# City of the Sun – Heerhugowaard – The Netherlands

More than 3,000 houses and a broad range of facilities are developed and realised on 123 hectares (304 acres) on the south side of Heerhugowaard (30 miles from Amsterdam), in the province North-Holland. This new development is called the City of the Sun (Stad van de Zon) and is surrounded by a new spacious large recreational area of 170 hectares (420 acres). Not only is the generous ratio between residential and recreational areas exceptional, the development objectives of both areas are also outstanding. The central area of the City of the Sun is has CO2 neutral emissions and the recreational part, with woods and ecological areas, consists of around 75 hectares of recreational water suitable for swimming.. Main goal was the addition of 12,500 houses and recreational area in the region of Heerhugowaard as a part of the building task of the National Government of The Netherlands.

## City of the Sun (Stad van de Zon)

The project City of the Sun is the brainchild of Ashok Bhalotra of urban design bureau KuiperCompagnons (Rotterdam, the Netherlands). The sun is the inspirational source for both the architecture as well as the layout. Optimum use is being made of both active and passive sun energy. Eighty percent of the properties in the central area of the City of the Sun (the Carré) are north-south orientated. Instead of an intersecting structure, there is, amongst others, an island structure and a significant crescent, the Hemelboog (The Firmament) leading to the centre. Many of the residential roads are traffic free with car parking in special areas, behind houses or in underground car parks. The traffic free residential roads are developed with extra greenery, special paving and play areas. The Hemelboog is, for the main part, a double row of semi-detached houses that are flanked on one side by a wide stretch of public gardens and landscaping.

As well as being the centre of the Carré, this area is also the centre for all the facilities for the complete City of the Sun.

The total costs of the urban part of the project were over 200 million US Dollars.

**5 MegaWatt PV and CO2 neutral emissions**

The active sun energy will be delivered via the 3.75 MegaWatt photovoltaic solar panels (PV in short) on the roofs of the houses and other buildings. Heerhugowaard, with the City of the Sun, has been the largest partner in the European Sun Cities project. The project has the aim to contribute significantly to the European goal for CO2 reduction and the implementation of PV systems. By producing 3.75 MegaWatt solar energy the City of the Sun is one of the largest urban-scale PV-projects in the world.

The use of solar panels is one of the measures being taken to realise a CO2 emission neutral neighbourhood. Simply put, it is a neighbourhood that supplies as much clean energy as needed for living, working and transportation. Other measures that being taken are the building of energy efficient houses (ISO++ houses) and the construction of three wind turbines in the recreation area, which produce together almost 7 MegaWatt renewable energy.

The investment part of Heerhugowaard in the total costs of the PV-solar panels were 4.7 million USD next to 8.8 million USD subsidies from other partners, like the Province of North-Holland and one of the main utility suppliers.

### Facilities

The City of the Sun will have all its own facilities to provide a complete environment. There are schools, kindergarten, shops, a cafe and a restaurant, a medical centre, a drugstore and a community centre. Heerhugowaard South has a large outdoor sports complex, a sports hall and a multifunctional sports- and leisure centre. Most facilities are commercial investments, for example the multifunctional sports- and leisure centre “Sport Lagune” and the music hall “Waerdse Tempel”. The city council of Heerhugowaard paid for the soccer fields and the community centre. The total costs of these facilities for the city of Heerhugowaard were 8.1 million USD.

### Recreation and Nature Development

The Alle Hosper bureau (landscape design), in close collaboration with artists from DRFTWD Office Associates, has made the design of the recreation area. The collaboration between the two bureaus has led to an exciting design where art is part of the landscape. The area has a 40 hectare (99 acres) wood with walking, cycling, skating and mountain biking paths; open spaces where events can be held; 75 hectares (185 acres) of water for rowing, canoeing and swimming; sunbathing and picnicking areas; and a real sand beach. At the beach, there are facilities for both daytime catering and also large musicals events. Besides its recreational function, the area has great ecological value. There will be special areas created where the land will be naturally developed leading hopefully to a variety of unique plants and animals. The recreational water is closed to the surrounding polder water. A cleansing system will ensure water of a high quality. A special labyrinth of streaming water will help achieve this water quality along with specific planting of appropriate vegetation and the eventual use of a sedimentation pond.

Last but not least the water system in the recreation area around City of the Sun has an important role in the water management plan of the polder Heerhugowaard. Because of the fact that all the banks are constructed in a way that the water level can be raised by 0.4 metres, there is throughout the year no need to pump the water out of this system. And that while there is much need in the wet seasons to do this with the water in the other parts of the polder. In this way the water system provides more safety for the whole municipality of Heerhugowaard.

The total costs of the recreation area, including the water system, were 50 million USD.

### From polder to town, from land to water

Until 1629, Heerhugowaard was an area where the seawater had free rein. Vegetated sandbanks dominated the landscape. After the land was reclaimed in 1629, Heerhugowaard became an agricultural area.

Now, existing houses and farms situated on one of the oldest and picturesque roads were integrated into the new layout plans. Central to the plan is the 700 metre square island, the Carré, that is broadly 1.30 metres above the average level of the water surrounding this new development. The raising and construction of the island, the excavation of the water channels which in places are up to 4 metres deep, the creation of higher areas in the new wooded area, as well as the construction of a large embankment which screens the area from the adjacent main provincial road is constructed in a sustainable way and re-using the soil that came from digging out the lake.. The banks of the Carré and the other smaller islands have been finished with octagonal boulders called ‘basalton’. The inspiration for these are the jetties along the North Holland beaches which reach into the North Sea. Through the development of the recreational area, the use of a wide variety of plants and vegetation and the changing water level, the original state of the land before the ’reclaiming will be regained.

### Current Situation

Construction of the first houses and amenities in the City of the Sun began in 2002. The excavation and construction of the Carré and the recreation area was started in 2003. The year saw a huge change in the landscape of the once so still polder. The building of the first houses in the Carré area started in the beginning of 2004. The City of the Sun and the recreational area of Heerhugowaard South are completed by the end of 2008.

**Lessons learned**

The lessons learned for the project City of the Sun were that the plan must be solid enough to survive financial ups and downs and changes of subsidy schemes.

There must be a separation between the renewable energy goals and the measurements by which these goals must be achieved. Determine the goals, but give the opportunity to the real estate developers to use the techniques they believe in. Determine the renewable energy goals in a flexible way, like in percentages. This makes the goals firm when construction requirements are being changed.

But most of all the necessity of an enormous long term commitment of the crucial partners in the project. Further on, a strong political commitment over the almost 20 years, which includes several mayors and aldermen (the daily board of the city) and several city councils who supported the achievement of the main goals.

# Achievements

With the City of the Sun, Heerhugowaard made a statement. Not only in means of urban planning with a square island surrounded by a high quality water system and a recreational area nearby the houses, but also by it’s renewable energy achievements.

When the producing of 3.75 MegaWatt solar energy, the 7 MegaWatts wind energy and planting of 100 hectares woods are being placed on a balance scale one can speak of City of the Sun as a CO2-emissionneutral build up area.. With the addition of the climate sustainable water system the City if the Sun is probable the first Kyoto-proof urban area in the world. The City of the Sun was officially opened in 2009 by the Prince Willem Alexander of the Netherlands (our future King).