



ANALYSIS OF THE TECHNOLOGICAL AND  
SPATIAL NEEDS OF THE MULTI-MODAL FREIGHT  
TERMINAL RAIL BAL TIC AT MUUGA HARBOUR  
(MCTRB)

**WP 2.3 – Analysis of the environmental  
restrictions and conditions**

**Final Report**

Entec Eesti OÜ  
2017

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## **1 INTRODUCTION**

*This report is prepared on the basis of existing and publicly available information. Two site visits were arranged, but on site investigations were not carried out. The environmental analysis focuses on the environmental restrictions and conditions at the proposed alternative locations of the MCTRB and near its vicinity. This environmental analysis also considers the possible environmental impact caused by the MSTRB during the construction, operation and maintenance period.*

## **2 SCOPE OF THE WORK**

According to the Technical Description 3.2.3.1, a consultant shall evaluate the potential consequences of the proposed activities and reasonable alternatives, such as the water, soil or air pollution; dust; hazardous and non-hazardous waste; noise; vibrations; light, heat, radiation or unpleasant smells. The scope of the analysis of the environmental restrictions and conditions is limited only to Clauses 3.2.3.2–3.2.3.5 and it does not include conducting a full SEA/EIA analysis. If necessary, the full SEA or EIA will be done during the next project phase. The content of this WP is rather an environmental pre-assessment – not in the legal sense, but as a consultative document which encompasses the environmental restrictions. The general aim on this WP is to prevent any unpleasant surprises at a later stage; for example, the subsequent determination that the consultant's proposed solution proves to be unrealistic due to the environmental restrictions and would require significant financial costs to mitigate the environmental impact.

### 3 PROPOSED ACTIVITY

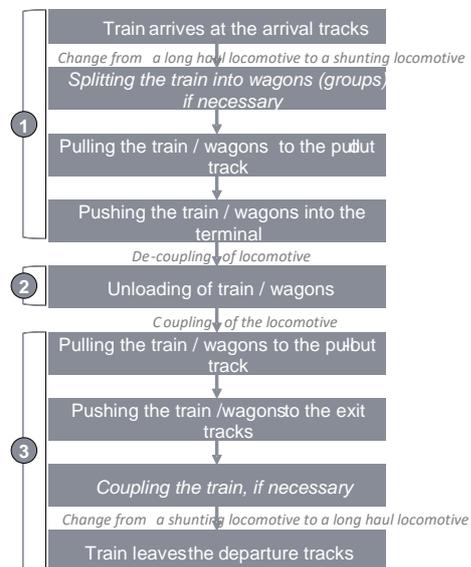
#### 3.1 Description of the proposed activity

The proposed activity is the construction and operation of a multi-modal freight terminal in the Muuga Port area and an access route to the terminal area.

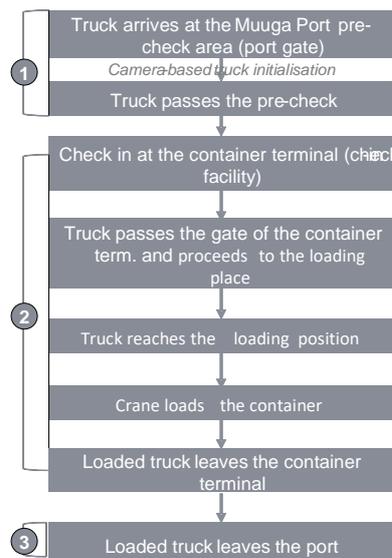
The Rail Baltic Multi-modal Freight Terminal (MCTRB) has different zones for different handling processes. The terminal zones are: the Container zone, General Cargo zone, Bulk Liquid zone, Dry Bulk zone and the RORO zone. Important functional parts of the terminal are the marshalling yard and the access route to the terminal, as well as the access routes to the different terminal zones inside the Muuga Port area.

A functional description of the MCTRB is given in more detail in the MCTRB Report WP3. The main functions of the terminal are:

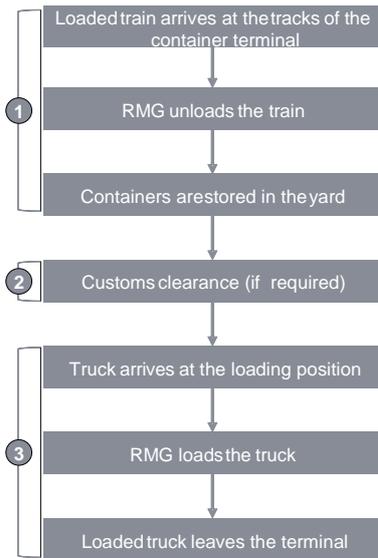
##### 1) Handling of trains



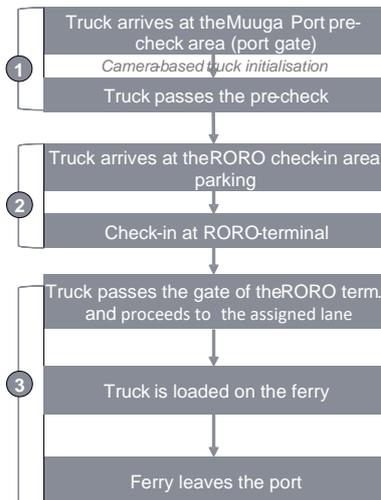
##### 2) Container handling via roads



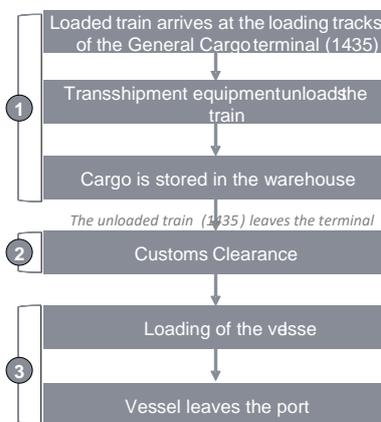
##### 3) Container handling via rail



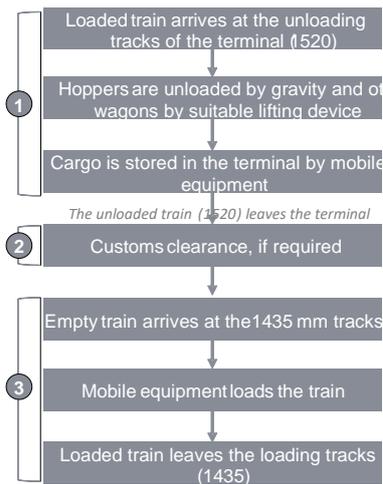
#### 4) RORO handling



#### 5) General cargo handling



#### 6) Dry bulk handling



### 3.2 Purpose and need of the proposed activity

Rail Baltic is an international railway corridor that is electrified with double-tracks and uses the European gauge standard (1435 mm). This corridor connects Estonia, Latvia and Lithuania with same other gauge standard countries within Eastern, Central and Western Europe. The corridor is a part of the North Sea–Baltic development corridor of the TEN-T core network. On the route consisting of Tallinn–Pärnu–Riga–Kaunas–Poland/Lithuanian border, the maximum design speed for a passenger traffic is 240 km/h and for freight traffic it is 120 km/h.

Muuga Harbour is the biggest cargo harbour in Estonia specialising in handling good of a transit origin. It is the main cargo harbour for the Port of Tallinn and is located ca 17 km east of the city. The railway connected with Muuga Harbour is indicated to be the northernmost freight station of Rail Baltic; therefore, smooth cooperation between the harbour infrastructure, the including existing roads, the 1520 mm gauge rail networks and the related technologies must be ensured, and the needs of Rail Baltic must also be met. Both the harbour and Rail Baltic belong to the TEN-T transport network that connects all of Europe. This requires the development of a modern freight terminal that will support the work of the North Sea –Baltic Core Network Corridor, and that will ensure streamlined logistics and formations of the freight trains.

The planned multi-modal freight terminal shall create opportunities for the expansion of the harbour as well as the servicing of new types of cargo, and will attract investments in the production, freight, warehousing and logistics sectors.

## 4 DESCRIPTION OF ALTERNATIVE LOCATIONS

Potential locations for the MCTRB were examined in the Maardu Town Industrial Area, in Jõelähtme Municipality and in Viimsi Municipality (see Figure 1).



Figure 1. Area of the examined locations for the MCTRB. X-GIS. Land Board.

6 alternative locations were developed and assessed from a technical and economical point of view in WP2 (see Figure 2).

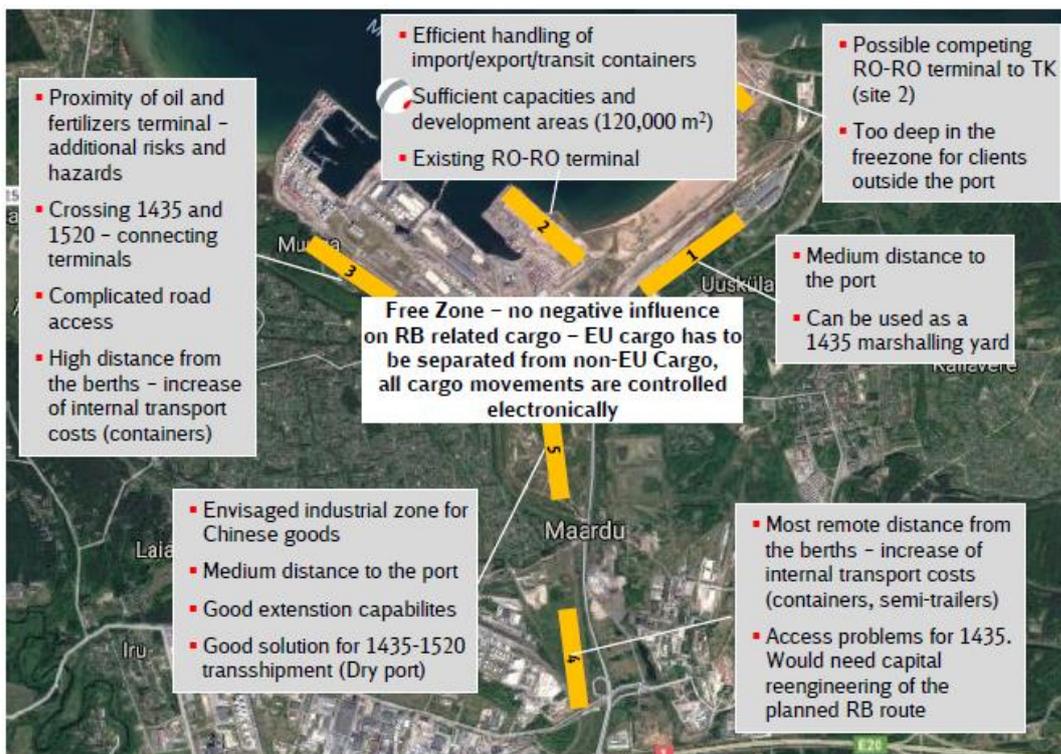


Figure 2. Alternative locations for the MCTRB.

After the SWOT analyses, the number of alternatives was narrowed down and finally two preferred locations were selected. The decision was based on the comparative estimations and also involved the major public stakeholders (Port of Tallinn, Estonian Railways Ltd. and the Technical Regulatory Authority). A majority of the alternatives were rejected due technical and economic reasons, but environmental restrictions have also played a critical role to some extent. For example, at the site of alternative 3 there is the protected Muuga Kabelikivi (Environmental

Register: KLO4000919) (see Figure 24). The preferred two alternative locations are shown in Figures 3 and 4.

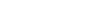


Figure 3. Alternative 1.



Figure 4. Alternative 2 (3b).

## LEGEND

	1435 mm New track
	1520 mm New track
	1520 mm Removed track
	Military handling area
	Ro-Ro handling area
	New retaining wall
	New bridge
	Road adaptation
	New building

Both the alternative locations are situated partly in Maardu Municipality, partly in Jõelähtme Municipality and partly in Viimsi Municipality.

Both the alternative locations have the following components in common (in terms of the geographical location): container zone, general cargo zone, bulk liquid zone, dry bulk zone and RORO zone (see also Chapter 3.1 Description of the proposed activity).

The common components are planned to be the locations of the following:

- 1) Container zone\* - Container terminal area (Plot 8 in Figure 5);
- 2) General cargo zone - General cargo terminal area (Plot 6 in Figure 5);
- 3) Bulk liquid zone - Oil terminal area (Plot 1 in Figure 5);
- 4) Dry bulk - Dry bulk terminal area (Plot 5 in Figure 5);
- 5) RORO zone\* - RORO terminal area and the former coal terminal area (Plots 7 and 9 in Figure 5).

\* The current storage facilities in Muuga – except the container and RORO areas – will be sufficient to cover the forecasted transport demand.

The difference between the two alternatives lies in the placement of the marshalling yard and in the Rail Baltic routing at the harbour area. The access route of Rail Baltic to the port area is the same for both alternatives, but some minor differences still do exist.

## ALT1

The Rail Baltic line runs parallel on the east side of the existing 1520 mm railway line. Between Maardu Station and the bridge of Vana-Narva Road, it will have to be lowered to go under the 1520 mm tracks branching from the main line to the west. In all other locations, the vertical alignment is the same as for the existing 1520 mm line, which does not need to be adjusted.

The Rail Baltic station is foreseen to be located so that the station tracks are not in parallel with the existing station, but are parallel to Nuudi Road. A long (1050 m) turnout track on the north-western end to be used for the decomposition of arriving and the forming of departing trains will also be situated more or less parallel to Nuudi Road. Except for the former coal terminal and the general cargo terminal in the Western Port territory, all other freight terminals will need to be connected using another turnout track.

#### Access to ALT3B

The Rail Baltica line follows the alignment of the 1520 mm line, running parallel to it on an embankment on the western side of Maardu Industrial Area (according to the Building Register, it is land for a waste facility). It elevates to bridge Maardu Road beside the level crossing of the 1520 mm line. It then stays elevated to pass between the existing harbour road gate in the east and the adjacent road bridge over the 1520 mm tracks in the west, bridging these tracks before the western head of the 1520 mm station. A ramp then lowers the elevation to reach the north-western side of the existing 1520 mm station. The turnout track will have to be constructed parallel to the existing 1520 mm access track to the former coal terminal.

### **4.1 Muuga Port**

All of the existing dangerous enterprises, or enterprises liable to be affected by a major accident, in Muuga Harbour are concentrated in the western part of the port. Despite there being no existing enterprises of such a type in the eastern part of the port, the planned Rail Baltic station and marshalling yard in both alternatives are locating in the Category A major accident enterprise AS DBT danger zone pressure gauge.

The layout of Muuga Port is given in Figure 5.

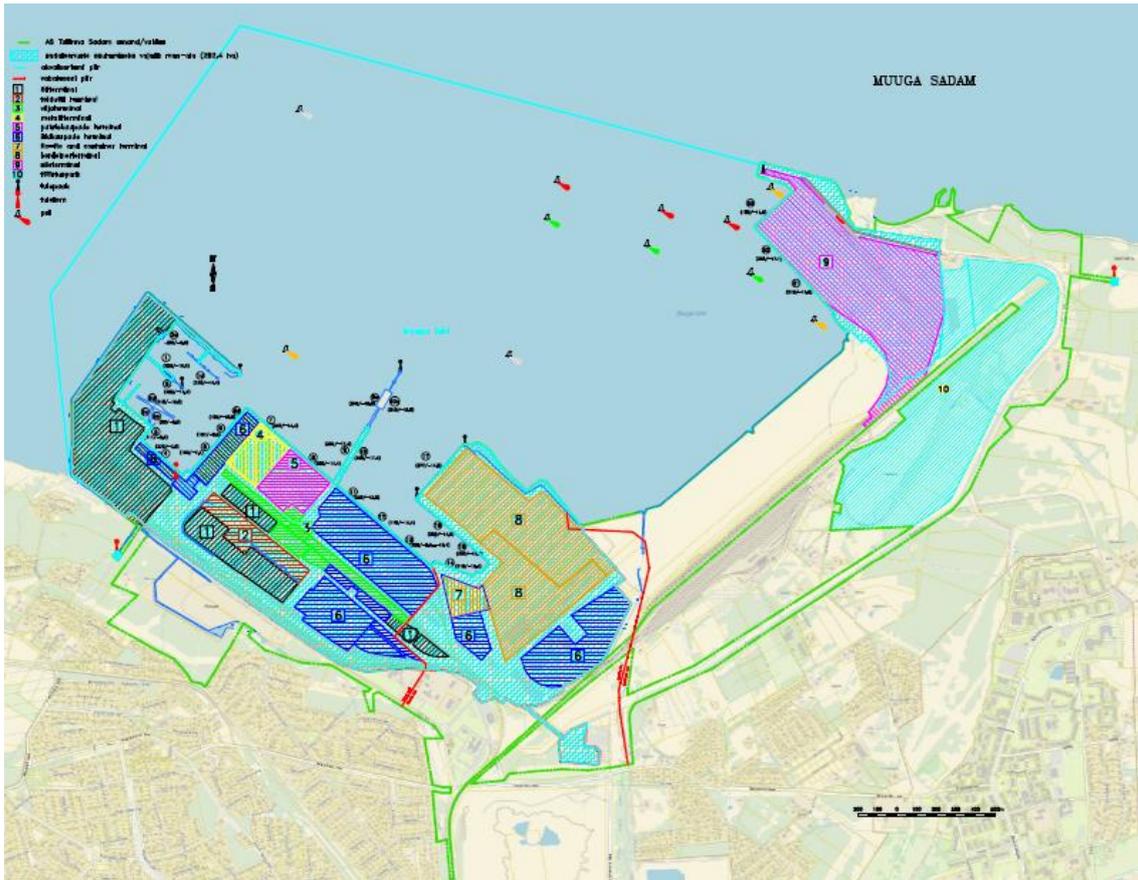


Figure 5. Layout of Muuga Port. <http://www.ts.ee/muuga-sadam>.



## 5 CURRENT STATE OF THE ENVIRONMENT

### 5.1 General description of the geology in the project area

The bedrock in the project area is Lower Cambrian sedimentary rock. The Lontova Formation Gault of Cambrian deposits extend into the ground on the east and west coasts of Muuga Bay. The thickness of the Gault is 40-70 metres. In the territory of Muuga Port, the Lontova Formation has been determined to be 43 metres.

In the southern part of the project area, the Cambrian deposits reach over to the Lükati Formation. The thickness of the Lükati Formation of Cambrian deposits is 10-12 metres and it forms the upper side of the Gault deposit (see Figure 6).

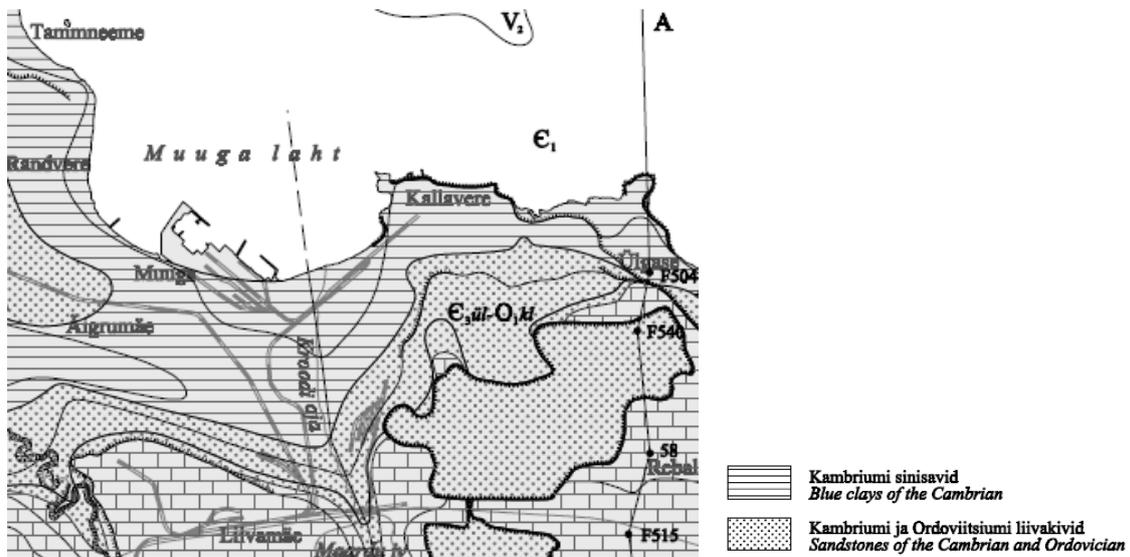


Figure 6. Schematic map of the bedrock. Source: Geological Survey of Estonia.

The Lontova and Lükati Formations together form the Estonian bedrock's most powerful aquifuge. From a hydrological point of view, the whole project area is situated in a protected groundwater area (considering the groundwater protection status) (see Figure 7).

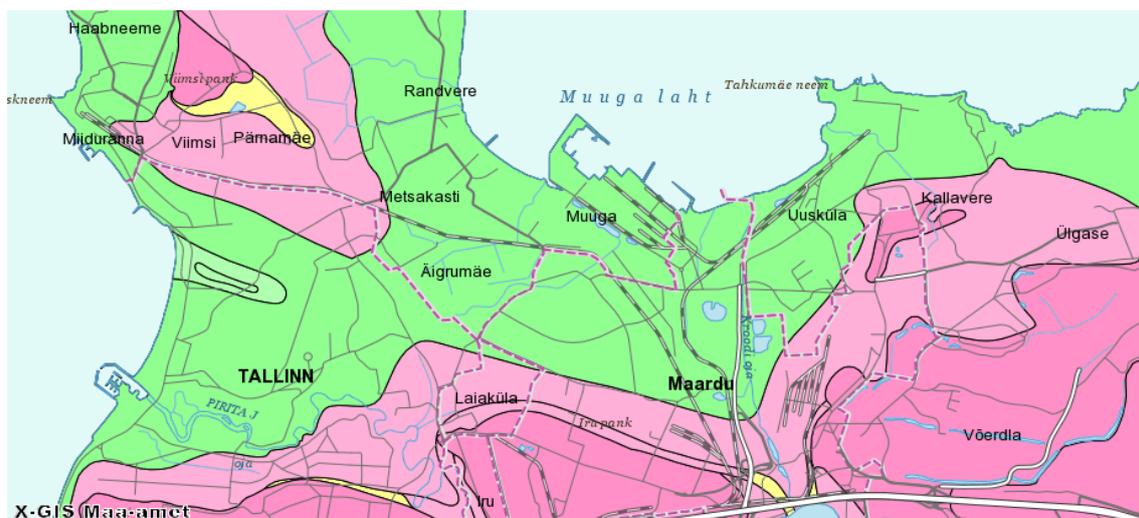


Figure 7. Schematic map of the groundwater protection status. X-GIS. Land Board.

- Kaitsmata ala
- Nõrgalt kaitstud ala
- Keskmiselt kaitstud ala
- Suhteliselt kaitstud ala
- Kaitstud ala

Anthropogenic sediments as the top cover lie mainly in Maardu and partly in the Muuga Port project area (see Figure 8). The thickness of the top cover sediments falls from about 30 metres in the Maardu industrial area (anthropogenic sediments) to about 1-2 metres in the north-east direction where the top cover sediments are thin.



Figure 8. Schematic map of the top cover sediments. X-GIS. Land Board.

Stratigraafilis geneetilised settetüübid

- dV Tehnogeensed setted
- vIV Holotseeni tuulesetted
- aIV Holotseeni jõsetted
- IIIV Holotseeni järvesetted
- bIV Holotseeni soosetted
- cIV Holotseeni nõlvasetted
- mIV<sub>bm</sub> Limneamere setted
- mIV<sub>lt</sub> Litoriaamere setted
- mIV<sub>lt-lm</sub> Litoria- ja Limneamere setted
- IIIV<sub>an</sub> Antsülusjärve setted
- mIV<sub>3</sub>-IIIV<sub>an</sub> Joldiamere ja Antsülusjärve setted
- vII<sub>3</sub> Pleistotseeni tuulesetted
- gII<sub>3</sub> Võrtsjärve alamkihistu glatsiogeensed setted
- fII<sub>3</sub> Võrtsjärve alamkihistu glatsiofluviaalsed setted
- IgII<sub>3</sub> Võrtsjärve alamkihistu jääjärvesetted
- gII<sub>1</sub> Valgjärve alamkihistu glatsiogeensed setted
- III<sub>pr</sub> Prangli kihistu setted
- Õhukese pinnakattega ala

## 5.2 Surface water and groundwater

There are three watercourses situated in the project area.

Kroodi Stream (Env. Reg. VEE1089100) (see Figure 9) with its restriction zones starts from Maardu Lake and its receiving water body is Muuga Bay. Kroodi Stream is 5.3 kilometres long (according to the Environmental Register) and its flow is regulated with the overflow from Maardu Lake and is 0.5 m<sup>3</sup>/s on average. Kroodi Stream serves as the recipient of storm water

effluent, according to the permit for the special use of water ([L.VV/323336](#)). Kroodi Stream has three different types of restriction zones:

- 1) a 10 metre wide water protection zone;
- 2) a 25 metre wide building exclusion zone; and
- 3) a 50 metre wide limited management zone.

According to the Nature Conservation Act, the building ban does not extend to the following areas where an adopted detailed plan (detailed spatial plan) or an adopted comprehensive plan exists: construction work in ports and civil engineering work related to water traffic, utility networks and the technical infrastructure, bridges and railways, among others.



Figure 9. Kroodi Stream. Environmental Register.



Figure 10. Kroodi Stream (ditch) with its restriction zones crossing Muuga Port railway station. X-GIS. Land Board.

According to the Environmental Register, there is also the watercourse of the Uusküla Ditch (Reg. Code VEE1400081) situated in the Muuga Port area (see Figure 11). The catchment area of the ditch is less than 10 m<sup>2</sup> and it is 1.6 kilometres long. It does not have a restriction zone. The Uusküla Ditch serves as recipient of storm water effluent, according to the permit for the special use of water ([L.VV/323643](#)).



Figure 11. Uusküla Ditch (also crossing Muuga Port railway station). Environmental Register.

To the north-east of the Uusküla Ditch, the mouth of the Võerdla Main Ditch (also known as Kallavere Ditch, Env. Reg. VEE1089000) is situated (see Figure 12).

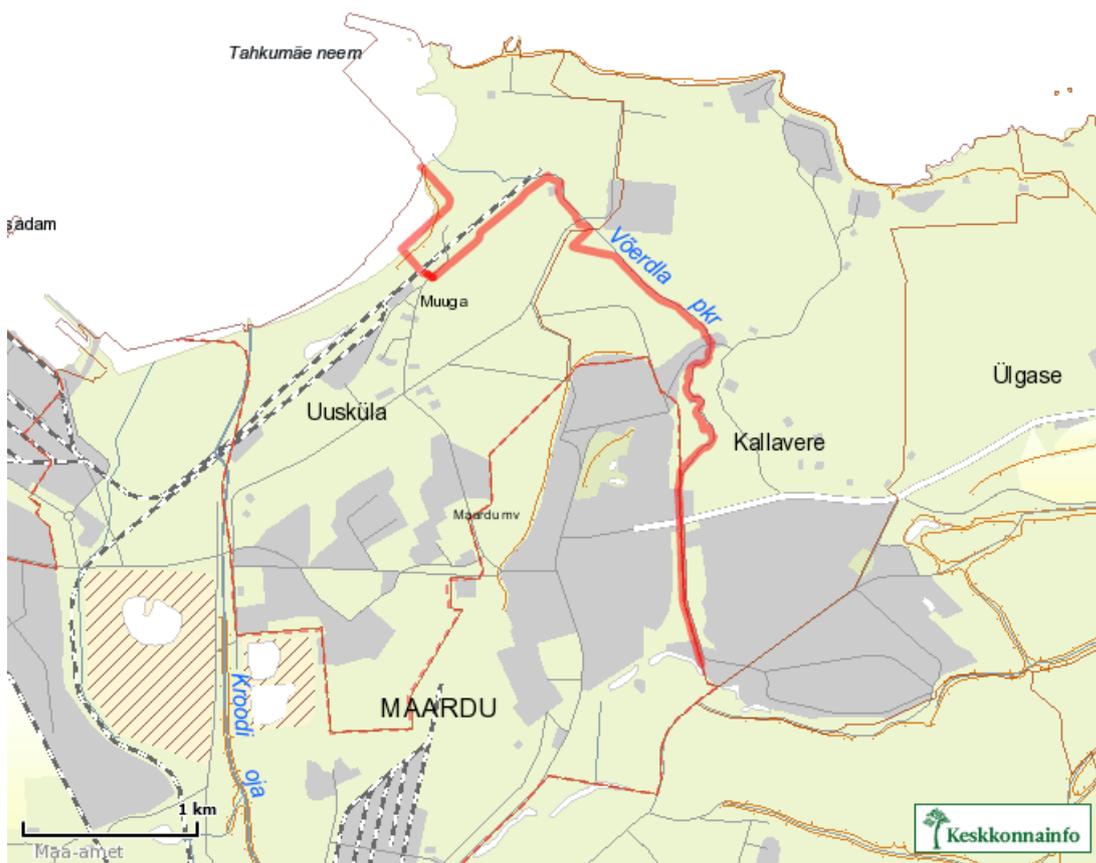


Figure 12. Võerdla Main Ditch. Environmental Register.

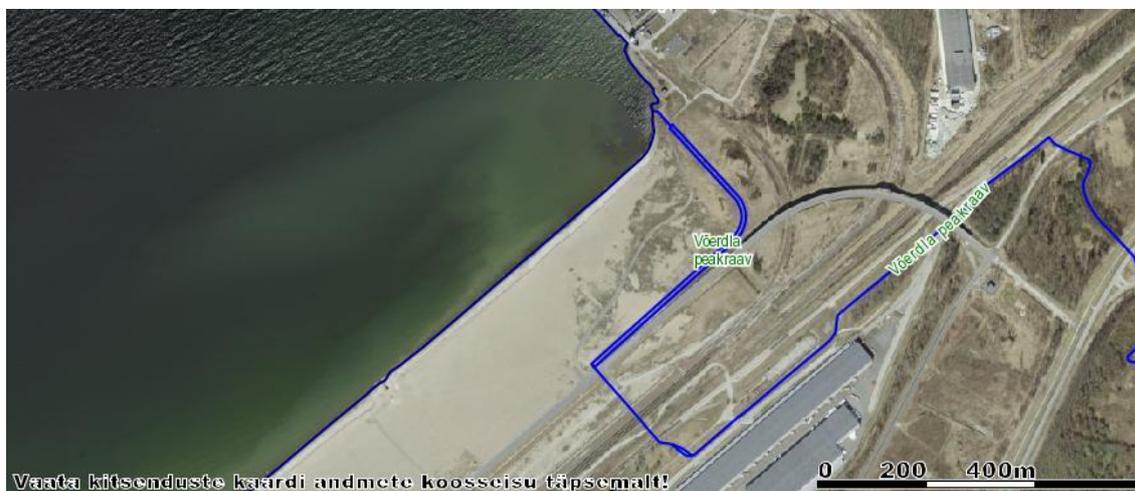


Figure 13. Võerdla Main Ditch in the Muuga Port area. X-GIS. Land Board.

According to the Environmental Register, the ditch is a 5.6 kilometre long watercourse with a 15.9 km<sup>2</sup> catchment area. The recipient water body is Muuga Bay. The Võerdla Main Ditch has a 10 metre wide water protection zone.

According to the Water Act, the following activities, among others, are prohibited within a water protection zone: extraction of mineral resources and earth substances, prospecting, cutting layers of trees and shrubs without the consent of the Environmental Board except for cutting carried out within the artificial recipients of land improvement systems for the performance of work to manage those systems, economic activities except for removing flora that has been

washed out of the water, mowing grass, cutting reeds, removing grass and reeds, and grazing under the conditions provided for in §§ 29<sup>1</sup> and 29<sup>2</sup> of this Act.

According to the adopted detailed land use plan, it is planned for Võerdla Main Ditch to be directed with a collector through the planned area in the eastern part of Muuga Port. The Võerdla Main Ditch would be directed under the Muuga railway station (tracks) by using 1.5 x 2 m culverts.

The groundwater wells in the project area are shown in Figure 14.

### 5.3 General description of environmental restrictions in the project area

In Figure 14, the major environmental restrictions in the project area and in its vicinity are shown.



Figure 14. Environmental restrictions in the potential locations of the MCTRB and its vicinity. Source: EELIS, 28.08.2017.

Based on the Harju County thematic plan and the comprehensive land use plan of Jõelähtme Municipality, there are defined green network elements in the project area. The green network corridor (K9) is connected with a core area (T9) of regional (county) importance, as defined by the comprehensive land use plan. The green corridor is a structure that guarantees the coherence of the green network. On the eastern side of the project area, a green network with a “dead end” corridor is situated. This corridor crosses Nuudi Road twice, with the fenced Muuga Port area and the existing railway tracks and industrial buildings located in the corridor. Therefore, the question can be raised if this green corridor is actually functioning in today’s conditions. Based on the summary of the legal opinion given by the Pohla and Hallmägi law office, there is no green network corridor in the Muuga Port territory and the green corridor shown on the map of the thematic plan if the Muuga Port area has no real significance to the planning of properties in this area. The legal opinion about the green network corridor (K9) was given in response to the issue raised by Jõelähtme Municipality ([Legal opinion](#)).

The preparation of a new comprehensive land use plan was initiated by Jõelähtme Municipality. According to a sketch of the plan, changes in the green network corridor have been proposed

and the “dead end” corridor has been removed (Figure 14a). The comprehensive land use plan has not yet been adopted by the municipality.



Figure 14a. Planned green network. Source: Comprehensive land use plan of Jõelähtme Municipality. Sketch. Hendrikson & KO, November 2015.

Ülgase nature reserve (Ülgase nature area) belongs to the European Natura 2000 nature area network. The area of Ülgase nature area is 49.3 Ha and it is situated about 3.5 kilometres to the east of Muuga Port.

The closest special area is the Ülgase-Saviranna special area (see Figure 15). This special area is situated in the Saviranna coastal area and does not belong to the Natura 2000 network. The size of the special area is 13.2 Ha and it is situated approximately 1.2 km from Muuga Port.

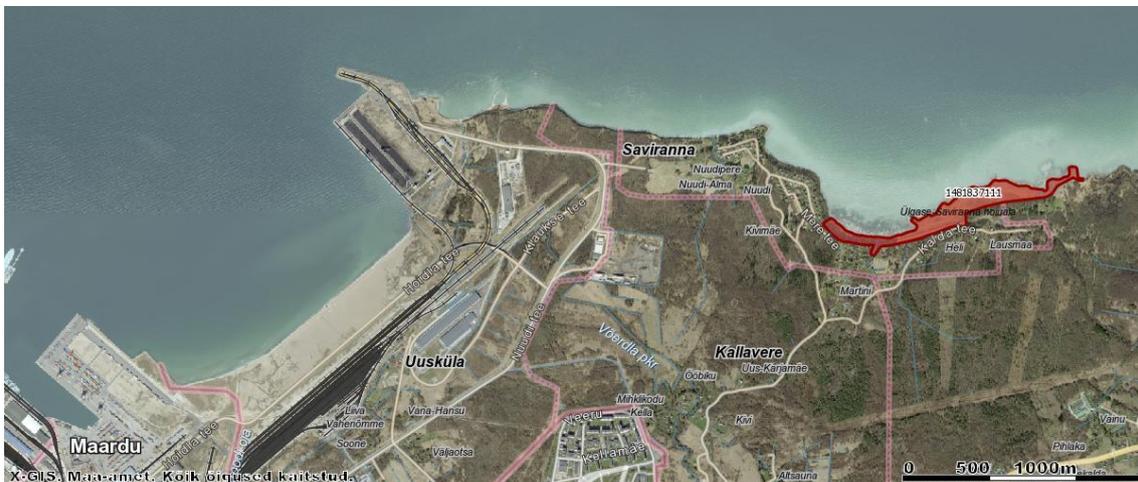


Figure 15. Ülgase-Saviranna special area (hoiuala). X-GIS. Land Board.

According to the Estonian Nature database, on the north-east side of Muuga Port, just on the border of the former coal terminal in Properties 24504:004:0996 and 24504:004:0997, there exists a coastal meadow that is classified as priority Natura Habitat 1630\* (Läänemere kesk- ja põhjaosa rannaniidud (EE) (see Figures 16 and 17). Due to different activities, a large part of the habitat area has been damaged and as a result of this fact the coastal meadow does not have a high nature protection value.

On Property 24504:004:0073 (in an eastern direction from the coastal meadow) is a meadow area which is classified as priority Natura Habitat 6210 (*Festuco- Brometalia*-kooslustega poollooduslikud kuivad rohumaad ja põõsastikud karbonaatsel mullal). Today, the major part of this meadow area is destroyed due the impact of the construction of a coal terminal and an access road. However, a 30-50 metre wide area between the access road and the shore still exists

(with an area of about 1 Ha). The present state of the meadow area is bad and it apparently does not have a significant environmental value anymore (Ramboll, 2011. Strategic Environmental Impact Assessment of the detailed land use plan of Muuga Pump-hydro accumulation station. SEA interim report).



Figure 16. Coastal meadow (24504:004:0996 and 24504:004:0997) and sandy coast with a meadow area (24504:004:0073). X-GIS. Land Board.



Figure 17. View of the coastal meadow (24504:004:0996 and 24504:004:0997). Photo by Entec, 2017.

On the both sides of Nuudi Road priority habitats are located. According to the EIA report on expanding the eastern part of Muuga Port (AS Tallmac, 2006), in the port area a total of 4 priority habitats were registered. All of them were forest priority habitats. Due the expanding of Muuga Port in the eastern direction, the value of these priority habitats might be lost to some extent.

According to the Estonian Nature Information System database in the project area between railway and Nuudi Road, Natura 2000 habitat type (6510) does exist. It is Mesophile grasslands formation - Lowland hay meadows. Outside of the project area from Nuudi Road in the south direction Natura 2000 habitat type (6270\*) and in the east direction Natura 2000 habitat type (6430) has been found (see Figure 18). 6270\* grassland formation - Fennoscandian lowland species-rich dry to mesic grasslands.

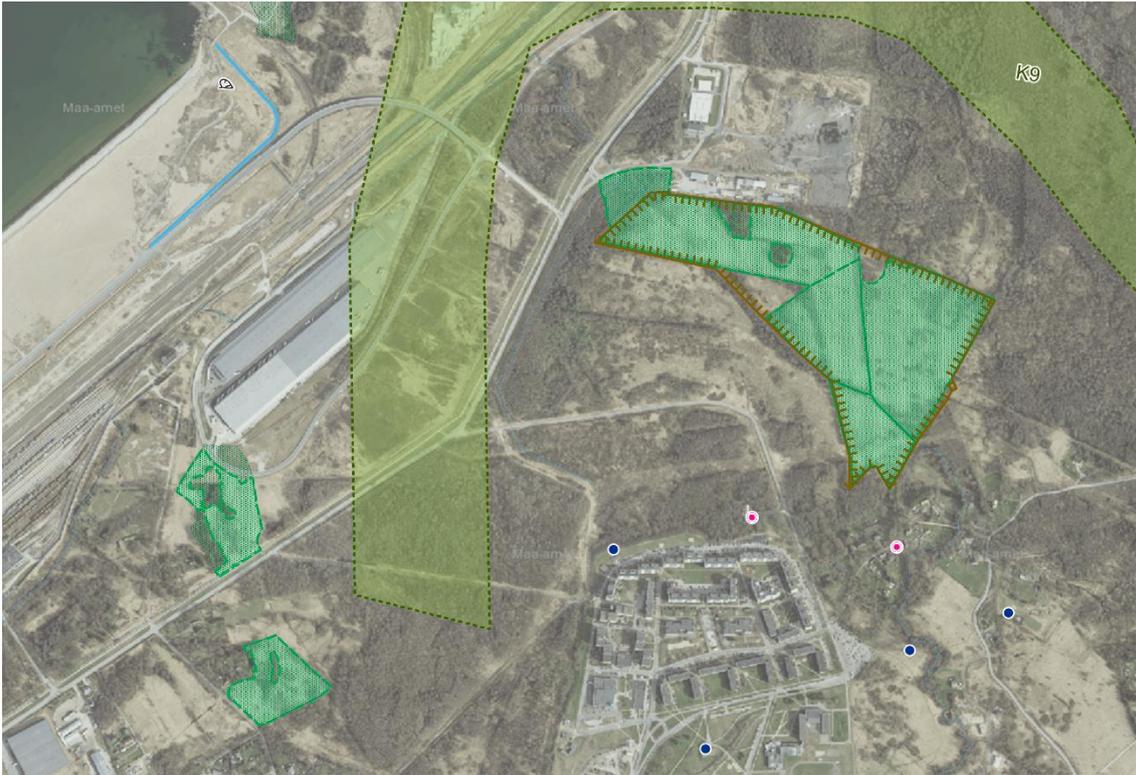


Figure 18. Meadows near Nuudi Road. Source: EELIS, 28.08.2017

According to the Nature Protection and Natura 2000 database (X-GIS), no protected natural objects exist in the area between the water and Nuudi Road in the vicinity of the existing Muuga Port railway station. However, as an outcome of an inventory by the Estonian Fund for Nature (ELF) in 2002, some Hydrophilous tall herb fringe communities (6430), which are semi-natural grassland formations, were found in the area between the railway station and Nuudi Road (see Figure 19). According to the inventory, the degree of representativeness of this Natura 2000 habitat type has a non-significant presence and it was assessed as a habitat with a low or missing value (D). Unknown, and presumably with low or missing value, habitat type lies between the water and railway station.

The outcome of this inventory is the only such finding, and it does not have any legal force.



Figure 19. Hydrophilous tall herb fringe communities. Source: EELIS, 28.08.2017.

According to earlier studies (AS Tallmac, 2006. EIA report on expanding the eastern part of Muuga Port), an attractive and especially valuable oak forest stand is located in the area between the coal terminal and the railway. In part, the stands have already been cleared due the construction work on the coal terminal and the railway section leading to the coal terminal. Nonetheless, the existence and condition of the stands are unclear and need to be evaluated through a dendrological study. Valuable stands must be preserved as much as possible during construction work.

## 5.4 Socio-economic environment

### 5.4.1 Settlements

The project area is situated in the territory of three different municipalities: Maardu Town, Jõelähtme Municipality and Viimsi Municipality.

There are several detailed land use plans adopted or under preparation in the project area. For overviews of the adopted or initiated detailed land use plans, see Figure 20.

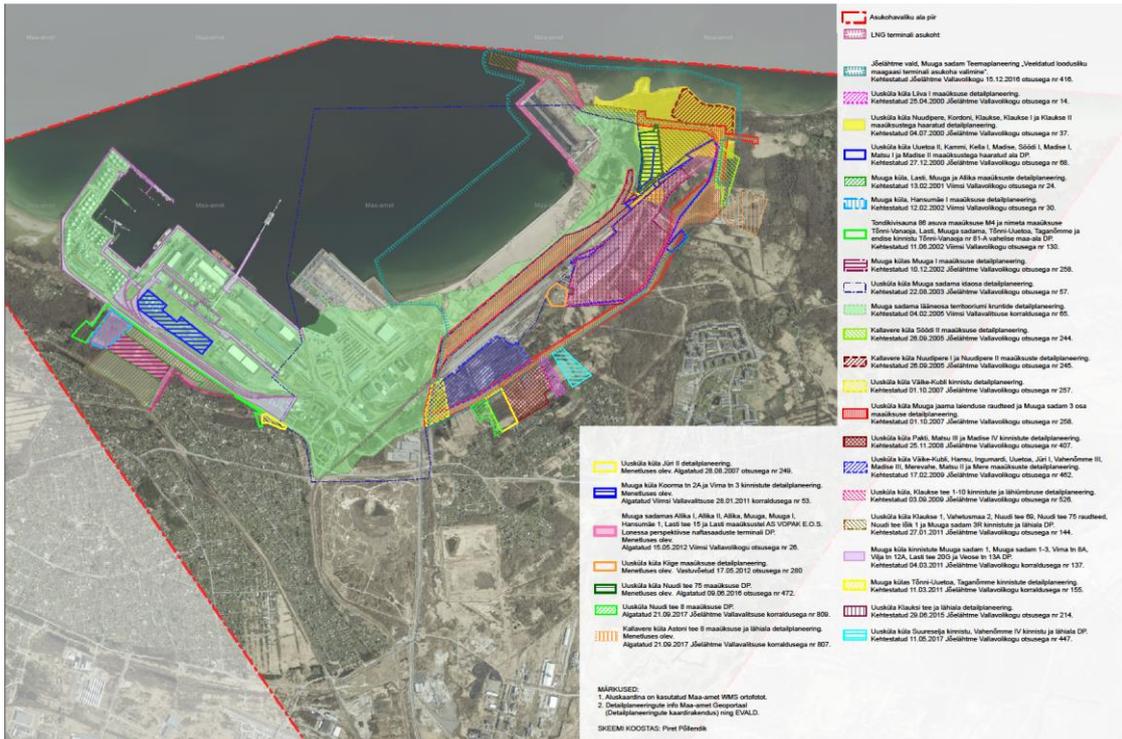


Figure 20. Adopted or initiated detailed land use plans. Map prepared by Entec.

The main settlements in the project area are Muuga aedlinn (in the south-west direction from Muuga Port), Uusküla Village (in the southern direction from the Muuga Port), Kallavere living area of Maardu Town (in the south-east direction from Muuga Port) and Saviranna Village (in the eastern direction from Muuga Port) (see Figure 20a).



Figure 20a. Settlements in the project area. X-GIS. Land Board.

### 5.4.2 Traffic

The main access to the port is via Põhjaranna, Maardu and Nuudi Roads. Due a decline in the commodities turnover, the traffic density has decreased considerably over last few years. This concerns both railway and road transport. However, after starting the operation of the freight line between Muuga Port and Vuosaari Port in Helsinki, some of the transportation load to the roads will increase.

### 5.4.3 Cultural heritage and recreational use of the areas

There are several objects of cultural heritage value in the project area (see Figure 14).

Old military objects are shown in Figures 21 and 22, while objects included in the Estonian Primeval Nature Book are shown in Figures 23 and 24. The only one of these objects that is formally under protection is Muuga Kabelikivi (Environmental Register: KLO4000919), which has a 50 metre protection zone (see Figure 24).



Figure 21. Objects of cultural heritage value in the vicinity of the former coal terminal. X-GIS. Land Board.



Figure 22. Old military object (Soviet military border observation tower) in the vicinity of the former coal terminal. Photo by Entec 2017.

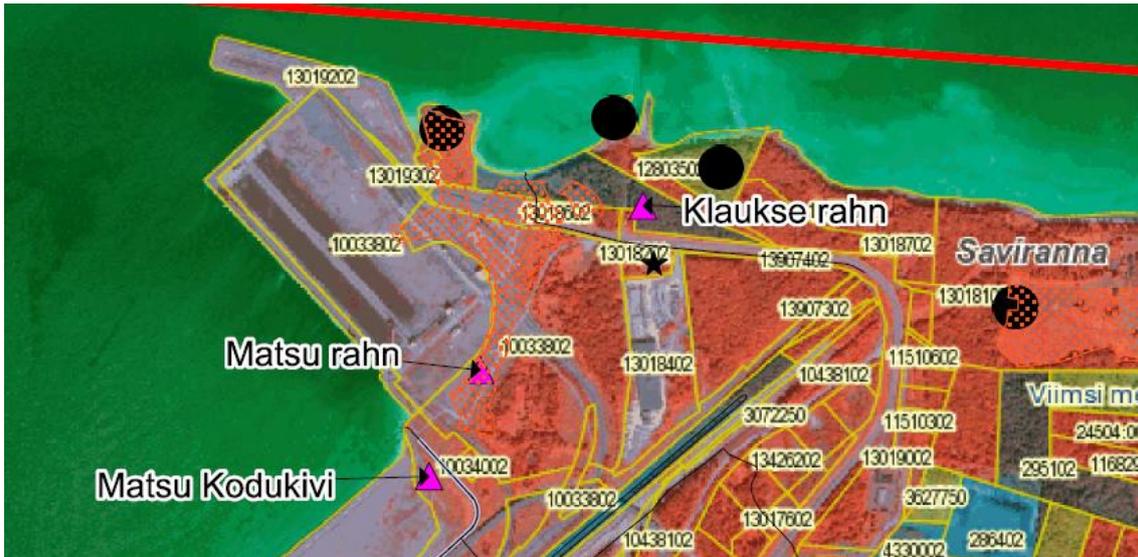


Figure 23. Objects in the Estonian Primeval Nature Book (Pink triangles) in the vicinity of the former coal terminal. Source: EELIS, 28.08.2017



Figure 24. Objects in the Estonian Primeval Nature Book on the western side of Muuga Port. Source: EELIS, 28.08.2017

## 6 STARTING POINTS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

### 6.1 Impact on the surface water and groundwater

The rail tracks will alternatively cross Kroodi Stream, Uusküla Ditch and Võerdla Main Ditch. From this point of view, there is no difference between the alternatives.

Uusküla Ditch most probably has a local drainage ditch function and it could be reconstructed if further investigations and analyses allow for this. As it has no restriction zone, Uusküla Ditch serves as the recipient of storm water effluent from Muuga railway station. This should be taken into account during the next stages of the project.

It is most probable that the MCTRB will not have a negative impact on the ditches, but during the detailed design these streams should be considered when planning crossings or facilities nearby the streams. Any possible negative impact should be avoided.

#### 6.1.1 Impact of the construction activity

The protection of the ditches should be considered when the detailed layout of the terminal site is being worked out.

During the construction period, blocking of runoff and the contaminating of the waterbodies should be avoided. All three ditches flow into Muuga Bay.

Bored wells are not under any direct impact from the construction activities, but it should still be taken into account that the closest wells are situating about 50...100 metres from the planned tracks (see Figures 25, 26 and 27). If the Rail Baltic displacement zone is taken into account, one of the bore wells between the Rail Baltic route and Põhjaranna Road can be dismantled.

Dewatering from the railway embankment trench may generate a depression of the underground water (groundwater) in the adjacent area. Exact measures to address this issue will be given in the detailed design phase based on geological and hydrogeological investigation



Figure 25, 26, 27. Bored wells situated near the planned tracks (on the site of Muuga Port, on the border of the former coal terminal and next to Põhjaranna Road. Source: EELIS, 28.08.2017

#### 6.1.2 Impact of the operation and maintenance

During the operational phase, there should not be any impact on the ditches nor the streams.

Presently, the ditches are diverted into pipelines or culverts when crossing the tracks. During the operation and maintenance period, the ditches will be open to contamination (mainly in the case of an emergency situation) such as runoff with contaminated storm water flowing into the ditches, etc. Mitigation measures should therefore be considered to avoid the inflow of polluted storm water to the ditches.

In order to ensure surface and groundwater protection, waterproofing base materials can be used in places where it is necessary.

The impact on the surface water and the groundwater is also dependent on the geological structure of the project area. The project area is a well-protected area, as it is protected from underneath by the Lontova and Lükati Formations which together form the Estonian bedrock's most powerful aquifuge. The potential impact of the operation and maintenance on the surface water and groundwater may be estimated to be very small.

The water supply and wastewater treatment measures will be considered in the next phase of the design. For the functioning MCTRB, the Muuga Port infrastructure can be used for the water supply and wastewater treatment. At this stage, it is not foreseen that large amounts of water will be used. For the operating terminal, water will be used mainly for domestic purposes.

## **6.2 Noise and vibrations**

The environmental noise emitted by traffic, industrial activities, service enterprises, sports events, etc., is sound with a pressure which causes a physical as well as a psychological disturbance for people.

When organising construction work causing noise, the Regulation No. 71 titled "Normative levels of noise in ambient air and noise level measurement, determination and assessment methods" issued on 16.12.2016 by the Minister of Environment (RT I, 21.12.2016, 27) should be considered. For noise caused by construction work, limit values have been set for the relevant categories of industrial noise with normative levels during the hours of 21.00–07.00. Activities causing impulse noise like blasting, piling, etc., can be executed during working days from 07.00 to 19.00.

The noise levels set by the aforementioned Regulation No. 71 are based on the effects of noise on human health and well-being.

According to the SEA report of the Maardu Comprehensive Land Use Plan (Hendrikson ja Ko, 2006) the main sources of noise in Maardu are the Maardu-Muuga railway transport on the border of the residential area and the Maardu-Miiduranna railway transport crossing the residential area. The Kroodi industrial area will be the most intensively developed, which is in an eastern direction close to the Muuga residential area. It is mentioned in the SEA report that this residential area is already affected by the railway and by sources of pollution originating in the port.

It can be assumed that the noise disturbance in the project area will grow due to the increasing transportation loads on the railway and roads. Therefore, the noise created by the trains and tracks must be modelled and proper mitigation measures must be foreseen. The mitigation measures, either noise barriers or other measures which are more suitable for a specific situation, will be given in the detailed design.

Beside the noise disturbance, vibrations may also have a negative impact on the neighbourhood.

### **6.2.1 Impact of the construction activity**

A number of residential buildings are within the noise zones for the alternatives regarding the construction of the Rail Baltic access to Muuga Port.

Some of the residential buildings will apparently be within the noise zone during the railway station construction for ALT1. Also, vibrations should not be excluded.

Detailed measures to restrict the noise arising due to the construction work will be given in the detailed design.

Noise disturbances during the construction period will be temporary, and the construction work will usually be carried out in the daytime.

### **6.2.2 Impact of the operation and maintenance**

The main activities causing noise in the MCTRB are mainly related to train handling and loading/unloading activities.

The location of the shunting area is planned to be in the Muuga Port area close to the Muuga Railway station. It should be considered that the noise levels will already be high due to the activities in the railway station, and the location of the shunting area will most probably increase the noise level. At this stage, it is uncertain if the activities of the shunting area will have higher noise levels than those of the existing railway station. Nonetheless, the cumulative impact must be considered and assessed.

The closest residential buildings are situating in the immediate vicinity of the planned MCTRB. In order to mitigate the noise impact, mitigation measures should most probably be considered.

Mitigation measures should at least be considered in the ALT1 location of the planned railway station, which is closer to the residential buildings and areas than ALT3B.

*In Maardu Municipality, the minimal distance between any kind of terminal and a residential building must be 300 metres (according to the Maardu Municipality Comprehensive Land Use Plan SEA report).* This has relevance for the MCTRB activities in the Maardu town industrial area.

Suitable mitigation measures will be given on the basis of noise modelling and shall be taken into account in the detailed design.

Vibrations happen most commonly due the train traffic on railways, but can be mitigated by technical solutions. To avoid inconvenience from vibrations, the geological situation, design appropriate embankments, etc., should be taken into account. All of this must be considered in the detailed design phase.

## **6.3 Impact on the air quality**

Air pollution due to rail traffic is mainly related to the movement of diesel locomotives. Also, the possible standing time at the MCTRB must be taken into account, as this may lead to a slightly higher concentration of contaminants compared to the natural background level.

The increasing road traffic will also generate an increase of air pollution.

### **6.3.1 Impact of the construction activity**

The impact on the ambient air quality is related to the use of heavy machinery for the earthwork and the construction of embankments for the railway tracks. The impact generated by the earthwork – such as dust emissions, especially during droughts – can be differentiated from the release of diesel engine exhaust gases. The earthwork will generally be carried out in the daytime, where any impact from the construction will be limited to the daytime hours between approximately 07:00 and 23:00. The duration of the earthwork will be specified in the detailed design phase.

The air emissions during the construction period will be temporary and can be mitigated.

### **6.3.2 Impact of the operation and maintenance**

The impact on the air quality will depend on the activities conducted in the MCTRB during its operation and maintenance period. It can be assumed that remarkable air emissions will not be created in the MCTRB.

The main activities that could generate air pollution are related to the shunting of trains and the loading/unloading of bulk liquids in the oil terminal area. The expected increasing air emissions in the Muuga Port area should be modelled. Nonetheless, the amounts of bulk liquids to be handled will stay at a lower level than they were in earlier times.

## **6.4 Waste and waste handling**

### **6.4.1 Impact of the construction activity**

Before the construction work commences, the soil contamination risk should be investigated.

In the railway station and sorting area of ALT1 between Muuga railway station and Nuudi Road the height of the land differs, ranging from 1.4 to 10.5 metres (absolute height). This is apparently due an anthropogenic conglomeration in the area. It should be assessed if the soil pile should be removed or if it can be used for the site levelling.

During the construction period, different types of waste will be generated including hazardous waste. All kind of waste should be collected by a contractor and given to the waste management company having the corresponding licence.

### **6.4.2 Impact of the operation and maintenance**

All of the waste generated during the operation and maintenance should be collected and handled in an environmentally-sound way, following the local regulations and according to the Environmental Management System of Muuga Port.

## **6.5 Impact on the natural environment**

### **6.5.1 Impact on the flora**

The green network and the closest priority habitat (see Figure 18) may be slightly affected by the construction and by the operation and maintenance of the shunting area. It should be considered that some restrictions may be set regarding the cutting of forests surrounding a priority habitat. Based on the layout of ALT1, the priority habitat should be taking into account when planning the connection tracks.

According to the Muuga Port Expanding EIA report, maintaining a buffer zone around the priority habitat should be considered in the case of deforestation work.

Despite its assessed low value, it is also advisable to avoid harming the coastal meadow and the surrounding meadow area.

According to the Nature Protection Act (§ 37(2)) the purpose of the protection of forests in the shore restriction zone is to protect the water and soil and to preserve the recreational conditions.

The proposed location of the RORO zone in the former coal terminal area is situated in the immediate vicinity of this protection zone. The MCTRB should be designed so that the impact to the coastal meadow on Properties 24504:004:0996 and 24504:004:0997 and the meadow area on Property 24504:004:0073 will be avoided. However, referring to the previously performed environmental assessments, the coastal meadow does not have a high environmental protection value. The surrounding meadow area has also already been strongly influenced by the construction of the coal terminal and access road and has most probably lost its environmental value.

On the site and in the immediate vicinity three boulders can be found (see Figure 23).

Ülgase nature reserve and the Ülgase-Saviranna special area are situated far enough from the project area so that they will apparently not be affected by the expansion of Muuga railway station.

#### **6.5.1.1 Impact of the construction activity**

The construction of the tracks from the planned ALT1 railway station may have some impact on the green network corridor and the closest priority habitat (see Figure 18). It should be considered that there may be set some restrictions regarding cutting of forest surrounding priority habitat.

The ALT3B extension of the existing tracks may also have an impact on the green corridor.

According to the Muuga Port Expanding EIA report, maintaining a buffer zone around the priority habitat should be considered in the case of deforestation work.

It is not clear to what extent the priority habitat has remained and what its value is. It is therefore advisable to arrange a dendrology or natural habitat assessment in order to find out the value of the priority habitat. Valuable stands must be preserved as much as possible during the construction work.

As was mentioned in Chapter 5.3, the significance and status of the green network in this area is not clear. The green corridor has a “dead end” and there is already an existing railway infrastructure and industrial building crossing it.

#### **6.5.1.2 Impact of the operation and maintenance**

There will likely not be any significant impact on the green network and the priority habitat during the operation and maintenance time.

### **6.5.2 Impact on the fauna**

According to the complemented EIA report on expanding the eastern part of Muuga Port (AS Tallmac, 2006), in 2005 a bird survey was conducted in the area between Muuga railway station, Kroodi Ditch and the coal terminal, and also between the coal terminal and the Saviranna area.

During the field work carried out during April September 2005, 76 bird species were registered in the area between Kroodi Stream, Muuga railway station and the coal terminal. 25 bird species and 46 pairs were found to be nesting in this area. There were also 33 species of migratory birds counted, the most numerous of which were Long-tailed Ducks.

In the area of the railway station, a couple of pairs of breeding birds were found. It was also found that birds were breeding in the hollows of the railway-related infrastructure and buildings. It was mentioned at that time that the construction of new buildings and an added railway infrastructure may probably have a positive impact on the nesting birds (AS Tallmac, 2006 EIA report).

The coastal area between the coal terminal and the Saviranna area was found to be relatively poor regarding water birds, especially in the winter period from November to March. Nonetheless, some not-nesting water birds were found.

The Muuga industrial park already creates barriers to wild animals. Small animals are more frequent guests in the area.

### **6.5.2.1 Impact of the construction activity**

In the case of ALT3B, it is planned for the existing tracks to be extended closer to the coast line in the former coal terminal area. Based on earlier studies, this should not cause a negative impact to the water or nesting birds.

However, the railway station expansion in ALT3B may have a negative impact on nesting birds during the construction period. Nonetheless, it is not clear what the present state regarding the nesting of birds is, as the situation has changed during the past 10 years.

There might be some impact on the breeding birds from noise in the former coal terminal area. According to earlier bird surveys, this impact can be considered as not significant at this stage.

It is advisable to for an ornithological expert to carry out an assessment.

### **6.5.2.2 Impact of the operation and maintenance**

There might be some negative impact to birds due the activities involving the coal terminal and the sandy beach, which is popular recreational area. The present situation is unknown, as the coal terminal is not in operation.

## **6.6 Impact on the socio-economic environment**

### **6.6.1 Impact on the landscape and cultural heritage**

In the project area are objects of cultural heritage described in chapter 5.4.3. Under protection is only Muuga Kabelikivi (environmental register: KLO4000919) (see figure 24).

#### **6.6.1.1 Impact of the construction activity**

There should not be environmental impact to the cultural heritage values during construction period.

Muuga Kabelikivi situates outside Muuga Port territory and construction activities close to Muuga Kabelikivi restriction zone will not be done.

#### **6.6.1.2 Impact of the operation and maintenance**

There will probably not be environmental impact to the cultural heritage values during operation and maintenance period.

### **6.6.2 Impact on the land use and land use planning**

There are no significant differences between ALT1 and ALT3B regarding the land use. All locations are covered by the adopted land use plans. The land use plans can also be reconsidered if the developer of the land is not bound by an agreement to implement the detailed land use plan. This can still be negotiated.

When screening the priority detailed land use plans it should be considered that, according to Planning Act § 140 (1) 1) The detailed spatial plan or a part of such a plan may be repealed if at least five years have elapsed since the adoption of the plan, and the implementation of the plan has not commenced.

Also, it should be noted that there are already sites that are presently covered by several (up to four) different detailed land use plans.

In several of the adopted spatial plan areas a number of building permits have been issued.

Building Code § 45 states the following:

*(1) A building permit is valid for five years. When building work has commenced, the building permit is valid for up to seven years from the time when it became valid. Where this is warranted by the circumstances, a longer term of validity may be stipulated or the term of validity may be amended.*

*(2) The date of the commencement of building work is deemed to be the first day on which work corresponding to the building design documentation is performed.*

The screening of the adopted spatial plans on the route of the railway tracks and the MCTRB building area is rather easy as this information is publicly available. Also, information regarding the issued building permits is publicly available from the Building Register. The most challenging task is obtaining exact information about the locations of buildings or civil engineering works having valid building permits. In order to reach a realistic solution for the location of the MCTRB it is advisable to coordinate the site selection with all interested parties. For the list of the adopted or ongoing land use plans, see Figure 20.

The major building permits that have been issued for the properties which will stay on the new railway route or close to it are listed below.

#### **ALT1**

1) 24504:004:1021(ALT1 and ALT3B military handling area)

On Property 24504:004:1021 a spatial plan has been adopted for the construction of the LNG terminal. Based on the application for Building Permit No. 1611271/01927 18 that building permits was issued by Jõelähtme Municipality (Building Register) in the former coal terminal area.

2) 24504:004:0782

On Property 24504:004:0782 a building permit was issued by Jõelähtme Municipality for the construction of Wagon Defrosting Building II. According to the Building Register this building permit (265/2006) is issued on 10.10.2006

3) 24504:004:0562 (ALT1 and ALT3B RORO parking and sorting area)

On Property 24504:004:0562 10 building permits have been issued by Jõelähtme Municipality for the construction of the following railway facilities:

- 1014491 30.07.2004 (Main Road No. 1);
- 1014493 30.07.2004 (Connection Road No. 3);
- 1014496 30.07.2004 (Väljapanekutee No. 12);
- 1014497 30.07.2004 (Pull-out Track No. 20);
- 1014505 30.07.2004 (Väljapanekutee No. 23);
- 1014510 30.07.2004 (Läbisõidutee No. 503);
- 1014521 30.07.2004 (Loading Road No. 510);
- 1014524 30.07.2004 (Pull-out Track No. 517);
- 1014526 30.07.2004 (Läbisõidutee No. 526);
- 196/2005 30.11.2005 (Liquid gas tank and supply line).

4) 24504:004:0566

On Property 24504:004:0566 a building permit was issued by Jõelähtme Municipality for the construction of Pier No. 19 (Permit 392/2007 19.06.2008).

5) 24504:004:1013

On Property 24504:004:1013 the Building Permit 1961/2007 05.12.2012 was issued by Jõelähtme Municipality for the construction of an office building. According to the Building Register, this office building is under construction.

6) 24504:004:0300

On Property 24504:004:0300 2 building permits have been issued by Jõelähtme Municipality.

26/2012 21.03.2012 (Fibre optic communication cable);

60/2004 20.05.2004 (Rolling stock repair hall-wash);

64 12.06.2002 (Fuel storage and trestles).

7) 24504:004:1027, 24504:004:1024, 24504:004:1025, 24504:004:1026, 24504:004:0559  
(ALT 1 and ALT3B)

On all of these properties, the Building Permit 78/2012 07.06.2012 has been issued by Jõelähtme Municipality for the construction of the railway lightning system for Railways No. 43, 44 and 56.

8) 44603:001:0030 (ALT 1 and ALT3B)

On Property 44603:001:0030 a building permit was issued by Maardu Municipality for the construction of the Ülemiste-Muuga fibre optic communication cable (Permit 8359 17.04.2012).

9) 44603:001:0013 (ALT 1 and ALT3B)

On Property 44603:001:0013 there were 4 building permits issued by Maardu Municipality. According to the Building Register, all of the buildings listed below are under construction.

2360 13.12.2005 (Electric heat station industrial building, Object 1);

2362 13.12.2005 (Electric heat station administrative-service building, Object 2);

2364 13.12.2005 (Electric heat station liquid fuel storage, Object 3);

2366 13.12.2005 (Electric heat station fire-fighting water tank).

10) 24504:004:1018

On Property 24504:004:1018 a building permit was issued by Jõelähtme Municipality for the construction of a wastewater pipeline in the Maardu industrial area (Phase I) (Permit 433/2007 25.09.2008). According to the Building Register, this wastewater pipeline is under construction.

11) 44603:001:0049, 44603:001:0052, 44603:001:0079, 44603:001:0081 and  
44603:001:0083

On Properties 44603:001:0049, 44603:001:0052, 44603:001:0079, 44603:001:0081 and 44603:001:0083 a building permit was issued by Maardu Municipality for the construction of a water supply pipeline (1612271/21232 16.11.2016). According to the Building Register, this pipeline is under construction.

12) 44603:001:0080 (ALT1 and ALT3B RORO handling area) and 44603:001:0067,  
44603:001:0075, 44603:001:0076

On Properties 44603:001:0080 and 44603:001:0067, 44603:001:0075 and 44603:001:0076 a building permit was issued by Maardu Municipality for the construction of the RMG crane-track as part of the expansion of the container terminal (9465 23.07.2013). According to the Building Register, this crane-track is under construction.

13) 44603:001:0029

On Property 44603:001:0029 a building permit was issued by Maardu Municipality for the construction of a storm water sewerage system for Veose str 5 (1512219/11130 23.09.2015), for the construction of 10 kV cable lines (1512219/07285 18.06.2015) and for the renovation of the water supply pipeline (1712271/32160 18.09.2017).

14) 44603:001:0049, 44603:001:0083 and 44603:001:0081

On Properties 44603:001:0049, 44603:001:0083 and 44603:001:0081 a building notice was submitted to Maardu Municipality for the construction of a seawater pipeline (1611201/04178 09.06.2016). According to the Building Register, this pipeline is under construction.

15) 89012:001:0094

On Property 89012:001:0094 there were 2 building permits issued by Viimsi Municipality. One is for the construction of a fire-fighting water pipeline (26230 18.02.2014) and the second one is for the construction of a fire-fighting water pumping station (26233 18.02.2014).

16) 89012:001:0079 and 89012:001:0081

On Properties 89012:001:0079 and 89012:001:0081 a building permit was issued by Viimsi Municipality for the construction of a water pipeline (1712271/00132 03.01.2017).

17) 44603:001:0046

On Property 44603:001:0046 a building permit was issued by Maardu Municipality for the construction of a loading trestle (7536 29.12.2010). It is currently under construction.

18) 89012:001:0310

On Property 89012:001:0310 a building permit was issued by Viimsi Municipality for the construction of a car shelter (1512219/12866 05.11.2015).

19) 89012:001:0001

On Property 89012:001:0001 a building permit was issued by Viimsi Municipality for the construction of a canopy (15833 15.04.2009).

20) 89012:001:0034

On Property 89012:001:0034 the following building permits were issued by Viimsi Municipality:

3926 24.01.2005 (Flotation Unit) under construction;

3923 24.01.2005 (Boiler House No. 4) under construction;

3976 28.01.2005 (Transformer Substation 2) under construction.

21) 89012:001:0007

On Property 89012:001:0007 a building permit was issued by Viimsi Municipality for the construction of an irrigation water pipe for the coal piles (10430 15.08.2007).

### **ALT3B**

22) 44603:001:0003

On Property 44603:001:0003 the following building permits were issued by Maardu Municipality:

6202 28.01.2009 (Gas station operator building);

6204 28.01.2009 (Gas station tank);

6208 28.01.2009 (Gas station awning);

1412219/01614 04.11.2014 (Wastewater pressure pipeline) under construction.

23) 44603:001:0005

On Property 44603:001:0005 the following building permits were issued by Maardu Municipality:

1266 15.07.2004 (Car Trestle I);

1268 15.07.2004 (Car Trestle II).

24) 44603:001:0063

On Property 44603:001:0063 the following building permits were issued by Maardu Municipality:

Building Notice 1611201/04301 28.06.2016 (Gauge gates for the piping of oil products);  
1412219/01614 04.11.2014 (Wastewater pressure pipeline).

### 6.6.2.1 Impact of the construction activity

It should be considered if there will be a cumulative impact if the construction of the MCTRB and other objects in the Muuga Port area or in the immediate vicinity are built at the same time.

### 6.6.2.2 Impact of the operation and maintenance

The cumulative impact of other developments must also be considered.

### 6.6.3 Impact on human health and well-being

The Rail Baltic access route (see Figure 28) to Muuga Port has already been selected and its environmental impact has been assessed. This route is common for ALT1 and ALT3B. Within the selected route, or right next to it, a parallel track is planned in both alternatives.

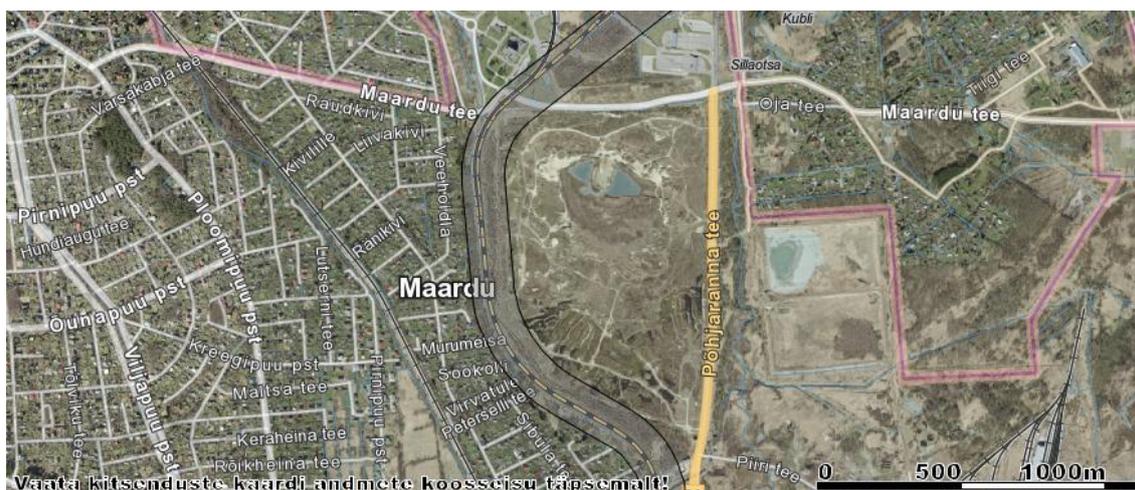


Figure 28. Rail Baltic route (grey zone on the map). X-GIS. Land Board.

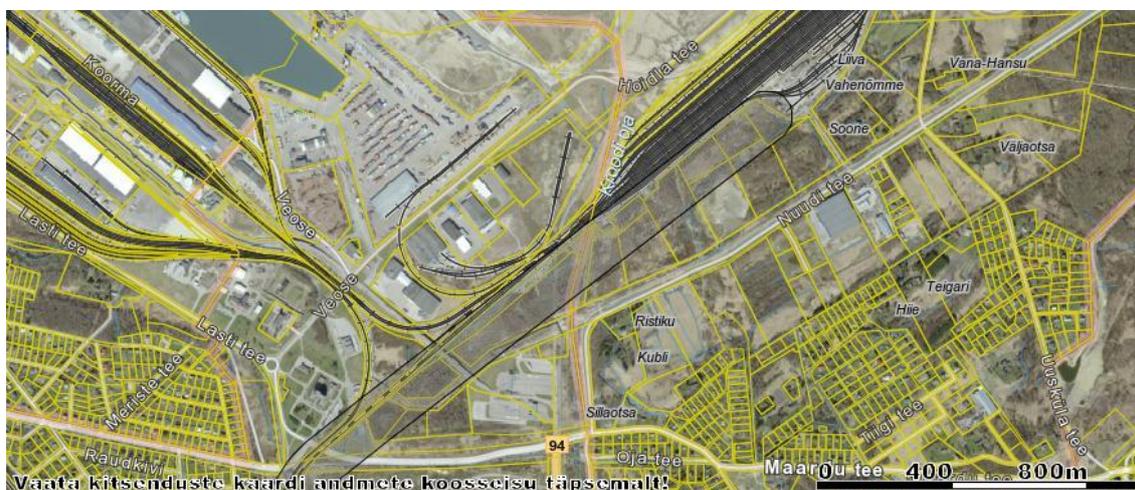


Figure 29. Rail Baltic route (grey zone on the map). X-GIS. Land Board.

Residential areas are situating in the western, north-west and south-west directions from the planned railway route and in the north-east direction on the other side of Põhjaranna Road and Rebase Road. The closest residential areas are in the immediate vicinity of the location of the access route (see Figure 30).

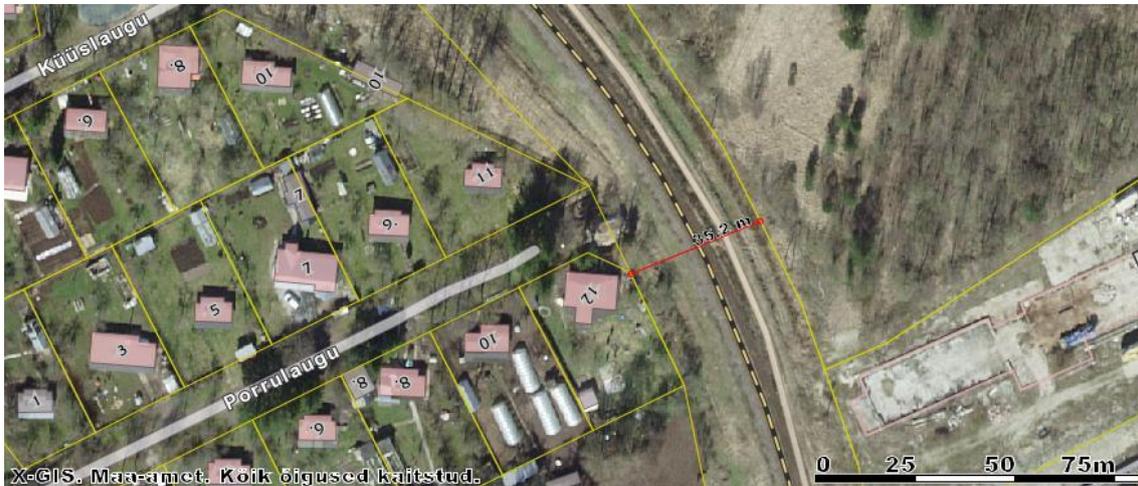


Figure 30. Closest residential area to the Rail Baltic access road. X-GIS. Land Board.

This residential area along the border of the planned Rail Baltic corridor will be affected by the railway construction and operation. The previously approved SEA of the Rail Baltic county thematic plans has foreseen some mitigation measures for the construction activities. The proposed mitigation measures will be described in the detailed design phase.

Regarding the ALT1 planned railway station, the closest residential properties are in the immediate vicinity between the existing railway station and Nuudi Road and just on the other side of Nuudi Road (Register No. 24504:004:0013; 24504:004:0042; 24504:004:0069; 24504:004:0121; 24504:004:0496; 24504:004:0070; 24504:004:0133; 24504:004:0606; 24504:004:0880; 24504:004:1070; 24501:001:0633) (see

Figure 31).



Figure 31. Residential property close to the ALT1 railway station area. X-GIS. Land Board.

Buildings on the residential properties 24504:004:0496; 24504:004:0690 (where, according to the Building Register, there should be a dwelling house); 24504:004:0880; 24504:004:0497 (where, according to the Building Register, there should be a dwelling house with an invalid building permit); 24504:004:1070; 24504:004:0013; 24504:004:0042; 24504:004:0133; and 24504:004:0121 will most probably be demolished (see Figure 32).

On Property 24504:004:0496 a train maintenance facility is planned to be built (ALT1).

The well-being of people other than those referred to in the above residential properties locating in the vicinity of the planned railway station will probably be affected and disturbed mainly by noise and vibrations.



Figure 32. Buildings on residential properties to be potentially demolished. X-GIS. Land Board.

### 6.6.3.1 Impact of the construction activity

During the construction phase of the MTCRB, there will be an impact on the people located and living near the construction area. The operation of construction equipment will generate noise, dust and air pollution in the construction area. Also, road traffic will increase during the transportation of building materials.

In the case of ALT3B, the demolition of residential buildings can be avoided.

The potential negative impact on people will be temporary and can be reduced by the organisation of the construction activities and engineering methods.

### 6.6.3.2 Impact of the operation and maintenance

The main impact during the operation and maintenance period is related to noise, vibrations and air pollution. This impact will presumably be higher in the closest residential areas, particularly in the case of ALT1 where the planned railway station is situated closer to residential properties.

Rail traffic inside the port territory towards the bulk liquid zone may have some noise impact on the closest residential properties in the western part of the port.

Mitigation measures should be considered.

## 6.6.4 Traffic

### 6.6.4.1 Impact of the construction activity

Traffic during the construction period will increase, probably mainly on Põhjaranna Road where the building materials and machinery will be transported. The building materials will presumably be stored in the port area.

Some disturbance will be caused by the construction work of the Rail Baltic access route to Muuga Port while crossing the existing Maardu Road.

The impact during the construction period will be temporary. However, the cumulative impact should be considered with regard to the schedules of other developments in the project area.

#### **6.6.4.2 Impact of the operation and maintenance**

After the commencement of the operations in the MCTRB, the traffic load will increase due to the transportation of goods via the railway and roads. The largest amount of traffic will arrive and leave via Muuga Road. Also, train traffic inside the port area will increase.

It should be noted that traffic will also increase via Nuudi Road. A light traffic road runs parallel to it, and road safety must be paid attention to during the operation and maintenance period.

The traffic load will increase over the years, together with the growing turnover of commodities. With the traffic increase, the cumulative impact of the other activities under development in the Port of Muuga and its vicinity must also be considered in terms of what role they will play in the traffic increase via the railway and Põhjaranna, Nuudi and Maardu Roads.

### **7 CONCLUSION**

A comparison of MCTRB ALT1 and ALT3B demonstrates that the track routes for cargo handling in the western part and in the north-east part of Muuga Port are similar. There are no major differences with respect to either the technical or the environmental view. The main difference between the alternatives is related to the location of the planned railway station. There are also a number of details that are referred in the previous chapters which show that ALT1 may have a bigger environmental impact than ALT3B. Most probably the impact will be bigger in the construction period as well in the operation phase.

While during the construction of ALT1 a total of 7 dwelling houses most probably will need to be demolished, the construction of ALT3B does not entail such activities.

In ALT1, the tracks run through the habitat (6430) and green network (next to Nuudi Road), while in ALT3B that area can be avoided.

The planned railway station in ALT1 is located much closer to the residential areas, which may lead to a higher cost of the required mitigation measures than is the case with ALT3B.

Based on earlier studies, the railway station expansion in ALT3B may have a negative impact on nesting birds. However, it is not clear what the present state of the nesting of birds is today.

In the project area has not been found category I, II nor III protected species.

### **8 STAKEHOLDERS**

- 1) Viimsi Municipality
- 2) Maardu Municipality
- 3) Jõelähtme Municipality
- 4) Muuga Village (Muuga Aedlinna Selts)
- 5) Uusküla (incl. Põhja-Paala ja Lõuna-Paala ühistud)
- 6) AS Tallinna Sadam (Port of Muuga)
- 7) Ministry of Economic Affairs and Communications
- 8) Estonian Technical Surveillance Authority
- 9) Estonian Railways Ltd.
- 10) Rail Baltic Estonia OÜ

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