About this appendix

Stockholm Royal Seaport is being developed and constructed in phases, from the subarea of Hjorthagen to Värtahamnen, and lastly to Loudden. Sites are allocated either directly or in competitions, and the land is either sold or transferred as a leasehold property. The action plan that gathers all requirements is appended to each site allocation contract and development agreement and are binding. They include levels for energy performance, stormwater management and green structure, waste management, transport, indoor environment and choice of materials.

Monitoring of property developers is first carried out in conjunction with the early parallel design process. The requirements are monitored at all stages, from programme documentation until two years after occupancy, although the degree of detail varies.

The monitoring means that we are doing our utmost to evaluate our work and meet the high standards. This close dialogue with the City also helps to increase the engagement of everyone involved in the project.

Tina Wisedén, Environmental Coordinator, Besqab, Ellevio and Niam
## Energy

### Summary assessment

The building envelope, comprising facades, roofs, floors and windows, is well-insulated and airtight. The quality of the building envelope varies between development phases, as well as within the development phase. In general, the average $U_{eq}$ value in Stockholm Royal Seaport is lower than the Swedish building code (BBR) requirements. The requirements have contributed to the use of special “thermal-bridge-free” fastening products, to higher airtightness the use of higher-quality insulation, and to a stronger focus on the ratio and quality of windows. A key factor for achieving the requirement is heat recovery from exhaust air. In the Norra 2, a Air Handling Unit (AHU) system was installed combined with district heating. If AHU and district heating cannot provide enough heat for the building, wastewater heat exchangers are installed. The later development phases were more focused on hot water circulation and other system losses.

### The energy co-ordinator plays a key role throughout the entire development process.

Paying attention to detail in the design stage is important. This prevents all of our efforts with energy planning from becoming merely a paper exercise to be submitted.

**Thomas Linderholm, energy co-ordinator, Besökab**

### Requirements summary:

#### Housing units

- The requirements for Norra 1 and Västra are based on voluntary commitments. The project-values are not audited by the City.
- **Norra 2, Ekolistet and Gasverket**: 50 kWh/m² Atemp, year, projected energy
- **Södra Värtan**: 50 kWh/m² Atemp, year, net energy
- **Premises**
  - **Norra 2, Ekolistet and Gasverket**: 45 kWh/m² Atemp, year, projected energy
  - **Sroda Watert**: 45 kWh/m² Atemp, year, net energy
  - **Existing buildings in Gasverket**: reduction target of 50%.

#### Premises

- **Norra 2, Ekolistet and Gasverket**: 45 kWh/m² Atemp, year, projected energy
- **Sroda Watert**: 45 kWh/m² Atemp, year, net energy
- **Existing buildings in Gasverket**: reduction target of 50%.

### Results – energy performance

#### 1. Norra 1 – housing units

- The City engaged in dialogue with the property developers at an early stage. The results are well below Swedish building code applicable BBR 18 building regulation.
- The values are normal - year correction of measured energy consumption values based on statistics for 2015 or 2016.

<table>
<thead>
<tr>
<th>Property Developer</th>
<th>Projected Values</th>
<th>Measured Values</th>
<th>Requirement level</th>
</tr>
</thead>
</table>
| Einar Magnussson    | 79 kWh/m² Atemp, year | 75 kWh/m² Atemp, year | BBR 18
| Enner Magnussson    | 75 kWh/m² Atemp, year | 73 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
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| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18
| Järntorget         | 76 kWh/m² Atemp, year | 74 kWh/m² Atemp, year | BBR 18

#### 2. Västra – housing units

- The City engaged in dialogue with the property developers at an early stage. The results are well below BBR 18 building regulation.
- Most of the property developers in Västra are connected to the district heating with AHU, except for Järntorget which has an exhaust air heat pump.
- For the 38 student apartments (Sliden), the difference between projected and measured values may be due to high hot water consumption. The projected value was 25 kWh/m² and measured value 41 kWh/m².

#### 3. Norra 2 – housing units

- The values are normal - year correction of measured energy consumption values based on statistics for 2015 or 2016.

#### 4. Brofältet – housing units

- Stockholmshem’s Plus-Energy House assumes that the building is highly energy-efficient. This entails good form factor, and that building envelope and technical installations are high performing combined with minimal thermal, ventilation and distribution losses. The system efficiency of the photovoltaics is increased by recovering excess heat from the inverters that relax the boreholes and by optimising the geothermal heat pumps for the production of hot water in the summer.
- The others work to optimise the building envelope, minimise district losses and install wastewater heat exchangers. Half of the buildings have a geothermal heat pump and AHU.

### Notes

1. Average thermal transmittance is an indicator of thermal insulation
2. $U_{eq}$ is a relevant and applicable constant system with heat recovery.
3. Locally generated renewable energy may be included in the building’s energy performance.
4. Electricity used for heating, hot water and cooling should be weighted with a factor of 2.
5. See footnote 3. However, Norra 2 is exempt.
6. No energy is to the energy supplied to the building for heating, cooling, hot water and energy for the building’s operation. All supplied energy is included.
7. Can be added in accordance with the applicable BBR.
8. Includes heating, hot water, cooling and property electricity.
9. Figures are based on as-built documentation, except for SIMD and MEC, which are reported according to construction documentation.
10. Plus-Energy House means that the building generates more energy than it uses. This is achieved by including locally generated energy in the performance.
11. Most of the property developers in Västra are connected to the district heating with AHU, except for Järntorget which has an exhaust air heat pump.
12. Some property developers have AHU.

### Figures

Energy performance in kWh/m² Atemp

- Projected values
- Measured values
- BBR 18
- Requirement level
5. Gasverket – sports facility, school, preschool

- Gasverket’s new buildings have well-insulated and airtight building envelopes with AHU plus district heating.
- The Real Estate Administration’s sports facility has variable air volume (VAV) and smart ventilation control systems.
- The challenge with existing buildings in Gasverket is weighing cultural heritage values against energy-efficiency measures. SISAB’s preschool has reduced its energy consumption by 80% and the school by 50% compared with the projected energy consumption of the original buildings.
- The floor and roofs have been partially or fully replaced, which has significantly improved the insulation. Windows have been improved as far as antiquarian aspects allow.

6. Södra Värtan13 – housing units

- The basic requirement for Södra Värtan is 50 kWh/m² Atemp net energy. One criteria for the site allocation competition was to develop a low-energy building concept, which led to some property developers adopting an energy performance of less than 45 and 40.

7. Södra Värtan – offices

- Due to a well-designed system to reduce energy requirements, the Ports of Stockholm’s Värta Terminal is well below the requirement. The energy system consists of energy storage in rock, heat pumps and an adaptive ventilation system.

Requirements summary:
- The requirements for Norra 1 and Västra are based on voluntary commitments.
- Locally produced 2 kWh/m² Atemp solar power, or 6 kWh/m² Atemp solar thermal energy or a combination of these two14.

Results – locally generated energy

1. Norra 2 – housing units

- The property developers were allowed to include locally generated energy in their energy performance, which is why their values are high.
- Wallenstam was allowed to use energy produced in newly built wind turbines outside Stockholm.
- SSM’s solar power is generated on NCC’s roof.
- Erik Wallin and Viktor Hanson both have photovoltaics and solar collector for electricity and heating production.
- Due to the property’s unfavourable location, Åke Sundvall is allowed to include the photovoltaics on its coming project in Gasverket Östra.
- Stockholmshem’s Plus-Energy House has a high performing solar PV’s. Stockholmshem is the only property developer to date that has also installed small wind turbines on the building.

2. Brofästet – housing units15

- The solar power generated by SISAB’s school and preschool meets the requirements of both new and existing buildings.

3. Gasverket – sports facility, school, preschool

- In Norra 2, the property developers could also choose the alternative to generate solar power locally that would account for at least 30% of the building’s energy requirements.
- Einar Mattsson’s reported values are based on calculations from the programme documentation stage.
Energy consumption, construction

Results – energy consumption, construction site cabins

Requirements summary:

- All use energy-efficient, electric-heated cabins. HEBA, Skanska and Stockholmshem have a joint establishment.
- Viktor Hanson has AHU.
- Erik Wallin, Wallenstam and Viktor Hanson do not have separate meters for office and worker cabins.
- All have green electricity for their cabin establishment and construction site.

Summary assessment

The Green Space Index (GSI) and stormwater strategy in combination contribute to well-designed solutions that benefit both vegetation and stormwater retention. The size and shape of the courtyard determine how much eco-efficient space can be created. The coordination of property developers and various technical competencies is a key condition and should take place in the early stages. At the same time, properly designed planting beds with sufficiently deep soil, abundant plants and stormwater units connected in a series that supply water to the vegetation are key factors. With this foundation, the design can vary considerably.

The tendency is a reduced GSI score between the early stages and the as-built documentation, which may be due to several factors, including lack of coordination between, for example, designers, architects and the stormwater engineers. In later development phases, the number of green roofs has increased, especially biotope roofs. In Södra Värtan, it has become even more important to make roofs a social place.

Climate-change adaptation

Requirements summary:

- The requirements for Norra 1 and Västra are based on voluntary commitments.
- Housing units shall achieve a GSI score of 0.6.
- Premises shall achieve a GSI score of 0.4.
- Does not apply to existing buildings in Gasverket for cultural heritage reasons.

The coordination of property developers and planners will more important for achieving the City’s requirements and further developing the GSI process.

Anders Dahlgren, Project Manager outdoor environment, Stockholmshem.

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"Energy performance is based on a cabin with a 21 m² interior."
Results – Green Space Index (GSI) per courtyard

1. Västra – housing units

- Nine of eleven property developers have sedum roofs.
- There are no sub-surface structures under most of Primula’s courtyards, enabling a much greater soil depth. SKB has a sedum roof and the courtyard’s deep planting beds provide ideal conditions for trees.
- Brofästet – housing units
- Gasverket (new buildings) and Värta Terminal

2. Norra 2 – housing units

- Erik Wallin, HEB and Skanska have deep planting beds in their courtyard. On their shared roof terrace, there are planter boxes and a greenhouse.
- Port of Stockholm’s terminal building has a green roof covering 49% of the roof’s surface. Perennials make up most of the greenery, so that visitors perceive the roof as a garden.
- NCC has a biotope roof with sedum, herbs and grass. The roof is a meeting place for the residents.

3. Brofästet – housing units

- Beaspel, Oscar properties and Åke Sundvall are planning a joint stormwater runoff system. The courtyard is designed to hold the stormwater runoff in several stages. Green walls are combined with nesting boxes, and north-facing walls are used for climbing plants.
- HSB and Kibodogen are planning a greenhouse and a rain garden in the courtyard.
- Stockholms- hem 1

4. Gasverket (new buildings) and Värta Terminal

- Ports of Stockholm’s terminal building has a green roof covering 49% of the roof’s surface. Perennials make up most of the greenery, so that visitors perceive the roof as a garden.
- Climbing plants on support wires are planned for the facade of the Real Estate Administration’s sports facility, along with trees for stormwater management, and a sedum roof.
- SISAB’s preschool has a sedum roof, fruit trees, flowering trees and shrubs, and a willow playhouse.

5. Södra Yärtan20 – housing units

- Mom has deep planting beds and due to the steady conditions, the courtyard has been given woodland vegetation, meaning stratified, forest-like vegetation.
- Mannersons, Erik Wallin and CA Fastigheter are planning a wetland in the courtyard with high biological values.
- Midroc is combining solar panels with a sedum roof. The shade from the photovoltaics creates a microclimate, with ideal conditions for a range of plant species.
- Wallenstam and Västabe are planning an open stormwater solution in the courtyard, whereby the rain becomes part of the outdoor experience.

6. Södra Yärtan – offices

- Bonnier (Pirhuset) is planning roof terraces on different levels, and generous planting beds for stormwater management. Various biotopes, all with their starting point in Södra Yärtan, will be placed on the roofs. An oak landscape is planned for the bottom, with a barren orchard/tapas terrace higher up. The vegetation becomes more barren as it moves upward in the landscape. Every terrace is permeable which helps to hold stormwater runoff.
- Wallfast does not have a green courtyard area, but is planning stepped, lush terraces.

The final report for Norra 1 was presented in the 2015 Sustainability Report, see stockholm.se/royalseaport

The values are based on the early parallel design process. Many property developers are planning roof terraces.

[19] The values are based on the early parallel design process. Many property developers are planning roof terraces.
A sustainable waste system

Summary assessment
All property developers are connected to vacuum waste collection systems and have installed waste disposal units in kitchens and recycling rooms. Most of these comply with the distance to the waste collection system. If the distance is exceeded, this only applies to a few housing units or individual stairwells. In most cases, the recycling rooms are within easy access. The average area per apartment for recycling rooms is 0.44 m² in Norra 2, and 0.40 m² in Brofästet. Compared with earlier phases, this means that the areas of many recycling rooms have been reduced. It could mean that the space will not be sufficient for required fractions.

Results – longest distance to waste-chute inlet

1. Norra 2 – housing units

<table>
<thead>
<tr>
<th>Distance waste chute inlet, metres</th>
<th>Projected values</th>
<th>Requirement level</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
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<td>60</td>
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<td>50</td>
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<tr>
<td>0</td>
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</tbody>
</table>

- Erik Wallin, Stockholmhem and Wallenstam did not meet the requirement. Deviations were approved due to the block’s design.
- SSM has a waste-chute inlet in the building.
- Viktor Hanson has a waste-chute inlet directly outside the entrance.

2. Brofästet – housing units

<table>
<thead>
<tr>
<th>Distance waste chute inlet, metres</th>
<th>Projected values</th>
<th>Requirement level</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
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</tbody>
</table>

- Tobin Properties, HSB, Oscar Properties and Einar Mattson did not meet the requirement. Deviations were approved due to the block’s design.

21 Three fractions are separated in the vacuum waste collection system: newspapers, plastic packaging and residual waste.
Construction waste

Summary assessment
To date, none of the property developers have met the requirement for the amount of construction waste. However, all of them have met the requirement for sending lesser amounts, less than 1 mass percent, to landfill. For various reasons, the property developers have not worked proactively to prevent, and reduce, the amount of their construction waste. Such factors as poor quality assurance during construction have led to moisture damage which, in turn, has meant that damaged material has been discarded. Some projects have had a high employee turnover, resulting in poor communication regarding the applicable requirements. The choice of construction method has also played a major role in the amount of construction waste generated.

Reducing the amount of waste requires good planning throughout all stages of the construction process. The results from Norra 2 led to changed requirements for later development phases. These include the current requirement that a waste management plan shall be drafted during the design stage.

Requirements summary:
- The requirements in Västra are based on voluntary commitments.22
- Max 10 kg/m² GFA.
- 100 mass percent of the construction waste shall be separated at source, of which 5 mass percent may be sent to landfill.
- Waste hierarchy.24

Results – construction waste25

1. Västra

2. Norra 2

How was construction waste handled in Västra?

- JM has a waste advisory board and has worked proactively to reduce its waste.
- Svenska Bostäder, SB (Söderåsen), handed the responsibility for waste management over to the contractor.
- Svenska Bostäder, SB (Björnlandet) had a joint internal target with the contractor to achieve a GFA of 23 kg/m². The façade was plastered on site, which generated more waste, and moving boxes from new residents accounted for some of the reported waste.
- ByggVesta’s contractor built defective constructions that had to be demolished. The contractor was replaced during the project.
- Primula cast concrete with a higher use of formwork timber.
- A brick façade also produces more, and heavier, waste.
- SKB had heavy brick and mortar waste.
- Stockholmshem did not work proactively to reduce its waste.
- Due to water damage, SSM and Viktor Hanson had to discard gypsum and fill materials.
- Erik Wallin and Wallenstam’s preschool did not work actively with this issue. Wallenstam’s preschool had problems with the disposal of external waste in their waste bins.
- Despite two cases of extensive water damage in the project, Viktor Hanson succeeded in minimizing its construction waste by setting reduced construction waste targets at an early stage.
- Stockholmshem planned to prevent construction waste, but problems during the construction stage meant that large amounts of concrete had to be discarded. Another problem was the disposal of external waste in its waste bins.
- Skanska/HEBA believe that the large turnover of employees in projects led to a low priority for waste-related issues.

How was construction waste handled in Norra 2?

- Due to inadequate source separation or lack of space, some of the waste qualified as mixed waste. The mixed waste is separated for material recycling or energy recovery. Mineral wool is sent to landfill since it cannot be recycled.

22 The results are not audited by the City. Järntorget did not use the CCC.
23 Source separation according to the Kretsloppsrådets guidelines.
24 Construction waste should be prevented. Recycling should be the first choice, materials recovery the second choice, and energy recovery the third choice.
25 The final report for Norra 1 was presented in 2016.
Sustainable transport

Summary assessment
All property developers in Norra 2 and Brofästet met the requirements for bicycle parking. However, there were no qualitative requirements prior to Brofästet, which meant that bicycle parking was not always perceived as attractive and secure. Despite the qualitative requirements as of Brofästet, the effectiveness of the solutions has proved difficult to assess. The mobility index tool has therefore been developed with inspiration from the GSI. This tool gives property developers more freedom to design solutions for their own property, and has been used as of Södra Värtan. The car parking space requirement was achieved by all but two property developers.

Mobility Index
The property developer chooses various actions from five modules, based on the most appropriate measures for their own building. The five modules are cyclable city, the walkable city, stationary vehicles, goods management and mobility services. The actions may be easier or more difficult to achieve but are weighted in relation to their expected effects, on a point scale.

Charging points in garages

Requirements summary:
The requirements in Norra 1 and Västra are based on voluntary commitments and have not been audited by the City.

Bicycle parking
- 2.2-2.5 spaces/apartment
- 0.25 spaces/employee

Car parking
- 0.5 spaces/apartment
- 0-4 spaces/1,000 m² GFA (office)
- 0-6 spaces/1,000 m² GFA (retail)

A minimum Mobility Index of 0.65 applies as of Södra Värtan.
All parking spaces in garages shall be prepared for charging points. Starting with Brofästet, 20% of the parking spaces will have charging points.

Results – number of parking spaces

1. Norra 2 – housing units

| Norra 1 | 2% (8 of 355) |
| Västra | 7% (38 of 535) |
| Norra 2 | 15% (45 of 315) |
| Brofästet | 24% (72 of 300) |

2. Brofästet – housing units

- 78% of bicycle parking spaces in Norra 3 are indoors.
- NCC, SHF, Wallenstam and Viktor Hanson have agreed on a distribution model, whereby the entire block met the requirement for car parking spaces.
- SHF’s low number of car parking spaces was approved because it offered a carpool car to the housing association and built more bicycle parking spaces.
- Erik Wallin was approved for offering one car parking space per townhouse.
- Skanska has made its indoor bicycle parking spaces more efficient by installing two-tier parking racks in the bicycle room.

Gasverket and Värtapiren
- Värtapiren has a few parking spaces for service vehicles, and 32 bicycle parking spaces for employees.
- The school, preschool and sports facility have accessible parking spaces only.
- The school, sports facility and preschool have 95 bicycle parking spaces on property level and 306 on public open space.

Södra Värtan – mobility index
- 65% of the bicycle parking spaces in Brofästet are indoors.
- Åke Sundbäck was approved for offering one car parking space per townhouse.
- Stockholmshem has bicycle parking spaces on the balcony.

3 The calculations are based on the 2016 Annual Report.
Sustainable buildings

Choice of materials – chemical content

Summary assessment

Every building contains 100-400 products. All property developers use the BASTA, Byggvarubedömningen or SundaHus environmental assessment system and document their building materials in a logbook. The specific requirements for halogenated materials and endocrine disruptors have led to product development among suppliers and to the development of criteria in the environmental assessment systems.

Results – materials

### Requirements summary:

- Material should meet requirements for content and documentation.
- Equivalent content criteria in national assessment systems.
- PVC, endocrine disruptors, zinc and copper shall not occur.
- Materials shall be documented in a digital logbook.

### Indoor environment

Summary assessment

The earlier the architect and energy and indoor environment experts are coordinated, the higher the likelihood that the indoor environment requirements can be met. Daylight is the biggest challenge in a densely populated urban district. Climate change is expected to increase the need for cooling and various free-cooling solutions are becoming increasingly common. Various types of greenery that mitigate heat and innovative architectural designs that emit light and heat in the spring and autumn, but reduce summer heat, are also becoming more common.

#### Results – SGB, indoor environment indicator

**Norr 2**
The property developers in Norra 2 have reached the construction phase or as-built phase, respectively.

#### Results[19] – SGB, indoor environment indicator

**Brofästet**
The property developers in Brofästet have reached the systems development phase.

### Results

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Reported deviations</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classified products are avoided in line with national assessment systems, as well as other substances that are not permitted.</td>
<td>No alternatives, quality risk, discovered after installation.</td>
<td>Halogenated (PVC, etc.) 18 deviations. Found in pipes, lighting, cabling, wet room paneling, reinforcement spaces, doors, sealants, ventilation and window parts.</td>
</tr>
<tr>
<td>Phase-out list substances (Lead, etc.) 8 deviations. Found in pipes, light sources, sealing joints, water taps, valves, water and sanitation.</td>
<td>No alternatives, functional reasons.</td>
<td>Endocrine disruptors 11 deviations. Found in sealants, electricity, flooring, wet room paneling, fall protection rubber, anti-kick materials, insulation, grouting, bricks.</td>
</tr>
<tr>
<td>No content information</td>
<td>Discovered after use, assessment pending.</td>
<td>4 deviations. Chemical products, cabling, pipes.</td>
</tr>
</tbody>
</table>

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[17] BASTA, Byggvarubedömningen (BVB) and SundaHus.

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[18] Due to the need to consider cultural heritage values, SISAB’s school has achieved good results.

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[19] The final reports for Norra 1 and Värta were presented in 2018.
The City Development Administration is responsible for the planning and construction of streets, squares and parks. This is carried out in close cooperation with the administrations and companies responsible for operation and maintenance. Stockholm Royal Seaport is being developed and constructed in phases. At present, 11 contracts are in various stages in different development phases.

The action plan for public open space includes climate-change adaptation, energy and ecocycle systems, transport and material choices. To create the best conditions for property developers to achieve the ambitious sustainability targets, key principles are identified at early stages, such as the integration of transport when planning the urban structure.

During the design stage, the action plan’s general requirements are reformulated into tender specifications. To ensure the requirements are met, continuous monitoring is carried out during the design stage, as well as regular environmental inspections during the construction stage, and some contracts are audited.
Proximity to services
Proximity to private and public services play a major role in the travel patterns created in Stockholm Royal Seaport. From a central point in Norra 2, the maximum amount of time to reach everyday services is five minutes, see the table below. Five minutes corresponds to about 450 metres. The diversion ratio compares the actual walking or cycling distance with the straight line distance.

<table>
<thead>
<tr>
<th>Services and activities</th>
<th>m</th>
<th>Diversion ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grocery shop</td>
<td>280</td>
<td>1.28</td>
</tr>
<tr>
<td>Preschool</td>
<td>285</td>
<td>1.36</td>
</tr>
<tr>
<td>School</td>
<td>420</td>
<td>1.35</td>
</tr>
<tr>
<td>Rapid transit bus stop</td>
<td>300</td>
<td>1.30</td>
</tr>
<tr>
<td>Metro station</td>
<td>825</td>
<td>1.21</td>
</tr>
<tr>
<td>Park</td>
<td>160</td>
<td>1.07</td>
</tr>
<tr>
<td>National City Park</td>
<td>460</td>
<td>1.31</td>
</tr>
</tbody>
</table>

The most recent evaluation in 2015 showed that the network of pedestrian and bicycle paths had been well-adapted to promote walking and cycling around the urban district, and connected the area to surrounding walkways and the rest of the city.

The potential to further improve conditions includes reducing barriers and creating short cuts for walking and cycling.

Street parking for bicycles is being planned to complement the parking planned on property level. There are designated parking spaces for carpool vehicles and a fast-charging station in the area that is available to everyone. All charging points on public open space are for carpool vehicles.

### Sustainable transport

#### Transport planning – general

Special planning and design guidelines have been developed to enable sustainable travel. The guidelines describe how streets and areas in Stockholm Royal Seaport should be designed to simplify for pedestrians, cyclists and public transport.

The most recent evaluation in 2015 showed that the network of pedestrian and bicycle paths had been well-adapted to promote walking and cycling around the urban district, and connected the area to surrounding walkways and the rest of the city.

The potential to further improve conditions includes reducing barriers and creating short cuts for walking and cycling.

<table>
<thead>
<tr>
<th>Destination</th>
<th>Bicycle parking spaces</th>
<th>Share bikes</th>
<th>Car parking</th>
<th>Carpool parking spaces</th>
<th>Electric vehicle charging points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norra 1</td>
<td>144</td>
<td>15</td>
<td>80</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Västra</td>
<td>118</td>
<td>0</td>
<td>136</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Norra 2</td>
<td>104</td>
<td>0</td>
<td>61</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Destinations</td>
<td>58</td>
<td>27</td>
<td>126</td>
<td>58</td>
<td>58</td>
</tr>
</tbody>
</table>

b “Destinations” refer to the Metro station, for example. Bicycle parking spaces, car parking space and electric vehicle charging points are available in Ropsten but are not reported.
Sensitive species
Despite the high proportion of contaminated soil, the area is home to sensitive species and these are accounted for when planning and during construction. Considerations include the relocation of endangered plants (potentilla bifurca), and the design and construction of wetlands and an amphibian tunnel. Common red-listed species include the eagle owl, the lesser black-backed gull, the herring gull and the long-horned beetle. Oak and amphibian habitats are protected and strengthened in the area.

On Loudden, the protected giant salamander has been observed in a pond near the oil cisterns. A new pond for the giant salamanders is under consideration, not far from the original pond.

The presence of aquatic and sediment-dwelling organisms has been carefully mapped prior to the planned construction in Lilla Värtan. To identify the fish species living in the development area and how the fish stock will be affected by construction, experimental fishing has also been carried out. An investigation has also been conducted to determine whether the fish contain contaminants that may be derived from former gas production in the area.

Green roofs
13,500 m²
Green courtyards
29,500 m²
Park and rain gardens
50,000 m²

Waste management planning
Vacuum waste collection system
In 2016, the permanent vacuum waste collection facility opened in a cavern in Hjorthagen. Households, businesses and public litter bins are connected to the vacuum waste collection system. 27 of the litter bins are currently in operation.

The vacuum waste collection system runs on 100% green electricity.

Stormwater strategy
A stormwater strategy has been created specifically for Stockholm Royal Seaport. The aim is to reduce flood risks, and the need to water street trees and greenery. All planning from 2018 and onwards will include the City’s stormwater strategy.

Green Space Index
The Green Space Index is a tool for calculating ecosystem services that has now been developed for public open space, meaning the public greenery on streets, parks and city squares. The GSI score for public open space indicates the proportion of the space’s area that is eco-efficient. The Green Space Index promotes eco-efficient areas that can deliver multiple ecosystem services.

The planning tool has been tested in Kolkajen and Södra Värtan, where the scores are 0.6 and 0.7 respectively. The scores are largely an indication of the diverse range of qualities in the blue and green areas. The results show that it is difficult to earn points for biodiversity, but easier for pollination and recreation. Most points were earned for climate regulation, meaning stormwater runoff and microclimate.

When planning Hjorthagen, the aim has been to provide a large unrestricted area of 25 m² per apartment. In total, completed development phases have an unrestricted area of 33 m² per apartment, while planned development phases have 31 m² per apartment. “Unrestricted area” refers to public open space and other common areas, combined with courtyards.

<table>
<thead>
<tr>
<th>Completed</th>
<th>Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norra 1</td>
<td>Västra</td>
</tr>
<tr>
<td>Share of apartments with access to park and natural areas within 1000 metres, %</td>
<td>100%</td>
</tr>
<tr>
<td>Green space – parks, ha</td>
<td>15</td>
</tr>
<tr>
<td>Green space – parks – per apartment, m²</td>
<td>37</td>
</tr>
<tr>
<td>Unrestricted area per apartment, m²</td>
<td>37</td>
</tr>
<tr>
<td>Courtyards and roofs, ha</td>
<td>2</td>
</tr>
<tr>
<td>No. of trees planted</td>
<td>18</td>
</tr>
<tr>
<td>Planting beds/tree pits, m³</td>
<td>64</td>
</tr>
<tr>
<td>Rain gardens, m²</td>
<td>2,100</td>
</tr>
</tbody>
</table>

The table shows developed unrestricted areas and green structure.

Stormwater strategy
A stormwater strategy has been created specifically for Stockholm Royal Seaport. The aim is to reduce flood risks, and the need to water street trees and greenery. All planning from 2018 and onwards will include the City’s stormwater strategy.

<table>
<thead>
<tr>
<th>Completed</th>
<th>Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norra 1</td>
<td>Västra</td>
</tr>
<tr>
<td>Share of apartments with access to park and natural areas within 200 metres, %</td>
<td>100%</td>
</tr>
<tr>
<td>Green space – parks, ha</td>
<td>15</td>
</tr>
<tr>
<td>Green space – parks – per apartment, m²</td>
<td>37</td>
</tr>
<tr>
<td>Unrestricted area per apartment, m²</td>
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</tr>
<tr>
<td>Rain gardens, m²</td>
<td>2,100</td>
</tr>
</tbody>
</table>

The table shows developed unrestricted areas and green structure.
Energy for lighting

Green energy is used for lighting. The light fittings in Stockholm Royal Seaport are energy-efficient and mercury-free. Only LED technology has been used from 2017 onwards. LED has reduced the amount of energy consumed by street lighting to about 1.8 kWh/kilometre\(^3\), representing energy savings of around 50% compared with the previous technology (metal halogen). The City performed a LCC, which gave a repayment period of about 5.5 years for investment costs with retained or improved lighting quality.

Construction

Soil remediation and aggregate management

The soil remediation is based on site-specific guideline values that follow the Swedish Environmental Protection Agency’s guidelines and methods. These guideline values require that contaminants be removed, which may cause inconvenience for the people living and working in the area, or for the surrounding environment. In practice, this means that materials are excavated, screened and re-used locally, or disposed of.

All excavated materials are sorted. Contamination is mainly confined to particulate matter, so coarser materials can mostly be classified as clean and re-used. The material for re-use is crushed into new fractions and used for the construction of roads and other infrastructure, as well as foundations. Contaminated soil and other excavated material, such as sleepers and contaminated concrete, are sampled and classified, and then disposed of.

1.8 kWh/kilometre are used for street lighting. This gives a repayment period of about 5.5 years.

13,800 tonnes of excavated material was re-used in 2017.

94,500 tonnes of rock was crushed on site during 2017, which reduced the number of truckload movements by a distance equal to driving around the earth 23 times.

7,800 m\(^3\) of contaminated water was purified in the water treatment facility.

Drainage water

When excavating under the groundwater level, drained water must be purified before discharged into Lilla Värtan due to soil contamination. In 2017, 7,800 m\(^3\) of contaminated water was purified in the water treatment plant, which is roughly equivalent to the water in ten Olympic swimming pools.

Construction Consolidation Centre (CCC)

The CCC was started in 2013 and coordinates all logistic flows and offers a range of services including co-loading, short-term goods storage, coordinated waste management, surveillance and cleaning. Logistics planning increases delivery precision, minimises damage to materials and the risk of theft, creates a safer workplace and reduces the number of truckload movements in the construction site through co-distribution. The ability to store building materials at the CCC makes the construction process easier for property developers due to lack of space on the construction site.

Co-loading reduces the number of deliveries to the construction site. Coordinated deliveries create better accessibility and good order at the work site. Small deliveries are co-loaded via the CCC, which has now reduced the number of truckload movements for these deliveries by 60%.

The CCC aims to use transport running on HVO100, a renewable alternative to diesel. In 2017, 22% of the fuel used was renewable.

Construction waste

The City requires contractors to reduce the amount of waste they generate. To prevent waste generation, contractors are required to create a waste management plan and appoint a waste management coordinator.

Requirements summary:

- 100 mass percent of the construction waste shall be separated at source.
- The construction waste sent to landfill shall be minimised.

Mass balance

Mass balance

<table>
<thead>
<tr>
<th>Material</th>
<th>2016 ton</th>
<th>2017 ton</th>
<th>2018 ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-use</td>
<td>10,514</td>
<td>13,800</td>
<td>13,465</td>
</tr>
<tr>
<td>Disposal/landfill</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Landfill material comprises materials with elevated contamination levels. These materials usually have poor geotechnical quality and cannot be used in construction projects.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Requirement</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 mass percent of the construction waste shall be separated at source.</td>
<td>The construction waste sent to landfill shall be minimised.</td>
<td></td>
</tr>
</tbody>
</table>
Electricity and diesel consumption

The energy consumed during construction is a minor share of the total energy consumption throughout the life cycle. Energy is mainly derived from fossil fuels. Electricity is 100% renewable and the diesel fuel has an environmental classification of 1.

Choice of materials

Requirements – chemical content

Material and products (materials) should meet Byggvarubedömningen (BVB) requirements regarding content and documentation. PVC, endocrine disruptors, zinc and copper shall not occur. Materials shall be documented in a digital logbook.

All built-in materials in Stockholm Royal Seaport are controlled from a chemical content perspective against BVB. Every contract uses about 30 products. Of a total of six contracts completed in 2017, 12 deviations for materials containing phase-out list substances and 14 deviations in relation to no content information were reported. 100% of these deviations were approved. All materials used were documented in a digital logbook.

Requirement Deviations Justification
Materials classified as “avoid” according to BVB and other specified substances must not be used

- Halogenated (PVC, etc.)
  - 0 deviations
- Phase-out list substances
  - 5 deviations
  - Found in grouting, ground spray, cleaning products, adhesives
  - Functional reasons, no alternative.
- Endocrine disruptors
  - 5 deviations
  - Found in hydraulic oils, umbrellas, sofas, bitumen
  - Functional reasons, discovered after installation, no alternative, no SIN List requirement.
- Zinc
  - 2 deviations
  - Found in bike stands, net
  - Aesthetic reasons, no alternative.
- Copper
  - 0 deviations
- No content information
  - 14 deviations
  - Found in anti-graffiti protection, concrete slabs, gates, birdhouses, graters, grilles, asphalt, reinforcement, ply equipment
  - Supplier does not wish to assess the product. When projects started, there were no requirements.

Requirement Deviations Justification

Truckload movements for the construction of public open space were equal to driving around the earth 9 times

In public open space, equipment was in operation for a total of 2 years and 8 months in 2017.
Choice of materials – climate and finite resources

Life-cycle assessments were previously performed on street materials, piles and decking. In 2016, a collaboration commenced with the IVL Swedish Environmental Research Institute to test their LCA tool on infrastructure projects. A pilot project will be conducted in 2018.

In 2017, attempts were also made to gather information about the amount of building materials used in Norra 1 and their subsequent climate impact. Emission factors from the environmental load profile – a tool developed for Hammarby Sjöstad – were used.

<table>
<thead>
<tr>
<th>Material</th>
<th>Building materials</th>
<th>Climate impact</th>
<th>Embedded energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>16,300 tonnes</td>
<td>&gt;1,430 tonnes CO₂eq</td>
<td>&gt;1,950 MWh</td>
</tr>
<tr>
<td>Steel</td>
<td>1,096 tonnes</td>
<td>&gt;316 tonnes CO₂eq</td>
<td>9350 MWh</td>
</tr>
<tr>
<td>Asphalt</td>
<td>4,300 tonnes</td>
<td>&gt;115 tonnes CO₂eq</td>
<td>550 MWh</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>18,950 MWh</td>
</tr>
</tbody>
</table>

Distributed per m²: 27 kg CO₂eq / m², 115 kWh/m²

Climate change effects and embodied energy in Norra 1.

As of 2016, the requirement is that only 25% of the ballast in concrete shall be obtained from virgin natural materials, such as natural sand and gravel, and pebbles.

Choice of materials – social aspects

Since 2015, Stockholm Royal Seaport has collaborated with several other municipalities in regard to ethical sourcing for natural stone in construction contracts. The aims are to share knowledge and best practice, and to develop joint procedures for influencing and contributing to better working conditions, in accordance with international conventions. In 2017, the group developed a joint monitoring tool. In partnership with the Swedish Association of Local Authorities and Regions (SKL), efforts are ongoing to introduce joint audit sampling and to study how work with other product groups could be developed. All imported natural stone for public open space was verified and the results show that all stone meets the working group’s joint requirements.

All timber building products are FSC certified. On behalf of the City, Swedwatch analysed the environmental and social aspects of Azobe timber, which is used for jetties. The report shows that, despite FSC labelling, the harvesting of Azobe timber is associated with some ethical and environmental risks. In 2018, the City of Stockholm will test and investigate alternative woods and treatment methods.

FSC labels are a guarantee of responsible forest management, with respect for the culture of indigenous peoples and for the environment.

Stockholm Royal Seaport’s work environment vision

Our construction and infrastructure projects shall be characterised by high standards of safety and quality, and broad involvement at all levels, in order to highlight and strengthen health and safety in construction. Minimising incidents and accidents requires everyone’s active participation.

Occupational health and safety – construction site

The City works actively to ensure a safe work environment on construction sites. The urban development project also works actively with property developers to ensure health and safety in construction, and Stockholm Royal Seaport was first to do so in the construction industry.

Stockholm Royal Seaport is a complex construction site with many property developers, contractors and other professionals. Occupancy and other activities are taking place alongside of the construction. Many different people have to work safely together in a small space. The City has a high ambition for the work environment and runs several forums and activities to ensure everyone’s safety and security. The project has a construction work environment vision and a zero accident vision.

From the start of construction in 2010 until 2017, only a few workplace accidents have led to long-term absence from the project. The BuidSaf mobile app is used to facilitate the reporting of incidents. In 2017, the number of reported incidents was much higher compared with previous years. This enables the project to work with more preventive measures at early stages.

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of reported incidents</td>
<td>59</td>
<td>73</td>
<td>405</td>
</tr>
<tr>
<td>Incidents</td>
<td>14</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Workplace accidents with absence</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Preventive occupational health and safety management

Stockholm Royal Seaport initiates and drives a number of preventive activities to create a safe and secure construction site. The aim is to consider everyone who visits the construction site. This includes risk mapping, logistics and establishment information, fire protection and safety inspections, with a focus on pedestrians and cyclists.
1.1 Create a robust and interconnected urban structure.
1.1.1 Develop natural connections to surrounding urban districts.
1.1.2 Create a flexibility where appropriate in the zoning plans for the area that will accommodate a range of functions and future changes.
1.1.3 Stockholm Royal Seaport shall be a place for everyone to live, work or visit, regardless of gender, age, race or other individual circumstances.

1.2 Contribute to the creation of a city that promotes equity.
1.2.1 Create a varied housing supply with different forms of tenure that can meet the needs of all stages of life such as tenant-owned and rental apartments, student housing, age care homes and services under Sweden’s Support and Service Act (LSS).
1.2.2 Create a flexibility where appropriate in the zoning plans.
1.2.3 Participate in the knowledge development process of the City’s administrations and companies in regard to how the housing supply can be developed to meet the needs of a diverse society.

1.3 Plan for a well-functioning everyday life.
1.3.1 Plan for good access and proximity to public services including a rich offering of cultural services for everyone, education environments that are welcoming to everyone, and indoor and outdoor sports amenities.
1.3.2 Plan for good access to private services, workplaces and premises for teleworking.
1.3.3 Design the public outdoor environment in a way that facilitates and encourages movement and physical activity, as well as good access to public spaces for interaction and activity, both indoors and outdoors.
1.3.4 Create opportunities for providing services that facilitate everyday life through digitalisation of the urban district.

1.4 Create attractive and safe places at all times of the day and night.
1.4.1 Plan for a mix of functions that give life and movement to selected streets and places.
1.4.2 Create destination points and activities that attract a variety of visitors to Stockholm Royal Seaport.
1.4.3 Design public open spaces so that everyone feels safe and welcome at all times of the day and night.
1.4.4 Design the ground floors of buildings to create active facades from all aspects, and good access to business premises throughout the entire urban district.

2.1 Prioritise pedestrian, bicycle and public transport traffic in the planning.
2.1.1 Create good connections and short and attractive routes for pedestrians and cyclists.
2.1.2 Make plenty of room for and prioritise pedestrian, bicycle and public transport traffic in the street space, and for facilities in buildings.

2.2 Plan for a mix of functions that allow flexible use.
2.2.1 Locate visitor-intense businesses close to public transport.
2.2.2 Make room for and prioritise sustainable goods and services that supply the area.
2.2.3 Expand the infrastructure for charging electric vehicles in the area.

2.3 The infrastructure shall promote co-loading and efficient, sustainable freight transportation.
2.3.1 Coordinate all construction shipments to the area via the Construction Consolidation Centre (BLC).
2.3.2 Plan for collected organic residues from wastewater being of use.
2.3.3 Capture heat from wastewater in the most efficient way.

3.1 Continuously reduce the amount of waste and increase the purity rate of waste.
3.1.1 Decrease the generation of waste by increased re-use, for example.
3.1.2 Reduce the amount of residual waste over time.
3.1.3 Increase the purity rate for different types of waste.
3.1.4 Hazardous waste does not occur in residual waste.

3.2 Water and wastewater management shall be more energy and resource-efficient.
3.2.1 Develop knowledge among all players about the benefits of source-separating wastewater systems through pilot projects.
3.2.2 Plan for collected organic residues from wastewater being of such a quality that more can be returned to the ecosystem with optimised energy and resource efficiency.
3.2.3 Capture heat from wastewater in the most efficient way (see also 3.3).

3.3.1.3 Create destination points and activities that attract a variety of visitors to Stockholm Royal Seaport.
3.3.1.4 Create good connections and short and attractive routes for pedestrians and cyclists.
3.3.2 Make plenty of room for and prioritise pedestrian, bicycle and public transport traffic in the street space, and for facilities in buildings.
3.3.3 Capture heat from wastewater in the most efficient way.

3.4.2 Plan for good access to private services, workplaces and premises for teleworking.
3.4.3 Design the public outdoor environment in a way that facilitates and encourages movement and physical activity, as well as good access to public spaces for interaction and activity, both indoors and outdoors.

4.1.3 The residents are very/fairly satisfied with access to: preschools (62%), schools (94%), range of cultural activities (84%).
4.1.4 The residents are very/fairly satisfied with access to: parks (68%), playgrounds (73%), sports facilities (50%).

4.4.4 The residents are very/fairly satisfied with access to: squares and meeting places (48%), playgrounds (73%), sports facilities (50%).

5.2.3 Capture heat from wastewater in the most efficient way (see also 3.3).
5.2.4 Hazardous waste does not occur in residual waste.
5.3.1.3 Create destination points and activities that attract a variety of visitors to Stockholm Royal Seaport.
5.3.1.4 Create good connections and short and attractive routes for pedestrians and cyclists.
5.3.2.1 Locate visitor-intense businesses close to public transport.
5.3.2.2 Make room for and prioritize sustainable goods and services that supply the area.
5.3.2.3 Expand the infrastructure for charging electric vehicles in the area.
3.1.4 Design multifunctional green spaces to offset future climate change, including stormwater management, to promote biodiversity and create good living environments.
3.1.5 Develop water areas to strengthen and develop recreational and natural values.
3.4.1 Plan for good access to parks and areas with high recreational and natural values.
3.5.4 Develop ecosystem services that contribute to health and well-being, also with regard to acoustic and air quality.
3.5.6 Create good conditions for producing ecosystem services through gardening and returning the city’s nutrients to the soil (s. 3.2.5).

5.1.2 Develop public participation for long-term, sustainable management and development of the urban district.
5.2.1 Create conditions for sustainable consumption.
5.3.3 Create a mixed supply of premises for a diversity of meeting places and businesses.
5.4.1 Account for existing businesses and their conditions for continued operation in the area.
5.4.2 Stimulate active participation in SRS’s evolution into a sustainable and open urban district.
5.4.3 Develop tools, working methods and experience to influence organizational and public participation for long-term, sustainable development for re-use and sharing.
5.5.3 Share best practices through guided tours, dialogue, networks and conferences.
5.6.1 Design multifunctional green spaces to offset future climate change, including stormwater management, to promote biodiversity and create good living environments.
5.6.2 Create conditions for sustainable consumption.
5.6.3 Create a mixed supply of premises for a diversity of meeting places and businesses.
5.6.4 Support network building and collaboration to stimulate sustainable enterprises.
5.6.5 Stimulate initiatives to employ people outside the labour force.
5.6.6 Develop public organisations that are role models for sustainability.
5.6.7 Support and promote research and development to contribute to innovation, and to remain at the forefront of sustainable urban development.
5.6.8 Encourage the development of sustainable solutions through capacity development, networks and forums.
5.6.9 Develop tools, working methods and experience to influence the city’s other urban development projects.
5.6.10 Share best practices through guided tours, dialogue, networks and conferences.

6.4.3 Develop water areas to strengthen and develop recreational and natural values.
6.4.4 Plan for good access to parks and areas with high recreational and natural values.
6.5.4 Develop ecosystem services that contribute to health and well-being, also with regard to acoustic and air quality.
6.5.6 Create good conditions for producing ecosystem services through gardening and returning the city’s nutrients to the soil (s. 3.2.5).

8.3.2 100% of property developers achieve the GSI. Does not include Norra 1 and Västra.
8.3.3 Design multifunctional green spaces to offset future climate change, including stormwater management, to promote biodiversity and create good living environments.
8.4.1 Support and promote research and development to contribute to innovation, and to remain at the forefront of sustainable urban development.
8.4.2 Encourage the development of sustainable solutions through capacity development, networks and forums.
8.4.3 Develop tools, working methods and experience to influence the city’s other urban development projects.
8.4.4 Share best practices through guided tours, dialogue, networks and conferences.
8.4.5 100% of property developers achieved the GSI. Does not include Norra 1 and Västra.
8.5.1 Plan for good access to parks and areas with high recreational and natural values.
8.5.2 100% of apartments have access to a park and natural areas within 500 metres.
8.5.3 Develop ecosystem services that contribute to health and well-being, also with regard to acoustic and air quality.
8.5.5 Create good conditions for producing ecosystem services through gardening and returning the city’s nutrients to the soil (s. 3.2.5).
8.5.6 Create in continuous dialogue with all players, enabling participation and feedback on the sustainability efforts of all players.
8.5.7 Design multifunctional green spaces to offset future climate change, including stormwater management, to promote biodiversity and create good living environments.
8.5.8 Create conditions for sustainable consumption.
8.5.9 Develop public organisations that are role models for sustainability.
8.5.10 Support network building and collaboration to stimulate sustainable enterprises.
8.6.1 Test project property developers: 2 project positions (of which one became employed for a probationary period).
8.6.2 100% of property developers achieved the GSI. Does not include Norra 1 and Västra.
8.6.3 Support and promote research and development to contribute to innovation, and to remain at the forefront of sustainable urban development.
8.6.4 Encourage the development of sustainable solutions through capacity development, networks and forums.
8.6.5 Develop tools, working methods and experience to influence the city’s other urban development projects.
8.6.6 Share best practices through guided tours, dialogue, networks and conferences.
8.6.7 100% of property developers achieved the GSI. Does not include Norra 1 and Västra.

3.3.1 Prevent and minimise the amount of construction waste. S-0, 3, 4
3.3.2 Treat and recycle collected garden and park waste with optimised energy and resource efficiency. 34
3.3.3 Develop knowledge about sustainable and circular construction and management processes. 31
3.3.4 Minimise energy needs in new construction and refurbishment. For new construction, the energy consumption shall be less than 50 kWh/m² Atemp and year.
3.3.5 Develop knowledge among all players about increasingly energy-efficient buildings through pilot projects.
3.3.6 Develop knowledge about how Stockholm Royal Seaport could contribute to increased greenhouse gas emissions.
3.3.7 Create opportunities for measuring, monitoring, controlling and providing feedback on resource consumption through digitisation of the urban district.
3.3.8 Design buildings and facilities so as to avoid and document greenhouse gas emissions.
3.3.9 Increase the knowledge of all players about the relationship between urban planning, energy-efficient buildings, and a good indoor environment.
3.3.10 Design buildings and facilities so as to avoid and document materials and products that entail the risk of negative environmental and health impacts.
3.3.11 Design buildings and facilities with materials and products that are produced in a socially sustainable manner.
3.3.12 Take life cycle costs into account in the design and choice of materials for buildings and facilities.

...
GRI Index

Strategy and analysis

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>WHAT</th>
<th>PAGE</th>
<th>SCOPE OF REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4.1</td>
<td>Project Manager Statement</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Organisational profile

<table>
<thead>
<tr>
<th>G4.3</th>
<th>Name of organisation</th>
<th>Front</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4.4</td>
<td>Primary brands, products or services</td>
<td>4–5, 8–9</td>
</tr>
<tr>
<td>G4.5</td>
<td>Location of organisation's headquarters</td>
<td>Back</td>
</tr>
<tr>
<td>G4.6/4.8</td>
<td>Countries/markets where the organisation operates</td>
<td>4–5</td>
</tr>
<tr>
<td>G4.7</td>
<td>Nature of ownership and legal form</td>
<td>8–9</td>
</tr>
<tr>
<td>G4.9</td>
<td>Scale of the organisation</td>
<td>4–5</td>
</tr>
<tr>
<td>G4.10</td>
<td>Number of employees, form of employment, gender</td>
<td>GRI Index</td>
</tr>
<tr>
<td>G4.LA11</td>
<td>Number of employees covered by collective bargaining agreements</td>
<td>GRI Index</td>
</tr>
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</table>

Economic impact

<table>
<thead>
<tr>
<th>INDICATOR</th>
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<tbody>
<tr>
<td>G4.EC4</td>
<td>Financial assistance received from government</td>
<td>9–31 DMA: 8–9</td>
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</table>

Indirect economic impact

| G4.EC8    | Significant indirect economic impacts | 19, 28–29 DMA: 8–9 |

Environmental impact

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<tr>
<td>G4.EN2</td>
<td>Percentage of materials used that are recycled input materials</td>
<td>21, 62 DMA: 8–9 Mass balance</td>
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<tr>
<td>G4.ENER</td>
<td>Energy consumption outside of the organisation</td>
<td>19, 42–44 DMA: 8–9</td>
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<tr>
<td>G4.ENER</td>
<td>Energy intensity</td>
<td>19, 62, 64 DMA: 8–9</td>
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<tr>
<td>G4.ENER</td>
<td>Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas</td>
<td>4–5, 11–15 DMA: 8–9</td>
<td></td>
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<tr>
<td>G4.ENER</td>
<td>Indirect emissions of greenhouse gases (Scope 2)</td>
<td>66 DMA: 8–9</td>
<td></td>
</tr>
<tr>
<td>G4.ENER</td>
<td>Weight of transported, treated waste deemed hazardous</td>
<td>68–65 DMA: 6–9</td>
<td></td>
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</tbody>
</table>

Effluents and Waste

<table>
<thead>
<tr>
<th>G4.EM52</th>
<th>Environmental Grievance Mechanisms</th>
<th>GRI Index</th>
</tr>
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<tbody>
<tr>
<td>G4.EM54</td>
<td>Number of grievances</td>
<td>In 2017, 122 grievances were received. The grievances mainly concern disruption from the construction work.</td>
</tr>
</tbody>
</table>