

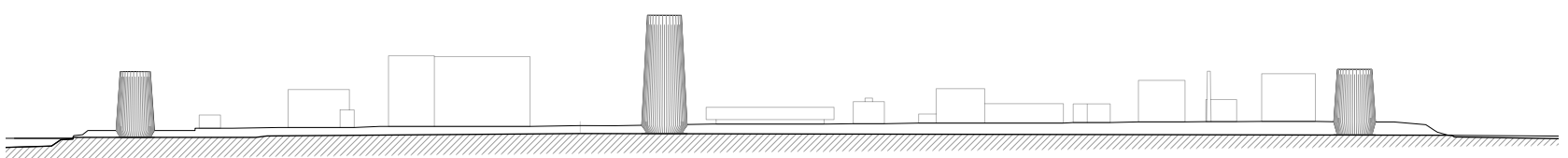
VESTIGE

ves·tīge (vēs`tij) n.

A visible trace, evidence, or sign of something that once existed but exists or appears no more.

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Masterthesis FS 2020 Thema C
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**10% CONTAMINATION FORMS
- A PIT AND A PILE**



Chemical dump Hirschacker (DE) which was used by CIBA AG as a final repository for chemical waste.

VISIBLE OR NOT

This work does not deal with the reuse of CIBAs most valuable building fabric or single buildings in the area, rather it is concerned with the worthless leftovers of the disappearing industry. The proposal deals with the highly contaminated ground and translates it into a visible and persistent body within the city. It creates new spaces instead of filling the existing ones by adding mere building volume. The work questions the widespread perception of preserving single buildings of a former industrial area as memorable, attractive or identity-forming elements to justify the development of a new neighborhood around it. Instead, the area as a whole is grasped with all its elements — visible or not — and a new type of holistic transformation is sought.

10%

In 1895 the grounds of the entire Klybeck quarter were filled with waste and slag so that the chemical industry could expand on the site. Due to 150 years of production of chemicals such as paints, adhesives, solvents and later pharmaceutical products, unimaginable amounts of hazardous chemicals were released into the ground through open storages or leaking pipes. The Swiss law stipulates that contaminated soil must be treated before it can be reused. However, approximately 10% of the processed soil accumulates as hazardous waste during the cleaning process and cannot be dumped in a regular landfill. Hence, these materials —the 10%— should not be taken out of Klybeck, au contraire, it should become experienceable and visible in the developing area with a series of urban interventions.

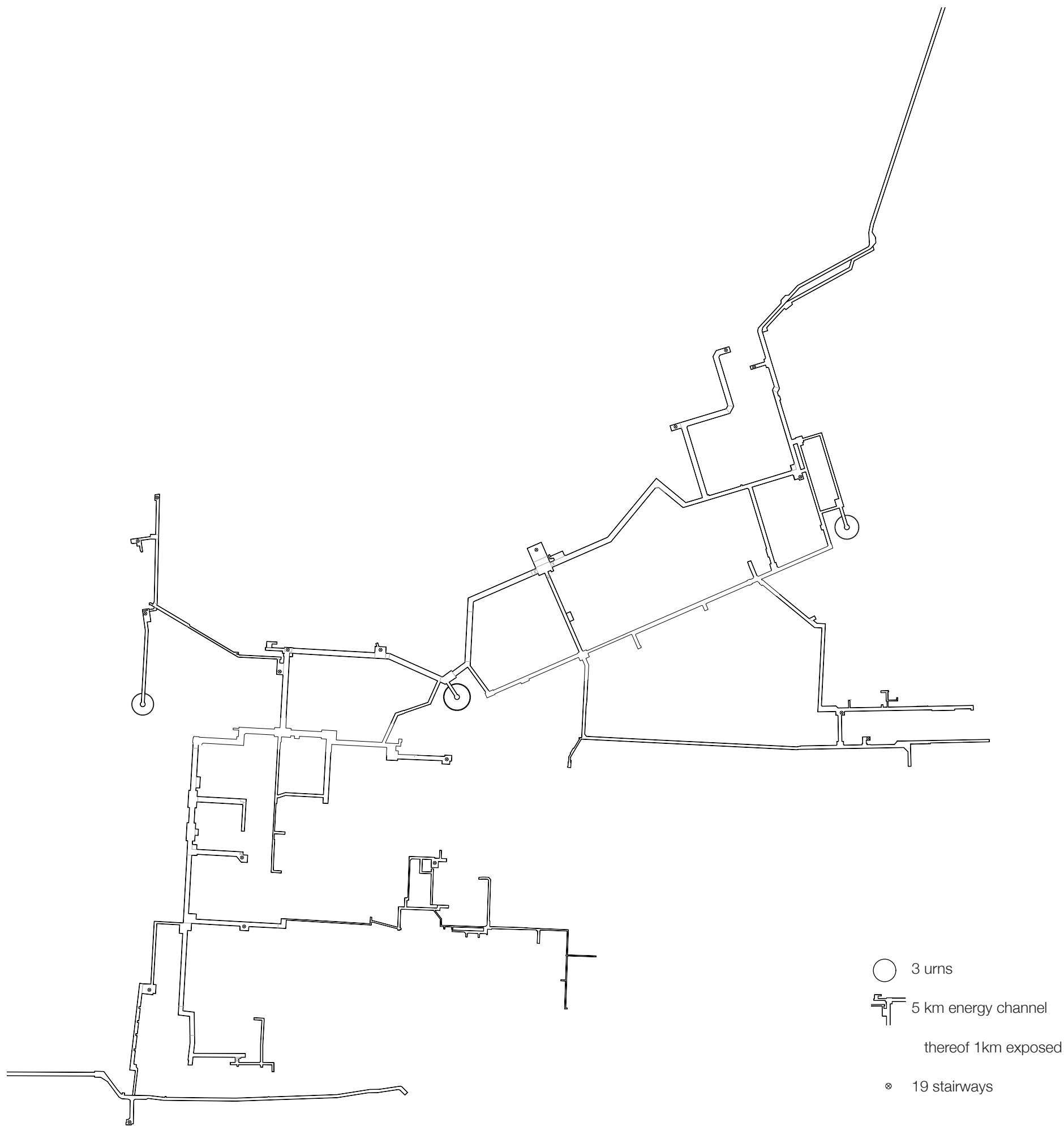
A PIT AND A PILE

Two new forms —a pit and a pile— are introduced to the area directly addressing the issue matter. The contaminated soil is excavated along a formerly restricted non-public street, exposing the vast infrastructure laying beneath the surface. The pit is connecting in West-East direction the rivers Rhine and Wiese, whose areas were separated for the last 150 years by private industrial use. In this strip the most contaminated earth is expected due to the leaky pipes layout of the chemistry industry. A system of paths, bridges and stairs is connecting the bizarre excavation field with the existing city level. The resulting 10% hazardous waste need to be stored safely to keep people and environment secure. Three large-scale vertical waste urns are placed along the strip in order to store the contaminated soil until natural detoxification takes place. The urn as a semiotic monument is not only a reminder of a disappearing industry. It is a productive element for the new district itself: With its huge concrete mass the urn is very suitable to store heat energy.



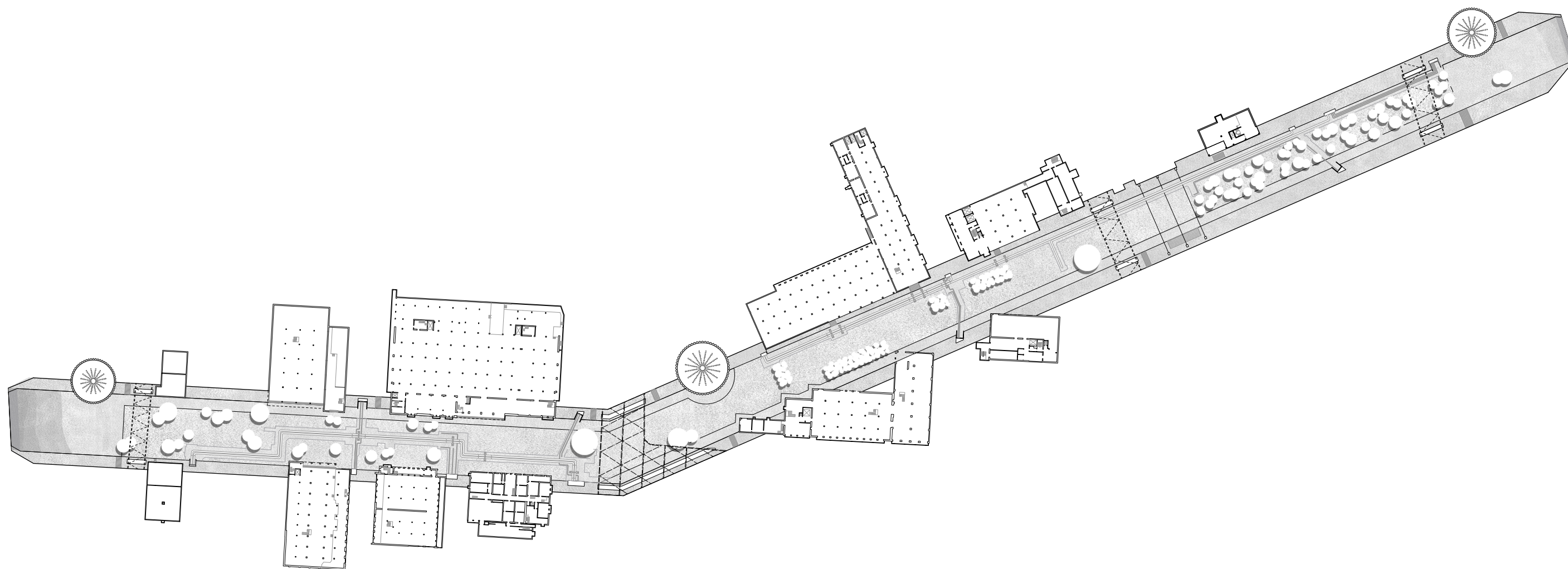
THE PIT

The pit opens up a peculiar excavation field and reveals the unseen. By unveiling the hidden network and the vestige of its past use a new city level is created.



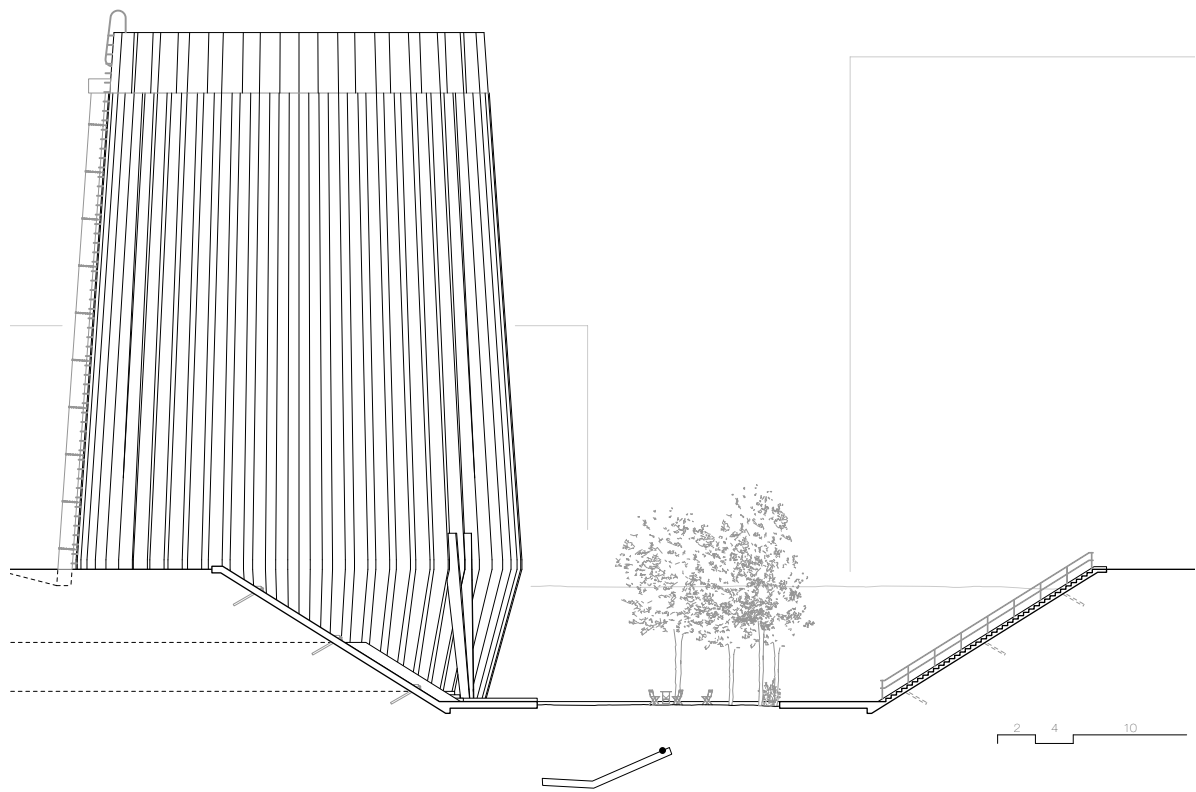
THE PILE

The ground is bound to the site, hence the contaminated excavated material from the pit is stored in three urns on site. Due to their physical properties, it is highly feasible to use them productively as energy storage and therefore they are affiliated to the existing energy network.



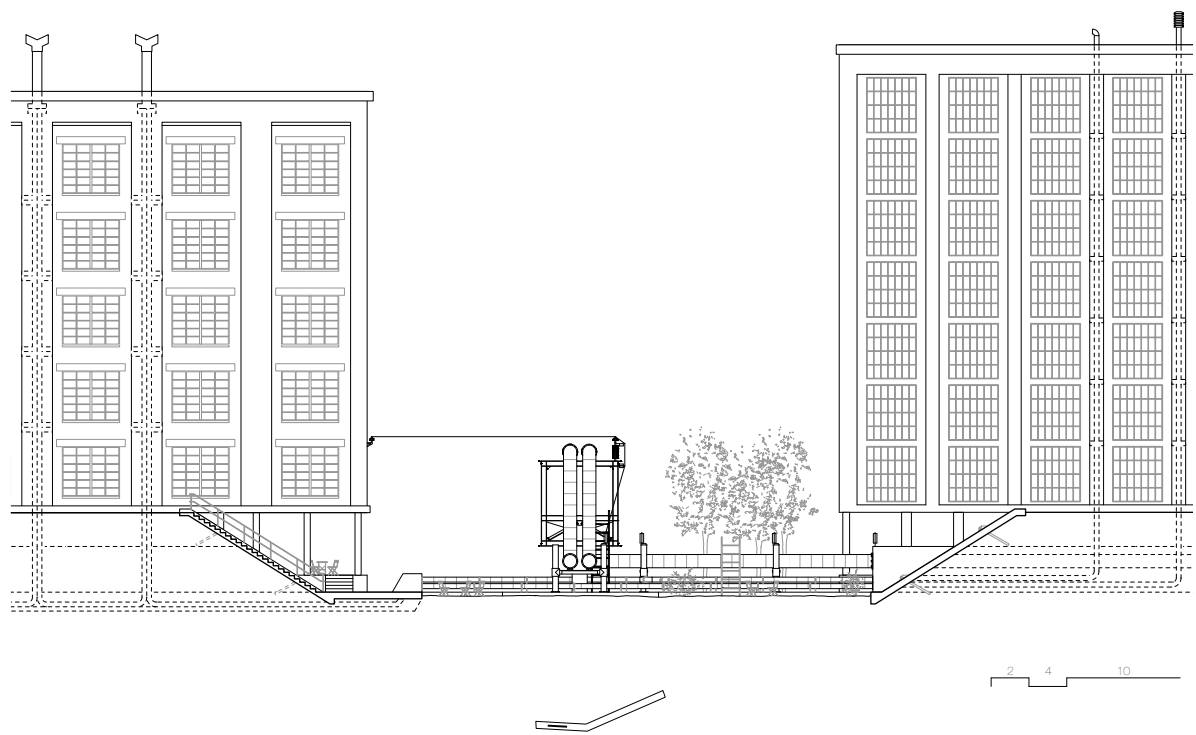
THE STRIP

The strip as public axis connects two open recreational spaces of importance and embodies the imprint of a vanishing industry.



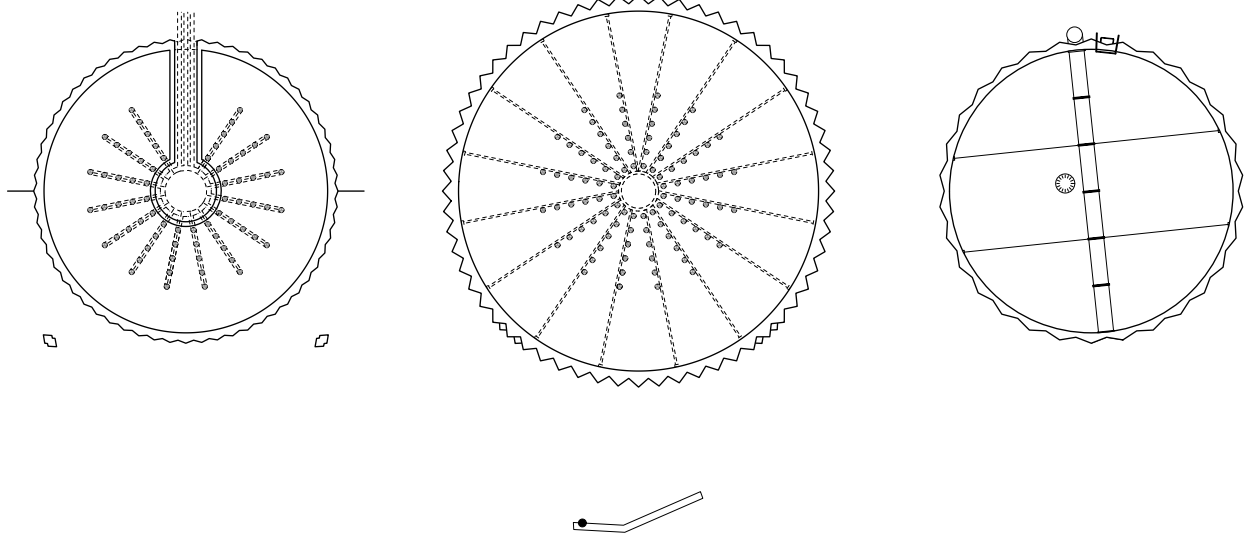
THE RIVER

A new transversal public space connects the two riversides and crosses the former boundaries of the industry.



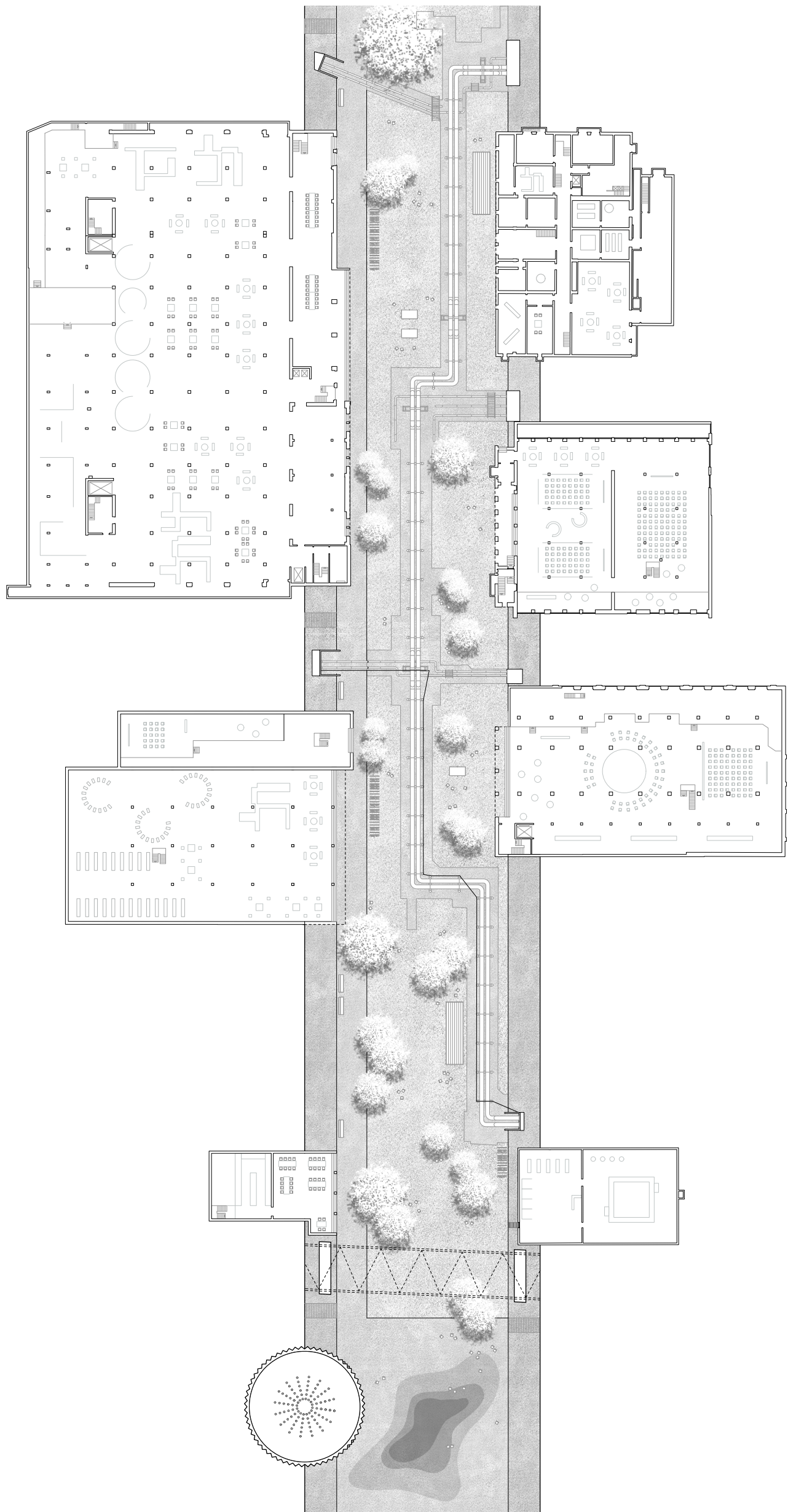
THE NETWORK

The exposure of the existing infrastructure and its various key elements within the city fabric turns the network into a spatial experience.



THE URN

The urn is a product of the vanishing and offers liberties for the coming.



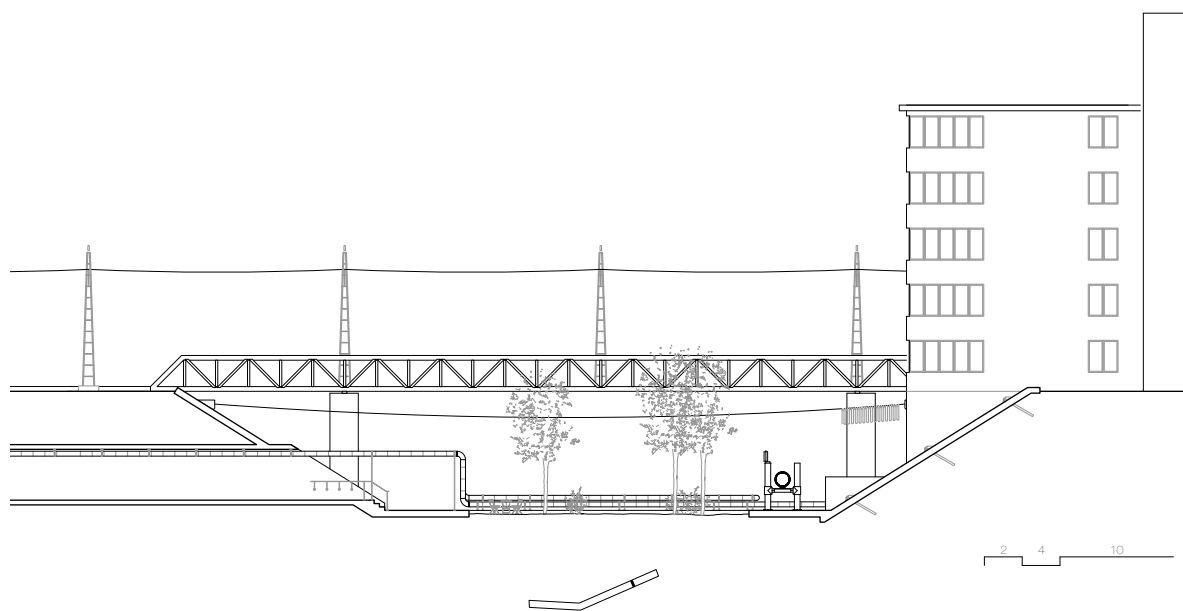
THE BASEMENT

The basement gets a new facade on the strip and breaks through to the new city level.



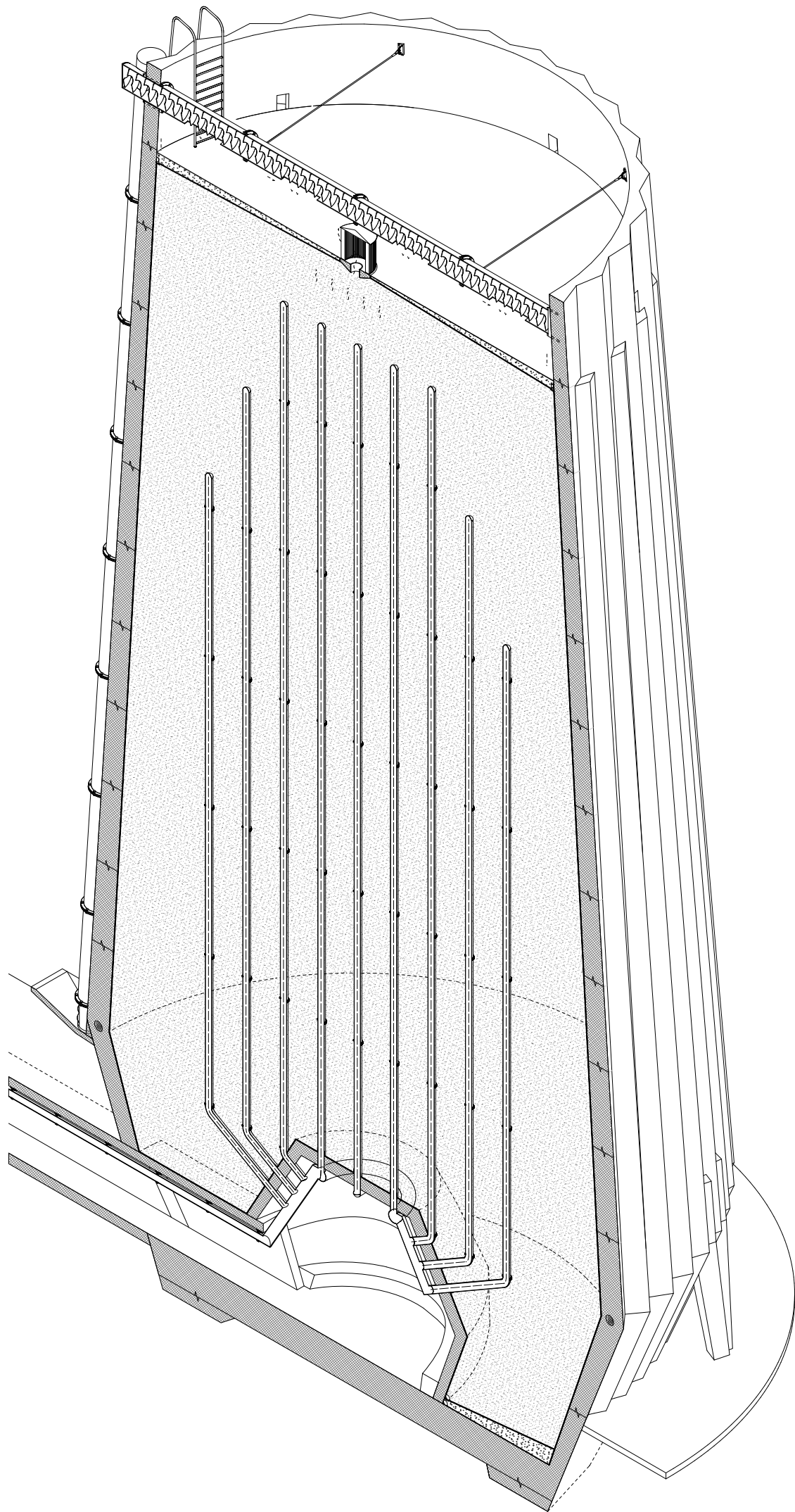
THE BUILDING CUT

The building foundation becomes the new ground floor and is opening up the formerly enclosed industrial front towards the strip furthermore it changes orientation and circulation within the building.



THE PORTAL

The existing energy channel assigns each building an address at the strip and supplies the needed infrastructure.



CONTAMINATION

Many organic substances are undergoing a natural decontamination by bacterial cultures. The increased temperature accelerates this process in the proposed urns and after an estimated 50 years, the contamination has fallen below the limit values. To ensure the sustainability of the urns, they can be refilled with contaminated soil from Basel if needed and furthermore serve as an energy storage.

Assumption: 10% hazardous waste ; contaminated depth of 3.5m ; 30% reduction in volume with soil washing, CIBA AG area 280 000 cubic meters

$280\,000\text{ m}^2 \cdot 3.5\text{ m} \cdot 0.1 = 98\,000\text{ m}^3$ excavation

$98\,000\text{ m}^3 \cdot 0.7 = 65\,500\text{ m}^3$ Hazardous waste for the dump

ENERGY STORAGE

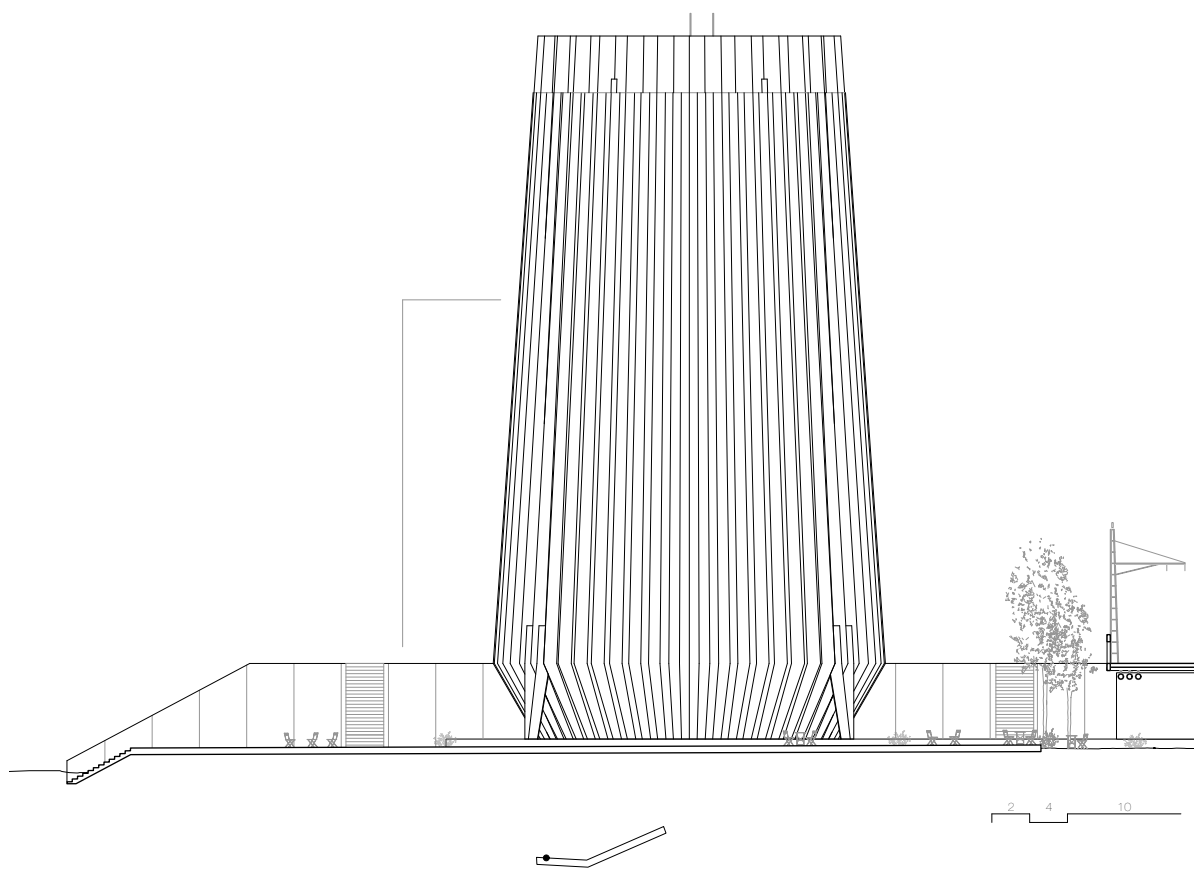
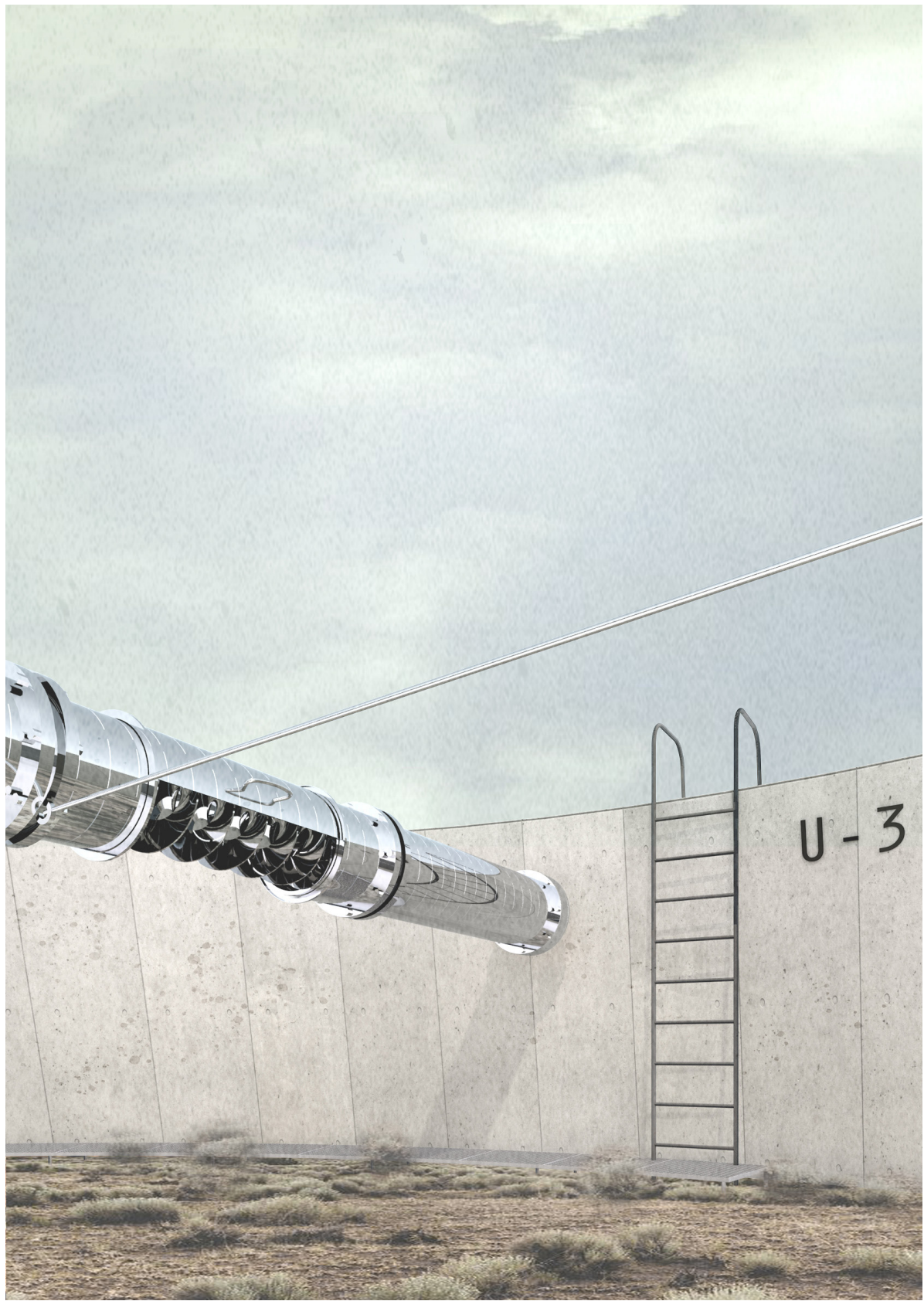
The sustainable energy production of solar- or geothermal probes are most efficient in combination with an energy reservoir to obtain the energy at a different time than production. While a normal dynamic underground storage system is not suitable in Basel, because of low ground water levels, an over-ground mass storage facility is very evident for energy use. This way, peak usage can be absorbed and the number of installations be reduced. In summer, the urns can be used for cooling and transfer heat gained in cooler months.

Energy demands:

heating for 20 000 people; average space demand of 39 m^2 per person; peak heating power demand of 20 W/m^2 , resulting in a heat demand of $15\,500\,000\text{ W (Qh)}$;

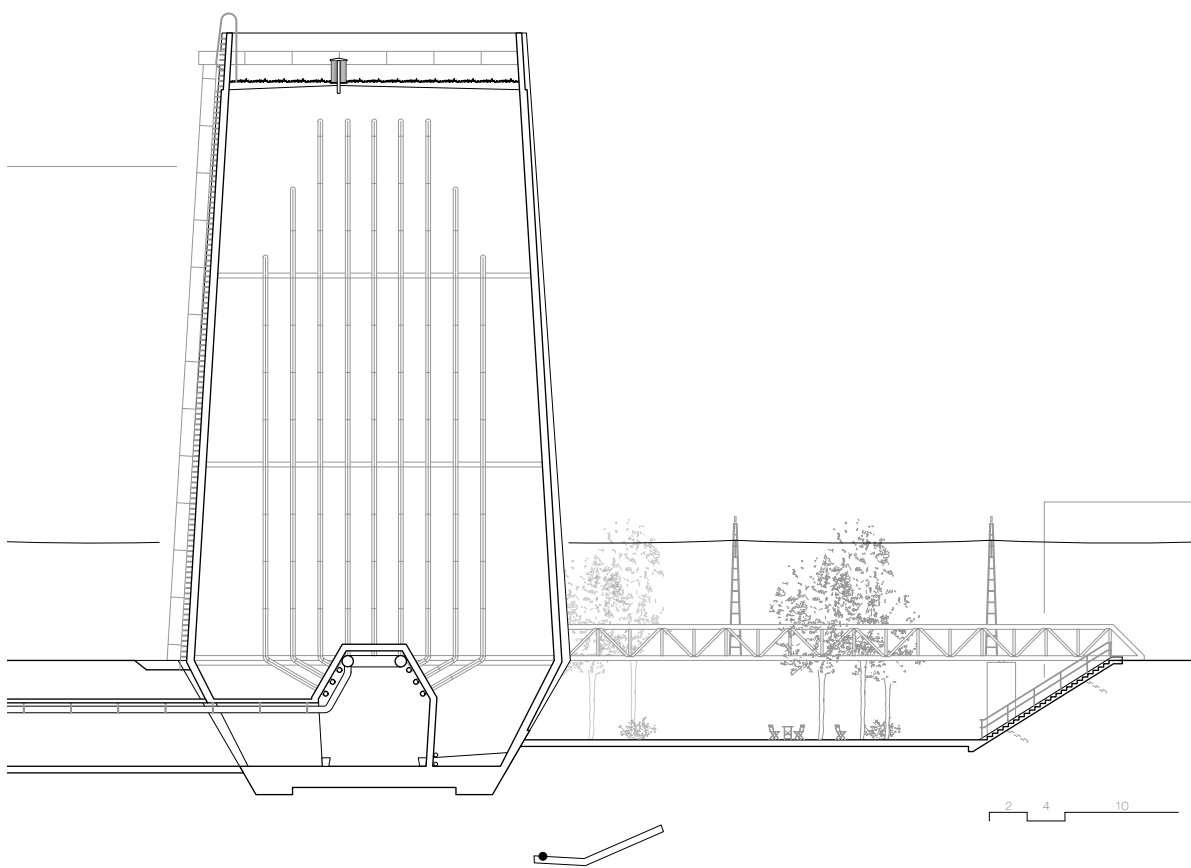
sensible heat in a material: $Q_t = V \cdot \rho \cdot c_p \cdot T = 1,98 \cdot 10^{12}\text{ J}$ Energy loss:

$Q_l = (k / s) \cdot A \cdot dT \cdot t = 3,6 \cdot 10^4\text{ W} \cdot t$;Peak performance: $Q_{\text{demands}} + Q_{\text{loss}} = Q_{\text{capacity}}$
 $\Rightarrow t = 35,4\text{ h}$



THE CONTAMINATION

Transforming the leftovers of a vanishing industry into a permanent and productive element of the city is suggesting a holistic development.



SYNERGY

The coupling of contaminated soil dump, energy storage and public space articulates a productive and synergetic use of otherwise worthless remnants.