

CapMan Real Estate

# Design and Construction Manual

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CapMan

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## Introduction

The purpose for the Design & Construction Manual is to promote sustainable construction and to establish common rules and targets for CapMan Real Estate and its stakeholders. The manual is a tool for the projects to implement sustainability (ESG) as part of new construction and major renovations. The Design and Construction Manual is designed to be shared with contractors and other relevant stakeholders.

The Design & Construction Manual and its themes and criteria are structured based on the CapMan Real Estate's priority list of the sustainability criteria:

- EU taxonomy
- Climate change mitigation, greenhouse gas (GHG) reductions and energy class
- Green building certifications

The Design & Construction Manual is applied to CapMan Real Estate's following projects:

- New Construction
- Major Renovation<sup>1</sup>

## Sustainability aspects covered in the guide

This guide has a strong focus on environmental responsibility but covers also social and economic responsibility to the relevant extent in relation to the themes presented.

## How to use the manual

The Design & Construction manual consists of 23 targets in total. Many of the targets are based on EU taxonomy or green building certifications system such as LEED, BREEAM or DGNB. It should be noted that specific projects can apply stricter green building certification system credit criteria than the targets described in the manual.

CapMan Real Estate sets two different levels for the sustainability in projects:

- Minimum level, that all CapMan Real Estate's new construction and major renovations project should achieve.
- Forerunner level, that is a higher level with stricter ESG criteria. Projects that aim for the forerunner level, must fulfill the criteria set in the minimum level.

It is recommended to integrate the targets into design and construction process as early as possible.

The Manual is not a proof for an achievement of green building certification or fulfillment of criteria set in the EU taxonomy. Every project needs to set project-specific goals and to specify actions to fulfill the criteria set in the desirable green building certification.

Every project must also ensure the fulfillment of national criteria, as criteria can be stricter than the ones described in this manual.

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<sup>1</sup> Major Renovation =

- The renovation concerns more than 50 % of sqm or involving the relocation of over 50 % of its regular occupants
- The renovation concerns building service elements

## Sustainability aspects covered in the guide

In this guide focuses on environmental responsibility and deals with social and financial responsibility to the extent that it has been necessary in relation to the themes presented.

THEMES	ENVIRONMENT	SOCIAL	ECONOMIC / GOVERNMENT
GREEN BUILDING CERTIFICATION	Third-party verification of sustainable construction and ensure international comparability (LEED / BREEAM / DGNB)		
EU TAXONOMY	European classification of environmentally sustainable activity		
ENERGY	<p>Effective use of energy resources</p> <p>Minimize emissions from energy consumption</p> <p>Support of energy efficient operation of the building with commissioning and energy monitoring</p>		Reduce costs from energy consumption
CARBON EMISSIONS	Minimize emissions from construction activities, material selection and refrigerants		
WATER			
MATERIAL AND WASTE	<p>Responsible sourcing of materials</p> <p>Minimize construction waste</p>		<p>Flexibility of a building and spaces</p> <p>Maintenance</p>
CLIMATE CHANGE ADAPTATION	prepare for the impacts of climate change		
LAND USE	<p>Support sustainable transportation</p> <p>Protection of ecological values at the site</p>		
INDOOR AIR QUALITY		<p>Chemicals</p> <p>Emissions to indoor air</p> <p>Thermal, acoustic, and visual comfort</p>	

SUPPLIER CODE OF CONDUCT	Supplier code of conduct
LIFE CYCLE COSTS	Ensuring ethical practices throughout the building process

# Supplier Code of Conduct

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## MINIMUM & FORERUNNER LEVEL

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### Construction & Major Renovations

1. Project complies with the principles set out in the CapMan Supplier Code of Conduct. All project participants are responsible and accountable for knowing and complying with the CapMan Supplier Code of Conduct.

Further explanations can be found in a separate CapMan Supplier Code of Conduct document.

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# Reporting

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## MINIMUM & FORERUNNER LEVEL

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### Construction & Major Renovations

1. Data on construction site waste (types, quantities) is collected and data submitted to CapMan.
    - Hazardous waste
    - PCB-containing waste
    - Thermal windows
    - PVC
    - Plastics (beyond PVC)
    - Cardboard
    - Treated wood
    - Natural stone
    - Unglazed tiles
    - Concrete
    - Mixtures of natural stone, unglazed tiles, and concrete
    - Iron and metal
    - Gypsum
    - Mineral wool
    - Insulation materials (beyond mineral wool)
    - Soil
    - Asphalt
    - Mixtures of concrete and asphalt
    - Glass
    - Flooring
    - Construction timber
    - Bricks and masonry
    - Electrical wiring and components
    - Pipes and ventilation ducts
    - Internal doors
    - Sanitary fixtures
    - Suspended ceilings
-

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- **Mixed waste**
  - **Energy waste**
  - **Other, what?**
  - **Total waste**
  - **Total waste without hazardous waste**
  - **Total waste utilization rate**
2. **A construction site health and safety plan is drafted, and data on working safety is collected (see list below). The plan and collected data are submitted to CapMan.**
- **Number of fatal accidents (number of fatalities)**
  - **Lost time incident rate (LTIR)<sup>2</sup>**
  - **Lost day rate<sup>3</sup>**
  - **Number of near misses**
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<sup>2</sup> (Number of injuries resulting an employee missing work / total hours worked on site) x 200 000 = LTIR per 100 employees

<sup>3</sup> (Total number of lost workdays resulting from incidents \* 200 000)/number of employee working hours

# Green Building Certification

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## MINIMUM LEVEL

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### **New Construction:**

1. All new buildings are certified. Alternative certification systems and certification levels are:
  - LEED BD+C Gold
  - BREEAM New Construction Very Good
  - DGNB New Construction Gold
2. WELL certification: A preliminary study is carried out to identify the potential certification level and the measures required to achieve certification. On the basis of the study, the costs of certification are estimated.

### **Major Renovation:**

1. All major renovation projects are certified. Alternative certification systems and certification levels are:
  - LEED BD+C Gold
  - BREEAM Renovation and refurbishment Very Good
  - DGNB New Buildings and Major Refurbishments Gold

The points to be applied for in the project are selected on a project-by-project basis.

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## FORERUNNER

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### **New Construction:**

1. Building achieved the highest certification level in LEED /BREEAM / DGNB.
2. If WELL certification has been found possible at reasonable costs and tenants value WELL certification, the project must be certified with Gold level, preferably Platinum.

### **Major Renovation:**

1. If WELL certification is possible at reasonable costs and tenants value WELL certification, the project must be certified Gold level, preferably Platinum.
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# EU Taxonomy

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## MINIMUM LEVEL

### New Construction:

1. A preliminary study is prepared on whether the building complies with the EU taxonomy 7.1 technical screening criteria.<sup>4</sup>
2. The project fulfills the minimum safeguards<sup>5</sup> as well as the threshold for Substantial contribution to climate change mitigation.<sup>6</sup>
3. All new construction projects must be EU taxonomy aligned.

### Major Renovation:

1. A preliminary study of EU taxonomy criterion 7.2 must be done.
1. The project must meet the minimum safeguards as well as the criteria of Substantial contribution to climate change mitigation or climate change adaptation.

## FORERUNNER

### New Construction:

1. The new building is EU taxonomy compliant (7.2) and meets the threshold for substantial contribution as well as Do No Significant Harm criteria for the rest five environmental objectives.<sup>7</sup>

### Major Renovation:

2. The major renovation is EU taxonomy compliant (7.2) and meets the threshold for substantial contribution as well as Do No Significant Harm criteria for the rest five environmental objectives.

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<sup>4</sup> EU taxonomy contains six environmental objectives for new buildings (7.1) and Renovation of existing buildings (7.2) categories. “The Taxonomy sets performance thresholds (referred to as ‘technical screening criteria’) for economic activities which make a substantive contribution to one of six environmental objectives and do no significant harm (DNSH) to the other five, where relevant, and meet minimum safeguards (e.g., OECD Guidelines on Multinational Enterprises and the UN Guiding Principles on Business and Human Rights)”.

<sup>5</sup> “The European Parliament and the Council established that for an economic activity to be Taxonomy-aligned, the activity should be carried out “in alignment with the OECD Guidelines for Multinational Enterprises and UN Guiding Principles on Business and Human Rights, including the International Labour Organisation’s (‘ILO’) declaration on Fundamental Rights and Principles at Work, the eight ILO core conventions and the International Bill of Human Rights”. Where applicable, more stringent requirements in EU law still apply.” [TEG final report on the EU taxonomy \(europa.eu\)](https://ec.europa.eu/economy_finance/press_corner/detail/2021/06/2021-06-23-1)

<sup>6</sup> Commission Delegated Regulation (EU) 2021/ 2139.

<sup>7</sup> EU taxonomy covers six environmental objectives: climate change mitigation; climate change adaptation; the sustainable use and protection of water and marine resources; the transition to a circular economy; pollution prevention and control; and the protection and restoration of biodiversity and ecosystems. COMMISSION DELEGATED REGULATION (EU) 2021/2139

# Energy Efficiency

## MINIMUM LEVEL

### New Construction

1. The primary energy demand for the building is at least 10 % lower than the Near Zero Building (NZEB) requirements (in national measures)<sup>89</sup>.
2. The energy performance is certified using an Energy Performance Certificate.<sup>7</sup>
3. The building is tested on air-tightness and thermal integrity. Testing complies with criteria set in EU Taxonomy.<sup>7</sup>
4. The building is equipped with highly efficient technologies (including heating, ventilation, air conditioning, water heating systems, lighting and equipment related to district energy) and energy efficient building components.<sup>10</sup>

### Major Renovation

1. The building renovation complies with the applicable requirements for major renovations. As set in the applicable national and regional building regulations for 'major renovation' implementing Directive 2010/31/EU. The energy performance of the building or the renovated part that is upgraded meets cost-optimal minimum energy performance requirements in accordance with the respective directive. OR The renovation and its actions lead to a reduction of primary energy demand of at least 30%.<sup>11</sup>

## FORERUNNER LEVEL

### New Construction

1. The primary energy demand for the building is at least 15 % lower than the Near Zero Building (NZEB) requirements (in national measures).<sup>12</sup>
2. The property participates in a demand response program<sup>2</sup> (electricity and/or heating), if a suitable program is available. At least the building is equipped with infrastructure which enables to join in a program in the

### Major Renovation

1. The building fulfills EU taxonomy technical screening criteria for climate change mitigation in category of Acquisition and ownership of buildings (7.7 ): "For buildings built before 31 December 2020, the building has at least an Energy Performance Certificate (EPC) class A. As an alternative, the building is within the top 15 % of the

<sup>8</sup> Near Zero Building (NZEB) is a building that has a very high energy performance. The Energy Performance Buildings Directive (2018/44/EU or latest valid version) obligates all buildings in EU to be Near Zero Buildings. Near Zero Building requirements (in national measures) refers to a national regulation derived from the Energy Performance Buildings Directive.

<sup>9</sup> EU Taxonomy 7.1

<sup>10</sup> Best practice.

<sup>11</sup> EU Taxonomy 7.2

<sup>12</sup> Modified from EU taxonomy 7.1 criteria

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future. The possibility to join to a program is studied case by case.<sup>13</sup>

national or regional building stock expressed as operational Primary Energy Demand (PED) and demonstrated by adequate evidence, which at least compares the performance of the relevant asset to the performance of the national or regional stock built before 31 December 2020 and at least distinguishes between residential and non-residential buildings.”

2. The building participates in a demand response program if suitable program is available.<sup>10</sup>
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<sup>13</sup> Best practice, modified from LEED credit criteria EA Credit Demand Response

# Renewable Energy

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## MINIMUM LEVEL

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### New Construction & Major Renovation

1. In each project, the possibilities to produce renewable energy (electricity, heat and cooling produced on the site or regionally) are examined. On-site renewable energy can refer to e.g. solar, wind or geothermal energy. In case there are possibilities to recycle waste heat/cool (including the condensation heat of cooling energy) in the property or nearby, should the feasibility of recycling be studied.<sup>14</sup>
  2. Precise and numerical goals for the utilization of renewable energy are set at the beginning of the project. Consider similar credit requirements in green building certification.<sup>11</sup>
  3. If the renewable energy is not found economically beneficial, the ability and readiness to implement it in the future should be considered.<sup>11</sup>
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## FORERUNNER LEVEL

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### New Construction & Major Renovation

1. The building utilizes renewable energy for electricity, heating or cooling.
    - a. 10 % of the electricity is covered with renewable energy  
OR
    - b. Heat pump is the main heating source for the space heating and/or domestic hot water  
OR
    - c. heat pumps are used to recycle interior waste heat inside the building.<sup>11</sup>
  2. The project building has ability to participate in demand response program (electricity and/or heating).<sup>151</sup> The possibility to join to a program is studied case by case, but each project must be equipped with such interval recording meters and ability for the building automation system to accept an external price or control signal.<sup>163</sup>
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<sup>14</sup> Best practice, similar criteria also in BREEAM, LEED and DGNB

<sup>15</sup> See description for the demand response program from the target description of energy efficiency

<sup>16</sup> Best practice, similar credit requirement also in LEED

# Commissioning and Post Construction Monitoring

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## MINIMUM LEVEL

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### **New Construction & Major Renovations**

1. Performance of all relevant building service systems tested once installed, balanced or programmed. Testing period is supervised by a commissioning expert. <sup>17</sup>
  2. Credit requirements regarding commissioning in applied green building certification system are met.
  3. Commissioning includes the following actions:
    - a. Review the owner's project requirements and project designs
    - b. Develop and implement a commissioning plan
    - c. Confirm incorporation of commissioning requirements into the construction documents.
    - d. Develop construction checklists.
    - e. Develop a system test procedure.
    - f. Verify system test execution
    - g. Maintain a log of issues throughout commissioning process
    - h. Document all findings and recommendations and report to the owner throughout the process.
  4. During the first year, seasonal tests and commissioning are carried out to ensure systems operate as designed. <sup>18</sup>
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## FORERUNNER LEVEL

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### **New Construction & Major Renovations**

1. The building is equipped with energy monitoring system that enables to collect, save and analyze the metered consumption data. The system enables appropriate monitoring of the systems' performance and track issues as they occur. All relevant energy and water consuming systems are monitored.<sup>19</sup>
  2. Post construction energy performance monitoring credits are pursued if such are available in selected green building certification system.
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<sup>17</sup> Commissioning expert can be experienced building service (MEP) designer or supervisor.

<sup>18</sup> Best practice and part of green building certification requirements.

<sup>19</sup> Modified from LEED Enhanced monitoring

# Energy Metering

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## MINIMUM & FORERUNNER LEVEL

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### **New Construction & Major Renovations**

1. Each energy source is metered separately, and metering data is collected in building energy management system.
  2. Meet the energy metering credit requirements of applied green building certification system or ensure the following end uses are metered:
    - a. Heating energy production or purchase energy for each heat source used (geothermal heat, solar collectors, etc.)
    - b. Heating of domestic hot water
    - c. Ventilation electricity consumption
    - d. Cooling system electricity consumption
    - e. Significant electricity consuming systems
    - f. Renewable energy production
    - g. Each tenant space metered separately<sup>20</sup>
  3. The metering system is prepared for future demand response program and smart control of building service systems.<sup>21</sup>
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<sup>20</sup> Best practice and part of the green building certification systems

<sup>21</sup> Best practice

# Minimizing Carbon Footprint

## MINIMUM LEVEL

### New Construction and Major Renovation

1. The life cycle assessments (LCA) regarding global warming potential (GWP) have been conducted for every project: a) during the proposal design phase and b) after project completion. The proposal design LCA complies with criteria set out in the EU Taxonomy<sup>22</sup> and Science Based Targets initiative (SBTi) Buildings Criteria. The post-completion LCA complies with the SBTi Buildings Criteria. For more information, see Appendix: CapMan Real Estate LCA Scope. **Note:** EU Taxonomy criteria do not apply to major renovation projects.
2. The LCA has been conducted no later than the proposal design phase. The assessments include an evaluation of the carbon emissions impact of alternative design solutions. The carbon intensity targets presented in Table 1 must be met for the corresponding year of building handover (project completion). The design alternatives examined include, at minimum<sup>23</sup>:
  - a. Alternative frame structures
  - b. Alternative façade materials
  - c. Alternative energy systems
3. Low-carbon materials are selected from following material groups<sup>20</sup>:
  - a. Floor coverings and other surface materials
  - b. Plasterboards
  - c. Insulating materials
  - d. Windows
4. Materials manufactured from recycled or re-used materials are preferred in material selection<sup>20</sup>.
5. Existing and re-used materials (for example soils and crushed concrete from demolition) are used in site structures<sup>20</sup>.
6. The actions for taking the carbon emission reductions into account (or statement of reasons for not taking the actions into account) are presented in a separate report or as part of the plans and decisions of the project<sup>20</sup>.

## FORERUNNER LEVEL

### New Construction

1. Selected frame structure for the building is wood or structures manufactured with low-carbon concrete and low-carbon steel structures<sup>20</sup>.

### Major Renovation

1. Selected frame structure for the building is wood or structures manufactured with low-carbon concrete and low-carbon steel structures<sup>20</sup>.

<sup>22</sup> EU Taxonomy 7.1, which refers also to whole life cycle carbon assessment (EN 15978 and Level(s)).

<sup>23</sup> Best practice, similar credit requirement also in BREEAM, LEED and DGNB

- |  |   |
|--|---|
| <p>2. At least 25 % of the materials selected from (at least) two material groups below are re-used or recycled<sup>20</sup>:</p> <ul style="list-style-type: none"> <li>a. Façades</li> <li>b. Insulations</li> <li>c. Roofs</li> <li>d. Partition walls</li> <li>e. Floor coverings</li> </ul> | <p>structures (if frame structures are added or repaired)<sup>20</sup>.</p> <p>2. At least 25 % of the materials selected from (at least) two material groups below are re-used or recycled (if part of renovations)<sup>20</sup>:</p> <ul style="list-style-type: none"> <li>a. Façades</li> <li>b. Insulations</li> <li>c. Roofs</li> <li>d. Partition walls</li> <li>e. Floor coverings</li> </ul> |
|--|---|

*Table 1 Maximum thresholds for upfront and in-use embodied carbon in new construction and major renovation projects, aligned with the SBTi Buildings Criteria and covering life cycle stages A1–A5. These thresholds are in line with CapMan’s net zero climate targets.*

<b>New Construction or Major Renovation project completion year</b>	<b>Maximum upfront embodied carbon intensity for <u>new construction</u>, kgCO2e/sqm</b>	<b>Maximum in-use embodied carbon intensity for <u>major renovations</u>, kgCO2e/sqm</b>
2021	330.86	181.60
2022	274.78	171.93
2023	249.74	162.27
2024	200.01	152.62
2025	184.01	143.00
2026	157.59	133.38
2027	150.18	123.78
2028	118.62	114.20
2029	108.72	104.62
2030	89.80	95.07
2031	80.21	85.53
2032	65.30	76.00
2033	58.23	66.49
2034	46.76	56.99
2035	43.01	47.51
2036	35.67	38.08
2037	32.00	28.65
2038	23.98	19.22
2039	20.02	9.79
2040	11.26	0.36

# Refrigerants

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## FIRST LEVEL

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### **New Construction and Major Renovations**

1. The building meets the F-Gas Regulation and uses refrigerants with low global warming potential (GWP). Alternatives to HFC refrigerants should be preferred (such as natural refrigerants, HFC with GWP like R22, HFOs and HFC-HFO blends). OR
  2. The building uses a district cooling system
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## FORERUNNER

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### **New Construction and Major Renovation**

1. The cooling systems use only refrigerants that have an ozone depletion potential of zero and a global warming potential of less than 50. OR
  2. The building uses a district cooling system
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# Water Use Reduction and Water Metering

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## MINIMUM LEVEL

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### **New Construction & Major Renovations (if part of the renovation works)**

1. To reduce indoor water consumption, select water fixtures and settings with following maximum water flow rates<sup>24</sup>:
    - a. Wash hand basin taps and kitchen taps: A maximum water flow of 6 liters/min
    - b. Showers: A maximum water flow of 8 liters/min
    - c. WCs, including suites, bowls and flushing cisterns: A full flush volume of a maximum of 6 liters and a maximum average flush volume of 3.5 liters
    - d. Urinals: A maximum of 2 liters/bowl/hour, and flushing urinals have a max full flush volume of 1 liter.
  2. Select automatic motion sensor wash hand basin taps<sup>25</sup>.
  3. The specified water use for the water appliances above is attested by product datasheets, a building certification or an existing product label in the EU.
  4. The building is installed with leak detection system<sup>26</sup>.
  5. If the project have an influence on the outdoor water use<sup>27</sup>
    - a. Design a landscape and choose vegetation that does not require a permanent irrigation system (beyond two-year establishment period). If irrigation system is needed (for example soft landscaping and vehicle washing), recognize water efficient systems.
  6. Install water use analytics and monitoring system such as SmartVatten<sup>28</sup>
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## FORERUNNER LEVEL

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### **New Construction & Major Renovations (if part of the renovation works)**

1. To support water management and to identify additional water savings in the use phase of the building, the building is installed with permanent water meters for at least two or more following water subsystems<sup>24</sup>:
    - a. Irrigation,
    - b. indoor plumbing fixtures and fittings,
    - c. domestic hot water,
    - d. boiler with aggregate projected annual water use of 100,000 gallons or more,
    - e. reclaimed water,
    - f. And other process water.
- 

<sup>24</sup> EU Taxonomy 7.1 and 7.2

<sup>25</sup> Best practice

<sup>26</sup> Best practice

<sup>27</sup> Based on LEED WE Credit Outdoor Water Use Reduction

<sup>28</sup> Best practice

# Responsible Material Sourcing

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## MINIMUM LEVEL

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### New Construction & Major Renovations

1. The contractor of the project prepares a policy for responsible sourcing of construction products. The responsible sourcing policy should encourage to choose products with a sustainability certification (e.g. certified wood, sustainability certificate, ISO14001 certification in the product manufacturing process), with extended producer responsibility, reused building products or products with recycled content.<sup>29</sup>
  2. Construction materials with Environmental Product Declarations (EPD)<sup>30</sup> are preferred whenever economically and technically feasible. The target is to use at least 20 products with EPDs.<sup>2</sup>
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## FORERUNNER LEVEL

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### New Construction & Major Renovations

1. The target is to use at least 40 products with EPDs.
  2. The target is to use at least 20 products with Health Product Declarations (HPD).<sup>31</sup>
  3. All wood products used during the construction process and building materials are either FSC or PEFC certified.<sup>32</sup>
  4. All natural stone used during the construction process and building materials either are processed and origins from EU countries or are natural stone from non-EU countries with documentation of compliance with ILO Convention 182.<sup>33</sup>
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<sup>29</sup> Best practice, similar credit in LEED

<sup>30</sup> EPD (Environmental Product Declaration) is a third-party verified data sheet reporting products and services environmental performances from a lifecycle perspective. EPDs are based on international standards (ISO 14025) and are based on a robust, transparent and open frameworks.

<sup>31</sup> Best practice.

<sup>32</sup> Forerunner targets 2 is based on BREEAM and LEED certification credit requirements

<sup>33</sup> As per definition of DGNB – New buildings – ENV1.3.

# Waste Management & Minimizing Environmental Impacts During Constructions

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## MINIMUM LEVEL & FORERUNNER

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### New Construction & Major Renovations:

1. Building design, construction techniques and processes supports circularity and are designed to limit waste generation during construction and demolition.<sup>34</sup>
  2. By weight, at least 80 %<sup>35</sup> of the non-hazardous construction and demolition waste (excluding category 17 05 04 in 2000/532/EC) generated on the construction site are prepared for reuse, recycling and other material recovery including backfilling operations using waste to substitute other materials (in accordance with EU Construction and Demolition Waste Management Protocol).<sup>36</sup>
    - a. Separate collection is organized for at least for wood, mineral fractions (concrete, bricks, tiles and ceramics, stones), metal, glass, plastic and plaster.<sup>1</sup> (Note that national requirements can be stricter)
    - b. Contractor reports on-site hazardous and non-hazardous waste generation and recycling ratio quarterly to CapMan during construction.<sup>37</sup>
  3. A construction waste management plan is developed, that indicates minimum targeted recycling rate, methods and resources support achieving the recycling rates (logistics, cooperation partners, responsibilities etc.). Construction waste management instructions must be completed and shared, including construction waste signage, recycling rate and methods.<sup>3839</sup>
  4. If the project includes demolition, a demolition survey is carried out in proposal design phase, at the latest. The demolition survey contains:
    - a. a list of materials (and material amounts) that can be used at the site or elsewhere,
    - b. a list of materials (and material amount) that can be repaired and used at the site or elsewhere
    - c. a list of materials (and material amounts) that can be provided as a raw material for industrial use.
  5. Waste management covers diverting reusable vegetation, rocks, and soil from disposal<sup>40</sup>
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<sup>34</sup> DIRECTIVE (EU) 2018/851

<sup>35</sup> EU taxonomy requirement is 70%, and CapMan Real Estate requirement/target is 80%.

<sup>36</sup> EU Taxonomy 7.1 & 7.2

<sup>37</sup> A requirement to meet other requirements, such as EU Taxonomy.

<sup>38</sup> Best practice, similar credit requirement in LEED / BREEAM / DGNB

<sup>39</sup> For DGNB projects, all recycling and deconstruction principles must comply with quality level 2 in DGNB – New Buildings – TEC1.6.

<sup>40</sup> Best practice

# Flexibility and Adaptability

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## MINIMUM LEVEL

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### New Construction & Major Renovations

1. Building designs and construction techniques support circularity and in particular demonstrate, with reference to ISO 20887 (288) or other standards for assessing the disassembly or adaptability of buildings, how they are designed to be more resource efficient, adaptable, flexible and dismantlable to enable reuse and recycling. <sup>41</sup>
  2. Identify different scenarios for future use and potential changes (changes in number of building users, changes in activity of spaces, changes in the operation or business of users / tenants). Take possible changes into account in the design process and design spaces to adapt for the possible changes. <sup>42</sup>
  3. A maintenance manual is developed for the maintenance personnel. The maintenance manual provides instructions for the maintenance of the spaces, its components and equipment, maintenance schedules, service life information of building components and materials and guidance for procedures in demolition and renovations (such as plans for reuse, compiling demolition plans).<sup>43</sup>
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## FORERUNNER

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3. Design at least one alternative use type for the building and consider the requirements set by the use type for building (e.g. floor heights, dimensioning the building services systems etc.)<sup>44</sup>
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<sup>41</sup> EU Taxonomy 7.1

<sup>42</sup> Best practice

<sup>43</sup> Part of building code, similar credit requirements in LEED / BREEAM / DGNB

<sup>44</sup> Best practice

# Climate Change Adaptation

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## MINIMUM LEVEL

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### **New Construction & Major Renovations**

1. A climate change risk and vulnerability assessment regarding temperature, wind, water and soil conditions is carried out. Assessment follows the EU taxonomy (7.1/7.2) regulation regarding climate change adaptation (DNSH). If risks are identified, the project prepares a plan how to adapt to climate change and measures are implemented in the designs. The risks to include in analysis are detailed in EU taxonomy Climate Delegated Act, appendix A.
    - a. In case the analysis has been done earlier for the building, the analysis is updated if the renovation changes the circumstances in a way it affects to risks or if updated climate scenarios are available.
  2. If the moisture sensitive operations occur in the building (server rooms etc.) the flood risk analysis is carried out.
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## FORERUNNER LEVEL

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### **New Construction & Major Renovation**

1. The building service system is able to adjust or be extended easily to meet the future requirements (e.g. cooling capacity).
  2. The landscape and the vegetation as well as the infrastructure on the site is designed to manage increased rainwater volume and prevent heat island effects. Regarding heavy rains, at least a 20% increase as a result of climate change are taken into account.
  3. Sea level rise in coastal areas is prepared for by considering building height based on the risk of flooding occurring once in 100-200 years. The watertightness of basement structures is ensured in areas where seawater, inland water or urban floods or strong groundwater level fluctuations can be expected.
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# Land Use and Protection of Ecological Values at the Site

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## MINIMUM LEVEL

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### New Construction

1. A site assessment is carried out and it includes the requirements for the site selection according to the EU Taxonomy 7.1 DNSH 6 criteria Protection and restoration of biodiversity and ecosystems. Green building certification systems include credit requirements for the site assessment as well, but the scope of the assessment varies between certification systems. The project may choose to include the certification requirements to the site assessment, if seen beneficial for the project.
  2. The development footprint is located on land that does not meet the following criteria for sensitive land:<sup>45</sup>
    - a. Prime farmland<sup>46</sup>
    - b. A flood hazard area
    - c. Areas within 30 meter of a water body.
    - d. Areas within 15 meter of a wetland.
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## FORERUNNER LEVEL

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### New Construction

1. The site meets the requirements of the EU Taxonomy 7.1 DNSH 6 criteria Protection and restoration of biodiversity and ecosystems:
    - a. “The activity complies with the criteria set out in Appendix D to this Annex:
      - i. An Environmental Impact Assessment (EIA) or screening (1) has been completed in accordance with Directive 2011/92/EU. Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented.
      - ii. For sites/operations located in or near biodiversity-sensitive areas (including the Natura 2000 network of protected areas, UNESCO World Heritage sites and Key Biodiversity Areas, as well as other protected areas), an appropriate assessment, where applicable, has been conducted and based on its conclusions the necessary mitigation measures are implemented.
    - b. The new construction is not built on one of the following:
      - i. Arable land and crop land with a moderate to high level of soil fertility and below ground biodiversity as referred to the EU LUCAS survey.
      - ii. Greenfield land of recognized high biodiversity value and land that serves as habitat of endangered species (flora and fauna) listed on the European Red List or the IUCN Red List.
      - iii. Land matching the definition of forest as set out in national law used in the national greenhouse gas inventory.
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<sup>45</sup> Modified from LEED LT Credit Sensitive Land Protection

<sup>46</sup> Prime farmland refers to a land area that is identified as important or unique land for farming. Prime farmland is usually protected by local authorities.

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- iv. or where not available, is in accordance with the FAO definition of forest.”
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# Location and Site Selection

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## MINIMUM LEVEL

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### New Construction

1. The project meets EU taxonomy 7.1 technical screening criteria for Do No Significant Harm 5:
  - a. Where the new construction is located on a potentially contaminated site (brownfield site), the site is subject to an investigation for potential contaminants, for example using standard ISO 18400.
2. The project is located close to municipal and commercial services such as educational services, health and wellbeing services, restaurants etc.<sup>47</sup>
3. The project is located nearby<sup>48</sup> of existing or planned bus, streetcar, or informal transit stops, bus rapid transit stops, light or heavy rail stations, commuter rail stations, or commuter ferry terminals.<sup>37</sup>

### New Construction & Major Renovation

1. The use of light transportation is supported by providing sufficient facilities for the safe storage of bicycles for building users and dressing facilities for employees. Projects should meet the requirements set for bicycle racks in selected building certification schemes.<sup>37</sup>

## FORERUNNER LEVEL

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### New Construction

1. Locate the new building on land that has been previously developed or used for industrial or commercial purpose.<sup>37</sup>
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<sup>47</sup> Best practice, similar criteria in LEED/BREEAM/DGNB

<sup>48</sup> Infrastructure can exist or it can be built in the near future. Recommended walking distance is 400-meter for bus, streetcar and informal transit stops and 800-meter for bus rapid transit stops, light or heavy rail stations, commuter rail stations or commuter ferry terminals.

# Indoor Air Quality

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## MINIMUM LEVEL

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### **New Construction & Major Renovation**

1. The ventilation is designed according to local best practice or European standards (e.g. EN 15251–2007 and EN 13779–2007). The project meets the minimum requirements related to ventilation and outdoor air rates in selected green building certification system.
  2. CO<sub>2</sub> monitoring is provided in all densely used spaces<sup>49</sup> or space where the number of users vary notably.
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<sup>49</sup> Typical densely used spaces are meeting rooms, auditorium, cafeteria, restaurants.

# Pollution Prevention and Control

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## MINIMUM & FORERUNNER LEVEL

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### New Construction & Major Renovations

1. All paints, coatings, sealants, flooring and ceiling materials used inside the waterproofing membrane are low-emitting (tVOCs). Products must be classified as low-emitting with a European label such as M1 certification, EC+1, BlueAngel etc.<sup>50 51</sup>
  2. The project meets EU taxonomy (7.1 or 7.2) technical screening criteria for Do No Significant Harm 5:
    - a. Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works.
  3. Building components and materials used in construction meet the EU taxonomy (7.1 or 7.2) technical screening criteria for Do No Significant Harm 5 Pollution prevention and control.
    - a. Building components and materials used in the construction comply with the criteria set out in Appendix C in in EU taxonomy Climate Delegated Act.
    - b. Building components and materials used in the construction that may come into contact with occupiers emit less than 0,06 mg of formaldehyde per m<sup>3</sup> of material or component upon testing in accordance with the conditions specified in Annex XVII to Regulation (EC) No 1907/2006 and less than 0,001 mg of other categories 1A and 1B carcinogenic volatile organic compounds per m<sup>3</sup> of material or component, upon testing in accordance with CEN/EN 16516 or ISO 16000-3(576) or other equivalent standardized test conditions and determination methods.
  4. After the building is completed, but before commissioning, TVOC and formaldehyde concentration are tested. Testing method recommendation ISO / IEC 17025.<sup>52</sup>
  5. Measures are taken to control and retain construction pollution to protect surface water and aquatic ecosystems (such as rivers, lakes, ocean and rainwater sewage network).<sup>53</sup>
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<sup>50</sup> Each green building certification system has a credit requirement related to material emissions. This credit requirement may be stricter than minimum level target. Projects may choose to meet the credit requirement if seen beneficial for the project.

<sup>51</sup> For DGNB projects, all materials must comply with quality level 3 in DGNB – New Buildings – ENV1.2.

<sup>52</sup> Based on LEED BD+C LT credit Indoor Air Quality Assessment

<sup>53</sup> Best practice and part of LEED and BREEAM requirements.

# Thermal Comfort

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## MINIMUM LEVEL

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### New Construction and Major Renovations

1. The project meets the minimum and credit requirements related to thermal comfort in the applied green building certification system. Demonstrate the compliance with thermal comfort simulations.
  2. The thermal comfort simulation is carried out using future climate scenarios to demonstrate the effects of future climate change during the building life cycle (e.g. higher outdoor temperatures in the summer season, etc.).<sup>54</sup> Based on the simulation results consider alternative measures to avoid negative impacts on indoor climate in the future.
  3. The building is designed to be easily adapted to meet future changes in climate (e.g. in case of higher summer temperature the cooling capacity can be increased).<sup>55</sup>
  4. The indoor temperature is monitored at least in each occupiable space types in each floor, and the metered data is collected to building automation system.
  5. Indoor temperature can be adjusted in zones (one per 60m<sup>2</sup>) through at thermostat or digital interface.<sup>56</sup>
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## FORERUNNER LEVEL

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### New Construction and Major Renovations

4. Measured indoor temperature data (and other environmental measures if available) is displayed for building users via screens or other device (e.g., mobile application).
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<sup>54</sup> The target is based on BREEAM New Construction and relates technical screening requirement EU Taxonomy Climate change adaptation requirement

<sup>55</sup> Please see reference 42.

<sup>56</sup> Modified from WELL Monitor Comfort Monitors credit. Green building certifications may include additional and more strict credit requirements regarding thermal comfort controls. Projects may choose to meet the credit requirement regarding controls if seen beneficial for the project.

# Acoustic Comfort

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## MINIMUM LEVEL

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### **New Construction & Major Renovations**

1. Acoustic conditions are designed by a professional. Designs considers managing background noise, speech privacy, reverberation time and/or impact noise.<sup>57</sup>
  2. As part of the building's acoustic design, the spaces are divided into different sound zones based on the function. In the planning of the zones, efforts should be made to ensure that noisy spaces and spaces that require silence are not next to each other without adequate soundproofing design solutions.<sup>58</sup>
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## FORERUNNER LEVEL

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### **New Construction & Major Renovations**

1. Each projects aims to meet the credit requirements related to acoustic comfort in applied green building certification scheme.
  2. Or if preferred, select and meet requirements from WELL certification scheme Sound category. Selected requirements must be valued at least three points in total.<sup>59</sup>
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<sup>57</sup> Modified from WELL certification Precondition Sound Mapping

<sup>58</sup> Please see reference 45

<sup>59</sup> [Standard | WELL V2 \(wellcertified.com\)](https://www.wellcertified.com)

# Visual Comfort or Views

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## MINIMUM LEVEL

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### New Construction & Major Renovations

1. Lighting is designed by a lighting professional and lighting design meets illuminance thresholds stated in EN 12464-1&2:2011 or other equivalent standards.<sup>60</sup>
  2. Regarding the following themes, the building meets the requirements set by the selected green building certification system:
    - a. Glare control
    - b. Lighting levels
    - c. Color rendering quality
    - d. In case the scope of the certification requirements do not cover visual comfort or lighting conditions, corresponding requirements should be selected from the New Construction version or follow local design standards.
  3. The lighting is controlled in zones. At least one control per 10 occupant is provided.<sup>61</sup> Alternatively, the project meets the credit requirement related to lighting controls in applied green building certification system.
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## FORERUNNER LEVEL

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### New Construction & Major Renovations

1. The project achieves at least 80% of points from credit requirements in LEED, BREEAM or DGNB related to visual comfort, lighting, and views.<sup>62</sup>
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<sup>60</sup> Modified from WELL Certification precondition L02 Visual Lighting Design

<sup>61</sup> Modified from WELL Certification L09 Occupant Lighting Control

# Daylight

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## MINIMUM LEVEL

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### New Construction & Major Renovations

1. Manual shading controls are provided for occupiable spaces.<sup>63</sup>
  2. The project should aim to provide access to daylight from majority of spaces. Projects should consider how to allocate regularly occupied spaces to ensure daylight.
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## FORERUNNER LEVEL

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### New Construction & Major Renovations

3. 70% of all workstations are within 7 meters of transparent envelope glazing.<sup>64</sup>
  4. The amount of daylight is simulated. Target illuminance of 28 fc is achieved for >50% of individual unit area throughout 50% of daylit hours of the year (Calculations per Annex A of CEN 17037:2018).<sup>65</sup> Alternatively, project may choose to meet the green building certification credit requirement related to daylight.
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<sup>63</sup> Based on LEED and BREEM certification credit requirement.

<sup>64</sup> WELL Certification L05 Daylight Design Strategies

<sup>65</sup> WELL Certification L06 Daylight simulation

# Life Cycle Cost

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## FORERUNNER LEVEL

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### **New Construction & Major Renovations**

1. A life cycle cost analysis according to ISO 15686-5:2008 is prepared before the end of the general design phase. The life cycle cost analysis includes comparisons of at least two of the following building material groups:
    - a. The shell of the building
    - b. House technical systems
    - c. Interior materials
    - d. Materials for outdoor areas<sup>66</sup>
  2. The life cycle cost analysis is used in the design of the building and its systems to minimize life cycle costs and maximize value.<sup>67</sup>
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<sup>66</sup> Modified from BREEAM Man 02 Life cycle cost and service life planning

<sup>67</sup> Please see reference 55

# Version History

<b>Version</b>	<b>Changes</b>	<b>Date</b>
1.3	<p>Added requirements related to embodied carbon and life cycle assessment (LCA), aligned with the Science Based Targets initiative (SBTi) Buildings Criteria, under the category: 'Minimizing Carbon Footprint'.</p> <p>Updated requirements related to the waste and safety related data points under the category: 'Reporting'.</p>	29 August 2025