Green paths and plant beds were completed during the year in the development phases Norra 1 and Västra. Stormwater is viewed and utilised as a resource. The water is conducted to plant beds on the street. This helps the plants, while the plant bed stores and conducts the water at the same time.

Cover picture: A tunnel for amphibians has been built under the local main street, Bobergsgatan.

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6 Some highlights
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12 Buildings | Importance of early-stage cooperation
18 The urban district | Opening up and connecting the city
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25 External involvement | Research and development
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34 Results – developers
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During the year, the first residents moved into Norra 2, the first development phase with site allocation covered by sustainability requirements. We are proud of how the area is developing and what we are achieving together. An extensive resident survey was conducted during the year to learn more about what it’s like to live in the area. It gives us acknowledgement of our work, and an understanding of what we need to improve. The survey shows that 94% of respondents are satisfied with the area as a whole. The frequency of bus services is the issue that residents wish to see improved. The Traffic Administration Office (formerly SL) has approved a new rapid transit bus service to the area, which will improve public transport. We are also in the midst of preparation work for schools, sports facilities and new streets. During this period, it will be slightly longer and harder to get to the Ropsten underground railway station. This work is scheduled for completion in 2018.

We are well on our way to opening Gasverket. Completion of the new Västra Pier during the year and construction startup on the new container port in Norvik, south of Stockholm, has made it possible to us to continue building housing units at the port. Plans for Södra Värtan include an outdoor pool, a quay promenade and parks. Södra Värtan will become an important place for many Stockholmers. Therefore it has been extra important to us to find out what they feel is important in the development. In addition to expanded dialogue, we also conducted a qualitative study where young women aged 12-18 from different parts of Stockholm shared their views on how to make public spaces in Södra Värtan attractive. We are learning a great deal from the City, property developers and everyone involved, in all of our different processes. This is knowledge that we take with us and implement in our continued planning and share with other urban development projects – which is extra important at a time when Sweden is facing the challenge of building large numbers of housing units in a short time.

Staffan Lorentz
Head of Development
Stockholm Royal Seaport
Stockholm City
Development Administration

Voluntary environmental commitments based on requirements in Norra 2 development phase
- Norra 1
- Västra
- Part of Gasverket

Sustainability requirements in site allocation and development agreements
- Norra 1
- Västra
- Part of Gasverket

Cooperation agreement with requirements’
- Terminal Building
- On Västra Pier

Development phases reported

AREA

<table>
<thead>
<tr>
<th>NO. OF HOUSING UNITS</th>
<th>COMMERCIAL FLOOR SPACE SQM</th>
<th>CONSTRUCTION START</th>
<th>OCCUPATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norra 1</td>
<td>670</td>
<td>1,200</td>
<td>2011</td>
</tr>
<tr>
<td>Västra</td>
<td>1,250</td>
<td>3,200</td>
<td>2014</td>
</tr>
<tr>
<td>Part of Gasverket</td>
<td>1,900</td>
<td>4,800</td>
<td>2015</td>
</tr>
<tr>
<td>School</td>
<td>800</td>
<td>1,900</td>
<td>2016</td>
</tr>
<tr>
<td>Sports facilities</td>
<td>1,900</td>
<td></td>
<td>2016-2017</td>
</tr>
<tr>
<td>Brofästet</td>
<td>580</td>
<td>3,000</td>
<td>2016</td>
</tr>
<tr>
<td>Södra Värtan</td>
<td>1,900</td>
<td>15,000</td>
<td>2017</td>
</tr>
</tbody>
</table>

Cooperation agreement with requirements’
- Terminal Building
- On Västra Pier

Every fifth newly built apartment in the City of Stockholm is located in Stockholm Royal Seaport. In 2016, 4,016 housing units were completed in the City of Stockholm, and 826 of these were in Stockholm Royal Seaport.

What’s happening in Stockholm Royal Seaport

During the year, the first residents moved into Norra 2, the first development phase with site allocation covered by sustainability requirements. We are proud of how the area is developing and what we are achieving together. An extensive resident survey was conducted during the year to learn more about what it’s like to live in the area. It gives us acknowledge of our work, and an understanding of what we need to improve. The survey shows that 94% of respondents are satisfied with the area as a whole. The frequency of bus services is the issue that residents wish to see improved. The Traffic Administration Office (formerly SL) has approved a new rapid transit bus service to the area, which will improve public transport. We are also in the midst of preparation work for schools, sports facilities and new streets. During this period, it will be slightly longer and harder to get to the Ropsten underground railway station. This work is scheduled for completion in 2018.

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Stockholm Royal Seaport
Stockholm City
Development Administration

![Map of Stockholm Royal Seaport with key development phases and sustainability requirements](https://example.com/map.png)
New site allocation policy tested in Värtahamnen

For the first time, the City of Stockholm has held a site allocation contest at a fixed price with a selection of architectural quality and sustainability criteria. The process involved integrated planning and site allocation with expanded civil dialogue that resulted in a plan with great variety, property developers of different sizes and many interesting solutions. These are some of the reasons why Södra Värtan was nominated for the Plan of the Year prize. The zoning plan was in the consultation phase at the beginning of 2017, and construction of the first development phase could begin in 2019.

Read more on pages 16-17.

300 delegations visited Stockholm Royal Seaport

In 2016, 300 groups of visitors with nearly 5,000 urban developers and decision-makers from all over the world came to Stockholm Royal Seaport to learn more about sustainable urban development. The visitors included researchers, officials, journalists, politicians and students.

Read more on page 24.

SEK 12 million in research grants

Reaching the ambitious sustainability targets requires new ways of working, as well as methodology and technology development. This often takes place through various R&D projects where the City, companies and academia collaborate. In 2016, Stockholm Royal Seaport received SEK 12 million in research grants. One of the most interesting new projects is MACRO (Food in Circular Robust Systems), which focuses on optimising resource flows, such as energy and food, so that systems are closed both locally and regionally.

Read more about MACRO and other R&D projects on pages 26-27.

The Sustainable Kids’ Forum listens to children’s views on sustainability

The Sustainable Kids’ Forum is a new forum for dialogue with children about sustainable development. Once a month, about 60 preschool children, with their teachers and parents are able to learn more about subjects such as climate adapted food, gardening, upcycled clothing and recycling. The concept began with Stockholm Royal Seaport, and is now spreading to other city districts.

Read more on page 9.

Occupancy in Norra 2 – the first phase with sustainability requirements.

Norra 2 is the first development phase covered by sustainability requirements all the way from site allocation to housing units that are ready for occupancy. The development phase consists of three blocks with approximately 600 housing units, premises and a new preschool, located between Bobeng’s brick gasometers in Gasverket and the Royal National City Park.

Smart Energi City is one of the R&D projects included in this development phase.

Read more on page 27.

P.S. Earlier development phases were planned before the environmental profile decision was adopted in 2009, and the sustainability commitments have therefore been voluntary.

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Read more on page 27.
The Pop-up Reuse Centre gives old things new life

Two re-use days were held when a mobile Pop-Up Re-use Centre visited Stockholm Royal Seaport. Some 2,100 kg of material was collected, of which 2,000 kg was sent for re-use. There was also an opportunity to receive help to repair broken bicycles, which attracted many interested visitors. The Pop-up Re-use Centre concept has been further refined, and is now ready to spread to the rest of Stockholm.

The Sustainable Kids’ Forum – a new forum for dialogue with children

The Sustainable Kids’ Forum is based on the philosophy of highlighting children’s perspectives in a fun-filled way and making children agents of change in efforts to prevent climate change. Children are the consumers of tomorrow, and critical to the world’s ability to become more climate-smart. Six activities were held during the year with 545 visitors: 400 children with 145 parents or guardians. In September, a children’s dialogue was held in Ekorrparken to collect the children’s thoughts and ideas on their local environment. The children were asked to paint and write about the favourite places and what they liked best about the area in the Story Tree. Ekorrparken was a particular favourite. The children were also able to make a natural tapestry from forest materials and build playhouses with chemical-smart building blocks. The Sustainable Kids’ Forum has been highlighted within the City of Stockholm as a climate-smart example and model. The concept is inspiring others to start similar meeting places.

Chemical-smart preschools

All preschools have prepared an action plan to phase out hazardous substances and materials. The Sustainable Kids’ Forum held an activity on the topic of chemical-smart preschools, where the children were able to discover how certain substances had a strong odour, for example. They also made their own paints and glue, and decorated an “environment tree.”

Certified preschools

Three of six preschools are certified with the “Green flag” from Keep Sweden Tidy. Children and staff work together to find methods and activities for learning more about sustainability in their everyday environment, such as reducing food waste.

Being able to influence and get involved

Activities that encourage interaction between residents and the City can increase interest and involvement, for both planning and the long-term management of the urban district. This will also help to increase the sense of community and identity with the area. Residents’ everyday lives are made easier by living close to grocery stores and restaurants, public transport, preschools and the natural environment. Other services, public art and meeting places, such as squares, playgrounds and gardens, and continually being expanded.

8 9

STOCKHOLM ROYAL SEAPORT 2016 SUSTAINABILITY REPORT
According to the survey, 94% of the residents feel satisfied with Stockholm Royal Seaport. The most satisfied residents are those with access to parks and natural areas, where nine of ten say they are very satisfied.

Social impact assessment
A vibrant city serves the needs and wishes of the people who live there. Social impact assessments were therefore conducted for Kolkajen-Ropsten and Södra Värtan. The aim is to highlight factors that need to be included in the ongoing work to achieve the targets for a socially sustainable urban district, such as equality and accessibility.

Södra Värtan: The assessment identified issues for further work, such as the content of public spaces, access to meeting spaces and premises for cultural activities and greater variety in the supply of housing and premises. The area needs public spaces that attract a wide range of people at all times of the day and night. Strengthening and securing connections to Gärdet and Hjorthagen is extremely important.

Kolkajen-Ropsten: Based on the assessment, the plan is considered to meet the targets of “Maximise the experience of the water” and “On pedestrians’ terms.” Long-term stewardship of both private and public spaces is required for the area to be perceived as attractive, safe and welcoming.

Resident survey
An extensive resident survey was conducted in Stockholm Royal Seaport to ensure that the urban district has turned out as planned and meets residents’ needs. The main reasons given for moving to the area are the inner city location, a larger apartment and proximity to green spaces.
The buildings are nearly Zero-Energy Buildings (nZEBs), and produce renewable energy in the form of solar power.

Average energy use per development phase, in kWh/m² A_{temp}, is shown below.

Norra 1 is based on measured values, the others on projected values. The requirements vary between the development phases and are gradually refined. For example, the energy requirement for housing units was tightened between the Norra 2 and Södra Värtan development phases. From 55 to 50 kWh/m² A_{temp} and from purchased energy to net energy.

The voluntary commitments were adopted for Norra 1 and Västra late in the planning stage. The energy use for heating, domestic hot water and building energy is therefore slightly higher than for other development phases. Nevertheless, the ambition has been high. A comparison between Norra 2 and later phases shows that the property developers have considerably improved the building envelope and reduced energy losses to a greater extent in the later development phases. It was possible to compensate for an inferior building envelope in Norra 2 with self-generated energy, which is not possible in the later development phases.

There are different requirements for Gasverket's existing buildings due to their cultural heritage values. For more information on energy performance and other measures, such as solar panels, see pages 40-43.
Parking
Quality and access to car and bicycle parking at property level is a key tool for facilitating sustainable travel patterns. Cycling is prioritised by providing good access to bicycle parking and service, while cars receive lower priority due to the low number of parking spaces. There were no stringent requirements for Norra 1 and Västra, but the number of bicycle parking spaces is rising steadily in subsequent development phases. A mobility index has been developed and introduced beginning with Södra Värtan, in order to facilitate planning and create high-quality mobility solutions. For more information, see pages 48-49.

Waste management
All buildings are connected to a vacuum waste collection system to facilitate waste separation for the people who live and work in the area. Three fractions are separated in the easily accessible waste-chute inlet: newspapers, plastics and residual waste. Recycling rooms for remaining fractions are located close to housing. All kitchens have waste disposal units. According to the resident survey, about 80% always separate their newspapers and packaging. For more information, see page 45.

Capacity development programme and Forum for Sustainable Solutions
Stockholm Royal Seaport offers a capacity development programme with seminars on various themes to help employees, property developers and consultants develop their knowledge. 738 representatives of property developers have participated in capacity development seminars over the last six years. The Forum for Sustainable Solutions has attracted 1,640 participants over the past five years.

Green Space Index for development sites
The Green Space Index (GSI) tool is used to create multifunctional green spaces on private properties. The property developers receive points for green solutions that retain rainwater, strengthen biodiversity and create recreational functions. Voluntary commitments in Norra 1 and Västra show the importance of incorporating the Green Space Index at early stages and integrating it into the architecture. The GSI score that can be obtained depends not only on the size and shape of the space, but on the amount of eco-efficient space that is created. For more information on the Green Space Index, see pages 38-39.

Average GSI score per development phase is shown below.

- Requirement level, housing
- Requirement level, offices

A roof in Norra 2 development phase against the Royal National City Park.
IN MORE DETAIL

Södra Värtan

In 2016, 14 property developers completed projects simultaneously in Södra Värtan and the plan for 1,900 new housing units and 125,000 m² of offices and services was nominated for the 2016 Planning Prize by the professional organisation for architects, Architects Sweden. Plans are being made for an active urban lifestyle in Södra Värtan, with an outdoor pool, parks and a square. As well as rooftop terraces with gardens, social areas and greenhouses. The planning is based on the needs of cyclists and pedestrians, so that most local streets will be pedestrian zones, and almost entirely car-free, green and suitable for activities and recreation. Robust street and park promenades connect and link the area with the rest of the inner city, and are one of the most important aspects for development of the area. An in-depth civil dialogue was held during the consultation in early 2017.

A site allocation contest was held, based on a fixed price and a selection of architectural quality and sustainability criteria. One of the sustainability criteria was a net energy requirement of 50 kWh/m². Seven property developers have committed to deliver even lower energy use, as shown in the table below.

Energy commitment – 40 kWh/m²and year

<table>
<thead>
<tr>
<th>Property developer</th>
<th>Architect</th>
<th>Housing units</th>
<th>Preschool</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB Projekt Väst</td>
<td>Kjellgren Kaminsky</td>
<td>≈ 60</td>
<td>–</td>
<td>TB’s block in the centre of Södra Värtan features functions such as bike and office hubs, and small-scale businesses such as cafes and studios.</td>
</tr>
<tr>
<td>CA Fastigheter</td>
<td>Lomar</td>
<td>≈ 45</td>
<td>–</td>
<td>Planning for buildings where technology is visible and becomes an obvious part of the urban space and architecture. Also flexible plan solutions, where a large two-room apartment can be turned into a three-room or mini four-room apartment.</td>
</tr>
<tr>
<td>Erik Widin</td>
<td>Johannes Nordander</td>
<td>≈ 50</td>
<td>X</td>
<td>The building will be designed as a classic brick house with large windows. The ground floors will facilitate a vibrant street life, with a preschool with large rooms for playing and socialising facing the street and business premises facing the quay promenade.</td>
</tr>
<tr>
<td>Midroc</td>
<td>White</td>
<td>≈ 90</td>
<td>–</td>
<td>Social inclusion is promoted through flexible apartments of different sizes, communal spaces with various functions, and a car and bicycle pool. Facades, roofs and balconies are given greenery and opportunities for gardening, and a comprehensive solution for storm water.</td>
</tr>
</tbody>
</table>

Energy commitment – 45 kWh/m²and year

<table>
<thead>
<tr>
<th>Property developer</th>
<th>Architect</th>
<th>Housing units</th>
<th>Preschool</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSB</td>
<td>Jokunk</td>
<td>≈ 80</td>
<td>–</td>
<td>Innovative plan solutions are combined with varied construction and architecture that takes advantage of the port’s qualities. The design must both contribute to ecosystem services and feature simple, well thought-out and robust installations that are durable and have low maintenance needs.</td>
</tr>
<tr>
<td>Mannensons</td>
<td>Vera</td>
<td>≈ 50</td>
<td>–</td>
<td>The project will promote a sustainable lifestyle featuring urban greenery and communal spaces for gardening, cooking and play. The biodiversity of the area can be strengthened through rain gardens, climbing plants and flower boxes. The basement will have space for large refrigerators for home-grown food, for example. Space-efficient housing units with good daylight conditions and design are characterised by the area’s port features.</td>
</tr>
<tr>
<td>Wallenstam</td>
<td>Sandell Sandberg</td>
<td>≈ 100</td>
<td>X</td>
<td>Hammarmagasin is characterised by history and port aesthetic of its location. Kalekhuset will feature communal spaces and functions for the residents, as well as a car and bicycle pool. Bicycles are always in focus, and there are spaces for washing and mechanical repairs.</td>
</tr>
</tbody>
</table>

The table shows the energy commitment for each property developer, with specific comments highlighting the unique features of each project.
Traffic planning
The dense and multi-functional city facilitates sustainable travel choices, where pedestrians, cyclists and public transport are prioritised. The street space only provides parking for brief stops, visitors and carpools.

Special planning guidelines have been developed to ensure high quality for pedestrians, cyclists and public transport are prioritised. The street space only provides parking for brief stops, visitors and carpools.

The Green Space Index for public open space C/O City, a research and development project, is developing a Green Space Index (GSI) for public open space. The aim is to supplement the existing GSI for development sites, and to create an urban district that both strengthens the ecosystem and is better equipped for future climate change. The goal is to achieve a Green Space Index that rewards multifunctional greeneries with a focus on ecosystem services. A pilot project is being conducted in the Kolkajen and Södra Värtan development phases to test the calculation tool.

Public spaces with streets, squares and parks play a key role in connecting the city. The design of the physical urban environment is based on robustness, safety and equality. This requires using land effectively, planning for a vibrant city, with a mix of housing and premises, and prioritising walking, cycling and public transport, as well as multifunctional green spaces and sound materials.
Construction Consolidation Centre

The Construction Consolidation Centre is an innovation project to study how the City can coordinate and resource-optimise the logistics needs of several property developers and the City’s contractors in Stockholm Royal Seaport. One provider was tendered in 2013, and the facility was planned and constructed under the City’s direction. The Construction Consolidation Centre coordinates several different resources and services. Read more on page 58.

360,000 tonnes
of fill material was excavated during the year, which is equivalent to more than one third of the Stockholm Globe Arena.

178,000 tonnes
of the rock that was excavated was crushed on site in 2016, eliminating a transport distance equivalent to 43 trips around the earth.

40%
of the fill material, corresponding to 144,000 tonnes, was reused.

220,000 tonnes
of fill material was transported and sent to landfills.

264,000 m²
of the area has so far been remediated, constituting 21% of the total area to be remediated.

100%
of the excavated rock material has been reused within the area.

Rare plant relocated
Potentilla bifurca, which grows in Värtahamnen, originally reached the area with ballast from Russia in the 1800s. Potentilla bifurca is protected throughout Sweden according to the Swedish Species Protection Ordinance. In order to protect the plant when the area was developed, it was transferred to areas including the roof of the new Värta Terminal.

The resident survey shows:
42% say it is easier to walk and cycle in Stockholm Royal Seaport than where they used to live.
72% say they are satisfied with the ability to walk or cycle to nearby urban districts.
99% say they are satisfied with access to green spaces and parks, with the outdoor environment as a whole, and are satisfied with the playgrounds.
91% feel safe in Stockholm Royal Seaport.

There are
21 carpark spaces,
1 fast-charging station with
2 charging points.

In total, there is

Remediation and fill material management
A great deal of soil in Stockholm Royal Seaport has been contaminated by previous industrial activity. Constructing buildings and streets requires removal of large amounts of soil and fill material, and rock excavation. On-site soil remediation and reuse of fill material can generate major environmental benefits. Fill removal of that is contaminated or does not meet quality requirements is transported to landfill or treatment facility. Read more on pages 59-60.

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Towards a climate-positive urban district
In 2016, the roadmap according to the CPDP’s (Climate Positive Development Program) framework for Stockholm Royal Seaport’s continued efforts to become a climate-positive urban district* was completed.

By building with the methods used in Stockholm Royal Seaport, greenhouse gas emissions can be reduced by about 60%, partly through a combination of requirements, competency development and follow-ups, but also by converting energy systems. The greatest challenge is the fossil fuels used in the transport system. Work with the roadmap has attracted major international attention and numerous visits to Stockholm Royal Seaport.

WGBC Congress studied Stockholm Royal Seaport
Stockholm Royal Seaport was presented at the annual congress of Building Sustainability (SGBC) and the World Green Building Council (WGBC) in Stockholm during the autumn. A study visit was made to the area during the congress, and around fifty participants from all over the world shared best practices with the project’s experts.

Knowledge is spreading
The knowledge originating from the development of Stockholm Royal Seaport is spreading. The C/O City R&D project that originated in the area has influenced the requirements specification in the national urban planning certification system that is applied in several other municipalities around Sweden. The City of Stockholm’s other urban development projects are adopting our way of working, with requirements, capacity development programmes, follow-ups and digital infrastructure.

Cities: Skylines
Digitisation will eventually impact the physical design of the city. The City has used the game Cities: Skylines in workshops with students and residents, where the transition to a fossil fuel-free city is has been visualised and discussed. This working method has attracted a great deal of attention, resulting in the publication of some 50 articles around the world.

* Climate-positive is defined according to the framework of the Climate Positive Development Programme (CPDP), a network within the C40, previously known as the Clinton Climate Initiative.

External involvement
Finding new methods and ways of working
Reflow is a visualisation tool to show the city’s ecosystems, with Stockholm Royal Seaport as starting point. Reflow is available both as an exhibit and online at reflow.stockholm.se

* Climate-positive is defined according to the framework of the Climate Positive Development Programme (CPDP), a network within the C40, previously known as the Clinton Climate Initiative.
Several buildings attracted attention. Due to the high level of ambition in the area in terms of sustainability and design, several buildings have been nominated and received awards. The student apartments designed by Sweco FFNS Arkitekter and the industrial building in Västra by Urban Designs won international distinctions during the year. In recent years, the industrial building as well as Wingårdh’s red building for SKB in Västra and the ventilation tower by Rundquist by Norra Länken have been nominated for the Stockholm Building of the Year Award.

**Industrial building wins Gold**

The industrial building on Storängstorget in Västra by Urban Design, commissioned by Fortum, was awarded a gold medal in the American Architecture Prize, in the “Industrial Buildings” category.

**Student housing in Västra win award**

Byggvesta’s student housing in Västra, Kosterhavet, received the Class Property Innovation and Sustainability Award. The prize is awarded for innovations that encourage and facilitate a more environmentally-friendly lifestyle for students. Kosterhavet, with its 113 student apartments, was highlighted as a model of sustainable student housing that challenges traditional ways of thinking, through such features as student ambassadors who live in the building and are involved in creating social activities and facilitating a sharing economy. The housing units are a mix of small one and two-room apartments, plus apartments designed for sharing.

**Research and development**

2,558 followers on Stockholm Royal Seaport’s Facebook page. During the year, the project attracted 200 posts.

Seven newsletters were sent to 1,820 subscribers.

21,610 visitors have been received since 2010.

During the year, the project received about 4,700 visitors from 67 countries. The leading countries were China, the US and France. Some 200 posts.

2016 SUSTAINABILITY REPORT

STOCKHOLM ROYAL SEAPORT
150 families are participating in Smart Energy City

150 families can see and control their energy use in real time in the Smart Energy City research project. The goal is to find solutions that make it possible to use electricity, water and heat in a smarter way. The washing machine, for example, can be programmed to run when the climate impact or price is lower.

Will there be any difference if households can see their consumption in terms of CO₂ emissions or money? The project was officially opened in November by the Minister for Enterprise and Innovation, Mikael Damberg, and can be followed at www.smartenergycity.se.

Logistics and waste during construction

Over SEK 12 million in municipal funds have been granted for new climate projects in Stockholm Royal Seaport that help to meet the City of Stockholm’s climate targets and reduce CO₂ emissions. Projects that have received financing are for purposes including logistics and waste. One subproject concerns the transport of contaminated or surplus materials by sea instead of road, which would reduce transport costs and cut CO₂ emissions by half. An innovation procurement was conducted during the year. The second subproject is for a newly developed litter bin that makes it possible to handle household rubbish from the contractor sheds through the existing vacuum waste collection system, which makes waste management more efficient and improves the work environment.

Source-separating wastewater system

The City of Stockholm’s wastewater management has a high degree of purification with low climate impact. But the wastewater’s resources, such as heat and nutrients, are not optimally reused. By separating the flow into food waste, toilet water and other wastewater, the utilisation of energy and resources is optimised. Ongoing research projects in Stockholm Royal Seaport are shedding light on this from different perspectives:

MACRO: The three-year MACRO project, financed by Vinnova, is run by the City of Stockholm and will raise knowledge of how to plan and construct a source-separating wastewater system in an urban environment. The results will then be used as support for a decision to implement a pilot project. Helsingborg, Västerås, Knivsta are participating in addition to the City of Stockholm, as well as academia, trade associations and suppliers.

CNCA: Source-separating wastewater systems enable the utilisation of high-quality plant nutrients, while increasing the possibility of reusing waste heat at property level and the potential for biogas. A pilot study financed by the Carbon Neutral Cities Alliance Innovation Fund is being conducted that describes the scenarios, potential and overall business model for source-separating wastewater systems in an urban environment.

Energy system analysis

One of Stockholm Royal Seaport’s targets is to be fossil-free by 2030. A systems analysis of Loudden’s energy supply has been funded by the Swedish Energy Agency. Various scenarios are analysed, as well as the potential to optimise energy use and the generation of renewable energy in the city. The study will contribute to an energy system that is open to:

- using local infrastructure for energy storage
- future technical development
- allowing business models for local energy exchanges
- allowing several different energy sources.

The results will be used as support for the continued planning of the Loudden subarea.

Innovation procurement for soil remediation

The soil and water areas along Kallkajen’s quays are contaminated. The costs for excavating or dredging this sediment, and treating it externally, are high. Substantial financial savings can be achieved by developing methods and technologies to treat contaminated soil on site. An innovation project for the development, testing and application of new technology is under way for future development phases, where there is contamination in deeper soils and in groundwater.

Grant for development projects

In 2016, a total of SEK 25 million was granted for development projects: SEK 12 million in external research grants from sources including the Swedish Energy Agency and Vinnova, and SEK 13 million from the City of Stockholm’s climate fund.

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How we work

Vision and targets
In 2009, the Stockholm City Council decided that Stockholm Royal Seaport would be an urban district with a sustainability profile based on four overall targets. The climate target is that the urban district will be fossil-fuel free by 2030, and adapted to future climate change. The ecological sustainability target is focused on resource management and a green structure that supports ecosystems. The social sustainability target describes the vibrant city that serves its people and enables sustainable choices. Stockholm Royal Seaport should also be a catalyst for innovation and new environmental technologies that contribute to economic sustainability targets.

The governing document Sustainable Urban Development Programme was updated during the year, and adopted by the City Council in early 2017.

Organisation
The City of Stockholm is a politically governed organisation and one of the largest employers in Sweden. The City Council sets targets for the City’s operations, and its members are elected by voters in general elections. Important governing documents for Stockholm Royal Seaport’s sustainability efforts are decided by the City Council.

The City Development Administration is the administration that manages the Stockholm Royal Seaport project, and tasked with planning and building on the City’s land. This development is financed through sales of land or site leasehold fees.

The work and decision-making process for the sustainability profile proceeds from the City Development Administration, but encompasses municipal administrations and companies. The Steering Committee consists of managers from the relevant administrations and companies. The focus groups consist of experts in urban planning, traffic, energy, green infrastructure, storm water, chemicals, water and waste and so forth.

Our values
A values project was conducted in 2016, primarily in relation to working atmosphere and approach. The slogan is We will grow together through commitment and responsibility.

Stakeholders
The sustainability targets provide the basis for several aspects that are reported, and an overview can be found on pages 32-33. The need for what should be reported is captured through surveys of employees and residents, consultation meetings, academic reference groups and administration and company-wide working groups. Stockholm Royal Seaport participates in a range of networks and engages in active dialogue with property developers, politicians, municipalities and authorities. The aim is to identify issues that are significant for the ongoing process. Issues of major interest include the achievement of sustainability and housing targets, the function of the urban district and best-practice sharing.

Cooperation model
One of the prerequisites for our work is broad political support, and the aspiration that Stockholm should continue to be a leader in sustainable urban development. The targets are transformed into binding requirements. The requirements affect the design of buildings and the urban district, and are followed up to ensure that the high ambitions are put into practice. In order to translate the requirements into action, training and other activities are arranged to enable dialogue and new knowledge. This is carried out in close cooperation with the relevant parties. Trend analysis brings new perspectives. Continued evaluation and analysis of the process contributes to continuous improvements and provides support for applied research and development projects.

The results are communicated to share best practice. See the model on the right.

The sustainability strategist says:
We attach great importance to designing open and welcoming public spaces, to make Stockholm a more connected city. A closer city that enables sustainable choices. We are working to raise awareness of more sustainable choices in everyday life, such as choosing to walk or cycle instead of taking the car, or reusing clothing and furniture. There should be many different ways for people living and working in the area to actively participate in the development of Stockholm Royal Seaport.

One lesson learned from Hammarby Sjöstad is that we cooperate with the property developers by defining clear requirements, following up and providing feedback on the results. It is obvious that property developers need to take an integrated approach at an early stage in order to meet the requirements. In Stockholm Royal Seaport we are pioneers, both the residents and those of us involved in the development.

We are learning together.

If you have any questions about this report, feel free to contact us at norma@jurgansdalen@stockholm.se

Christina Salmhofer, Sustainability Strategist Stockholm City Development Administration

Commitment
We are committed and passionate about what we do. We are proactive and creative.

Development
We are growing and developing. We innovate both in our work and share our knowledge.

Responsibility
We represent the City of Stockholm. We take an overall view and are multi-oriented. We cooperate and take a long-term approach.

Together
We cooperate, communicate clearly and take initiative. We are adaptable and supportive.

Evaluation and feedback
Follow-up
Knowledge and dialogue
Strategy, objectives and requirements
Trend analysis
Political will

28 2016 SUSTAINABILITY REPORT

STOCKHOLM ROYAL SEAPORT 29
Towards a sustainable city

Stockholm Royal Seaport is angled out in the environmental programme as an area with an environmental profile. City Council decides that Stockholm Royal Seaport is to be developed with an environmental profile.

First set of requirements defined for Norra 2

City of Stockholm adopts Stockholm Royal Seaport’s requirements for energy, Green Space Index, digital infrastructure and materials. As well as working methods, such as the capacity development programme, focus groups and follow-up.

Identification of new R&D projects.

Voluntary commitments for Norra 1 and Västra

Stockholm Royal Seaport is planned as an area with singled out in the environmental profile.

City Council approves the overall programme for the environmental and sustainable urban development in Stockholm Royal Seaport.

City of Stockholm adopts Stockholm Royal Seaport’s requirements for energy, Green Space Index, digital infrastructure and materials. As well as working methods, such as the capacity development programme, focus groups and follow-up.

Stockholm Royal Seaport now has at least 6,000 new housing units and 35,000 new workplaces.

City tram line is phased out for offices, retail, preschools, schools, sport and culture.

Occupancy of Gasverket, with sports facility, hotel, school, preschool and library.

Occupancy of Gasverket now at least 12,000 new workplaces.

Hjorthagen is fully developed with about 6,000 new housing units and premises for offices, retail, preschools, schools, sport and culture.

Social impact assessment conducted for Kolkajen and Södra Värtan

The Green Space Index for public open space is applied

City Council approves the Stockholm Royal Seaport’s requirements for energy, Green Space Index, digital infrastructure and materials. As well as working methods, such as the capacity development programme, focus groups and follow-up.

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Stockholm Royal Seaport now has at least 6,000 new housing units and 35,000 new workplaces.

Site-allocation competition in Kolkajen with a focus on social sustainability

Decision on source-separating wastewater system in Södra Värtan and Kolkajen

Expanded civil dialogue Södra Värtan

City tram line is phased out for offices, retail, preschools, schools, sport and culture.

Sustainable Urban Development Programme adopted by City Council

New focus groups started

Pop-Up Recycling moves around Stockholm

Best practices from Stockholm Royal Seaport are shared across the entire city.
### Target achievements – forecast for 2030

This is a forecast for 2030, based on the ongoing work and current conditions.

#### CLIMATE TARGETS

<table>
<thead>
<tr>
<th>Target</th>
<th>Target achievements</th>
<th>Example of planned actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Climate-positive urban district. The first stage, a roadmap, has been developed, approved by the Urban Development Division and sent to the Climate Positive Development Programme (CPDP).</td>
<td>Follow-up plan.</td>
</tr>
<tr>
<td>1.2</td>
<td>By 2030, emissions will not exceed 1.5 tonnes of CO&lt;sub&gt;2&lt;/sub&gt; per person. Requirements for energy-efficient buildings from 2016; max 50 kWh/m&lt;sup&gt;2&lt;/sup&gt; net energy, self-generated energy, charging infrastructure, mobility measures etc. Traffic hierarchy, charging infrastructure, separate collection of food waste for biogas production, energy systems analysis for Loudalen, etc.</td>
<td>Scenario development for Loudalen, decision on source-separating system to send food waste to tanks and environmental zone analysis for cars.</td>
</tr>
<tr>
<td>1.3</td>
<td>SRS is fossil-free by 2030. SRS = Stockholm Royal Seaport.</td>
<td>Elevations requirements, a storm-water strategy, Green Space Index, etc. At urban district level, storm water strategies and a Green Space Index for public open space have been developed.</td>
</tr>
<tr>
<td>1.4</td>
<td>SRS is adapted to future climate change.</td>
<td>The City of Stockholm’s Storm Water Strategy, analysis of existing buildings in Södra Värtan and Kolkajen.</td>
</tr>
</tbody>
</table>

#### ECONOMIC SUSTAINABILITY TARGETS

<table>
<thead>
<tr>
<th>Target</th>
<th>Target achievements</th>
<th>Example of planned actions</th>
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<tbody>
<tr>
<td>2.1</td>
<td>SRS has low resource usage. Actions under points 1.2-1.3, as well as requirements for property developers concerning connection to vacuum waste collection system and Construction Consolidation Centre. At urban district level, an R&amp;D project is ongoing regarding food in circular and robust systems. Introduction meetings for residents.</td>
<td>System documentation for source-separating wastewater systems in Kolkajen and Södra Värtan, refinement of LCA requirements.</td>
</tr>
<tr>
<td>2.2</td>
<td>SRS has a limited impact on human health and the environment. Requirements for the chemical content and documentation of materials, as well as a good indoor environment in buildings.</td>
<td>Chemical-free preschool.</td>
</tr>
<tr>
<td>2.3</td>
<td>Sustainable production and consumption patterns. Actions under 1.2-1.3 and 3.2.2. The Sustainable Kids’ Forum activities around sustainable consumption, as well as seminars with residents. Mobile recycling centre.</td>
<td>Consumption strategy.</td>
</tr>
<tr>
<td>2.4</td>
<td>SRS has a green structure that supports and develops the ecosystem, as well as valuable ecosystem services. Green Space Index for development sites requirement. Biotope and sociotope studies, testing and implementation of the Green Space Index for public open space.</td>
<td>The Green Space Index for public open space is used in all projects.</td>
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#### SOCIAL SUSTAINABILITY TARGETS

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<thead>
<tr>
<th>Target</th>
<th>Target achievements</th>
<th>Example of planned actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>“Enabling sustainable choices.” Requirements for user-friendly waste management, a mobile recycling centre, traffic hierarchy and mobility measures (pedestrian-friendliness, bicycle parking, carpool spaces, electric vehicle charging), proximity to services and parks, etc. Information and resident get-togethers (thematic meetings, security walk).</td>
<td>Feedback and information to residents. Refinement of Reflow.</td>
</tr>
<tr>
<td>3.2</td>
<td>In SRS, people who live and work in the area are encouraged to become involved. Actions under 3.1. Planting boxes, beekeeping, formalisation of the HIND neighbourhood network, Sustainable Kid Forum activities, expanded civil dialogue through consultation.</td>
<td>Civil dialogue, Södra Värtan.</td>
</tr>
<tr>
<td>3.3</td>
<td>SRS promotes social inclusion and cooperation through mixed forms of tenure and housing unit sizes. Mixed forms of tenure (SO1 rental apartments and SO2 tenant-owned apartments), as well as various types of special housing (student housing, &lt;50, residential hotels, etc.), welcoming and accessible public spaces.</td>
<td>Site-allocation competition focused on social sustainability in Kolkajen.</td>
</tr>
<tr>
<td>3.4</td>
<td>A multi-functional and safe urban district that is accessible to everyone. Actions under 3.3. Functional mix, Security walks. Social impact assessments, Resident survey.</td>
<td>Account for key aspects in social impact assessment and resident survey.</td>
</tr>
<tr>
<td>3.5</td>
<td>Good opportunities for recreation and culture. Proximity and connections to parks and green spaces in the urban district. Pavilion and cycle bridge to Norra Djurgården, art, etc.</td>
<td>Inauguration of the first work of art in Västra. Bridge over Husarviken. Gaswerk for recreation and culture.</td>
</tr>
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</table>

<table>
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<tr>
<th>Target</th>
<th>Target achievements</th>
<th>Example of planned actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>In SRS, land is re-used and the cultural built heritage is protected and utilised.</td>
<td>Soil remediation that makes land available for construction with a high rate of development, utilisation of cultural-heritage buildings, etc. Cinema as parking garages, careful renovation of Gaswerk.</td>
</tr>
<tr>
<td>4.2</td>
<td>SRS is an economically vital urban district.</td>
<td>Functional mix. Service and premises close to public transport. Public services on the ground floors of destinations. Digital plan. Dialogue with property owners and business operators.</td>
</tr>
<tr>
<td>4.4</td>
<td>The Life Cycle Costing (LCC) principle is to be applied. 100-year perspective. Requirements for paving materials on public open space.</td>
<td>Joint methodology for LCC estimates.</td>
</tr>
</tbody>
</table>
Follow-up Report
About the City of Stockholm’s follow-up process

The City imposes requirements on property developers for the planning and production of buildings and public open space in Stockholm Royal Seaport. The results are followed-up on several occasions: after the programming, systems development and construction phases, as well as as-built documentation and after two years of operation. The follow-up takes the form of close dialogue and the City reviews the property developers’ information. A web-based tool is used to facilitate the follow-up. Requirements for public open space during different phases are followed up annually, and reported per phase.

About this appendix

The aim of this appendix is to present the follow-up results for the requirements imposed on property developers and the City’s own work, and to highlight the commitment shown through best practices. The report has two sections: one for property developers, and one for public open space. The requirements are based on the Stockholm Royal Seaport’s sustainability targets. The results presented are the Green Space Index, Energy, Waste, Transport, Materials and Indoor Environment. The report also includes results from the resident survey.

A map and overview of the development phases can be found on page 5.
Climate-change adaptation

The aim of the Green Space Index
The Green Space Index (GSI) is a tool designed to create climate-adapted and lush developed areas. The starting point is to reward greenery that is multifunctional: 
- promotes biodiversity

How can this requirement be met?
The Green Space Index is calculated block by block, and the property developers need to cooperate in order to fulfill the requirement. A high Green Space Index is not based on a site’s size, but on the amount of eco-efficient space created. The Green Space Index indicates how much of the site’s total area is eco-efficient, i.e. that which makes a positive contribution to the site’s ecosystem and local climate, and has social values associated with greenery.

Summary assessment
The Green Space Index combined with the storm water strategy mean that the systems for water and greenery now emerging in courtyards and on roofs are receiving well thought-out solutions that promote both vegetation and storm water retention. Key conditions for success are the coordination of property developers at an early stage, and properly constructed plant beds with sufficiently deep soil, abundant plants and storm water solutions connected in a series that supply water to the vegetation. With this as the foundation, the subsequent design varies considerably. Examples of new solutions are bat houses, insect hotels, rooftop gardens, new types of deep window boxes, rain beds, wall constructions for climbing plants and rain barrels.

Requirements in brief:
- Housing units must achieve a GSI of 0.6.
- Premises must achieve a GSI of 0.4.
- They do not apply to existing buildings in Gamla stan for cultural heritage reasons.
- The requirements for Norra 1 and Västra are based on voluntary commitments and the results are not reviewed by the City.

Resident survey:
89% of residents are very or fairly satisfied with the outdoor environment as a whole in relation to flowerbeds, tree planting and benches.

An ongoing dialogue between the relevant parties in the block is essential. Everyone must contribute to achieving the Green Space Index. It is important to have already established the ambitions and purpose jointly with all relevant parties in the project development stage.

Results – GSI by block

Västra

Norra 2

Brofästet

Södra Värtan* – offices

- Wallfast is planning stair-shaped rooftop terraces.
- Bonnier has rooftop terraces of different heights, and large plant beds for storm water retention.

Södra Värtan* – housing units

- Nine of eleven property developers have green roofs.
- A large proportion of the greenery in Primula’s courtyard has not been excavated.
- SKB has a thick floor slab with Leca and soil, and plants trees.

Requirements in brief:
- Nine of eleven property developers have green roofs.
- A large proportion of the greenery in Primula’s courtyard has not been excavated.
- SKB has a thick floor slab with Leca and soil, and plants trees.
Energy

The aim of energy requirements
The aim is to reduce energy use by imposing strict requirements for energy-efficient buildings. Self-generated energy is also a requirement in order to reduce the need for fossil energy.

How can this requirement be met?
Buildings must be designed with well-insulated, airtight building solutions in order to minimise thermal bridging. Air treatment systems must be high-performance, with minimal losses and optimal airflows for a good indoor comfort. The energy need for domestic hot water must be reduced by installing energy-efficient plumbing fixtures and heat recovery from wastewater heat exchangers.

The use of electricity for the operation of buildings can be reduced with energy-efficient solutions. Premises that require cooling must be designed to use mainly passive solutions. Window placement and orientation, and solar shading are important aspects for the optimal design of buildings with cooling needs. The form factor of a building (the surrounding area in relation to the heated area, $A_{surround}/A_{temp}$) is highly significant for its energy use.

Life-cycle assessment (LCA)
In order to build knowledge of the climate impact of buildings from a life cycle perspective, property developers are required to compare two frame options in order to investigate their potential to reduce climate impact. The results have so far indicated a need to refine requirements and verification methods. A development project will take place in partnership with the IVL Swedish Environmental Research Institute.

Summary assessment
One important reason why the requirements are being met is that clients, contractors, suppliers, consultants and other involved parties are working actively towards joint targets. The energy requirements for Stockholm Royal Seaport have changed and evolved in recent years after being evaluated and analysed.

Lessons learned from previous requirements showed that self-generated energy was credited to compensate for an inferior building envelope. This applied to Norra 2. Hot-water use is currently viewed as the energy item most relevant for efficiency measures. The energy requirement was made more stringent between the Brofästet and Södra Värtan development phases, from 55 to 50 kWh/m² $A_{temp}$ and from purchased energy to net energy.

Requirements in brief:

Housing units
- Norra 2, Brofästet and Gasverket: < 55 kWh/m² $A_{temp}$, year, purchased energy.
- Södra Värtan: 50 kWh/m² $A_{temp}$, year, net energy.

Premises
- Norra 2, Brofästet and Gasverket: 45 kWh/m² $A_{temp}$, year, purchased energy.
- Södra Värtan: 45 kWh/m² $A_{temp}$, year, net energy.
- Existing buildings in Gasverket: target of 50% reduction.

Self-generated energy cannot be credited to the building’s energy performance, with the exception of Norra 2.

The energy requirements require focus during both planning and construction stages, and a follow-up of every parameter to avoid exceeding the narrow margins permitted by the energy requirements.

Net energy is the energy supplied to the building for heating, cooling, domestic hot water and energy for the building’s operations.

Under the net energy requirement, all supplied energy must be counted, which means that the building needs a good envelope regardless of the energy supply system chosen.

Exhaust and supply air ventilation with heat recovery, known as an FTX system, is standard when building low-energy buildings.
In existing buildings, cultural heritage values must be weighed against energy efficiency measures.

SISAB’s school (new building) has a well-insulated building envelope.

SISAB has reduced energy use in its existing building by 45% for the school and 52% for the preschool.

The requirement for Södra Värtan is 50 kWh/m² A temp, however the site-allocation competition made it possible to commit to a stricter energy performance requirement.

Niam consists mostly of offices, but has only reported estimates for housing units to date.

All property developers came in well below the BBR requirement in place at the time, which was 110 kWh/m² A temp. Measured values from Svenska Hus are based on figures from their energy declaration.

The values are annualised on a degree-day basis based on measured statistics for 2015 or 2016. The heat pump’s share of heat has been assumed according to models. All of the properties have air heat exchangers except for Lennart Eriksson, which has district heating and FTX, and Reinhold Gustafsson, which has a geothermal heat pump and FTX, as well as recharging the ground with solar thermal energy collected in water loops on the green roof of the building.

All of the property developers have district heating and FTX. Wallenstam’s preschool shows higher energy performance due to airflows which result in higher energy requirements.

Erik Wallin reports deductions for solar power.

Wallenstam has not credited itself for self-generated electricity from wind power.

The requirement for Södra Värtan is 50 kWh/m² A temp, however the site-allocation competition made it possible to commit to a stricter energy performance requirement.

Einar Mattsson 1, HSB and Stockholmshem have wastewater heat exchangers.

Åke Sundvall has revised its project and reports estimated values lower than its previous 105 to 50 kWh/m² A temp.

Stockholms hem’s plus-energy house has good building envelope combined with an efficient geothermal heat pump, and preheating of air coming in to the FTX via drill holes and wastewater heat exchangers.
Self-generated energy

Requirements in brief:
Self-generation 2 kWh/m² Aₜₚ temporarily solar power, or 6 kWh/m² Aₜₚ temporarily solar thermal energy or a combination of these two.
Self-generated electricity cannot be credited in the building’s energy performance, with the exception of Norra 2.

Results – self-generated energy per development phase

Norra 2. Projected values.

<table>
<thead>
<tr>
<th>Developer</th>
<th>Solar cells kWh/m² Aₜₚ</th>
<th>Solar collectors kWh/m² Aₜₚ</th>
<th>Wind power</th>
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</thead>
<tbody>
<tr>
<td>Stockholmshem</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Skanska</td>
<td>0</td>
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<td>SSM</td>
<td>0</td>
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<tr>
<td>Wallenstam</td>
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<tr>
<td>Viktor Hanson</td>
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</table>

For Norra 2, the property developers were allowed to credit their self-generated energy in their energy performance figures, which is why many aimed for a high rate of local self-generation.
Wallenstam has self-generated energy from newly built wind turbines that covers both property and household electricity.

Brofästet. Projected values.

<table>
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<tr>
<th>Developer</th>
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</table>

Due to the property’s unfavourable location, Åke Sundvall has received permission to place solar cells on future projects in Gasverket.
Stockholmsnem has both solar cells and wind turbines.

A sustainable waste system

The aim of waste requirements
The waste system in Stockholm Royal Seaport should facilitate waste separation and be user-friendly. Waste disposal units should be installed in residential and commercial kitchens, and a vacuum waste collection system used for residual waste, plastic packaging and newspapers. Other waste should be taken to the property’s recycling room.

Summary assessment
To maintain high quality, a recycling room should be of an appropriate size and close to building entrances. The average area per apartment for recycling rooms in Norra 2 is 0.46 m², and 0.43 m² in Brofästet. A large recycling room can be perceived as more user-friendly. A small recycling room becomes easily untidy, making it difficult to accommodate all of the fractions desired.

Norra 2

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<tr>
<th>Distance (metres)</th>
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<td>0</td>
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<td>50</td>
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<tr>
<td>60</td>
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<td>70</td>
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</tbody>
</table>

For Norra 2, the property developers were allowed to credit their self-generated energy in their energy performance figures, which is why many aimed for a high rate of local self-generation.

Wallenstam has self-generated energy from newly built wind turbines that covers both property and household electricity.

Due to the property’s unfavourable location, Åke Sundvall has received permission to place solar cells on future projects in Gasverket.

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Brofästet

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</table>

The longest average distance is 38 metres.
Tobin/EBAB has exceeded the distance for two townhouse-style housing units.
HSB and Einar Mattsson have solved the distance issue in the best way under the circumstances.

Requirements in brief:

Resident survey:
53% say the conditions for separating waste are better in Stockholm Royal Seaport than where they used to live.
44% say their behaviour has become more environmentally friendly in terms of separating waste since moving to Stockholm Royal Seaport.
Construction waste

The aim of requirements
The amount of construction waste arising must be as small as possible to reduce environmental impact. The first choice for construction waste should be reuse, the second choice material recycling and the third choice energy recovery. As little waste as possible should be sent to landfill.

Summary assessment
An integrated approach should be applied to waste planning long before production start-up in order to meet the defined targets. Good quality assurance during construction can help to reduce the amount of waste. Property developers need to work more actively here by already preventing waste during the planning stage.

Requirements in brief:
- Max 20 kg waste in kg/m² GFA (gross floor area)
- Max 5% by weight may be sent to landfill.

Results – Construction waste in kg/m² GFA.

<table>
<thead>
<tr>
<th>Company</th>
<th>Energy recovery</th>
<th>Materials recycling</th>
<th>Reuse</th>
<th>Mixed</th>
<th>Landfill</th>
<th>Not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Västra</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ByggVesta</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Einar Mattsson</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>JM (Tresticklan)</td>
<td></td>
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<td></td>
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<tr>
<td>Burtschi (Tynnela)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Järntorget</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Primula</td>
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<td></td>
</tr>
<tr>
<td>SKB</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stockholmholmen</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SS (Söderåsen)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norra 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viktor Hanson</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wallenstam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wallenstam/Folksö</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The waste can be separated into eighteen fractions on site, and the fractions can be matched with our current stage of construction. The portion of mixed waste that arises is transported to one of our waste contractors’ recycling stations where it is sorted. So far, 0% has been sent to landfill.

The statistics are provided by the Construction Consolidation Centre, except for Järntorget.
- ByggVesta’s contractor built faulty constructions that had to be demolished.
- JM has a waste advisory board to reduce and prevent waste.
- Primula has cast concrete with a higher use of formwork timber, and built a brick facade that produces high-weight waste.
- SKB has had high-weight brick and mortar waste.
- In total, energy has been recovered from 45% of the construction waste, materials recycled from 21%, 19% has been reused, 1% sent to landfill and 14% comprises mixed waste. The mixed waste is sorted and the materials are recycled or energy recovered. Less than 1% is sent to landfill.

SSM and Viktor Hanson have discarded plaster and fill materials due to water damage.
- Wallenstam’s preschool has not worked actively with this issue.
- In total, energy has been recovered from 45% of the construction waste, materials recycled from 34%, 7% has been reused, 2% sent to landfill and 18% comprises mixed waste.

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Environmental Coordinator
Norra 2, Skanska

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Sustainable transport

The aim of transport requirements
The urban district is planned for an efficient transport system with high accessibility so that people living and working in the area can travel as sustainably as possible. Property-level actions that help to promote sustainable travel also help to increase the attractiveness of walking and cycling and a vibrant urban environment. Reduced car use also means lower emissions of CO₂ and other substances.

How can these requirements be met?
The planning of property-level transport solutions must begin at an early stage, and prioritise walking and cycling. A range of qualitative aspects should be included, including safety, security, and access to, and the placement of, parking facilities for bikes and carpools. This will facilitate the choice of walking, cycling and using public transport over private cars.

Summary assessment
Experience from the first two phases shows that qualitative requirements for bicycle parking do not necessarily result in high quality. Therefore, qualitative requirements are also imposed in later phases. Qualitative requirements are more difficult to follow up, which is why the Mobility Index was developed. Development sites are used for parking garages. Only a few spaces are reserved for carpools.

Mobility Index
Due to the many factors influencing an individual’s choice of transport, these aspects have been collected into a Mobility Index. The tool contains actions that make it easier for property developers to create conditions for sustainable transport choices. To achieve the requirement level, actions must have been taken in these sections: the cyclable city, the walkable city, stationary vehicles, goods management and mobility services.

Requirements in brief:
- Bicycle parking
  - 2.0-2.5 spaces/apartment
  - 0.15 spaces/employee
- Car parking
  - 0.5 spaces/apartment
  - 0.4 spaces/100 m² GFA (office)
  - 0.4 spaces/100 m² GFA (hotel)

The requirements in Norra 1 and Västra are based on voluntary commitments and have not been reviewed. A minimum Mobility Index of 0.5 applies as of Södra Värtan.

Resident survey:
- 64% of households have access to a car. The most common reasons for owning a car are travel and shopping.
- 67% of households in occupied development phases leave their bikes in bike rooms.
- 37% of households say their behaviour has improved in regard to walking and cycling since moving to the area.

Results – number of bicycle and car parking spaces

Norra 2
- NCC, SSM, Wallenstam and Viktor Hanson have agreed on a model whereby the number of bicycle parking spaces is adapted to the activities.
- Schools, sports facilities and preschools have bicycle parking on their premises. Brofästet
- Södra Värtan* – Mobility Index
  - 2.2-2.5 spaces/ apartment
  - Riksbyggen
  - The Värta Terminal has a few spaces for service vehicles.
  - The level of ambition is high, particularly in regard to walking and cycling.

Gavärket and Värtapiren
- The Värta Terminal has a few spaces for service vehicles.
- The school has two spaces, and the preschool and sports facility share one.

Midroc HSB
- Resident survey:
  - 49% of households say they their behaviour has improved in regard to walking and cycling since moving to the area.
- Abacus
- Stockholmshem has placed bicycle parking on the balcony.
- Midroc HSB
- Tobin/EBAB, Einar Mattsson and Oscar Properties have a good mix of indoor and outdoor bicycle parking.

Veidekke
- The school has two spaces, and the preschool and sports facility share one.

SSM enables its low number of car parking spaces by making a carpool space in garage available to the tenant owners’ association and building more bicycle parking spaces.
- Göteborg Trafik has built larger townhouses.

Gasverket and Värtapiren
- The Värta Terminal has a few spaces for service vehicles.
- The school has two spaces, and the preschool and sports facility share two parking spaces reserved for the disabled.
- The number of bicycle parking spaces is adapted to the activities.
- Schools, sports facilities and preschools have bicycle parking on their own land, and shared parking on public open space.

Car parking
- 0.5 spaces/ apartment
- 0-4 spaces/1,000 m

0-6 spaces/1,000 m

Survey
- 59% of households say they their behaviour has improved in regard to walking and cycling since moving to the area.
- 67% of households leave their bikes in bike rooms.
- 37% of households say their behaviour has improved in regard to walking and cycling since moving to the area.

Stockholmshem
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Charge points in garages

Share of charge points (%)

<table>
<thead>
<tr>
<th>Percentage of total number of parking spaces per development phase:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norra 1</td>
</tr>
<tr>
<td>Västra</td>
</tr>
<tr>
<td>Norra 2</td>
</tr>
<tr>
<td>Brofästet</td>
</tr>
</tbody>
</table>

The aim of material requirements

Using the precautionary principle as a starting point, all buildings must be constructed with sound materials and should, wherever possible, be free from hazardous substances. This aims to ensure a good indoor environment and to protect human health and the environment by preventing the spread of hazardous substances.

How can this requirement be met?

Thorough documentation and the inspection of all construction materials are required to avoid hazardous substances. All materials must be checked against the requirements of BVB, Sunda Hus or BASTA. All materials must be logged, and any deviations from the requirements must be explained.

Summary assessment

In general, the property developers are accustomed to using the Basta, BVB and Sunda Hus databases. Requirements that go beyond these criteria, such as endocrine disruptors, have sometimes been overlooked since there are no procedures for managing these expanded requirements.

Results

Deviations from chemical content

<table>
<thead>
<tr>
<th>Deviation</th>
<th>Area of application</th>
<th>Reason for deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC</td>
<td>Pipes, reinforcement spacers, caulking compound</td>
<td>Lack of alternatives in the right size, quality risk, failed to notice when entering data</td>
</tr>
<tr>
<td>Phase-out list substances (mercury, lead)</td>
<td>Pipes, rust-inhibiting paint, low-energy bulbs, fluorescent lamps, handles, roof drains, water taps, valves</td>
<td>No equivalent product on the market/ limited selection on the market, durability/ wear and tear for specific usage</td>
</tr>
<tr>
<td>Zinc</td>
<td>Galvanized steel floor gratings, drain pipes, roofing sheets, window edge flashing, canopies, planting boxes</td>
<td>Difficult to find alternative solution or product</td>
</tr>
<tr>
<td>Endocrine disruptors</td>
<td>Playground fall protection, ground membrane system</td>
<td>Lack of alternatives on the market and availability. The preschools often choose rubberized asphalt over natural materials due to small yards and hard wear.</td>
</tr>
<tr>
<td>Copper</td>
<td>Accumulator tanks</td>
<td>Heat-conducting properties required by technical equipment</td>
</tr>
</tbody>
</table>

Sustainable buildings

Requirements in brief:

All parking spaces in garages must be prepared for charge points. Starting with Brofästet, 20% of parking spaces will have charge points.

The requirements for Norra 1 and Västra are based on voluntary commitments.
Indoor environment

The aim of indoor environment requirements
A good indoor environment contributes to the well-being of residents by ensuring a good thermal climate, air quality, low noise levels and good daylight.

How can this requirement be met?
The earlier the architect and energy and indoor environment experts begin to cooperate, the better the likelihood that the requirements can be met.

Summary assessment
In recent years, the City has noted a higher degree of interest in, and understanding of, the daylight issue. The review has shown that the city structure may contribute to property developers not achieving the requirement for daylight in particular, and this has been accounted for in later stages. However, work should commence with all indoor environment indicators, especially daylight, as early as the programme phase. In general, it can be said that the property developers are good at planning moisture proofing, and find it most difficult to plan for sufficient levels of daylight while simultaneously avoiding high indoor temperatures during the summer.

Requirements in brief:
The Sweden Green Building Council’s Gold rating must be achieved for indoor environment.

Resident survey:
7 of 10 say their indoor temperature is very good or fairly good.

More than
8 of 10 say their indoor air quality is very good or fairly good.

Results – indoor environment indicator according to the Sweden Green Building Council rating achieved

Norra 2

Brofästet

Gasverket

Norra 1, Västra and the Värta Pier

The City has granted exceptions for the Silver rating of the indoor environment for Skanska, HEBA and SSM, due to their planning conditions.

Gasverket has achieved good results, despite cultural heritage considerations.

Norra 1 – completed
Lennart Ericsson
NCC

Västra – completed
Einar Hansson

YSAB school – completed
ENSAB preschool
ENSAB preschool
Sports facilities

Värta Pier – completed
Värta Terminal

SEAB school has achieved good results, despite cultural heritage considerations.

The City has granted exceptions for the Silver rating of the indoor environment for Skanska, HEBA and SSM, due to their planning conditions.

Besqab stands out for having made a thorough report of the daylight indicator at an early stage.

The City has granted exceptions for the Silver rating of the indoor environment to HSB and Besqab, due to their planning conditions.

Property developers in Norra 1 and Västra have voluntarily applied the Sweden Green Building Council’s requirements.
The City Development Administration is responsible for the planning and construction of streets, squares and parks. In other words, functions on public open space. This is carried out in close cooperation with other relevant administrations and companies.

The City has developed requirements for managing, leading and quality-assuring sustainability issues in planning and construction on public open space.

The requirements for public open space includes as climate-change adaptation, energy and ecocycle systems, transport and material choices. Key principles are identified at early stages for the integration of transport, solar irradiance and noise, for example, into the planning of the urban structure, to make it possible for property developers to meet the ambitious sustainability targets.

The sustainability requirements are adapted to local conditions and scope during the planning phase. The requirements are converted into detailed requirements and specifications in the tender documents. During construction, they are regularly monitored by conducting environmental inspections and individual audits of contractors to ensure that the requirements are met.
Transport

Traffic planning
Pedestrians, cyclists and public transport are prioritised when planning the traffic system. The street space only provides parking for brief stops, visitors and carpool.

Special planning guidelines have been developed for sustainable travel. The guidelines describe how the streets and urban districts of Stockholm Royal Seaport should be designed to make travel as environmentally friendly and efficient as possible. The planned infrastructure was evaluated in a pedestrian, bicycle and public transport plan in 2015/16. The document is updated as the areas are completed.

The most recent evaluation showed that the network of pedestrian and bicycle paths has been well adapted to promote walking and cycling around the urban district, and connects to surrounding streets. The potential to further improve conditions includes reducing barriers and creating short cuts for walking and cycling.

Public transport currently consists of the underground railway’s red line, rapid transit route 1 and several other bus services. The area will eventually receive higher capacity public transport services. In late 2017, public transport will be strengthened with another rapid transit service. Other bus services are also being continually expanded.

Bicycle parking
Bicycle parking is built on public open space to complement the bicycle parking planned for development sites. Norra 1 and Västra have 256 bicycle parking spaces on public open space, and there are approximately 60 bicycle parking spaces by the square in Hjort hagen. A total of 41 bike-sharing spaces are spread across three locations: 15 at the underground railway entrance near Hjorthagen, 11 in Ropsten and 15 at the entrance to Norra 1.

Car parking
Since limited space is available for cars due to the low number of parking spaces, designated places are created for carpool and electric vehicle charging in favour of car.

No. of completed carpool spaces per development phase

<table>
<thead>
<tr>
<th>Phase</th>
<th>Norra 1</th>
<th>Västra</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>6</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>

Green Space Index (GSI)

There were requests in the Kolkajen and Södra Värtan development phases. The goal is to create a Green Space Index that rewards multifunctional greenery and water, with a focus on ecosystem services. The aim is to strengthen ecosystems and create green structures that are better equipped for disruptions and future climate change. The GSI covers biodiversity, pollination, climate-change adaptation, noise reduction, recreation, health and culture. It is being developed in collaboration with C/O City, a research project financed by Vinnova.

Green Space Index

Road safety for pedestrians and cyclists is perceived as a problem. Nearly 40% are fairly or very dissatisfied with road safety for pedestrians or cyclists in particular.

Public transport accounts for the largest percentage of dissatisfied residents, with nearly 40% of residents claiming they are very satisfied.

Red-listed and protected species

Several red-listed and protected species have been observed on northern and southern Djurgården. The most common protected species are Potentilla bifurca and the northern crested newt. The most common red-listed species are 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.

Waste

In 2016, the permanent vacuum waste collection facility opened in a cavern in Hjort hagen. Three fractions are handled in the facility: newspapers, plastics and residual waste from households and businesses. The vacuum waste collection facility makes it easier to handle waste, but above all reduces waste transport in the area. Bins on public open space are also connected to the facility, and 15 are currently in operation.

Road safety

Nearly three of four households are relatively satisfied with the ability to walk or cycle to nearby urban districts from Stockholm Royal Seaport.

Public transport

2 of 10 public transport accounts for the largest percentage of dissatisfied residents, and only two of ten households claim to be very or fairly satisfied with public transport.

Completed carpool spaces

<table>
<thead>
<tr>
<th>Phase</th>
<th>Norra 1</th>
<th>Västra</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>6</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>

Resident survey:

40% of

3 of 4

7 of 10 households are very or fairly dissatisfied with issues related to public transport.

Resident survey:

9 of 10

Access to parks and natural areas

255 new trees have been planted in Norra 1 and Västra.

Green space structure and storm water

Green Space Index

Green Space Index (GSI) for public open space is under development, and being tested in the Kolkajen and Södra Värtan development phases. The goal is to create a Green Space Index that rewards multifunctional greenery and water, with a focus on ecosystem services. The aim is to strengthen ecosystems and create green structures that are better equipped for disruptions and future climate change. The GSI covers biodiversity, pollination, climate-change adaptation, noise reduction, recreation, health and culture. It is being developed in collaboration with C/O City, a research project financed by Vinnova.

Storm water strategies are in place for both Hjorthagen and Södra Värtan, and describe how storm water is managed in the area. The clear direction and planning instructions are factors for success. The expected results of the storm water strategy are a reduced need for watering street trees and greenery, and that storm water becomes a visible element of the design. As of Västra, a new technique using soil blends and tree pits has been used for stormwater management in streets. As of Norra 3, biochar will be used in soil blends.

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Access to parks and natural areas

9 of 10

Resident survey:

Access to parks and natural areas

9 of 10

Access to parks and natural areas

255 new trees have been planted in Norra 1 and Västra.
Energy use during construction accounts for a minor portion of the total energy use during the urban district's life cycle. Since the energy is primarily derived from fossil fuels, statistics are collected to enable the stipulation of strict requirements at a later stage.

Public open space, electricity and diesel use 2013-2016, kWh/m$^2$

- Diesel for working machinery (kWh/m$^2$)
- Electricity (kWh/m$^2$)

<table>
<thead>
<tr>
<th>Area</th>
<th>Diesel for working machinery</th>
<th>Electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Västra</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Norra 1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Norra 2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Västra Brofästet</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ängsbotten</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Detailed planning

- Västra
- Norra 1
- Norra 2
- Västra Brofästet
- Ängsbotten

There is no electricity data for temporary site-access roads in Västra. Temporary site-access roads in Västra and Ängsbotten have high diesel usage due to the inferior ground conditions.

Electricity is 100% renewable.

Diesel has Environmental Classification 1.

Wiklund, which handles the Construction Consolidation Centre’s transport, has been working on the introduction of HVO100, a renewable alternative to diesel. As a result, 54% of the fuel used at BLC in 2016 was renewable.

Remediation and fill material management

Soil and fill material in the urban district have been contaminated by previous industrial activity. Remediation is required before housing and new businesses can be built on the land. 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 be inconvenient for people living and working in the area, or for the surrounding environment. In practice this means that fill materials are excavated, screened and reused, or transported away. By reusing and crushing rock locally for use in road construction and building foundations, the amount of transport is minimised and the need to purchase filling material is reduced.
To reduce the amount of natural gravel used in the area, there is a requirement that only 25% of the ballast in concrete can be derived from virgin natural materials, i.e. gravel, sand and crushed shingle.

Stockholm Royal Seaport collaborates with several other municipalities on the issue of ethical requirements for materials and shared procedures for ensuring that natural stone complies with international standards for ethical sourcing. In 2016, the group developed a joint follow-up tool and, together with the Swedish Association of Local Authorities and Regions, developed shared sample audits, and is now investigating how work with other product categories can be developed.

In 2016, all imported natural stone for public spaces was verified and the results show that all stone meets the working group’s joint requirements.

Health and safety

Stockholm Royal Seaport’s biggest health and safety challenge is that many contractors have to work together in a confined space, and at a later stage continue working when residents have moved into the area.

The City is working actively to secure a safe construction environment for its projects. The City is responsible for occupational health and safety during the construction stage, and ensures that all work is carried out in accordance with applicable laws and regulations. This is conducted by holding work meetings and performing risk assessments, and through preventive work and joint safety inspections in the construction stage. The project also conducts active construction health and safety work with builders and property developers. Stockholm Royal Seaport was first in the construction industry to engage in this form of cooperation.

Stockholm Royal Seaport has a zero vision policy for incidents and occupational accidents, and is below the average number of incidents and occupational accidents compared with the rest of the construction industry in Sweden.

The following was reported in 2016:

- 22 incidents
- 3 occupational accidents

Construction sites are dewatered, i.e. the water is pumped out of excavation pits, and the water is purified in the local water treatment plant. This reduces the amount of transport, environmental impact and energy use. In 2016, 24,600 m$^3$ of contaminated water was purified in the water treatment plant, which is roughly equivalent to the water in ten Olympic swimming pools.

Public open space, mass balance, in tonnes and %

- 62% 21,892 tonnes
- 38% 13,687 tonnes

Materials

The materials requirement includes chemical content, social aspects and climate impact. So far these efforts have focused on minimising substances that are hazardous to the environment and human health by checking them against BVB criteria and recording construction materials in a digital logbook. In 2016, there were six deviations for materials containing substances on the phase-out list for chemicals. Several were brass products containing lead, and PVC that was used to line the ceiling of the vacuum waste collection terminal.

Life cycle assessments (LCA) have been carried out on street materials, and on piles and decking. In 2016, a partnership was initiated with the IVL Swedish Environmental Research Institute to test the LCA methodology on infrastructure projects. The pilot project will be completed in 2017.

To reduce the amount of natural gravel used in the area, there is a requirement that only 25% of the ballast in concrete can be derived from virgin natural materials, i.e. gravel, sand and crushed shingle.
### Organisational profile

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>WHAT</th>
<th>PAGE</th>
<th>SCOPE OF REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4.3</td>
<td>Name of organisation</td>
<td>Front</td>
<td></td>
</tr>
<tr>
<td>G4.4</td>
<td>Primary brands, products or services</td>
<td>4-5, 28-29</td>
<td></td>
</tr>
<tr>
<td>G4.5</td>
<td>Location of organisation's headquarters</td>
<td>Back</td>
<td></td>
</tr>
<tr>
<td>G4.6/4.8</td>
<td>Countries, markets where the organisation operates</td>
<td>4-5</td>
<td></td>
</tr>
<tr>
<td>G4.7</td>
<td>Nature of ownership and legal form</td>
<td>19-29</td>
<td></td>
</tr>
<tr>
<td>G4.9</td>
<td>Scale of the organisation</td>
<td>4-5</td>
<td></td>
</tr>
<tr>
<td>G4.10</td>
<td>Number of employees, form of employment, gender</td>
<td>GRI Index</td>
<td>Total of 88 (48% women, 52% men), of whom 13 are employees (average age 38) and 75 are consultants. No seasonal variations.</td>
</tr>
<tr>
<td>G4.11</td>
<td>Number of employees covered by collective bargaining agreements</td>
<td>GRI Index</td>
<td>All employees are covered by the collective bargaining agreement.</td>
</tr>
<tr>
<td>G4.12</td>
<td>The supply chain</td>
<td>60-61</td>
<td></td>
</tr>
<tr>
<td>G4.13-4.22</td>
<td>Significant changes during the reporting period/Explanations of effective changes/Significant reporting changes/Date of previous report</td>
<td>GRI Index</td>
<td>This is the first report according to GRI.</td>
</tr>
<tr>
<td>G4.14</td>
<td>The precautionary principle</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>G4.15/4.16</td>
<td>Membership in sustainability initiatives</td>
<td>13, 60-61</td>
<td>BVB.</td>
</tr>
</tbody>
</table>

### Stakeholder Engagement

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>G4.24-4.27</td>
<td>Stakeholder groups engaged by the organisation/Basis for identification and selection of stakeholders/Approach to stakeholder engagement/Key topics and concerns</td>
<td>29-30</td>
<td></td>
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</table>

### Report Profile

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<thead>
<tr>
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<tbody>
<tr>
<td>G4.28</td>
<td>Reporting period</td>
<td>Front</td>
<td>2016.</td>
</tr>
<tr>
<td>G4.30</td>
<td>Reporting cycle</td>
<td>GRI Index</td>
<td>Annually.</td>
</tr>
<tr>
<td>G4.31</td>
<td>Contract person</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>G4.32</td>
<td>GRI accordance option</td>
<td>GRI Index</td>
<td>Core.</td>
</tr>
<tr>
<td>G4.33</td>
<td>Organisation's policy with regard to seeking external assurance for the report</td>
<td>GRI Index</td>
<td>The report is not externally assured.</td>
</tr>
</tbody>
</table>

### Governance

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>G4.34</td>
<td>Governance structure</td>
<td>19-29</td>
<td></td>
</tr>
</tbody>
</table>

### Ethics and Integrity

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>G4.56</td>
<td>The organisation’s values, principles, standards and norms of behaviour</td>
<td>19-29</td>
<td>The project follows the City of Stockholm’s policies.</td>
</tr>
</tbody>
</table>

### Economic impact

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>G4.EC4</td>
<td>Financial assistance received from government</td>
<td>16-17</td>
<td>DMA: 28-29</td>
</tr>
</tbody>
</table>

### Indirect economic impact

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>G4.EC7</td>
<td>Development and impact of infrastructure investments and services supported</td>
<td>4-5, 8-11, 17-20, 55-60</td>
<td>DMA: 29-30</td>
</tr>
</tbody>
</table>
### Social impact

<table>
<thead>
<tr>
<th>Indicator</th>
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</thead>
<tbody>
<tr>
<td><strong>Labour Practices and Decent Work</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.LA6</td>
<td>Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender</td>
<td>DMA: 28-29</td>
<td>There are no statistics for occupational diseases, lost days, absenteeism and distribution by gender</td>
</tr>
<tr>
<td><strong>Training and Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.LA11</td>
<td>Percentage of employees receiving regular performance and career development reviews</td>
<td>DMA: 28-29</td>
<td>100% of employees had performance reviews in 2016.</td>
</tr>
<tr>
<td><strong>Diversity and Equal Opportunity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.LA12</td>
<td>Composition of governance bodies and management, and breakdown of employees according to gender, age group</td>
<td>DMA: 28-29</td>
<td>The management team consists of four women and three men with an average age of 45. The Steering Committee consists of six women and four men, with an average age of about 55. Minority group membership is not reported in accordance with Swedish law.</td>
</tr>
<tr>
<td><strong>Equal Remuneration for Women and Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.LA13</td>
<td>Ratio of basic salary and remuneration of women to men</td>
<td>DMA: 28-29</td>
<td>The average monthly salary is SEK 45,400 for women, and SEK 43,800 for men.</td>
</tr>
<tr>
<td><strong>The organisation’s role in society</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.SO1</td>
<td>Local community engagement, impact assessments, and development programmes</td>
<td>DMA: 28-29</td>
<td>Consultation is mandatory by law.</td>
</tr>
</tbody>
</table>

### Environmental impact

<table>
<thead>
<tr>
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<th>Scope of Report</th>
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</thead>
<tbody>
<tr>
<td><strong>Materials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.EN2</td>
<td>Percentage of materials used that are recycled input materials</td>
<td>DMA: 28-29</td>
<td></td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.EN5</td>
<td>Energy intensity</td>
<td>DMA: 28-29</td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.EN1</td>
<td>Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas</td>
<td>DMA: 28-29</td>
<td></td>
</tr>
<tr>
<td>G4.EN4</td>
<td>Total number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk</td>
<td>DMA: 28-29</td>
<td></td>
</tr>
<tr>
<td><strong>Effluents and Waste</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.EN3</td>
<td>Total weight of waste by type and disposal method</td>
<td>DMA: 28-29</td>
<td>Only construction waste is reported.</td>
</tr>
<tr>
<td>G4.EN5</td>
<td>Weight of transported, treated waste deemed hazardous.</td>
<td>DMA: 28-29</td>
<td></td>
</tr>
<tr>
<td><strong>Supplier Environmental Assessment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.EN32</td>
<td>Percentage of new suppliers that were screened using environmental criteria</td>
<td>DMA: 28-29</td>
<td>100% have been screened. Statutory requirements are not included in this report.</td>
</tr>
<tr>
<td><strong>Environmental Grievance Mechanisms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.EN34</td>
<td>Number of grievances</td>
<td>DMA: 28-29</td>
<td>80 grievances were received in 2016. The grievances mainly concern public transport and disruption from the construction projects.</td>
</tr>
</tbody>
</table>