



European
Commission
Innovation and
Networks Executive
Agency (INEA)

H2020 – Two Stages

Deliverable: D5.2- Technical specifications and legal conditions that the wagon parking need to fulfil

1. INFORMATION ON THE ACTION

Grant Agreement N ^o	723274
Action title	Less Than Wagon Load

Author of the report

Name	Lucia Knapcikova
Position	TUKE Coordinator/Participant contact/Team member
Entity	TUKE
Telephone N ^o	+421 904 184 003
E-mail	lucia.knapcikova@tuke.sk



This project has received funding from the European Union's Horizon 2020 Research and innovation programme under grant agreement No. 723274

D5.2 Technical specifications and legal conditions that the wagon parking need to fulfil

Summary

Programme	H2020 – MG – 2016-2017 – Two Stages
Project acronym	LWL
Grant agreement number	723274
Number of the Deliverable	5.2
WP/Task related	WP 5 – No.5.2
Type (distribution level)	Public
Number of pages	18
Document Responsible	Lucia Knapcikova
Date of delivery	01.04.2018

Table of contents

Table of contents.....	3
Table of abbreviations.....	4
Table of figures.....	5
1. Target market specification	6
2. Technical requirements and legislation	8
3. Methodology.....	14
4. Conclusions.....	16
5. References.....	17

Table of abbreviations

CCTV	Closed Circuit Television
CIM	The contract for international carriage of goods by rail
COTIF	Convention concerning international carriage by rail
CoETDG	Committee of Experts on the Transport of Dangerous Goods
EC	European Commission
ECM	Entities in Charge of Maintenance
EN	European Norms (European Standards)
ERA	European Railway Agency
GCU	General Contract of Use for Wagons
IM	Infrastructure Manager
ISO	International Organization for Standardization
LTWL	Less Than Wagon Load
NSAs	National Safety Authorities
OTIF	Organisation for International Carriage by Rail
RFID	Radio Frequency Identification technology
RID	International Convention on the International Carriage of Dangerous Goods by Rail
RTC	Rail Tank Car
RUs	Railway Undertakings
SMS	Safety management system
WP	Work package

Table of figures

Figure 1 MainHub area – a view.....	7
Figure 2 Port of Antwerp – a view.....	7

1. Target market specification

Market specification of presented study is located in the Antwerp chemical cluster, where every day 250 loaded freight wagons leave the Antwerp port area and route to their next destination. Antwerp [1] is one of the biggest European rail ports. The Port of Antwerp aims to further increase the share of freight transport by rail. This is why different services and initiatives have been developed to guarantee customers are able to transport their goods efficiently and reliably. The issue of safe transport of dangerous goods is still very high.

The aim of this report is to consider:

- Technical specification and
- Legal conditions, that the wagon parking need to fulfil.

Most important is view on the technical requirements that are required (such as in exist legislative frameworks) for wagon parking as a part of transport during the first 30 days and after 30 days. Combine this information with a review of the legal conditions and rules linked to this kind of parking area.

Based on this research it should be possible to match it with some areas in the Main Hub area (Figure 1) that could be appropriate.

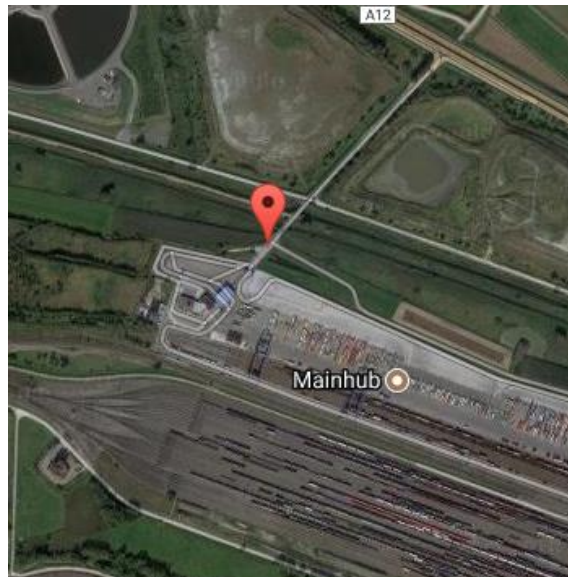


Figure 1 MainHub area –a view[1]

The wagons and the load should be stored and suitably secured to prevent

displacement. Transportation including the loading, unloading of dangerous goods [3],[4]and wagon parking always bring risk. As it solves technical specifications of wagon parking, it has to solve handling and storage of dangerous goods in the wagon too. Generally, it is forbidden to open and handle the dangerous goods during transportation.

Based on discussions earlier with project lead- Lineas officials, the emphasis of this report has been taken from the review of existing legislation on transportation of dangerous goods and specification of technical requirements.

2. Technical requirements and legislation framework

2.1 Technical requirements for wagon parking area

The project partners performed a comparative analysis of the existing technical specifications for the wagon parking. The analysis is focused on technical and operational aspects of the railway system in the Main Hub's area.



Figure 2 Port of Antwerp – a view [2]

Main Hub and Antwerp North shunting yard in a nutshell:

- More than 100 km of internal rail tracks,
- More than 250 goods train per day,
- Prefer a JIT (Just in Time- logistics method),
- Transport and storage of chemical products are governed by strict regulations.

The above mentioned area should be able to advice on securing premises. It is necessary to prepare security plans for wagon parking area. The following areas should be considered:

- On-Site access and control-barriers,
- Closed Circuit Television (CCTV),
- Automatic systems identifications,
- Physical control of wagon parking area,
- Visitor control of wagons,
- Staff parking away from the main site,

- Security of any tools or equipments.

Obligations for transportation of dangerous goods are defined in the RID (paragraph 1.4.2.2.1.). In order to organize wagon parking, first an effective security plan is needed. The prevent activities of wagon parking is to work on security plan. The security plan has to clearly identify those involved in the dangerous goods transport chain and what their security roles and responsibilities are, including dealing with wagon parking area.

The security plan contains of following elements:

- Specific allocation of responsibilities for security to competent and qualified persons,
- A summary list of the types of dangerous goods (According to RID, VLAREM)
- Review of current operations and assessment of security risks (including any stops necessary to the transport operation- loading, unloading),
- Responsibilities and duties of the employees (who can be involved with the wagon parking of high consequence dangerous goods)
- The verification of documents, licenses or qualifications and permission to work

When accepting dangerous goods, following information must be obtained:

- Dangerous goods class,
- Proper shipping name (trade names alone are not acceptable),
- Details of the load (number and description of packages (for packages), net weight or volume of the load, whether loaded or discharged (for tanks)).
- Emergency Action Code for domestic traffic/Hazard Identification Number for export traffic, for consignments in bulk and in tanks.
- Specialist advice contact number/Alpha code contact (must be 24-hour cover)

If we speak about security, it is necessary to solve also the lighting of the wagon parking area. It is an essential security measure for our project task as well as having health and safety benefits. Using a lighted area entry into the area can deterred, conceals security staff and their preferred activities with supports of CCTV.

2.1.1 Loading and unloading of chemical wagons

Loading or the unloading of dangerous goods is one of the most hazardous operations likely to be undertaken at any manufacturing or storage facility.

2.1.2 Wagon markings

Article 4, para. 4 of the Safety Directive (2004/49/EG amended by 2008/110/EC) stipulates the “responsibility of each manufacturer, maintenance supplier, wagon keeper, service provider and procurement entity to ensure that rolling stock, installations, accessories and equipment and services supplied by them comply with the requirements and the conditions for use specified, so that they can be safely put into operation by the railway undertaking and/or infrastructure manager”. “Real life wagon markings” often do not correspond with the relevant provisions in place and wagons are subsequently marked incorrectly [10].

2.1.3 Wagons shunting problem

For each wagon unit, it is given a service tasks together with their respective durations. The service task requires some resource for its entire duration and the availability of resources is usually limited. A shunted wagon that moves to a track will be added in front of one of the two sides of the sequence of wagons already parked on the track.

The main objective in the parking problem is to place all shunt wagons on the tracks such that at any moment in time the combined wagon length does not exceed the length of the track. The shunt plans describe, for a 24 hour planning horizon, the assignment of incoming wagons to departures the next morning, the tracks on which the wagons will be parked.

2.2 Legislative frameworks review

2.2.1 Agreement of Regulations Concerning the International Carriage of Dangerous Goods by Rail

Safety regulations which serve to protect persons, the environment and goods should, however, be applicable irrespective of such formal restrictions. Now, on the basis of the Directive 96/49/EC of 23 July 1996 (RID Framework Directive), the Member States of the European Community (EC) must also apply RID to the carriage of dangerous goods by rail in national traffic and to carriage between the Member States, this being irrespective of a CIM contract of carriage and the transport document used.[9]

Agreement of Regulations Concerning the International Carriage of Dangerous Goods by Rail is an international agreement for the transport of dangerous substances by rail.

Agreement [3], [4] describes the classification of dangerous goods, including classification criteria and appropriate test methods, driver training requirements, requirements for the use of packaging, tanks and means of transport. Agreement contains the technical requirements for chemical wagons and the construction of tanks for each class and sets, the method of immobilisation, long term parking, parking at night, etc..The aim of establishing regulations for the international carriage of dangerous goods is to increase the safety and prevent accidents and damage to persons, property and the environment.

The basic concept provides for the creation of a separate Appendix C to COTIF (= RID), this Appendix C to be composed of both a “legal” section and a “technical” section.

2.2.2 The Seveso directive

From an environmental safety standpoint, LTWL project with the buffering/storage of chemical wagons with dangerous goods could fall under the Seveso directives [7].

Market analysis in the Antwerp chemical cluster is dedicated as hazardous material zones and is licensed under EU Seveso. In Europe, the catastrophic accident in the Italian town *Seveso in 1976* prompted the adoption of legislation on the prevention and control of such accidents.

Major accidents involving dangerous chemicals pose a significant threat to humans and the environment. Furthermore such accidents cause huge economic losses and disrupt sustainable growth. However, the use of large amounts of dangerous chemicals is unavoidable in some industry sectors which are vital for a modern industrialized society. To minimize the associated risks, measures are necessary to prevent major accidents and to ensure appropriate preparedness and response should such accidents nevertheless happen.

The Seveso Directive requires [7] a.o. the identification of industrial establishments with major risks such as handling, manufacturing, using or storing dangerous substances. Safety rules on transport and wagon parking of dangerous goods are adapted to the level of hazards represented by the dangerous substances to be carried and combine two development principles, as follows:

- Rules related to “substance safety” are defined to ensure that no immediate hazards from the substances can harm the workers and the public, before, during or after normal transport operations,
- Rules related to “transport safety” are defined to ensure that residual risks during

transport operations are kept as low as possible and allow integration of dangerous goods in an efficient and competitive transport system.

These general principles are used and applied for rail transportation.

2.2.3 Flemish minister of Environment, Nature, Culture

The department of Environmental inspection and the department Environment, Nature and Energy policy of the department Environment, Nature and Energy [6] have examined the mentioned problem about legal conditions of buffer zone in the port area in Antwerp.

If following risk management measures are foreseen for the establishment and exploitation of such a buffer zone:

- Edit an emergency plan,
- Control of incoming wagons,
- Suitable area security,
- Periodically check the RTCs of certain types of dangerous goods,
- Physical separation of the RTC of certain types of dangerous goods,

Concluding, we can state that the buffer zone will not be considered as a Seveso facility if the following conditions are met (cumulative):

- The buffer zone is only used for temporary buffering of full and empty RTCs,
- The buffer zone is located outside the area where the goods are produced or used,
- Within the buffer zone no other activities are performed besides activities related to the transport and storage of the goods,
- The operator can prove with the correct documents that the buffer zone is part of the global transport chain of the goods and state the origin and destination,

If nevertheless the buffer zone also provides other activities (f.e. transshipment of goods to and from RTCs) the zone must be considered as a facility, and is the cited exception not applicable and the buffer zone becomes a Seveso-facility if the threshold values is surpassed. If the buffer zone must be considered as a Seveso-facility, it has immediate consequences that the facility is considered as troublesome*.

Seveso regulation [7] is applicable if the activity on the buffer zone is limited to solely 'buffering of empty or full rail wagons before resuming their travel towards their end destination', provided that the transport chain is provable, and so the destination of every loading unit is known at all times.

In the other case the buffer zone will be considered as Seveso regulation if the threshold value is surpassed.

The Committee of competent authorities (CCA) from the Department of Environmental inspection and the Department Environment, Nature and Energy policy of the department Environment, Nature and Energy [5] has answered the question concerning the exception that in first instance a ruling has to take place if we can speak of an facility (as stated in the Seveso guideline : *"the whole area operated by the operator where dangerous goods are present in one or more installations, including the shared infrastructure or activities"*), because only the temporary storage during transport outside facilities is excluded.

* also needs to answer towards the paragraph 17.2 of annex 1 with title I of the Flemish Environmental Permitting Regulations (VLAREM)[8]

3. Methodology

3.1 Market specification

Project team believe that there is a potential to support the chemical industry in Antwerp chemical cluster. The goal of the task described a potential wagon parking area, where wagons are parked with all necessary regulations.

We analysed a potential wagon parking market, described legislation conditions and technical requirements, such a safety and security of wagon parking.

Questionnaire research is concerned scope of:

- Legislative conditions (interviewed companies legislative frameworks)
- Wagon parking duration (up to 30 days, more than 30 days of parking)
- Technical specification (technical requirements, safety and security regulations, inspections/controls)

3.2 Market responses

After some market consultation with companies located in the Antwerp chemical cluster it has been decided to present the following information. Questionnaire research related to technical requirements and legislation restrictions of wagon parking.

Our results show, that:

- Only wagons of class 2, 3, 6.1, 8 and 9 (according to RID) would be accepted by parking,
- Maximum duration of storage should be 30 days consecutive,
- Maximum length of wagon set is limited up to 350m,
- Area for chemical wagons parking have to comply with all safety and security regulation,
- Rail tank cars (RTC's) must leave terminal again within 24hrs after delivery (companies guarantee emptying/loading service),
- Legislation about wagon parking (buffering) is either VLAREM or RID, as amended,
- RID for wagon parking as a part of transportation- first 30 days. The process

goes as followed:

- Wagons get a bill of lading with destination 'Antwerp Main Hub RID Parking' (Wagons need to have a bill of lading E2E according RID)
 - Wagons will be shunted out using the hill to a dedicated rail track and awaits transport there.
 - On an agreed moment during the day, an order is done by Antwerp Main Hub RID Parking.
 - Antwerp North will shunt these wagons and prepare transportation
- Seveso directive is in the force for more than 30 days of wagon parking,
 - Considers RID regulations applicable when railcars are loaded as a part of a transport chain,
 - VLAREM regulations are applicable when the loading is done without a link to a transport chain,
 - Companies have to provide actually risk assessment analysis for the wagon parking,
 - Companies have to provide a risk analysis systems for the transport of dangerous goods,
 - Companies being able to assess the acceptability of the external risks of transport ways,
 - Problem is the availability and reliability of transport data of dangerous goods (is quite poor),
 - Monitoring of dangerous goods should to be understandable for both professionals as well as political decision makers.

The companies in the Antwerp chemical cluster are responsible for dangerous goods transport strategy and also responsible for preparing the necessary legal framework. It focuses on improving and developing supervision and management, education and services.

3.3 Interaction of European bodies and railway sector

By the interaction of the European bodies and the railway sector on safety management are necessary the responsibilities on:

- Commission level (harmonised EU rules, agreements)

- Agency level (impact assessment, examination, recommendation of safety change, create an accidents database, public documents, reports)
- National safety authority level (grant certificate and authorization to infrastructure managers and railway undertaking, monitoring of changes, reporting, examining of new safety recommendations)
- Infrastructure managers, railway undertakings and entities in charge of maintenance ECM (risk control and internal measures)

3.4 Supervision and investigation

The Rail Safety Directive sets out requirements for the establishment of independent National Safety Authorities (NSAs). Their role includes awarding safety certificates to RUs and safety authorizations to IMs and taking forward the supervision of RUs/IMs safety management systems.

4. Conclusions

Presented task “D5.2 Technical specifications and legal conditions that the wagon parking need to fulfil” contains results of:

- Existing legislative framework,
- Technical requirements and
- Many discussions between project partners.

According to legislative framework research we can constant:

- RID directive is for parking as a part of transportation- first 30 days
- Seveso directive for more than 30 days of wagon parking
- VLAREM regulations are applicable when the loading is done without a link to a transport chain.

According to technical requirements we can constant:

- Limited wagon´s sets, up to 350 m
- RID class (2, 3, 6.1, 8. 9) for wagon would be accepted by parking
- Security plan (including inspections, controls)
- Visibility of dangerous goods transportations is poor
- Specifications by storage (loading/unloading) of dangerous goods
- Risk assessment is needed

The risks of dangerous substances by wagon parking, loading/unloading must be in time:

- Foresee,
- Identify and
- Prevent their possible negative effects thereby ensuring a greater degree of environmental protection.

Environmental safety is a basic condition for a healthy environment that is closely linked to the rail transport of dangerous goods.

5. References

- [1] Intermodal terminal in Antwerp. Available on <http://www.intermodal-terminals.eu/database/terminal/view/id/3>
- [2] Port of Antwerp. Available on <http://www.portofantwerp.com/nl/node/3837>
- [3] Recognition of hazardous goods. Available on http://europa.eu/rapid/press-release_IP-09-1167_en.htm
- [4] Convention concerning International Carriage by Rail (COTIF)
Appendix C – Regulations concerning the International Carriage of Dangerous Goods by Rail (RID)
with https://otif.org/fileadmin/new/2-Activities/2D-Dangerous-Goods/RID_2017_E.pdf
- [5] Final report of the 15th session of the RID Committee of Experts' working group on tank and vehicle technology (OTIF/RID/CE/GTT/2018-A)
- [6] Flemish minister of Environment, Nature, Culture. Letter about the specialised RID-buffer zone in the port area of Antwerp
- [7] Seveso directive. Available on <http://ec.europa.eu/environment/seveso/legislation.htm>
- [8] VLAREM regulation. Available on <https://www.vlaanderen.be/en/enterprise-and-investment/environmental-permit>
- [9] Regulation concerning the International Carriage of Dangerous Goods by Rail (RID). Available on http://www.otif.org/fileadmin/user_upload/otif_verlinkte_files/07_veroeff/03_erlaeut/rpex99-rid-e.pdf
- [10] GCU. Available on http://www.gcubureau.org/documents/10184/63457/GCU+Joint+Committee++Guidelines_Wagon_Markings_V3_EN.pdf/33b80756-a978-4c12-b491-1678e3e92c9a