

Audit of material management and disposal during the expansion of the Zurich northern bypass

Federal Roads Office

Key facts

The Federal Roads Office (FEDRO) is currently expanding the Zurich northern bypass, a motorway section which has been in operation for more than 30 years. The aims are to eliminate the current capacity bottlenecks, increase functional efficiency and safety, and improve environmental sustainability along the motorway. The main construction work itself began in 2016, and the entire project will be carried out in several lots. Work on the section to be extended to three lanes in both directions should be completed by the end of 2025. The total budget is estimated at around CHF 1.65 billion.

The audit of the Swiss Federal Audit Office (SFAO) focused on the onsite monitoring of legally compliant material management and disposal in relation to the third tube of the Gubrist tunnel. The contract for work and services for this project amounts to approximately CHF 200 million. This includes logistics for the some 1.5 million tonnes of excavated tunnel material, which must be separated, removed and recycled or disposed of in landfills. At present, approximately 50% of the tunnel has been excavated.

Aspects of the project organisation need to be adapted

The execution of the construction work is organised in line with an internal FEDRO standard which has been adapted to the specific requirements and demands of a "key project". Project execution is fleshed out in a handbook for the overall project and an implementation handbook for lot 2.

Three FEDRO staff members are responsible for operational implementation, in their capacity as "overall project manager" and as "sub-project manager". In organisational terms, this is achieved by two people each having a double sub-project manager role and acting as each other's deputy, which is common practice at FEDRO. The overall project manager does not have a deputy.

In lot 2, the service description of the local site manager, the general representative vis-à-vis the contractor, is not specific enough. Because of the contractor's three-shift service provision and the single-shift work of the local site manager, an imbalance has arisen in the monitoring of the contract and in the control and monitoring activities.

The SFAO recommends that FEDRO resolve the matter of the overall project manager's deputy for the implementation phase of the expansion of the Zurich northern bypass. In addition, for future construction projects, the service description of the local site manager must be drafted in sufficient detail and taking account of the special needs of projects with multi-shift construction work.

Insufficient separation of unpolluted tunnel excavation material

In terms of material management and disposal, the Waste Management Ordinance, which has been in force since 1 January 2016, requires in particular compliance with stricter limits, as well as the recycling of unpolluted materials. Excavated material is still considered unpolluted if it contains a maximum of 1% by weight of mineral construction waste. Technical facilities can assist with the separation process. Since the Technical Ordinance on Waste was still in force when lot 2 was put out to tender, FEDRO, together with the Federal Office for the Environment (FOEN), drew up object-specific regulations based on the Waste Management Ordinance.

The separation of the tunnel excavation material into unpolluted and polluted material is only checked visually. It can therefore be concluded that there is no evidence that the unpolluted part of lot 2 complies with the contamination limits set out in the Waste Management Ordinance.

The SFAO recommends that FEDRO, together with the FOEN, which is in charge of the project, determine in a practicable manner how the unpolluted tunnel excavation material is to be separated from the polluted parts in accordance with the law.

Partly insufficient monitoring of the transport of waste to landfill

In order to ensure that waste is handled in accordance with the law, all waste must be declared in line with uniform regulations regarding type, quantity, sender and disposer. These details are recorded in the hard copy accompanying or transport documents which accompany the individual removal. This means that thousands of such consignment notes are created for lot 2 and these serve as the basis for invoicing. Transport by rail is by nature considered to be well monitored. The situation is different for lorry transport (from the construction site to the disposal company's address), as this is not subject to any onsite checks.

The current analogue substantiation system generally works satisfactorily. It is outdated with regard to future requirements and the digitalisation of business processes.

The SFAO recommends that FEDRO analyse, in cooperation with the competent authorities in particular, the existing analogue waste and disposal declaration in a bid to create a digital substantiation system that will meet the different requirements of the future.

Increased recycling is a long-term task

Both the recovery of excavated material and the reuse of recycled construction materials made from construction waste have long been common practice in various sectors of the industry. In view of the limited extraction possibilities for raw materials, the limited landfill space available and the stricter regulations in the Waste Management Ordinance, an increase in recycling, combined with careful handling of raw materials, has become unavoidable.

Enforcement concerns all parties involved in the construction industry and, even after more than three years of this ordinance being in force, it still does not work as desired everywhere. On this basis, the FOEN must prepare the key enforcement aids at federal level. At the same time, FEDRO must align its internal regulations with the new requirements, so that all parts of motorway projects are performed in an environmentally compatible manner. Both offices know that there is a need for action.

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