



Greening a city centre square

Summary

- A square in the city centre surrounded by buildings the sun shines directly into for most the day. The only shade is from the buildings which enclose it, so on most days there is no wind. There is no greenery and water is unable to infiltrate
- Trees, a fence with greenery, green façade shading, parking spaces with permeable pavement, driveable green surface and a strip of green planting had been introduced to reduce heat stress and make the square more attractive.

Before intervention	After intervention
	
 <p>At entrance</p>	 <p>After entering, (round corner on right) Showing green façade</p>

Location

Middelburg is a municipality in the province of Zeeland, the Netherlands. It covers an area of about 53 km² and has a population of 48,964 people living in about 23,233 households located in three residential areas. Middelburg is a historical and cultural city which attracts a lot of tourists. The city centre and older neighbourhoods consist of mainly paved areas and do not have lot of green features. This may increase the heat stress experienced when high temperatures occur, particularly for the vulnerable elderly people and children.

Site Description

The Zusterplein is connected to the market square of Middelburg by the Zusterstraat. The Town Hall, on the market square, is directly opposite the Zusterplein and can be seen from the entrance to the Zusterplein, which is paved and surrounded by shops and business. There is no greenery, water is unable to infiltrate so there is surface water flooding in heavy rain. Lack of shade and wind means this is not cool environment in hot weather. There are a range of facilities in the Zusterplein, both information for tourists and services for locals, such as e-bike charging and bike rental and parking as well as a waterpoint. However, the entrance to the Zusterplein is very narrow and is hidden behind the buildings and it is mostly used for deliveries to the surrounding shops and businesses.

The decision-making journey

The rationale for intervention was the poor accessibility, condition of the paving and unattractiveness of the square as well as the perception it was not a safe place at quiet times.

Discussions were held with:

- local residents and business owners, as buildings are privately owned so agreement is required for any modifications and the need for deliveries should be taken into account.
- users/visitors/tourists
- municipality: civil service, politicians, and administrators

The agenda for the discussions focused on the following:

- is there a need for this square?
- understanding where the hottest places are
- potential interventions in the context of the surrounding area, especially the Zusterstraat
- how many parking spaces need to be retained?
- Should the square have a specific use or be multifunctional?

The results of these informed the final design and the interventions to be included in it.

Implementation

- serious soil contamination has been a limitation, restricting the types of greenery that could be installed
- planned renovation of the ING Bank building has delayed the start of this project and it has not yet begun.

Indicative costs: please note that costs have been rounded and, while accurate at the time of implementation, can only be used as an indication of cost.

Capital Cost	€	£ = 1.16€
Site preparation:	2,065	1,786
Sewage	484	418
Paving	20,408	17,648
Groundwork	11,631	10,057
Grids to support climbers	6,671	5,768
Total	41,259	35,677
Plants: 160 @ 7.50	1,200	1,038
26 flowering jasmine @ 28.00	728	630

Capital Cost (continued)	€	£ = 1.16€
7 Trees : 6 standard <i>Ulmus 'Columella'</i> & 1 standard <i>Gleditsia triacanthos</i> 'Skyline'	1,400	1,210
Constructed supports for climbing plants Placing 7 compartments with double bar mat 250 cm high and 260 cm wide. New posts and existing double rod mats that are provided of creepers. Wages: €675 materials €765	1,440	1,245
<ul style="list-style-type: none"> supplying, applying, and tying the plant material for every 260 m, 10 Hedera plants and 1 flowering creeper Jasmine. Wages: €345 materials €735 existing bars with mesh fencing approx. 40 m Wages: €320 materials €345 40 m of bars that are covered with mesh with climbing plants 4 at 1 m and a flowering creeper Jasmine every 1.5 m 160 plants at €7.50 26 blooming Jasmine at €28.00 Wages €415 Additional costs 	1,080 665 2,343 1,143	934 575 2,026 988

Annual Maintenance Costs	€	£ = 1.16€
85m ² shrub planting	510	441
60m ² climbing plants supported on grids	360	311
250 m ² Permeable pavement	125	108
7 trees	103	89
Total	1,098	950

Concerns raised during the public consultation:	Reactions after completion
<ul style="list-style-type: none"> • <i>Reduction of parking spaces</i> • <i>The lighter colours of the paving reflect light into my house/eyes</i> • <i>Loading and unloading should still be possible</i> • <i>The redevelopment of the sister square would have a significant impact on the accessibility of the ING office during the renovation (ING Bank).</i> <p><i>Concerns raised by the Foundation of Arts (Kunst en Cultuurroute Middelburg KCRM)</i></p> <ul style="list-style-type: none"> • <i>Will all the doors opening onto the square be painted the same colour?</i> • <i>Will all the paving from Zusterstraat to Market square entrance be uniform “green tiles”?</i> • <i>There is no mention of upgrading the interiør of the square, will the toilets and position of the bicycle racks be critically reviewed?</i> • <i>The signage to the functions (including parking facilities and toilets) requires attention from both the Market and the Zusterstraat.</i> 	<ul style="list-style-type: none"> • <i>The area is now being well used</i> • <i>Visitors are making good use of the bike shed</i> • <i>This is being looked after by the local business organisation who are responsible for providing the bike shed and toilets as facilities for shoppers and they are very pleased as the area is now more accessible and user friendly.</i>

Reflection: what went well/what could have gone better?

- Participation in the redesign went well and responses were overall positive to the draft design on the municipality’s website.
- Reconstruction has not been started yet, therefore it’s too soon to reflect on the project.
- It is a labour intensive process to come to a successful intervention. Always unexpected things happen. Start in time.
- An independent body/ organisation(such as local- or regional authority) have to facilitate the process to come to a decision what intervention will be realized.
- Involve the stakeholders in the design. > creates support for the final design.
- Involve as much as possible young people and children in the realization of the pilots.
- Explain the added value and extra benefits for the different targetgroups/stakeholders. Make clear what is in it for them.
- A good participation process /decision-making –process gives great satisfaction, support and a sense of ownership of the design by inhabitants and other stakeholders. Continuity guaranteed.
- Not all colleagues are yet aware of the importance of preventing heat stress. Involve as much as possible the other colleagues in the implementation of the interventions at an early stage so that they also become enthusiastic.
- It is an integrated process.
- Gives insight into the future management and maintenance costs.

MEASURE OF SUCCESS	EVIDENCE
reduction of PET value (baseline vs result values, comparison with reference point)	Vegetated paving: 0.5 °C Green wall (Indirect green façade) 3.2°C
size of the area (m2) with improved heat resilience (the total area that benefits from the measures approximate this by using the same approach used for the initial estimation in the application form)	The Zusterplein has a surface area of 360 m2.
number of daily users benefitting from the intervention (if relevant/available: are there specific times of day or the year when there is heavy use?)	The total number of visitors recorded is 27,623 with the greatest number (6,284) in August
co-benefits achieved (e.g. biodiversity, pollution reduction, economic benefits, influence on property value, long-term savings, aesthetic improvement, psychological impact etc.)	Reduced heat stress Biodiversity, pollution reduction, aesthetic improvement, psychological impact.
other results observed	Users will have a closer connection to the city center. The visitors appreciate the greening of the Zusterplein. It now looks much more attractive and will increase the number of visitors.

Technical and financial specifications

- A textile based green wall made by Sioen Industries.
- Permeable pavement instead of regular pavement for parking spaces. Installing and supplying plastic infiltration grids TTE direct Green Dimensions. Measurement 800x400x60 mm with four-sided coupling, sown on a TTE substrate and overgrown with grass. Supplier S.P.M. Lintzen vof o.g. including tailor-made infiltration grids if necessary.

<https://greentecstyle.eco/nl/nieuws/sioen-gaat-vol-voor-de-green-deal>

References

<https://www.middelburg.nl/vergroening-zusterplein>
[3.20190828.3a Verslag Cool towns Middelburg 28082019 def.pdf](https://www.middelburg.nl/vergroening-zusterplein/3.20190828.3a%20Verslag%20Cool%20towns%20Middelburg%2028082019%20def.pdf)
<https://allecijfers.nl/gemeente/middelburg/>
<https://wijzijindestad.com/profielen/service-centrum-zusterplein-o-a-fietsenstalling-en-openbare-toiletten-middelburg/>
[Zusterplein 16, 4331KM Middelburg | Planviewer, het Nationale Locatie Platform](https://www.planviewer.nl/locaties/4331KM-Middelburg)