

Roof greening – Taking stock

Thanks to their beneficial ecological effects, green roofs contribute to reducing negative impacts on the ecosystem in metropolitan areas and help to improve both living and working conditions. They reduce the run-off of rainwater, counteract rainwater peaks, create evaporation surfaces and can increase biodiversity. The creation of additional greened surfaces for work and leisure means that green roofs also help to improve urban living environments and can compensate for the loss of open spaces to a certain extent. The topic of greenery on buildings is becoming increasingly important, particularly in the context of measures to adapt to climate change. This provided the motivation for the first city-wide analysis for Berlin and the integration of this issue into the Environmental Atlas.

Methodology

To acquire data on green roofs in Berlin, a two-stage process was developed that was used to analyse available building and roof outlines as well as underground car parks without overlying buildings. In the first step, an automated preliminary mapping of green roof surfaces was carried out based on digital colour-infrared orthophotos (DOP20CIR) from April 2016 and other specialist planning data and geodata with citywide availability. The particular radiative properties of plants are used in order to identify areas with vegetation (NDVI). In the second step, the results of the preliminary mapping were checked and, where necessary, improved by means of interpretation of aerial images as part of

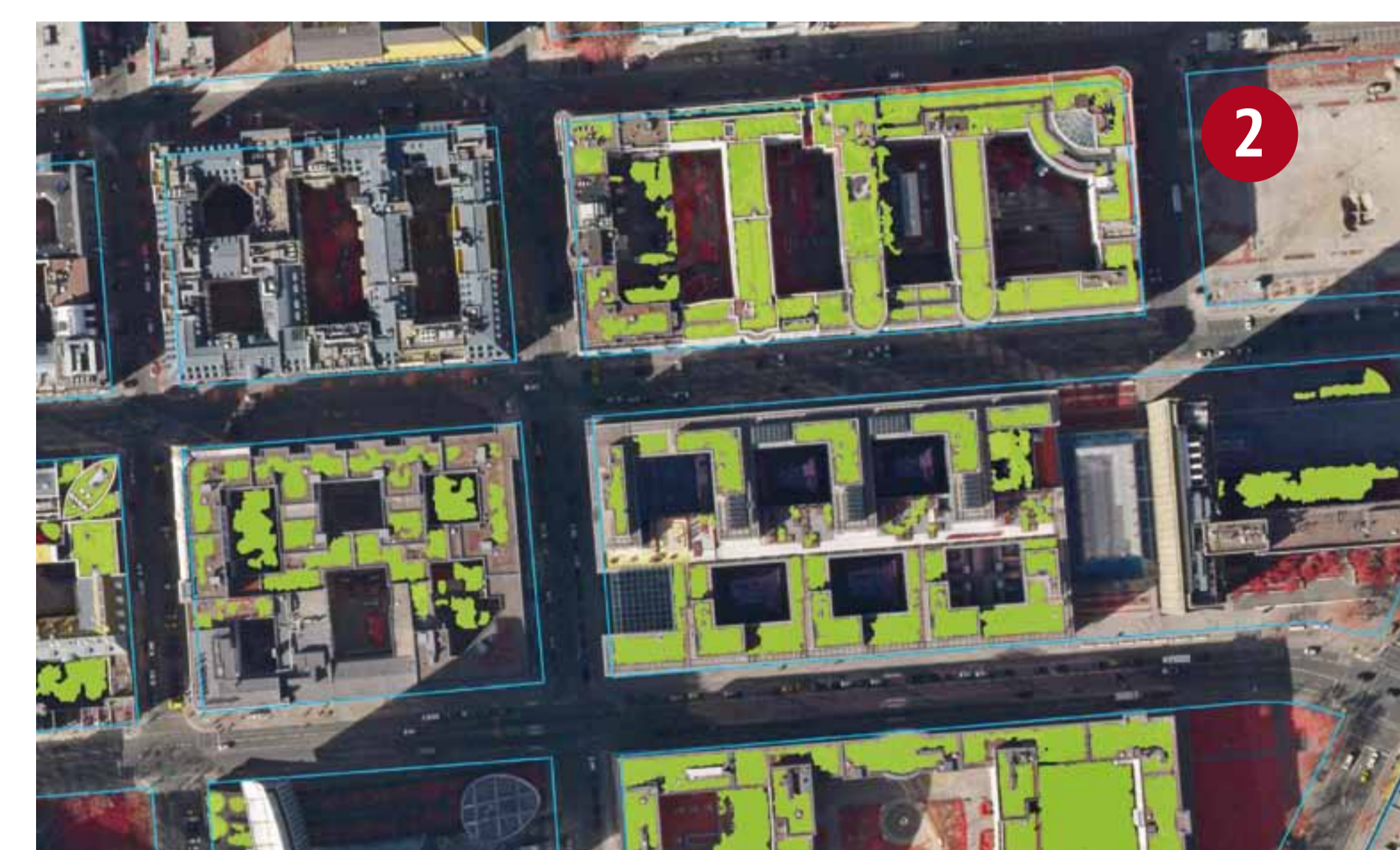
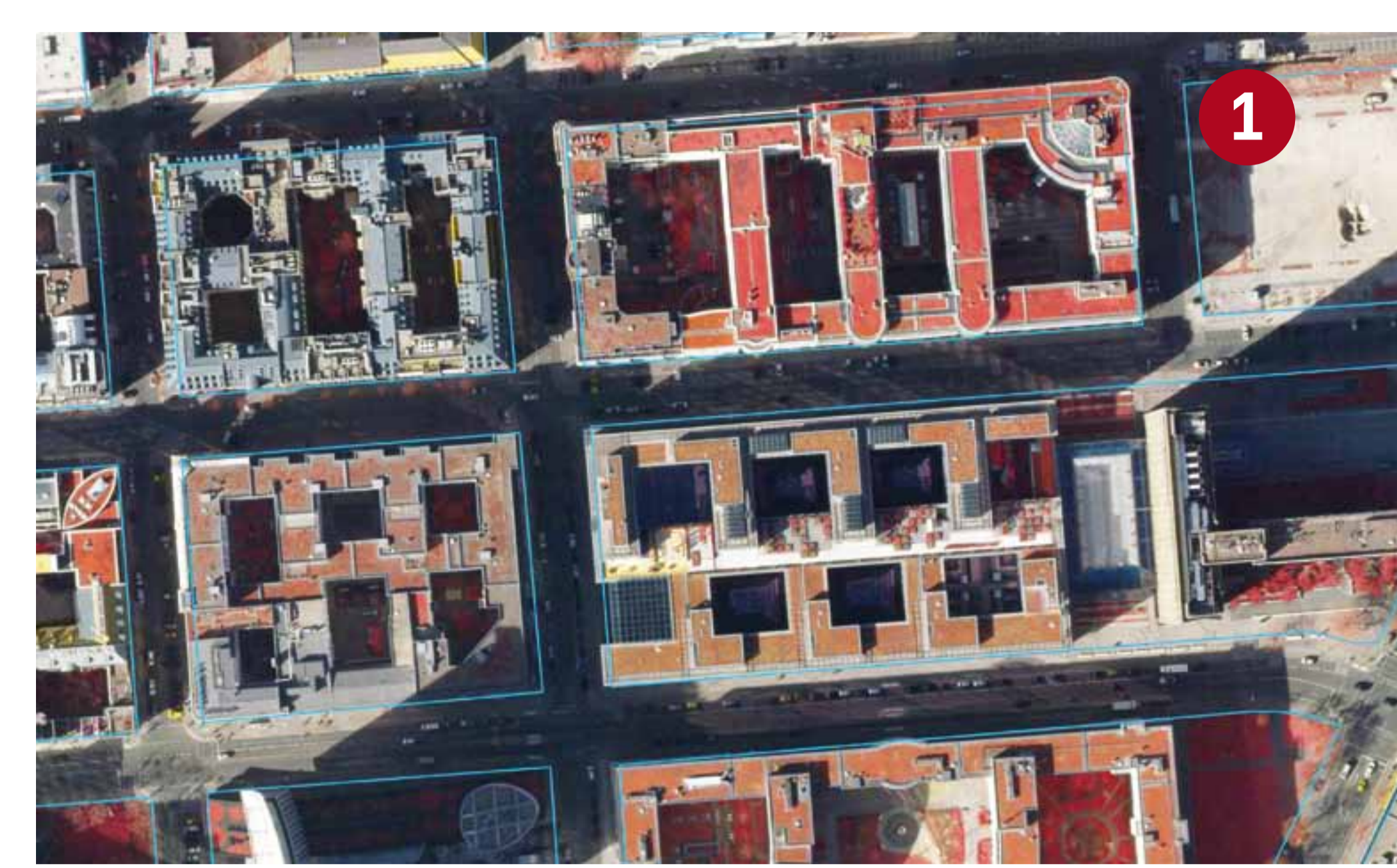
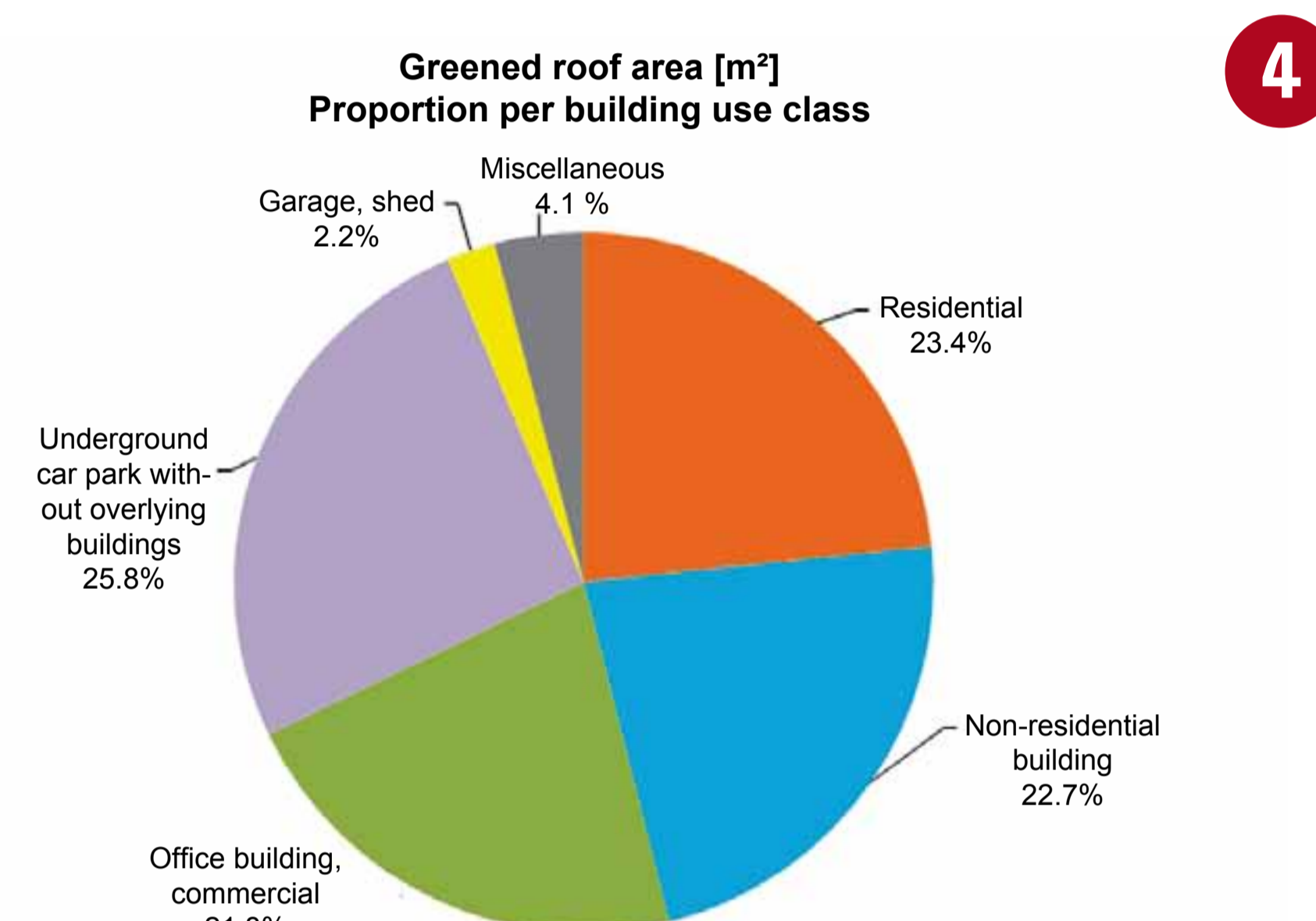
visual post-processing. The mapped surfaces were then aggregated according to the block and partial block segments.

Results and facts

In Berlin, 18,368 of a total of 604,865 buildings (3.0%) – incl. underground car parks without overlying buildings – have green roof areas or partial green roof areas of > 10 m². When added up across the whole city, the partial green roof areas come to 400 ha, which is equivalent to the area of around 400 football fields.

Most of the green roof areas have been created in the inner city, particularly in the core areas and areas with closed block and block-edge development and in commercial and industrial areas.

Potential for green roofs in the future exists on office and commercial buildings, which would appear to have a large fraction of suitable flat roofs. Only around 3% of these are covered with green roofs up to now.



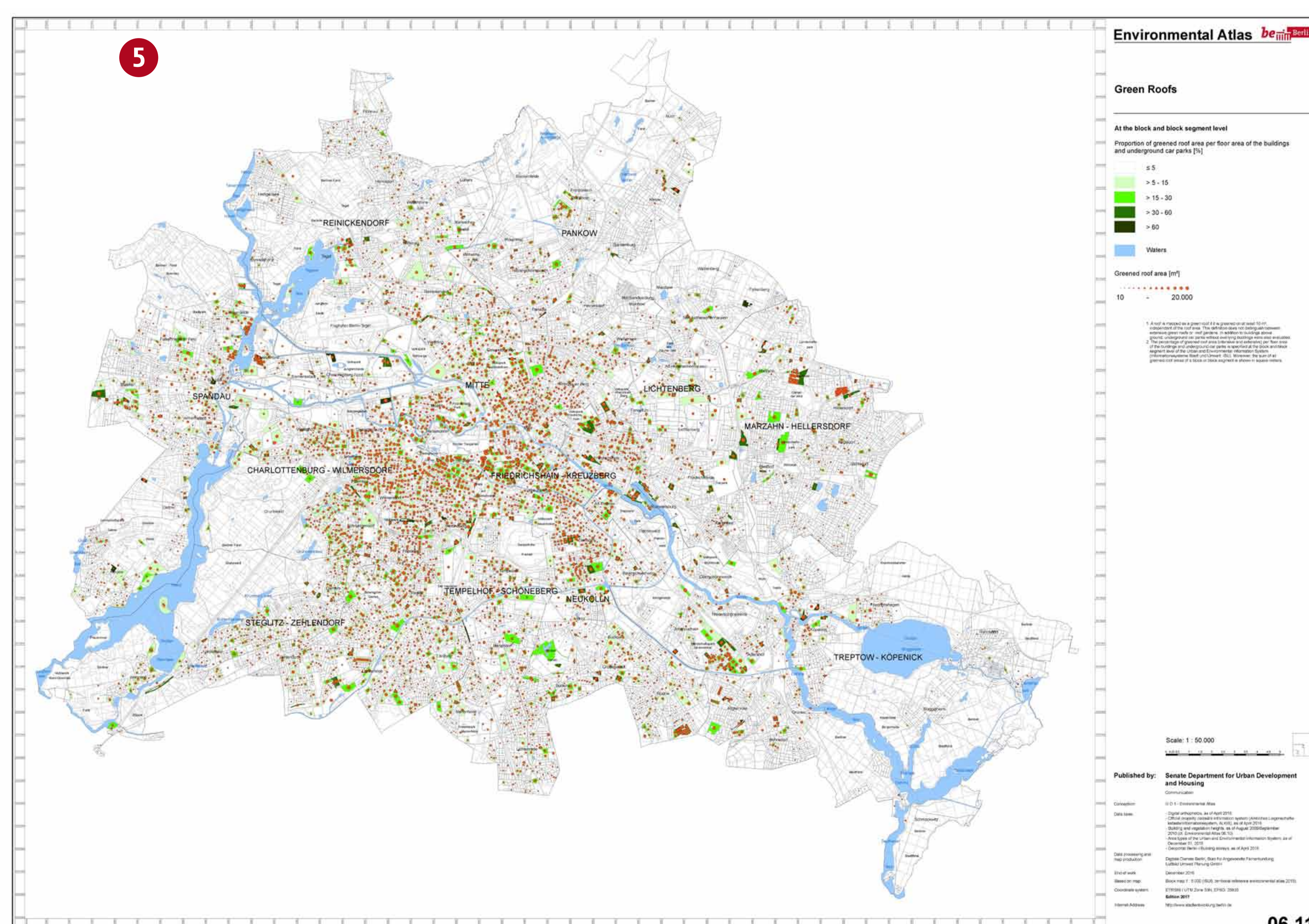
1 Infrared aerial image (CIR), blue line: Block and partial block segments of the Urban and Environmental Information System (ISU)

2 Green roof areas on buildings and underground car parks

3 Analysis of the block and partial block segments of the ISU: Fraction of green roof area per floor area of the buildings and underground car parks [%], total of all green roof areas [m²]

4 Building floor areas with green roofs – fraction for each building use class

5 Environmental Atlas map of green roofs with data on block and partial block segments



Further information:

www.stadtentwicklung.berlin.de/umwelt/umweltatlas/i611.htm

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> Buildings planted with greenery