BREEAM-NL Area development

Label for Sustainable Area Development

Technical Manual

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Dutch Green Building Council
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Changes
All changes of all the versions will be published on www.breeam.nl.

Version	Release date	Comments
0.95	July 15th 2011	DRAFT for limited distribution
0.95	August 17th	BRE Global agreement with launch
0.99	September 2nd 2011	Agreement Board of Experts (formerly Central Advisory Group)
1.0	September 7th 2011	Last small change based on input BoE and BRE
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1.0	August 2012	Final version, approved by the CvD and BRE. Suitable for certification.

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Dutch Green Building Council

Dutch Green Building Council (DGBC) is an independent foundation, developing and maintaining Assessment Manuals in close collaboration with many market parties and (semi) government agencies, against which the sustainability performances of buildings and areas in the Netherlands can be tested.

More information about the Dutch Green Building Council can be found at the website www.dgbc.nl

BREEAM

BREEAM is an instrument for assessing the sustainability of buildings and areas. BREEAM was developed by the Center for Sustainable Construction, part of the British BRE Global. BREEAM stands for Building Research Establishment Environmental Assessment Method.

BREEAM-NL is the version of BREEAM adjusted to the Dutch situation. You can provide input as well, through www.wiki.dgbc.nl since this assessment guideline is largely established with the help of knowledge and expertise from the market.

Intellectual Property

Publication

If an update is adopted, a PDF file will be created which will be published on www.breeam.nl and released for downloads. Only the PDF versions on www.breeam.nl are finally adopted versions. The Wiki-versions (www.wiki.dgbc.nl) are always evolving and therefore draft versions. Therefore, formal statements on the sustainability performance of (an aspect of) an area can never be made based on Wiki-versions.

Contents

I. Introduction

I.1. Dutch Green Building Council

The DGBC arose from the need to make sustainable construction and sustainable area development concrete and measurable. The primary objective of the DGBC is to make the urban area in the Netherlands more sustainable. In that context, the DGBC took the initiative of developing and managing a label for Sustainable Area Development.
The DGBC is supported by a large number of organizations who all have a sustainability ambition and who support the objectives of the DGBC. These participants are actively involved in the developments and continuous improvement. At www.dgbc.nl you can find more information about participation.
More information about the Dutch Green Building Council can be found at the website www.dgbc.nl

I.2. BREEAM and BREEAM-NL

BREEAM is an instrument for assessing the sustainability of buildings and areas.
BREEAM-NL is the version of BREEAM adjusted to the Dutch situation. BREEAM-NL is the label covering schemes for the assessment of the developed area in the Netherlands. DGBC develops and manages the schemes, making it the scheme manager. DGBC operates under license of BRE Global Ltd (England). The use and the performance of the schemes is supervised by an independent review body called Central Advisory Group (similar to a Central College of Experts) in which a broad cross-section of stakeholders from the construction industry is represented.
Currently (May 2012), the DGBC develops, manages and maintains three schemes under the label BREEAM-NL: BREEAM-NL New construction for New construction and large scale renovations, BREEAM-NL Existing construction & Use for existing buildings and this BREEAM-NL Area development for assessing area development.
In this Assessment Directive, you'll find all information regarding BREEAM-NL Area development, the label for sustainable area developments. You can submit suggestions and substantiated supplements to the DGBC Wikipedia http://www.wiki.dgbc.nl

I.3. BREEAM reliability

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 has always used objective criteria to recognize good environmental performance:

- Issues for assessment are agreed to be significant in their contribution to improving sustainability
- Issues must be assessable at the relevant stage in a building's life
- performance is based on scientific evidence, where possible
- performance should exceed the legal requirements and promote innovation
- improvements stimulated by BREEAM-NL should be achievableand cost effective

Where specific targets cannot be set using hard science or research,, sensible and practical measures are recommended to enhancethe sustainability performance of the project.
Assessments are performed by organizations and individuals who have received DGBC training under license of BRE Global. This leads to:

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

BRE Global has gained UKAS (United Kingdom Accreditation Service) accreditation for its BREEAM schemes. This means that the management of BREEAM is monitored and overseen by UKAS.

I.4. BREEAM-NL area development

Version 1.0 2012 of BREEAM-NL Area development, the label for sustainable area development managed by DGBC, was established during the period March 2009 – August 2012, in consultation with stakeholder groups.
The development of this label for sustainable area development has involved consultation with a large number of interested groups and approval by the Advisory Group of the Dutch Green Building Council (DGBC) (see Annex 1).

Users of this manualare expected to be aware of the contents of the **BREEAM-NL Operations Manual, in** which details are given of the methods, responsibilities and powers of the various roles involved, the method of submitting assessment reports, version numbering, registration etc. In the case of discrepancies in procedures the Operaitons manual overrules this technical manual. The Operations Manual can be viewed and downloaded on the DGBC website.

I.5. Introduction assessment guideline

Area developments are assessed in the design phase and the realization phase based on topics, grouped into the following categories:

- Management
- Synergy
- Sources
- Spatial development
- Welfare & Prosperity
- Area climate

Each category and each topic (named 'credit') has been worked out to detail in this assessment manual. For each credit, sustainability objectives and criteria have been defined that have to be met. If the criteria can be met, and this is adequately demonstrated with underlying evidence, credits can be awarded.
The sustainability objectives rise above the legal minimum recorded in law and legislation. BREEAM-NL certification is therefore called extralegal and is a voluntary choice of the commissioning party. The objectives are aimed at making the urban area more sustainable, in which current practice guidelines and 'best practices' are adopted where possible.
Most assessment issues have freedom of choice, which means that commissioning parties can choose for which assessment issues they want to achieve the credits, to build a total score. For a number of topics, a minimum standard applies that has to be achieved in order to achieve a certain total score. These are required credits.
Once all topics within a category have been assessed, a category score can be determined, after which a category weighting is applied.
The weighted category scores are then added to any additional scores awarded for innovation credits to give a total score This total score leads to a qualification of 1 to 5 stars.
After review by an independent acknowledged BREEAM-NL 'assessor' and possible further quality assurance by DGBC, the assessments of areas result in a final report and a BREEAM-NL certificate, in which the sustainability performance of the assessed area are mentioned against the topics from the framework of standards.

I.6. Target audience & stakeholders

Primary target audiences for this label are Municipalities, Provinces, the national government, developers and investors. The users of an area (resident, employee, passer-by, visitor) are the primary stakeholder. The expectation is that they will not be the certificate applicants, but they will be the ones that will demand the certificate.
Stakeholders may be municipalities, corporations, residents, companies, visitors, care and education bodies, institutional investors, developers, water boards, nature organizations, neighborhood associations, tourist organizations, trade associations, landowners, provinces and national government agencies.

I.7. Label as instrument

The label for Sustainable Area development has been developed as an answer to questions from the market. Local and national governments, developers, designers, advisors, energy companies, water companies and others need a clear definition. A label makes sure these parties speak the same language when realizing area developments. This allows for a more successful collaboration without confusion of tongue. The Label itself is also an instrument in the process of making the developed area more sustainable, since it generates momentum and stimulates a certain level of competition and benchmarking: 'who is the most sustainable?. The successful partnerships will contribute to that as well.

I.8. Definition of sustainable area development

In this label, sustainable area development is approached in an integrated manner. Sustainability is more than just ecology. Sustainability should be considered a combination of people, environment and resources. According to this label, sustainable area development is a socially responsible area development.
Sustainable area development is based on the principle of dealing with the natural riches of the earth as efficiently as possible (principle of the *trias energetica* and *trias ecologica*) and looking for a harmonious balance, in which this earth remains livable and operational for future generations (people-planet-profit)
The Brundtland definition (1987): "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.."
The Advisory Group Area Development uses the following definition for sustainable area development (expressed from this label):

Sustainable development is process-oriented development of an area in the sense most favorable to stakeholders (social sustainability), the environment (ecologic sustainability), and welfare (economic sustainability) and where the spatial and aesthetic quality are an integral part of the process..

Drawn up by the DGBC Advisory Group Area Development, June 30th 2010.

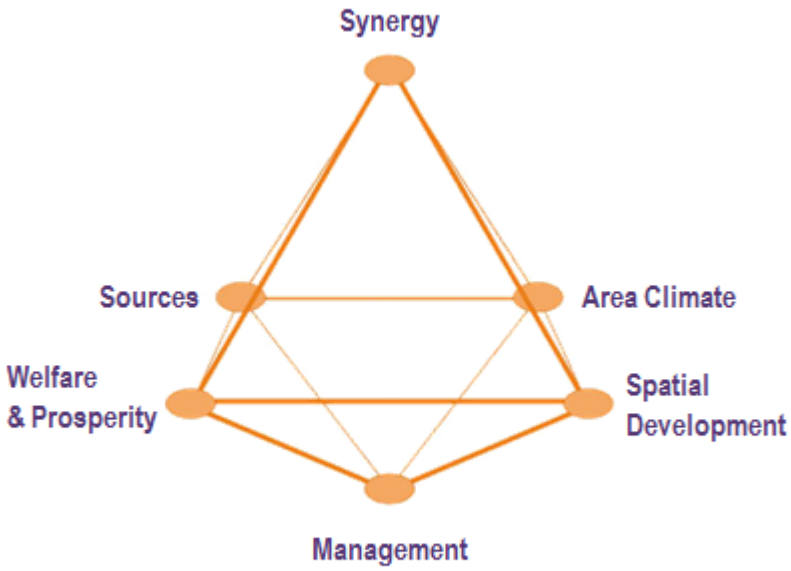
I.9. Purpose of this label

The underlying higher purpose of this and the other DGBC labels is making the developed area more sustainable. More operationalizedis the goal, providing one language for sustainability in area developments. Both commissioning party, provider and end users gain insight into the sustainability performance of a defined area. Commissioning parties can pose a concrete question and providers can concretely interpret it. End users – residents, business and visitors – can learn about the sustainability aspects whether or not realized in the area and base their choice of establishment based on that. The labeling from 1 to 5 stars gives the plan area a compact, clear way of communication on the sustainability performance.
Municipalities and provinces, but private developers as well, can distinguish themselves with an area with an independently determined sustainability level. An expressed ambition such as 'most sustainable area in the Netherlands' can now be translated into topics, performance and one overall assessment.

The added value of a certificate for an area development may be many things. For Municipalities, Provinces and the national government, it may be the confirmation of the realization of set sustainability ambitions. Or a justification to a city council or residents. For private parties, it may be a signal to investors, (future) users and clients. But of course, it can also just be an expression of an intrinsic need to develop in a sustainable manner and to have the result tested by an independent body.

I.10. Label Area Development Overview

The structure of the Label is displayed in the figure below.



There are four substantive themes, outlined in the horizontal plane: Sources, Area climate, Spatial Development and Welfare & Prosperity. The development and realization of these substantive aspects are secured in the category Management. Synergy promotes a global vision and unusual, successful combinations in the various substantive themes.
All categories are subdivided into various topics, called *credits*. Within the label, each credit has been worked out in a standard manner. The objective of the credit is described; the test criteria are defined and the evidence for both the design phase and the realization phase have been defined.

II. Scope - extent

Area development has many faces. All area developments, in the broadest sense of the word, can be assessed using this label. This may concern projects that relate to the integrated development of new areas (greenfields); the redevelopment of existing areas (brownfields), or a combination thereof. But it may also concern projects that are less plan-oriented and integrated in design, such as temporary transformations or adaptive reuse.

II.1. Topic of assessment

This Assessment Directive (BRL) is intended for the assessment of area development in the Netherlands. If the assessment has a positive outcome, a DGBC certificate will be issued including the qualification applicable to the area.
Registration of the area for assessment, goes against the current version of the BRL. The version based on which the assessment has taken place is displayed on the certificate. Certificates issued for completed areas, should always be considered a snapshot.
According to this Assessment Directive, an area is under development if one or more of the following characteristics apply:

- A master plan exists as well as an visionary plan for development (or it is being developed / updated);
- There are spatial choices to be made versus an existing situation that remains (virtually) unchanged;
- There are at least developments in (aboveground and underground) infrastructure & public areas.

The label for existing areas that is in development, will be intended for determining the sustainability performance in a status quo situation, meaning without (large scale) developments.
If an area does not fall within the scope of this assessment guideline, a tailor-made program may be initiated. DGBC should be contacted in this case.

II.2. Existing Area

This scheme is not suitable for determining the status quo of an area. For instance, if a Municipality would want to know how a current neighborhood performs in the current situation, the label cannot be used for that. There should be a development, choices to be made. In order to determine the status of an existing area, the label BREEAM-NL existing area is being developed. That label can also be used to assess area developments for their current sustainability status, years after completion.

II.3. Area Typologies

Areas can have strong typological differences, for instance in terms of use, users, residents, functions, infrastructure etc. Still, within this label, there are no distinctions made based on typology. This means that all credits are declared applicable for all typologies.

II.4. Area definition

Within the label, the applicant is free to define the physical boundaries of the area. An area is integrally assessed and is defined as follows:

1. The area contains buildings, public space and infrastructure;
2. The area that is the subject of the (re)development is clearly and unambiguously defined (in many cases this also is the area to which the area exploitation applies);
3. There are one or more commissioning parties(s) (this can also be a combination, such as a PPS);

II.5. Area and system boundaries

The area border is determined by the factual boundaries of the area to be developed. Often, but not always, this boundary matches the boundary of the land exploitation. The area boundary is, in principle, fixed throughout the area development. Since several aspects in an area are directly related to the area around the plan area, the term system boundary is also used in this Assessment Directive. The system boundary may vary per credit. The system boundary of a water related credit can also cover the surrounding area with sources, currents and facilities which the plan area uses or has a relationship with. Where applicable, the system boundary will be defined in the credit and it will be indicated how elements should be assessed within and outside of the plan area boundary.

II.6. Phasing

Eventually, the DGBC wants to promote and value sustainability in both the ambition, the realization and the use in area development. Within the label Area Development, two certification phases can be distinguished:

- **design phase**
- **realization phase**

These phases have process and content related themes. The process themes promote and value a sustainable and deliberate process throughout the development. The content themes value design and realization choices that promote the sustainability performance of the area during the management and use phase. In other words, management and use are leading for the themes in the design and realization phases,
With BREEAM-NL Existing Area (to be developed, begins 2nd half of 2012) the sustainability performance of existing areas can be determined.

II.7. Certificates

Within the label, an area development can be assessed and certified at two moments: with a temporary Design certificate and a final Realization certificate.

Design certificate

In the plan and design phase the sustainability ambitions of the principles of the area will generally become concrete for the first time. The preparation for a plan, in the form of various analyses is part of this phase. In the design phase, the foundation is laid for the realization and the eventual use and management. Evidence in this phase consists mainly of intentions and statements, anticipating the realization. The design certificate is a temporary certificate that expires on issuance of the realization certificate or at the latest 5 years after issuance.

Realization certificate

In the realization phase the ambitions from the design phase should be realized. The evidence for the realization will often be the same as in the design phase, supplemented with evidence of actual realization and / or actualization. If testing hasn't occurred during the design phase, the evidence associated with this phase will have to be provided.

Realization partial certificate

Area developments generally have a long lead time from design to realization. The development of areas also involves an overlap in phases during the development and the coexistence of several partial areas in both phases during a certain period. The distinction in phases and a possible overlap do not stand in the way of certification.
The applicant is free to have the parts of the plan that are realized certified separately using a realization partial certificate. Within the partial certificate, only those plan parts are considered that have actually been realized (this may adversely affect the score). After realization of the overall project, the overall project can be assessed as a whole, if the applicant desires so.

III. Score and qualification

This chapter explains how a BREEAM-NL qualification is calculated based on an assessed area development.
A number of elements determine the eventual BREEAM-NL qualification:

- Thresholds per qualification;
- Weighting;
- Minimum standards (required credits);
- Synergy credits.

In order to achieve the score of a credit, the full credit should be achieved: the goal, the requirements and the evidence.

III.1. Thresholds per qualification

An area development assessed within this label will achieve a final score. The final score achieved will be converted into a BREEAM-NL qualification according to the table below:

Qualification in Stars	Score	(Old qualification)
1 star	≥ 30%	Pass
2 stars	≥ 45%	Good
3 stars	≥ 55%	Very good
4 stars	≥ 70%	Excellent
5 stars	≥ 85%*	Outstanding*

** For the qualification 5 Stars, additional requirements are required, this is explained later.*

The eventual score achieved is listed on the certificate.

III.2. Weighting

The total score is determined by the sum of the scores achieved per category, multiplied by a weighting percentage per category.
The weighting percentages for this version have been preliminary established by a balanced division between the four substantive categories and a heavier category, but mutual equal weighting for two umbrella categories management and synergy.

Area category	Weighting
Management	18%
Synergy	18%
Sources	17%
Spatial Development	20%
Welfare & Prosperity	12%
Area climate	15%

At the time of publication of this version of the Assessment Directive (June 2012) DGC foresees a broad weighting study for all BREEAM-NL labels (2nd half 2012). Therefore, it is foreseeable that the category weightings will change over the course of 2013.

III.3. Required credits

In order to achieve an area qualification, a minimum standard must be met. This means that, per level, a minimum number of credits has to be achieved for a number of assessment issues. This is displayed in the table below.

Credit Area	1 Star	2 Stars	3 Stars	4 Stars	5 Stars
MAN 1 – Management	1	1	2	2	2
MAN 3 – Participatie	1	1	2	3	4
SYN 1 – Gebiedsaard	3	3	3	6	6
SYN 2 – Gebiedsvisie	4	4	4	5	5
Case study material	-	-	-	-	√

III.4. Innovation credits

With Innovation credits, the percentage score of the area development can be further increased. Innovation credits are intended to award solutions that significantly increase sustainability of the area, but that generate no points within the current assessment directive.

On top of the score a maximum of 10% can be added for innovation credits achieved. For each honored innovation, a maximum of 1% can be added.
A different procedure applies to achieving innovation credits. A copy of this procedure can be requested from DGCB.

III.5. How is an Area qualification established

In order to achieve the qualification, one does the following (see the table below as well):

1. Determine the number of credits achieved for a credit in the Design or Realization phase.
2. Determine the number of credits achieved per category by summing up the credit credits;
3. Determine the percentage per category based on the maximum number of credits to be achieved in each category; such as 15 points of 30 achieved = 50%
4. Multiply the category percentages by the weighting factors, this results in the category score;
5. Add up the category scored, including the innovation credits, if applicable, this leads to a draft final score;
6. Check whether the required credits for the preliminary qualification have been achieved. If so, the draft qualification is equal to the final qualification.

Example of the calculation of the Area qualification:

Area category	Credits achieved	Available credits *	% Credits achieved	Weighting	Category score
Area management	4	11	36%	18%	6,5%
Synergy	15	21	71%	18%	12,8%
Sources	23	36	64%	17%	10,9%
Spatial Development	19	49	39%	20%	7,8%
Welfare & Prosperity	10	16	63%	12%	7,6%
Area climate	18	30	60%	15%	9,0%
Total score					**54,6%**
Temporary qualification					**2 STARS**
** PLEASE NOTE: the number of available points listed here is merely an example*					

Credits required for qualification 3 STARS	Achieved?
MAN 1 – 2 credits	√
MAN 3 – 2 credit	√
SYN 1 – 3 credit	√
SYN 2 – 4 credits	√
Innovation credits	1%
Final Score	55,6%
Final Qualification	3 STARS

In the example above, the temporary qualification '2 Stars' is not equal to the final qualification, since the required credits for this level have been achieved and the innovation credit has led to a step to the next level (3 stars begins at 55%).
Please note that a 'final' qualification is only final after testing by an independent assessor and possible further quality assurance by DGBC. For these procedures, please see the previously mentioned User manual or Operations Manual.

III.6. 5 Star qualification

In order to obtain a 5 Star qualification for an area, the following requirements must be met:

1. The final score should be ≥ 85%;
2. The required credits have to be achieved;
3. A case study has to be delivered according to the guidelines below.

Case study

One of the main aspects of a 5 Star qualification will be the exemplary function of these projects for the rest of the industry. Therefore, it is of the essence that other developers and commissioning parties have access to a good case study.
The commissioning party of the area that has achieved the 5 Star qualification will be asked by DGBC to either provide a turnkey case study or to provide so much material that DGBC is able to draw one up based on it. This information will be requested together with the final report of the auditor for the relevant phase.
After approval of the auditor, DGBC will use the case study for various publications.
If no case study or insufficient material is provided, the building will receive the qualification 4 Stars.

IV. Definitions

In this chapter, only the generally applicable definitions are listed. The credit specific definitions are listed under the heading Definitions at the relevant credits.

Applicant	He who wants to have an area development assessed based on BREEAM-NL
Advisory group	A semi-permanent group of (experienced) experts committed to develop and manage a high quality supported label
Assessor	Qualified assessor regarding BREEAM-NL
BREEAM	Building Research Establishment Environmental Assessment Method
Board of Experts	A body of the DGBC representing a broad section of the construction and development sector, with the main task of monitoring quality and the performance of the BREEAM-NL labels
DGBC	The Dutch Green Building Council Foundation
Sustainable area development	A process-oriented development of an area in the sense most favorable to stakeholders (social sustainability), the environment (ecologic sustainability), and welfare (economic sustainability) and where the spatial and aesthetic quality are an integral part of the process.
Expert	Qualified process manager and content expert regarding BREEAM-NL
Area boundary	The actual borders of the area to be developed. Usually these are well defined by the commissioning party.
Area, plan area	In this context, it is the plan area in development or to be developed which is the subject of the assessment. The concepts are interchangeable.
Commissioning party	The commissioning party of the area development. Usually, but not always, also the one who commissioned certification. This can be one body or organization, but also a consortium such as a public-private partnership
Stakeholder	Organization, group or individual affected by or related to the area development or that can be of meaning for the development. This may be included but is not limited to: (future) residents, business, users, nearby residents, developers, tenants, local nature organizations, (social) interest representatives, business organizations, environmental organizations, investors, local, provincial and national governments, within and outside of the plan area.
Synergy	Creating added value by realizing combinations between non-previously combined aspects and that are not in the original specification or are not obvious. Synergy is the smart combination of existing aspects in such a way that the combination provides added value in comparison to the sum of the separate aspects.
System boundary	A boundary that has not been clearly defined in advance, that – depending on the topic – may fall within or (well) outside of the area. Where relevant, the system boundary will be defined in the credit.
Public area	Public area is an area accessible to anyone. The public area is a physical area where activities and meetings occur on a daily basis. The public area includes streets, squares, roads, shopping centers, sports fields and multifunctional accommodations. It concerns area that can't be assigned to a certain group, they are collective. The configuration and management is under the responsibility of government agencies. Public areas have a social, cultural, ecological,

traffic and / or economical purpose.

1. Area management

MAN 1	**Management**
MAN 2	**Stakeholder analysis**
MAN 3	**Participation**
MAN 4	**Phase transition to Management & Occupancy phase**
MAN 5	**Management and User Manual**
MAN 6	**Socially Responsible Entrepreneurship**

Category: Area management	Maximum no. of credits: 2	Required: Yes

MAN 1 - Management

1 Purpose of the credit:
Ensuring responsibility for the realization of the sustainability ambition during design and development.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that in the project organization, the responsibility for realizing the sustainability ambition is ensured.
1	Where the evidence provided demonstrates that the responsibility was organized in a timely manner, with sufficient time, people and resources.

4 Criteria requirements:
The following demonstrates compliance:

First credit:
1. In the upper echelon of the project organization, a person has been made responsible for the realization of the defined sustainability ambition.
2. This person has the authority to make decisions or at least to vote.

Second credit:
1. The first credit has been achieved.
2. The person responsible for the realization of sustainability was appointed during the design phase.
3. This person has sufficient time, people and resources at his disposal to be able to pursue realization of the defined sustainability ambition with a realistic chance of success.

5 Additions to the criteria requirements:
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6 Evidence required

Design Phase

First credit:
Requirement 1 & 2:
- Description of the project organization with at least an indication of: headcount in FTEs, positions, responsibilities, authorities and decision making structure;
- The member of the project organization appointed as the one responsible for the realization of the sustainability ambition, including his individual responsibilities and powers.

OR

- A statement of the principal / project organization on how the project organization will be interpreted in terms of headcount in FTEs, positions, responsibilities, powers and decision making structure;
- A statement of the principal / project organization indicating that a member of the project organization will be appointed with the responsibilities and powers required for the realization of the sustainability ambition.

Second credit:
Requirement 1:
- Evidence that the conditions for the first credit have been met.

Requirement 2&3:
- A copy of a contractual clause confirming that the person was appointed in a timely manner and that he has sufficient time, people and resources at his disposal for the realization of the sustainability ambition.

Realization phase

First credit:
Requirement 1 & 2:
- Description of the project organization containing at least: headcount in FTEs, positions, responsibilities, powers and decision making structure, both at the start and at the completion of the realization phase;
- The member of the project organization made responsible for the defined sustainability ambition and his individual responsibilities and powers, both at the start and completion of the realization phase.

Second credit:
Requirement 1:
- Evidence that the conditions for the first credit have been met.

Requirement 2&3:
- Same evidence as in the Design Phase.

7 Definitions:

8 Additional information:

9 References:

Category: Area management	Maximum no. of credits: 2	Required: Yes

MAN 2 – Stakeholder analysis

1 Purpose of the credit:
Stimulating the process of gaining insight into the people and bodies affected by the area development and / or who (can) influence the area development.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded as follows:

Credits	
1	A stakeholder analysis has been conducted
1	The stakeholder analysis has also been conducted in consultation with relevant stakeholders and the analysis is being evaluated

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. A stakeholder analysis has been conducted that covers at least:
   - Sum of all potential stakeholders with an estimate of their relation to the area development, expressed on a scale of ++ (very strong relationship) to -- (very vague relationship);
   - Identification of all relevant stakeholders if those stakeholders have at least a strong relationship (+);
   - The (potential) relationship with the relevant stakeholders, described in words:
     - the way they are/can be affected by the area development;
     - the degree of nuisance / extent they (may) experience as a result of the area development;
     - the level of power and / or influence they can exercise in respect of the area development.
   - The potential input of the relevant stakeholders in the process, including:
     - The level of participation (according to the participation ladder);
     - The way this level is interpreted;
     - A participation planning (which stakeholder is asked for input when).
   - Identification of the 'key' stakeholders, as those parties that are / can be affected most and / or (may) experience the most nuisance or advantage and / or (may) exercise the most power and influence.
2. Identification means unambiguously identifying the stakeholders, including contact details.
3. The analysis considers the relevant relationships during the entire Design and Realization phase and the relationships to be expected in all reasonableness during (the first years of) the Occupancy and Use phase.
4. If potential relevant stakeholders have been appointed that cannot yet be identified in person or as body (such as future residents), representatives of the relevant stakeholders should be involved as stakeholders.
5. The stakeholder analysis is updated at least annually during the Design and Realization phase.
6. The first stakeholder analysis was conducted prior to the establishment of the Final Design.

Second credit:

1. Evidence that the first credit has been achieved.

2. Among the ‘relevant stakeholders’ are the people and bodies that are not part of the project organizations and that have no financial interest in the design and the realization of the area development.
3. The objectives of the ‘key stakeholders’ in respect of the process of the area development have been documented during the Design Phase for a post-analysis.

5 Additions to the criteria requirements:

-

6 Evidence required:

Design Phase

First credit:
Requirement 1:
- Copy of the analysis
- A planning of the update timeframes during the remaining Design and Realization phases

Second credit:
Requirement 1: Evidence that the first credit has been achieved
Requirement 2:
- Copies of documents such as meeting agendas, attendance lists of meetings, minutes, lists of agreements, letters of intent of commitment or participation, information brochures, signed vision document etc.
- The people involved in the stakeholder analysis and the bodies they represent.
- The relationship of the people involved to the area development
- The objectives of the ‘key stakeholders’
- A copy of the statement drawn up and signed by the project agency, in which she commits to the implementation of a stakeholder evaluation among the key stakeholders, at the latest two year after formal realization of the area development.

Realization phase

First credit:
Requirement 1:
- Copy of the updated analysis
- Evidence that the update timeframes were no more than 1 year apart during the Design and Realization phases

Second credit:
Requirement 1: Evidence that the first credit has been achieved
Requirement 2: Same as the Design Phase, with evidence that the update timeframes were no more than 1 year apart during the Design and Realization phases.

7 Definitions:

Stakeholder
Organization, group or individual affected by or related to the area development or who can be of meaning for the development. This may include but is not limited to: (future) residents, companies, users, nearby residents, developers, tenants, local nature organizations, (social) interest representatives, business organizations, environmental organizations, investors, local, provincial and national governments inside and outside the plan area.

Stakeholder analysis
Inventory and identification of relevant stakeholders providing insight into their relationship to the area development, expressed in influence and interest and the way they can be involved in the process.

Key stakeholder

A select group of stakeholders identified in the stakeholder analysis as parties that are / may be most affected and / or (may) experience the most nuisance or advantage and / or (may) exercise the most power and influence of or over the area development.

8 Additional information:

9 References:

Category: Area management	Maximum no. of credits: 4	Required: Yes
MAN 3 - Participation		

1 Purpose of the credit:
Improving both the Design and the Realization of the area development by proactively involving stakeholders during the entire Design and Realization phase.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
1	Participation takes place in accordance with step 2 on the participation ladder (Consulting)
2	Participation takes place in accordance with step 3 on the participation ladder (Advising)
3	Participation takes place in accordance with step 4 on the participation ladder (Coproducing)
4	Participation takes place in accordance with step 5 on the participation ladder (Co-deciding)

4 Criteria requirements:
The following demonstrates compliance:

For all credits the following generic requirement applies in addition to the credit specific criteria requirements:

1. All stakeholders mentioned in the stakeholder analysis (MAN 2) have, preferably in the Preliminary Design Phase but at the latest prior to the Final design Phase of the area development, been informed about:
    - The physical boundaries of the plan area
    - The envisioned of the project
    - A (rough) time schedule
    - The effects of the area development to be expected during the (remaining) Design and Realization phases

First credit:

1. The generic requirement has been met.
2. Relevant stakeholders are involved in the development as interlocutor, and these stakeholders are being consulted.
3. To this end participation evenings, hearings, digital bearings, surveys, contests, debates, group discussions or similar events are organized.

Second credit:

1. The generic requirement has been met.
2. Key stakeholders have the opportunity of bringing forward issues and formulating solutions, with these ideas playing a full-fledged role in the development. The stakeholders are considered to be advisors.
3. In principle the project organization commits to the results, but in the final decision making process, she may make (substantiated) deviations.

4. To this end advisory councils, district and town councils, expert meetings, roundtables or equivalents are organized.

Third credit:
1. The generic requirement has been met.
2. The project organization puts together an agenda in consultation with the key stakeholders, after which they will look for solutions together.
3. The project organization commits to these solutions regarding the final decision making process. The stakeholder is a collaborative partner.
4. To this end, consultative groups, covenants, workshops, project groups or equivalents are organized.

Fourth credit:
1. The generic requirement has been met.
2. The project organization leaves the development and the decision making process to the key stakeholders, with the project organization having an advising role. The stakeholder is co-decider.
3. The project organization adopts the result after testing them against predefined preconditions.
4. To this end a steering committee, participation council, (binding) referendum or equivalents are organized.

5 Additions to the criteria requirements:

6 Evidence required:

Design Phase

All credits, generic requirement:
- A copy of the information provided to the stakeholders
- The copy shows: author, send date and recipients of the information

First credit:
All requirements: Evidence that demonstrates that Step 2 of the participation ladder has been complied with.

Second credit:
All requirements: Evidence that demonstrates that Step 3 of the participation ladder has been complied with.

Third credit:
All requirements: Evidence that demonstrates that Step 4 of the participation ladder has been complied with.

Fourth credit:
All requirements: Evidence that demonstrates that Step 5 of the participation ladder has been complied with.

Realization phase

All credits:
Same as the Design Phase, including updates

7 Definitions:

Stakeholder
Organization, group or individual affected by or related to the area development or who can be of meaning for the development. This may include but is not limited to: (future) residents, companies, users, nearby residents, developers, tenants, local nature organizations, (social) interest representatives, business organizations, environmental organizations, investors, local, provincial and national governments inside and outside the plan area.

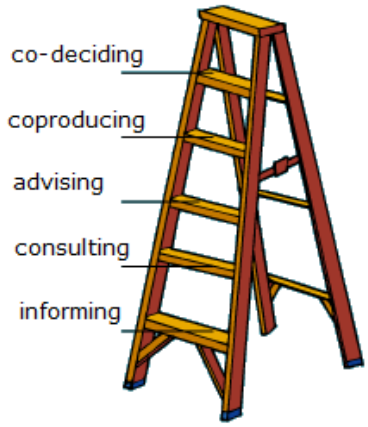
Stakeholder analysis
Inventory and identification of relevant stakeholders providing insight into their relationship to the area development, expressed in influence and interest and the way they can be involved in the process.

Key stakeholder
A select group of stakeholders identified in the stakeholder analysis (MAN 2) as parties that are / may be most affected and / or (may) experience the most nuisance or advantage and / or (may) exercise the most power and influence of or to the area development.

Stakeholder participation
The way the stakeholders are involved in the area development. The level of participation may vary from providing information to (co)deciding.

Stakeholder plan
Plan in which the stakeholder analysis and the method of participation of the stakeholders is documented.

Participation ladder
The level of participation may vary from informing (level 1) to (co)deciding by the stakeholders (level 5). The commonly used participation ladder (also used in this assessment directive) distinguishes 5 levels:



Step 1 = Informing
The project organization determines the agenda for decision making and keeps all parties involved informed. Stakeholders / people involved have no say in the development. The participant is purely an audience. Resources may include: information sessions, local newspapers, campaigns, field trips.

Step 2 = Consulting
To a large extent the project organization determines the agenda for decision making, but she considers the people involved to be interlocutors in the development. The project organization does not commit to the results of the meetings. The stakeholder is the party consulted.
Resources may include: participation evenings, hearings, digital bearings, surveys, contests, debates, group discussions.

Step 3 = Advising
In principle, the project organization puts together the agenda, but the people involved are given the opportunity to bring forward issues and formulating solutions, with these ideas playing a full-fledged

role in the development. In principle the project organization commits to the results, but in the final decision making process, she may make (substantiated) deviations. De stakeholder is advisor.
Resources may include: councils, district and town councils, expert meetings, roundtables .

Step 4 = Coproducing
The project organization puts together an agenda in consultation with the parties involved, after which they will look for solutions together. The project commits to these solutions regarding the final decision making. The stakeholder is the collaborative partner.
Resources may include: consultative groups, covenants, workshops, project groups .

Step 5 = Co-deciding
The project organization leaves the development and the decision making process to the key stakeholders, with the project organization having an advising role. The project organization adopts the results after testing them against predefined preconditions. The stakeholder is co-decider.
Resources may include: steering committee, participation council, (binding) referendum.

8 Additional information:

9 References:

Category: Area management	Maximum no. of credits: 1	Required: No

MAN 4 – Phase transition to Management & Occupancy phase

1 Purpose of the credit:
Stimulating the lasting sustainability performance of the area by setting up a form of management for the occupancy and use phase.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 1 credit can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that in the phase transition from Realization to Occupancy & Use, a form of management has been setup in which relevant knowledge and information is ensured.

4 Criteria requirements:
The following demonstrates compliance:

1. A form of management is organized in such a way that there will be a contact and documentation point for the users of the area during the occupancy phase. This is organized with a horizon of at least 5 years.
2. The contact and documentation point will have the relevant documentation regarding the sustainability aspects of the area. This covers at least:
    a. Energy systems
    b. Water systems
    c. Soil details
    d. Biotic and a-biotic systems
    e. Cultural history
    f. Underground infrastructure
3. (New) residents and other long-term users of the area shall be informed of the existence of the chosen form of management.
   OR
   There is a website where the contact and documentation point can be found.

5 Additions to the criteria requirements:
-

6 Evidence required:

Design Phase

Requirement 1 t/m 3:
- A plan for the transition from realization to occupancy & use phase, containing at least:
    - The person, organization or body responsible for maintaining the chosen form of management;
    - The structure, headcount, tasks and roles of the form of management;
    - A commitment signed by the project organization to maintain the form of management for at least 5 years;

- The way knowledge and information regarding said sustainability aspects of the area will be managed;
- The way this knowledge and information will be made available for managers and users of the area;
- The way (new) residents and other long-term users of the area are informed of the existence of the form of management.

OR

- A copy of a signed statement of the project organization committing to the fact that this plan will be drawn up on transition to the Occupancy & Use Phase.

Realization phase

Requirement 1 t/m 3:

- Same as the Design Phase

7 Definitions:

8 Additional information:

9 References:

Category: Area management	Maximum no. of credits: 1	Required: Yes

MAN 5 – Management and User Manual

1 Purpose of the credit:
Stimulating the provision of area manuals for both the managers and users of the area to allow them to understand the area and deal with it efficiently.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 1 credit can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that a technical and non-technical user manual has been provided for managers, respectively residents / users of the area containing information about the use and the sustainability performance of the area.

4 Criteria requirements:
The following demonstrates compliance:

1. A management manual has been developed containing the information as described under 'Content of Management Manual' (see Additional Information).
2. The management Manual is useful for the manager(s) of the area and its systems (at least energy, water, biotic and a-biotic systems).
3. A user manual has been developed including the information as described under 'Content of User Manual' (see Additional information).
4. The user manual is useful for the non-technical users of the area and is suitable for (other) stakeholders that will use the area.

5 Additions to the criteria requirements:

Content of user manual

The list below demonstrates the buildup and type of information that has to be included in the manual. Parts to be distinguished are:

- For the users: general information about the facilities in the public area
- For the managers: additional operating information about contact details required in case of malfunctions or suboptimal performance.

1. Information about uncommon, sustainable or otherwise special technical area systems, facilities and systems.

Information to be provided:

- Users: a brief explanation of the installations, facilities and systems available in the area, including their functions in non-technical terms such as
  - Local energy generation, storage and distribution systems;

    - water purification or treatment plants;
    - bicycle paths with lighting on presence detection;
    - automatic awnings or automatic lighting;
    - energy measuring etc.
- Managers: as above, plus a non-technical instruction of the management and maintenance of these systems and information about the manufacturers, suppliers and installers of the systems.

2. Water in the public area

Information to be provided:

- Users: indication of the waters that are and are not intended for recreational purposes.
- Managers: location of water collection systems, information about groundwater levels on completion, principles on outlines of the local water system (pumping stations, pumps, overflows, connections etc.), contact details local Water Board, purpose of surface waters (whether or not for recreation), irrigation facilities for the public areas.

3. Ecological values

Information to be provided:

- User: a list of special ecological values and protected species in the area. Referral to the 'Boswet' (Forest Act) and the 'Flora & Faunawet' (Flora & Fauna Act).
- Manager: same as above plus directives for management and maintenance of special ecological values, biotic (flora and fauna) and non-biotic (such as natural banks). Directives for – if applicable – mowing (such as not phased in connection with breeding birds), dredging in relation to the ecological impact.

4. Emergency management

Information to be provided:

- Users: sites to be avoided in case of emergencies, such as storage of flammable and potentially explosive substances, referral to the locally applicable emergency plan
- Managers: same as above, plus national and local alarm numbers of police, fire department and ambulance.

5. Reporting procedures on pollution or nuisance caused by noise, smell, smoke etc.

Information to be provided:

- Users: contact details of the Municipal office, the regional measurement service and of the area manager and information on how to report.
- Managers: same.

6. Training

Indicate which training sessions have been planned for the use of special public facilities and systems.
Information to be provided:

- Users: n/a
- Managers: training in the use of available special facilities, supplemented with information about commissioning or adjusting systems (or having them commissioned / adjusted.

7. References

Include relevant referrals to websites, publications and organizations for users and managers.

6 Evidence required:

Design Phase

Requirements 1 - 4:
A copy of the clause from the specification (of the work) including:

- The requirement to draw up a manager and user manual;
- The size and contents of the above-mentioned manager and user manual.

OR

An official letter of the project organization confirming:

- That the design team is required to draw up a manager and user manual;
- That the content of the above-mentioned manuals will be worked out in accordance with the requirements of BREEM-NL Area development.

Realization phase

Requirements 1 - 4:

- A copy of the manual;
- A written confirmation of the project organization that prior to the formal transfer of the area (prior to the moment on which the developer has left the area completely) the manual has been provided to the managers and made available to residents and users (for instance through publication on a website).

7 Definitions:

For this credit, Users are defined as 'long-term users', so not just residents but also people who work there. Passers-by are not included.

8 Additional information:

9 References:

Category: Area management	Maximum no. of credits: 1	Required: No

MAN 6 – Socially Responsible Entrepreneurship

1 Purpose of the credit:
Stimulating a socially responsible work method of the project organization.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 1 credit can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the project organization has implemented Socially Responsible Entrepreneurship (SRE) in their business or is demonstrably working on doing so.

4 Criteria requirements:
The following demonstrates compliance:

1. The project organization or the organizational part under which the project organization falls is recognized in accordance with ISO-26000, the 'MVO-Prestatieladder', 'Keurmerk NL MVO', 'IMA MVO-standard', the 'MVO-wijzer' or equivalent.

OR

2. The project organization or the organizational part under which the project organization falls deploys people and resources to become recognized or certified in accordance with one of the previously mentioned systems within the foreseeable future (no more than 2 years). The process towards certification should at the latest, be imitated during the design phase.

5 Additions to the criteria requirements:
-

6 Evidence required:

Design Phase

Requirement 1

- Copy of MVO (SRE) – certificate or recognition including elaboration of the project team that the relevant project organization falls under the scope of the certificate;

OR

Requirement 2

- A statement, signed by an external certifying or supporting party, providing plausible substantiation that the project organization has already begun the certification process and expects to be awarded an MVO-certificate or recognition within 2 years after the date of the statement.

Realization phase

Requirement 1

- Copy of MVO (SRE) – certificate or recognition including elaboration of the project team that the relevant project organization falls under the scope of the certificate;

Requirement 2:

- Only applies if the Design certificate was issued no longer than 2 years ago.

7 Definitions:

SRE (MVO in Dutch) – Socially Responsible Entrepreneurship
The definition of SRE used in this label is:
Conducting business or heading an organization in such a way, that a balance is sought between people, the ecology and the financial position of the organization in all its considerations (often abbreviated as People, Planet, Profit (Prosperity) or People, Environment, Resources).

ISO 26000
International directive (not a standard) for Social Responsible Entrepreneurship (SRE).

8 Additional information:

The accepted MVO(SRE)certificate or recognition include the following: the 'MVO prestatieladder' the 'keurmerk NL MVO' of Qualitatis Certification B.V., the 'MVO-standard' of Instituut MVO demonstrable and the 'MVO-wijzer'. Please refer to 9. References. Equivalents may be accepted is the equivalency is plausibly substantiated by the project.

The definitions as used in the various systems may deviate from this. In case of certification against or recognition in accordance with one of the previously mentioned systems, the definition of the system precedes the definition referred to in this assessment directive.

9 References:

MVO prestatieladder, source: http://www.mvoprestatieladder.nl/index.php

Keurmerk NL MVO, source: http://www.keurmerk-mvo.nl/index.html

IMA MVO-norm, source: http://www.mvonorm.com/de_norm.html

MVO-Wijzer, source: http://de.mvowijzer.nl/

http://www.mvonederland.nl/

2. Synergy

SYN 1	**Characteristics of the area**
SYN 2	**Visionary plan**
SYN 3	**Adaptive Capacity**
SYN 4	**Sustainable return on investment**
SYN 5	**Synergy**

Category: Synergy	Maximum no. of credits: 6	Required: Yes
SYN 1 Characteristics of the area		

1 Purpose of the credit:
Determining the characteristics of the area and its context.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 6 credits can be awarded:

Credits	
3	Where the evidence provided demonstrates that an inventory was made of the characteristics of the area providing insight into the uniqueness of the area and the relationship of the area to its surroundings and where this information is made publicly available for future use.
3	Where, based on the inventory, an analysis was made of the strengths and weaknesses and the opportunities and threats (SWOT) that describe the intrinsic qualities and bottlenecks of the area and its context.

4 Criteria requirements:
First three credits

1. In the inventory, the items a. through w. below are included. If items from this list are not deemed applicable, this should be substantiated.
   Per item it is indicated whether it concerns the plan or system boundary. The inventory can be performed based on a 'desktop study'. Detailed (field) research is not a part of SYN1; this is required in some other credits. The inventory is preferably supported based on images, photos and thematic maps. If there is a revitalization of previous, outdated planning and an inventory was already made in the past, the old inventory should be updated according to the same criteria.

2. The result of the inventory has been provided to the Municipality (/municipalities) and released for public consultation. If parts from the inventory are considered to be confidential, this is to be indicated and substantiated.

Spatial development

a. Brief description of the origins of the plan including historic use of space over at least the past 50 years (plan boundary)

b. Brief description of the current urban structures, public spaces and built structures present(plan boundary and system boundary where relevant)

c. Brief description and characterization on how the area connects to its environment regarding transport of people and goods (plan boundary and system boundary where relevant)

d. Inventory of the current program and use of space (including shops, social and cultural facilities, services, industry, living etc. (plan boundary).

e. Inventorying existing Public Transport facilities and traffic infrastructures including routes for car traffic, expedition traffic, cyclist, pedestrian and water routes including any bottleneck credits and facilities associated with these traffic systems (such as parking facilities, PT credits storage space for bicycles). (plan boundary)

f. Brief description of the available cultural heritage and the description of the cultural historic values (plan boundary)

g. Inventory of the legal and policy frameworks regarding the plan area framework directive, water, bird and habitat directive Natura 2000, flora- and fauna act, nature legislation, ecologic main structure (plan boundary).

h. Brief description of the properties of the local green and blue structures (parks, lakes, rivers, forests, green facilities, groundwater situation, water storage capacity, corridors etc.). (plan boundary).

i. Brief description of the flora and fauna present. (plan boundary).

j. Brief description of the land surface including the dominant characteristics of the first 3 meter underground (use of the appropriate terms like flat, hilly, undulating, calcareous, sand-rich, woody, mostly clay, hard / soft surfaces, etc.) (plan boundary)

Sources

k. Inventory of the available potential (renewable) sources of energy, water and (construction) materials (raw materials and / or production) used , including waste streams. For each (renewable) source it has been indicated – in accordance with the requirements below – to what extent it is possible to generate these within the system boundaries of the area. 'Practically possible' means that it fits within the current legislation, the available space and the technical possibilities. Both existing and potential facilities of sustainable energy generation in the area will be mapped.

Area Climate

l. Inventory of the dominant air quality expressed in NOx, PM10 and PM 2,5 based on GCN maps (Grootschalige concentratiekaarten Nederland, see also definitions KLI 3). (plan area)

m. Inventory of the dominant soil quality. (plan area)

n. Inventory of the dominant noise situation (traffic and company noise, ambient noise, such as an adjacent airport). (plan area)

o. Inventory of the potential or observed radiation risks (plan area)

p. Brief description of aspects regarding external safety, such as transport routes of hazardous substances in or near the plan area and risky configurations. (plan area)

Welfare & Prosperity

q. Inventory of existing social frameworks (such as policy regarding social services, employment, housing differentiation). (plan area)

r. Brief overall description of the population structure (number of residents, prognosis population growth/shrinkage, age structure, family composition, population movement, educational level, ethnicity). (plan area)

s. Brief overall description of the public safety perceived by the residents and users, possibly based on the themes from the Integrale Veiligheids Monitor (IVM) relevant to the plan. (plan area)

t. Inventory of the average disposable income per family (plan area).

u. Brief description of the economic activity present. (plan area)

Summary

v. A description of the characteristics of the area based on the outcome of the above-mentioned items (plan and system boundary)

w. Brief description of the overall financial situation of the municipality, within which the plan area falls, with a 5 year prognosis in relation to management and maintenance of the plan area in the Realization phase'

Fourth through sixth credit

1. Based on the subjects from the inventory, an analysis has been drawn up that points out the strengths, weaknesses, opportunities and threats (SWOT) of the current area and its wider context.
2. The analysis also contains an answer to the question what the expected consequences are for the plan area if the development were not to happen (reference alternative).
3. At least 2 parties identified as 'relevant stakeholder' in accordance with the requirements from MAN 2 – stakeholder analysis are involved in the analysis.
4. If the municipality is not part of the area developing parties, a municipal statement is required, showing that the municipality considers the scope and extent of, and those involved in the analysis to be adequate.

5 Additions to the criteria requirements:

-

6 Evidence required:

Design phase

Credits 1 - 3:

Requirement 1

- A copy of the fully performed inventory, signed by the area developing party(/parties), with mention of the phasing regarding the realization and envisioned date of completion.

Requirement 2

- A statement of the municipality showing that the inventory has been provided to the municipality and is open to public consultation.

Credits 4 - 6:

Requirement 1 & 2

- A copy of the analysis, signed by the area developing parties and by the other parties involved in the inventory.

Requirement 3

- For each stakeholder involved, a brief description of their 'relevance' according to MAN 2 – stakeholder analysis and their role in the establishment of the analysis.

Requirement 4

- If applicable: the municipal statement as referred to under criteria requirements.

Realization phase

Same as the design phase

7 Definitions:

System boundary

For this credit, the system boundary doesn't have a hard definition, since it is variable. It always concerns the connection of the area to the surroundings. Examples:

- A Public Transport node located just outside of the plan area, but relevant to the mobility aspect should be appointed.
- If the plan area is in the noise contours of an airport, the airport is relevant to the aspect 'noise'.

- The perception of public safety in a neighborhood will be partly determined by that of the neighborhood / the village / the city.

Brief description
A brief description provides a sufficient image of the item, without an extensive study or substantiation being required. It is descriptive, therefore not simply a list of facts. It concerns the dominant image. A brief description is preferably supported with images, photos or thematic maps. For Soil quality for instance, a study such as required in the credit Soil quality, does not have to be conducted. However, it is important to determine whether across the overall area there are focus credits, such as current, potential or imminent pollution of special qualities (unique soil types, special soil organisms, special soil structures etc.).

Inventory
An inventory is a factual summary of the situation. The inventory is supplemented with information from on site observations, based on the information available. The inventories requested in this BRL are preferably concluded with a descriptive summary supported with images, photos or thematic maps.

8 Additional information:

In order to achieve sustainable area development (in an efficient manner) it is recommended to determine the aspects from SYN1 prior to addressing the other credits. For the explanation of the terms ‘Brief description’ and ‘Inventory’ please see the definitions.

9 References:

Category: Synergy	Maximum no. of credits: 5	Required: Yes
SYN 2 Visionary plan		

1 Purpose of the credit:
Establishing a solid, integral visionary plan in order to achieve area development in which the available qualities of an area are used and strengthened, threats are diverted and weaknesses are eliminated where possible.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 5 credits can be awarded as follows:

Credits	
4	Where the evidence demonstrates that a solid visionary plan has been established.
1	Where the evidence demonstrates that the visionary plan was established with relevant stakeholders.

4 Criteria requirements:
The following demonstrate compliance:

First four credits
The visionary plan …
1. provides an integral vision on the sustainability to be realized within the plan area, in the context of the definition of sustainable area development used in this label;
2. includes the inventory from SYN1 – Characteristics of the area;
3. has addressed the results of the SWOT-analysis from credit SYN1 – Characteristics of the area or left them out with provision of reasons;
4. underpins that, in finding solutions for bottleneck credits, these solutions were sought within the area or system boundary, in which shifting to others or a later timeframe is minimized;
5. includes a brief description of the bandwidth within which the development strategy moves, both in terms of content and process;
6. includes at least one considered alternative development direction.

Fifth credit
1. The visionary plan drawn up in consultation with stakeholders who may be considered ‘relevant’ in accordance with the requirements from MAN 2 – stakeholder analysis;
2. These stakeholders and their contributions have been identified.

5 Additions to the criteria requirements:
-

6 Evidence required:
Design phase

First four credits
Requirement 1 through 6:
- A copy of the visionary plan signed by the area developing party/parties.
- A statement of the municipality showing that the visionary plan is approved by the municipality and is available for public consultation.

- At least 1 detailed alternative development direction for the plan area. An overview of the changed preconditions that form the basis of the alternative development direction. With a substantiation of the proposed changed preconditions (such as financial, environmental, spatial, socio-economical).

Fifth credit
Requirement 1&2:

- A list of the relevant stakeholders involved in the establishment of the visionary plan and the extent of their involvement;
- Evidence that demonstrates that their relevancy was determined in accordance to the relevant requirements from MAN 2 – stakeholder analysis.

Realization phase

All credits
Same to Design phase, updated.

7 Definitions:

Area developing parties
Parties that participate in the process in an active and / or risk bearing manner to achieve realization of the proposed development.

8 Additional information:

9 References:

Category: Synergy	Maximum no. of credits: 4	Required: No
SYN 3 Adaptive Capacity		

1 Purpose of the credit:
Stimulating the ability of dealing with changing circumstances during the area development.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the planning takes into account changing circumstances in the field of space and mobility.
1	Where the evidence provided demonstrates that the planning takes into account changing circumstances in the field of a-biotic structures and ecological values.
1	Where the evidence provided demonstrates that the planning takes into account changing circumstances in the field of socio-economical developments by the deployment of flexible instruments.
1	Where the evidence provided demonstrates that the area development provides room for temporary use of buildings and locations .

4 Criteria requirements:
The following demonstrate compliance:

First credit

1. At least 1 growth and shrink scenario has been worked out regarding the future use of space and relocation behavior. The scenarios:
    a. Assume at least + or – 20% of the built urban programme and the effects thereof on space and mobility;
    b. cover the 'modal-split' or the division between slow transportation, public transport and individual transportation;
    c. look ahead at least 15 years.

Second credit

1. A recognized ecologist has defined threshold values for the plan area based on the proposed development, that will map the self-healing capacity of the ecological systems. This concerns the capacity of an ecosystem (nature and landscape), water system and hydro morphology) to adopt or mitigate disruptions as a result of the reduction of bio diversity, exploitation of natural resources, pollution, eutrophication, soil contamination, intensive land use, emergencies (such as forest and heath fires, storms, insect or algae plagues) and climate changes (such as water level and temperature increase).
2. If, in unchanged implementation of this urban programme, one or more thresholds drop below the self-healing ability (disruptions can no longer be adopted or mitigated) an alternative scenario should be developed where the thresholds are no longer exceeded. If the thresholds in this programme are not exceeded, this credit can automatically be awarded and no scenario has to be developed.

Third credit

1. If the municipal frameworks (at least a zoning plan) are spacious enough to facilitate the scenarios developed for this credit, this credit can be awarded automatically.

2. If the municipal frameworks do not provide this space, a letter of intent of the municipality, showing that this room will be provided during the development phase, shall suffice.

Fourth credit

1. The project organization encourages temporary use of buildings and sites by
   - including temporary use in the planning;
   - publishing about the buildings and sites on the website of the project organization;
   - where possible, proactively (versus reactively) informing potential users about the possibilities.

5 Additions to the criteria requirements:

-

6 Evidence required:

Design phase

First credit

Requirement 1:

- The detailed growth and shrink scenarios for space and mobility

Second credit

Requirements 1 through 3

- A copy of the detailed thresholds.
- Evidence of the competence of the ecologist
- Where relevant: the detailed alternative scenario

Third credit

Requirements 1 and 2

- Evidence that the municipal context provide the required space OR
- The letter of intent of the municipality referred to in the requirements

Fourth credit

Requirement 1

- Evidence that temporary use is included in the planning
- Print-outs of the website showing the availability of the temporary sites and buildings
- If applicable: evidence of pro-active informing of potential users

Realization phase

-

7 Definitions:

Category: Synergy	Maximum no. of credits: 4	Required? Nee

SYN 4 Sustainable Return on investment

1 Purpose of the credit:
Ensuring the feasibility of the sustainable measures and interventions within the plan area * by drawing up a financing and collaboration scheme based on area values translated into returns for relevant stakeholders.

* In the context of this credit, plan area is not limited to the physical boundaries of the plan area, but can and shall be area transgressing for different aspects. These boundaries shall be determined by the project; the BRL defines no requirements thereto for this credit.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
2	Where the evidence provided demonstrates that per relevant stakeholders the needs related to the area development have been mapped, and where these are linked to other stakeholders who have a financial relationship therewith.
2	Where the evidence provided demonstrates that a steady collaboration and financing scheme has been established in support of the sustainable realization of the area development.

4 Criteria requirements:
The following demonstrate compliance:

First two credits:

1. The relevant stakeholders within the plan area are mapped in which the relevance of parties is determined according to a) the requirements defined thereto in credit MAN2 – participation, plus b) a strong or very strong relationship with the area development (+ or ++ in MAN 2), and plus c) of which the area development has an (financial) impact on the financial management of the relevant stakeholder (please also see Additional information).

2. A Matrix is drawn up containing the needs of each stakeholder related to the area development, both economical, social and ecological. (please also see Additional information).

3. For every need from the previous requirement, the parties are identified that have a financial relationship with these needs. This relationship may be an investment, an exploitation and / or financial gains. (please also see Additional information).

Third and fourth credit:

1. The first 2 credits have been achieved.

2. The basis of the financing scheme is established as follows:
   - For each need, determine the financial value from the matrix above; this may be in the form of an investment, an operation and an income or combinations for various parties
   - Add up all values (total investments, total exploitation with cash flow, total income)

3. The financing scheme also contains the following agreements:

- What type of financing is used, to what extent (equity/debt), at what financing body, against which interest rate
- How are investments secured
- How is the income distributed

4. The collaboration scheme primarily covers the manner of collaboration for implementing the financing scheme and also covers details concerning:
    - The parties involved; control, decision-making power
    - The method of documentation (contractual, notarial etc.)
    - The method of management of the construction (caretaker, manager, internal or external)
    - The method of reporting on the results
    - Minimum frequency of progress meetings

5 Additions to the criteria requirements:

-

6 Evidence required:

Design phase

First two credits:
All requirements:

- The list of relevant stakeholders and the substantiation of the relevance
- A completed matrix with the elements as identified under criteria requirements.

Third and fourth credit:
All requirements:

- Evidence that the first 2 credits have been achieved
- Copies of the financing and collaboration schemes, signed by the authors

Realization phase

First two credits:
All requirements:

- Same as the Design phase with, where relevant, an update of the list of relevant stakeholders and of the completed matrix.

Third and fourth credit:
All requirements:

- Same to the Design phase, supplemented with reports of meetings about both schemes, including lists of participants.

7 Definitions:

8 Additional information:

Elaboration of the first two credits, Requirements 1: this formulation excludes stakeholders without financial relationship with the area, such as passers-by who need infrastructure and green facilities and includes stakeholders with financial relationship, such as residents who have an interest in lower energy costs; a Water Board that wants to invest in natural banks; a municipality that can expect higher tax income by additional houses, but at the same time, has to invest in infrastructure and green facilities.
Elaboration of the first two credits, Requirement 2: an economical ‘need’ related to the area development, for instance for a Water Board, can be a low maintenance bank; for a local nature

organization and for the fauna, the ecological need can be a natural bank. For a future resident, a social need can be a suitable house, a park and facilities. For the developer, the house is an economical need, just as it is for the municipality (tax income). Et cetera.
Elaboration of the first two credits, Requirement 2: a natural bank is an investment for the municipality/the Water Board; affects the operation by the municipality / the Water Board and may provide income for a tourist nature attraction.

9 References:

Category: Synergy	Maximum no. of credits: 2	Required: No
SYN 5 Synergy		

1 Purpose of the credit:
Creating added value by looking further than the initial planning objective in the establishment of the visionary plan, by adding new aspects and combining them with aspects already present within the plan area, allowing for the realization of additional qualities that would not have been possible otherwise.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded as follows:

Credits	
2	Where the evidence provided demonstrates that the area development leads to synergy.

4 Criteria requirements:
The following demonstrate compliance:

Two credits
These credits are awarded when at least one form of synergy has been demonstrated. Several forms of synergy do not lead to more credits being awarded.

1. A substantiation of why a combination of aspects, facilities, qualities etc are regarded as synergy. The substantiation makes plausible that the combination is an addition to the original programme, avoiding that an already envisioned combination is presented as synergy. Please also see under 5 Additions to the criteria requirements.
2. A very detailed description of the synergy to be achieved.
3. The economical, social and / or ecological value or a plausible estimate of the single, uncombined aspects prior to the composition as synergy-parts.
4. The added economical, social and / or ecological added value or a plausible estimate of the combination of these aspects in comparison to the separate aspects.
5. The envisioned realization, including:
    - Timetable
    - Parties involved
    - Financing

5 Additions to the criteria requirements:
The assessment of that what can and cannot be considered synergy in the context of this credit, cannot unambiguously be defined in advance. Therefore, the assessor has to be given much more freedom in his assessment role. In any case, the project will have to make plausible that there is a special addition with demonstrable added value in respect of the original programme. If in doubt, the assessor is to submit the case to DGBC for consultation in the Advisory Group Area. They will provide a binding ruling.

6 Evidence required:

Design phase

Two credits
All Requirements:

- Document with which the envisioned synergy has been demonstrated and substantiated in accordance with the requirements defined under 4 Criteria requirements.
- A letter of intent signed by the developing parties regarding the realization of the envisioned synergy.

Realization phase

Two credits
All Requirements:

- A description of the actually realized synergy including an updated substantiation of the added value based on realization.

7 Definitions:

Synergy
Creating added value by realizing combinations between the aspects that had not been combined in the original estimate. Synergy means combining certain aspect in such a way that the combination provides an added value in respect of the sum of the single aspects.
Difference between synergy and innovation:
Innovation means doing the same thing in a smarter way; synergy means combining themes, aspects, topics that are not automatically combined. Example of an innovation: smart lighting of a bicycle path using presence detection and LED lights, still makes it a bicycle path, however, a smart one.
Example of synergy is:
An area has an urban programme with offices, parking facilities, a medical university and flats for both students and newcomers on the housing market. Because of the intensity of the programme, the quality of the surroundings is under pressure. To create synergy, agreements have been made with the university to increase the spatial quality at several locations in the public space by installing nursery gardens and making various roofs of buildings suitable for installing greenhouses. There, medicinal plants can be grown in addition to vegetables and fruit. The products from these greenhouses may be used for research at the university but will also be offered to the various corporate restaurants in the area. In addition to a greener appearance of the public space, possibilities for research and employment are created.

8 Additional information:

9 References:

3. Sources

BRO 1	**Limit primary energy consumption**
BRO 2	**Generate renewable energy**
BRO 3	**Water consumption**
BRO 4	**Material cycle**
BRO 5	**Environmental impact of materials**
BRO 6	**Substantiated Origin of Materials**
BRO 7	**Robust design**
BRO 8	**Food**

Category: Sources	Maximum no. of credits: 4	Required? No

BRO 1 Limit Primary Energy Consumption

1 Purpose of the credit:
Reducing primary energy consumption in public and built environment

2 Application:
This credit applies to all areas.

3 Credit criteria:
The reduction of the primary energy consumption of the area is determined in comparison to the permissible typical energy consumption applicable for all buildings in the area according to the Building Decree. In the permissible typical energy consumption, the newly developed situation is assumed, even if it concerns existing buildings.

A maximum of 8 credits can be awarded as follows:

Credits	
2	Where the evidence demonstrates that the percentage improvement of the energy performance (EPimprovement) of the area is at least 5%.
3	Where the evidence demonstrates that the percentage improvement of the energy performance (EPimprovement) of the area is at least 10%.
4	Where the evidence demonstrates that the percentage improvement of the energy performance (EPimprovement) of the area is at least 15%.
5	Where the evidence demonstrates that the percentage improvement of the energy performance (EPimprovement) of the area is at least 20%.
6	Where the evidence demonstrates that the percentage improvement of the energy performance (EPimprovement) of the area is at least 25%.
7	Where the evidence demonstrates that the percentage improvement of the energy performance (EPimprovement) of the area is at least 30%.
1	Where the evidence demonstrates that there is an annual energy monitoring with reporting to the municipality.

4 Criteria requirements:
The following demonstrates compliance:

First seven credits:

1. EP-calculations have been conducted in accordance with the Dutch standards NEN 7120/NVN7125 showing that the credit criteria regarding the improvement of the energy performance of the buildings as percentage of improvement of the current EP-requirements from the Building Decree as applicable for the construction permits of the buildings, have been met.
2. Strategy document that shows (based on the EP-calculations) what measures are taken to improve the energy performance of the area. The document also contains a proposal for further improvement of the energy performance of the area with consideration of the investments and income.

The points awarded are based on this ratio of EPimprovement.

For the area, this coefficient is calculated in an energy performance calculation in accordance with NEN 7120/NVN 7125 in the ratio EpTot / Ep;adm;tot;nb
EPimprovement = {1 – ((ΣEpTot +ΣEov+ΣEb)/ ΣEp;adm;tot;nb)} * 100 [%]

In which:
EPimprovement = improvement of energy performance in comparison to legal requirement [%] for public space and built environment during the occupancy phase
ΣEpTot = total typical energy consumption [MJ] of all buildings in the area
ΣEov = total primary energy consumption for public lighting, including traffic lights and illuminated advertising in the area
ΣEb = total primary energy consumption for (sewer)drainage in the area
ΣEp;adm;tot;nb = total permissible typical energy consumption [MJ] of the buildings in the area

Eighth credit:
The energy flows that should be monitored and reported to the municipality include the following:
1. The total energy consumption of the area.
2. The energy production of collective systems that provide more than one building with energy.
3. The energy production of the large or collective renewable energy facilities within the system boundary of the area.

5 Additions to the criteria requirements:
In the market, computer software is / will be available that is an automated version of the previously mentioned NEN 7120 and NVN 7125. If such software is used, it should be attested in accordance with BRL9501.

Buildings for which no permissible typical energy consumption can be determined
There are buildings for which no permissible typical energy consumption can be determined, such as industrial buildings. If the total usable surface area of these buildings comprises of more than 10% of the total usable surface area, the DGBC should be contacted for a suitable interpretation of the typical energy consumption.

The calculation of the total primary energy consumption for (sewer)drainage (ΣEb) is made as follows:
- Determine the total primary energy consumption of the drainage facilities that drain the system
- Determine the total surface area drained by these facilities
- The primary energy consumption for drainage of the area is equal to the ratio of the area (Aarea) relative to the total surface area drained (Atotal) times the total primary energy consumption of the drainage facilities (Edrainage;total): (Aarea/Atotal)*Edrainage;total

6 Evidence required:

Design phase

Firstseven credits:
Requirement 1:
- Description of the energy performance of the area showing the percentage in energy savings in the envisioned situation in comparison to the reference situation.

Requirement 2:
- A statement of the design team that the saving measures will be applied, who are responsible and how this responsibility is recorded (such as in a development agreement)

Eighth credit All Requirements:
- A description of the measures taken for energy monitoring of the area

OR
- A statement of the design team that measures will be realized to allow for energy monitoring of the area.

Realization phase

Firstseven credits:
Requirement 1 and 2:

- Description of the energy performance of the area showing the percentage in energy savings in the envisioned situation in comparison to the reference situation. To this end, the description of the energy performance of the area from the Design phase may be used, updated to the current principle.
- An assessment of the further detailed plans whether the measures defined in the energy vision have actually been included in the design for which a construction permit has been granted.

Eighth credit
All Requirements:

- A description of the measures that are being realized to allow for energy monitoring of the area.

7 Definitions:

Primary energy use
Use of energy commodities in their natural form prior to any technical conversion. This includes coal, lignite, petroleum, natural gas, uranium, water, sunlight.

8 Additional information:

9 References:

Category: Sources	Maximum no. of credits: 7	Required? Yes

BRO 2 Generating Renewable Energy

1 Purpose of the credit:
The generation and efficient use of as much renewable energy as possible within the system boundaries of the area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 7 credits can be awarded as follows:

Credits	
2	The potential for the generation of renewable energy within the plan area is inventoried.
AND	
1	At least 20% of the energy demand of the area is provided by the generation of renewable energy within the plan area.
2	At least 40% of the energy demand of the area is provided by the generation of renewable energy within the plan area.
3	At least 60% of the energy demand of the area is provided by the generation of renewable energy within the plan area.
4	At least 80% of the energy demand of the area is provided by the generation of renewable energy within the plan area.
5	100% Or more of the energy demand of the area is provided by the generation of renewable energy within the plan area.

4 Criteria requirements:
The following demonstrates compliance:

First two credits

1. The potential for the generation of renewable energy is inventoried by a qualified energy specialist. It need not be limited to solar, wind, biomass and geothermal energy.
2. Calculations of the potential of renewable energy by a qualified energy specialist. If solar energy, wind energy, biomass and geothermics are possible, then the potential needs to be calculated as follows.
3. Solar energy:
    a. The current amount of roof surface area in the area as well as the amount to be added has been mapped. The roof surface area in monumental and historic conservation areas does not have to be included.
    b. The total of all horizontal roof surface areas (m^2) is determined. The practical horizontal potential (m^2) is 50% of this total.
    c. The total of all sloped roof surface areas (m^2) has been determined. The practical sloped potential (m^2) are the roof surfaces with an angle between 20 and 50 degrees AND with an orientation between Southeast and Southwest.

4. The potential for the generation of wind energy in the area has been inventoried. In this, the primary area reviewed is the plan area, but based on a realistic substantiation, a system boundary with a maximum of 10 km may be used.
5. The potentially available biomass in the area has been inventoried. In this inventory, the potential biomass in the environment of the area that can efficiently be deployed for the energy demand of the area may be included, with a system boundary of 50 km.
6. The potential for the use of geothermics has been mapped, with a maximum system boundary of 20 km.

Third through seventh credit

1. The first two credits are scored.
2. The energy demand of the area has been determined by a qualified energy specialist (∑EP Area; as calculated in credit BRO1).
3. The amount of energy extracted from renewable sources has been determined by a qualified energy specialist.

5 Additions to the criteria requirements:

6 Evidence required:

Design phase

First and second credit

Requirement 1

- An inventory report of the possible applications for the generation and supply of renewable energy within the planning area.

Requirement 2

- Calculation of the potential renewable energy. For solar, wind, biomass and geothermal, the following applies:

Requirement 3

- A visual and statistical substantiation of the roof surface areas required, current and planned including the calculated horizontal, sloped and total practical potential for the generation of solar energy on existing and new roofs.

Requirement 4

- Possible locations of wind turbines with distances to residential areas, high pressure gas pipes and mutual distances.
- Substantiation that municipal, provincial and / or national policy in principle allows for the application of wind turbines.

Requirement 5

- Locations of the potential biomass sources of at least 500 kW in a 50 km radius around the area.
- Substantiation that municipal, provincial and / or national policy in principle allows for a biomass processing plant with an electric or thermal power of at least 500 kW in the area,.
- The temperature level and the energy demand for the area, where possible in accordance with NVN 7125 and NEN7120

Requirement 6

- Printout of ThermoGIS software or equivalent on which the suitable subsurface for the application of geothermics has been mapped. Here, this means pumping up hot water, of at least 45 degrees Celsius
- Copy of an exploration license.

Third through seventh credit:
Requirements 1, 2 and 3

- The expected energy demand of the area has been determined based on the calculation methods in the NEN7120 and the NVN7125.
- EP calculating total energy of the planning area.
- The expected generation of renewable energy (in kW) has been determined.
- The percentage of renewable energy has been calculated using the following formula: [(generated renewable energy / energy demand of the area) * 100%].

Realization phase:

All credits:
All requirements

- The evidence required for this phase is the same as that for the design phase.

7 Definitions:

Renewable energy

NOTE: for all sources mentioned here, any energy used for generating the renewable energy must be deducted from the amount of renewable energy generated.

Energy originating from the following sources:

- Earth and subsurface heat: geothermal energy.
- Biomass (such as vegetable, animal, waste, sludge) with the restriction that the biomass is already available from existing processes, or, if it is produced specifically for the generation of energy, it is not at the expense of existing nature or food production. Examples: clearing a forest or agricultural plot for the production of elephant grass is not considered sustainable (this is at the expense of nature respectively food production). Growing algae as biomass is considered sustainable, since this doesn't compete with the food production, which also applies to processing sludge.
- Wind
- Sun
- Hydropower

Energy demand of the area
The amount of energy consumed by the buildings, public facilities and sewer in the area.

Qualified energy specialist
A specialist with qualifications and relevant experience in energy studies and energy calculations.

8 Additional information:

9 References:

Category: Sources	Maximum no. of credits:3	Required? No
BRO 3 Water Usage		

1 Purpose of the credit:

The optimization of the use of the local water and keeping it suitable for return to the water system.

2 Application:

This credit applies to all areas.

3 Credit criteria:

A maximum of 3 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the area uses local water for at least 15% leading to an actual reduction of the demand from outside of the system.
2	Where the evidence provided demonstrates that the area uses local water for at least 30% leading to an actual reduction of the demand from outside of the system.
1	Where the evidence provided demonstrates that the natural water balance is preserved without deterioration of the water quality.

4 Criteria requirements:

First and second credit

1. Calculate the total water need of the area in the occupancy phase for critical periods, specified by quality level according to table 1. Additions to the criteria requirements.
2. Calculate the total supply (availability) of water in the area for a critical period from all local sources, except for drinking water imported from elsewhere. The reference situation is the situation according to the indicators in the calculation tool (Excel file) associated with this credit.
3. Determine the share of use of local water compared to the total water need.

Third credit

1. Determine the natural water balance of the area for an average summer
2. Determine the water balance for the reference situation
3. Demonstrate that no more than 20% of the waste water produced in the reference situation leaves the plan area. Note about a possibility to determine this: the amounts that are not drained to open water, are transported away from the area to the sewage water purification plant through the sewer, and this is measurable.
4. Demonstrate that the water quality is not deteriorating. The processing of the water bound waste flows treated within the area, cannot lead to deterioration of the water quality.

5 Additions to the criteria requirements:

First and second credit

Determining water need

1. Determine the critical period for the water consumption in the area. A critical period is the period in which the demand exceeds the supply and where the supply in the area has to be

addressed, or external supply is necessary. By default, an average meteorological summer is assumed (the months March through August). For specific functions, other critical periods may apply. Tap water consumption in an area where events are held, will show a peak in the period of the highest visitor count. For specific cultivation, or for instance for frost control in fruit trees in the spring, the peak in water consumption is shorter.

2. In the determination of the water consumption, make sure to distinguish the three types of water quality with the associated water need and critical period.
3. Determine the water need for each type of water quality. Translate the water need in mutual comparable units: preferably in m^3/day and show the critical period (number of days / number of months). For the determination of the water need, use the indicators from 8 Additional information or sources that are more representative. Use data that corresponds with the geographical location and the planned functions in the plan area where possible. If data is not easily available, (national) derived indicators may be used for water and supply / drainage and for the average use of water for the planned functions.
4. The availability of local water is determined within the boundaries of the plan area, unless a water structure is transgressing the boundaries of the plan area and the importance of allocating the water structure to the plan area is substantiated. The boundary of the water system preferably connects to the plan area as closely as possible. Of course, the confinement should be reasonable; where necessary it can exceed the project or area boundaries. The amounts of water allocated for use within the area boundaries should be reasonably available for this purpose. This means that use within the area boundaries may not be at the expense of the users or functions outside of the area.

Water need
A classification by the desired quality of the water is necessary in order to determine the local water need. Three quality types for water need can be distinguished:

Table 1. Quality types for determining the water need.

Quality	Demand	Indicative critical period
1	Water of drinking water quality for household, corporate and public processes and applications	1 to 4 days
2	Water of a quality level lower than drinking water quality, also for household, corporate and public processes and applications	1 to 4 weeks
2	Irrigation water and crop transpiration (public, individual, agricultural and commercial)	1 to 4 months
2	Maintaining the ground water level	1 to 4 months
2	Supplementing ground water level, infiltration losses	1 to 4 months
2	Supplementing water reservoirs	1 to 4 weeks
≥ 2	Other water applications (extinguishing, rinsing, washing, cooling, heating etc.)	1 to 4 days

In the reference calculation assume a calculation of a critical period of an average summer (4 to 6 months). Explanation: in many areas, the water demand for tap water, water for corporate processes and for other processes is much smaller during the critical periods than the demand for maintaining the water level in the waterways, the groundwater recharge and the replenishment of water reservoirs.

Availability
For the availability of local water, a distinction is made by the quality of the type of water:

Table 2. Quality types for the sources of water supply

Quality	Source
1	Tap water (produced by local well or externally supplied)
2	Rain water, rainwater runoff, surface water, ground water
3	Grey water (recycling possible in lower grade applications)
4	Wastewater, (black, polluted)

5. In the plan, substantiate what quality of the water is used for what function. Note: purification processes may contribute to the preservation or improvement of the water quality. If applicable, include the land use of purification facilities in the description of the project area.

Stock management

6. In the calculations, show what supplies are used in the critical periods to meet the water demand. In the water systems with a fixed level, the water level will drop no more than 0.15 , during a summer period, in systems with a flexible level, the water level may drop between 0.30 m and 0.5 m.

Drainage and water demand

7. Determine the water demand in the area as follows:

a. Drinking water is determined relative to reference consumption of householders (120 l/pp/d) and the employees and sector specific consumption, if applicable. Usually, the waste water production is equal to the drinking water intake unless a second piping system is used in combination with purification and recycling of waste water. When alternatives sources for household water consumption is used, the calculations should show which sources are used to this end.

b. If applicable, insight in the water demand is provided from unpaved (agriculture, recreation, sports, green facilities), from business areas and industry and from the water management. The indicators from (8) may be used as guidance here.

c. Insight in recycling is provided by quantifying the internal use of the flows. Recycling leads to a reduction of the waste water flow to outside of the area. It is demonstrated to what extent the waste water decreases. In the explanation, it is indicated what facilities are required to allow for recycling of waste water.

d. The water demand from the water system is estimated by calculating the open water evaporation (statement KNMI, evaporation according to Makking). In De Bilt, the average evaporation in the six months of summer is 427 mm (2.4 mm/day), minus the rain on open water.

e. For water quality management, many water systems are replenished with external water supply. The water demand of a water system can be estimated based on the retention time of the water volume (between 15 and 45 days). The volume of water systems can be estimated based on surface area (5% to 15% of gross area) x average depth (about 0.75 m).

f. Depending on the type of sewer system, rain on pavement is transported to outside the area or is available for replenishment of water supplies. In a mixed sewer, about 2% of the annual volume of the sewer inlet reaches overflow. In an improved separated sewer, about 25% of the sewer inlet reaches outflow to open water. In a separated sewer system this applies to 100% of the sewer inlet. Evaporation and infiltration on surfaces cause the sewer inlet to be about 75% of the total rainfall. In the six months of summer, the sewer inlet is about 1.6 mm/day.

6 Evidence required:

Design phase

First and second credit

Requirements 1 through 3

- The calculations of the total anticipated need, the total anticipated supply and the ratio of externally supplied water with respect to the local supply components.
- Substantiation of the sources designated as ‘local’ in the calculation: usually rain and groundwater discharge / supply from ground water, sometimes also: recycling of waste water.
- Substantiation of the expected critical periods, if an average summer is not opted for
- Substantiation of the expected quality levels: default type 2, only 1 for parts if a specific purification is available thereto.
- A statement that the Water Board involved designates the assumptions and calculations as realistic, signed by the Water Board.

Third credit

Requirements 1 and 2

- The calculations of the amounts of purified and returned water flows assumed

- Calculations of the amount of waste water in the reference situation (95% of the drinking water use + the drainage of mixed sewer systems), and in the plan situation. Waste water decreases if purification of a fraction of the waste water takes place. In decentralized purification, up to 100% of the waste water can be processed locally. Determination of the reduction of waste water in comparison to the reference.
- A statement that the Water Board involved designates the assumptions and calculations as realistic, signed by the Water Board.

Requirement 3

- In the layout of the area, sufficient measures have been included to be able to improve the water quality (helophyte filters, decentralized purification, separation of clean rainwater and contaminated wastewater).

Realization phase

First and second credit
Requirements 1 through 3
Same as Design phase

Third credit
Requirements 1 and 2

- The calculations of the amounts of purified and returned water flows
- Substantiation of the calculations
- A statement that the Water Board involved designates the assumptions and calculations as realistic, signed by the Water Board

Requirement 3

- The layout of the area contains sufficient measures for improving the water quality (helophyte filters, decentralized purification, separation of clean rainwater and contaminated wastewater).

7 Definitions:

Water system
The water system consists of the surface water, the ground water and the associated sediments, banks and related civil engineering structures as well as the organisms living therein.

Water balance
The water balance is the ratio between demand and supply within the water system in the area.

Water chain
The chain of water production, water consumption, collection and transportation of wastewater and wastewater treatment.

Critical period
Period with an (extreme) repeat time to be determined in the consumption process, where the demand for water exceeds the supply and for which arrangements have to be made to bridge this period without limitation of the demand. For large areas the summer period (4 to 6 months) is critical.

Local water need
The total amount of water of all qualities required for all applications within the plan area.

Local water sources
All sources according to the source table under 'Additions to the criteria requirements' that fall within the plan area.

External drinking water need
The amount of drinking water transported from outside the area to the area to be able to meet the local demand.

Water manager
The government body charged with the care for the water management, the water quality, sewage waste water and the ground water (*Water Board, polder board, province and municipality)* and the utility company responsible for the care of drinking water *(drinking water company)*.

Drinkwater
Water of extremely good and controlled quality, suitable for drinking without further processing.

Grey water
Rain water or slightly contaminated waste water originating from laundry machine, shower, bath and sinks. Water from these sources may be deployed for (re)use depending on the quality. Grey water can be used for toilet flushing, laundry machine and garden irrigation (possibly after treatment).

Black water
Waste water originating from toilets, contaminated with pathogens. Due to the contamination with bacteria, viruses and organic substances, the water is not necessarily suitable for reuse. It may be hazardous to health.

Rainwater
Rainwater collected from buildings, streets and other paved surfaces.

Household water
Water used in households for applications that require less quality than drinking water. Use in offices, stores etc. may also be covered.

Industrial water, process water
Water used in or with industrial processes.

Water balance
The water balance of an area indicates how much water is supplied to an area, minus the water consumption, the water loss and the change in stock. The components of the water balance are:
rainfall + groundwater discharge + surface water intake + drinking water supply = evaporation + drinking water consumption + infiltration + drainage of surface water + drainage of waste water + increase of stock (storage)

8 Additional information:

This credit is about the use of local water. To increase this share, measures can be researched and applied. In addition, the careful use of the resources water in such a way that the quality becomes better than when water is used in the standard way for the fulfillment of the water needs in the area, is awarded as well.

9 References:

Select literature

- Omgaan met hemelwater binnen de perceelgrens, Isso-publication 70.1, 2008
- Omgaan met hemelwater bij bedrijfs- en bedrijventerreinen, STOWA report 2004-23.
- Gebruik van Hemelwater, Reed Business Information, 2004
- Invloed van de systeemkeuze op de emissie van het afvalwatersysteem, STOWA report 2009-31

compendium voor de leefomgeving (online)
Statline watergebruik (online)
www.KNMI.nl

Category: Sources	Maximum no. of credits: 5	Required? No
BRO 4 Material cycle		

1 Purpose of the credit:
Reducing the material use by recycling materials and applying materials in such a way that they can be reused in the future.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 5 credits can be awarded as follows:

Credits	
1	The sum of recycled materials plus recycled aggregates in public space is at least 20%.
2	The sum of recycled materials plus recycled aggregates in public space is at least 30%.
3	The sum of recycled materials plus recycled aggregates in public space is at least 40%.
2	At least 20% of the total volume of materials can be used at *the same quality level* in the future.

4 Criteria requirements:
The following demonstrates compliance:

Credits 1 through 3:
1. A calculation of the total amount of materials (volume);
2. A calculation of the total amount of reused materials (volume) and;
3. A calculation of the total amount of aggregates used for the production of the materials (volume);
4. A sum of the volume % of the amount of reused materials and the mount of reused aggregates.

Credits 4 and 5:
1. Statements of suppliers of the materials used, showing that the suppliers will take back (a part of) the materials to use at the same quality level.
2. A calculation of the total amount of materials
3. The total in volume percentage materials covered by the statements is at least 20% of the total.

5 Additions to the criteria requirements:

6 Evidence required:

Design phase

First through third credit:

Requirements 1 through 4
- List of relevant sections in public space, including volume percentage material use.

- Of each material applied in a substantial amount in the plan, mention an alternative for (high quality) reuse.
- Substantiation of the reason applying / not applying reuse.
- Calculation of the percentage of materials that can be reused.
- List of possible waste processors / suppliers that are able to meet the recycling requirements.

Fourth and fifth credit:
Requirements 1 and 2

- Calculation of the percentage of materials that can be reused on the same quality level.
- Possible applications of the materials at, at least, the same quality level.

Realization phase

First through third credit:
Requirements 1 through 4

- An up to date version of the list of relevant sections in public space, including volume percentage material use, plus:
  - The amount of material per section already recycled
  - The expected amount of recycled material per section within the development
- Calculation of the percentage of materials that is or will be recycled.
- Contracts with waste processor / supplier that confirm the percentage.
- Invoices of the waste processor / supplier that confirm the amounts of recycled material, when parts have already been completed.

Fourth and fifth credit
Requirements 1 through 3

- Contracts with waste processor / supplier that confirm the 20% objective.
- Invoices of the waste processor / supplier that confirm the amounts of recycled material at *the same quality* level when parts have already been completed.

7 Definitions:

Relevant sections in public space
Notwithstanding the general definition of 'Public space' in the Introduction of this Assessment Directive, buildings are not included in this credit. Objects that can be considered the relevant parts of public space are paving, civil engineering structures, utility infrastructure, public lighting, traffic control systems, street furniture etc. Green facilities are currently not included, but in principle, various environmental footprints can be calculated depending on production and management. Since this is underdeveloped in the Netherlands, the choice was made not to include it in this credit.

Recycled materials
Materials that can be separated from the waste flow and that can be reused without further processing or little processing, and of which the basis of the material remains the same.

Recycling at the same quality level
This means the use of material as second life (possibly, but not exclusively in the same application as the original), without demonstrable environmental impact as a result of extra processing or treatment.

8 Additional information:

The credit focuses specifically on the inventorying and the two quality levels of recycling. Within the inventory, once can make a distinction by the quality of the reuse, such as the classification below:

a) Objects or systems that can be integrally recycled; b) Materials that can be recycled with no or little processing (cleaning, sandblasting, cutting to size);

c)	When materials are reused after radical reworking (breaking, melting, adding or removing substances or chemical fractions).

This credit is primarily about the materials that are used in public space in large amounts, such as concrete, soil, asphalt etc. Elements in public space that are negligible in terms of material volume do not have to be included in this credit. Examples of these elements are playground equipment etc.

9 References:

- BRL 2506 Recycling granulates for use in concrete, road construction and works. An overview of BRL 2506-certified suppliers is available at: http://www.bouwkwaliteit.nl/nieuwe_database/brl_nummer/output_brl.php?brlno=2506

Category: Sources	Maximum no. of credits:6	Required? No

BRO 5 Environmental Impact of Materials

1 Purpose of the credit:
Identifying and stimulating the use of materials in public space with a low impact on the environment throughout the full exploitation period / lifespan of the area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 6 credits can be awarded as follows:

Credits	
1	That the choice of at least 10% of the volume of the materials applied in public space is based on a comparison of life cycle analyses of alternative materials, and where the materials with the smallest environmental impact have been chosen.
2	That the choice of at least 20% of the volume of the materials applied in public spaces is based on a comparison of life cycle analyses of alternative materials, and where the materials with the smallest environmental impact have been chosen.
3	That the choice of at least 30% of the volume of the materials applied in public spaces is based on a comparison of life cycle analyses of alternative materials, and where the materials with the smallest environmental impact have been chosen.
4	That the choice of at least 40% of the volume of the materials applied in public spaces is based on a comparison of life cycle analyses of alternative materials, and where the materials with the smallest environmental impact have been chosen.
5	That the choice of at least 50% of the volume of the materials applied in public spaces is based on a comparison of life cycle analyses of alternative materials, and where the materials with the smallest environmental impact have been chosen.
6	That the choice of at least 60% of the volume of the materials applied in public spaces is based on a comparison of life cycle analyses of alternative materials, and where the materials with the smallest environmental impact have been chosen.

4 Criteria requirements:
The following demonstrates compliance:

1. A calculation of the total volume of materials applied in public space
2. A list of materials in the area of which LCAs are available
3. LCA-comparisons of alternative materials with similar functional properties.

The number of credits that can be achieved depends on the volume of the materials for which LCAs have been compared, where the materials with the least environmental impact have been chosen, according to the table under credit criteria.

5 Additions to the criteria requirements:
Volume material
The total volume may be determined with a ± 5% margin of uncertainty.

Material of public space
All materials for paving, street furniture etc. minus buildings and minus ground, soil and green facilities.

Comparative LCAs
A comparison of LCAs of two (composed) similar materials shall suffice.

Lifespan
The following standard lifespan for various types of constructions are used for the lifespan:

- Civil engineering structures: 100 years
- Infrastructure: 50 years

6 Evidence required:

Design phase

All credits
Requirements 1 through 3

- Calculation of the total volume of materials in public space, including the underlying data, assumptions and calculation method. If the design has been insufficiently developed, a reasonable assumption will be made.
- Calculation of the total volume of the materials for which an LCA is available.
- Report that shows that the results of the comparison based on LCA have affected the final choice of material.
- Overview of the LCAs used (certificates or calculation)

Realization phase

All credits
Requirements 1 and 2

- Evidence is the same as for the Design phase, plus:
- Report that the choices made are also implemented in the realization

OR:

- Report that demonstrates that changed choices in respect of the Design phase are still substantiated by comparative LCAs.

7 Definitions:

Dominant parts in public space
Objects that can be considered the dominant parts of public space, include paving, civil engineering structures, utility infrastructure, public lighting, traffic control systems, street furniture, etc.

LCA (life cycle analysis)
“Life cycle analysis is an analysis method that quantifies the environmental impact of products and services over their full lifespan. The different stages (raw material extraction, production, transportation, use and waste processing) are carefully mapped and for each stage an inventory is made of the energy and material consumption and of the emissions to the environment. In an LCA, all environmental effects during the lifespan of a product are mapped: from raw material extraction via use to the waste phase.”

Source: http://www.productmilieu.nl/achtergrond.asp #watislca
The outcome of the LCA is an environmental profile, a series of effect scores for various environmental themes.

8 Additional information:

Pending an (equivalent of a) shadow price analog to the work method of these buildings, credits are awarded in this credit for conducting material comparisons based on available LCA analyses.

9 References:

-

Category: Sources	Maximum no. of credits:4	Required? Yes

BRO 6 Substantiated Origin of Materials

1 Purpose of the credit:
Stimulating the application of materials with a substantiated / justified origin.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
4	Where the evidence provided demonstrates that at least 80 volume% of the materials used in the area has a substantiated / justified origin. Additionally, 100% of the wood used, should be legally produced.

4 Criteria requirements:
The following demonstrates compliance:

1. At least 80 volume% of the materials used (see list of applicable materials under 5. Additions to the Criteria requirements) has a substantiated / justified origin.
2. Use the calculation tool '2008_Mat_5_calculator_rev02_NL.xls' to determine the number of credits for this credit for the materials with the calculation procedure as documented in worksheet 'Mat 5 Responsible Sourcing'.
3. Additionally, for all the wood used that is non-certified, it has to be demonstrated that it originates from a traceable legal source and is not listed on the CITES-list (see definitions for legally obtained wood).

5 Additions to the criteria requirements:

List of applicable materials

a) Ceramic materials (such as Brick ceramic tiles, roof tiles)
b) Composites and resin-bonded materials, including fiberglass reinforced composites and synthetic mortars.
c) Concrete (including in-situ and prefab concrete and concrete blocks, bricks, tiles, mortars and cement stucco.
d) Glass.
e) Plastic and rubber (including EPDM-, TPO-, PVC- and VET-roof membranes).
f) Metals (steel, aluminum etc.).
g) Ornamental and building stone including slate.
h) Wood and wood-based products.
i) Bituminous materials such as roofing membranes and asphalt.
j) Other mineral-based materials such as fiber cement and calcium silicate.
k) Products made with recycled materials.

The materials used are assigned to an origin class (tier level) based on the level and the extent? of the certification obtained from the material supplier or producer. See Table 1: Origin classification (Tier levels and compliance), Table 2: Requirements environment management systems (EMS Requirements)

Materials recycled on-site
Materials that can be recycled on-site are excluded from the assessment. The goal of this credit is to focus on the justified origin of the newly specified materials.

Specific recycled materials
Recycled materials or recycled aggregates used in the project are equated with origin class 1 (Tier level 1) according to Table 1.

Temporary wood
Recycled wood that is used temporarily on the construction site falls outside of the scope of this credit. Only the wood that is permanently used in the area and temporary wood that is purchased for the project, should be assessed.

CITES-list
Annex I and II of the CITES-list (CITES = Convention on International Trade in Endangered Species) shows the types of wood that are protected. Annex II of the CITES-list shows the types that are protected in at least one country. If a wood type used is listed in Annex III, it can be included in the assessment if the wood is not obtained from a country where this type is protected (see the additional information for more details).

Government statement
A government statement such as a logging permit does not apply as a third party wood certification, but may be used as evidence for legally obtained wood.

Pre- or post-user waste
When the materials assessed are part of a pre- or post-user waste flow, Table 2 may be used for the EMS requirements. However, when an EMS certificate is available for new wood, this doesn't mean that it concerns certified wood from sustainably managed forests. Therefore, such a certificate does not qualify for credits.

6 Evidence required:

Design phase

All credits

Requirement 1 through 3

- Design and / or specifications confirming the following:
- The location of the specified elements and materials.
- Details of the specified materials.
- Copies with the outcome of both calculation tools for Mat 5.
- For materials that are certified through an environment management system (EMS), a letter of intent of the design team is to confirm that:
- The relevant materials will be obtained from suppliers that are able to show an environment management system (EMS) certificate (or equivalent) for the production process and / or the extraction phase of their product.
- For certified wood, a letter of intent is required of the design team confirming that:
- The wood will be obtained from suppliers that are able to provide the necessary certification for the required tier-level.
- A written confirmation of the developer, stating that: all the wood comes from legal sources and is not listed on the CITES-list or in case of Appendix III of the CITES-list, it doesn't originate from the country that protects this type, as recorded in Appendix III.

Realization phase

All credits

Requirement 1 through 3

- Documentation based whereon the total m2 for the area can be determined.

OR

- Written confirmation of the design team or the contractor of all changes in the specifications of the relevant parts of public space.
- Revision drawings or revision documents confirming that the area is implemented in accordance with the design drawings and specifications.
- Copies of sales slips or receipts or certificates / letters of conformity for the relevant materials including the recycled or reused materials.

In addition

- Copies with the outcomes of both calculation tools for Mat 5 (if there are differences with the materials used from the design phase)
- For materials (EMS certifies organization, not materials) certified through an environment management system (EMS) one of the following documents should be provided:
    - Copy of the ISO 14001-certificate.
    - Copy of the environment management system (EMS) certificate.
    - Copy of the certification document of the Chain of Custody certificate.
    - If non-certified wood is used, a written confirmation by the supplier, stating that :
    - All the wood comes from legal sources;

  All wood types and sources used in the project, not listed on one of the CITES appendices for endangered species (Appendix I, II, III) or in case of Appendix III the wood does not originate from the country that protects this type as stated in Appendix III.

7 Definitions:

Parts of public space for this credit

All objects that are or may be part of public space:

- Pavement of squares and roads,
- Fountains, ponds, canals and wades,
- Civil engineering structures (quay walls, jetties, bridges, locks, culverts),
- Green (grass, bush, trees)
- Utility infrastructure (cables and piping, substations, settling tanks, pumping stations and pumps),
- Public lighting, traffic control systems,
- Solar panels and wind turbines,
- Road and square furniture and playground equipment.
- Artworks (in the cultural sense), advertising

This list concerns the materials that *may* be included. It concerns volume percentage and in practice these will generally come from the pavements. This list is extensive to prevent the other parts from being excluded.

Recycled materials

Materials that can be separated from the waste flow and can be reused without further processing or with little processing and of which the basis of the material remains the same.

- When objects or systems are integrally recycled;
- When materials are recycled with no processing required (only cleaning);
- When materials, after minimal processing, are recycled (cutting to size, sandblasting);
- When the materials after a radical reworking, are recycled (breaking, melding, adding or removing substances or chemical fractions).

Legally produced wood

Legal wood and wood-related products come from a forest where the following conditions are met:

1. The forest owner or manager has the legal right to use the forest.
2. The forest management organization and every contracted party comply with local and national regulations regarding:
    - Forest management,
    - Environment,
    - working conditions and welfare,
    - Health and safety,
    - Terms of use and terms of other parties.
3. All payable rights of usage and taxes
4. Compliance with the requirements of CITES.

All documentations demonstrating the above, should be provided or be available on request, depending on the availability of these documents in the relevant country. Statements of each of the wood certification schemes, drawn up in tier 1, 2 and 4 for this credit, don't demonstrate legally produced wood.

Supply chain management environment management system (EMS)
Covers all important aspects of the process and distinguishes what is necessary in the supply chain management of end products. Please note that it is not necessary to establish a supply chain management environment management system (EMS) for recycled materials.
Responsible sources
Demonstrated by means of independently accredited certification systems.

8 Additional information:

Calculation procedure
The Mat5 credit points can be calculated with the help of the English Excel Mat 5 calculation tool "2008_Mat_5_calculator_rev02_NL.xls" (see Calculation tools). In the calculation tool, an English explanation has been included. Here is the direct link to the calculation tool:
http://www.dgbc.nl/images/uploads/2008_Mat_5_calculator_rev02_NL.xls.

Table 1: Origin classification (Tier levels and compliance)

Table 1 in BREEAM Europe: Offices 2009, Mat 5

Tier level	Issue assessed	Points available per element	Evidence / measure assessed	Examples of compliant schemes
1	Legality & responsible sourcing	3	Certification scheme	FSC, CSA, SFI with CoC, PEFC, Reused Materials, Schemes compliant with BES6001:2008[1] (or similar) Excellent* and Very Good* Performance Ratings (Note; the EMS required to achieve these ratings must be independently certified, or C2C gold/platinum certification combined with ISO9001.
2	Legality & responsible sourcing	2	Certification scheme	Schemes compliant with BES6001:2008 (or similar) Good* and Pass* Performance Ratings (Note; the EMS required to achieve these ratings must be independently certified), or C2C basic/silver certification combined with ISO9001.
3	Legality & responsible sourcing	1.5	Certification scheme/ EMS	Timber: MTCC, Verified**, SGS, TFT Other materials: Certified EMS for the Key Process and *Supply Chain*.

[1] [1] BES6001:2008 Issue 1 *Framework Standard for the Responsible Sourcing of Construction Products*, BRE Global, 2008.

				Recycled Materials with certified EMS for the *Key Process*
4	Legality & responsible sourcing	1	Certification scheme/EMS	Certified EMS for key process stage.

Note:
Where any timber is used, it must be legally sourced. Where evidence cannot be provided to demonstrate legal sourcing for any element, no points can be awarded for the Responsible Sourcing Issue.

Where new in situ concrete (not existing concrete) is used, certification of the manufacture of the cement as the primary process, extraction of the aggregate and limestone used to make the cement as well as supply chain processes to be provided.

* Performance ratings for schemes compliant with BES6001:2008 (or similar) can only be used to demonstrate compliance with the assessment criteria for this issue where certification covers the key process and supply chain processes for the material being assessed.

** "Verified" is the name of a scheme produced by SmartWood.

Table 2: Requirements to the Environmental Management System (EMS requirements)

Table 2 in BREEAM Europe: Offices 2008, Mat 5, page 20-22

Table 2: EMS Requirements

Material	Key Process	Supply chain processes
Brick (including clay tiles and other ceramics)	Product Manufacture	Clay Extraction
Resin-based composites and materials (including GRP and polymeric render)	Composite product manufacture	Glass fibre production Polymer production
In situ Concrete (including ready mix and cemetitious mortars and renders)	Ready mixed concrete plant	Cement production Aggregate extraction and production
Precast concrete and other concrete products (including blocks, cladding, precast flooring, concrete or cementitious roof tiles)	Concrete product manufacture	Cement production Aggregate extraction and production
Glass	Glass production	Sand extraction Soda Ash production or extraction
Plastics and rubbers (including polymeric renders, EPDM, TPO, PVC and VET roofing membranes)	Plastic/rubber product manufacture	Main polymer production
Metals (steel, aluminium etc)	Metal Product manufacture - e.g. cladding production, steel section production	Metal production: Steel: Electric arc furnace or Basic oxygen furnace process, Aluminium, ingot production, Copper: ingot or cathode production.
Dressed or building stone (including slate)	Stone product manufacture	Stone extraction
Plasterboard and plaster	Plasterboard or plaster manufacture	Gypsum extraction Synthetic gypsum (from flue gas desulphurisation) by default (recycled content)
Virgin timber	Timber from certified sources	Timber from certified sources
Cement Bonded Particle Board	Due to the significant cement content, in addition to requiring timber certification, the key supply chain process must also be considered to obtain the relevant tier for timber certification. Production of Cement Bonded Particleboard	Cement production Timber from certified sources
Wood panel products such as Oriented Strand Board, plywood, chipboard/particle board, etc.)	Wood panel products, including those with recycled content, can only use the Timber Certification route	
Bituminous materials, such as roofing membranes and asphalt	Product manufacture	Bitumen production Aggregate extraction and production
Other mineral-based materials, including fibre cement and calcium silicate	Product manufacture	Cement production lime production other mineral extraction and production
Products with 100% recycled content	Product manufacture	Recycled input by default
Products with lower % of recycled content	Product manufacture	Supply chain process/processes for any virgin material in the relevant product type above. Recycled input by default
Any other product	Key processes is likely to be product manufacture	1 or 2 main inputs with significant production or extraction impacts should be identified
Excluded products: insulation materials, fixings, adhesives, additives	N/A	N/A

Table 3 - Requirements to the Environmental Management System (EMS requirements for insulation products)

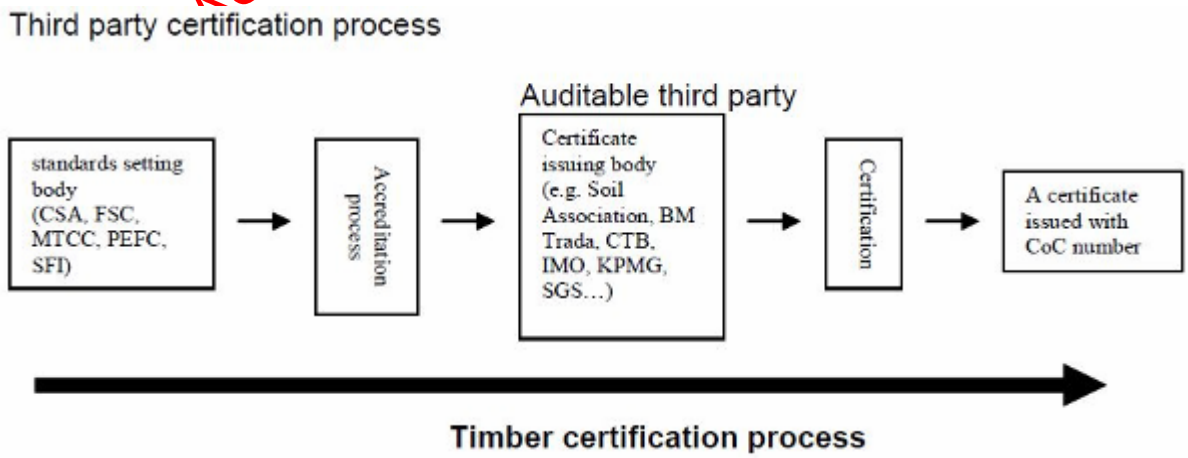
Table 3 in BREEAM Europe: Offices 2008, Mat 6, page. 29

Table 3: EMS requirements for insulation products

Material	Key Process	Supply chain processes
Foam Insulation	Insulation manufacture	Principal Polymer production, e.g. Polystyrene, MDI , Phenolic resin or equivalent
Stone wool, glass & cellular glass made using < 50% recycled input	Product manufacture	Any quarried or mined mineral over 20% of input
Wool	Product manufacture	Wool Scouring
Products using > 50% recycled content except those using timber	Product manufacture	Recycled content by default
Timber-based insulation materials including those using recycled timber	Product manufacture	Recycled timber by default, all other timber from one of the recognised timber certification schemes in Table 1.
Other renewable-based insulation materials using agricultural by-products (e.g. straw)	Product manufacture	By-product manufacture by default

Wood and Environment Management System (EMS)
If an environment management system is used to assess products of reused wood, 100% of the wood use should concern recycled wood or should be labeled with one of the recognized wood certificates (see table 1). A wood product composed of 50% reused wood and 50% of legal origin does not meet the criteria and will not be awarded with credits.

Chain of custody (supply chain management)
With this process, the chronological history is documented, from the evidence of the products from forest to consumer. Wood should be traceable from the certified forest to the finished product. All steps, from the transport of the wood to the sawmill to the point where the product reaches the consumer should be included in an adequately inventoried audit system that allows for separating and identifying each step of the certified product. Supply Chain management certification facilitates the procedures required for tracking certified wood and for preventing confusion with non-certified wood. Supply chain management is established and audited by a relevant wood certification system.



CITES – Convention on International Trade in Endangered Species.
(http://www.cites.org/eng/app/appendices.shtml)

CITES stands for: Convention on International Trade in Endangered Species of Wild Fauna and Flora. It is an international treaty to make the trade in plant and animal species possible without threatening the survival of these species. The three attachments with the CITES-covenant currently count 30 thousand species.
This covenant also includes a permit and certification system.
174 countries have voluntarily joined CITES. The Netherlands has ratified CITES in 1984. In the Netherlands, the agreements have been recorded in the Flora and Fauna act.
The species included by CITES are subdivided into three lists, based on the level of protection requires.

1. Appendix I contains the endangered species. Trade in these species is only allowed under exceptional circumstances.
2. Appendix II contains the species that are not so much endangered, but for which controlled trade has been established to prevent them from ending up in circumstances in which they will not survive.
3. Appendix III contains the species that are protected in at least one country that has asked other CITES parties for support in the inspection of the trade.

Calculation of wood volumes

a. The information regarding the origin, length and volume of wood is available from the product manufacturer or calculator, who can provide a detailed breakdown of the amounts of materials.
b. The total wood volume of wooden frames can be estimated based on the total frame length of the frame (styles and sills). This can be converted into the wood volume by multiplying the total frame length of the closed frame parts (without windows that open) by 0.00653 and by multiplying the total length of the frame parts with windows that can open by 0.01089.
c. To calculate the total wood volume of wooden doors with frame, calculate the total surface of all doors of the building and multiply by 0.02187. This gives you the total wood volume of all doors including frame.

9 References:

- EU Eco-Management and Audit Scheme (EMAS)(http://www.emas.org.uk/aboutemas/mainframe.htm) (http://europa.eu.int/comm/environment/emas/index_en.htm)
- International Standards for Organisation (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://europa.eu.int/)
- SGS timber tracking programme (http://www.sgs.com/forest_services_?serviceId=8535&lobId=5548)
- TFT – Tropical Forest Trust (http://www.tropicalforesttrust.com/)
- FERN – European NGO campaigning for forests (http://www.fern.org)
- ProForest (http://www.ProForest.net)
- WWF (http://www.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.tropicalforesttrust.com)
- Good Wood Guide, Friends of the Earth/ Flora and Fauna International, 2002 (http://www.goodwoodguide.com)
- http://www.fsc.nl of http://www.fsc.org
- http://www.pefc.nl
- BES 6001 http://www.greenbooklive.com/search/scheme.jsp?id=153

Category: Spatial development	Maximum no. of credits:1	Required? No

BRO 7 Robust design

1 Purpose of the credit:
Identifying and stimulating measures for the protection of exposed physical components of the built environment , minimizing the replacement frequency thereof, while increasing functionality.

2 Application:
This credit applies to all areas.

3 Credit criteria:
1 point can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that protection has been applied to vulnerable objects in the area with an increased risk of damage, such as at areas with busy pedestrian traffic or where vehicle or truck / car transport is being conducted.

4 Criteria requirements:
The following demonstrates compliance:

First credit:
1. An inventory has been made of the vulnerable objects in the area sensitive to damage by users, pedestrians, vehicles or other forms of road and transport.
2. In the design of the area, the protection of vulnerable objects has been considered, so that the functionality of the objects remains guaranteed.

5 Additions to the criteria requirements:
-

6 Evidence required:

Design phase

First credit
Requirement 1
Design drawings indicating:
All vulnerable areas/parts of the building.

Requirement 2
Design drawings and / or specifications that confirm the following:
- The specified sustainability and / or robustness measures

Realization phase

First credit:
Requirements 1 and 2:
A report of on-site inspection by the assessor and photographic evidence of:
- Vulnerable objects with increased risk of damage
- applied (robust) materials, preservative measures or protective finishing.

7 Definitions:

Vulnerable objects

The following are regarded as vulnerable objects:

- Raised roadway partition for cyclists or pedestrians.
- Electricity cabinets and substations, sewage pumping stations, power lines.
- Trees along the roadway or in exposed areas.

Suitable protective measures

Suitable robust and protective measures regarding vulnerable objects include:

- Poles or columns, barriers, increased curbs on delivery and unloading sites.
- Robust construction of the exterior walls up to a height of 2 meters.
- Tree protection by means of poles or other constructions.
- Protective rails at walls or in the corridors.

8 Additional information:

9 References:

Category: Spatial development	Maximum no. of credits:2	Required? No
BRO 8 Food		

1 Purpose of the credit:
Stimulating the production and consumption of locally produced food.

2 Application:
This credit applies to all areas.

3 Credit criteria:
2 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the production of food within the area is increased
1	Where the evidence provided demonstrates that the consumption of locally produced food is increased

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. An inventory has been made of the space available for food production, both at the ground level, on roofs, vertical, new and existing surface. Based on the urban programme and the ecological properties of the area, an inventory is made to see whether the available space can be used for growing food. This is considered to be 100% available.
2. In the (re)design of the area, at least 20% for the available space for food production is reserved for food production.
3. At least 80% of the space reserved for food production is actually used for food production

Second credit:

1. A marketing plan was created to increase the consumption of locally produced food. This plan is customized for the area and describes how:
   a. The visibility of locally produced food is increased.
   b. The attraction of locally produced food is increased.
   c. The availability of locally produced food is increased.
   d. The users of the area are encouraged to use the available space and to consume the crops produced.

5 Additions to the criteria requirements:
-

6 Evidence required:

Design phase

First credit
Requirement 1

- A copy of the inventory, containing:

- A plan / map indicating the space available for food production (horizontal and vertical).
- An overview of the square meters available
- Per section of the space available, a list of possibilities for using this space for the food production up to a total number of m2.

Requirement 2
- A copy of the design indicating which areas have been reserved, their surface, and a sum of the surfaces up to at least 20% of the surface under Requirement 1

Requirement 3
- Written commitment of the commissioning party that at least 80% of these surfaces will be used for local food production.

Second credit
Requirement 1
- A copy of the marketing plan

Requirement 2
- A plan of approach on how the marketing plan is implemented

Realization phase

All credits:
Requirement 1
- A report with evidence, drawn up by the expert, demonstrating that the proposed measures from the Design phase are actually being followed and implemented.

AND:
- If any changes have arisen in comparison to the Design phase that (should) reasonably lead to adjusted measures, a statement of the reason of changed signed by the principal, including the associated measures.

7 Definitions:

Locally produced food
Food that is produced within a maximum of 1 km from the plan area and processed within a maximum distance of 10 km.

4. Spatial Development

RO 1	Land use
RO 2	Contaminated soil
RO 3	Urban Programme
RO 4	Reuse of existing structures
RO 5	Cultural Heritage
RO 6	Abiotic structures
RO 7	Ecological values
RO 8	Mobility
RO 9	Underground infrastructure
RO 10	Sustainability performance buildings
RO 11	Flood risks
RO 12	Rainwater management

Category: Spatial development	Maximum number of credits: 6	Required? No
RO 1 Land use		

1 Purpose of the credit:
Stimulating development in urban areas and making use of derelict and/or developed areas.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 6 credits can be awarded as follows:

Credits	
1	Development takes place outside the urban area on more than 50% derelict and/or developed land.
3	Development takes place outside the urban area on more than 75% derelict and/or developed land.
3	Development takes place within the urban area on more than 50% derelict and/or developed land.
6	Development takes place within the urban area on more than 75% derelict and/or developed land.

With regard to awarding credits, only the criterion that applies most to the development shall be applicable.

4 Criteria-requirements:
The following demonstrates compliance:
All credits:

1. It has been determined whether the area is located inside or outside of the urban area prior to the start of the area development.
2. The ratio of undeveloped area and derelict area and/or developed area in the plan area has been determined prior to the start of the area development.

If an area lies both within and outside of the urban area, the part that covers more than 50% of the overall urban programme (gross floor space) of the project is leading for determining which criterion applies most.

5 Additions to the criteria requirements:

6 Evidence required:
Design phase
All credits:
Requirements 1 & 2:

- A map with indication of the urban boundary prior to the start of the development.
- A map indicating the plan area including which surface area in m2 or ha of the area falls within and outside of the urban area prior to the start of area development.

- A calculation of the proportion in percentage of the surface area within the urban area/ outside of the urban area prior to the start of the area development.
- A map indicating the plan area including which surface area in m2 or ha of the area are undeveloped, derelict and / or developed area according to the specifications under Definitions prior to the start of the area development.
- A calculation of the proportion in percentage of undeveloped area / derelict area and / or developed area prior to the start of the area development.

Realization phase
Requirements 1 & 2:
- Map material and photos showing that the final plan boundary is the same as in the Design phase.
- If the plan boundary has been changed, the same as in the Design phase, but updated.

7 Definitions:

Prior to the start of the area development
The situation found at the time of the final choice of location.

City proper
Within the city proper, buildings located in each other's vicinity are concentrated into a cohesive structure (Parliamentary Papers II 2005-2006, 30 453, article 3, first paragraph). The city proper is determined by the town council.

Undeveloped area
Site without buildings.
This is understood to mean:
1. Urban green and blue such as parks, recreational areas, community gardens, canals, rivers and cemeteries
2. Cultural landscape such as agricultural areas (agriculture, forestry), estates, extensive recreation, water (storage) and nature
3. Nature landscape (nature, possibly water (storage) with limited recreational shared use)

These areas may contain elements such as buildings, roads and pathways.

Developed area
Area developed for industrial, commercial or social purposes. This does not include the components as referred to under undeveloped area

Derelict land
Previously an area with buildings, that was developed for industrial, commercial or social purposes. This does not include the components as referred to under undeveloped area.

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits: 2	Required? No
RO 2 Contaminated soil		

1 Purpose of the credit:
Stimulating project developers, municipalities, housing corporations etc to develop projects at sites with a contaminated soil .

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded as follows:

Credits	
1	When the construction project is realized at a location with a seriously contaminated soil.
1	When the construction project is realized at a location with a seriously contaminated soil that is also marked for urgent remediation

4 Criteria-requirements

These credits cannot be achieved if the construction project is realized within the EHS, a Natura 2000-area or a national park.
First credit:

1. Soil studies at the site show that there is serious soil contamination at the location to be developed (in accordance with article 29 of the Soil protection act. The commissioning party/developer should provide an order as evidence showing that there is a serious case of contamination at the location.
2. The commissioning party/developer draws up a remediation plan / plan of approach to be able to construct on the site to be developed. This plan of approach should usually be approved by the authorized authority (usually the province) .
3. The commissioning party/developer has the remediation plan implemented and is legally authorized to develop the location.

Second credit:

1. The first credit has been achieved
2. The order should demonstrate that the contamination is not just serious, but urgent as well (in accordance with article 37 of the Soil protection act).

5 Additions to the criteria requirements
Health and safety
Contaminated soils that have been remediated for health and safety reasons (instead of for area development purposes) are not qualified for the credits of RO2.

Asbestos
If the soil contains asbestos, its remediation qualifies for the credits of RO2.

6 Evidence required

Design phase
First credit, all requirements
The project group should provide reports/documents containing the following information:

- An order from competent authority that demonstrates that the contamination can be considered serious.
- A remediation plan approved by the competent authority.

Second credit, all requirements:
The project group should provide reports/documents containing the following information:

- An order from competent authority that demonstrates that the contamination can be considered urgent.

Realization phase
First and second credit:
To be provided:

- An evaluation report showing that the remediation plan has been implemented as agreed.

7 Definitions:

Competent authority
The body authorized to establish orders in the context of contaminated soils and remediation plans. The competent authority inspects remediation plans and / or plans of approach for dealing with contaminated soils. Without approval of competent authority, a plan cannot be implemented and a construction project cannot proceed. In case of serious contamination, the province often is the competent authority. In some cases this has been delegated, such as in the Rijnmond region, where the DCMR is the competent authority.

Soil study
Soil studies are often conducted in several phases, from an exploratory study to further and specific study. For evidence towards BREEAM, a further study is relevant, in which the seriousness, urgency and location of the contamination have been indicated.

EHS
The Ecologische Hoofdstructuur (National Ecological Network), a spatial network for the preservation and development of natural areas. The national government has indicated where this network should be realized and the provinces have the task to determine and realize this.

Case of serious contamination
Contamination is serious if the volume (m^3) and the concentration of a contamination exceed a legally defined value (standard). The standard is defined based on the function of a location. For an industrial area, the standards are higher than for a schoolyard.

National park
Areas (often within the EHS) considered to be the most valuable natural areas in the Netherlands.

Natura 2000
A European network of natural areas with room for plant and animal species to be preserved within Europe.

Remediation plan

A remediation plan describes the backgrounds, the implementation methods and expected results of the proposed remediation and meets the requirements defined in article 39, paragraph 1 of the Soil protection act.

Urgency
Contamination is urgent if it has a short-term adverse effect on (1) ecology, (2) human health and / or (3) if there is danger that the contamination spreads.

Contaminated soil
Soil is considered contaminated if the concentration of a substance in the soil or the ground water exceeds the background value (AW). If the concentration exceeds the intervention value and a certain amount (25 m3 soil or 100 m3 ground water (soil volume)) the soil contamination should be considered serious, the kind for which a remediation duty applies.

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits: 4	Required? No
RO 3 Urban programme		

1 Purpose of the credit:
Establishing a balanced and future proof urban programme.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
2	Where the evidence provided demonstrates that programmatic preconditions and principles and the programmatic wishes and needs of relevant stakeholders have been inventoried.
2	Where the evidence provided demonstrates that an urban programme is drawn up that suits the local qualities.

4 Criteria-requirements:
The following demonstrates compliance:

First two credits:

1. In the inventory, all relevant policy documents, such as at least the applicable structure vision have been included. A local authority (Municipality, Province) should confirm in writing that 'all relevant' documents have been included.
2. The inventory includes the programmatic preconditions and principles as established by the commissioning party and the programmatic wishes and needs as obtained from at least two relevant stakeholders where relevance has been determined in accordance with the requirements as defined in MAN 3 – Stakeholder analysis.
3. In addition to the plan area, the chosen scale of the inventory also covers the connection of the plan area to its environment insofar relevant systems transgress plan area boundaries. The relevance of the systems should be confirmed in writing by a local authority (Municipality, Province). Consider the following systems in this:
    1. Water systems (surface and underground)
    2. Ecological structures
    3. Social structures
    4. Spatial structures such as sightlines, tree rows, infrastructures etc.

Third and fourth credit:

1. The first two credits have been achieved.
2. An urban programme has been established in which the results of the above-mentioned inventory have been processed or left out under provision of reasons.
3. The programme is established in consultation with relevant stakeholders at at least level 3 of the participation ladder (MAN 2).
4. The programme is partly made based on the unique characteristics of the location and is in line with the inventory and SWOT-analysis from credit SYN1 – Characteristics of the area and visionary plan from SYN2 – Visionary plan.
5. At least one credit from SYN 3 Adaptive abilities has been achieved.

5 Additions to the criteria requirements:

Relevant stakeholders (or a representative thereof)
Covers at least the municipality and / or the province supplemented with stakeholders who represent the local, regional and / or national interests, tuned to the impact of the area development.

Area boundary / System boundary:
This credit applies to the plan area and the connection to the environment. This concerns the system boundaries of the area, as defined under General Definitions in this assessment directive. This includes:

- An ecological (main-)structure that stretches beyond the boundaries of the area;
- Connection of the infrastructure to the surrounding area;
- A residential district located partly within and partly outside of the area;
- A facility cluster outside of the area boundary but within the system boundary

Private outdoor area for homes

- Takes into account the requirements for Private outdoor area for homes in the programmatic requirements, as defined in credit HEA 14 from BREEAM-NL New build

Accessibility

- Takes into account the requirements for Accessibility for homes as defined in HEA 15 from BREEAM-NL New build

6 Evidence required:

Design phase

First two credits:
Requirement 1

- The inventory including a list of all relevant policy documents included
- The statement of the local government (Municipality, Province) that all relevant policy documents are included.

Requirement 2

- The stakeholders designated as relevant stakeholders and included in the establishment of the programme
- The programmatic preconditions and principles as established by the commissioning party
- The programmatic wishes and needs per relevant stakeholders.

Requirement 3

- A substantiation of the choices of scale on which the various aspects of the area have been addressed (system boundaries)

Third and fourth credit:
Requirement 1

- Evidence demonstrating that the first credit has been achieved.

Requirement 2

A detailed urban programme (possibility as part of the Master plan) including:

- A substantiation of the choices made that led tothis programme based on the inventory.

Requirement 3

- Evidence that the programme was established in consultation with relevant stakeholders at at least level 3 of the participation ladder (MAN 2).
- Justification of the way the unique aspects of the area have been included in the programme including a substantiation of the choices made in this process.

Requirement 4

- Evidence that the programme is in line with the inventory and SWOT-analysis from credit SYN1 – Characteristics of the area and the Visionary plan from SYN2 – Visionary plan.

Requirement 5
- Evidence of which credit in SYN 3 has been achieved.

Realization phase

First two credits:
No additional or changed requirements relative to the requirements as defined for the Design phase.

Third and fourth credit :
- Same to the Design phase,

AND:
- Report of meetings held during the realization phase demonstrating that the urban programme is assessed for developments (social, ecological and economical) in and around the area and adjusted, if the developments give rise thereto.
- If changes have been made to the urban programme a substantiation of the changes.

7 Definitions:

Future proofness of the area
The extent to which the area can keep developing relatively easy in line with changing circumstances in and around the area without too dramatic interventions (demolition, large scale renovations).

Urban programme
An overview of the total of all different functions within the plan area and their footprint in gross square meters. A distinction should be made between functions that are already present and those that are added with the planned area development. This concerns both buildings and areas (such as: squares, parks, ponds, recreational areas, sports facilities, parking facilities).

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits: 3	Required? No
RO 4 Reuse of existing structures		

1 Purpose of the credit:
The efficient and optimal reuse of existing structures and buildings.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 3 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates 20% reuse of the existing structures and / or buildings
2	Where the evidence provided demonstrates 40% reuse of the existing structures and / or buildings
3	Where the evidence provided demonstrates 60% reuse of the existing structures and / or buildings

4 Criteria-requirements:
The following demonstrates compliance:

First 3 credits:

1. The existing structures and buildings in the area prior to the start of the development are defined, with a summation of the surface area of these structures and of the surface of the footprints and a summation of the gross floor space of all buildings (BVO)
2. It has been indicated which structures and buildings are being reused, with a summation of the surface area of these structures and a summation of the reused gross floor space of the buildings (BVO).
3. The percentage of the surface area of reused structures and buildings is determined in respect of the existing structures and buildings in the area prior to development (100%).
4. Using the ratio below, determine the percentage for reuse as follows:

$$\frac{\text{Total m2 BVO reused buildings + total m2 reused structures}}{\text{Total existing m2 BVO buildings + total m2 existing structures (excl buildings)}}$$

5 Additions to the criteria requirements:
-

6 Evidence required:

All credits:

Design phase
All requirements

- Map material and / or (aerial) photographs outlining the situation prior to the start of the area development.

- A map indicating the area boundary as well as the existing structures and buildings prior to the start of the area development with surface areas in square meters (footprint of buildings, the gross floor space of the buildings and surface area of structures)
- A summation of the surface areas of existing structures and the total gross floor space of all buildings.
- A map of the plan indicating the area boundary as well as the reused structures and buildings with surface area in m2.
- A summation of the surface area of reused structures and buildings.
- A calculation of the percentage of the surface area of reused structures and buildings relative to the existing structures and buildings in the area according to the formula defined under the criteria requirements.

Realization phase
All requirements
- Same as the evidence for the Design phase, but updated.

7 Definitions:

Building footprint
The surface area covered by a building at surface level.

Structures
Structures are understood to mean:
- Green structures such as parks, forests, playgrounds, sports parks, agricultural areas or natural areas (including bicycle or hiking paths and water structures, exclusive of the buildings present and the non-area bound water and traffic structures).
- Squares, parking and other paved area associated with the programme realized (except for , access roads and pavements)

Reuse of buildings
Reuse of buildings is understood to mean preserving the existing buildings and transforming (adapting, expanding) or renovating them.

Reuse of structures
Reuse of structures is understood to mean that the structures are the same prior to and after the development.

Prior to the start of the area development
The situation found prior to the start of the realization phase.

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits:3	Required: No
RO 5 Cultural heritage		

1 Purpose of the credit:
Inventorying, preserving and where possible, reinforcing cultural historic values

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 3 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the cultural history within the area has been inventoried and valued (inventory)
1	Where the evidence provided demonstrates that cultural historical values within the area are maintained . If this is not possible for some parts, a substantiation should be provided (optimization)
2	Where the evidence provided demonstrates that cultural historical values within the area have been integrated in the urban programme to improve the quality of the area development (reinforce)

4 Criteria-requirements:
The following demonstrates compliance:

First credit:

1. A cultural historical exploration has been made, based on data already available, both at object and at structure level (see 5. Additions) where the cultural historical values within the plan area (see under Additions to criteria requirements) are inventoried and valued according to the classification 'no value', 'value', 'high value' and 'very high value'.
2. The exploration was performed by a recognized body or qualified person.
3. The results of the exploration should be made accessible for posterity.
4. If the exploration gives rise to further study (such as archeological study as legally required in accordance with the Malta convention) the exploration will only have been finished when this study has been or is being conducted or there is a commitment that this study will be performed prior to the start of the (excavation) work.

If, based on the exploration of the first credit, it was found that there are no cultural historical values in the area with the classification 'value' or higher, the 2nd and 3rd credit can automatically be awarded under condition that the exploration was conducted by a recognized body or qualified person and that the competent body (see under Additions to the criteria requirements) considers the exploration to be adequate.

Second credit:

1. First credit has been achieved
2. The method of renovation, reuse or conservation of the cultural historical values present, both at object level and at area level and if relevant area boundary transgressing.
3. If the choice was made to refrain from preserving the cultural historical values inventoried, these should be documented for posterity.
4. If the choice was made to refrain from preserving, the competent body (see under 5. Additions) should confirm in writing that she agrees.

Third credit:

1. First credit has been achieved
2. The way the cultural historical values present are deployed to increase the quality of the area development, both at object level and at area level and if relevant area boundary transgressing.

5 Additions to the criteria requirements:

Within the area
Values within the area are taken as a point of departure. If the values stretch beyond the area, this should be included in the analysis (system boundary versus area boundary).

Authorized body
The local, provincial, regional or national body who has the relevant cultural historical values in their portfolio. This does not have to be a government body; a (semi) private body can also be recognized as an authorized body due to its position, own history or authority built, such as a private museum or a knowledge institute.

Recognized body or qualified person
A body or person who has demonstrable knowledge of and experience with cultural historical values, the associated legislation and the way an inventory should be made and based on which cultural history can be valued. This may be a cultural historical expert or an cultural history consultant, but this is not required.

Object- and structure level
Not only separate objects (such as buildings, monuments, ruins or objects in the public space) but also connecting structures (such as roads, water and green vegetation) and the 'story' of the area are part of the inventory. The structure and the story connect separate objects in time, with each other and with the environment.

Making accessible to the public
Making accessible to the public can be done by:

- Making the result available to a local, regional or national public body specifically designed for that, such as a city or municipal archive a regional or national cultural historical center,
- Documenting it in a monument,
- Having it included in a historical collection,
- Having it included in a museum,
- Having it included in a local *cultural historical* yearbook,
- Documenting it in a publication,
- Publishing on a publicly accessible website such as www.kich.nl and www.chbeheer.nl (also see References)

Documenting for posterity
It is not specified who should do this or how. However, it is clear that this concerns a responsibility with a historical character, so the documentation process should be conducted carefully by expert people and / or bodies.

6 Evidence required:

Design phase

First credit:
Requirement 1

A copy of the cultural historical exploration including:

- The people and bodies involved in the exploration
- The pre-consulted existing information about values present
- The identification of the explored area with both area and system boundaries

- The explored cultural historical values
- Results of the exploration, expressed in the said classification
- A confirmation of accord to the exploration by an authorized government agency

Requirement 2

- Evidence showing that the body or person who has conducted the cultural historical exploration is recognized or has the required qualifications (see additional criteria requirements)

Requirement 3

- Evidence or a commitment written by the project team of the way the results of the exploration will be documented for posterity.

Requirement 4

- If applicable: substantiation that further study is required.

Second credit:
Requirement 1

- Evidence that the first credit has been achieved.

Requirement 2

- A substantiation of the renovation, reuse or conservation
- Written accord by a local, regional or national competent body

Requirement 3

- For the non-preserved value: evidence of documentation for posterity.

Requirement 4

- If applicable: accord of the competent body.

Third credit:
Requirement 1

- Evidence that the first credit has been achieved.

Requirement 2

- A substantiation of the way (a selection of) the available cultural historical values are used for improving the spatial quality, the social dynamic, the economic vitality and / or the identity of the area,
- Written accord by a local, regional or competent body.

Realization phase

First credit:

All Requirements

- Same as the Design phase, where relevant updated based on findings during the realization phase
- Evidence of documentation for posterity

Second credit:
All Requirements

- Same as the Design phase, where relevant updated based on findings during the realization phase, plus
- Photographic material and / or descriptions of the preserved values.

Third credit:
Requirement 1

- Same as the Design phase, where relevant updated based on findings during the realization phase, plus

- Photographic material and / or descriptions of the improved values.

7 Definitions:

Cultural heritage
"Traces from the past, visible in the present and noticeable in the present are part of the cultural heritage. These may be objects in museums, archeological findings, archives, monuments and landscapes. But also the associated immaterial heritage, such as stories, habits or rituals."
Cultural historical exploration
In cultural history, three things are distinguished in the physical environment: 1. the soil archive (archeology), 2. the cultural landscape and 3 the architectural heritage (buildings and structures). This means that a cultural historical exploration is not required to say something about archeology. So: cultural historical exploration in the broad sense also cover archeology and research on historical buildings. Cultural exploration in the narrow sense are studies into the built (spatial) environment and their qualities.
Cultural historical values
The elements of cultural history to be valued may range from tangible rural, urban and architectural elements to non-tangible elements such as stories and habits.

8 Additional information:

9 References:

Rijksdienst voor het Cultureel Erfgoed: http://www.cultureelerfgoed.nl/ The Cultural Heritage Agency 'Erfgoed Nederland' is no longer active, but the website still contains a lot of information: http://www.erfgoednederland.nl/
www.kich.nl KennisInfrastructuur CultuurHistorie, abbreviated KICH, makes archeological, scenic and building historical information accessible. KICH provides information about monuments, archeological sites, landscapes and landscape elements and associated information.

Every province has a cultural historical map, containing the main cultural historical objects and structures of the provinces. See www.chbeheer.nl and for the provincial data: http://www.chbeheer.nl/bijlagen/cultuurhistorische-databanken-op-het-internet/14

Category: Spatial development	Maximum number of credits: 3	Required? No

RO 6 Abiotic structures

1 Purpose of the credit:

The preservation - and where possible reinforcement - of abiotic structures within the plan area, and for structures in the direct vicinity of the plan area to which a connection can be made (system boundary).

2 Application:

This credit applies to all areas.

3 Credit criteria:

3 credits can be awarded as follows:

Credits	
1	Where the evidence provided shows that the abiotic structures have been inventoried and valued. **(inventory)**
1	Where the evidence provided shows that the abiotic structures are being preserved or, when the choice is made not to preserve, a substantiation is made and damage caused is compensated. **(preservation and compensation)**
1	Where the evidence provided shows that the abiotic structures have been used to improve the quality of the area development. **(enhancement)**

4 Criteria-requirements:

The following demonstrates compliance:

First credit:

1. An ecologist has made an inventory of the the a-biotic structures present above ground and underground, essential to the survival of the ecology present (at local and regional level).
2. Part of the inventory is a valuation of the various structures and a description of the relevance to the area.
3. The inventory starts with the structures in the area, but also considers the system boundaries. So, if a river bed crosses the area, the relevant part of the entire river bed is to be considered.
4. The inventory has been established in collaboration with a body that has authority over the abiotic structures in the area.

Second credit:

1. First credit has been achieved
2. It has been described how the existing abiotic structures designated as relevant in the first credit are being preserved.
2. If the area development affects abiotic structures, the choice to do this is substantiated and it is demonstrated how the damage will be compensated within the area operation. The substantiation has been established in consultation with a local, regional or national body that has authority over the a-biotic structures in the area.

Third credit

1. Second credit is achieved and
2. It has been substantiated how the a-biotic structures present are being deployed in order to enhance the quality of the area. Such as::
   - Making visible an existing underground water flow in a parking garage
   - Fitting construction into an old river bed
   - Connecting previously separated a-biotic structures in such a way that they create added value.

5 Additions to the criteria requirements:

A-biotic structures form the habitat (precondition) to the available ecology (biotic nature) and may have an intrinsic value, such as:

- A water table preserving a peat bog
- Sediment of nutrients feeding a biotope (such as a limestone cave with a lot of calcification);
- Sandy soils on which a heath grows
- An underground water flow feeding a river
- If no longer (visibly) present, a missing structure is also of important, it can be restored (such as restoration of historic water courses, in urban areas as well);
- Thus, a-biotic structures may also be man-made;
- Geological monuments

The determination whether something is 'essential to the survival of the available ecology' has to be endorsed by a recognized ecologist. If desired, the ecologist enables external expertise, such as an hydrologist or a cultural heritage expert.

The determination whether a-biotic structures are affected directly or indirectly by the area development on a local scale, has to be endorsed by a recognized ecologist. If desired, the ecologist enables external expertise, such as an hydrologist or a cultural heritage expert.

An 'authorized body' does not have to be a government body; a (semi) private institution can, for instance due to its position, own history or gained authority be recognized as an authorized body, for instance a private museum or knowledge institute. The requirement that such bodies are involved is not a legal requirements, but a means to ensure an optimal knowledge exchange. In addition, this creates a relevant list of sources for the study.

Compensation concerns the construction of a similar (≠ equal) a-biotic structure within the 'local scale' of the area, or in other words, the system boundary of the relevant a-biotic structure. The similar structure to be newly constructed is a logical part of the present a-biotic structures.

6 Evidence required:

Design phase

First credit:

Requirement 1 through 3:

- A copy of the inventory. In the inventory the various structures as defined under the criteria requirements are indicated and given a classification 'essential' or 'non-essential' including a substantiation of the chosen classification.
- A map or maps with a brief description of the structures, above-ground, at surface level and underground for the area including the relevant system boundaries.

Requirement 4:

- Evidence showing that the inventory has been established with the consent, collaboration or participation of the relevant competent body. The inventory is signed by this competent body.

Second credit:

Requirement 1:

- Evidence showing that the first credit has been achieved

Requirement 2:

- Evidence demonstrating how and which inventoried structures are preserved.

Requirement 3:

- A substantiation signed by a competent body stating which structures are not being preserved and why.

- A list of measures, expressed in time, finances and location, that should lead to the compensation for the possible non-preservation of structures.

Third credit:
All requirements
- A detailed plan, documented in a vision, demonstrating that the available a-biotic structures are deployed to strengthen the area development.

Realization phase

All credits:

All requirements
- A report with evidence, showing that the proposed measures from the Design phase are actually being followed up and implemented. .

AND:
- If changes have occurred in respect of the Planning phase that should reasonably lead to adjusted measures, a statement signed by the commissioning party of the reason of change and the associated appropriate measures.

7 Definitions:

A-biotic structure
All a-biotic natural structures (ground)water material deposit, food flows, top layer etc) that form the habitat for the available ecology.
Local scale
The system boundary of the a-biotic structure. It can't be permanently defined in advance, and usually isn't equal to the area boundary. It is wiser to take the system boundary too wide than too narrow and it is determined by the natural boundaries of the specific structure, such as a river bed or a ground water table.

Recognized ecologist
A recognized ecologist is a person who:

1. Has enjoyed training at a higher vocational or scientific level with the focus on (Dutch) ecology *AND/OR*
2. An ecologist who works for an ecologic consultancy connected to the network Green Agencies *AND/OR*
3. Demonstrably commits actively to the field of species protection and is member of the organizations to this end in the Netherlands, (such as Das en Boom, VZZ, RAVON, Vogelbescherming Nederland, Vlinderstichting, Natuurhistorisch genootschap, KNNV, NJN, IVN, EIS Nederland, FLORON, VORF, SOVON, etc.).

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits:4	Required? No
RO 7 Ecological values		

1 Purpose of the credit:
Preserving and, where possible, strengthening the ecological values, allowing for optimal shared use of available and visiting species.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that a recognized ecologist has drawn up a nature report containing an inventory and valuation of the ecological values and in which an effect assessment of proposed development to this ecological values has been conducted (inventorying and effect assessment)
1	Where the evidence provided demonstrates that the nature report contains a plan to preserve the ecological values (in the direct vicinity of) the area where possible. This can be done by preventing, mitigating or compensating adverse effects (mitigation and compensation)
1	Where the evidence provided demonstrates that the conditions for ecological values (area boundary) are optimized (optimization)
1	Where the evidence provided demonstrates that special or rare ecological values (defined by policy) are strengthened at regional scale (system boundary) (strengthening)

4 Criteria-requirements:
The following demonstrates compliance:

First credit:

1. Prior to the start of the construction activities/site preparation, a recognized ecologist draws up a nature report describing the plan area based on an agency study and field study and if necessary, field inventory. This means that:
   - The available plant and animal species are inventoried.
   - The potential for plant and animal species of the plan area is mapped, where this potential is related to the system boundary (regional location) of the area.
   - The impact of the work to the availability and use by plant and animal species has been mapped.

Second credit:

1. First credit has been achieved
2. The nature report contains an extensive plan to prevent, mitigate and / or compensate adverse effects.
3. A feasibility study was conducted in consultation with relevant stakeholders into the possibility to preserve or conserve the flora and fauna present. The feasibility is determined at area level and, if relevant, at the level of the system boundary (area transgressing).
4. Part of the nature report is an ecological work protocol indicating how the developer can realize the project with minimal or no damage to the flora and fauna. NOTE: the principle in this is to realize the development, but with minimal disruption of the flora and fauna.
5. The developers informs the construction workers on how to implement the ecological work protocol. The requirements from the European, national, provincial and local law and

legislations in the field of nature (Flora and Fauna Act, 'de Natuurbeschermingswet', 'Boswet' and ' het Provinciaal compensatiebeginsel') are complied with. This is confirmed by the recognized ecologist. A recognized ecologist has found during the building process, that the work is being performed in accordance with the work protocol and (the specific conditions of) any dispensation granted and shall draw up a statement on this after completion.

6. If the choice was made to refrain from preserving the inventoried natural historical values, these should be documented.
7. The results of the feasibility study should be made accessible to the public.

Third credit:

1. The first credit has been achieved
2. In the nature report, a paragraph has been included containing recommendations to stimulate the shared use of ecological values in addition to the statutory measures. This is realized by creating suitable circumstances for plant and animal species, in other words creating a suitable habitat and managing it the right way. In the nature report it is documented what (combination of) measures is adequate for the credit to be awarded (including substantiation).
3. After completion of the development, the ecologist draws up a statement that measures have been taken due to which protected and / or Red List species are optimized locally (in accordance with advice in nature report).

Fourth credit:

1. The first credit has been achieved
2. In the nature report, a paragraph has been included containing recommendations for contributing to the strengthening of the ecological values at a regional scale, in addition to statutory measures. This is realized by taking design and management measures. For this credit to be awarded, customization is required at a local level and the estimation should be made by an independent and recognized ecologist. The nature report shall describe what (combination of)measures is adequate for a credit to be awarded.
3. After completion of the construction project, the ecologist will draw up a statement whether sufficient measures have been taken to reinforce the special or rare nature(values) at regional scale (system boundary) (in accordance with advice in the nature report).

5 Additions to the criteria requirements:

(Re)introduction of species:

1. (Re)introduction of plant species (sowing, planting) is exclusively permitted if the species is common in the region and if the conditions the species requires for its growing site are met.
2. (Re)introduction of animal species (releasing) is undesirable. By creating the right conditions, there is an increased chance that the species will (eventually) settle in the plan area.

The nature report consists of the following sections:

Chapter content	**Applicable to**
Description of the plant and animal species present and the potential.	All credits
The impact of the construction work (temporary impact) and the presence and use of the future area development (permanent impact) on the ecological values (protected species and general nature values).	All credits
Proposal of the ecologist on how the adverse effects can be prevented and / or mitigated in the design phase (design measures), the realization phase and / or the management phase	All credits
Proposal on how ecological added value can be created for species (protected and Red List), during the design phase (design measures), realization phase and management phase.	Second credit
Proposal on how ecological added value can be created by connecting to Natura 2000-areas, (P)EHS-areas, urban and / or rural green structures.	Third credit
An ecological work protocol with (1) directions for the contractor to minimize harmful effects on flora and fauna during the implementation and (2) directions on how the proposed design measures can be effectively implemented.	All credits
A report of a visit to the construction site to inspect whether the work has been	All credits

implemented according to recommendations of the ecologist and partial reports of the implemented ecological assistance.	
A management plan with instructions for management, monitoring, evaluation and correction.	All credits

- The nature report confirms that the work is performed under supervision of a recognized ecologist.
- By taking design measures, conditions are created for species; the eventual presence of species greatly depends on the management conducted. Therefore, the nature report should contain recommendations for design and management measures.
- Since it concerns a prediction of future sustainable use, it should be substantiated why the measures are expected to be successful.

6 Evidence required:

Design phase

First credit:

Requirement 1:

A copy of a drawn up report (nature report) containing:

- Ecological description of the (potential of the) plan area.
- Overview of the possible impact of the construction work on local biotic nature.

Second credit:

Requirement 1

Evidence showing that the first credit has been achieved.

Requirement 2

- A work protocol containing instructions for mitigating/preventing possible negative effects.

Requirement 3

- Evidence showing that for MAN2 at least 1 credit has been achieved
- Evidence showing that for MAN3 at least 1 credit has been achieved.
- A copy of the full feasibility study drawn up according to the current 'best practices'. The study contains at least:
  - The people and bodies involved in the study.
  - The studied options for preservation or conservation including the substantiated outcomes.
  - A confirmation of accord regarding the feasibility study by a competent government body.

Requirement 4

- A copy of the work protocol demonstrating that the project can be realized with minimal to no damage to the ecological values.

Requirement 5

- A statement signed by the project group demonstrating that all constructing parties have to work in accordance with this protocol.
- Evidence showing that a recognized ecologist confirms that the work is conducted in accordance with the work protocol and the applicable laws and regulations (and any dispensations).

Requirement 6

- A description of the way the natural historic values that are not being preserved will be documented for posterity, together with a written accord by a local, regional or national body that has authority over the relevant natural historical values. This doesn't have to be a government agency; a (semi-) private body can also be recognized as an authorized body, for instance due to its position, history or authority built.

Requirement 7

- Evidence or a commitment written by the project team of the way the results of the feasibility study will be made accessible to the public.

Third credit:
All requirements
A copy of the report drawn up (nature report) containing
- Recommendation for the creation of ecological added value.
- A letter in which the developer indicates which recommendations of the ecologist will be adopted and implemented (design and management measures).

Fourth credit:
All requirements
A copy of the drawn up report (nature report) containing
- Recommendations for the creation of ecological added value.
- A letter in which the developer indicates which recommendations of the ecologist will be adopted and implemented (design and management measures).

Realization phase
All criteria and all requirements:
- The evidence is the same as the design phase. If changes have occurred, the nature report should be adjusted and resubmitted.
- A recognized ecologist finds during the construction process that the work is performed in accordance with the work protocol and (the specific conditions of) any dispensation granted and draws up a statement about this.

7 Definitions:

Ecology
Relationship and interaction of plants and animals in relation to each other and their environment

Ecological values
All flora and fauna and their habitats in (the immediate vicinity of) the planning area.

Ecological work protocol
A document providing the contractor with instructions during the implementation of the construction project on sparing plants and animals and to properly take any measures for ecology.

Recognized ecologist
A recognized ecologist is a person who:

4. Has enjoyed training at a higher vocational or scientific level with the focus on (Dutch) ecology *AND/OR*
5. An ecologist who works for an ecologic consultancy connected to the network Green Agencies *AND/OR*
6. Demonstrably commits actively to the field of species protection and is member of the organizations to this end in the Netherlands, (such as Das en Boom, VZZ, RAVON, Vogelbescherming Nederland, Vlinderstichting, Natuurhistorisch genootschap, KNNV, NJN, IVN, EIS Nederland, FLORON, VORF, SOVON, etc.).

Nature report
A report drawn up by an ecologist containing all relevant ecological information concerning the area development. This document is drawn up and updated throughout the construction process by a recognized ecologist, from the site choice to the management of the green area.

System boundary
The system boundary concerns the plan area including the surrounding area with sources, flows and facilities used by the plan area or with which the plan area has a relationship.

Examples:
In the plan area, there may be possibilities for owls to look for food, but in the plan area, there are no suitable breeding possibilities for the owl. However, this breeding possibilities does exist in the vicinity of the plan area (the plan area falls in the territory of the owl).
The water in the plan area is part of a flow area. The water quality of the waterways and with that the (potentially) available wet nature in the plan area depends on the upstream situation, among other things.
The placement of wind mills in the travel route of geese may affect the reproduction of the geese even if they don't breed in the plan area.

Care duty
The care duty means that human actions may not have an adverse effect on the flora and fauna. The care duty applies to all plants and animals, whether or not protected. In the case of protected plants or animals, the care duty also applies when an exemption or dispensation has been granted. The care duty for animals doesn't mean that animals cannot be killed but it does mean that, if necessary, as little suffering as possible should be involved (Ministry of Economic Affairs, Agriculture and Innovation).

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits:8	Required? No
RO 8 Mobility		

1 Purpose of the credit:
Reaching an optimal system for meeting the transport needs of people and goods of an area with the lowest possible environmental impact.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 8 credits can be awarded as follows:

Credits	
2	Where the evidence provided demonstrates that de transport needs of the area development have been analyzed and a Transport plan has been drawn up
1	Where the evidence provided demonstrates that the surrounding transport network is not unduly burdened by the development OR that measures have been taken to absorb the additional pressure on the surrounding network.
1	Where the evidence provided demonstrates that measures have been taken to limit the transport of goods to and from the area.
1	Where developments in the vicinity of a good Public Transport grid are realized
1	Where developments in the vicinity of local facilities are realized
1	Where the evidence provided demonstrates that connections are made to the surrounding slow traffic networks and these routes are continued within the area boundary to stimulate for instance the use of the bicycle.
1	Where the evidence provided demonstrates that facilities have been provided that support the use of bycicle transport from and to the area.

4 Criteria-requirements:
The following demonstrates compliance:

First two points:

1. The inventory covers:
   - All current and future traffic needs of the area
     - ‘Current’ is immediately after the development;
     - ‘Future’ is at least 10 years after the completion of the development
   - The traffic connections to the direct vicinity of the plan area
   - Transport patterns and movements of the current (after? redevelopment) and future users and products / goods
   - Available transport modalities
   - Current Public Transport facilities including type of PT, travel times to nearest PT point and frequency of PT movement and circumstances for waiting times
   - Accessibility of facilities, such as supermarkets, shops, ATMs, daycares, schools, post offices etc.
   - Infrastructure and facilities for pedestrians and cyclists in the area.
   - Available safe pedestrian and bike passages.
   - Parking options leading to a reduction of car use.

2. The transport plan covers an analysis of the specific location containing at least:
    - Analysis of transport patterns and movements of current (after? redevelopment) and future users and products / goods
    - Analysis of available transport modalities
    - Analysis of existing PT facilities including type of PT, travel time to nearest PT point and frequency of PT movements and circumstances for waiting times
    - Analysis of accessibility of central facilities such as supermarkets, stores, ATMs, daycares, schools, post offices etc.
    - Analysis of infrastructure and facilities for pedestrians and cyclists in the area.
    - Analysis of available safe pedestrian and bicycle passages.
    - Analysis of parking options leading to a reduction of car use..
3. The transport plan covers a package of measures aimed at managing and controlling the transport needs of people and goods from and to the area with the aim of optimizing mobility and to maintain or improve the accessibility of the area. The measures are aimed at the following aspects:
    - Tuning the demand for transport to the supply of transport
    - Preventing transport (for instance including flexiplaces in the design for teleworkers)
    - Preventing conventional car use (for instance with good facilities for cyclists and pedestrians, negotiation about improvement of PT offered, delivery services PT or carpool, information provisions in public spaces)
    - Stimulating sustainable means of transportation and systems such as charging stations for electric cars, gas station with alternative fuel)
    - Improving the use of vehicles and systems (for instance priority parking for carpoolers, cars on renewable energy, car sharing etc.)
4. The traffic plan covers a plan of approach including
    - Breakdown by measures per method of transportation and possible alternatives.
    - Implementation programme with phasing and planning of measures.
    - Costs and income.
    - Preconditions and agreements.
5. The traffic plan details 1 to 5 of the following measures that aim to optimize the implementation of the transport need:
    - Tuning the demand for transport to the supply of transport
    - Reducing the number of transport movements
    - Reducing conventional car use
    - Stimulating sustainable means of transportation and systems
    - Improving the use of means of transportation and systems
6. The Transportation plan has been established in consultation with and approval of the municipality

Third point:

1. The first two credits are achieved.
2. A traffic expert has drawn up a (topical) traffic model.
3. The drawn up model demonstrates that there is no impaired traffic flow in the surrounding traffic system after realization of the proposed development. Impaired traffic flow in this context could also include bottlenecks in the public transport facilities.
4. If any bottlenecks do arise, measures are taken to resolve them. These solutions should be approved by the municipality and they are part of the project finance scheme of the proposed development.

Fourth point:

1. The first two credits are achieved.
2. An inventory was made of the various traffic flows (goods and services) from and to the area, including the new development.
3. Based on the findings from the inventory concrete measures have been taken to reduce traffic flows An example of this is
   a transport management system for sharing of goods vehicles within the city/region.

Fifth point:

1. The first two credits are achieved.
2. If people can reach a public transport node within a distance of 1000 meters distance from any building through a safe route, where the following schedule to the city center or PT node applies::
    a. Peak hours half-hour service
    b. Outside of peak hours and during weekends hour service .

Sixth point:
1. The first two credits are achieved.
2. At least three of the following facilities have to be present within 500 meter walking distance from the main entrance of all buildings:
    - Restaurant or lunchroom;
    - Supermarket;
    - ATM (PIN);
    - Sports facility(/facilities);
    - Daycare;
    - Other facilities, at least one of the following: book store, kiosk, pharmacy, drugstore, hairdresser, bike repair shop, drycleaners, weekly market, flower shop.

Seventh point:
1. The first two credits are achieved.
2. An inventory has been made of the available slow traffic routes to and from the plan area.
3. New destinations have been added and / or new connections have been made.
4. These routes have been made appealing to users through 1 or more of the following aspects: adeqaute lighting, safe road crossings, segregation from vehicles and adequate signage.

Eighth point:
1. The first two credits are achieved.
2. If the evidence provide demonstrates that sufficient bicycle storages are available. The required number of parking places for bicycles is established as follows::
    - 10% of the total number of building users, in buildings up to 500 users OR
    - 7% of the total number of building users in buildings of 501 to 1000 users OR
    - 5% of the total number of building users in buildings with more than 1000 users.

    In addition 80% of the bike storages should at least:
    - be indoor and lockable;
    - provide the opportunity to attach both the wheel and the frame of the bike to a secured object by means of a lock (for instance: a pavement tile with slot for the bicycle wheel does not suffice);
    - have sufficient lighting;

5 Additions to the criteria requirements:

-

6 Evidence required:

Design phase

First two points:
All requirements:
- Copy of the full inventory..
- Copy of the transport plan, signed by the municipality

Third point:
- All requirements:Map material with indication of the expected traffic intensities of the plan area and the surrounding area based on a traffic model.
- A statement by a traffic expert that the newly proposed developments will not lead to bottlenecks in the traffic structure.

– An overview of any measures and adjustments necessary in the surrounding traffic structure with a signed statement by the project group that these adjustments or measures are included in the project finance scheme.

Fourth point
All requirements:
– An inventory of the necessary transport need of the area based on the urban programme of requirements to be realized.
– The destinations, frequency and intensities of the traffic movements are indicated on the map.
– A signed statement by the project group demonstrating which measures have been taken to reduce the traffic flows
–

Fifth point:
A plan map to scale indicating the distances to a train station, PT stop and / or PT node and a copy of the schedule of the relevant transportation company; (express) bus, tram, metro and / or train.

Sixth point:
A map to scale of the plan area and its surrounding area with indication of:
- Buildings and the location of entrances;
- Location(s) and type(s) of facilities;
- Walking and cycling routes and distance to the facilities.

If the facilities are not yet actually there but in development, a letter of the developer should be provided confirming:
- The location and type of facility being developed;
- The planning, containing information on when the facilities will have been realized.

Seventh point:
All requirements:
A map to scale of the plan area and its surrounding area with indication of:
– The slow traffic routes from and to the plan area. Missing interconnections are indicated and are endorsed by the relevant municipality.
– Slow traffic routes within the area boundary including the area are indicated on a plan map.
– Storages for bicycles are indicated on the map .
– A description of the visual quality of the public spaces intended for slow traffic, possibly clarified by means of visual images and references.

Eighth point:
Requirement 1.& 2. Situation drawing, design drawings and / or a copy of the specification indicating:
– The location of the bicycle storage;
– Number of storage slots;
– Data regarding number of building users and / or use surface.

Realization phase

First two points:
All requirements
• Copy of the fully updated inventory.
• Documents showing the implementation of the plan, including the achievement of the envisioned goals (with substantiation).

Third point:
– A traffic calculation for the plan area and its surrounding area conducted by a traffic expert based on the plans to be actually realized, demonstrating that no bottlenecks exist in the traffic situation.

- A statement by a traffic expert signed by the municipality, stating that the development will not lead to bottlenecks in the traffic structure.
- Evidence that the necessary measures and adjustments in the surrounding traffic structure have been / will be taken and a statement that the municipality agrees with the proposed measures.

Fourth point:
- Same as the Planning phase, updated, plus:
- An overview with measures realized to reduce the number of traffic movements and a substantiation of an expert demonstrating the effect of the measures.
-

Fifth point:
- A plan map to scale indicating the positions of the realized train station(s), PT stop(s) and / or PT node(s), distances to and the routes to these stops, demonstrating that the requirements have been met.
- An overview of the measures realized to make these routes safe.
- A copy of the current schedule(s)

Sixth point:
- A plan map to scale indicating the positions of the realized buildings and associated entrances and the realized distances of these entrances up to the stops for public transport. There where changes have occurred since the design phase, sufficient evidence (drawings / photos) exists demonstrating that the requirements are met.

Seventh point:
A map to scale of the plan area and its vicinity indicating:
- Existing and newly realized slow traffic routes and slow traffic routes to be realized within and outside of the area boundary are indicated on a plan map.
- Bicycle storages realized and to be realized are indicated on the map.
- design details of the plan and use of materials for the public spaces for slow traffic.

Eighth point:
Requirement 1&2.
- Report of a random inspection of the assessor with photographic proof of the available facilities.

7 Definitions:

Slow Traffic Network:
The network components serving cyclists and pedestrians.

Users of the area
Users are also understood to mean visitors and passers-by.

Transportation systems and transport modalities
- Truck / car
- Bus, train, tram, metro,
- Water,
- Bicycle (slow traffic),
- Motorcycle, moped, scooter,
- Pedestrians (slow traffic)

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits: 4	Required? No

RO 9 Underground infrastructure

1 Purpose of the credit:
Achieving an optimal underground infrastructure in publicly accessible areas.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the needs, requirements and possibilities of the relevant stakeholders in respect of the construction of the underground infrastructure have been inventoried
2	Where the evidence provided demonstrates that, based on the inventory, an integrated design has been achieved for a smart and flexible route for subterranean infrastructure.
1	Where the evidence provided demonstrates that the location and characteristics of all (remainders of) underground infrastructure is documented for future use.

4 Criteria-requirements:
The following demonstrates compliance:

First credit:

1. Where relevant stakeholders for this aspect have been identified in accordance with the requirements defined thereto in MAN2- stakeholder analysis.
2. Participation for the inventory has taken place at at least level 3 of the Participation ladder (MAN 3). Parties include at least: government (design), utility companies (cables & piping) and the Water Board (water management and sewer);
3. The inventory provides insight into both the current and the future (or temporary) underground infrastructure.

Second and third credit:

1. The first credit has been achieved.
2. A vision for the optimal implementation of the underground infrastructure supported by the relevant stakeholders has been established;
3. Based on this vision, a design was made for the construction of the underground infrastructure that has been geared to the design and use of the area above,
4. Measures have been taken so that the underground infrastructure is permanently well accessible at all times.
5. The design for the underground infrastructure should take into account expected changes in the area in the medium term (10 to 15 years);
6. The construction of the underground infrastructure avoids disruptions of the water management of the area and the surrounding area. If disruptions are inevitable, the impact of the disruptions has been described and minimized
7. Compaction of the soil is limited to the sites where this is technically necessary.
8. In the construction of underground infrastructure, parts that do not qualify for reuse will be removed;
9. Measures have been taken in the design to minimize ground excavation;
10. The dimensioning of the sewage system fits in the total of water management principles within the area;

11. The final pavement is provided after the underground infrastructure has been realized. In case of expansions (such as around traffic nodes) breaking up the pavement should be avoided.

Fourth credit:

1. The location of all elements of the underground infrastructure, both new and current, used and unused, insofar these were constructed, changed or have been topical in any other way during the area development, is documented in accordance with the BRO – Key Register of the Subsurface

6 Evidence required:

Design phase

First credit:
Requirement 1
Evidence showing that for MAN2 at least 1 credit has been achieved.

Requirement 2
Evidence showing that for MAN3 at least 2 credits have been achieved.

Requirement 3

- Report of the mutual consultation and report (SWOT analysis) of the needs, requirements and possibilities of the parties documented under requirement 1.

Second and third credit:
All requirements
A vision and an associated design for the underground infrastructure signed by the municipality and the project group, containing:

- (cross) sections and the agreed distances to plots or other appendages;
- A situation drawing with the current underground infrastructure;
- Maps / plans indicating the relationship between underground and above ground;
- An analysis of the expected changes in use of the underground infrastructure for at least the next 10 to 15 years, taking into account foreseeable developments in respect of consumption, climate (global warming, less frequent but more intensive rainfall) and technology;
- A substantiation that shows that the underground infrastructure will not significantly disrupt the water management in the area;
- Drawings and / or descriptions that demonstrate that compaction of the soil in the proposed area development is minimized and remains limited to the areas where it is technically necessary.
- Description of the measures guaranteeing the accessibility and adjustability of the underground infrastructure;
- Statement of the main contractor that in the work, no final pavement will be placed prior to the completion of the underground infrastructure;
- The positioning of conduits to create a future crossing to prevent nuisance at nodes / cross sections

Fourth credit:
Requirement 1:

- A letter of intent of the project agency that all relevant elements of the underground infrastructure as mentioned in the Requirements will be recorded in accordance with BRO – Key Register of the Subsurface.

Realization phase

First credit:
All requirements

- The evidence is the same as for the Design phase.

Second and third credit:
All requirements:

- Evidence that demonstrates that the design is realized in accordance with the requirements from the design phase. If changes have been made, also evidence of coordination with the parties involved .

Fourth credit:
Requirement 1:
- Evidence that all relevant elements of the underground infrastructure, as defined in the Requirements, are documented in accordance with BRO – Key Register of the Subsurface.

7 Definitions:

Underground infrastructure
The total of cables, pipes and sewerage for the transport or facilitation of gas, electricity (high-medium and low voltage), drinking water, city heating, heat-cold storage, earth heating, public lighting, telecom, sewerage, geothermic and other (future infrastructure)
BRO – Key Register of the Subsurface
A Geo-data key register of the Ministry of Infrastructure and Environment, governed by TNO.

Publicly accessible area
Publicly accessible areas include roads, squares, parks, plantations, public water and other public spaces generally accessible to the public. .
Co-siting
Promoting the use of residual energy. For instance reusing the excess heat of a bakery in business complexes / workplaces..
KLIC-report
A KLIC-report makes sure that pipe managers receive notification of planned work in the subsurface. This notification is a statutory requirement.
RD coordinates
State triangle coordinates are the coordinates used in the Netherlands at a national level as a basis for geographical indications and files such as in a geographic information system (GIS) on maps of the land registry, the 'Grootschalige Basiskaart van Nederland (GBKN)', the 'Basiskaart Grootschalige Topografie (BGT)' and topographic maps.

8 Additional information:

9 References:

Category: Spatial development	Maximum number of credits: 4	Required? No

RO 10 Sustainability performance of Buildings

1 Purpose of the credit:
Stimulating the development or retention of sustainable buildings in the area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	Where a calculation has been performed for the plan area resulting in … credits
1	1
2	2
3	3
4	4

Structure of the table:
- Two credits can be awarded if the calculation tool (See Additional information) shows 2 credits as outcome.

4 Criteria-requirements:
The following demonstrates compliance:

All credits
1. The DGCB calculation tool in Excel has been made for the plan area in accordance with the calculation rules specified in the tool
2. The score from the calculation tool is not exclusively based on evidence in the class 'without independent check''

5 Additions to the criteria requirements:

Calculation Tool
The calculations referred to in this credit, should be performed with the most recent calculation tool developed by DGBC, available at http://www.breeam.nl/gebied/downloads_gebied

Equal
Other labels (such as LEED) and other instruments (such as GPR-Gebouw and Greencalc+) can be considered equal using a certain conversion table further described in the calculation tool.
GPR-Gebouw en Greencalc+ can be considered equal to BREEAM-NL certificates:
1. GPR-Gebouw / Greencalc+ score is equal to a BREEAM-NL Pre-Assessment (without independent check)
2. GPR-Gebouw / Greencalc+ score is equal to BREEAM-NL Design certificate if, in addition to the calculation of the calculation tool, evidence is provided justifying all input of the tool.
3. GPR-Gebouw / Greencalc+ score is equal to BREEAM-NL Delivery certificate if a building inspection report is included justifying the outcome of the original calculation.

6 Evidence required:
Design phase
All credits:

Requirements 1 and 2

- A completed DGBC calculation tool with substantiation of the allocation of the percentages
- A letter of intent of developing parties including a substantiation of the potential sustainability performance of buildings not yet realized

Realization phase

Requirements 1 and 2

- Same as the design phase.

7 Definitions:

Sustainable building

A building that can demonstrate by means of a certificate that it performs better than legally required in the field of sustainability.

8 Additional information:

9 References:

Category: Spatial development	Maximum no. of credits: 2	Required: no

RO 11 Flood risks

1 Purpose of the credit

To encourage the development in areas with a low risk of flooding or to take measures to reduce the consequences of flooding in areas with a limited or higher risk of flooding.

2 Application

This credit applies to all areas.

3 Credit criteria

A maximum of 2 points can be awarded as follows,

Points	
1	Where the evidence provided demonstrates that the assessed development is situated in an area with a 'limited' or 'higher' flood risk as a result of inundation or failure of a water defense system. *AND* measures have been taken to improve flood resistance and minimize the risk of flooding in accordance with local authority guidance.
2	Where the evidence provided demonstrates that the development is situated in an area with a 'low' risk of flooding as a result of inundation or failure of a water defense system.

4 Criteria requirements

The following demonstrates compliance:

First credit:

1. A location specific flood risk assessment has been conducted by a qualified consultant.
2. The flooding risk assessment confirms the following:

- The assessed development is situated in a flooding area designated as subject to a 'limited' or 'higher' risk of flooding.
  - Measures have been taken, in accordance with the local authority, that improve the flooding resistance of the development.
  - Vulnerable functions and locations that have concentrations of vulnerable groups are situated at places in the area that have a low risk of flooding or are situated at least 60 cm above the design flood level.
  - The main access roads have been constructed in such a way that they remain accessible for emergency services during flooding. They are located no lower than 20 cm under the design flood level.

Two credits:

1. A location specific flood risk assessment has been conducted by a qualified advisor.
2. The flood risk assessment confirms that the assessed development is situated in a flooding area designated as subject to a 'low' annual flood risk.

5 Additions to the criteria requirements

None.

6 Evidence required

Design phase

First credit:

- The qualifications of the consultant.
- A copy of the flood risk assessment confirming the risk to be 'medium'
- Statement of the local authority, confirming that the proposed measures will reduce the flood risks and are in line with the principles of multi-layer safety.
- Site drawings indicating:
  - Vulnerable functions and (envisioned) locations and their design levels in relation to the design flood level for the site.
  - The (envisioned) design level for main access roads.

Two credits

- The qualifications of the consultant.
- A copy of the flood risk assessment confirming the risk to be 'low'

Realization phase

One and two credits:

- Requirements same as the design phase, updated to the as-built situation.

7 Definitions

Qualified consultant

A consultant with qualifications and relevant experience in calculating surface water runoff and design of sustainable urban waste water systems and flood reducing measures. If complex flood calculations and limiting measures are required, this should be a specialized hydrological engineer.

Relevant water manager

Refers to the body responsible for determining flood risks such as the Water Board, province or Rijkswaterstaat.

Flood risk assessment

A **flood risk** is the product of the chance of a flood occurring and the consequences such a flood might have. An assessment requires a study to assess the risk (explicit chance and consequence) of a flood of the development, as well as the consequences any changes or developments of the site may have for the risk of flooding with regard to the site and elsewhere.

Definition of risk of flooding

- Low risk: areas located at higher grounds (see below)
- Low risk: areas located in a primary dike ring with a flood risk of 1:10000 or 1:4000 and also areas located behind a secondary water defense system with the highest safety level (1:1000).
- Higher risk: areas that do not meet the descriptions above.

Vulnerable functions / groups

Functions required for emergency services in emergency situations or basic necessities and where there are high concentrations of vulnerable groups. The functions referred to here include: hospitals, nursing homes, police, fire department and defense, electricity facilities, stations, schools and daycare.

Multi-layer safety

Multi-layer safety means that not only the risk of flooding (dike breach) is used to reduce damage and victims in case of a disaster, but spatial planning and disaster management as well.

Higher grounds
The natural higher parts of the Netherlands as documented in the Flood Defences Act (Wet op Waterkering).

8 Additional information
None.

9 References
- EU Floods Directive 2007/60/EC on the assessment and management of flood risks, http://ec.europa.eu/environment/water/flood_risk/key_docs.htm
- http://ec.europa.eu/environment/water/index_en.htm
- http://www.floodsite.net
- http://www.worldweather.org
- http://www.helpdeskwater.nl/onderwerpen/waterveiligheid-0/

Please see the country specific references for more information.

Country specific references for the Netherlands
- **KNW**, Koninklijk Nederlands Waternetwerk http://www.waternetwerk.nl/
- **UvW**, Unie van Waterschappen http://www.uvw.nl
- **Deltaprogramma**, http://www.rijksoverheid.nl/onderwerpen/deltaprogramma
- http://www.deltacommissaris.nl/

Category: Spatial development	Maximum no. of credits: 3	Required? No

RO 12 Rainwater management

1 Purpose of the credit

Prevent damage from flooding in (extreme) rain situations.

2 Application

This credit applies to all areas.

3 Credit criteria

A maximum of 3 points can be awarded as follows:

Points	
1	Where the evidence provided demonstrates that a rainwater system map has been created for the area calculated on the normative T=100 shower and insight is created into where rain water flooding may occur.
1	Where, in addition to the first credit, the evidence provided demonstrates that sufficient water storage capacity is available in the area and the surface water drainage system and the layout of the public area have been designed in such a way that there will be no rain water flood during a T = 100 shower.
1	Where the evidence provided demonstrates that permanent additional water storage capacity has been created for new buildings and private land.

4 Criteria requirements

The following demonstrates compliance:

First credit

1. For the plan area, a calculation has been made for the situation T = 100 and the sites in the public area where rain water flooding might occur have been identified on a map.
2. The calculation has been approved by the relevant water manager

Second credit

The first credit has been achieved, and

1. Based on the calculation for the situation T=100 a design has been made for the surface water drainage systems and the design of the public area in the plan area in such a way that no rain water flood shall occur.
2. Locations and amounts for the storage of rain water have been documented and approved in consultation with the relevant water manager and manager of the public area.

Third credit:

1. Where sustainable water storage and infiltration measures have been taken to retain the water that, in a T=100 situation falls on all new buildings and private land, for a period of at least 24 hours.

5 Additions to the criteria requirements

In order to make a suitable design for the public area and the surface water drainage system of an area, it is recommended to provide insight into the possible rain water flooding in the earliest stage possible. To this end, various computer modeling programs exist that map the various water flows and the location and level of flooding.

6 Evidence required

Design phase

First credit

- A calculation for the situation T=100 regarding the plan area and a map showing the locations where flooding may occur within the area boundaries in situation T = 100. Both approved and signed by the relevant water manager and the manager of the public area.

Second credit:

all requirements:

- Evidence that the first credit has been achieved.
- An overview of the requirements set by the relevant water manager and manager of the public area regarding the storage capacity for rain water of the plan area.
- Indicated on a map:
  - the (envisioned) locations for rain water storage and their capacity
  - (envisioned) measures for infiltration
- A list of the sustainable urban water storage and infiltration systems to be realized to relieve the surface water drainage system and the public area.
- A statement of the relevant water manager and manager of the public area that the design meets the requirements as referred to in the 2nd bullet.

Third credit:

- A list of the envisioned measures on or in buildings and / or private land regarding the rain water storage and their capacity, if possible indicated on a map.
- A calculation made by a qualified advisor demonstrating that the measures to be take ensure that, in a T = 100 situation, the water amount that falls on all buildings and private land, will be collected on these buildings and this land and retained there for a period of at least 24 hours.

Realization phase

First credit

- Same as the Design phase.

Second credit:

- Same as the Design phase with an update of the realized storages and measures taken.
- A statement by the developer that the realization is in line with the design or an update and a statement of the relevant water manager and manager of the public area that the realization is still in line with the design.

Third credit:

- An overview of the measures taken with their capacity, indicated on a map.
- A post realization calculation made by a qualified advisor showing that the measures taken make sure that in a T=100 situation, the amount of water that falls on all buildings and private land is collected on these buildings and this land and is kept there for a period of at least 24 hours.

7 Definitions

Surface water runoff

Water that flows over the soil towards a drainage system. This happens when the soil is impermeable or saturated or in case of extremely heavy rainfall.

Runoff speed

The speed with which water runs off of a surface.

Sustainable urban water storage and infiltration systems

A series of management methods and control systems developed to drain surface water at a more sustainable manner than some conventional techniques.

Included are:

- Storage Ponds.
- Wadis.
- Cane Fields.
- Permeable pavement: in areas where local geological and hydrological circumstances allow for this, such as paved surfaces on a permeable substrate on a gravel bed to store the water and to allow it to penetrate the soil. For less permeable land, the gravel layer can be deeper and it can take the water to an infiltration facilities, although this is not possible in some areas.
- Drainage water from roofs collected as part of a rain water extraction system.
- Drainage water from roofs, passed on to an infiltration facility or other storage facility such as reservoirs, ponds, wadis etc.
- Green roofs.

'No flooding'

This concerns the situation as considered by the manager of the public area.

Qualified consultant

A consultant with qualifications and relevant experience in calculating surface water runoff and design of sustainable urban waste water systems and flood reducing measures. If complex flood calculations and limiting measures are required, this should be a specialized hydrological engineer.

Design flood

A historic or extraordinary flood with a certain annual risk of occurrence against which the suitability of the proposed development is assessed and limiting measures are designed, if relevant.

Flood risk assessment

A study design to assess the flood risk of a site as well as the consequences that any changes or developments of the site may have for the flood risk of the site and elsewhere.

Depressions

A depression is a local lower situated area within the area boundary. This concerns the areas where water running of through the surface level will accumulate and cause hinder. This can be garage entrances, tunnels or overpasses.

8 Additional information

None.

9 References

- http://ec.europa.eu/environment/water/index_en.htm

Please see the country specific references for more information.

Country specific references for the Netherlands

- **KNW**, Koninklijk Nederlands Waternetwerk http://www.waternetwerk.nl/
- **Rioned**, Stichting Rioned http://www.riool.net/
- **Deltaprogramma**, http://www.rijksoverheid.nl/onderwerpen/deltaprogramma
- http://www.deltacommissaris.nl/

5. Welfare and Prosperity

W&W 1	**Public safety**
W&W 2	**Social cohesion**
W&W 3	**Perception of the surroundings**
W&W 4	**Regional employment & business activity**
W&W 5	**Ownership**

Category: Welfare & Prosperity	Maximum no. of credits: 2	Required? No
W&W 1 Public safety		

1 Purpose of the credit:
Promoting public safety in the plan area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded as follows:

Credits	
2	Where the evidence provided demonstrates that at least 15 of the 25 defined measures of the 'Politiekeurmerk Veilig Wonen' (Police Label Safe Living) in respect of the Urban planning, Public Space and Plot requirements have been applied, focused on promoting public safety in the plan area.

4 Criteria requirements:
The following demonstrates compliance:

Two credits:

1. At least 15 of the 24 measures (see under 5 Additions to the criteria requirements) of the 'Politiekeurmerk Veilig Wonen' (PKVW) in respect of the Urban planning, Public Area and Plot requirements have been applied.

5 Additions to the criteria requirements:

Politiekeurmerk Veilig Wonen (PKVW)

For detailed information about the sections below, please see the up to date information in the PKVW.

Urban planning sections:
- S1 Diversity housing stock
- S2 Construction height and scale
- S3 Connection to surrounding buildings
- S4 District access
- S5 Slow traffic routes
- S6 Recreation and relaxation
- S7 District facilities
- S8 Crowd-drawing facilities

Public area sections:
- O1 Public lighting
- O2 Parking in the open air
- O3 Public car park
- O4 Tunnels and underpasses
- O5 Public transport stops
- O6 Indoor sites
- O7 Street furniture
- O8 Youth facilities
- O9 Walls / surfaces / partitions
- O10 Management plan residential area

Plot level sections:

- K1 Parcellation and location family houses: front
- K2 Parcellation and location family houses: back
- K3 Parcellation and location residential buildings
- K4 Back paths
- K5 Property boundaries
- K6 Complex of storages, sheds or private garages: location and lighting

6 Evidence Required:

Design phase

Two credits:

Requirement 1

- Statement of the project agency that at least 15 of the 24 requirements form the PKVW in the field of urban planning, public space and plot requirements will be applied including the envisioned method of application.

Realization phase

First credit:

Requirement 1

- Substantiation that the measures referred to in the Design phase have been applied.

7 Definitions:

Public safety

Public safety is both an objective (low crime rate) and a subjective (safety perception) phenomenon. Both interpretations are considered in this credit.

- In terms of **crime**: how does the actual crime rate (crimes such as demolition, theft, burglary and violence) in this area relate to that in the surrounding area?
- In terms of **perception value**: do people feel save in the area during different times of day and in the various seasons?

8 Additional information:

For possible measures to get the safety level at the desired level, one can use the 'Handboek Veilig Ontwerp en Beheer' (Safe Design and Management Manual, THOTH publishers, 2008); if it concerns a residential area one can also use the 'Handboek Politiekeurmerk Veilig Wonen' (Safe Living Police Label Manual); if it concerns a business site or mall one can also use the 'Handboek Keurmerk Veilig Ondernemen' (Safe Business Label Manual), in addition to the 'Handboek Veilig Ontwerp en Beheer' (there is a manual for both business sites and malls)' if it concerns an entertainment area one can use the 'Handboek Kwaliteitsmeter Veilig Out' (Quality Meter Safe Entertainment Manual) in addition to the Handboek Veilig Ontwerp en Beheer'.

9 References:

Politiekeurmerk Veilig Wonen (PKVW): http://www.politiekeurmerk.nl/keurmerk

Politiekeurmerk Veilig Wonen (PKVW): http://www.politiekeurmerk.nl/keurmerk

Category: Welfare & Prosperity	Maximum no. of credits:2	Required? No
W&W 2 Social Cohesion		

1 Purpose of the credit:
Promoting social cohesion in the plan area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded:

Credits	
1	Where the evidence provided demonstrates that an analysis has been made for the promotion of the social cohesion within the development.
1	Where the evidence provided demonstrates that at least 3 demonstrable measures have been taken to promote social cohesion.

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. An analysis has been made focused on the first performance field of the WMO: promoting social cohesion in and the livability of the development.
2. The analysis is drawn up by an independent expert body OR written accord declared by the municipality.

Second credit:

1. At least three measures from the list below have been taken to promote the social cohesions:
    - Facilitating the establishment of a VVE (Owner's Association)
    - Organizing gathering of future residents / users
    - Facilitating / promoting joint management and / or property (soil, energy, water)
    - Participation of future residents / users at at least step 4 of the participation ladder from MAN 3 – Participation ladder
    - Making available / possible virtual meeting places
    - Designing physical meeting places
    - Formalizing involvement of the municipality in the district
    - Being visible in the district as a municipality

For this credit, the possibility of equivalence applies: if the project is able to plausibly substantiate that other design measures are reasonably expected to promote the social cohesion, this may be submitted to the assessor for approval.

5 Additions to the criteria requirements:
-

6 Evidence Required:
Design phase
First credit:
Requirement 1 and 2:

- The analysis including the parties involved, the period of the analysis and the implementing party
- Evidence that the implementing party is independent and expert OR a written accord of the municipality.

Second credit:
Requirement 1
- Substantiation that at least 3 of the measures referred to for the promotion of social cohesion will be taken.

Realization phase

First credit:
Requirement 1 and 2
- Same as the Design phase.

Second credit:
Requirement 1
- Evidence that the proposed measures for the promotion of the social cohesion from the list above have been taken.

7 Definitions:

Social cohesion
The extent to which there is perceived unity between the residents in and / or users of the area. To clarify, the opposite of this is social isolation.

WMO
De Wet maatschappelijke ondersteuning (the Social Support Act)

8 Additional information:

9 References:

Category: Welfare & Prosperity	Maximum no. of credits:3	Required? No

W&W 3 Perception of the surroundings

1 Purpose of the credit:
Promoting a pleasant perception of the surroundings in the plan area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 3 credits can be awarded:

Credits	
1	Where the evidence provided demonstrates that the potential perception of the surroundings of the plan area is analyzed based on a strength / weakness analysis (SWOT).
2	Where the evidence provided demonstrates that the potential perception of the surroundings is positively affected to a maximum extent by preservation of the strong and improvement of the weak elements.

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. The SWOT covers at least the elements from the list below:
   - Skyline perception;
   - Water: ditches, shores, rivers, streams;
   - Vegetation / naturalness: various green;
   - Identity: of the area; character:
   - Relief: flat or sloping;
   - Unity: variation within the landscape;
   - Human scale;
   - Use: layout for functions, accessibility and availability;
   - Spatiality: design of the area, the landscape, street plan;
   - Management of public area: monitoring compliance with rules and maintenance;
   - Quality of buildings;
   - Recreational possibilities.

Second and third credit:

1. The first credit has to be achieved.
2. The strengths from the SWOT are maintained in the urban planning program and the weaknesses are improved of left out under provision of reasons.
3. At least four stakeholders identified as relevant according to MAN 2 – stakeholder analysis should be involved at at least level 3 of the participation ladder from MAN 3 - participation.

5 Additions to the criteria requirements:
-

6 Evidence Required:
Design phase
First credit:

Requirement 1

- Copy of the analysis including the authors and assumptions.

Second and third credit:

Requirement 1 and 2

- Substantiation of the retained strengths and improved weaknesses.
- If left out under provision of reasons: a paragraph added to the SWOT demonstrating which relevant stakeholders are involved and how their input has been dealt with.

Realization phase

First credit:

Requirement 1

- Same as the design phase.

Second and third credit:

Requirement 1 and 2

- Report of the assessor that the elements referred to in the Design phase have been realized.

7 Definitions:

Perception of the surroundings

The experience of the environment in which one lives as perceived by the user / resident and as affected by visual aspects of that area, at a scale of '(very) pleasant' to '(very) unpleasant'.

8 Additional information:

9 References:

Category: Welfare and Prosperity 4	Maximum no. of credits: 3	Required? No
W&W 4 Regional employment & business activity		

1 Purpose of the credit:
Stimulating regional permanent employment within the system boundary of the area development.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 3 credits can be awarded as follows:

Credits	
1	If the evidence provided demonstrates that no employment is lost within the system boundary as a result of the area development.
2	If the evidence provided demonstrates that net employment is created within the system boundary as a result of the area development.
3	If the evidence provided demonstrates that, in addition to the aforementioned, complementary and region strengthening new business is attracted.

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. An economic study or an inventory study into the employment, including at least:
   - Local existing businesses;
   - Employment figures;
   - Companies to be added.
2. A calculation demonstrating that no employment is lost within the system boundary as a result of the area development.

Second credit:

1. The first credit has been achieved.
2. The calculation and the study for the first credit demonstrates that net permanent employment is growing as a result of the area development within the system boundary.

Third credit:

1. The first and second credit have been achieved.
2. Based on the studies and calculations of credit 1 and 2, it should be demonstrated that the area development creates complementary (currently not existing) employment and / or attracts new business that is not yet present within the system boundary (enriching and diversifying the region).

5 Additions to the criteria requirements:
- In redevelopment and revitalization, the employment figures prior to and after the area development should be compared.
- The system boundary is a 5 KM radius around the area development.

6 Evidence Required:

Planning phase

First credit:

Requirement 1

- The economic study or the inventory study.

Requirement 2

- The calculation demonstrating that employment remains at least the same as a result of the development.

Second credit:

Requirement 1

- Evidence demonstrating that the first credit has been achieved.

Requirement 2

- The calculation in accordance with the first credit, demonstrating that net permanent employment is growing.

Third credit:

Requirement 1

- Evidence demonstrating that the second credit has been achieved.

Requirement 2

- The calculation shows that employment isn't just growing, but that the development also contributes to complementary employment or provides diversification of employment.

Realization phase

First credit:

Requirement 1 and 2

- Same as the planning phase, where possible updated with the meanwhile realized activities; forecasts are permitted, but should be substantiated.

Second credit:

Requirement 1 and 2

- Same as the planning phase, where possible updated with the meanwhile realized activities; forecasts are permitted, but should be substantiated.
-

Third credit:

Requirement 1 and 2

- Same as the planning phase, where possible updated with the meanwhile realized activities; forecasts are permitted, but should be substantiated.

7 Definitions:

Permanent employment

Jobs based on permanent contracts.

Complementary business/activities

Added business. Businesses that are not yet active within the system boundary, classified in accordance with the SBI – Standaard Bedrijfsindeling (Standard Business Classification, see with references) of the CBS:

A	Agriculture, forestry and fishing
B	Extraction of minerals
C	Industry
Etc.	

Region-enhancing activity

Supporting existing activity by means of a volume increase (specializations, supporting, less vulnerable economy) and / or new types of companies that don't yet exist within the system boundary.

8 Additional information:

9 References:

www.cbs.nl > Standaard Bedrijfsindeling

Category: Welfare and Prosperity	Maximum no. of points: 6	Required? No
W&W5 Ownership		

1 Purpose of the credit:

Stimulating the economic involvement of users in the development of the living environment.

2 Application:

This credit applies to all areas.

3 Credit criteria:

A maximum of 6 points can be awarded as follows:

Points	
1	Where the evidence provided demonstrates that co-creation has been achieved.
2	Where the evidence provided demonstrates that co-organization has been achieved.
3	Where the evidence provided demonstrates that co-investment has been achieved.

4 Criteria requirements:

The following demonstrates compliance:

First point:

1. The (future) users have demonstrably affected the choice and interpretation of financial forms of collaboration for the development of the plan area.

Second point

1. One or more formal organization(s) has/have been founded (with statutes and regulations) in which the users participate and have a say in matters that concern the plan area.

Third point

1. One or more agreements have been signed demonstrating that the (futures) users participate financially in the development or the management of the plan area.

5 Addition to the criteria requirements:

The points can be achieved individually.

6 Evidence required:

Design phase

First point:

Requirement 1

- An elaboration on the approach to achieve co-creation or a letter of intent from the principal / project agency stating that the envisioned form of co-creation will be organized with the aim of reaching a form of collaboration.
- A rough indication of the envisioned form of collaboration

Second point:

Requirement 1

- An elaboration on the approach to achieve co-organization or a letter of intent from the principal / project agency stating that the envisioned form of co-organization will be organized
- A rough indication of the envisioned organizational form

Third point:
Requirement 1
- An elaboration on the approach to achieve co-investment or a letter of intent from the principal / project agency stating that the envisioned form of co-investment will be organized
- A rough indication of the envisioned form of investment

Realization phase

First point:
Requirement 1
- Evidence of communication and interaction with (future) users regarding the co-creation.
- The financial forms of collaboration regarding co-creation.

Second point:
Requirement 1
- Evidence of communication and interaction with (future) users regarding the co-organization.
- The resulting organizational form, including the roles, tasks, responsibilities, authorities of that organization; a list of members and the statutes or other form of documented formal and informal agreements.

Third point:
Requirement 1
- Evidence of communication and interaction with (future) users regarding the co-investment.
- A signed agreement or contract document with the resulting financing agreements.

7 Definitions:

Ownership
This means that users feel responsible and / or bear responsibility for the quality of the environment and its preservation based on their involvement in its establishment and management.

Co-creation, co-organization and co-investment
Participation of users in the area has various levels that, in the case of local initiatives, have a constructive buildup: Co-creation, co-organization and co-investment.

Co-creation concerns the joint formation of plans and projects for the area. Examples are meetings or workshops organized by municipalities, principal or developer to jointly discuss neighborhood planning, layout of public area or opening a community center.

Co-organization takes place when involved locals join forces in an entity (foundation, BV, NV, corporation, committees, neighborhood councils etc). This creates a clear contact and 'face' and plans for realization and / or operation (such as of sustainable energy systems) are channeled.

Co-investment takes place when the local entity raises (investment) funds for the purpose of financing activities and / or projects with a part of the investment being funded by involved locals (such as residents, entrepreneurs etc). Examples are Local Sustainable Energy companies, (partially) managed by involved locals and in which local co-investment takes place for energy saving or sustainable energy generation projects. But also joint food production and cultural events.

Parties involved
This may be various persons/representatives who can logically be considered the target audience based on the vision on area development. They are not always stakeholders, it concerns a broader

group of parties involved, who are able to make a constructive contribution to the development of the area in any way, either by input regarding the content (the result), or by input regarding the process (the way the area is developed through participation and using communication and information). These parties may be construction experts, future users (divided across various groups such as recreationists, residents, operators), delegates of municipalities and housing corporations, all kinds of substantive experts in the field of social development and transformation processes, communication and participation, environment and sustainability, special development, noise, green etc.

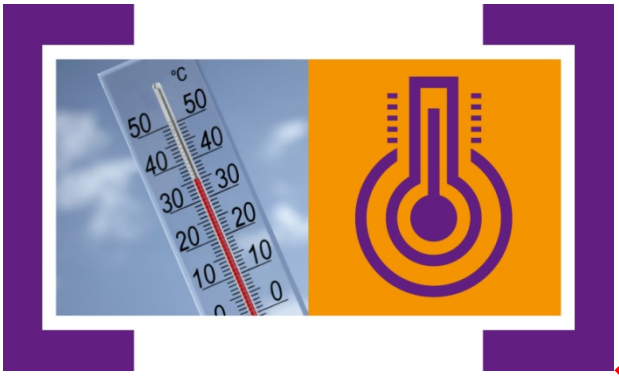
8 Additional information:

-

9 References:

-

6. Area climate



KLI 1	**Thermal outdoor climate**
KLI 2	**Wind climate**
KLI 3	**Air quality**
KLI 4	**Water quality**
KLI 5	**Soil quality**
KLI 6	**Soil physical properties**
KLI 7	**Noise**
KLI 8	**Daylighting**
KLI 9	**Light nuisance**
KLI 10	**Radiation Hazard**

Category: Area climate	Maximum no. of credits: 4	Required? No

KLI 1 Thermal outdoor climate

1 Purpose of the credit:
Stimulating a comfortable thermal outdoor climate in the area by preventing the development of the Urban Heat Island (UHI) effect.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the UHI within the system boundary does not exceed 0.5.
2	Where the evidence provided demonstrates that the UHI within the system boundary does not exceed 0.25.
4	Where the evidence provided demonstrates that the UHI within the system boundary does not exceed 0.10.

4 Criteria requirements:
The following demonstrates compliance:

One credit:

1. Based on the formula of Alterra, it has been demonstrated that the maximum UHI within the system boundary is 0.5. (Formula: *UHI = 0,04* urban density in a radius of 1.5 km – 0.04* % green per hectare within the system boundary).*

Two credits:

1. Based on the formula of Alterra, it has been shown that the maximum UHI within the system boundary is 0.25.

Four credits:

2. Based on the formula of Alterra, it has been shown that the maximum UHI within the system boundary is 0.10.

5 Additions to the criteria requirements:-

6 Evidence required:

Design phase

One credit:
Requirement 1

- Map indicating the system boundary of the plan area.

- Calculation based on the formula of Alterra demonstrating that the requirement of a maximum of 0.5 within the system boundary is being complied with.

Two credits:
Requirement 1
- Map indicating the system boundary of the plan area.
- Calculation based on the formula of Alterra demonstrating that the requirement of a maximum of 0,25 within the system boundary is being complied with.

Four credits:
Requirement 1
- Map indicating the system boundary of the plan area.
- Calculation based on the formula of Alterra demonstrating that the requirement of a maximum of 0,10 within the system boundary is being complied with.

Realization phase

All credits:
Requirement 1
- A written statement of the developing party confirming that no changes have occurred during realization in respect of the Design phase and, if changes have been applied to the original plan, a renewed calculation according to the formula of Alterra showing that the credit requirements applicable to the Design phase are still being complied with.

7 Definitions:

Area boundary / system boundary:
This credit has a system boundary. This boundary lies 500 m outside of the area boundary. This concerns the possible external UHI effect on the plan area and the measures taken, such as the construction or presence of city forests and parks, which may be outside of the plan area.

Urban density:
Percentage of total area with buildings. In urban areas this can be as much as 30 or 40%

8 Additional information:

Alterra-WUR has compared the temperature differences measured between urban areas and the green environment to a number of city characteristics, such as percentage of green and percentage of construction. Based on the correlation between the measurements and the characteristics, a formulate has been derived: UHI = 0,04* urban density in a 1.5 km radius - 0,04* % green per hectare (sources: Climate effect Atlas of the Netherlands).

Measures to reduce or prevent the UHI include:
- Green verges and traffic lines alongside all roads in the area
- street trees alongside all main roads in the area
- lawns in 10% of the public area
- green noise barriers
- green roofs and facades
- flowing surface water within 30 m of important residence functions
- 30% of the pavement consists of open pavement (water and air permeable)
- 40% of the pavement consists of materials with high reflection characteristics (roofs and public area)
- Cooling water elements in the area (such as fountains and water ponds)application of water in the area

9 References:

– Werken aan een hittebestendige stad - Een handreiking met maatregelen om de temperatuur-gerelateerde effecten van klimaatverandering in steden op te vangen - draft Grontmij/provincie Limburg. www.limburg.nl/dsresource?objectid=15917&type=org

Category: Area climate	Maximum no. of credits: 3	Required? No
KLI 2 Wind climate		

1 Purpose of the credit:
Promoting a favorable local wind climate in the plan area and limiting the influence of a possible negative impact of the wind climate in the plan area on the direct vicinity.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 3 credits can be awarded as follows:

Credits	
1	When, in the planning phase, a wind study is required after consulting the Decision model NEN 8100 and a wind nuisance expert is subsequently consulted.
1	Where the evidence provided based on the wind nuisance study shows that a wind climate with at least the classification **'moderate'** is realized in the plan area and the direct vicinity.
2	Where the evidence provided based on the wind nuisance study shows that a wind climate with classification **'good'** is being realized in the plan area and the direct vicinity.

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. The results of the decision model in NEN 8100 give rise to a wind nuisance study. Based on this, a wind nuisance expert has been appointed who should make proposals that lead to an improvement of the wind climate.

Second or Third credit:

1. The first credit has been achieved.
2. The wind nuisance study shows that there is at least a 'moderate' wind climate being realized in the plan area (for one credit) or a 'good' wind climate (for two credits) for the activities in the area (see additional information).
3. Activities I and II, Strolling and Sauntering (from NEN 8100) have been included in the study.
4. It is demonstrated that any adverse effects of the wind climate in the plan area to the wind climate in the adjoining area (see System boundary) does not lead to a classification of one tier lower than the applicable classification of prior to the area development.

5 Additions to the criteria requirements:
-

6 Evidence required:

Design phase

First credit:
Requirement 1

- Document showing that NEN 8100 demonstrates that a wind nuisance study is required.
- A report of the wind nuisance study or a report of the meeting(s) with the wind nuisance expert.
- Document showing that the wind nuisance expert was consulted and a document plausibly demonstrating that the advice of the wind nuisance expert results in an improvement of the wind climate in the plan area.

Second or Third credit:
Requirement 1

- Evidence shows that the first credit has been achieved.

Requirement 2 en 3

- Report of the wind nuisance study showing that a wind climate with a minimum classification of 'moderate' or 'good' is being realized for the activities common in the area.

Requirement 4

- Substantiation that no adverse effects of the wind climate are to be expected in the plan area to the wind climate in the adjoining area OR substantiation that the adverse effects do not lead to a classification of one tier lower than in the classification applicable prior to the area development in the adjoining area.

Realization phase

First credit:
Requirement 1

- Same as the Design phase

Second or Third credit:
Requirement 1

- Evidence shows that the first credit has been achieved.

Requirement 2 en 3

- Report of the wind nuisance study demonstrating that a wind climate has been realized with at least the classification 'moderate' or 'good' for the activities common in the area.

Requirement 4

- Substantiation that no adverse effects of the wind climate have occurred in the plan area to the wind climate in the adjoining area OR substantiation that the adverse effects have not led to a classification of one tier lower than in the classification applicable prior to the area development in the adjoining area.

7 Definitions:

System boundary:
This credit has a system boundary. It lies 100m outside of the area boundary. This concerns the possible effects of external wind nuisance on the plan area and vice versa.

Wind nuisance expert
A person trained in the application of the Dutch standard NEN 8100:2006 Wind nuisance and wind hazard in the developed area' and able to perform quantitative wind simulations.

8 Additional information:

Activities
NEN 8100 contains a further definition of the quality classes and Activities. In this credit, the emphasis is on the Activities Strolling and Sauntering.
These activities will have to be assessed within the plan area in general.
The activity Prolonged sitting has not been considered, since the local wind climate can often be improved reasonably simple for this activity.

9 References:

http://www.nen.nl/web/Normshop/Norm/NEN-81002006-nl.htm

Category: Area climate	Maximum no. of points:2	Required? No
KLI 3 Air quality		

1 Purpose of the credit:
Minimizing exposure to air pollutants in the area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 points can be awarded as follows:

Points	
1	If the study area values in the most recent GCN map covering the plan area, of NOx, PM10 and PM2,5 have a minimum score of '**reasonable'** prior to the start of the area development and measures have been taken to maintain that quality after realization.
2	If the study area values in the most recent GCN map covering the plan area, of NOx, PM10 and PM2,5 have a minimum score of '**good'** prior to the start of the area development and measures have been taken to maintain that quality after realization.

4 Criteria requirements:
The following demonstrates compliance:

First point:

1. Based on the GCN map, the plan area has a score of reasonable in terms of NOx, PM10 and PM2.5 based on table 1.
2. An estimate of the adverse effects on the air quality as a result of the development
3. Design measures are incorporated to mitigate any adverse effects on the air quality caused by the development.

First two points:

1. Based on the most recent GCN map, the plan area has a score of 'good' in terms of NOx, PM10 and PM2.5 based on table 1.
2. An estimate of the adverse effects on the air quality as a result of the development
3. Design measures are incorporated to mitigate any adverse effects on the air quality caused by the development.

5 Additions to the criteria requirements:
For all points, the values and points are weighed based on table 1.

	Points	2	1	0	0	0
Substance	Limit values	Good	Reasonable	Moderate	Very moderate	Poor
NOx	40 µg /m3	<20	20-30	30-40	40-50	50-65
PM10	40 µg/m3	<20	20-30	30-40	40-50	50-65
PM2,5	25 µg /m3	<10	10-20	20-25	25-30	30

Table 1 Points regarding air quality based on the GCN values 2010

Application of GCN-maps
On their website the 'Plan Bureau voor de Leefomgeving' provides so-called Large Scale Concentration Maps for the Netherlands (Grootschalige Concentratiekaarten Nederland, GCN kaarten) of various types of pollution at km2 level.
The values of the 2010 maps of the study areas should be compared in table 1, allowing to determine the score. Principle is that the values of all 3 substances meet their relevant class at least. If a new version of the GCN maps is released, this BRL will be adjusted accordingly.

Grids GCN-maps
The plan area can fall within several grids of the GCN map. In that case, the values of the grid in which the major part of the plan area falls, shall apply.

Possible measures (mobility, regional and local):

- distribution with clean transportation;
- improvement of bicycle paths;
- parking permit for clean cars;
- stimulation of carpooling;
- a contribution in the replacement of a traffic control system;
- stimulation of the bicycle use;
- stimulation of refueling with green gas and the proper use of wood stoves.
- stimulation of electric vehicles
- stimulation of the New Driving (economical driving)
- realization of sustainable municipal car fleet
- green wave
- environmental zone for trucks
- differentiating parking rates
- throughput measures (DVM);
- temporary speed reduction with strict enforcement
- installing screens;
- air treatment / tunnel cleaning (at tunnel portals).

6 Evidence required:

Design phase:

First point:
Requirement 1

- An image of the GCN map of the relevant study area with the concentrations NOx, PM10 and PM 2,5 of the last available year and the map with the expected values.
- Document demonstrating that, based on the GCN values (table 1), the study area has a score of ´reasonable' in terms of air quality.
- Substantiation (air quality models, map of expected values) of the fact that the proposed design measures will nullify the adverse effects of the development.

First two points:
Requirement 1

- An image of the GCN map of the relevant study area with the concentrations NOx, PM10 and PM 2,5 of the last available year and the map with the expected values.
- Document demonstrating that, based on the GCN values (table 1), the study area has a score of ´good' in terms of air quality.
- Substantiation (air quality models, map of expected values) of the fact that the proposed design measures will nullify the adverse effects of the development.

Realization phase

All points:

- The measures realized with an update of the as-built situation

7 Definitions:

NOx
Nitrogen oxide

PM10
Particulate Matter in the atmosphere with an (aerodynamic) diameter of ≤ 10 µm

PM2,5
Particulate Matter in the atmosphere with an (aerodynamic) diameter of ≤ 2,5 µm

Study area
The study area consists of the km^2 grid in the GCN map covering the plan area.

Green gas
Green gas is the sustainable variant of natural gas and is produced by upgrading biogas to the same quality as natural gas. Green gas is clean and is renewable.

Green wave
The phenomenon whereby a motorist encounters only green traffic lights when he drives with a constant speed along a set of traffic lights.

8 Additional information:

-

9 References:

Plan Bureau voor de Leefomgeving (PBL)
http://www.pbl.nl

Concentratiekaarten voor grootschalige luchtverontreiniging in Nederland Rapportage 2009 Planbureau voor de Leefomgeving (PBL), July 2009 PBL-publication number 500088005.

Wet milieubeheer
http://wetten.overheid.nl/BWBR0003245

Regeling beoordeling luchtkwaliteit 2007
http://wetten.overheid.nl/BWBR0022817

Handreiking meten en rekenen luchtkwaliteit
http://www.vrom.nl/pagina.html?id=2706&sp=2&dn=7355

Category: Area climate	Maximum no. of credits:4	Required? No
KLI 4 Water quality		

1 Purpose of the credit:
Stimulating optimal quality of the area's surface water.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the effective solutions for preservation and improvement of the water quality have been considered in the Design phase, based on a water assessment with the water quality manager
1	Where the evidence provided demonstrates that at least 33% of the surface water in the plan area meets the water quality goals of the water quality manager.
2	Where the evidence provided demonstrates that at least 67% of the surface water in the plan area meets the water quality goals of the water quality manager.
3	Where the evidence provided demonstrates that 100% of the surface water in the plan area meets the water quality goals of the water quality manager.

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. A water assessment performed at least prior to site preparation.
2. The water assessment has been performed in collaboration with a water quality manager of the local water board.
3. Of the aspects that may impact the water quality, the following aspects should be studied in any case:
   - Sewer overflow,
   - Water buffer (first dispose of the dirty water, then buffer)
   - Storage and purification systems (examples are helophyte filters, environmentally friendly banks, phosphate removal, Aqua flow, 'Wassende Weg' and harvesting water plants for deployment as biomass).
   - Not permitting leachable materials (such as copper, zinc, PAKs)

Second through fourth credit:

1. The first credit has been achieved.
2. The up-to-date water quality goals of the local water board are being used.
3. There is no shifting of water pollution from the plan area outward.
4. The evidence shows that at least 33% (1 credit), 67%(2 credits) or 100% (3 credits) of the surface water in the plan area meets the water quality goals of the local water quality manager.

5 Additions to the criteria requirements:

-

6 Evidence required:

Design phase

First credit:
Requirements 1 through 3

- A water assessment drawn up in collaboration with the water quality manager, with mention of the measures to be taken and aspects being studied.
- All report(s) of the meeting with the water quality manager.

Second through fourth credit:
Requirement 1

- A copy of the water quality goals of the water quality manager.

Requirement 2

- A document containing the calculation of the percentage of surface water in the field that is to meet the water quality goals after plan realization.

Requirement 3

A statement of the project agency substantiating that no shifting will take place OR measures to prevent shifting.

Requirement 4

- Evidence or a statement mentioning that at least 33% (1 credit), 67%(2 credits) or 100% (3 credits) of the surface water in the plan area meets the water quality goals of the local water quality manager.

Realization phase

First credit:
Requirement 1 through 3

- Similar to the Design phase, plus
- In case of changes to the surface waters with respect to the Design: an updated water assessment including any adjusted measures OR a statement of the water quality manager that the changes are limited eliminating the need for an updated water assessment.

Second through fourth credit:
Requirement 1 through 4

- The substantiated percentage of surface water in the plan area that meets the water quality goals.
- Substantiation that no shifting occurs.

7 Definitions:

Water assessment
“The water assessment is an instrument that explicitly considers water management interests in a balanced way in the establishment of spatial plans and decisions. It is not an assessment in retrospect, but a process that connects the initiator of a spatial plan and the water manager as early as possible in the process.” Source: http://www.helpdeskwater.nl/onderwerpen/water-ruimte/watertoetsproces/

8 Additional information:

9 References:

Handreiking watertoets: http://www.helpdeskwater.nl/onderwerpen/water-ruimte/watertoetsproces/

Category: Area climate	Maximum no. of credits:2	Required? No

KLI 5 Soil quality

1 Purpose of the credit:
Pursuing optimal soil quality in the area.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded as follows:

Credits	
2	Where the evidence provided demonstrates that the soil quality is being improved.

4 Criteria requirements:
The following demonstrates compliance:

Two credits:
1. The quality of the existing (of prior to the development) and the added soil during the development has been demonstrated by means of soil samples.
2. The soil added for land elevation is of demonstrable better quality than the available soil.

5 Additions to the criteria requirements:

System boundary
In this credit the system boundary is understood to mean the maximum size of the area around the plan area in which/wherefrom:
1. Soil is obtained for the area development;
2. Soil quality is affected by subterranean constructions or structures;
3. Soil quality is affected by cases of soil contamination outside of the plan area.

6 Evidence required:

Design phase

All credits
Requirement 1 through 2
- Evidence of the available soil, obtained by means of sampling
- Contracts / agreements with soil suppliers showing that the quality of the added soil will be of better quality than the already available soil OR a letter of intent of the project agency that the quality of soil to be added will be of better quality than the already available soil.

Realization phase

All credits
Requirement 1 through 2:
- Evidence of the quality of the available soil, obtained by means of sampling
- Evidence of the quality of the added soil and a substantiation that it is of better quality than the soil already available at the start of development.

7 Definitions:

Soil
This fixed portion of the Earth with liquid and gaseous components and organisms. This means for instance that the ground water belongs to the soil, just like the subsurface.

Soil physical properties
Physical properties of the soil: soil structure, stratification and geohydrology.

Soil quality
A combination of ecological diversity and chemical soil composition, meaning the diversity in soil organisms, the presence/absence of nutrients and the presence / absence of contamination.

Sustainable soil remediation
In the remediation study the space, water consumption, material consumption, energy consumption, air emissions, water emissions and safety and health of operational staff both at the remediation site and the processing site have demonstrably been taken into account in the choice of the remediation objective and the remediation technology to be applied.

Local soil
Soil made available when moving soil in the plan area.

8 Additional information:

9 References:
www.bodeminfo.nl;
www.bodemloket.nl.

Category: Area climate	Maximum no. of credits:2	Required? No

KLI 6 Soil physical properties

1 Purpose of the credit:
Stimulating the optimal use of the physical properties of the soil in the area, stimulating the preservation of the soil structure.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 2 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that, in the area's plan, at least 50% of the used land is tuned to the potential of the physical soil properties (soil structure and geo hydrology).
1	Where the evidence provided demonstrates that in the preparation and in subterranean interventions (foundation piles, basements pipes for thermal storage etc.) the soil is subjected to as little irreparable damages as possible.

4 Criteria requirements:
The following demonstrates compliance:

First credit

1. For the area's plan, at least 50% of the projected land use is tuned to the physical properties of the soil. The various uses are tuned to the potential of the physical properties of the soil (soil structure and geo hydrology):
    - Heavier and higher structures on higher located sandy soils.
    - Medium sized structures on clay soil
    - Light extensive (timber frame) construction on peat land
    - Structures on floating foundations in wet areas
    - Water in low areas and / or in wet areas
    - Nature, and green on soil with poor bearing capacity.

This requirement applies to structures including infrastructure, green nature, water (such as blue nature, water storage, waterways) and farmland.

2. For this calculation, count the total number of square meters in the square plane per user function (for instance a building, water or nature) and determine the percentage that is tuned to the physical properties of the soils.

Second credit

The scope of this credit concerns: the ecological contact zone, ground water flow, soil layers with clean water and (protective) impermeable layers.

If, in building the foundation and in subterranean construction, construction does not take place deeper than 1.5 meters below surface level, this credit may be awarded automatically.

OR:

If, in building the foundation and in subterranean construction, construction takes place deeper than 1.5 meters below surface level, the following requirements apply for entitlement to the second credit:

1. In the construction of foundations, basements and / or heat storage systems, no impermeable soil layers are perforated.
2. In the construction of foundations, basements and / or heat storage systems, the local groundwater flow is not adversely affected (preventing brackish / saline groundwater discharge, flooding of existing basements, drying up of wooden piles etc.

5 Additions to the criteria requirements:

-

6 Evidence required:

Design phase

First credit
Requirement 1 and 2

- An overview of the total surface (flat plane) area of the land use to be realized, expressed in square meters, supplemented with a substantiation and calculation showing that at least 50% of the land use to be realized has been tuned to the potential of the physical properties of the soil.

Second credit
Requirement 1 and 2

- Evidence that the soil will not be disrupted below a level of 1.5m

OR:

If disruptions will go deeper than 1.5:

- Potential risk areas
- A statement that no impermeable soil layers will be perforated and the ground water flow will not be adversely affected.

Realization phase

First credit
Requirement 1 and 2
Same as the Design phase for the realized land use.

Second credit
Requirement 1 and 2

- Evidence that the soil has not been disrupted below a level of 1.5m

OR:

If construction goes deeper than 1.5, evidence that:

- no impermeable soil layers are perforated
- the ground water flow is not adversely affected.

7 Definitions:

Impermeable soil layer Soil layer with a low water permeability (clay, peat silt containing fine sand, loam, loess) that seals an overlying or underlying aquiferous layer (coarse sand, gravel, limestone) for vertical groundwater transportation.

Soil

This fixed portion of the Earth with liquid and gaseous components and organisms. This means for instance that the ground water belongs to the soil, just like the subsurface.

Physical properties of the soil
Physical condition of the soil: soil structure, stratification and geohydrology.

Soil structure
The soil structure is the mutual arrangement and coherence of the solid soil particles; soil particles consists of minerals (sand, clay and silt) and dead inorganic substance.

Good or better soil structure
In a good soil structure, the solid soil particles are bonded together into aggregates and form a crumb structure that lies more or less separate from each other, with pores that may contain air and water. In a good soil structure, excess water is quickly removed during wet periods, leaving behind sufficient water for dry periods. It also allows for a good soil gas exchange ..

Ecological contact zone
The part of the soil with which people, animal and plants can get in touch during normal site use (usually the top 1.5 meter of the soil).

Local soil
Soil made available when moving soil in the plan area.

8 Additional information:

Some **examples of evidence** include:

- Report of geotechnical study and advice regarding foundation design.
- Basement construction(s) plan.
- Thermal energy Storage Advice.

9 References:

www.bodeminfo.nl;
www.bodemloket.nl.

Category: Area climate	Maximum no. of credits: 3	Required? No
KLI 7 Noise		

1 Purpose of the credit:
Minimizing noise nuisance within the area development.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 3 credits can be awarded as follows:

Credits	
1	Where the evidence provided demonstrates that the noise nuisance score is lower than 3.0%;
2	Where the evidence provided demonstrates that the noise nuisance score is lower than 2,0%;
1	If demonstrated that in the design of homes within the plan, all homes have at least a sound sheltered façade and a sound sheltered outdoor area with a noise level of less than 48dB.

4 Criteria requirements:
The following demonstrates compliance:

First credit and first two credits:

1. A noise nuisance calculation has been made by an expert. The noise nuisance score is calculated as follows:
    - Calculation of the cumulative noise levels (due to all relevant noise sources in and around the plan area) in the outdoor area of the entire area.
    - Determine the number of people located within certain locations or certain buildings within an area with a similar nuisance factor. Divide the number of people per programmatic function by the factor displayed in table 1.

Table 1: Division factor for the determination of housing equivalents.
(partly derived from the manual Health effect screening of the GGD)

Type of building / residence location	Division factor
Home	1
Education	8
Care	3
Sports/recreation/nature	16
Office/work location	6
Shopping center	24

- Multiply the number of home equivalents as calculated above with the nuisance factor for the relevant location as displayed in table 2.

Table 2: Nuisance factor as function of the cumulated noise level L_{cum} in dB.

L_{CUM}	< 43 dB	43-48 dB	48-53 dB	53-58 dB	58-63 dB	63-68 dB	> 68 dB
Nuisance-factor	0 %	1 %	4 %	7 %	12 %	18 %	25 %

- Add up all weighed nuisance factors and divide by the total number of household equivalents. This results in a numerical value: the noise nuisance score (in percentage).

The result is an acoustic study performed by an expert in which the steps mentioned above are worked out. In addition, the acoustic study should indicate which measures have been considered to limit the noise nuisance in the area. In this, the following topics should be addressed at least:

- Possibility of separating noise sources and noise sensitive functions in an area;
- Possibility of applying measures to the noise source (such as noise dampeners, silent asphalt etc.).
- Possibility of applying measures in the transfer of the noise source to the recipient (such as noise screens, shielding primary buildings etc.);
- Possibility of applying measures at the recipient (such as façade facilities, building layout etc.).

Third credit:

1. The noise level has been established based on situation drawings and an acoustic study, performed by an expert.
2. It has been demonstrated that all homes have at least one sound sheltered façade and one sound sheltered outdoor area, of which the noise level is less than 48 dB.

5 Additions to the criteria requirements:

Calculations should be performed in accordance with the requirements of the Calculation and measurement regulations noise nuisance 2006 (for road and rail noise) and the Guideline Measuring and Calculating Industrial Noise (for industrial noise). Accumulation of various noise sources takes place in accordance with Attachment 1 of the Calculation and measurement regulations noise nuisance 2006.

Scope of the acoustic study
In the acoustic study, all relevant noise sources in and around the plan area should be included insofar the industrial noise, traffic noise, rail traffic noise and aviation noise is concerned (please note: noise from cafés, restaurants and school yards etc fall under industrial noise).
Construction noise (noise during construction) and neighbor noise do not fall under this credit.

Noise level per location
The nuisance factor per location is determined based on the highest calculated noise level at the location of the relevant residence location, such as façade of a house with the most noise exposure. For larger (indivisible) residence locations, such as a hospital, the number of persons can also be determined per sector of, for instance 500 m^2, where the highest calculated noise level per sector can be used for the determination of the nuisance score.

Division factor
If a residence location can't be classified according to the categories in table 1, one can determine a different division factor, subject to substantiation. To this end, the following formula is applied:
Division factor = 2 x (24 hours / residence time).

6 Evidence required:

Design phase

First credit and first two credits:

Requirement 1

- A document containing the acoustic study with the cumulative noise level and noise nuisance score of the area development to be realized. The document was drawn up and signed by an acoustic expert. For the design phase, assumptions may be made for the number of people expected in the area.
- This document shows that the noise nuisance score will be lower than respectively 3.0% or 2.,0%.

Third credit:
Requirement 1
A situation drawing of the plan area indicating:

- Where in the plan area the existing homes and homes to be newly built are located.
- Where the relevant noise sources are located.

AND:

- A substantiation of the fact that all homes have at least a noise sheltered facade.
- A substantiation of the fact that all homes have a noise sheltered outdoor area, with a noise level less than 48 dB.

Realization phase

Credits 1 and 2:
Requirement 1

- A written statement, confirming that the principles of the acoustic study used in the Design phase (and with that, the results) are still correct.

OR

- An acoustic study adjusted to the changed principles and a copy of the calculation.

Third credit:
Requirement 1

- A written statement, confirming that the situation drawings and substantiations used in the Design phase, are still correct.

OR

- Situation drawings adjusted to the changed principles with new substantiation/calculation.

7 Definitions:

Expert
An acoustic expert, or else a person who is demonstrably trained in or has experience with conducting outdoor sound measurements.

LCUM
The accumulated noise level in dB determined in accordance with Annex I of the 'Reken- en meetvoorschrift geluidhinder 2006'.

Noise sheltered facade
A façade with a noise exposure at least 10 dB lower than the façade of the building with the highest noise exposure.

8 Additional information

9 References:

- Wet geluidhinder: http://wetten.overheid.nl/BWBR0003227/
- Reken- en meetvoorschrift geluidhinder 2006 (Rmg2006): http://wetten.overheid.nl/BWBR0020773/
- Handleiding Meten en Rekenen Industrielawaai (HMRI): http://www.vrom.nl/pagina.html?id=2706&sp=2&dn=w824

Category: Area climate	Maximum no. of credits: 3	Required? No
KLI 8 Daylighting		

1 Purpose of the credit:
Stimulating optimal daylighting into the area to increase the comfort and the perceived quality of the surroundings.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 3 credits can be awarded as follows:

Credits	
1	If the placement of the buildings meets the requirements of the MBV Nederlandse Gemeenten art. 2.5. and, if applicable, the façade distances for facades with workplaces are at least 10 meters apart (BREEAM New build HEA 2 View out).
1	If the evidence provided demonstrates that, for the facades of both homes and utility buildings, at least **two** insolation hours are possible per day.
2	If the evidence provided shows that for the facades of both homes and utility buildings, at least **four** insolation hours are possible per day.

If no buildings taller than 25 meter or 1.5 times the height of the surrounding buildings are being realized in the plan area, the second and third credit may be awarded automatically.

4 Criteria requirements:
The following demonstrates compliance:

First credit:

1. The placement of the buildings meet the distance criteria according to the 13th change of the Building code (MBV)
2. If the window or the façade opening overlooks an atrium, yard, garden or courtyard or other buildings, the distance calculated from the window or the façade opening, until the rear wall of the atrium, the yard, garden or courtyard resp. to the facing façade of the other building should be at least 10 meters. In case of view on an atrium, yard, garden or courtyard these should have some decoration, such as green facilities, planters, furniture, art objects etc.

Second and third credit:

1. If the plan area contains buildings taller than 25 meter or more than 1.5 times the height of the surrounding constructions, an insolation survey has to be conducted.
2. The insolation survey should indicate that, in the period from February 19th to October 21st, based on a solar elevation of more than 10 degrees, respectively **two hours** or **four hours** of insolation is possible per day at the facades of both homes and utility buildings.

5 Additions to the criteria requirements:
-

6 Evidence required:

Design phase

First credit:
Requirement 1

- Written report showing that the project plan meets the principles as defined in the MBV 13th change.

Requirement 2

- Evidence showing that the façade distance for facades with workplaces, is at least 10 meter.

Second and third credit:
Requirement 1

- Evidence based on drawings indicating whether buildings taller than 25 meter or more than 1.5 times the height of the surrounding buildings exist within the plan area.

Requirement 2
If the above applies, a written report and drawings of the insolation survey.

Realization phase

All credits:
Similar to the planning phase plus a report confirming that construction is in accordance with the MBV and if applicable, the insolation survey has been conducted. If adjustments have been made to the constructions, a new insolation survey has to be conducted.

7 Definitions:

8 Additional information:

Area boundary / system boundary:
This credit has a system boundary. It lies 100m outside of the area boundary. This concerns the possible effects of insolation from outside the plan area and vice versa.

MBV
The criteria refer to the MBV 13th change (See references). In this MBV, the urban planning principles are proposed which should guarantee proper daylighting for buildings. By sticking to these ordering principles, it is also ensured that the (public) outdoor areas receive sufficient daylight and sun.

Since, in the Dutch building regulations, outdoor areas are not (yet) required (in the Builder's Decree 2012 they are), the first credit will be obtained by making outdoor areas for homes required and by imposing a location requirement on them. Locating at least one outdoor area at the East-West or South façade, one also makes sure that side where this outdoor area is located, receives sufficient daylight.

9 References:

- http://www.vng.nl/Documenten/vngdocumenten/2010_Ibr/bijl_2_Toelichting_op_MBV_20-4.pdf
- http://zbs.denhaag.nl/risdoc/2010/RIS170509.PDF

Category: Area climate	Maximum no. of credits: 1	Required? No
KLI 9 Light nuisance		

1 Purpose of the credit:
Preventing light nuisance in the plan area and the direct vicinity (system boundary) as a result of all external electrical lighting installations present.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 1 point can be awarded as follows:

Credits	
1	When all external electrical lighting installations in the plan area and its direct vicinity meet the limits defined in the NSVV directives on light nuisance.

4 Criteria requirements:
The following demonstrates compliance:

One credit:

1. All electrical lighting installations in the plan area and its direct vicinity have to meet the criteria requirements of NSVV.

5 Additions to the criteria requirements:
1. At plot level, the requirements of BREEAM-NL New build POL 7 Minimizing Light Pollution shall apply as upper limit at building site level:
    a. The design for outdoor lighting should be designed in accordance with the directives of the light nuisance committee of the NSVV (Nederlandse Stichting voor Verlichtingskunde) and CIE 126-1997 (Guidelines for minimizing sky glow). Instead of the directives of the NSVV, CE 150-2003 may be used as well.
    b. All outdoor lighting (with the exception of safety lighting) can be automatically switched off between 11 PM and 7 AM. This can be realized by means of a timer for the relevant hours.
    c. Where safety lighting is necessary and used between 11 PM and 7 AM, it should be dimmed during these hours in accordance with the directives of the NSVV and EN 12464-2:2007, for instance by using an automatic switch to dim the lighting level after 11 PM or earlier.
2. For private outdoor areas the requirements of BREEAM-NL New build HEA 5 Artificial lighting indoors and outdoors shall apply for the lower limit for visual comfort and visual performance:
    a. The values for resp. the ‘average illumination’ (Em in lux) the ‘evenness of illumination’ (Uo) the ‘Glare Reduction (GRL) and the ‘color value index’ (Ra) of the lighting applied to the ‘outdoor terrain of the building’ are determined based on resp. compliance with the defined minimum requirements from NEN-EN 12464 Light and lighting – Workplace lighting – Part 2: Outdoor workplaces.

6 Evidence required:

Design phase

One credit:
Requirement 1

- Report, drawings and calculations showing that the electrical lighting systems will meet the requirements defined by the NSVV and the requirements under 5 Supplements.

Realization phase

First credit:
Requirement 1

- Report, drawings, photo material and calculations demonstrating that the lighting is realized in accordance with the design, or material demonstrating that the changes meet the requirements.

7 Definitions:

NSVV
Nederlandse Stichting voor Verlichtingskunde.

Effective fixtures
Electrical lighting installations may cause nuisance. In most cases this is the case when unshielded fixtures are being used or when fixtures have been applied ineffectively. Nuisance is mainly caused by fixtures for sports fields that aren't efficiently installed and fixtures for advertisement lighting.
By promoting the use of effective fixtures and lamps, light nuisance is limited and effective use of energy in the plan area is stimulated.

System boundary
The system boundary of the plan area is defined for light nuisance as the area 500 meters outside of the plan limit.

8 Additional information:

9 References:

HI-103	Algemene richtlijn betreffende lichthinder. Deel 1 Algemeen en Grenswaarden voor sportverlichting
HI-102	Algemene richtlijn betreffende lichthinder. Deel 2 Terreinverlichting
HI-104	Algemene richtlijn betreffende lichthinder. Deel 3 Aanstraling van gebouwen en objecten buiten
HI-105	Algemene richtlijn betreffende lichthinder. Deel 4 Reclameverlichting

Handboek Lichtdonker
Beleid en uitvoeringsinstrumenten voor o.a. provincies, gemeenten en andere partijen (download: www.nsvv.nl)
www.platformlichthinder.nl

Nederlandse Stichting voor Verlichtingskunde, NSVV: www.nsvv.nl

Category: Area climate	Maximum no. of credits:4	Required? No
KLI 10 Radiation Hazard		

1 Purpose of the credit:
Minimizing health risks due to non-natural radiation sources.

2 Application:
This credit applies to all areas.

3 Credit criteria:
A maximum of 4 credits can be awarded as follows:

Credits	
1	Within the plan area, an analysis has been made of the systems and materials to be introduced that may have harmful electromagnetic or radioactive radiation effects on the users and ecosystems in the area AND measures are envisaged to limit the radiation risks in the plan area.
1	Where the evidence provided demonstrates that in residential areas in the plan area, the magnetic field strength is no more than 0,4µTesla is **and** that the distance to the sources of the magnetic field strengths is at least 60 meter.
2	Where the evidence provided demonstrates that in residential areas in the plan area, the magnetic field strength is no more than 0,2 µTesla **and** that the distance to the sources of the magnetic field strengths is at least 200 meter.
3	Where the evidence provided demonstrates that in residential areas in the plan area, the magnetic field strength is no more than 0,1 µTesla **and** that the distance to the sources of the magnetic field strengths is at least 600 meter

4 Criteria requirements:
The following demonstrates compliance:

First credit:
1. In the plan area, the possible locations of electromagnetic radiation sources have been mapped and any occurring field strengths have been indicated..
2. Reports of the design team show that measures have been taken to limit the electromagnetic radiation sources.

Second credit:
1. By means of measurement or calculation by an expert, it needs to be demonstrated that the occurring electromagnetic field strength in residential areas does not exceed the threshold of 0,4 µTesla.
2. The distance to residential areas from the nearest source (low hanging (low hanging power lines) is not less than the threshold of 60m.

Third credit:

1. By means of measurement or calculation by an expert, it needs to be demonstrated that the occurring electromagnetic field strength in residential areas does not exceed the threshold of 0,2 µTesla.
2. The distance to residential areas from the nearest source (low hanging (low hanging power lines) is not less than the threshold of 200m.

Fourth credit.

3. By means of measurement or calculation by an expert, it needs to be demonstrated that the occurring electromagnetic field strength in residential areas does not exceed the threshold of 0,1 µTesla.
4. The distance to residential areas from the nearest source (low hanging (low hanging power lines) is not less than the threshold of 600m.

5 Additions to the criteria requirements:

-

6 Evidence required:

Design phase

First credit:
Requirement 1

- Plan maps indicating the locations where the possible radiation sources of electromagnetic and / or radioactive radiation have been planned or situated, complete with occurring field strength.

Requirement 2

- Report/ analysis of the plan area including recommendations to reduce risks of radiation effects.

Second and third credit:
Requirement 1

- Maps indicating the radiation sources, the amount of radiation released at the sources and the distance from the sources up to the nearest residential area.

Requirement 2

- Report with calculations substantiating that the thresholds as defined in the criteria are complied with.

Fourth credit:
Requirement 1

- Maps indicating the radiation sources, the amount of radiation released at the sources and the distance from the sources up to the nearest residential area.

Requirement 2

- Report with calculations substantiating that the thresholds as defined in the criteria are complied with.

Realization phase

All credits:
All requirements
Same as the Design phase, but updated.**7 Definitions:**

Residential area
Part of a programmatic function with at least a dwelling area, consisting of one or more adjacent spaces on the same construction layer, other than a toilet area, bathroom area, technical area or traffic area.

Tesla (T)

Tesla is the unit of electromagnetic flux density.

Electromagnetism
Electromagnetic fields are waves measured in Hertz (Hz). The higher the frequency, the shorter the wavelength and the more energetic the fields. At frequencies from 0 to 300 Hz, one speaks of extremely low frequency electric and magnetic fields (ELF EM fields).
The electrical field is expressed in Volts per meter [V/m]. The magnetic field depends on the current through the wire, which is expressed in tesla (T) or micro tesla: (µT) or in ampere per meter (A/m). The units can be very easily converted: 1 A/m = 1,26 µT. Both the electrical field and the magnetic field lose power fast when the distance to the source increases.
[Source: www.milieucentraal.nl]

8 Additional information:

9 References:

- NEN-EN 50110-1:1998 NL “Bedrijfsvoering van elektrische installaties - Algemene bepalingen”
- Haas E.M.; Elektrostress en gezondheid; Jan van Arkel, 2005
- www.milieucentraal.nl
- www.rivm.nl

Annex 1

Colophon

The Advisory Group Area (Adviesgroep Gebied) has substantively committed to drawing up a solid and supported label. The Board of Experts oversees the substantive DGBC developments, advises the DGBC Board and finally establishes the final versions.
In the writing process of this assessment directive, many individuals and organizations have been involved. Below you'll find the people from the Advisory Group Area in the period March 2009 through June 2012. The individuals marked with an * were active member at the time of launch of version 2.0.

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