

G-PARK ZEVENAAR PHASE 2



6902 PK



Clear
Height
12,20m



79,249



853,029



**BREEAM
CASE STUDY
EXCELLENT**

G-PARK ZEVENAAR PHASE 2

LOCATION - ZEVENAAR

Zevenaar is situated in the Arnhem / Nijmegen region in the east of The Netherlands.

It is part of a greater logistical area which is called 'Logistics Valley'. It connects the two most important Dutch ports (Port of Rotterdam and Amsterdam Airport Schiphol) with the German Rhine-Ruhr area. Over the last few years this area has been named one of the top 15 logistical hotspots in The Netherlands (ranked by logistical platform Logistiek.nl).

This platform consists of 27 independent experts, including logistics real estate developers, estate agents, location consultants, logistics service providers, who work together to compare the various regions using several criteria.

The main advantage of the region is its proximity to the German Ruhr area, the main connecting roads of Rotterdam and Amsterdam, and its accessibility to the European hinterland

Excel

GLP wants to excel with the development of DC G-Park Zevenaar. This can be achieved by means of a BREEAM Excellent certificate given its proven added value.

This is supplemented by a circular MIA subsidy in return for meeting strict requirements in the field of material use.



Building information

GLP Zevenaar, fase 2
Edisonstraat 83, 7 Poort
6902 PK Zevenaar

Layout and surface

Function	Gross surface area
Office function	3.518 M ²
Industry function	76.419 M ²
Terrain area	44.890 M ²
Traffic areas	20.048 M ²
Storage spaces	0 M ²



Project team

Experts:	M3E Subsidie advies B.V.
Assessor:	Lois Advies
Architect:	Palazzo
Contractor:	Goldbeck Nederland B.V.
Constructor:	Croes
Installers:	Denned
Commissioning manager:	M3E B.V.

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BUILDING PROCESS

Before the start of construction, a work plan was developed to limit the environmental impact of the construction site. A strong environmental policy plan is in place and the contractor works according to a certified environmental management system (ISO14001).

Actions are being taken that facilitate shared use as seen in Tables 2 and/or 3 of the Order in Council of the Flora and Fauna Act. These plans were made in close consultation between the developer, builder and the ecologist.

The building was set up with the ambition to score on BREEAM, Circularity and an approach to meet the requirements of WELL. GLP strives for a very high standard of sustainability and health in combination with the BREEAM Excellent certificate.

This requires outstanding cooperation between contractors, installers, subcontractors and consultants. A tight schedule has been created in order to optimize this process. A commissioning's manager has also been appointed to ensure optimal operation of the installations.



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PROCESS EN ORGANIZATION

The building was designed with the ambition to score on BREEAM, Circularity and an approach to meet the requirements of WELL.

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After delivery, a thermal scan is performed to determine whether there are thermal leaks in the facade.

Sustainability aspects

The sustainability measures that have been adopted are discussed below for each category. The main sustainability aspects taken into account during construction are:

- Presence detection for lighting in offices, washing and changing rooms and sanitary facilities;
- Energy-efficient LED lighting;
- Water-saving toilets equipped with flush selection buttons and flush interrupters;
- Measuring specific to individual energy flows;
- Leak detection on coolants;
- Main building materials are sourced with responsible origin;
- good insulation values of roof and facades to ensure minimal energy loss;
- all-electric-installation: bivalent heat pump installation combined with cold and heat storage net and air-to-water heat pump as peak load facility;
- Underfloor heating as main heating in the hall and comfort heating in the offices;
- Approx. 48.149 m² PV-cells;
- Rc-values: 3,5 m²K/W (floor), 4,5 m²K/W and 6.35 (facade), 6,45 m²K/W (roof);
- Cooling/heating: Heat pump underfloor heating;
- Ventilation: WTW via VRF-system (office);
- Lighting: LED-lighting in offices and hall with presence detection.

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SUSTAINABLE CONSTRUCTION

The new construction will be realized in precast concrete and steel construction. Next to building efficiently and with low waste volumes due to working with prefabricated construction parts, there is waste separation with at least seven waste streams.

Waste separation and reduction are part of a Smart Waste Management Plan, which was setup by the construction team.

In addition, a work plan has been drawn up to further limit the environmental impact of the construction site. The work plan consists of various measures to limit the

environmental impact. Examples are: limiting CO₂ emissions as result of transport to construction site, limiting water usage, and minimizing air and soil pollution. Separately, there's an environmental policy plan in effect and the contractor works in accordance with a certified environmental management system (ISO14001).

During planning, special care was taken to limit the project's impact on the ecology of the area. Measures will be taken to facilitate the shared use of Tables 2 and / or 3 of the AMvB of the Flora and Fauna Act, and provisions will be made for special natural values such as vernacular plants, indigenous birds and bats.



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INNOVATION AND SUSTAINABLE DESIGN

EXCEPTED ENERGY NEED	YEARLY	YEARLY /m2 BVO
Building-related installations*	1.154.250kWh	15,39 kWh/m2
SUSTAINABLE ENERGY		
Generated by PV-panels, of which:	100%	100%
Part building related use	100%	100%
OTHER FUEL		
Building-related installations*	0	0 kWh/m2
DRINKING WATER	YEARLY	
EXPECTED	9,8 liters/pers./Day.	



BREEAM

CASE STUDY - EXCELLENT

The project is being carried out with the ambition to obtain a BREEAM Excellent rating. During construction, steps are taken to limit the impact on the environment. Points are awarded for each focus area. For the final score, all categories are taken into account with a pre-specified weighting.

The total score thus comes to 77,9 percent. For the qualification “Excellent” at least 70 of the 100 possible percentage points must be achieved. This is the second highest possible score, and designates a four-star rating.

Management

11
/ **16**

Health

8
/ **14**

Energy

25
/ **26**

Transportation

8
/ **12**

Water

6
/ **8**

Materials

5
/ **17**

Waste

4
/ **6**

Land use en ecology

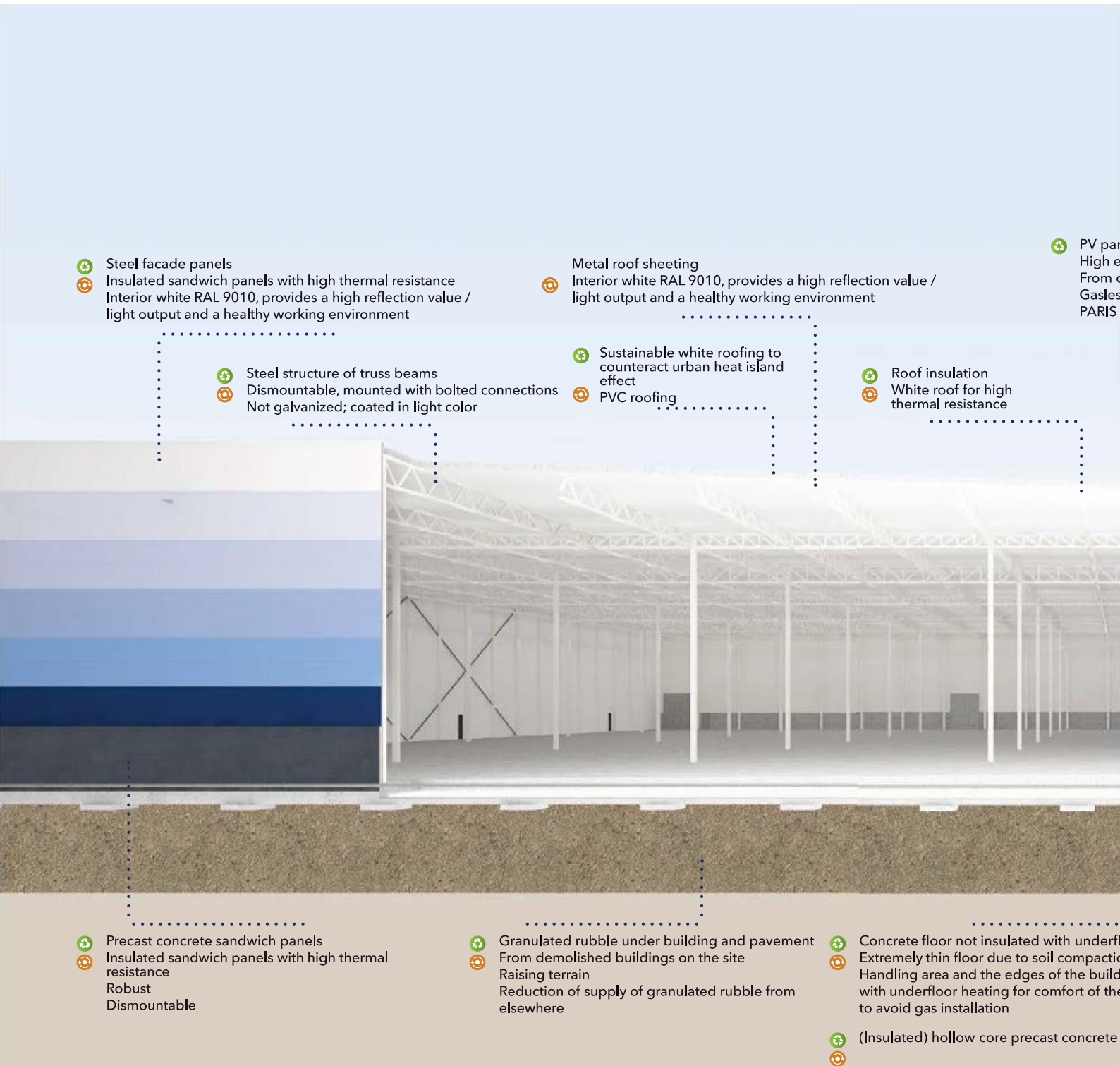
6
/ **11**

Pollution

6
/ **11**



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- Steel facade panels
- Insulated sandwich panels with high thermal resistance
Interior white RAL 9010, provides a high reflection value / light output and a healthy working environment

- Steel structure of truss beams
Dismountable, mounted with bolted connections
Not galvanized; coated in light color

- Metal roof sheeting
Interior white RAL 9010, provides a high reflection value / light output and a healthy working environment

- Sustainable white roofing to counteract urban heat island effect
- PVC roofing

- Roof insulation
White roof for high thermal resistance

- PV panels
High efficiency
From demolition
Gasless
PARIS

- Precast concrete sandwich panels
- Insulated sandwich panels with high thermal resistance
Robust
Dismountable

- Granulated rubble under building and pavement
From demolished buildings on the site
Raising terrain
Reduction of supply of granulated rubble from elsewhere

- Concrete floor not insulated with underfloor heating
Extremely thin floor due to soil compaction
Handling area and the edges of the building with underfloor heating for comfort of the workers to avoid gas installation

- (Insulated) hollow core precast concrete

BREEAM-NL
IS A METHOD OF ASSESSING THE SUSTAINABILITY PERFORMANCE OF A BUILDING AND ITS ENVIRONMENT.

CIRCULARITY OR CIRCULAR BUILDING
IS PRIMARILY A FUTURE-PROOF WAY OF LOOKING AT THE BUILT ENVIRONMENT.
USING, REUSING AND RECYCLING PRODUCTS INSTEAD OF PRODUCING FUTURE WASTE.

panels for generating electrical power
 efficiency PV panels; energy neutral also in use
 consumer to supplier
 and all electric solution
 PROOF

Skylights
 > 5% natural daylight in the warehouse improves the
 working environment

Green and healthy workplace
 Plenty of daylight, clean air
 WELL

Overhang / recessed facade
 Limitation of heat load by solar radiation

Energy efficient LED lighting
 Top of market efficient LED lighting
 Presence- and daylight-dependent
 lighting control

Screens interior
 Light protection
 Possibility to influence one's own
 working environment

Insulating sun protecting triple glazing
 in aluminium curtain wall
 $U\text{-value} \leq 0,7 \text{ W/m}^2\text{K}$

floor heating
 on
 ing foreseen
 e employees and

Energy efficient elevator
 By using energy released by the inhibiting
 movement of the lift itself

Use of water efficient
 equipment

Foundation optimized with prefab elements
 No pile foundation
 Maximization of prefabricated elements

floors

Dynamic passenger information system
 Narrow casting
 Including current display of building energy consumption

Entrance wall and ceiling of recycled wood
 All (re-) used wood with FSC quality mark

Energy efficient climate ceilings
 Without using greenhouse gases
 Use of propane instead of R410A refrigerant; GWP < 5

New plants and trees
 Preservation and improvement of biodiversity and
 ecology on the plot. Various measures have been
 taken for the sustainable shared use by native plant
 and animal species.

Electric charging points
 charging cars, trucks en bicycles

Carpool places cars

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MANAGEMENT

BREEAM CASE STUDY - 11 / 16

Sufficient time, people and resources were arranged during construction to ensure that all systems function according to the design requirements and preconditions.

After completion, heat loss measurements are performed to verify that the building meets the design specifications. The climate installation is adjusted seasonally. Furthermore, the employees are trained in the effective operation of the systems.

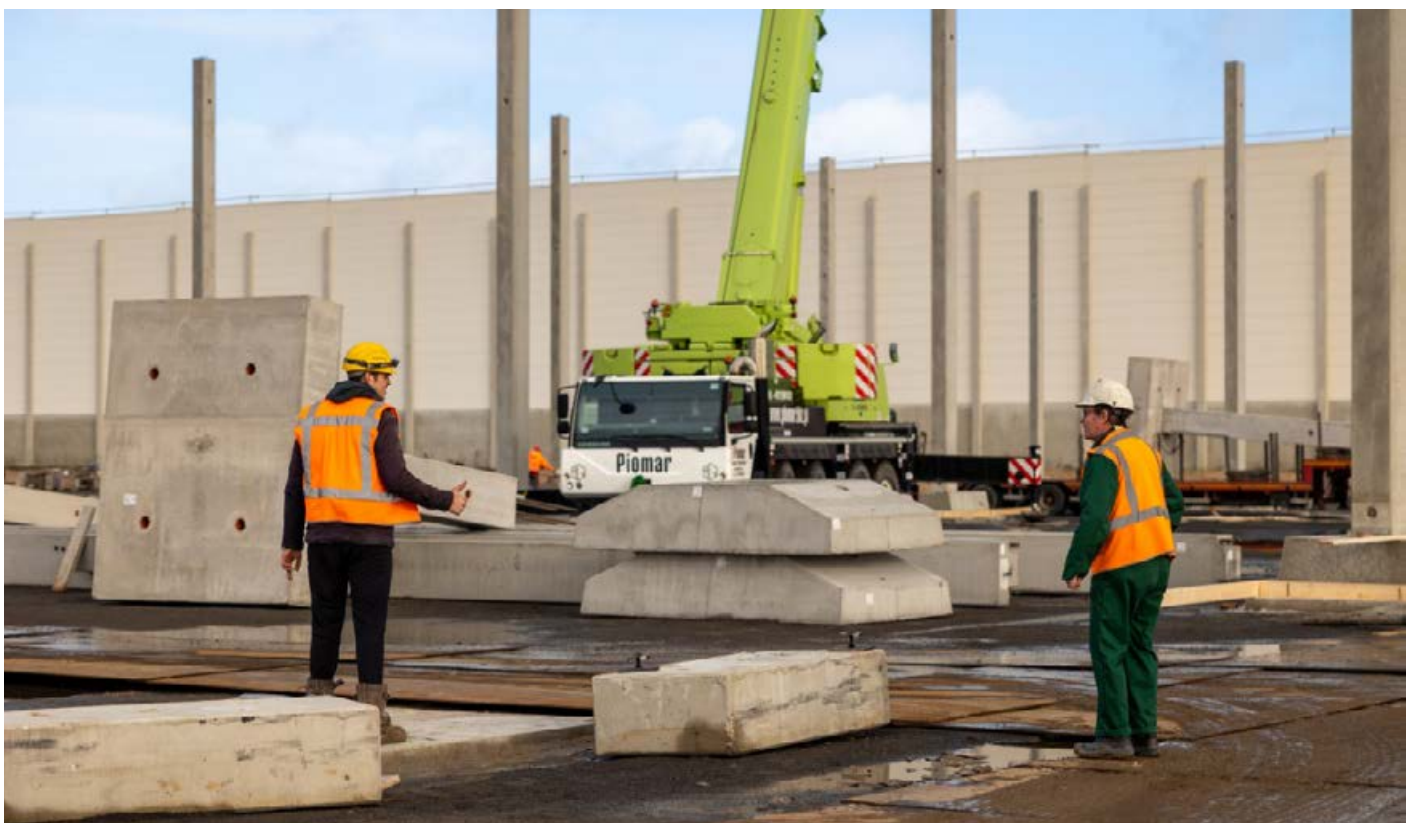
Responsible management on the construction site

All the wood used is legally and responsibly sourced. A sign, clearly visible from the road, shows the CO₂ emissions as well as the water and energy consumption of the activities on the construction site.

The aim is to keep pollution of the air, ground and surface water to an absolute minimum. The amount of waste produced is limited as much as possible and the different types of waste are separated for proper disposal. The operator keeps track of the precise origin of supplied materials.

Safety

As the design was being developed, an experienced safety expert examined the plan. The plan has been checked for possible weak or invisible spots that an opportunity-burglar could exploit. By following the advice of the expert, the requirements for a B2 BORG certificate have been met.



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HEALTH

BREEAM CASE STUDY - 8 / 14

Thermal Comfort

The office spaces receive the most optimal proportion of daylight. In addition, a manageable indoor climate is achieved by means of screens. This allows everyone to customize the space to their liking.

Temperature regulation

A climate system is implemented in the office spaces, which allows the temperature to be determined according to personal preferences per 40 m² area.

Air quality and ventilation

There will be sufficient fresh air throughout the building for the number of users, or the maximum number of users to be expected per room. The inlet and outlet of the air treatment installations are positioned on the roof in such a way that no pollution can occur.

The industry also complies with requirements for the amount of demonstrably sufficient fresh air needed for the number of users.

All light, no glare

All workplaces in the new office have a window that offers an unobstructed view to the outside. Sun protection has been installed to prevent light nuisance due to reflection or incident light, which complies with glare factor 3. In addition, LED lighting is used that approaches daylight very closely without light flickering or noise irritation.

Using healthy material

The basic principle is that all materials used for the completion of the construction have an emission that meets the requirements as set under this credit.



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ENERGY BREEAM CASE STUDY - 25 / 26

Renewable energy

Renewable energy has been chosen to minimize the impact on the environment. The aim is to be energy neutral on average over the span of a year. We strive to meet this aim by using self-generated green energy for heating and cooling the new building. In addition, the use of solar panels and electric power minimizes the emission of nitrogen oxide (NOx).

Insulation

Good insulation has also been factored in. The facade is made of sandwich panels with a high Rc-value and extra attention has been paid to the connecting details for good air and gap sealing.

Heat leaks and airtightness

After completion, the building was tested for heat leaks. This will help to reduce heat loss. In addition, the building is tested for airtightness. This will reduce the overall energy loss.

Other

Energy-efficient LED lighting with presence detection is used in the office areas. Furthermore, the lighting can be controlled per 40 m² of space via a wall switch.

Consumption

The expected energy consumption of this project is in 28 kWh/m².



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TRANSPORTATION BREEAM CASE STUDY - 8 / 12

Supply traffic can easily reach the building. Loading and unloading is separated from other flows of traffic. There is ample room for vehicles to maneuver.

Road safety has also been considered. There is a detached, elevated footpath from the public road to the main entrance of the building. The site is lit in accordance with NEN-EN 12464-2.

To encourage cycling, the building is easily accessible by bicycle. There is a covered and well-lit bicycle shed in a socially safe place (with a good view from the building).

The building is equipped with a shower, changing room and lockers. There are several electric charging points for electric cars.



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WATER BREEAM CASE STUDY - 6 / 8

High-quality and water-saving sanitary ware serves as the basis for sustainable water consumption. By means of urinals with low flushing capacity, 6L toilets, push button taps or electric eye systems and water-saving showerheads, water consumption is greatly reduced.

The water in the toilets is connected to a greywater system. The water supply to the toilets is equipped with an electrically operated shut-off valve, which opens and closes automatically based on presence detectors installed in the toilet area.

Water-saving taps will be used (up to 6 liters per minute). The showers are equipped with a water-saving showerhead (9 liters per minute).

Consumption

The expected water consumption is 3.9 m³/person/year. It is expected that 55% of the water consumption will be obtained via rainwater or greywater recycling.



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MATERIALS

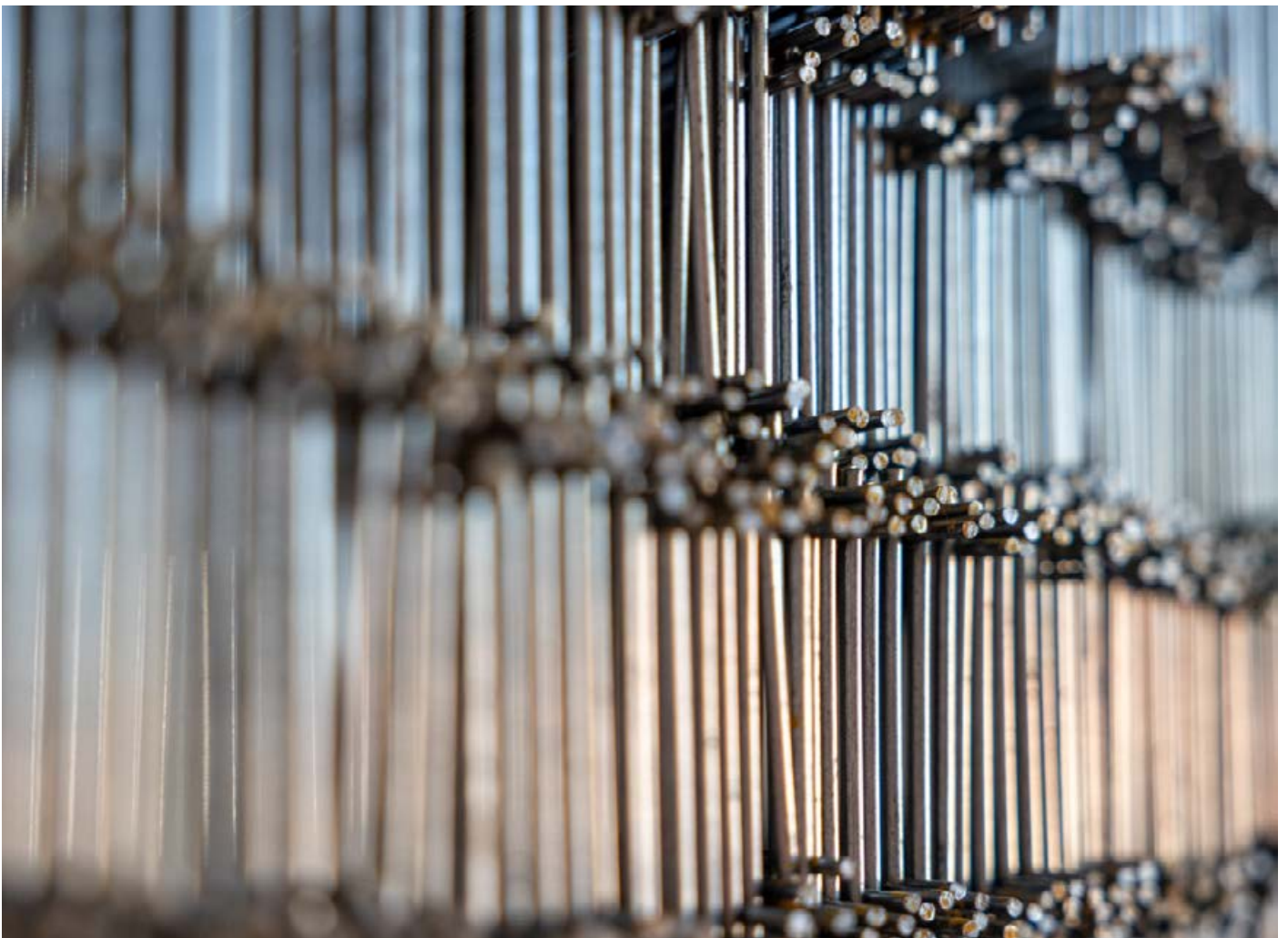
BREEAM CASE STUDY - 5 / 17

Building materials with a low environmental impact have been used. At least 80% by volume of the insulation materials supplied have, for example, an ISO14001 or BES 6001 certificate. This shows that the manufacturer works according to an environmental management system (EMS) and that the origin of materials is substantiated.

In addition, only FSC or PEFC wood is used for both permanently and temporarily applied wood.

In vulnerable areas of the building, such as the outer wall, the loading docks, floors and walls, extra protection has been applied to prevent damage and extend the lifespan of materials.

Within the office, a wear-resistant floor has been chosen. The car park is also located further from the building, so the risk of damage from maneuvering vehicles is limited.



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WASTE BREEAM CASE STUDY - 4 / 6

During construction waste is reduced as much as possible. The construction waste that arises is separated into distinct containers.

At least 80% of the recyclable waste has been reused. The rubble generated from the new building is reused as rubble pavement under the new structure.



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LAND USE AND ECOLOGY BREEAM CASE STUDY - 6 / 11

The new building is located in a largely developed and paved area. The building plot falls within the built-up area of the municipality of Venray, surrounded by a business park.

The site has a low ecological or landscape value that is not important for protected flora and fauna. Phase 1 of the property already made provisions to protect breeding birds.

Arrangements have been made in the building plan to promote the establishment of certain animal species and plants. Advice for this plan was obtained from an ecologist.

A certified ecologist has drawn up a work protocol to protect the fauna during and following the construction work.



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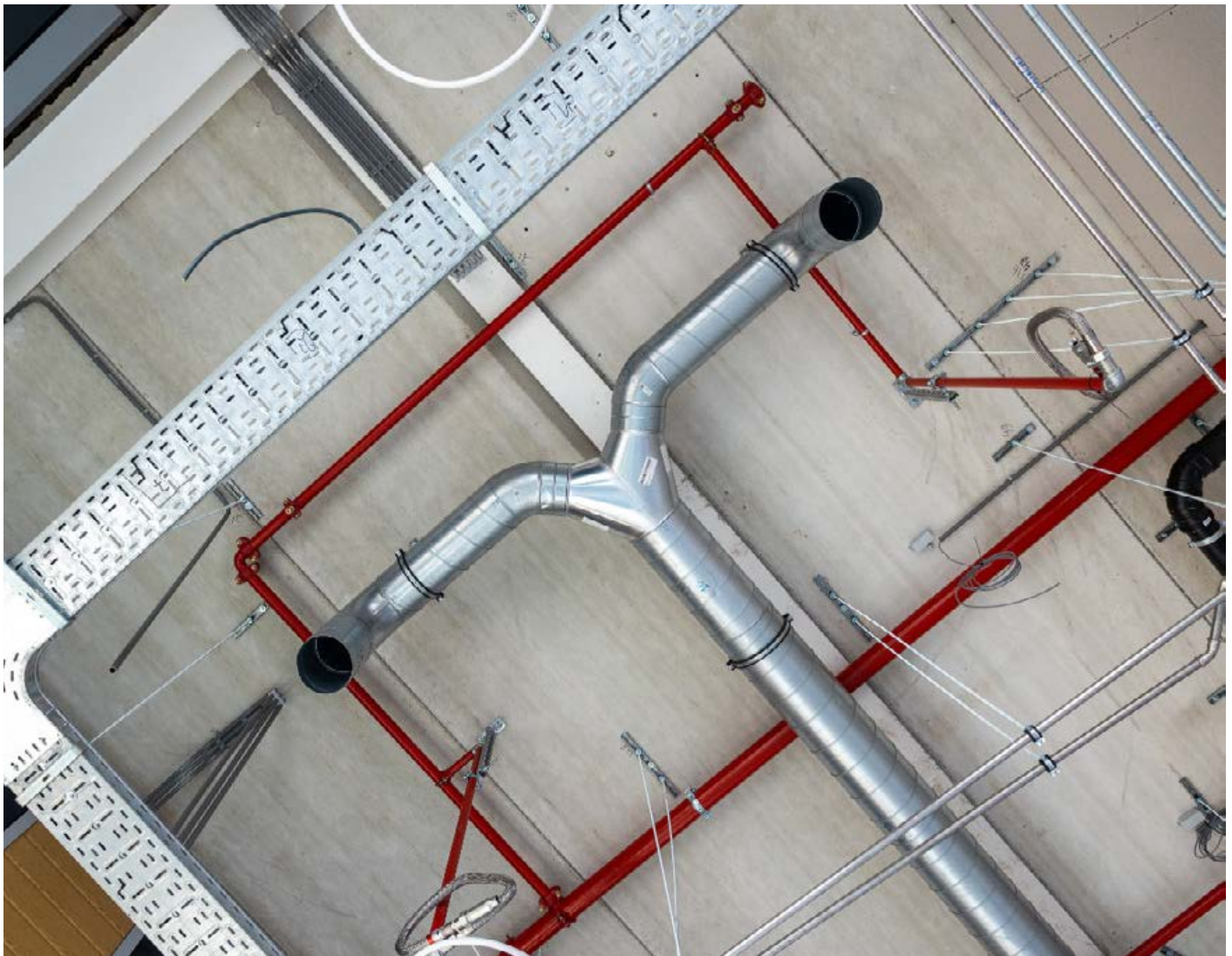
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POLLUTION BREEAM CASE STUDY - 6 / 11

A heat pump has been utilized to limit air pollution as much as possible. It uses refrigerant and is equipped with an advanced anti-leakage system.

A refrigerant circuit is a closed circuit. If leakage is detected, the circuit closes and the pumps are turned off. In this way no refrigerant escapes.

To limit light pollution, only outdoor lighting has been installed in the designated areas. Post-top lights with LEDs have been used and the light is dimmed during the night.



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Tips for a subsequent project

In order to improve the process, there is room to hire more parties at an early stage.

It is a difficult assignment that includes many unique components, such as green walls and solar panels on the facade.

Incorporate the decision moment of whether or not to include BREEAM in the process even earlier, for example in the sketch design, pre-design phase.

The QuickScan and selection list with costs and benefits must be prominent in both the pre-design and the definitive design phase.

Experience with BREEAM makes the process easier; experience provides an advantage.



Costs and benefits

When devising a sustainable building, the potential costs are quickly cited. However, there are more or comparable benefits to justify such costs.

The investment in more ventilation capacity will result in a better indoor climate, which will pay for itself in reduced worker absence due to illness.

The time and effort that will be put into the ecological value of the site will contribute to biodiversity and promote the health of the environment.

These are a few examples of costs whose benefits are difficult to calculate in monetary terms, but which will certainly have a positive effect.

SUSTAINABLE EXCELLENCE



GLP's logistics- and distribution properties meet high sustainability criteria worldwide through environmentally sound building solutions.

All new developments in Germany are certified to at least the DGNB Gold standard, making them more cost-effective to operate and maintain. In addition to reducing operating costs for users, GLP contributes to sustainability by improving the CO₂ balance, reducing energy and water consumption, and selecting certified and recyclable building materials.

GLP EUROPE

GLP is a leading global investment manager and business builder in logistics, real estate, infrastructure, finance and related technologies.

Our European operating portfolio consists of more than 4 million SQ M across the strategic logistic markets, which is 98% leased to blue chip customers such as Amazon, UPS and Volkswagen. In addition, GLP Europe has a prime land bank which allows for the development of an additional 4 million SQ M.

GLP operates globally across Brazil, China, Europe, India, Japan, the U.S. and Vietnam. Our combined investing and operating expertise allows us to create value for our customers and investors, and have US\$97 billion in assets under management in real estate and private equity funds.

Learn more at www.glp.com



**approx. 4 million sq m
portfolio**



**Leading with
innovation**



**European
market leader**



**Award winning
developments**

If you would like any further information on the building, or to arrange a meeting, please email or call:



GLP 

Philippe Hendriks
Development Director

+31 (0) 6 50 68 29 74
philippe.hendriks@glp.com

bg  bridgegap®

Dennis van Gijtenbeek

+31 (0) 6 12 09 48 88
+31 (0) 10 310 53 10
dennis@bridgegap.com

GLP

WTC Tower I, West Wing, Level 3, Strawinskylaan 1811, 1077 XX Amsterdam, The Netherlands
glp.com/eu