



Country / City	Netherlands
University / School	Academy of Architecture Amsterdam
Academic year	2018
Title of the project	Brave New Substrate
Authors	David Habets

TECHNICAL DOSSIER

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Authors	David Habets
Title of the course	Graduation
Academic year	2018
Teaching Staff	Nikol Dietz, Rob Hootsmans, Erick de Lyon, Riëtte Bosch
Department/Section/Program of belonging	Landscape Architecture
University/School	Academy of Architecture Amsterdam



Brave New Substrate – is a research-by-design project investigating the biochemical future of the functioning industrial area ‘De Maurits’ in the South of the Netherlands. Over the course of history, the coal mine has transformed into a petrochemical complex that is now on the eve of the ‘biotech revolution’. Since 2008, building has taken place on the ‘Brightlands’ campus around the central laboratory (1920). The spatial interests of the campus are at odds with the spatial consequence of the petrochemical industry. Explosion circles and group risks delineate the area; it is increasingly becoming an introverted and closed site. This is paradoxically opposed to the desire for ‘open innovation’ that is underlined by the multi-million investments from Europe. In what ways can architecture contribute to the development of radical new industries at the beginning of our ‘biochemical’ Anthropocene?

Brave New Substrate explores three landscape experiments, a sulphate warehouse, abandoned mine shafts and the functioning cooling tower as substrates to new biochemical experiments. Experiments from the laboratory will therefore be tested in the industrial site to form three radical aesthetic and spatial experiences. Hot water from the cooling tower, polluted water from the mine shafts and plastic mountains in the sulphate warehouse will form a new habitat for the isolated microbial life from the lab. The extremophiles: Ideonella Sakaiensis, Methanopyrus kandleri and generalist physcomitrella patens normally grown in isolated cultures form new symbiotic relations on the industrial site. Industrial heritage and processes will be the substrate on which a ‘chemistry of the future’ can come to life. Knowledge development will be made perceivable to the region in a radical new way. By fostering curiosity and fascinations among the ‘laypersons’ and ‘the experts’ of the campus. Through their new aesthetics the landscape experiments give form to the ongoing debate about the role and impact of new industry in the 21st century.



CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

For further information
Máster d’Arquitectura del Paisatge -DUOT - UPC

T: + 34 93 401 64 11 / +34 93 552 0842
Contact via email at: biennial.paisatge@upc.edu

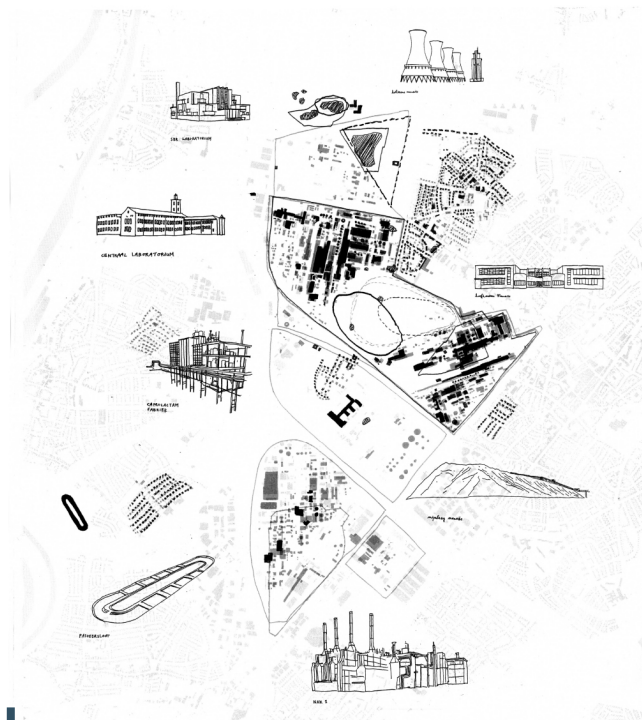
Máster d’Arquitectura del Paisatge -DUOT - UPC
ETSAB- Escola Tècnica Superior
d’Arquitectura de Barcelona
Avenida Diagonal, 649 piso 5
08028 Barcelona-Spain

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SCHOOL PRIZE



location campus and the coal depots of Western-Europe

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history of industrial experiments on the terrain



new public route on existing pipe columns

Brave New Substrate gives form to a public knowledge park in which campus and industry can develop parallel to each other and can reinforce one another. A new public route will be built at a height of 10 metres over the existing pipe support structures, where pipes run from factory to factory. The path descends under the colonnade of concrete and steel pipes towards the campus.

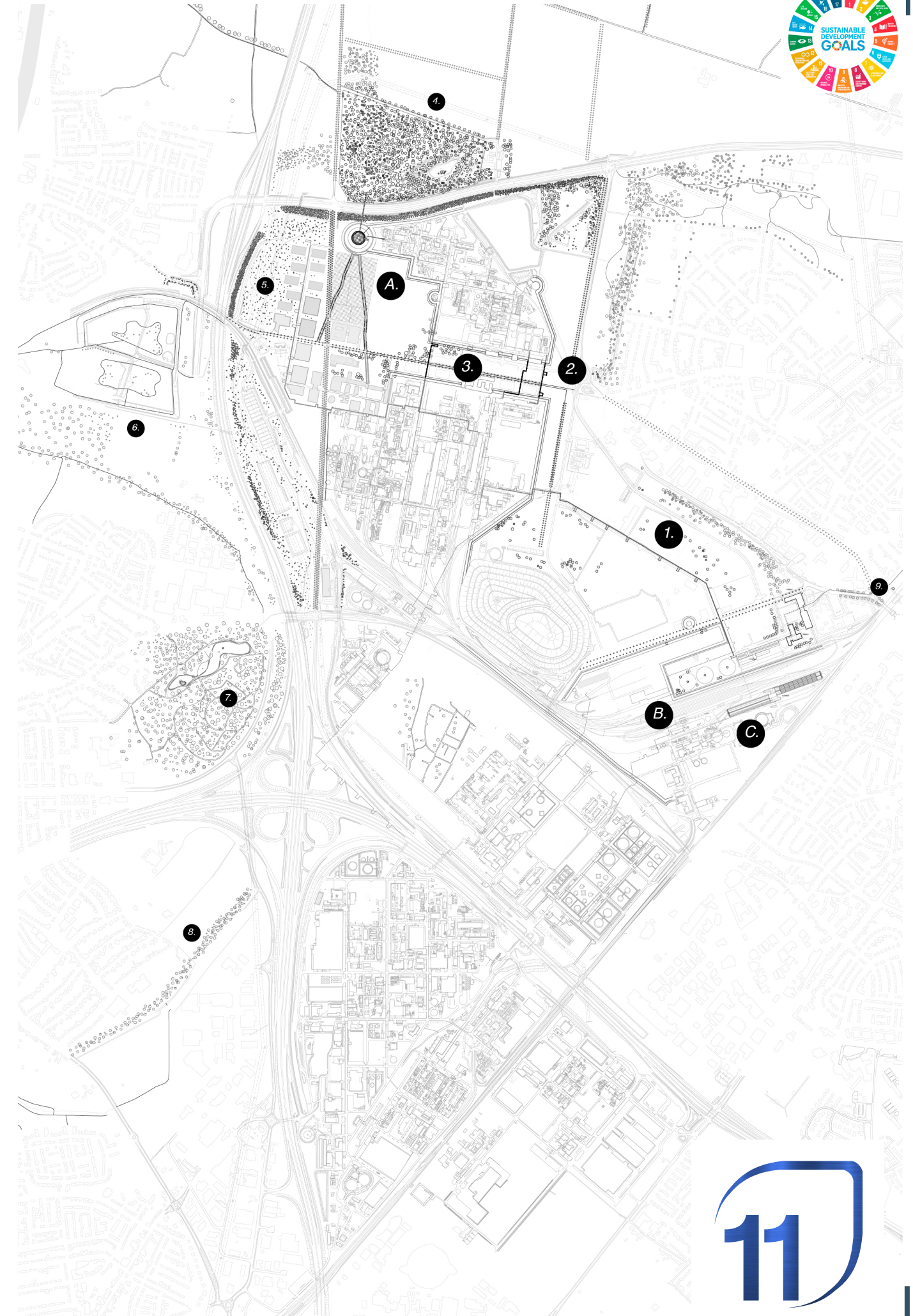


new park entrance

With new Landwehren and Gruben (earth banks from the area), the petrochemical industry will be shielded from the public landscape. The pad runs further through the cooling tower towards the Heksenbos forest in the region of Graetheide.

- 4. brown coal mine park (made public), 5. reforestation of the campus (alike the old Graet forest that use to be), 6. chemical depot park, 7. New campus entrance,
- 8. reconstruction of landwher landscape structure as fututre entrance,
- 9. restauration of the public station

new 'Gruben' (sunken) path through the existing campus

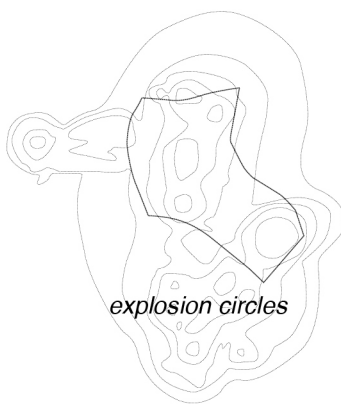




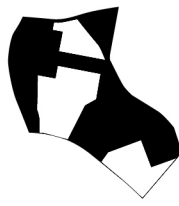
A.

cooling tower in the symbiotic field

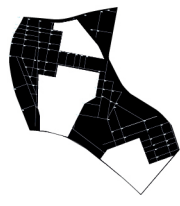
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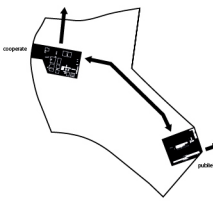
explosion circles



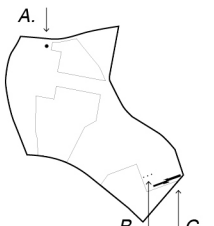
industrial islands



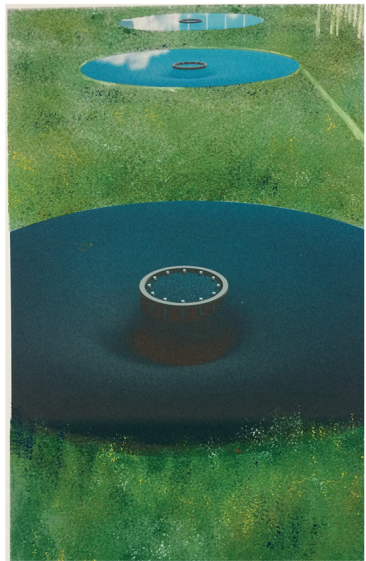
landscape experiments



two campus clusters + new public route



three pilot experiment

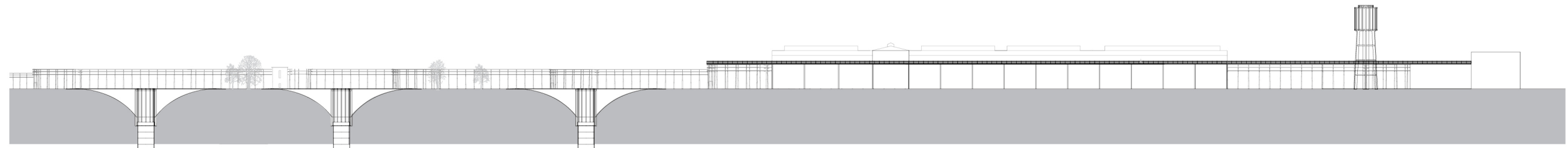


B.

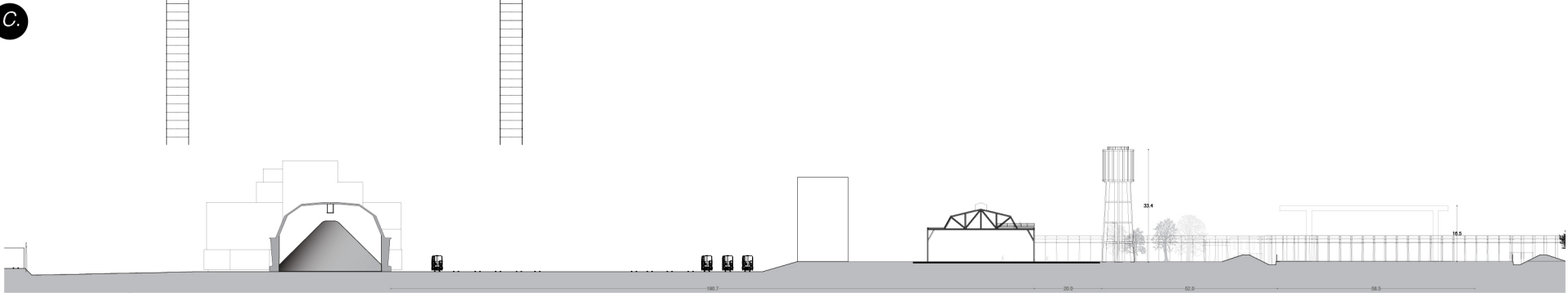
winogradsky pools around the old mine shafts

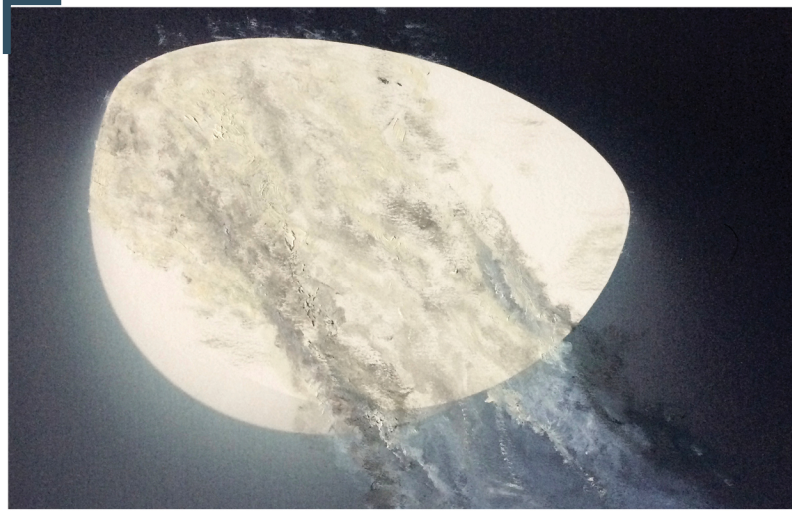
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Drawing Brave New Substrate, combination drawing on halftone paper, hand-drawn with graphite, 6 x 1 metres. Section of the public route over the industrial site with rendered sections, detailed drawings of plants microbe communes, protein complexes and functional polymers. Three pilot ecologies: the sulphate warehouse, the mine shafts and the cooling tower (from left to right). The public route over the industrial site makes this 'industry of the future' accessible to laypersons and experts.



C.





1. cloud escaping at the ocular of the cooling tower

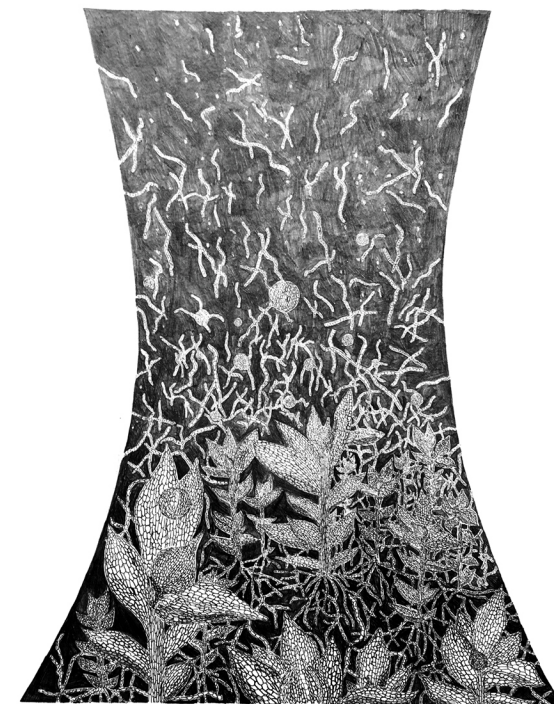
The moss reactor cooling tower is exemplary for all interventions of the new public knowledge park. An laboratory experiment stands model for the design proposals in the landscape experiments (to

Professor Van Iterson, the first director of the State Mines, designed the first passive hyperbolic cooling tower. The cooling function remains preserved. The ammonia factory will probably still be in operation for decades. Every hour, 30 million litres of cooling water fall downwards, which is atomised at a height of 20 metres. By breaking open the shell of the tower, light will enter the tower and 'physcomitrella patens' spores can sprout.

The lab experiment to cultivate human proteins in moss, will be tested here on a 'pilot scale' as 'park'. The end of the public route runs upwards via the curve of the cooling tower along the immensely large waterfall (60 x 10 metres) past a 10-metre high wall or 'park' of moss to a 'cloud room'. Above in the world of mist, the clouds will rise full of life through the oculus of the tower. Even in the clouds, one finds life.



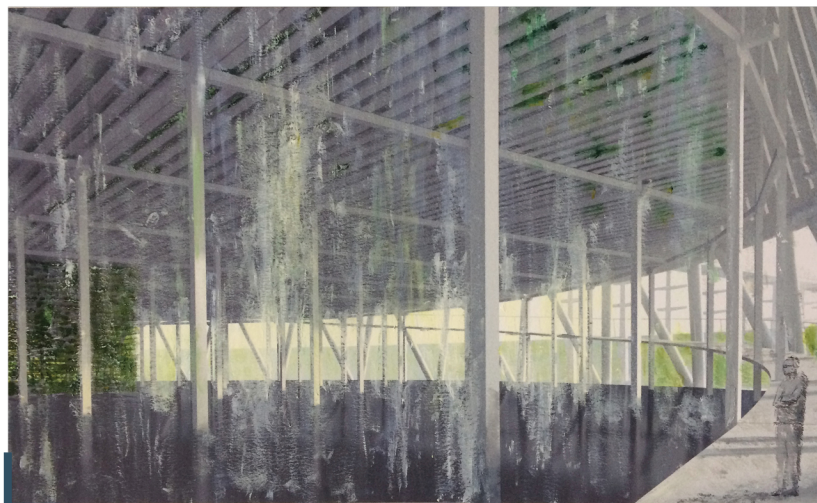
2. moss wall along the watercascade of the cooling tower



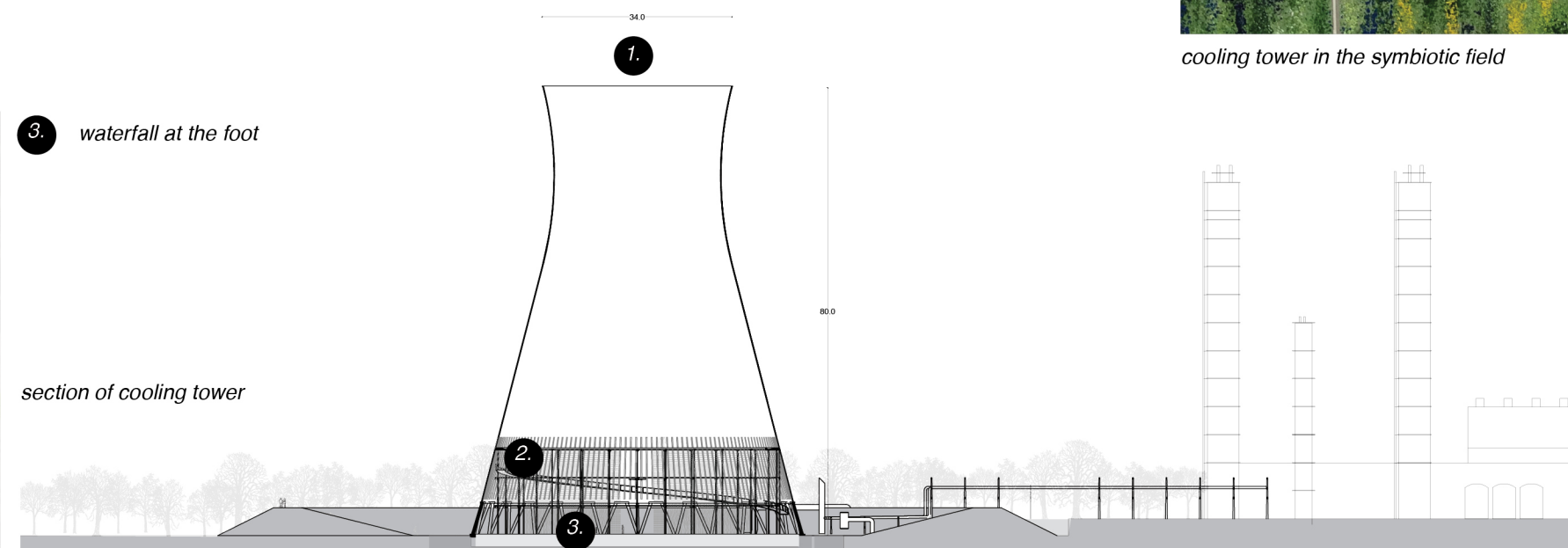
physcomitrella patens moss concept drawing



protein structure drawing

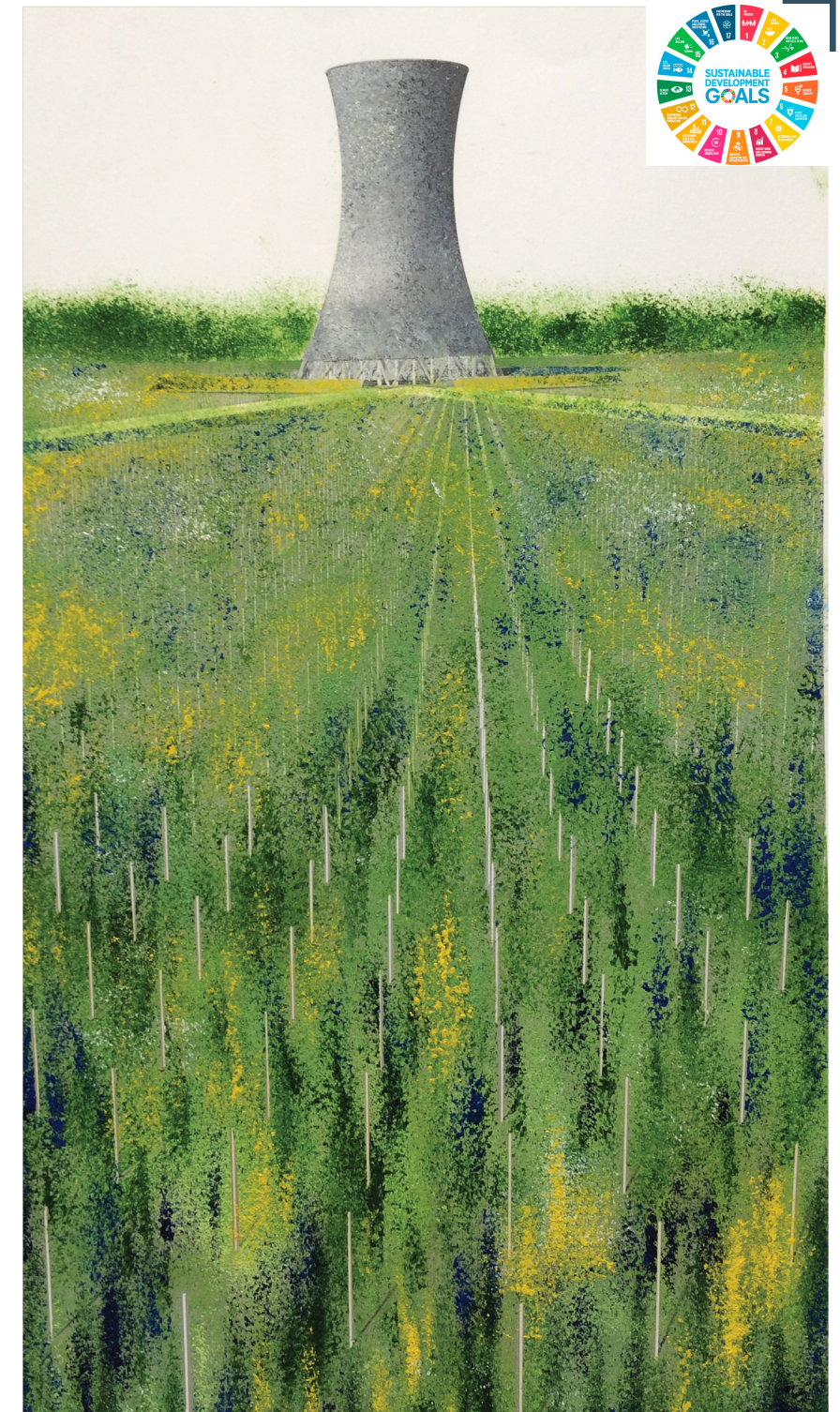


3. waterfall at the foot



section of cooling tower

A.



cooling tower in the symbiotic field

