

/extract of detailed plan/

**EXPERT ASSESSMENT OF RISKS OF MAJOR ACCIDENTS WITH THE DANGER OF  
EMERGENCY OF  
MAARDU CITY VANA-NARVA ROAD 13 LAND UNIT**

On the basis of the detailed plan of Maardu City Vana-Narva Road 13 land unit (ETP Grupp project No. 1572), the planned Tallinn Prison is located in the danger zone of the terminal of AS TERMOIL and of the pipeline of AS TRENDGATE.

AS TERMOIL has the right to handle mazut and crude oil. Although the company is at the moment handling only mazut, we must consider the possibility of handling crude oil as well upon assessing the risks of the establishment.

The mazut containers and tanks at the terminal of the establishment pose no direct threat to the future Tallinn Prison, as the detailed plan area remains outside the danger zone of the mazut containers and tanks.

The detailed plan area is endangered by existing container park containers No. 30, 31, 32, 33, 34, 35 meant for storing crude oil and by the oil tanks loaded with crude oil and unloaded on the railway trestle. Building additional containers for storing crude oil in the course of the expansion of AS TERMOIL shall place the Tallinn Prison into the danger zone of those containers.

In the summary of the Harju Risk Analysis reviewed by the Harju Crisis Management Committee 2005 and approved by the Minister of Internal Affairs, the ranges of the possible danger zones of the oil terminals used in the risk analysis of Maardu City and AS TERMOIL are specified:

		Rs	Rv	Rk	Ro
Flash fire of oil container	Thermal radiation	70	120	200	600
Pool fire of oil container	Thermal radiation	10	40	60	100
Breaking of more than two oil containers	Soil contamination	more than 2,000 tons of mazut			
Fire on the loading bay of the terminal	Thermal radiation	70	250	500	800 <sup>1</sup>
Breaking of crude oil pipeline	Soil contamination	up to 600 tons of mazut			
	Flash fire (crude oil)	10	40	100	200

1. The danger zone range of the loading bay of the terminal used upon preparing the summary of the Harju Risk Analysis was 1,600 m. As it has become evident after the preparation of the risk analysis that the 120 ton railway tanks will not be used for carrying crude oil, the danger zone range of 800 m of the BLEVE of the oil tank is more realistic.
2. Rs – danger zone range of extreme danger, Rv – danger zone range of high danger, Rk – danger zone range of medium danger.

Dangers to unprotected people located outside the facilities were assessed upon preparing the risk analysis. In order to assess the possible consequences of major accidents, risks are considered from the scene until the border of danger zone of medium danger.

It appears from the table that the people located outside the facilities on the territory of the Tallinn Prison will only be in the danger zone of medium danger of boiling liquid expanding vapour explosion (BLEVE) of crude oil tank on the railway trestle of AS TERMOIL. On the external border of the area, only a few people may get second-degree burns within 15-20 seconds and only a few people life-threatening heat injuries on the internal border. It is a commonly acknowledged rule upon performing risk analysis that on the area of thermal radiation, it takes 5 seconds for a person to get burnt. Thus, the

people exposed to thermal radiation who are located outside the facilities of the planned Tallinn Prison will have 10-15 seconds to take shelter. It will be more difficult to take shelter from thermal radiation in the planned parking lot of the prison.

The relatively short thermal energy impulse of the BLEVE of the crude oil railway tank of AS TERMOIL shall not pose direct danger to the facilities of the planned Tallinn Prison. However, the BLEVE fireball might upon concurrence of unfavourable factors set the cars in the parking lot on fire.

In addition to the terminal of AS TERMOIL, the territory of the planned Tallinn Prison is in the danger zone of AS TRENDGATE pipeline, which is used for pumping crude oil to Muuga Harbour. Further technical details of the pipeline are necessary to assess the possible consequences of the pool fire of the crude oil flowing out from the broken pipeline.

The Harju County Risk Analysis is of advisory nature upon preparing the detailed plan as it is not possible to impose restrictions on building in the danger zone of dangerous enterprises on the basis of the degree of the risks assessed in it.

Protection belts of establishments handling oil are established on the basis of fire safety rules and norms and the supplemented version (RTL 2005, 106, 1629) from 28<sup>th</sup> October 2005 of the regulation No. 106 (RTL 2001, 7, 110) from 6<sup>th</sup> December 2000 of the Minister of Transport and Communications "Requirements for Storage Facilities for and Places of Loading, Unloading and Transshipment of Chemicals, and for Other Structures Necessary for Handling of Chemicals in Ports, Road Transport Terminals, Railway Stations and Airports and Special Requirements for Handling Ammonium Nitrate". The diameter of the protection belt does not exceed 50 metres in any of those documents.

#### Summary

1. The territory of the planned Tallinn Prison is located in the danger zone of medium danger of the BLEVE of AS TERMOIL terminal railway tank and of the pool fire of AS TRENDGATE pipeline.
2. In the case of major fire that may possibly happen on the railway trestle of AS TERMOIL, the persons outside the facilities on the area of the prison are those who are directly in danger upon concurrence of unfavourable circumstances and may suffer from second and third degree burns hazardous to life. The cars located on the parking lot are in danger as well.
3. In the case of the BLEVE of oil tank occurring on AS TERMOIL railway trestle, the people located on the territory of the prison will very probably manage to take shelter before life-threatening burns are caused.
4. The facilities of the planned prison are threatened by the possible pool fire of AS TRENDGATE pipeline. Further technical details of the pipeline and data about the boundary fence of the prison and prison facilities are necessary in order to assess the consequences of such pool fire.
5. It would be practical to use materials that provide better protection from fire upon designing the prison facilities in order to reduce the consequences of possible heat damage.
6. In the legal framework valid in Estonia, there is no legal basis for imposing restrictions on building the prison.

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