

le nid

EXPLORER
CO-CONSTRUIRE
MONTRER



NAMUR
CAPITALE

Namur in 3D



The NID (Namur Intelligente et Durable [Intelligent and Sustainable Namur]) continues its mission at the service of the Namur public wishing to better understand territorial issues, projects and urban developments, in order to participate in the co-construction of a more sustainable city, based on collective intelligence.

In 2018, the NID acquired a 3D model of the municipal territory, which offers many advantages and opens up new perspectives, particularly in the context of public surveys or the development of strategies at the city or neighbourhood level.

NAMUR IN 3D

2D mapping is an excellent means of communication and analysis, but its limitations can be seen in applications such as land use planning, integration of future urban projects or in 3D spatial analysis (slopes, visibility, etc.).

Within the framework of the NID's missions and the preparation of the Climate-Energy Plan, the City wished to invest in a 3D model of the entire municipal territory (17,500 ha).

This 3D tool is based on the processing of aerial photographs (spatial resolution of 5 cm) acquired throughout the municipality in September 2017 by the company *Walphot*. These photographs were taken in such a way as to enable the generation of:

- the 3D geometries of 65,000 buildings, bridges and the Citadel (accuracy level – Level Of Detail 2);
- the textures of building facades.

In addition, the façades of the buildings in the Corbeille and the centre of Jambes were re-textured in higher resolution on the basis of photographs taken from the road for greater realism.



A PUBLIC-ACCESS WEB PLATFORM

To make this 3D model and its data accessible to all, a web visualization platform was designed by ESRI (world leader in Geographic Information Systems) and made public on the NID website:

WWW.LE-NID.BE/3D

The municipal services have access to a professional version of the software.



NAMUR OF TOMORROW

Under the heading “Namur of Tomorrow”, the tool offers the visualisation of several major projects that have recently been completed or which are still in progress. In particular, one can visualise the face of the Casernes (Cœur de Ville) and Asty-Moulin districts, the multimodal Station and the “Poteresse” eco-neighbourhood in Bouge.



NAMUR OF YESTERDAY

“Namur of Yesterday” immerses us in the city in the 18th century with the modelling of the *Larcher d’Aubancourt* relief map. Originally, the relief map of Namur was a model made for military purposes, to facilitate the manoeuvres of the French army and the management of conquered cities. It is currently in exhibit at the Palais des Beaux-Arts in Lille.



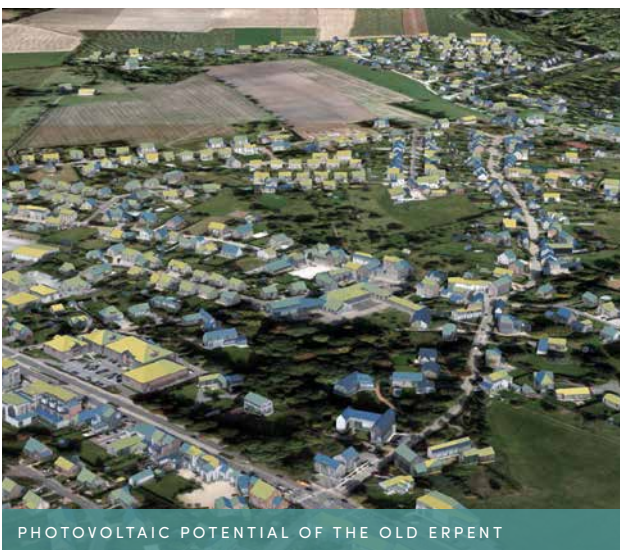
NAMUR IN 1750 - THE CITADEL

PHOTOVOLTAIC POTENTIAL

An in-depth calculation of the photovoltaic potential is made for each roof. This calculation is based on the area, orientation and pitch of the roof and determines:

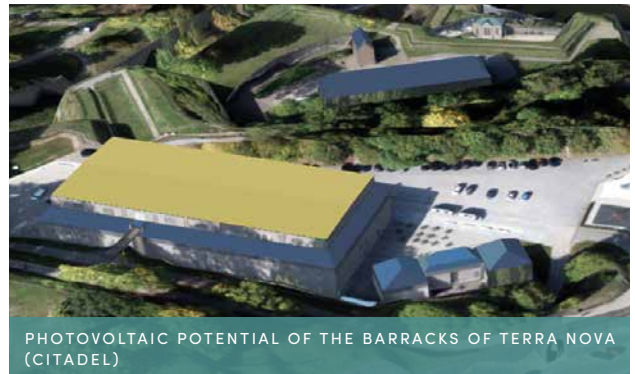
- the average sunshine duration, taking into account the loss of yield due to shadows induced by the relief or the presence of other neighbouring buildings;
- the estimated annual energy production per building and the environmental benefit in terms of reduced CO2 emissions if the roof is equipped with photovoltaic panels.

The aim is to enable every citizen to determine the feasibility of a project to install panels on their roof (areas with high potential are shown in yellow, those with lower potential in blue).



PHOTOVOLTAIC POTENTIAL OF THE OLD ERPENT

On a municipal scale, this indicator of photovoltaic potential identifies the best buildings to equip, and also allows prioritising projects according to technical, economic and environmental conditions.



PHOTOVOLTAIC POTENTIAL OF THE BARRACKS OF TERRA NOVA (CITADEL)

AERIAL THERMOGRAPHY

Aerial thermography by infrared scanner is a technique that measures and illustrates the “radiative flux” emitted by the roofs flown over. Using this radiative flux, it is possible, to estimate the amount of heat loss through roofs. **Thermography therefore gives an indication of the state of insulation of roofs.**



AERIAL THERMOGRAPHY - SOUTH OF LA CORBEILLE AND RUE NOTRE DAME

An aircraft equipped with an infrared scanner flew over the municipality during the nights of 16-17 and 23-24 February 2018. For the data to be correct, several conditions had to be met: good visibility, clear sky, 80% humidity, temperatures between -5°C and -3°C, maximum wind speed of 7 km/h, flight altitude: 1200 m (data spatial resolution: 25 cm on the ground). After the flight, the data collected were used to calculate a heat loss index for each building. In order to calibrate the data throughout the Namur region, 120 citizens volunteered to test

their building as a “reference”. On the nights of the flights, they took various temperature measurements inside and outside their homes and filled out a form indicating the characteristics of their homes.

The more heat the roofs emit, the closer they are to the red shades. A key for interpreting the results is available to determine the emission class of one’s roof according to the following scale:



An average heat emission value could be calculated for each neighbourhood in Namur. Logically enough, a certain correspondence could be established between the thermal response of roofs and the age of the building. The city centre neighbourhoods have, on average, the highest emitting roofs (and are therefore the least insulated) in the municipality. The neighbourhoods with the lowest average roof emissions are Gelbressée, Erpent, Géronsart, Jambes-Montagne, Vierly and Frizet.

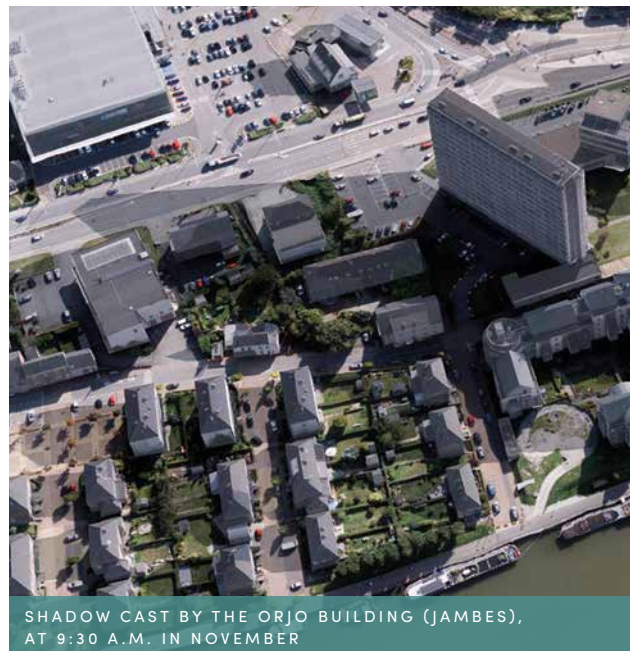
It was also found that Namur residents who own their own home are more likely to occupy a better insulated home than those who rent. Thermography allows the latter to question their landlords about the state of insulation in their homes.

TO CONCLUDE

Namur 3D therefore allows:

- to offer **better information and understanding of the territory** by allowing a more realistic and therefore more educational analysis of territorial issues;
- to **visualise the impact of a project on its environment** (impact on the sunlight of neighbouring houses for instance);
- to **communicate more efficiently on the major challenges** of the city of tomorrow;
- to **facilitate the appropriation of urban issues by citizens**, in a perspective of «co-construction» of the city;

- to **facilitate the creation of land management and decision-making tools** (design and improvement of applications, etc.) for stakeholders in the city.

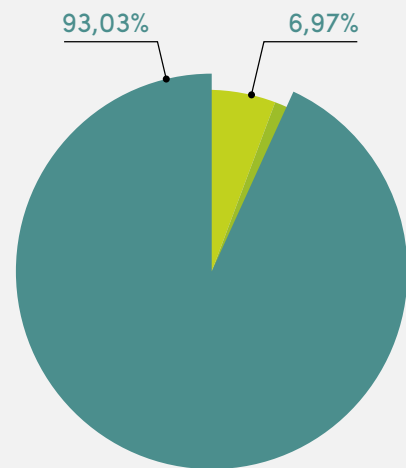


KEY DATES

- | | |
|----------------------------|---|
| August 2017 | Awarding of contracts for 3D modelling. |
| September 2017 | Flights for the acquisition of 3D geometries and textures. |
| 16 and 23 Feb. 2018 | Aerial thermography flights. |
| May 2018 | Commissioning of the visualisation platform. |
| November 2018 | Digitization of the relief map of Namur in Lille “Namur 1750”. |
| April 2020 | Addition of new features: High-definition Namur and Namur 1750. |

KEY FIGURES

3,022,646.32 m²	High potential area available for the installation of photovoltaic panels.
118.03 kWh/m²	Annual available electrical power per m ² of high potential area.
25,281 MWh/year	Actual electricity production (2018).
362,550.5 MWh/year	Potential annual electricity production.
100,426.5 eq.t/year	Potential reduction of CO ₂ emissions (for high-potential roof areas, 1 MWh produced is equivalent to a reduction of CO ₂ emissions of 0.277 tonnes).
3841	Existing photovoltaic installations (2018).



- Electricity production by photovoltaics (2018)
- Electricity generation potential (2018)

ELECTRICITY PRODUCTION BY PHOTOVOLTAICS IN NAMUR (2018)



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KNOW MORE

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Timings

Open Wednesday to Friday from 10 a.m. to 5 p.m.,
Saturday and Sunday from 2 p.m. to 6 p.m.

Booking required via the NID website
www.le-nid.be - www.namur.be

Registration is also possible on site or by phone,
subject to availability.