



**Politecnico
di Torino**

Honors Thesis

Master of Science in Architecture Construction City

Abstract

**Toxic Heritage:
Italian National Repository of Radioactive Waste**

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The management of radioactive waste is not the only Achilles' heel of the nuclear industry, nevertheless, it attracts great attention in scientific, economic and political arenas. The most important challenge relates to the question: "*What is being done with radioactive waste?*"

The distinguishing feature of radioactive waste is in its extremely long isolation from all living organisms and the environment until it no longer presents a danger and risk. Serious incidents in the nuclear industry at early stages paved the way for the atmosphere of fear and dread. The aversion to everything related to nuclear, including radioactive waste, is referred to as nuclear stigma and has several possible non-radiological impacts: social, political, economic, cultural and psychological. For instance, such issues as equal rights; peaceful coexistence; freedom of speech; the matter of society's well-being; the risk of intentional and unintentional intrusion into the repository - may arise during radioactive waste management. Besides, due to the particularly long life span of the repository and the uncertainty of the future, the integral part of the management of radioactive waste should be the transmission of knowledge and memory to future generations. Accordingly, worldwide, there is a growing acknowledgement that social and ethical issues are just as important as technical ones when developing secure programmes for radioactive waste. Undoubtedly, public trust in the management of radioactive waste plays a significant role. This is both the principal task and the possibility to look at the dangers posed by radioactive waste from a different perspective.

Using the exploration of the terms '*waste*' and '*nuclear*' as a point of departure, firstly, the paper sheds light on the general understanding of *radioactive waste* and later, - on its non-radiological aspects. Furthermore, the thesis attempts to investigate the possible ways of the management of radioactive waste through the proposal of the Italian public company - SOGIN. Subsequently, deep analyses of the localization process were provided and the potentially suitable area was identified. This provided a basis to achieve the main purpose of the work, which

lies in providing an architectural proposal for the Italian National Radioactive Waste Repository with a near-surface disposal facility.

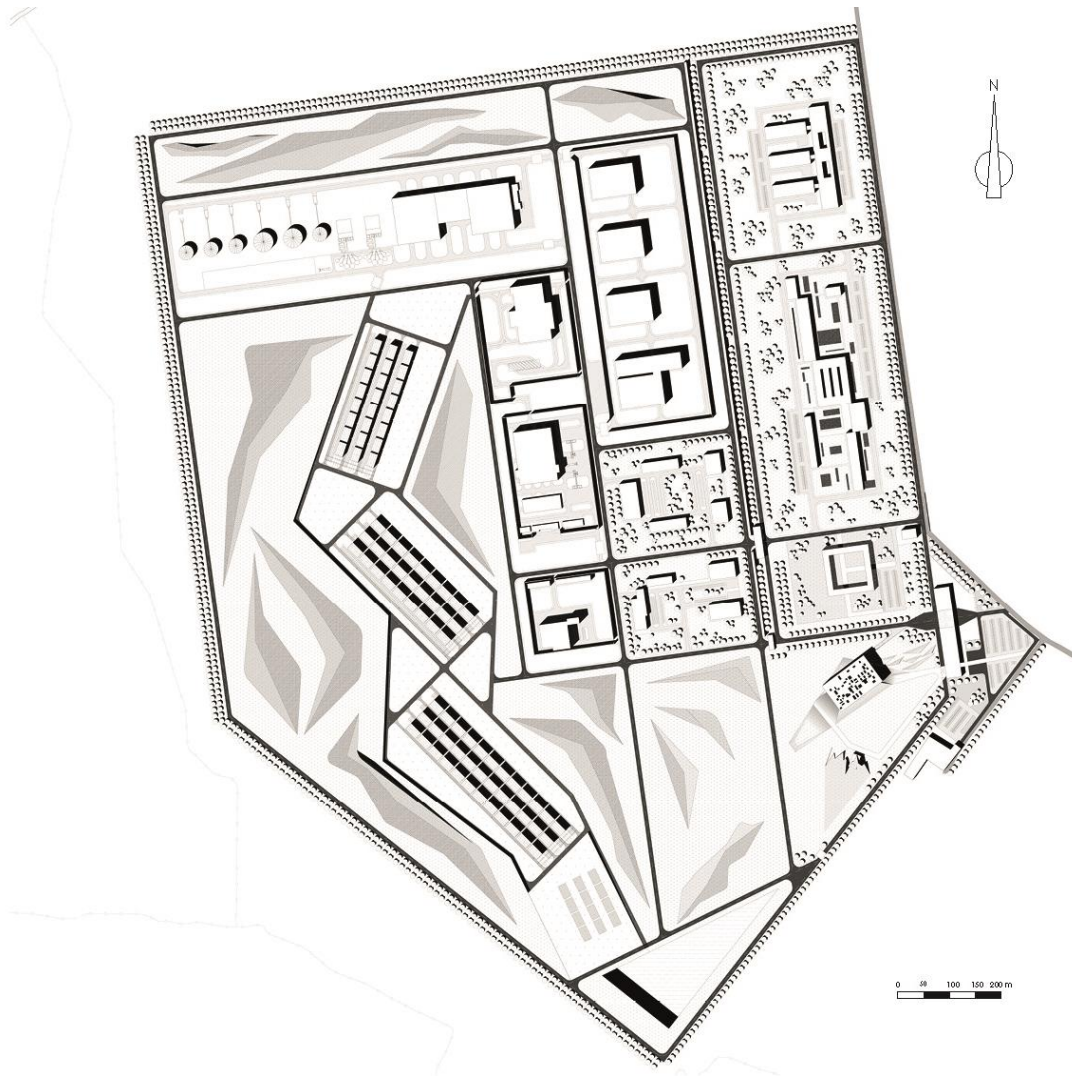


Fig. 1. The Master Plan (y. 2061).

The architectural proposal, where the time issue is a starting point, is an attempt to connect the analytical framework with design premises. The project tries to unfold firstly, a wide range of aspects concerning different types of communication with future generations, the transmission of knowledge and memory, monumentality, and secondly, several contradictions, such as fear and desire, control and democracy. It consists of the elaboration of the Master plan for the repository and

the design of the Archive within it. The Archive serves both as a 'collection of records' and as a tool of communication with future generations: it makes the place worth visiting and informing oneself about.

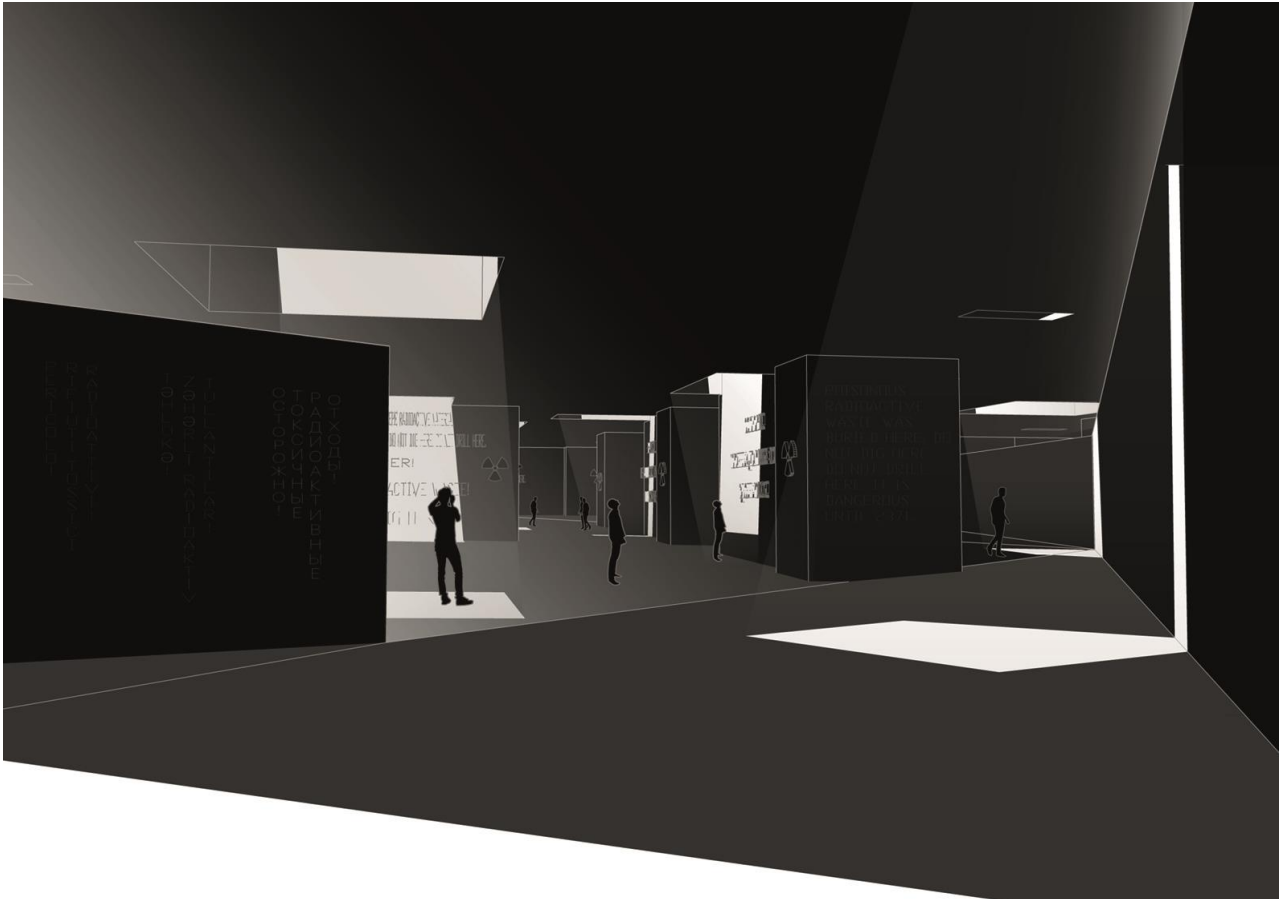


Fig. 2. Inside the Archive.

The proposal was developed by answering fundamental questions: how to integrate the project with people of the present and people of the future? How to organize a space, which does not evoke a feeling of suspicion and fear? How to manage the interface between *'huge and dangerous'* with fear of people? How to promote interaction between the issues of democracy (transparency) and security (control)? How to connect the existing landscape with a new one? How will the *'toxic heritage'* interact with nature? What is the monument from the

functional, symbolic and visual point of view? How to keep a memory alive? How does time affect space?

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