Modification of the Nationwide High-Level Transport Network

DECLARATION OF THE RAILWAY LINE "AREA EAST OF VIENNA – NATIONAL BORDER NEAR KITTSEE (LINE AND FREIGHT TERMINAL)" AS A HIGH-PERFORMANCE LINE

Environmental Report pursuant to Sec. 6 of the Federal Law on the Strategic Assessment in the Transport Sector (SP-V Law)

ÖBB INFRA

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TABLE OF CONTENTS

1 INTRODUCTION 1

2 PROPOSAL FOR THE NETWORK MODIFICATION 5
2.1 Contents and Objectives of the Network Modification 5
2.2 Rationale Behind the Network Modification 6
2.3 Benefits of the Network Modification 7

3 FRAMEWORK CONDITIONS AND ASSUMPTIONS FOR THE PROPOSED NETWORK MODIFICATION 9
3.1 Delimitation of the Austrian Network Modification 9
3.2 Volume and Distribution of Quantities of Goods 11
3.3 Technical Requirements and Assumptions 13
3.3.1 1,520 mm Gauge Network 13
3.3.2 Terminal for Connecting the 1,435 and 1,520 mm Gauge Networks 13
3.3.3 Logistics Centre 14

4 GENERAL OBJECTIVES AND RELATIONSHIP WITH PLANS AND PROGRAMMES 17
4.1 Approach 17
4.2 Relationship With Other Plans and Programmes 21
4.2.1 International Level 21
4.2.2 National Level 32
4.2.3 State Level 41
4.2.4 Trans-national and Trans-Provincial Collaborations 55
4.3 Environmental Protection Objectives 61
4.4 Objectives pursuant to Sec. 5(4) of the Federal Law on the Strategic Assessment in the Transport Sector (SP-V Law) 62

5 METHODOLOGICAL SPECIFICATIONS 63
5.1 System Delimitation 63
5.1.1 Spatial Delimitation of the Investigation Framework 63
5.1.2 Temporal Delimitation of the Investigation Framework 65
5.1.3 Content Delimitation of the Investigation Framework 66
5.2 Methodological Approach for Presenting Environmental Conditions 67
5.2.1 Procedure for Presenting Environmental Conditions 67
5.2.2 Procedure for Determining Space Resistivity 69
5.3 Methodological Approach for Impact Assessment 71
5.3.1 Assessment Framework 71
5.3.2 Methods 74
5.3.3 Value Synthesis 75

5.4 Consideration of Remarks From the Scoping Process 75
5.5 Consideration of the Specifications of the SP-V Law 77
6 TRANSPORT STRUCTURES AND THEIR DEVELOPMENT 79
6.1 High-Level Infrastructure Network in Europe 79
6.1.1 Trans-European Transport Network TEN-T 79
6.1.2 European Rail Freight Corridors (RFCs) 83
6.2 Rail Infrastructure 84
6.2.1 Existing Rail Infrastructure 84
6.2.2 Rail Infrastructure Development 89
6.3 Road Infrastructure 94
6.3.1 Existing Road Infrastructure 94
6.3.2 Road Infrastructure Development 97
6.4 Multimodal terminals 100
6.4.1 Existing Multimodal Terminals 100
6.4.2 Multimodal Terminal Development 102
6.5 Inland Waterway 103
6.5.1 Existing Inland Waterways and Ports 103
6.5.2 Measures Envisaged for the Inland Waterway 105
6.6 Airports With International Traffic 106
6.6.1 Existing Airports With International Traffic 106
6.6.2 Measures Envisaged for Air Traffic 107
7 DESCRIPTION OF ENVIRONMENTAL CONDITIONS 109
7.1 Functional Investigation Area 109
7.1.1 Population and the Economic Area 110
7.1.2 Traffic Situation and Developments in Freight Transport 112
7.2 Narrow Investigation Area 115
7.2.1 Human settlements and economic areas 117
7.2.2 People and health 132
7.2.3 Nature and landscape 140
7.2.4 Water, soil and land use 157
7.3 Space Resistivity Analysis in the Narrow Investigation Area 167
7.3.1 Space Resistivity Categories and Applying the Environmental Conditions to Space Resistivity 167
7.3.2 Space Resistivity for the Subject Area “Human Settlements and Infrastructure” 172
7.3.3 Space Resistivity for the Subject Area “People and Health” 173
7.3.4 Space Resistivity for the Subject Area “Nature and Landscape” 174
7.3.5 Space Resistivity for the Subject Area “Water, Soil and Land Use” 176
7.3.6 Space Resistivity for the Subject Area “Topography” 177

7.3.7 Summary of Space Resistivity in the Narrow Investigation Area 178

8 ALTERNATIVES 181
8.1.1 Zero Alternative 181
8.1.2 Site Alternatives 181

9 IMPACT ASSESSMENT 191
9.1 Assessment Framework 191
9.2 Description of Likely Significant Effects 197
9.2.1 Zero Alternative 197
9.2.2 General Likely Significant Effects of the Network Modification 205
9.2.3 Likely Significant Effects of Site Alternatives 210
9.3 Interrelationships 249
9.4 Assessing and Comparing the Effects 250
9.4.1 Zero Alternative 250
9.4.2 Site Alternatives 252

10 BASIS FOR THE OVERALL ASSESSMENT OF THE NETWORK MODIFICATION 259
10.1 Rationale Behind the High-Level Character of the Network Modification 259
10.2 Measures 260
10.2.1 Measures to Prevent, Reduce or Offset Likely Significant Effects 260
10.2.2 Measures Concerning Monitoring 262
10.3 Recommendation for the Network Modification 263
10.4 Difficulties in Compiling the Required Information 265

11 NON-TECHNICAL SUMMARY 269

LIST OF REFERENCES 281

LEGAL BASES 288

LIST OF FIGURES 291

LIST OF TABLES 294

LIST OF ABBREVIATIONS 297

GLOSSARY 299

1

INTRODUCTION

Different parts of the world have railway networks with differing track gauges, with goods usually having to be reloaded from one system to the next at the break of gauge. So as to better connect the networks and simplify freight transport, the 1,520 mm gauge network is set to be extended from eastern Slovakia into the Vienna area.

1 INTRODUCTION

The mobility of people, goods and services is the basis of the economic system in an increasingly globalised world. Modern and efficient infrastructure forms the backbone of the **international exchange of goods**. The majority of global trade currently takes place using **seagoing vessels**. For example, 95% of all goods traded between the EU and China are shipped by sea. The established sea route runs between East Asia via the Suez Canal and Mediterranean and North Sea ports. In addition to its high environmental impact, this transport mode is also associated with extensive transport routes and times.

Freight transport by rail, road and air currently still plays a minor role in the exchange of goods over long distances, including between Asia and Europe. The main reason for this is the **insufficient continuity of the transportation infrastructure** (rail, road) and the very high costs (air). Due to its system-related advantages over long distances, **rail transport represents a relevant alternative** to ocean transport.

The existing railway connections between Asia and Europe have **different track gauges**, i.e. spacing of the rails: the 1,520 mm gauge in Russia and the former Soviet republics is wider than in most of the European Union and China, where the gauge is 1,435 mm. This creates the need for **a gauge change** or the **reloading** of goods.

Despite the necessity for a gauge change or reloading, rail freight transport has high **growth potential**. The inefficient interconnection between the 1,520 mm rail network and the 1,435 mm rail network is currently a great constraint. This is mostly due to the fact that the current interconnection points of the networks are not located near the European business and logistics centres, calling for the need to load, re-gauge or rearrange the goods unnecessarily often on their way from the sender to the receiver, all of which is time-consuming and costly.

Amid these clearly identifiable weaknesses in the infrastructure, several states are endeavouring to extend the **land bridge** between Europe and Asia and to thus create an efficient connection.

Many of the goods that are already being traded between East Asia, Russia and the EU are **specifically suited to the rail sector** i.e. they can be transported with a high degree of efficiency over long distances by train. These goods include ores, chemicals, machinery and vehicles, consumer goods, and footwear and clothing, most of which are linked to **European growth and key industries**. There is also a general trend towards transporting all types of goods by way of containers.

In order to take advantage of this potential, **rail systems must be connected more efficiently**. That is why **Breitspur Planungsgesellschaft** (BPG) was founded in 2008. This joint venture comprising the four equal state-owned railway companies of Austria, Slovakia, Ukraine and Russia plans to **extend the 1,520 mm gauge network from the current end point in Košice in eastern Slovakia to the Vienna area**. With a main transloading terminal east of Vienna, goods could be reloaded efficiently and per the latest

technological standard in order to create a new **connection at the interface of three TEN-T core network corridors**. (cf. Figure 1)

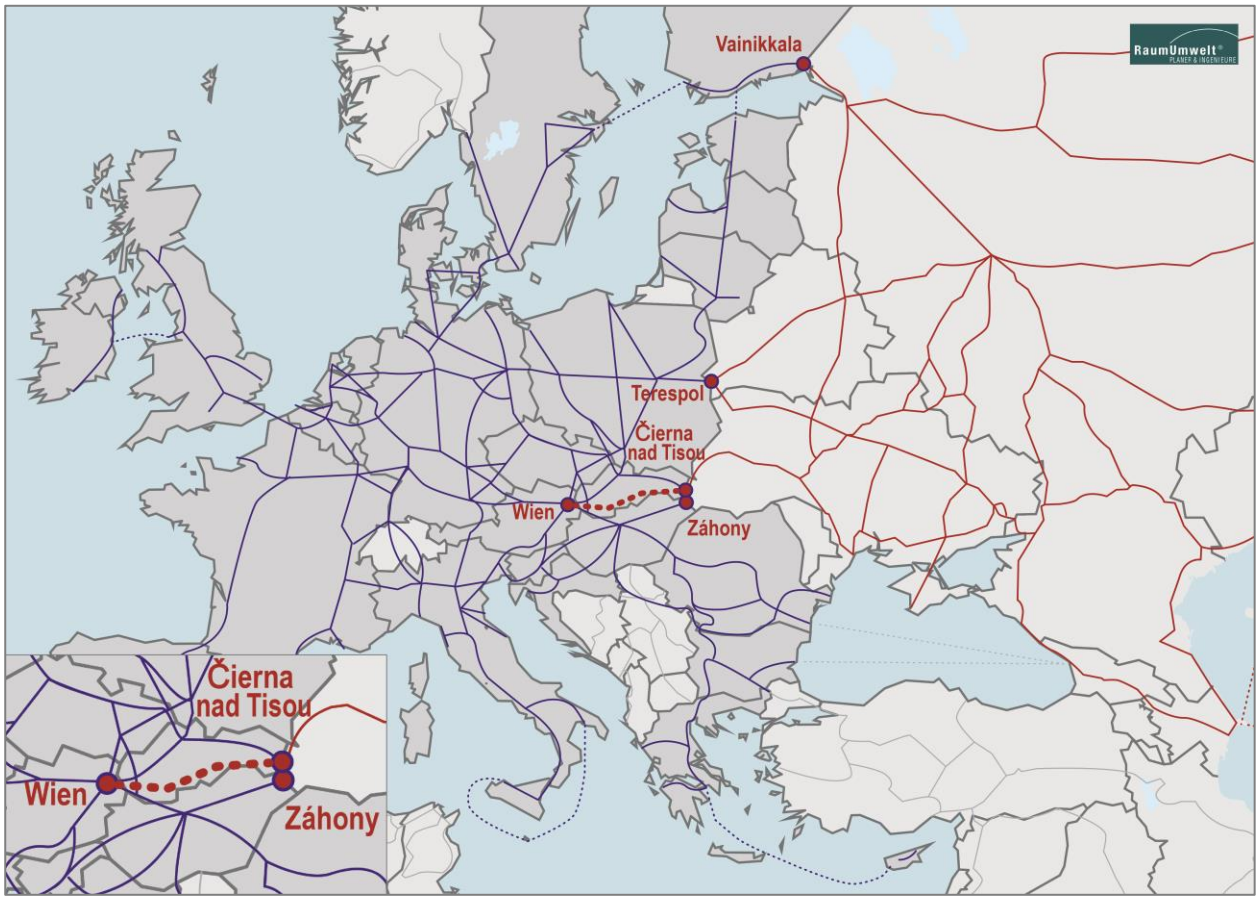


Figure 1: TEN-T rail network (blue) and 1,520 mm rail network (red) with planned rail corridor (own illustration)

Several preliminary studies have concluded that the **construction of a modern freight terminal** at locations conveniently placed for transport facilities is instrumental for efficiently connecting the rail networks. What is special about the location east of Vienna is that it is located at the interconnection point of a total of **three multimodal TEN-T core network corridors**: the Baltic-Adriatic Corridor, the Rhine-Danube Corridor and the Orient/East-Med Corridor. This means that hinterland traffic can therefore take place directly and primarily via **well-developed railway connections** to the rest of Europe.

The development of these EU core network corridors by 2030 will be prioritised, thus contributing to the objectives of cohesion, efficiency and sustainability. Although the planned undertaking does not meet the EU's technical requirements for the TEN-T core network (gauge of 1,435 mm), it contributes to the European objectives: overlapping the rail networks makes **rail freight transport more attractive** and promotes a **shift to environmentally friendly modes of transport** – which in turn provides an important economic boost.

Through this undertaking with global reach, some of the long-distance freight traffic between Asia and Europe will be shifted to the railways, thereby contributing to Europe's **sustainability** and **competitiveness**. The undertaking will ecologise the global freight transport system and make an important contribution to reducing **CO_2 emissions** and **protecting the climate**. Detailed information on the economic and geopolitical background can be found in the **baseline study "Potenziale der Eisenbahn als nachhaltige Alternative für den transkontinentalen Warenaustausch" (Potentials of the railway as a sustainable alternative for the transcontinental exchange of goods)** (ÖBB-Infrastruktur AG 2019b).

Austria's commitment to extending the 1,520 mm route was conveyed in the Council of Ministers presentation of 16/02/2018 (BMDW-10.070/0005-IM/a 2018, BMVIT- 54/0001-II/SL/2018) with reference to the Council of Ministers presentations from 2012 (157/11) and 2013 (191/27): in addition to infrastructural aspects, the undertaking must also be considered in the **context of economics and macroeconomics as well as in terms of location, transport and labour market policy**. The railway system is recognised as a forward-looking, ecologically sustainable and efficient transport alternative. Instructions were issued to advance preparations for further planning and process steps in Austria. The last ÖVP-FPÖ-led government platform explicitly listed the implementation of the undertaking as an objective.

An undertaking of this magnitude and complexity requires a clear sequence of **planning steps**. On the Slovak side, the environmental impact assessment (EIA), which corresponds to an "***Umweltverträglichkeitsprüfung*"** (UVP) in Austria, is currently being carried out. The effects on the environment, for example on protected goods such as landscape or soil, is more closely examined therein. The **screening phase** of this process has already been concluded, in which a preliminary environmental study (scoping report) (PES) has been drawn up. These planning processes are already based on a concrete route, the course of which was already selected in Slovakia as a result of the preliminary studies mentioned.

Accordingly, the **border crossing point to Austria near Kittsee** was also determined. In contrast, the route and, above all, the location of the transhipment terminal on Austrian territory have not yet been determined. They will only be reviewed and specified in a **subsequent route selection procedure**.

A first important milestone for the Austrian side is embedding the Austrian part of the route as well as the terminal through a so-called **High Performance Regulation** (*Hochleistungsstrecken-Verordnung*, HL-VO) as part of the nationwide high-level transport network in Austria. To this end, the BMVIT is conducting a **strategic assessment in the transport sector** (SP-V), in which ÖBB-Infrastruktur AG, as the owner's representative, has assumed the role of the initiator.

The technical centre piece of the SP-V is the present **Environmental Report**, which is prepared by ÖBB-Infrastruktur AG and which examines the expected significant effects the planned network modification will have on the environment. The exact determination of the route and the terminal location is based on the High Performance Regulation (HL-VO) in a downstream route identification and selection process.

2

PROPOSAL FOR THE NETWORK MODIFICATION

ÖBB-Infrastruktur AG is declaring to build a railway “Area east of Vienna – national border near Kittsee (line and freight terminal)” as a high-performance line. This railway line is part of a comprehensive international undertaking to extend the 1,520 mm gauge network from eastern Slovakia into the Vienna area.

2 PROPOSAL FOR THE NETWORK MODIFICATION

2.1 CONTENTS AND OBJECTIVES OF THE NETWORK MODIFICATION

ÖBB-Infrastruktur AG intends to build a railway with a gauge of 1,520 mm between the national border near Kittsee and a new freight terminal to the east of Vienna. By expanding the railway network, ÖBB-Infrastruktur AG aims to connect the 1,520 mm gauge network and the 1,435 mm gauge network in a **transloading hub in eastern Austria**, an important **European TEN-T core network node.** The planned railway is part of a **joint undertaking** between the Austrian (ÖBB), Slovak (ŽSR), Ukrainian (UZ) and Russian (RZD) state railways,

giving rise to the following concrete **objectives** for the proposed network modification pursuant to Sec. 6(2)(1) of the SP-V Law:

- Creating the infrastructural requirements for a high-performing land-based freight transport connection between the European Economic Area on the one hand and Russia, Central and East Asia on the other hand as a fast, efficient, secure and environmentally friendly additional service to the intercontinental exchange of goods.
- Creating the infrastructural requirements for handling this land-based freight traffic via the Vienna area as an important TEN-T core network node

Implementing these goals requires a **modification of the nationwide high-level transport network**. ÖBB-Infrastruktur AG in its role as the initiator pursuant to Sec. 2(6)(4) of the SP-V Law has therefore submitted the following proposal on 15/11/2018 for a network modification pursuant to Sec. 4 of the SP-V Law to the Federal Minister of Transport, Innovation and Technology (BMVIT):

The Federal Minister of Transport, Innovation and Technology may submit to the Austrian government a draft ordinance in accordance with Sec. 1(1) of the High-Performance Lines Act (HIG) on declaring the planned railway line

"Area east of Vienna – national border near Kittsee (line and freight terminal)"

a high-performance line[1].

This proposed network modification concerns a change in the nationwide high-level transport network and will be subject to a **strategic assessment in the transport sector** in accordance with the SP-V Law before the draft ordinance is drawn up. The present **Environmental Report** is the technical basis for this strategic assessment in the transport sector.

[1] This planned route is the content of the proposed network modification and is therefore presented in the Environmental Report in accordance with Sec. 6(2)(1) of the SP-V Law.

On the basis of the above-mentioned network modification proposal, this Environmental Report examines the **fundamental possibilities of linking** the 1,435 mm and 1,520 mm gauge networks in the area east of Vienna with no predisposition towards any particular outcome. The **linking possibility deemed most suitable** in the initiator's view at the end of this review will be **recommended** to the Minister of Transport, Innovation and Technology as the result of the Environmental Report.

2.2 RATIONALE BEHIND THE NETWORK MODIFICATION

The proposed network modification of the nationwide high-level transport network (cf. Chapter 2.1) concerns the **high-performance line network to the southeast of Vienna**. With the previous six High Performance Regulations (HL-VO), the following railways have been declared to be **high-performance lines** in this area (as of August 2019; cf. Figure 2):

- Vienna (including Terminal Inzersdorf) – Pottendorf – Wiener Neustadt (1st High Performance Regulation, HL-VO)
- Vienna – national border near Nickelsdorf (2nd High Performance Regulation, HL-VO)
- Parndorf – national border near Kittsee (3rd High Performance Regulation, HL-VO)
- Vienna – Eisenstadt – Oberwart – Graz – Klagenfurt – Villach – Austria/Italy border (3rd High Performance Regulation, HL-VO)
- Vienna Central Station – Vienna Airport – Bruck an der Leitha (6th High Performance Regulation, HL-VO)

The route Parndorf – national border near Kittsee has already been decreed a high-performance line by the 3rd High Performance Regulation (HL-VO) and the route Bruck an der Leitha – Parndorf is included in the 2nd High Performance Regulation (HL-VO). The need for a network modification has arisen because of the **functional independence of the planned railway**.

This declaration of the railway "area east of Vienna – national border near Kittsee (line and freight terminal)" is closely related to the specifically planned undertaking of ÖBB-Infrastruktur AG: **linking the 1,520 mm gauge network and the 1,435 mm gauge network and creating a transloading hub east of Vienna**. This undertaking will give rise to a functionally independent high-level railway connection in cross-border long-distance freight transport, making this declaration as an additional high-performance line necessary.

Due to the technical specification of a 1,520 mm track gauge construction and its connection to the international 1,520 mm gauge network, the line greatly gains **importance in cross-border long-distance freight transport.** The line is part of a **functionally new rail freight corridor** between eastern Slovakia and the Vienna area as part of a land-based rail link between Europe and Asia.

Transfer points between the 1,435 mm and 1,520 mm gauge networks are currently only located at the external borders of the EU or on the periphery of the 1,435 mm gauge network. The 1,520 mm gauge network, which was previously connected to the 1,435 mm gauge network by only three central transfer points,[2] will be brought to an **important TEN-T core network node**.

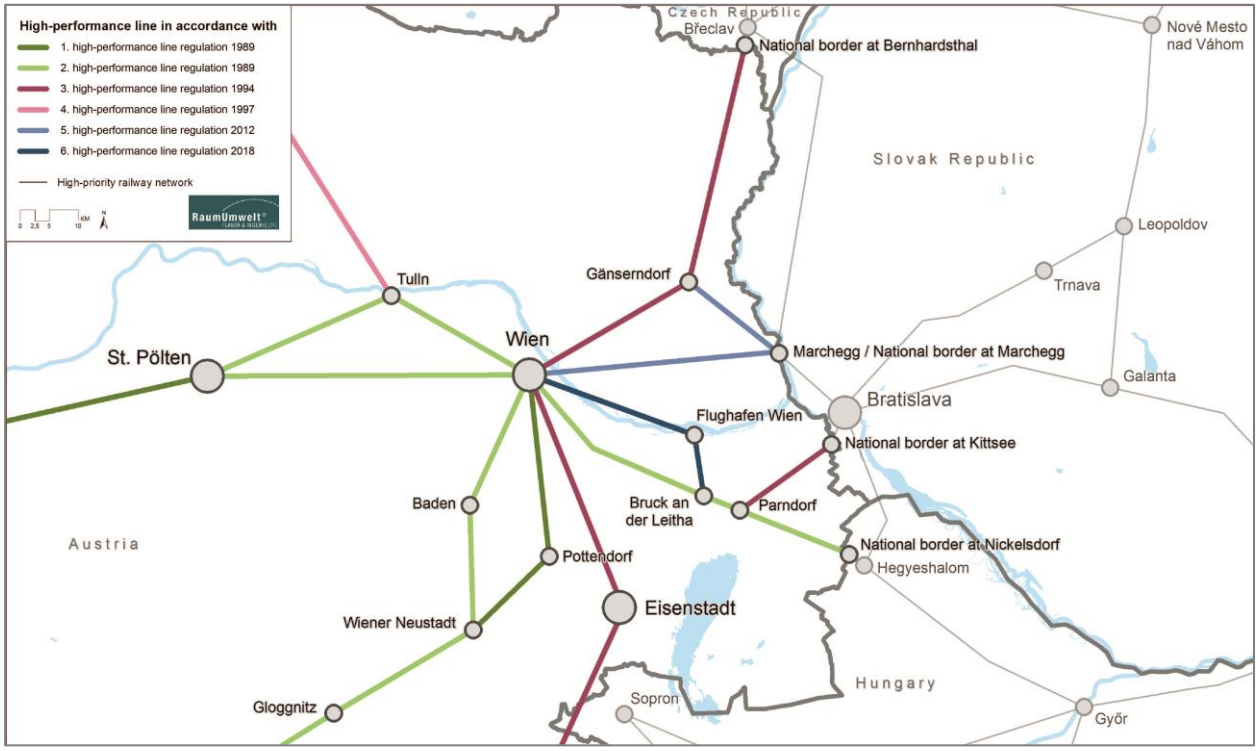


Figure 2: Austrian high-performance line network, as of September 2019 (own illustration)

2.3 BENEFITS OF THE NETWORK MODIFICATION

The **direct advantage** of the proposed network modification lies in

- the establishment of fast, efficient and secure long-distance freight train connections between Russia, Central and East Asia on the one hand and the European Economic Area on the other,
- the efficient distribution or bundling of land-based freight traffic flows over the TEN-T core network, making full use of the comparative advantages of all available modes of transport,
- the possibility of controlling the choice of the means of transport through freight terminal sizing, technology and operation, with the aim of stepping up rail-rail transloading,
- contributing to increasing the competitiveness of the rail system in the global exchange of goods, and

[2] Terespol, Čierna nad Tisou, Záhony; there is no separate transfer point between Finland and Russia because the Finnish rail network also has a 1,520 mm track gauge.

- establishing the Russia-Ukraine-Slovakia-Austria Corridor as the preferred link between the 1,520 mm gauge network and the 1,435 mm gauge network with a transloading point for container traffic in an already available TEN-T core network node.

The proposed network modification provides the basis for constructing the necessary railway facilities as high performance lines.

The **indirect advantage** of the proposed network modification lies in

- strengthening the rail system as an environmentally friendly and climate-friendly mode of transport in all parts of the transport chain, including transit,
- making land transport of goods between the EU, Russia, Central and East Asia more attractive,
- creating an attractive transport alternative to sea freight and air freight in the exchange of goods between Europe and its eastern trading partners,
- the improved connection of Central and Eastern European economic centres and conurbations in the global exchange of goods,
- boosting employment and creating value in the Vienna/Bratislava twin city region, and
- optimising the utilisation of the Austrian main freight transport network.

The indirect advantage is presented in accordance with the provisions of Sec. 5(4) of the SP-V Law, according to which a network modification must take into account defined objectives associated with a nationwide high-level transport network.

3

FRAMEWORK CONDITIONS AND ASSUMPTIONS FOR THE PROPOSED NETWORK MODIFICATION

The proposed network modification has several distinctive features: It is an international and cross-border undertaking and the only route in Austria with a 1,520 mm gauge. In order to present the methodological approach in the environmental report, certain assumptions are made, with the limits of the investigation clearly defined.

3 FRAMEWORK CONDITIONS AND ASSUMPTIONS FOR THE PROPOSED NETWORK MODIFICATION

3.1 DELIMITATION OF THE AUSTRIAN NETWORK MODIFICATION

The extension of the 1,520 mm rail network to the east of Vienna is an undertaking with global reach. The aim is a high-performing alternative for handling **the exchange of goods between Asia and Europe** efficiently and in an environmentally friendly manner. This exchange of goods is currently mainly being done using seagoing vessels. Detailed information on the transport economics of the undertaking can be found in the **baseline study "Potenziale der Eisenbahn als nachhaltige Alternative für den transkontinentalen Warenaustausch" (Potentials of the railway as a sustainable alternative for the transcontinental exchange of goods)** (ÖBB-Infrastruktur AG 2019b).

In the course of BPG's previous plan for extending the 1,520 mm gauge network into the area east of Vienna, the **advantages of this solution** compared to other possible options for better linking the 1,435 mm and 1,520 mm gauge networks were also discussed. The following summarises which **alternative solutions** have already been excluded for good reason, all of which cannot be the subject of a change to the nationwide high-level transport network in Austria:

Gauge Change in Eastern Slovakia

In addition to transshipping goods at the system boundary between 1,435 mm and 1,520 mm gauge networks, **regauging** railway cars also represents a **technical possibility** for freight transport beyond this system boundary. Regauging requires appropriate **technical equipment** in the terminal as well as **suitable rolling stock**.

The tri-border area of Slovakia (Čierna nad Tisou), Hungary (Záhony) and Ukraine (Tschop) does not yet have any technical facilities for rerouting freight wagons[3]. A possibility to strengthen the rail freight transport between Asia and Europe consists in **erecting a gauge change facility for freight wagons in eastern Slovakia** in Čierna nad Tisou. That would enable running freight trains with suitable rolling stock between 1,435 and 1,520 mm gauge networks **without having to transship.**

The conversion of freight wagons or freight trains, regardless of the location of a specific facility, goes hand in hand with **fundamental operational disadvantages**. Since a single freight wagon or freight train must comply with the **technical parameters** of both the 1,435 and 1,520 mm gauge networks, the **minimum** of the two networks is always used; this concerns track clearance, axle load and technically possible train lengths. In addition, the **lack of interoperability** of freight wagons (coupling systems) implies an

[3] Tschop merely has a gauge change facility for passenger transport.

isolated handling of trains with wagons from the 1,435 mm to the 1,520 mm gauge network and vice versa.

As with transshipping, regauging itself also takes **time**, thus reducing the efficiency of rail freight transport. In addition, the transloading point – which in this case has been reinforced with a gauge change facility – is located directly on the border between the 1,435 mm and 1,520 mm rail networks and thus **on the edge of the EU or TEN-T core network**. This means that all traffic flows are on a single route through the Ukraine to the transloading point. From there, they then run on a single route through Slovakia to relevant nodes of the TEN-T core network, where the goods must be redistributed – e.g. by **again transshipping or rearranging** them. This **lack of track network interlocking** results in **efficiency losses** when **redistributing** the goods to Europe.

Constructing a New Terminal in Eastern Slovakia and Reinforcing the TEN-T Core Network in Slovakia

Constructing a new terminal in eastern Slovakia and redistributing goods on a reinforced 1,435 mm gauge network in Slovakia that goes beyond the objectives of the TEN-T core network would have a similar effect: **additional shunting** in the vicinity of the closest high-level node of the TEN-T core network would be necessary.

Only **interconnecting both gauge networks** in the core area of the TEN-T core network will lead to increased efficiency and make rail freight transport more attractive because the additional handling process would be rendered obsolete. That means that the erection of a **completely new railway** between Košice and the area east of Vienna as a **1,435 mm track gauge** shows no substantial advantage over the existing situation.

Concentrating the Linking of the 1,435 mm and 1,520 mm Gauge Networks at Brest

Goods transported by rail between Europe and Asia today are currently being reloaded mainly on the **border between Belarus and Poland** near Brest. The different rail networks do not overlap at this connection either, and the transshipment point is located at the boundary of the two systems and thus **outside the core areas of the TEN-T core network**.

The planned extension of the 1,520 mm gauge network to the east of Vienna will, however, interconnect the two systems at a traffic hub. The existing connection of 1,425 and 1,520 mm gauge networks near Brest also has disadvantages for hinterland traffic to Central and Southern European countries: the distances to these destinations and sources are long, with additional demands placed on **parts of the European rail transport network that are already heavily used**.

The extension of the 1,520 mm gauge to the east of Vienna would thus be a **reasonable addition** to the existing railway links between Asia and Europe **without being in direct competition** with them.

Extending the 1,520 mm Gauge Network North of Bratislava to the North of Vienna

BPG examined various corridors for extending the 1,520 mm gauge network to the east of Vienna. Another version was also reviewed that envisions the implementation of a terminal in Nové Zámky and in which the route runs north of Bratislava and would thus meet Austrian national territory **north of the Danube**. This overall alternative was turned down with good reason: the necessary **tunnelling of the Little Carpathians** and **crossing** the **strongly protected March with its extensive water meadows** were not considered adequate solutions. The **spatial and environmental impact** would be high in comparison and the construction costs would also be relatively high.

That would lead to the implementation risk increasing to a disproportionate extent, which is why this option was not pursued any further. At the border crossing point in Kittsee, the negative effects on people and the environment are significantly lower. A parallel route across the Danube alongside the planned motorway on Slovakian national territory keeps additional negative effects on the environment to a minimum. On the Austrian side of the border, Natura 2000 areas will be bypassed to the north.

Conclusion for the Modification of the Nationwide High-Level Transport Network in Austria

The proposed network modification (cf. Chapter 2) concerns the modification of the Austrian nationwide high-level transport network **south of the Danube and east of Vienna**, starting from the **defined border crossing point at Kittsee**. Pursuant to Sec. 3(2)(3) of the SP-V Law, the Environmental Report will present, inter alia, the alternative intermodal and cross-network assessment. This also includes so-called **system alternatives** – alternatives within the modes and types of transport overall, reasonably available for handling freight transport, which contribute to achieving the objectives of the proposed network modification.

Such **alternative solutions** alone cannot be realistically shown for the modification to the nationwide high-level transport network in Austria. The network modification in Austria is the result of a **joint, international planning consideration**. Accordingly, **system alternatives** were considered and judged to be **inadequate solutions**.

3.2 VOLUME AND DISTRIBUTION OF QUANTITIES OF GOODS

The location of a terminal to the east of Vienna ensures optimal **accessibility to the sales and production markets** throughout the EU. Sixty-three per cent of the goods transloaded at the terminal are transported by rail. This high share of rail transport in the modal split is also due to the **rail network's good state of expansion** into the main export countries in the 2050 forecast year.

The quantity of goods forecast for the terminal will largely be transported between the terminal and **Germany** (19%) and **Italy** (12.5%). Furthermore, goods will be transported on routes between the terminal

and the Netherlands, Belgium, France or Spain. Five per cent of all goods will be transported by rail within Austria. Most of the goods transshipped or originating in eastern Slovakia and transported via the 1,435 mm gauge network to and from Vienna are distributed among the rest of Austria (61%) and Germany and Italy (11% each) (cf. Figure 3).

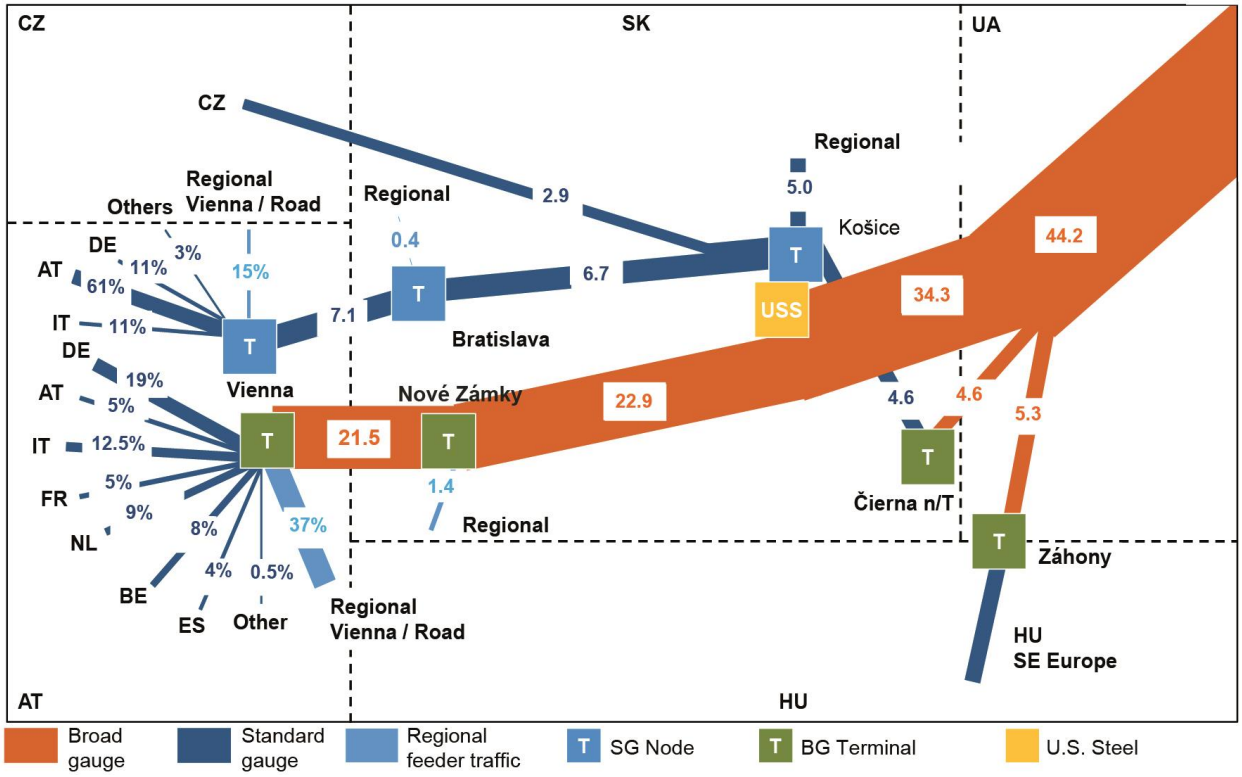


Figure 3: 2050 freight traffic volume in million t/year on the Košice-Vienna route with implementation of the undertaking (own BPG calculation)

It is expected that the implementation of the undertaking will result in an additional **56 trains** daily running on the 1,435 mm gauge network to and from the terminal. **Ten trains** (six via Villach, four via Spielfeld) will run on the **southern axis** and **42 trains on the western line** (32 via Passau, ten via Salzburg).[4] This new traffic will increase the train kilometres by 17% compared to 2016 and the gross tonne-kilometres transported by 19% in freight traffic in the ÖBB-Infrastruktur AG network (own ÖBB-Infrastruktur AG calculations).

The undertaking will allow goods currently being transported via the North Sea ports to Central Europe to be handled via the logistics hub in the heart of Europe. There are currently **few freight centres of international standing** in Central Europe. Rather, the logistics centres on the North Sea and in Germany and Italy determine the onward movement of goods within Europe.

[4] Differences result from traffic starting/ending in Austria and shifting effects between 1,435 and 1,520 mm network and road/rail.

3.3 TECHNICAL REQUIREMENTS AND ASSUMPTIONS

3.3.1 1,520 MM GAUGE NETWORK

The section with the 1,520 mm gauge network is the **only one in Austria to have a 1,520 mm track gauge**. Since the High-Performance Lines Act (HIG) does not mention any technical specifications as a prerequisite for the declaration as a high-performance line, that does not constitute a restriction for the declaration. Apart from several passing loops along the entire route, the line will be **single-track** and **electrified**. The line is intended for **freight transport only** and will be expanded to a **maximum speed of 140 km/h**.

On Slovak territory, the route south of Bratislava will run parallel to the D4 motorway and over a **new Danube Bridge**. Thus, the additional negative effects on the environment caused by the construction of the railway line are kept to a minimum. The route will meet Austrian national territory at the **Austrian border town of Kittsee**.

The planned **end point** has **not been finalised**; determining a suitable location for the best possible integration of the extended 1,520 mm gauge network into the TEN-T core network east of Vienna makes up a part of this Environmental Report. Only in a subsequent route selection procedure will the route and the exact terminal location be reviewed and determined.

3.3.2 TERMINAL FOR CONNECTING THE 1,435 AND 1,520 MM GAUGE NETWORKS

The planned terminal itself is modularly divided into three parts. The container trains will enter the terminal from the single-track 1,520 mm line, where a **shunting area** for the 1,520 mm trains is located. In the middle is a **handling area** for container transloading. There, transloading will take place in different ways: rail/road, mixed transloading rail/road and rail/rail, and transloading rail/rail from a 1,520 mm track to two or three 1,435 mm tracks. This ensures a **high degree of flexibility** even for unsorted container trains. Behind the **handling area** is a **shunting area** for the 1,435 mm trains.

From there, one 1,435 mm railway line or connecting road in each direction will lead into the existing high-level rail or road network in order to ensure a **connection to the existing transport network** and onward movement of the goods.

A **rough diagram** of the planned terminal is shown in Figure 4.

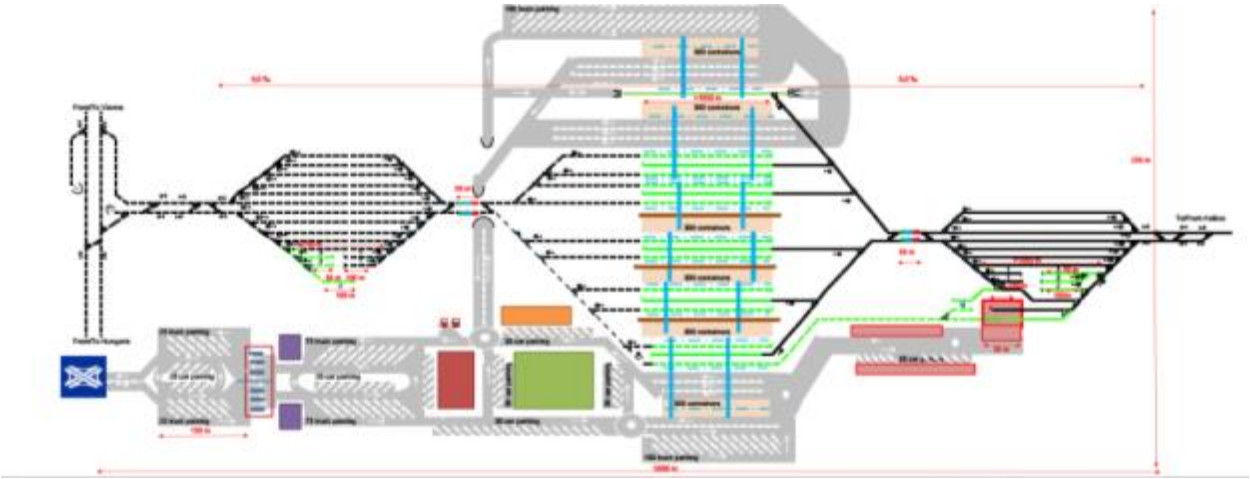


Figure 4: Modular scheme of the planned transshipment terminal (own BPG illustration)

The aim is to have **six storage locations** at the planned terminal itself, in each of which 1,020 TEU can be stacked in three rows and on two levels, resulting in a total storage capacity of 6,120 TEU. Since the **storage utilisation** of approx. 80% should not be exceeded, a capacity of approx. 4,900 TEU is assumed. The terminal will have a total area of approx. **150 hectares**. It will thus be considerably smaller than the Port of Vienna or the Container Terminal Enns (350 ha each) and slightly larger than the Port of Linz CCT (Linzer Stadthafen CCT) (110 ha). Each train is planned to transport 126 containers, or 142 containers on peak days. This means that in 2050, either 3,800 or 5,400 containers per day can be transloaded at the terminal.

The establishment of logistics terminals (cf. Chapter 3.3.3) will provide an **economic boost** to the region, including job creation. This Environmental Report assumes around 130 employees for the planned terminal.

The exact **layout of the terminal** has not yet been defined and greatly depends on the actual location. It rests on the spatial conditions and the integration into the existing high-level transport network.

3.3.3 LOGISTICS CENTRE

In line with experience gained from similarly large intermodal terminals, the undertaking, if implemented, is expected to attract further **logistics-related companies to the surrounding area** of the terminal. In these companies, goods are manipulated or refined.

Such a logistics centre is not a **railway facility** according to Sec. 10 of the Railway Act (EisBG) and is therefore not part of the proposed network modification or the responsibility of the federal authorities. However, in the course of the further assessment, it is assumed that a **hypothetical logistics centre** associated with the proposed network modification will be established in order to anticipate possible additional effects and to increase the resilience of the strategic assessment in the transport sector (SP-V).

The actual implementation of such a logistics centre lies within the competence of the federal states or municipalities.

As part of the impact assessment it is assumed that the logistics centre is about the same **size** as the terminal, i.e. about 150 ha. The layout of the area can be configured relatively flexibly, which is why no further, more thorough assumptions are made in this regard. It is assumed that the **workforce** will consist of around 2,000 persons. On the one hand, these assumptions are taken into account when assessing **land use**; on the other hand, the **effects on the road network** are considered.

4

GENERAL OBJECTIVES AND RELATIONSHIP WITH PLANS AND PROGRAMMES

International, national, regional and trans-national documents form the macrosocial background against which the proposed network modification is considered and assessed. The objectives contained in these documents directly or indirectly relate to the proposed network modification.

4 GENERAL OBJECTIVES AND RELATIONSHIP WITH PLANS AND PROGRAMMES

4.1 APPROACH

The nationwide high-level transport network forms the backbone of the inner-Austrian and cross-border transportation infrastructure. Due to its great importance, it is **thematically closely related** to other **target documents,** which must be considered in the proposed network modification and which are therefore also used as a basis for assessing the effects of the proposed network modification. These are bases, strategies and other plans and programmes.

The target documents can be roughly divided into the following **two types**:

- Documents with generally applicable objectives and/or measures that can be achieved or implemented better or worse through the proposed network modification, e.g. nature conservation target documents
- Documents that specifically refer to the development of transportation infrastructure, e.g. mobility concepts of the federal states

The relevant plans and programmes are identified and presented below. They come from different territorial authority levels and are **binding to different degrees**. Their **reference** to the development of transportation infrastructure networks is inconsistent, yet each is elaborated on.

In accordance with the SEA Directive (2001/42/EC), the relevant **plans and programmes** that are prepared or adopted by an authority or drawn up on the basis of legal and administrative provisions are prioritised. In addition, **target documents, guidelines and bases for infrastructure planning and construction** are looked at that are strictly speaking not plans and programmes as per the SEA Directive but that nevertheless are relevant to the proposed network modification. Legal bases such as laws are not taken into account as they are not plans or programmes within the meaning of the SEA Directive. However, they influence the description of the environmental conditions and, in particular, the presentation of the relevant environmental protection objectives pursuant to Sec. 6(2)(7) of the SP-V Law.

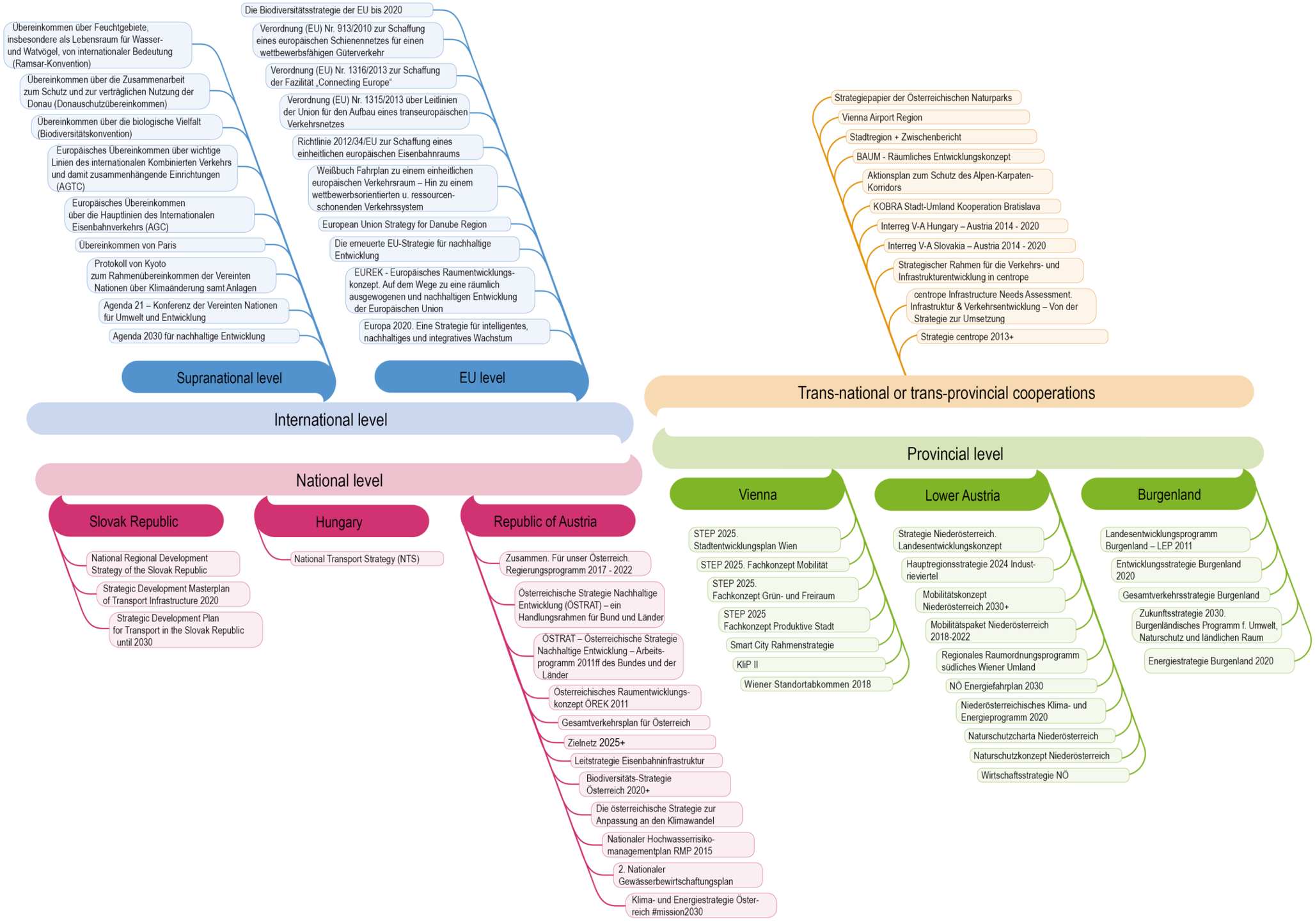
The **supranational, EU, federal and state levels** are regarded as relevant territorial authority levels. Documents at the regional level are only considered in justified cases, because they generally make no relevant reference to the national high-level transport network. For this reason, documents at the municipal level are not used.

For the neighbouring states **Slovak Republic** and **Hungary**, which are affected by the proposed network modification, reference is made to selected documents at the national level. Cross-border plans and programmes between Austria and one of these two neighbouring countries will also be considered.

The selected plans and programmes are evaluated using text analysis. In addition to a general **brief description** of the document (institution, normative content, general objectives and core issue), the **concrete connection** to the proposed network modification is presented, which can vary greatly at times.

The concrete connections are usually **target statements** that are contradictory, consistent with or neutral to the proposed network modification. In order to present an overview of these objectives as a whole, individual statements are **clustered** and put in relation to one another in a **target system with main and subgoals** (cf. Chapter 5.3). This target system thus represents the **macrosocial background** against which the proposed network modification is considered and assessed in terms of its effects (cf. Chapter 9).

The considered **plans and programmes** and other target documents are presented below.


Übereinkommen über Feuchtgebiete, insbesondere als Lebensraum für Wasser- und Watvögel, von internationaler Bedeutung (Ramsar-Konvention)
Übereinkommen über die Zusammenarbeit zum Schutz und zur verträglichen Nutzung der Donau (Donauschutzübereinkommen)
Übereinkommen über die biologische Vielfalt (Biodiversitätskonvention)
Europäisches Übereinkommen über wichtige Linien des internationalen Kombinierten Verkehrs und damit zusammenhängende Einrichtungen (AGTC)
Europäisches Übereinkommen über die Hauptlinien des Internationalen Eisenbahnverkehrs (AGC)
Übereinkommen von Paris
Protokoll von Kyoto zum Rahmenübereinkommen der Vereinten Nationen über Klimaänderung samt Anlagen
Agenda 21 – Konferenz der Vereinten Nationen für Umwelt und Entwicklung
Agenda 2030 für nachhaltige Entwicklung
Die Biodiversitätsstrategie der EU bis 2020
Verordnung (EU) Nr. 913/2010 zur Schaffung eines europäischen Schienennetzes für einen wettbewerbsfähigen Güterverkehr
Verordnung (EU) Nr. 1316/2013 zur Schaffung der Fazilität „Connecting Europe“
Verordnung (EU) Nr. 1315/2013 über Leitlinien der Union für den Aufbau eines transeuropäischen Verkehrsnetzes
Richtlinie 2012/34/EU zur Schaffung eines einheitlichen europäischen Eisenbahnraums
Weißbuch Fahrplan zu einem einheitlichen europäischen Verkehrsraum – Hin zu einem wettbewerbsorientierten u. ressourcen-schonenden Verkehrssystem
European Union Strategy for Danube Region
Die erneuerte EU-Strategie für nachhaltige Entwicklung
EUREK - Europäisches Raumentwicklungs-konzept. Auf dem Wege zu eine räumlich ausgewogenen und nachhaltigen Entwicklung der Europäischen Union
Europa 2020. Eine Strategie für intelligentes, nachhaltiges und integratives Wachstum
Supranational level
EU level
International level
National level
Slovak Republic
National Regional Development Strategy of the Slovak Republic
Strategic Development Masterplan of Transport Infrastructure 2020
Strategic Development Plan for Transport in the Slovak Republic until 2030
Hungary
National Transport Strategy (NTS)
Republic of Austria
Zusammen. Für unser Österreich. Regierungsprogramm 2017 - 2022
Österreichische Strategie Nachhaltige Entwicklung (ÖSTRAT) – ein Handlungsrahmen für Bund und Länder
ÖSTRAT – Österreichische Strategie Nachhaltige Entwicklung – Arbeits-programm 2011ff des Bundes und der Länder
Österreichisches Raumentwicklungs-konzept ÖREK 2011
Gesamtverkehrsplan für Österreich
Zielnetz 2025+
Leitstrategie Eisenbahninfrastruktur
Biodiversitäts-Strategie Österreich 2020+
Die österreichische Strategie zur Anpassung an den Klimawandel
Nationaler Hochwasserrisiko-managementplan RMP 2015
2. Nationaler Gewässerbewirtschaftungsplan
Klima- und Energiestrategie Öster-reich #mission2030
Strategiepapier der Österreichischen Naturparks
Vienna Airport Region
Stadtregion + Zwischenbericht
BAUM - Räumliches Entwicklungskonzept
Aktionsplan zum Schutz des Alpen-Karpaten-Korridors
KOBRA Stadt-Umland Kooperation Bratislava
Interreg V-A Hungary – Austria 2014 - 2020
Interreg V-A Slovakia – Austria 2014 - 2020
Strategischer Rahmen für die Verkehrs- und Infrastrukturentwicklung in centrope
centrope Infrastructure Needs Assessment. Infrastruktur & Verkehrsentwicklung – Von der Strategie zur Umsetzung
Strategie centrope 2013+
Trans-national or trans-provincial cooperations
Provincial level
Vienna
STEP 2025. Stadtentwicklungsplan Wien
STEP 2025. Fachkonzept Mobilität
STEP 2025. Fachkonzept Grün- und Freiraum
STEP 2025 Fachkonzept Produktive Stadt
Smart City Rahmenstrategie
KliP II
Wiener Standortabkommen 2018
Lower Austria
Strategie Niederösterreich. Landesentwicklungskonzept
Hauptregionsstrategie 2024 Indust-rieviertel
Mobilitätskonzept Niederösterreich 2030+
Mobilitätspaket Niederösterreich 2018-2022
Regionales Raumordnungsprogramm südliches Wiener Umland
NÖ Energiefahrplan 2030
Niederösterreichisches Klima- und Energieprogramm 2020
Naturschutzcharta Niederösterreich
Naturschutzkonzept Niederösterreich
Wirtschaftsstrategie NÖ
Burgenland
Landesentwicklungsprogramm Burgenland – LEP 2011
Entwicklungsstrategie Burgenland 2020
Gesamtverkehrsstrategie Burgenland
Zukunftsstrategie 2030. Burgenländisches Programm f. Umwelt, Naturschutz und ländlichen Raum
Energiestrategie Burgenland 2020

4.2 RELATIONSHIP WITH OTHER PLANS AND PROGRAMMES

4.2.1 INTERNATIONAL LEVEL

4.2.1.1 Supranational Level

2030 Agenda for Sustainable Development

The strategy document "**Transforming our world: the 2030 Agenda for Sustainable Development**" (or "Global Sustainability Agenda") was adopted by the United Nations General Assembly in 2015 and entered into force in 2016 (United Nations Conference 2015a). It is the central international agenda that defines a total of **17 Sustainable Development Goals (SDG)**. The objectives that are to be achieved by 2030 include ending hunger and poverty and promoting access to affordable, reliable, sustainable and modern energy.



Figure 5: Sustainable Development Goals of the United Nations

Goal 8 involves **promoting sustained, inclusive and sustainable economic growth**. This includes job creation and achieving full and productive employment. Goal 9 includes **the development of resilient infrastructure**. That encompasses transborder, quality and sustainable infrastructure to support economic development. Goals to **combat climate change** are also defined (Goal 13). (cf. Figure 5)

The individual countries are entrusted with achieving the goals. The 17 goals are integrated into relevant strategies and programmes. Depending on the subject area, different ministries are responsible for implementing the goals in national strategies.

Agenda 21 – United Nations Conference on Environment and Development

Agenda 21 (United Nations Conference 1992) was adopted in 1992 at the United Nations Conference on Environment and Development held in Rio de Janeiro. It is a **global plan of action for sustainable development** and was signed by 178 countries, which voluntarily committed themselves to achieving the agreed targets. Agenda 21 addresses economic, social and environmental aspects of sustainable development.

Regarding **transportation**, the basis of action is: *"The transport sector has an essential and positive role to play in economic and social development, and transportation needs will undoubtedly increase. However, since the transport sector is also a source of atmospheric emissions, there is need for a review of existing transport systems and for more effective design and management of traffic and transport systems."* (ibid.: p. 83)

The objective of this programme area is to develop and promote cost-effective policies or programmes to limit, reduce or control harmful emissions into the atmosphere and other adverse environmental effects of the **transport sector**, taking into account specific local and national circumstances.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria. The proposed network modification may therefore have an influence on the achievement of the objectives of Agenda 21.

Kyoto Protocol to the United Nations Framework Convention on Climate Change

The **Kyoto Protocol to the United Nations Framework Convention on Climate Change** is an **additional protocol to the United Nations Framework Convention on Climate Change** and established **binding limitations in greenhouse gas emissions under international** law for countries that had ratified the Protocol. It entered into force in 2005 and was to be replaced by a new Protocol in 2012. However, no agreement was reached at several UN climate conferences, so that a second commitment period until 2020 was finally agreed on in 2012.

The signatories undertook to formulate policies and measures to reduce greenhouse gas emissions in the **transport sector**. Moreover, adaptation strategies were set to be developed (cf. Austrian Strategy for Adaptation to Climate Change) (Federal Law Gazette III No. 89/2005, Article 10). The quantitative objective of the Protocol is to **reduce the total greenhouse gas emissions** of the industrialised countries by at least 5% below 1990 levels by 2012.

Many of the acceding countries, including Austria, are far from **reaching this target**. Some governments have now withdrawn from the Protocol. Nevertheless, the Protocol's objectives have found their way into many EU and Austrian documents.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria, which is one of the biggest producers of greenhouse gas emissions. The proposed network modification may therefore have an influence on the achievement of the objectives of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The Paris Agreement

The **Paris Agreement** is an agreement aimed at protecting the climate. The Agreement was adopted in December 2015 at the UN Climate Change Conference in *Paris* (COP21) (United Nations Conference 2015b). It entered into force in November 2016, when the Agreement was ratified by more than 55 countries responsible for at least 55% of greenhouse gas emissions. Austria ratified the Agreement in July 2016.

The states undertake to keep the increase in global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the increase to 1.5 °C, to increase the **ability of countries to adapt** to climate change and to promote financial flows consistent with a pathway towards low greenhouse gas emissions. In order to achieve the objectives of the Agreement, governments must submit **national climate plans** and update them every five years. They include the level of emissions and progress towards the targets.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria, which is one of the biggest producers of greenhouse gas emissions. The proposed network modification may therefore have an influence on the achievement of the objectives of the Paris Agreement.

European Agreement on Main International Railway Lines (AGC)

The **European Agreement on Main International Railway Lines** (Federal Law Gazette III No. 147/2002), or **AGC**, is a coordinated plan for the expansion of railway lines considered to be of great international importance. The goal is to create a **homogeneous and interoperable European railway system**. Austria joined the Agreement in 2002. This Agreement, as a treaty under international law, is legally binding.

The so-called electric railway network consists of a system of **main lines and supplementary lines**. In addition to the routing, common technical minimum standards are also stipulated. The main lines are designed for large **capacities**, which generally calls for double-track lines. Other measures concern the **speed of expansion**. The latest state of the art technology is supposed to be applied to newly built sections (cf. Annex II), and level intersections with the road network are to be avoided (cf. ibid.).

The proposed network modification is aimed at improving the connection between the 1,520 and 1,435 mm gauge networks and is thus directly related to the development of the electric railway network in Europe.

European Agreement on Important International Combined Transport Lines and Related Installations (AGTC)

The European Agreement on Important International Combined Transport Lines and Related Installations, or AGTC, is an international agreement, which Austria joined in 1991. The aim is to facilitate the international transport of goods. It lists lines and installations important for international combined transport (including terminal locations and gauge interchange stations) as well as technical requirements. Bratislava and Vienna are listed as important terminal locations. No specifications are given for the track gauge.

The proposed network modification is aimed at improving the connection between the 1,520 and 1,435 mm gauge networks and is thus directly related to the development of the international transport of goods in Europe.

Convention on Biological Diversity

The "**Biodiversity Convention**" is an international environmental agreement that entered into force in 1993. Article 1 (Federal Law Gazette No 213/1995 as amended by Federal Law Gazette III No. 83/2015) lays down the objectives:

> *"The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.*"

The Parties should minimise adverse effects, as far as possible and as appropriate. Arrangements should be introduced to ensure that "*the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account*" (Article 14(1)(b)). The protection of protected areas or ecosystems and natural habitats (cf. Article 8) is of particular relevance in the context of planning transportation infrastructure. The Biodiversity Convention is implemented in Austria within the framework of the **Biodiversity Strategy 2020+**.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could lead to the impairment of protected areas or ecosystems and natural habitats. The proposed network modification may therefore have an influence on the achievement of the objectives of the "Biodiversity Convention".

Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Danube River Protection Convention)

The **Danube River Protection Convention** is an international agreement signed in 1994 by Germany, Austria, Croatia, Romania, the Slovak Republic, Slovenia, the Czech Republic, Hungary and the EU and entered into force in 1998. The objectives of the Convention include sustainable and equitable water management and the conservation, improvement and rational use of surface waters and ground water in the catchment area. The parties "*shall go to great lengths to control the hazards originating from accidents involving substances hazardous to water, floods and ice-hazards of the Danube river*" (Federal Law Gazette III No. 139/1998, Art. 2(1)). All measures to protect the *Danube* and the waters in the catchment area are based on the **polluter-pays principle** and the **precautionary principle**.

Article 7(2) lays down provisions on emission limitation:

> *"Supplementary provisions for preventing or reducing the release of hazardous substances and nutrients shall be developed by the Contracting Parties for non-point sources, in particular where the main sources are originating from agriculture, taking into account the best environmental practice.*"

"**Best environmental practice**" means "*the application of the most appropriate combination of sectoral environmental control strategies and measures*" (Annex I, Part 2). When deciding on this combination, social and economic factors are also to be taken into account. The best environmental practice for a particular source of impacts will change with time (cf. Annex I, Part 2). The International Commission for the Protection of the Danube River (ICPDR) is responsible for implementing the Danube River Protection Convention.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could lead to the impairment of groundwater or surface water due to construction or operations. The proposed network modification affects the Danube's immediate vicinity as well as several bodies of groundwater and watercourses that accompany or flow into the Danube. The proposed network modification may therefore have an influence on the achievement of the objectives of the Danube River Protection Convention.

The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)

The **Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat**, or **Ramsar Convention**, is a treaty under international law and one of the oldest international treaties on nature conservation with its entry into force in 1975 (Federal Law Gazette No. 283/1993). Its objectives are the **conservation and wise use of wetlands**. The governments undertake to designate wetlands of international importance and to ensure that they maintain their ecological character. The framework is

provided by the "wise use" concept, which states that the use of wetlands serves human well-being as well as the preservation of the characteristics and functions of natural habitats. When planning a high-performance line, the protection of wetlands must be taken into account. In Austria, the Convention is implemented within the framework of the document "Ramsar Sites in Austria" (BMLFUW 2014b); these sites are described in Chapter 7.2.3. The objectives of the Convention may conflict with the modification of the nationwide high-level transport network.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could lead to the impairment of wetlands. The proposed network modification concerns the vicinity of the Danube and Lake Neusiedl, which make up the important core Austrian Ramsar sites. The proposed network modification may therefore have an influence on the achievement of the objectives of the Ramsar Convention.

4.2.1.2 EU Level

Europe 2020. A Strategy for Smart, Sustainable and Inclusive Growth

Europe 2020 is a programme for the advancement of the economy of the EU for the period up to 2020. The strategy aims to **create smart, sustainable and inclusive growth**. To put this into concrete terms, the EU has adopted core targets to be achieved by 2020 in five areas (European Commission 2010: p. 5):

- *"75% of the 20-64-year-olds should be employed.*
- *3% of the EU's GDP should be invested in R&D.*
- *The '20/20/20' climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right)*
- *The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree.*
- *20 million less people should be at risk of poverty.."*

Seven flagship initiatives will help the EU and its Member States coordinate measures to achieve these objectives. Statements on **transport and mobility** can be found primarily in the flagship initiative "Resource efficient Europe". This includes proposals *"to modernise and decarbonise the transport sector thereby contributing to increased competitiveness. This can be done through a mix of measures e.g. infrastructure measures such as setting up grid infrastructure for electrical mobility, intelligent traffic management, better logistics, pursuing the reduction of carbon emissions for road vehicles, for the aviation and maritime sectors including the launch of a major European 'green' car initiative"* (ibid.: p. 18 et seq.). Furthermore, *"a coordinated implementation of infrastructure undertakings, within the EU Core network, that critically contribute to the effectiveness of the overall EU transport system must be ensured*" (ibid.: p. 19).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification may therefore have an influence on the achievement of the objectives of the Europe 2020 strategy.

ESDP – European Spatial Development Perspective. Towards Balanced and Sustainable Development of the Territory of the European Union

The **European Spatial Development Perspective**, or **ESDP**, is a mission for the future development of European territory on which the Member States and the European Commission agreed in 1999. It provides a framework for the **integrated spatial development** within the Member States and is therefore not a legally binding document.

The fundamental objective is a **balanced spatial development** through which "*the EU will therefore gradually develop, in line with safeguarding regional diversity, from an Economic Union into an Environmental Union and into a Social Union"* (European Commission 1999: p. 10). In the field of **transport**, the further development of the TEN-T is a primary objective; it makes a decisive contribution to the functioning of the single market and the strengthening of economic and social cohesion (ibid.: p. 14). Environmentally friendly transport modes are to be strengthened, with an increased use of railways and of waterways in **goods transport** (ibid.: p. 30). Intermodal junctions for freight transport should be better interconnected (ibid.: p. 31). In addition, **competitiveness** throughout the EU should be increased and **nature and cultural heritage** and cultural landscapes preserved and further developed.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the objectives of the ESDP.

The Renewed EU Sustainable Development Strategy

The renewed EU Sustainable Development Strategy sets out four **main objectives** for sustainable development. These are "*environmental protection, social equity and cohesion, economic prosperity and meeting international responsibilities*". One of the key challenges laid down is **sustainable transport**. The general objective is "*to ensure that transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment*" (Council of the European Union 2006, p. 10).

Operational **objectives and targets** for achieving this overall goal include (ibid.: p. 10):

- "*Decoupling economic growth and the demand for transport with the aim of reducing environmental impacts.*

- *Achieving sustainable levels of transport energy use and reducing transport greenhouse gas emissions.*
- *Reducing pollutant emissions from transport to levels that minimise effects on human health and/or the environment.*
- *Achieving a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system.*
- *Reducing transport noise both at source and through mitigation measures to ensure overall exposure levels minimise impacts on health.*"

Actions should include "*possible **alternatives to road transport for freight and passengers** including the appropriate development of the Trans-European Network and inter-modal links for freight logistics*". In addition, Member States should "*strive to make progress towards effective global solutions for the reduction of harmful impacts of international maritime and air traffic*" *(ibid.: p. 11).* It should also be applied to the assessment of external costs that are caused by transport.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the objectives of the EU Sustainable Development Strategy.

Danube Region Strategy

The **European Union Strategy for the Danube Region**, or the **Danube Region Strategy**, is a strategy designed to promote cooperation between the states along the Danube, particularly in the priority areas of connecting the Danube region, protecting the environment, building prosperity, and strengthening the Danube region with regard to cooperation and security (European Commission 2014, p. 8).

Regarding the issue of **transport**, great potential is seen in sustainable **inland navigation** in the Danube river basin. To this end, bottlenecks must be removed, while respecting environmental legislation, in order to ensure navigability. Road, rail and air infrastructure will also be developed in line with the TEN-T undertaking. Multimodality and interoperability, exploiting the potential of the river, are crucial. (ibid.: p. 8)

A total of 14 neighbouring states are involved in the strategy: nine EU Member States (AT, BG, CZ, DE, HR, HU, RO, SI, SK) and five third states (BiH, MD, MN, SRB, UA). The **Danube Riparian States** directly implement the objectives of the strategy.

The **objectives** proposed by the European Commission include improving mobility and multimodality, encouraging the use of sustainable energy, preserving biodiversity, landscapes, and air and soil quality or stepping up institutional capacity and cooperation. The share of cargo transport on the river is to be in-

creased by 20% by 2020 (compared to 2010), and efficient multimodal terminals are to be set up at Danube river ports.

The Danube in Austria is part of the nationwide high-level transport network. As an inland waterway, the Danube is considered in the change to the nationwide high-level transport network. The proposed network modification affects the nationwide high-level transport network in the Danube area. The inclusion of a planned railway in the nationwide high-level transport network can also set the framework for undertakings that could lead to the impairment of groundwater or surface water due to construction or operations. The proposed network modification affects the Danube's immediate vicinity as well as several bodies of groundwater and watercourses that accompany or flow into the Danube. The proposed network modification may therefore have an influence on the achievement of the objectives of the Danube Region Strategy.

White Paper Roadmap to a Single European Transport Area – Towards a Competitive and Resource-Efficient Transport System

The **White Paper on Transport** was prepared by the European Commission in 2011. It is intended to help grow transport and support mobility while enabling reaching 60% of the required emission reductions until 2050. **Improvements** are to be achieved in three areas (European Commission 2011b: p. 10f.):

- Developing and deploying new and sustainable fuels and propulsion systems;
- Optimising the performance of multimodal logistic chains, including by making greater use of more energy-efficient modes;
- Increasing the efficiency of transport and use of infrastructure through information systems and market-based incentives.

Implementing this vision requires the deployment of new **technologies** and the development of adequate **infrastructure**. Important elements are the introduction of a European transport area for all modes of transport, the development of a European research, innovation and deployment strategy for transport, as well as an EU-wide modern infrastructure, smart pricing and funding (ibid.: p. 12 et seq.). Thirty per cent of road freight should shift to rail or waterborne transport by 2030, and to 50% by 2050.

The proposed network modification is aimed at improving the connection between the 1,520 and 1,435 mm gauge networks and is thus directly related to the development of the international transport of goods in Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the objectives of the White Paper on Transport.

Directive 2012/34/EU on Establishing a Single European Railway Area

Directive 2012/34/EU lays down the rules to the management of railway infrastructure and to rail transport activities, the criteria applicable to the issuing, renewal or amendment of licences for railway undertakings, the principles and procedures for setting and collecting railway infrastructure charges and the allocation of railway infrastructure capacity. This will allow the European transport market to grow closer together and thus strengthen the single market and **ensure sustainable mobility**.

The proposed network modification is aimed at improving the connection between the 1,520 and 1,435 mm gauge networks and is thus directly related to the development of rail transport in Europe. The proposed network modification may therefore have an influence on the achievement of the objectives of Directive 2012/34/EU.

Regulation (EU) No 1315/2013 on Union Guidelines for the Development of the Trans-European Transport Network

The Trans-European Networks, or TENs, are an expansion programme for transport, energy and telecommunication networks; in the transport sector, the TENs are abbreviated as TEN-T. The aim is to **improve infrastructure** in general and **standardise transport systems** in Europe.

Regulation (EU) No 1315/2013 lays down the TEN-T guidelines. They define the transport infrastructures, specify the requirements they should fulfil, and provide measures for their implementation. The focus is on the creation of new infrastructure and the comprehensive rehabilitation and upgrading of existing infrastructure by 2030 as well as the creation of measures promoting the resource-efficient use of the network (paragraph 8).

This regulation defines the two-level structure of the **comprehensive network** and the **core network**. The core network shall comprise the main connections and corridors. All EU capitals and other major cities form nodes in the core network connecting different transport infrastructure. The core network is expected to be completed by 2030.

Nine **corridors** have been defined in the core network as the main axes of the TEN-T. These corridors comprise at least three transport modes, cover at least three Member States and have at least two cross-border sections. **Three TEN-T core network corridors** run between Vienna and Budapest or Bratislava and are therefore directly relevant to the proposed network modification.

The comprehensive network includes a Europe-wide transport network ensuring accessibility to all regions. The goal is to have it completed by 2050, with nearly all citizens and businesses able to reach the comprehensive network within 30 minutes by then.

The proposed network modification is designed to improve the connection between the 1,520 and 1,435 mm gauge networks and is thus directly related to the TEN-T development. Its aim is to give priority to

long-distance freight transport by rail. The proposed network modification may therefore have an influence on the achievement of the objectives of the TEN-T.

Regulation (EU) No 1316/2013 Connecting Europe Facility

Regulation (EU) No 1316/2014 governs the **implementation and co-financing** of the Trans-European Networks (TENs):

> *"The aim of the creation of the Connecting Europe Facility (CEF) established by this Regulation is to accelerate investment in the field of trans-European networks and to leverage funding from both the public and the private sectors, while increasing legal certainty and respecting the principle of technological neutrality."* *(Art. 2)*

For the period from 2014 to 2020, a financial envelope of around €33 billion is planned. Around €26 billion is available for the transport sector, of which around €11 billion is exclusively designated for cohesion states (Chapter I Article 5(1)(a)). Transport infrastructure will be co-financed by the EU by up to 40% (Chapter III Art. 10(i)).

The proposed network modification is designed to improve the connection between the 1,520 and 1,435 mm gauge networks and is thus directly related to the TEN-T development. Its aim is to give priority to long-distance freight transport by rail. The proposed network modification may therefore have an influence on the achievement of the objectives of the Connecting Europe Facility.

Regulation (EU) No 913/2010 Concerning a European Rail Network for Competitive Freight

Regulation (EU) No 913/2010 lays down **international rail freight corridors**, or RFCs. A clear structure of several bodies (management board, executive board) is stipulated for freight corridor management. There will be a one-stop shop for accessing the infrastructure capacity, thus providing applicants with a single point of contact for requesting infrastructure capacity.

The proposed network modification is aimed at improving the connection between the 1,520 and 1,435 mm gauge networks and is thus directly related to the development of the international transport of goods in Europe. Its aim is to give priority to long-distance freight transport by rail. The proposed network modification may therefore have an influence on the achievement of the objectives of Regulation (EU) No 913/2010 concerning a European rail network for competitive freight.

The EU Biodiversity Strategy to 2020

The EU **2020 Biodiversity Strategy** sets out six targets for reducing the impact of biodiversity loss (European Commission 2011a):

- ❑ Fully implement the Birds and Habitats Directives

- Maintain and restore ecosystems and their services
- Increase the contribution of agriculture and forestry to biodiversity
- Ensure the sustainable use of fisheries resources
- Combat invasive alien species
- Step-up action to tackle the global biodiversity crisis

A total of 20 **actions** are assigned to the targets.

The target is "*halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss*" (ibid.: p. 12 et seq.).

The **vision** is that "*by 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human well-being and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided*" (ibid.: p. 6).

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could lead to the impairment of protected areas or ecosystems and natural habitats. The proposed network modification may therefore have an influence on the achievement of the objectives of the 2020 Biodiversity Strategy.

4.2.2 NATIONAL LEVEL

4.2.2.1 Republic of Austria

Together for our Austria, Government Programme 2017–2022

The government programme in force at the time of the November 2018 proposal for the network modification and on which this network modification proposal is based sets out the most important objectives and measures of the Austrian Government for the envisaged government period 2017–2022 (ÖVP/FPÖ 2017). The chapter on infrastructure presents the central plans for developing the transport infrastructure:

- Attracting funds for expanding infrastructure along the TEN networks and integrating new connections
- Further developing the Target Network 2025+
- More efficient and budget-friendly implementation of infrastructure undertakings

Furthermore, **freight transport** is to be **shifted** from road to rail and waterway, and Austria as a logistics location is to be strengthened. The flow of goods from Eastern Europe and Asia is to be handled by rail

("New Silk Road"). The **extension of the 1,520 mm rail network** into the Vienna area is explicitly stated as a goal.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. With the extension of the 1,520 mm rail network into the Vienna area, the proposed network modification represents an explicit objective of the government programme 2017–2022. It may therefore have an influence on the achievement of the objectives of the government programme 2017–2022.

Austrian Strategy for Sustainable Development (ÖSTRAT) – A Framework for Action for the Federal Government and Federal Provinces

The **Austrian Strategy for Sustainable Development** (BMLFUW 2010), or **ÖSTRAT**, is a joint document of the Federal Government and the Federal Provinces that defines fields of action, future issues and the organisational framework for Austria's **sustainable development**. The central **objectives** of ÖSTRAT are to safeguard the quality of life, to strengthen Austria as a dynamic business location, to protect Austria's living space and to ensure Austria's social and economic responsibility (ibid.: p. 7).

The **Work Programme 2011ff of the Federal Government and the Federal Provinces** (BMLFUW 2011) for ÖSTRAT deals with the topic of transport:

> "*In order to facilitate sustainable mobility, foot traffic, bicycle traffic and public transportation should be promoted, transport routes optimised, international traffic flows reduced and new technologies used for rural areas. Particular attention should be paid to promoting less mobile population groups. For freight traffic, transport routes should be optimised and shifted to environmentally friendly means of transport."* (ibid.: p. 18)

An important aspect is the high level of **pollution from greenhouse gas emissions** that traffic causes. This is to be counteracted above all by using alternative fuels and more environmentally friendly means of transport (ibid.: p. 21). Better **coordination between spatial planning and transport planning** can contribute to shorter routes and thus to less traffic-induced pollution (ibid.: p. 23).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the objectives of ÖSTRAT.

Austrian Spatial Development Concept ÖREK 2011

The **Austrian Spatial Development Concept** (Office of the Austrian Conference on Spatial Planning 2011), or **ÖREK**, is a strategic steering instrument at the national level and is prepared by the Austrian Conference on Spatial Planning (ÖROK) for a period of ten years. The concept sees itself as a **mission**

statement with recommendations for action for the spatial development of the provinces, municipalities and cities and is not legally binding.

In addition to its **fundamental attitude** toward competitiveness, solidarity and sustainability (ibid.: p. 17 et seq.), ÖREK lays down the development and maintenance of compact human settlement structures, polycentric structures, efficient corridors and functional interdependencies as **objectives** for spatial development. In addition, it also strives towards promoting small and medium-sized towns, developing non-urban areas, facilitating potentials specific to the region, coping with population growth and reviewing spatial planning measures (ibid.: p. 18 et seq.).

ÖROK is also committed to eight **principles for action**, which include sustainable spatial development, orientation on the common good, coherent and participative planning, collaboration in Austria, with neighbouring countries and within the EU, and a review of the effects and implementation (ibid.: p. 20 et seq.).

ÖREK's **action programme** is divided into four pillars, which in turn are separated into fields of action and tasks (ibid.: p. 25 et seq.):

- Pillar 1: Regional and national competitiveness
- Pillar 2: Social diversity and solidarity
- Pillar 3: Climate change, adaptation and resource efficiency
- Pillar 4: Cooperative and efficient handling structures

Areas of responsibility relevant to the proposed network modification are primarily found in Pillars 1 and 3. They include **securing corridors for high-level infrastructure** to strengthen competitiveness (ibid.: p. 36) and **expanding intermodal interfaces in freight traffic** (ibid.: p. 75).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the ÖREK objectives.

Comprehensive Transport Plan for Austria

The **Comprehensive Transport Plan for Austria** (BMVIT 2012), or **GVP (Gesamtverkehrsplan)**, was submitted by the BMVIT in 2012. It contains **objectives and guidelines of Austrian transport policies** up to the year 2025. The overarching goal is to develop a more social, safer, environmentally friendly, and efficient transport system (ibid.: p. 4).

On the basis of ten **transport policy guidelines**, the overarching goal will be achieved by means of eight **packages of strategies and measures** from the following dimensions:

- modern infrastructure,

- the future of public transport,
- more safety,
- planning, systematisation, interconnections,
- technology and innovation,
- considerations of different needs,
- environmental protection and resource efficiency,
- international aspects (ibid.: p. 5 et seq.)

Measures in the dimension “Modern infrastructure as the basis of a future-oriented transport network” primarily concern the **Target Network 2025+** (ÖBB-Infrastruktur AG 2011). It defines objectives for the expansion of the railway infrastructure. In terms of freight traffic, the share of rail traffic is to be increased to 40%. This is to be achieved through measures such as **investing in the existing network** and expanding or **constructing new freight terminals** (ibid.: p. 52). The dimension “Planning, systematisation, interconnections,” aims to make the **transport system** smarter and to provide information on the efficient interconnection of different means of transport. For “Environmental protection and resource efficiency”, objectives such as **shifting traffic to rail** and **interconnecting transport systems** using alternative propulsion systems are important. The dimension “International aspects” lists the main undertakings as being the implementation of the objectives of the European Union Strategy for the Danube Region and the establishment of a Single European Sky (ibid.: p. 69).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. With the creation of a new freight terminal to the east of Vienna, the proposed network modification represents an explicit objective of the GVP. It may therefore have an influence on the achievement of the objectives of the GVP.

Target Network 2025+

The Target Network 2025+ (ÖBB-Infrastruktur AG 2011) forms the comprehensive ÖBB-Infrastruktur AG concept in coordination with the BMVIT. The following three overall objectives are pursued (ibid.: p. 7 et seq.):

- Strengthening the market position
- Increasing economic efficiency
- Further developing safety

Strategies are defined for each of these objectives. Capital expenditures in infrastructure are planned for market segments with demand adequate for the system.

The share of rail freight transport in the comprehensive traffic is to increase sharply (ibid.: p. 11, p. 31). The Güterzentrum Wien Süd (Freight Centre Vienna South) in Inzersdorf is set to be expanded in order to expand the cargo handling capacity (ibid.: p. 9, p. 49).

The **framework plan** of ÖBB-Infrastruktur AG is a financing instrument that is continuously updated. It is used to specify an undertaking portfolio to be implemented. The current framework plan 2018–2023 (BMVIT 2018) contains the specific measures for achieving the objectives:

- Expansion undertakings on the major corridors
- Railway station initiative
- Expansion of freight terminals
- Inventory renovations

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at satisfying a demand for long-distance freight transport and can have an influence on the achievement the overall objective of the Target Network 2025+. The proposed network modification is currently not included as an explicit measure of the Target Network 2025+.

Indicative Railway Infrastructure Strategy

With the **Indicative Railway Infrastructure Strategy** (BMVIT 2017), the BMVIT has implemented Sec. 55 of the 1957 Railway Act (EisBG). It specifies how the railway infrastructure should be designed in order to meet future mobility requirements with regard to the **maintenance, renewal** and **expansion** of the railway infrastructure (BMVIT 2017: p. 15).

The indicative strategy defines three targets:

- Strengthening the market position in intermodal competition
- Efficiently utilising funds
- Reducing negative effects

So as to reach the targets, **intermodal interfaces** should be optimised, sufficient **capacities in freight traffic should be ensured** and **greenhouse gas emissions should be reduced** (ibid.).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at satisfying a demand for long-distance freight transport and can have an influence on the achievement of the overall objective of the Indicative Railway Infrastructure Strategy.

Biodiversity Strategy Austria 2020+

The **Biodiversity Strategy** (BMLFUW 2014a) defines **five fields of action and twelve targets** for preserving and promoting biodiversity and its ecosystem services. Target 11 "*Biodiversity and ecosystem services are taken into account in spatial planning and transport/mobility*" aims, among other things, to significantly increase the ecological permeability for main traffic infrastructure. Measures relevant to transport and mobility are also provided for as part of other targets: **reducing traffic-related emissions** or continuing existing measures that have a positive effect on biodiversity, such as night driving bans or speed limits.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could lead to the impairment of biodiversity and ecosystem services. The proposed network modification concerns the immediate surroundings of the Danube, Lake Neusiedl and the Alps-Carpathians Corridor, which link high-quality living spaces and ecological networks. At the same time, it aims at environmentally friendly long-distance freight transport handling. The proposed network modification may therefore have an influence on the achievement of the objectives of the Biodiversity Strategy.

The Austrian Strategy for Adaptation to Climate Change

The **Austrian Strategy for Adaptation to Climate Change** (BMNT 2017a) was adopted by the Council of Ministers in 2017. The document is the updated version of the 2012 version with the **goal** to take initiatives and measures to mitigate the negative impacts of climate change on the environment, society and the economy. In addition, interfaces between the fields of activity are to be identified in order to avoid possible conflicts during implementation and to raise awareness of the complexity of the issue (ibid.: p. 25).

Ten **guiding principles** serve as a frame of reference along which the various actors can make decisions specific to the situation and regardless of sectors, levels and stakeholders (ibid.: p. 65 et seq.).

The strategy provides recommendations for several subject areas, including "*Facilitating the embedding and connectivity of protected areas and habitats*" (*Ecosystems and biodiversity*) and "*Safeguarding a climate-friendly transportation system*" (*Transportation infrastructure*) (ibid.: p. 132 et seq.). The second part of the adaptation strategy, which comprises the **Action Plan** (BMNT 2017b), contains comprehensive recommendations for action for achieving the objectives described above.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the objectives of Austrian Strategy for Adaptation to Climate Change.

National Flood Risk Management Plan RMP 2015

The **Flood Risk Management Plan** (BMLFUW 2016) was drawn up on the basis of an evaluation of the flood risk for every river basin district (Danube, Rhine, Elbe) and the flood hazard maps and flood risk maps that are based thereon. It sets out **measures** to achieve the following **objectives** (ibid: p. 29):

- Avoiding new risks prior to a flood event
- Reducing existing risks prior to a flood event
- Reducing adverse consequences during and after a flood event
- Strengthening risk and hazard awareness

The measures are assigned to the different fields of action, which are prevention, protection, awareness, preparation and aftercare.

The proposed network modification affects the Danube's immediate surroundings as well as several flood zones of watercourses that flow into the Danube. The proposed network modification may therefore have an influence on the achievement of the objectives of the National Flood Risk Management Plan RMP 2015.

2nd National Water Management Plan

The **National Water Management Plan** (BMLFUW 2015), or **NGP**, is the central overarching document for river basin planning in Austria. It describes the individual river basin districts and estimates their impairment. The framework of the **programme of measures** defines conservation measures, remediation measures and measures to promote water management development. The focus is placed on improving the hydromorphological situation of bodies of water and on reducing substance inputs into surface waters and the groundwater. Furthermore, the plan aims at improving watercourse structures and discharge conditions, for example by linking watercourses.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could lead to the impairment of bodies of water due to construction or operations. The proposed network modification affects the Danube's immediate vicinity as well as several watercourses that flow into the Danube. The proposed network modification may therefore have an influence on the achievement of the objectives of the National Water Management Plan.

Climate and Energy Strategy #mission2030

In the Austrian **Climate and Energy Strategy**, which was adopted in 2018, objectives for climate protection and the sustainable development of the energy system (BMNT 2018) are laid down as part of eight tasks. Among other things, **new infrastructure undertakings** aimed at achieving the climate and energy goals should be supported, the infrastructural capacities on the railways should be maximised by 2030,

and Austria as a **logistics location** should be improved by developing logistics hubs and ensuring that the necessary rail infrastructure is available. The "**New Silk Road**" undertaking should increase ecological processing by rail of the rising volume of goods from Eastern Europe and Asia (ibid.: p. 26 et seq.). The sustainable handling of freight transport logistics is seen as key to achieving climate and energy goals. Among other things, establishing cost transparency should **shift traffic flows to rail** (ibid.: p. 36).

The objectives are concretised with the help of flagship undertakings. Flagship undertaking 1 "Efficient freight transport logistics" defines three objectives (ibid.: p. 56):

- Increase the **competitiveness** of the Austrian freight transport and logistics sector,
- Increase the **attractiveness of Austria as a business location**,
- Safeguard social and environmental **sustainability**.

The negative effects of freight transport are thus to be reduced and the increased demand on traffic to be handled efficiently.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and promoting sustainable logistics in Austria. It may therefore have an influence on the achievement of the objectives of the Climate and Energy Strategy.

4.2.2.2 Slovak Republic

National Regional Development Strategy of the Slovak Republic

The **National Regional Development Strategy** (Ministry of Transport, Construction and Regional Development of the Slovak Republic n.d.) is structured along the **priority areas** human resources, business environment, science, research and innovation, and the environment (ibid.: p. 15 et seq.). For implementation, **measures** are defined along five **basic pillars of implementation** (science, research and innovation; human resources; employment; competitiveness, growth and business environment; environment). For the individual regions of the Slovak Republic, **subgoals** and measures are described for each of these priority areas. For the region around *Bratislava*, the promotion of integrated and ecological transport solutions is planned, among other things (ibid.: p. 55).

The proposed network modification is a part of the comprehensive cross-border undertaking between the Slovak Republic and Austria. The proposed network modification is based on the premise that the extended 1,520 mm route on the Slovak side will lead to the Austrian-Slovak border near Kittsee. The modification of the nationwide high-level transport network thus only has an indirect effect on Slovak national territory. The proposed network modification – as part of the above-mentioned comprehensive undertak-

ing – may therefore have an influence on the achievement of the objectives of the National Regional Development Strategy.

Strategic Development Master Plan of Transport Infrastructure 2020

The **Strategic Development Master Plan of Transport Infrastructure 2020** is the medium-term strategy document for transport infrastructure planning in the Slovak Republic (Ministry of Transport, Construction and Regional Development of the Slovak Republic 2014). The objectives include the provision of integrated and easily accessible **infrastructure** that promotes social inclusion, competitive **transport services** that promote economic growth, **user-friendly transport**, and **environmentally friendly, energy-efficient and safe transport** (p. 94). The reliability of **rail freight transport** is to be improved and the infrastructure prepared for the expected growth in freight traffic (p. 102). If the broad-gauge line to Vienna is extended, the Slovak Republic can expect an increase in the volume of freight traffic; preparations must be made. In general, infrastructure planning should be made more efficient and more ecological. Intermodal transport is to be promoted, e.g. by improving intermodal terminals and logistics centres.

The proposed network modification is a part of the comprehensive cross-border undertaking between the Slovak Republic and Austria. The proposed network modification is based on the premise that the extended 1,520 mm route on the Slovak side will lead to the Austrian-Slovak border near Kittsee. A modification of the nationwide high-level transport network thus only has an indirect effect on Slovak national territory. The proposed network modification – as part of the explicitly mentioned comprehensive undertaking – may therefore have an influence on the achievement of the objectives of the Strategic Development Master Plan of Transport Infrastructure 2020.

Strategic Development Plan for Transport in the Slovak Republic until 2030

The **Strategic Development Plan for Transport in the Slovak Republic until 2030** (Ministry of Transport, Construction and Regional Development of the Slovak Republic 2016) is the long-term strategic document that guides effective development of the transport sector. The vision up to 2030 is a sustainable, integrated, multimodal transport system that meets society's economic, social and environmental needs and contributes to the full integration of the Slovak Republic into the European Economic Area (ibid.: p.3). Various **measures** are envisaged to achieve the overall objectives. For the railway sector, combined transport is to be promoted and the **share of rail freight transport** as well as the **quality** and **environmental friendliness** are to be increased (ibid.: p. 57 et seq.). The modernisation of the railway lines in the *Bratislava* area will also be promoted.

The proposed network modification is a part of the comprehensive cross-border undertaking between the Slovak Republic and Austria. The proposed network modification is based on the premise that the extended 1,520 mm route on the Slovak side will lead to the Austrian-Slovak border near Kittsee. A modification of the nationwide high-level transport network thus only has an indirect effect on Slovak national

territory. The proposed network modification – as part of the mentioned comprehensive undertaking – may therefore have an influence on the achievement of the objectives of the Strategic Development Plan for Transport in the Slovak Republic until 2030.

4.2.2.3 Hungary

National Transport Strategy (NTS)

In 2014, the Hungarian Ministry of National Development presented a revised draft of its **National Transport Strategy** (Hungarian Transport Administration 2014), or **NTS**. According to the requirements of the White Paper on Transport (European Commission 2011b), **targets and measures** were stipulated for 2020, 2030 and 2050. The so-called **social targets** are (ibid.: p. 43 et seq.):

- Reducing negative impacts on the environment, strengthening climate awareness
- Improving health and safety
- Promoting economic efficiency and growth
- Increasing employment
- Improving the well-being and mobility of the population
- Reducing regional disparities
- Improving social justice, fairness
- Embedding certain regions in international economic and mobility cycles

In order to achieve these social targets, traffic goals need to be achieved, which include strengthening means of transport that are more socially equitable, improving infrastructure, developing public transportation and improving transport services.

A modification of the nationwide high-level transport network only indirectly affects Hungarian territory. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the objectives of National Transport Strategy.

4.2.3 STATE LEVEL

4.2.3.1 Burgenland

Regional Development Programme Burgenland – LEP 2011

The **Regional Development Programme Burgenland** (Office of the Burgenland Provincial Government 2012, Austrian State Law Gazette No. 71/2011), or **LEP** 2011, was adopted by the Provincial Govern-

ment of Burgenland as an ordinance in 2011 and is therefore legally binding. In addition to the general objectives of **sustainability**, **preserving the quality of life** and **economic performance**, the 2011 LEP formulates eight principles of spatial development for Burgenland (Sec. 3(1)):

- *"Strengthening regional identities from diversity;*
- *Developing cooperation as added value;*
- *Recognising social diversity as a potential;*
- *Achieving a sustainable use of space with high-quality supply and mobility;*
- *Promoting renewable energy production and creating more efficient human settlement structures;*
- *Using and further developing knowledge and research as economic capital;*
- *Developing cooperation between nature and cultural landscape conservation, agriculture, forestry and tourism;*
- *Sustainably using natural areas."*

With regard to **infrastructure and mobility**, the "*sufficient, environmentally compatible, sustainable and cost-effective mobility of the population and the economy should be guaranteed and improved*" (Sec. 3 no. 2.3.2.1). In addition, connectivity with the surrounding central areas within and outside Austria should be ensured, especially in the rail network. Public transport should be optimised and connections to neighbouring federal states and countries improved: "*Priority is to be given to the development of sustainable means of transport, intelligent forms of mobility and climate-friendly transport systems*" (Sec. 3 no. 2.3.2.2).

The expansion of **renewable energy production facilities** is to be accelerated throughout Burgenland. In North Burgenland, wind power and biomass from agriculture and forests should be promoted in particular. As a basis for the use of wind energy, a **concept for wind power stations** was drawn up on the basis of trans-regional programmes and concepts. It identifies **suitability zones and prohibition zones for wind power stations** based on defined assessment criteria.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Burgenland, it also creates conditions for the future development of the transport sector and regional development in Burgenland. The inclusion of a planned railway in the nationwide high-level transport network can further set the framework for undertakings that conflict with other forms of land use, such as wind power. The proposed network modification may therefore have an influence on the achievement of the objectives of the LEP 2011.

Development Strategy Burgenland 2020

The **Development Strategy Burgenland 2020** is part of the Regional Development Programme Burgenland and was adopted in 2012 (Regional Management Burgenland 2012). Based on five mission strategies, the objectives of the LEP are put into concrete terms and bundled. In order to make a contribution to the Europe 2020 strategy, **CO_2 emissions are to be reduced** and **sustainable development** promoted. As part of the mission strategy "Regional development, economy and locations", **jobs** are to be preserved or created and **flagship companies** to be used **as catalysts** to their full potential. The **employment rate** is to be increased and **economic zones** expanded. **New business locations** are to be promoted in zones with a favourable spatial location and good infrastructure and connections to the trans-regional transport infrastructure. The proposed network modification comprises the route and a terminal.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Burgenland, it also creates conditions for the future development of the transport sector and regional development in Burgenland. The proposed network modification may therefore have an influence on the achievement of the objectives of the Development Strategy Burgenland 2020.

Comprehensive Transport Strategy Burgenland

The **Comprehensive Transport Strategy for Burgenland** (Gesamtverkehrsstrategie Burgenland) (VOR 2014) was adopted in 2014 and replaces the 2002 Comprehensive Transport Concept. The **motto** is **"Achieving more together: Mobility for all people of Burgenland – sustainable – innovative – safe"**. The **guiding principles** are "achievable – sustainable – optimised – together – innovative – safe". The objectives are to be achieved with the aid of monitoring programmes and efficiency testing as well as collaborations with Hungary and in the eastern region. The existence of efficient transport connections is regarded as important for securing location quality and further developing Burgenland as a **business location**. Expansion measures to improve accessibility can be a contributing factor (p. 37). For the **environmentally friendly handling** of freight traffic, i.e. the shift from road to rail, the cooperation of all relevant stakeholders should be strengthened (p. 84). The Comprehensive Transport Strategy also includes a position on the **extension of the 1,520 mm line** – the undertaking on which the proposed network modification is based: "*As things stand, the undertaking has no priority in the eastern region with regard to other already mentioned challenges and tasks arising from transport policies*" (p. 86). The following aspects are relevant for assessing the undertaking: land use, opportunity costs, traffic and environmental impacts, TEN rail network performance, regional economic impacts, suitability of the terminal location and subsidies for financing and operation.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification con-

cerns Burgenland, it also creates conditions for the future development of the transport sector and regional development in Burgenland. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the objectives of the 2020 Comprehensive Transport Strategy for Burgenland.

2030 Future Strategy: Burgenland Programme for the Environment, Nature Conservation and Rural Areas

The **2030 Future Strategy (Zukunftsstrategie 2030)** (Office of the Provincial Government of Burgenland 2015) sets out the long-term guidelines for the state of Burgenland up to 2030. It has four **priority issues**, each of which has its own specific **objectives and strategies** and defines **priority measures**:

- Agriculture and regional food
- Rural area
- Water management
- Classical nature conservation with environmental relevance

As a basis for the use of wind energy in *Burgenland*, a **concept for wind power stations** was drawn up on the basis of trans-regional programmes and concepts. It identifies **suitability zones and prohibition zones for wind power stations** based on defined assessment criteria. This enables the development of towns, secures long-term natural resources, takes tourism and recreational needs into account and keeps the cumulative effect of wind farms in check. In any case, all of this must be considered when implementing the proposed network modification.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that conflict with other forms of land use, such as agricultural production or wind energy, or that concern natural regions and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the 2030 Future Strategy.

2020 Energy Strategy of Burgenland

The **2020 Energy Strategy of Burgenland** (Office of the Provincial Government of Burgenland 2013) defines the **objectives for energy generation and consumption** for the state of Burgenland. The aim is to have at least 50% of the total energy consumption in Burgenland be produced from renewable energy sources by 2020 and to be completely **energy self-sufficient** by 2050.

The following **priorities** have been stipulated (p. 49):

- Energy conservation and energy efficiency
- Energy resources and energy production

- Energy storage & energy conversion, energy logistics

Large **wind power stations** are to be optimised and repowered and existing locations improved. Further specific **suitability zones**, especially for medium-sized wind power stations, are set to be examined (p. 52).

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that conflict with other forms of land use, such as wind power. The proposed network modification may therefore have an influence on the achievement of the objectives of the 2020 Energy Strategy of Burgenland.

4.2.3.2 Lower Austria

Strategy Lower Austria. The Provincial Development Concept

The **Lower Austrian Provincial Development Concept** (Office of the Lower Austria Regional Government 2004), or **Strategy Lower Austria**, is a **mission statement and strategic policy document of provincial development** in *Lower Austria.* As such it has a normative character but is not legally binding. The Strategy Lower Austria defines the following **priority objectives** (ibid.: p. 24):

- *"Equal living conditions for all social groups in all regions*
- *Competitive regions & development of the regional potentials*
- *Sustainable, environmentally compatible and careful management of natural resources*"

In the area of **transport**, the fundamental objectives are avoiding traffic through coordinated settlement development, the shift of traffic to transport modes that cause the least negative impact, and improving traffic from an ecological and safety point of view (ibid.: p. 103 et seq.).

Measures to implement these objectives include expanding combined transport, upgrading international axes and improving intra- and interregional accessibility.

Concrete measures for rail transport include the expansion of the Western Railway, the renovation of the Vienna – Eisenstadt line and the connection to the Trans-European Corridor V, the connection of *Vienna Airport* to the international railway network and the implementation of a regional logistics concept for freight transport (ibid.: p. 105 et seq.).

Business relocations are to be promoted particularly where unemployment is high or the employment rate is low, which is to be achieved, inter alia, by providing hard site factors such as transport connections (ibid.: p. 72 et seq.).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification con-

cerns Lower Austria, it also creates conditions for the future development of the transport sector and regional development in Lower Austria. The proposed network modification may therefore have an influence on the achievement of the objectives of the Lower Austria Provincial Development Concept.

Main Regional Strategy 2024 Industrieviertel Quarter

The Main Regional Strategies (Office of the Lower Austria Regional Government 2014a) set out the main objectives and **fundamental principles for regional development**. Value creation is to increase and the environmental situation and cooperation structures are to be improved by 2024 (ibid.: p. 7). Subgoals and measures are defined along four fields of action (ibid.: p. 16 et seq.):

- Value creation
- Environmental system and renewable energy
- Public service
- Cooperation system

Due to the pronounced economic strength of the Industrieviertel quarter to date, priority is being given to: supporting the spatial development opportunities of businesses, **strengthening business locations**, and making use of the **potential of the workforce** in a targeted manner (ibid.: p. 17). With regard to the environment, the consequences of climate change are to be dealt with, **protected areas** strengthened and connected, and typical **landscapes** secured and preserved (ibid.: p. 19). In addition, **spatial planning and human settlement policies** are to be repositioned (ibid: p. 21) and **cooperation** with various regional authorities strengthened (ibid.: p. 24).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Lower Austria, it also creates conditions for the future development of the transport sector and regional development in Lower Austria. The inclusion of a planned railway in the nationwide high-level transport network can further set the framework for undertakings that conflict with other forms of land use or concern natural regions and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the Main Regional Strategy 2024 Industrieviertel Quarter.

2030+ Lower Austrian Mobility Concept (Mobilitätskonzept Niederösterreich 2030+)

The **2030+ Lower Austrian Mobility Concept** (Office of the Lower Austria Regional Government 2015a), or MK NÖ 2030+, was adopted by the Lower Austria Land Government in 2015. Under the banner **"Secure, design and promote mobility in its diversity"**, it sets targets for the mobility system up to the year 2030 and beyond and describes measures for achieving these targets. The MK NÖ 2030+ defines various **measures** for three different spatial types – city centres, axes and rural areas.

Along the transport axes, **intermodal nodes** for freight traffic are to be created and infrastructure undertakings are to be handled efficiently and in an environmentally friendly manner (ibid.: p. 67). The fields of action for freight traffic include **shifting** long-distance transport to rail and waterways, creating **transport chains** optimised for intermodal use, developing business locations with a **high-level infrastructure** and positioning Lower Austria as a **transport hub** and improving **value creation** in freight traffic (ibid.: p. 90).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Lower Austria, it also creates conditions for the future development of the transport sector in Lower Austria. The proposed network modification may therefore have an influence on the achievement of the objectives of the 2030+ Lower Austrian Mobility Concept.

Lower Austrian Mobility Package 2018-2022 (Mobilitätspaket Niederösterreich)

In the Lower Austrian Mobility Package (Office of the Lower Austria Regional Government 2017a), the key areas of the MK NÖ 2030+ (Lower Austrian Mobility Concept) are further specified with concrete measures. With regard to infrastructure, **road undertakings** along the transport axes or the feeder roads to transport axes are to be expanded, further **Danube crossings** examined and gaps in the **high-level road network to the Czech Republic and Slovakia** examined (ibid.: p. 13). A detailed logistics concept called "Sustainable Logistics 2030+ Lower Austria-Vienna" is currently in the works.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Lower Austria, it also creates conditions for the future development of the transport sector in Lower Austria. The proposed network modification may therefore have an influence on the achievement of the objectives of the Lower Austrian Mobility Package.

Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland)

The **Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland)** (Austrian State Law Gazette 8000/85-0 as amended by Austrian State Law Gazette No. 67/2015) applies to the districts of Baden, Bruck an der Leitha, Mödling and St. Pölten-Land. The following **goals** are stipulated (Section 3):

- *"Adjusting material extraction to medium-term needs, ecological principles and other requirements for use.*
- *Defining green belts and settlement boundaries that separate human settlements from each other in order to secure regional settlement structures and typical landscape features as well as to proactively prevent conflicts of use.*

- *Securing and linking valuable biotopes.*
- *Taking bodies of groundwater relevant for water supply into account.*
- *Ensuring spatial conditions for agriculture and forestry.*"

Measures are defined for natural areas, settlement development and extraction of raw materials. Designations, settlement boundaries, protected areas and the like are mapped out on the plan.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that conflict with other forms of land use, such as settlement development or material extraction, or that concern natural regions and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the Regional Spatial Planning Programme for the Southern Catchment Are of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland).

Lower Austria Energy Roadmap 2030

The **Lower Austria Energy Roadmap 2030** (Office of the Lower Austria Regional Government 2011) is a strategic document for **converting the energy system** in Lower Austria and was adopted by the state parliament, the Lower Austrian *Landtag*, in 2011. The most important **quantitative goals** are (ibid.: p. 7):

- Increasing the share of renewable energy in the final energy demand to 50% by 2020;
- 100% of the final energy demand should come from renewable energy production from Lower Austria by 2050.

The issue of **traffic** (ibid.: p. 16) is of the utmost importance as the dependence on oil is higher than in any other sector. The strategic guidelines intend to reduce the number of journeys taken with motorised, private transport, use more economical vehicles and vehicles with alternative drive systems, and reduce the commuting distance. Furthermore, the aim is to expand and improve the quality of public transportation. Doubling the bicycling share by expanding and creating a nationwide bicycle network and decelerating road traffic and adapting inner city traffic areas to the needs of pedestrians should contribute to a reduction of the energy consumption for transport.

The goal is to reduce **fuel consumption** in the transport sector by 10% by 2020. After 2020 and 2030, the share is supposed to decrease even more, with long-term measures in public transportation as well as the use of electric mobility having had a greater impact by then (ibid.: p. 31).

In order to achieve the energy roadmap goals, zones that allow the erection of wind power stations are defined in the **Ordinance on a Sectoral Spatial Planning Programme on Wind Energy Use in Lower Austria** (Austrian State Law Gazette 8001/1-0).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Lower Austria, it also creates conditions for the future development of the transport sector in Lower Austria. The inclusion of a planned railway in the nationwide high-level transport network can further set the framework for undertakings that conflict with other forms of land use, such as energy generation. The proposed network modification may therefore have an influence on the achievement of the objectives of the Lower Austrian Energy Roadmap 2030.

Lower Austrian Climate and Energy Programme 2020 (Niederösterreichisches Klima- und Energieprogramm 2020)

The **Lower Austrian Climate and Energy Programme 2020 (Niederösterreichisches Klima- und Energieprogramm 2020)** (Office of the Lower Austria Regional Government 2014b) was adopted in 2014 and is not legally binding. The **main objectives** of the strategy consist of the following areas (ibid.: p. 15):

- Increasing energy efficiency and using renewable energy sources
- Climate protection to drive innovation and investments in the future of *Lower Austria*
- Improving the quality of life by means of a sustainable lifestyle

The climate and energy strategy develops concrete **measures** for greenhouse gas emissions not covered by the EU Emissions Trading System, i.e. approx. 60% of all greenhouse gases emitted in *Lower Austria*. Six areas (buildings, mobility and spatial development, the circular economy, agriculture and forestry, the state as a model, energy supply) were defined according to groups of polluters. Measures with **instruments for implementation** are assigned to each subject area.

The following **priorities** have been defined for **mobility and spatial development**:

- Making settlement structures attractive for high-quality facilities and diverse mobility
- Facilitating the transition from cars to the environmental alliance through comfortable walking and biking paths and public transportation networks
- Promoting electromobility in Lower Austria as a valuable contribution to energy efficiency and lowering carbon emissions

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Lower Austria, it also creates conditions for the future development of the transport sector in Lower Austria. The inclusion of a planned railway in the nationwide high-level transport network can further set the framework for undertakings that conflict with other forms of land use, such as energy generation. The proposed network modification may therefore have an influence on the achievement of the objectives of

the Lower Austrian Climate and Energy Programme 2020 (Niederösterreichisches Klima- und Energieprogramm 2020).

Lower Austria Nature Conservation Charter (Naturschutzcharta Niederösterreich)

The **Nature Conservation Charter (Naturschutzcharta)** (Office of the Lower Austria Regional Government 2015b) is the umbrella strategy of the Lower Austria Nature Protection Concept (Naturschutzkonzept Niederösterreich) (Office of the Lower Austria Regional Government 2015c) and defines the principles for and approaches to nature conservation in Lower Austria. **Measures** are defined for the following **subject areas**:

- Intact nature as the basis of life
- Land managers as partners
- Nature and water protection for the safety and good of the people
- Diversity creates added value
- People protect what they know.

This includes **measures** such as the conservation of nature-friendly agriculture and forestry, the creation of attractive tourism compatible with nature for the protected areas, or the increased integration of nature conservation into regional and umbrella spatial planning.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could affect natural regions and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the Lower Austria Nature Conservation Charter (Naturschutzkonzept Niederösterreich).

Lower Austrian Nature Protection Concept

The **Lower Austrian Nature Protection Concept** (Office of the Lower Austria Regional Government 2015c) was prepared in 2015 according to the Lower Austrian Nature Conservation Act 2000 (Austrian State Law Gazette No. 5500-0 as amended by Austrian State Law Gazette No. 111/2015). It defines fundamental **objectives for nature conservation** in *Lower Austria* up to 2020 (ibid.: p. 37):

- Embedding nature conservation objectives in all relevant political fields of action
- Integrating nature conservation into all essential areas and using synergies
- Preserving and promoting biological diversity as the basis for sustainable development in Lower Austria
- Strengthening existing cooperation and involving new partners
- Promoting biodiversity

- Valuing biological diversity and intact nature

For **spatial planning, regional development and mobility** (ibid.: p. 45 et seq.), the main objectives are to further develop sustainably effective regional structures, cooperate with regional institutions and push the dialogue between nature conservation and spatial planning, and promote mobility that is compatible with nature. What is important in this respect is finding a balance between preventing the further fragmentation of natural areas through (trans-regional) transport axes on the one hand and ensuring sufficient (public) transport connections on the other.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could affect natural regions and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the Lower Austrian Nature Protection Concept.

Economic Strategy Lower Austria 2020

The **Economic Strategy Lower Austria 2020** defines the goals for the Lower Austrian economy and the business site Lower Austria on the basis of four core strategies (Office of the Lower Austrian Provincial Government 2014c). The purpose of the core strategy "Sustainable Business Success and Internationalisation" includes **counselling and supporting** "**potential exporters**" and assisting with **site establishment and expansion undertakings**. With the core strategy "Attractive Business Sites", the province of Lower Austria has set itself the goal of promoting **regional flagship undertakings,** including promoting top business establishment and expansion undertakings in this context and improving **location marketing**.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Lower Austria, it also creates conditions for the future development of the transport sector and regional development in Lower Austria. The proposed network modification may therefore have an influence on the achievement of the objectives of the Economic Strategy Lower Austria 2020.

4.2.3.3 Vienna

STEP 2025. Urban Development Plan Vienna

The **Urban Development Plan Vienna** (City of Vienna 2014b), or **STEP 2025**, was approved by the Municipal Council in the summer of 2014. The main priorities consist of eight **flagship initiatives**, which are structured along three **pillars**:

- Vienna: Building the Future – A High-Quality Urban Structure and Multifaceted Urban Life:
  This pillar includes an action plan for making the residential areas that were built in the 1950s to

1970s more attractive, new land mobilisation instruments for urban growth, and a centre concept designed to ensure polycentric urban development with short distances.

- Vienna Reaching Beyond its Borders – Growth and the Knowledge Society are Transforming the Metropolitan Region:
  This pillar comprises a flagship initiative for safeguarding and managing land reserves for commercial areas and the further development of regional and international co-operation structures.
- Vienna: Networking the City – Farsighted, Robust and Viable for Several Generations:
  The third pillar deals with optimising and upgrading public transport and improving the quality of public open spaces.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns the Greater Vienna area, it also creates conditions for the future urban development of Vienna. The proposed network modification may therefore have an influence on the achievement of the objectives of the 2025 Urban Development Plan Vienna.

STEP 2025. Thematic Concept "Mobility"

The **thematic concept "Mobility"** (City of Vienna 2014d) ties in with STEP and takes the **specifications formulated in STEP 2025 further**. It was adopted in December 2014 by the Vienna Municipal Council under the **banner "together on the move"**. Mobility in Vienna should be fair, healthy, compact, eco-friendly, robust and efficient. For **freight transport**, the City of Vienna is prioritising **railway and waterway transport**. In agreement with the state of *Lower Austria*, the freight terminal of Inzersdorf is being further developed, as is the port of Vienna as a trimodal logistics centre (ibid.: p. 78).

The clear commitment of the **federal states** of Burgenland, Lower Austria and Vienna **to cooperate with one another** is also laid down in the thematic concept "Mobility". The aim is to shift freight traffic to rail for the entire eastern region: a longer-term plan of action is set to be developed jointly with all parties involved (ibid.: p. 102).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns the Greater Vienna area, it also creates conditions for the future development of the traffic sector in Vienna. The proposed network modification may therefore have an influence on the achievement of the objectives of the thematic concept "Mobility".

STEP 2025. Thematic Concept "Green and Open Spaces"

The **thematic concept "Green and Open Spaces"** (City of Vienna 2014c) **elaborates on STEP 2025** and defines the **strategies for the development of green and open spaces**. It defines twelve different **types of open space** and specifies specific **measures** for each. The ecological, economic and social

significance of these spaces are taken into account. For the green and open spaces in the urban environs, the goal is to develop the landscape together with the surrounding municipalities and states and to generate added value through networking with the environs.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could affect open spaces and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the thematic concept "Green and Open Spaces".

STEP 2025. Thematic Concept "Productive City"

The thematic concept "Productive City" (City of Vienna 2017) defines the goals for strengthening and integrating the **producing sector** into the urban fabric and the Viennese economy. The aim is to strengthen Vienna as a **business location**. Contrary to the trends of the last decades, the goal is now to successfully integrate the producing sector into the city in the future. Within Vienna, business zones with different characters are located across the map.

Developing Vienna as a business location should go hand in hand with the environs. To this end, **cooperation** between the Province of Lower Austria and its environs is to be strengthened: "*On the basis of the long-term expansion planning of the transport infrastructure, economic and business settlement strategies that transcend city boundaries are to be prepared and implemented in suitable areas together with actors willing to cooperate"*. (ibid.: p. 103) Within the Greater Vienna area, viable cooperation structures are to be strengthened in order to keep the overall location attractive for businesses.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns the Greater Vienna area, it also creates conditions for the future urban development of Vienna. The proposed network modification may therefore have an influence on the achievement of the objectives of the thematic concept "Productive City".

Smart City Framework Strategy

The Smart City framework strategy (City of Vienna 2014a) outlines the development of Vienna into a Smart City by the year 2050. It serves as a guide for other thematic strategies such as STEP 2025. It pursues the following objectives:

- Radical resource preservation
- "Innovation leader" due to top-end research, a strong economy and education
- Maintain quality of life at the current superlative level

Vienna is to remain one of the ten European regions with the highest purchasing power based on per-capita GDP, is to further strengthen its position as the preferred company headquarters city and is to increase the number of enterprises that are set up (ibid.: p. 36). Greenhouse gas emissions are planned to be reduced by 80% below 1990 levels by 2050.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns the Greater Vienna area, it also creates conditions for the future urban development of Vienna. The proposed network modification may therefore have an influence on the achievement of the objectives of the Smart City Framework Strategy.

City of Vienna's Climate Protection Programme. Update 2010–2020 (KliP II)

The **Climate Protection Programme** (City of Vienna 2009) lays down targets and measures to reduce greenhouse gas emissions per capita in Vienna. Measures have been defined for the following **fields of action**:

- Energy production
- Use of energy
- Mobility and city structure
- Procurement, waste management, agriculture and forestry, nature conservation
- Public relations

The field of action "Mobility and city structure" is to reduce, both directly and indirectly, **greenhouse gas emissions** generated by transport. This is to be achieved by avoiding traffic, shifting traffic to environmentally friendly means of transport and increasing efficiency (ibid.: p. 88). The expansion of the environmental alliance is also envisaged at the regional level: the **"Regional Cooperation" programme of measures** includes creating financial incentives for regional cooperation, establishing regional bus corridors, making the transport network more attractive or establishing cross-border connections for public transportation in the centrope region (ibid.: p. 106 et seq.).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. The proposed network modification aims at an environmentally friendly handling of long-distance freight transport and may therefore have an influence on the achievement of the City of Vienna's Climate Protection Programme.

Vienna Location Agreement 2018

In 2018, the City of Vienna, together with the Vienna branch of the Federation of Austrian Industries (Industriellenvereinigung Wien), signed a **location agreement** entitled "Industry and Economy in the City"

(City of Vienna, Industriellenvereinigung Wien 2018). The aim is to maintain the **competitiveness and quality of life of the work and business location** through joint efforts and to thus strengthen the business location.

In addition to general goals to strengthen freight traffic, the **extension of the 1,520 mm rail network** into the Vienna area is also highlighted (ibid.: p. 19). This is expected to **boost trade** with Asia and Russia. The construction of a new logistics terminal is aimed at boosting a "**green logistics chain**" from which freight traffic can be largely shifted to railways and waterways. Vienna is generally regarded as a suitable industrial location due to its high concentration of different infrastructure.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns the Greater Vienna area, it also creates conditions for the future urban development of Vienna. With the extension of the 1,520 mm gauge network into the Vienna area, the proposed network modification represents an explicit objective of the Vienna Location Agreement. The proposed network modification may therefore have an influence on the achievement of the objectives of the Vienna Location Agreement.

4.2.4 TRANS-NATIONAL AND TRANS-PROVINCIAL COLLABORATIONS

Centrope Strategy 2013+

The **Central European Region** (centrope) (centrope Agency 2012b) consists of neighbouring regions in Austria, the Czech Republic, Slovakia and Hungary. The region comprises a population of around 7.2 million and intends to grow into a **common economic area**. The strategy is particularly concerned with further strategic support of research and innovation, together with the strengthening of human capital, spatial integration as well as culture and tourism.

The item "spatial concentration" aims at offering dense and efficient services in cross-border public transportation. The intention is to provide commuters high-quality cross-border public transportation services (ibid.: p. 21). A **centrope mobility management** system will also be established, the activities of which will entail the monitoring of traffic development, agenda-setting, the initiation of new implementation partnerships, multilateral knowledge management, political co-ordination and other cross-border mobility centre functions.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns a part of the Central European Region (centrope), it also creates conditions for the future development of the transport sector in this region. The proposed network modification may therefore have an influence on the achievement of the objectives of the centrope Strategy 2013+.

centrope Infrastructure Needs Assessment. Infrastructure & Transport Development – From Strategy to Action

The **Infrastructure Needs Assessment Tool (INAT)** was developed as part of the centrope capacity pilot undertaking (centrope Agency 2012a). As part of the Mapping Report, a comprehensive analysis on the **state of infrastructure development** was carried out and shortcomings and future demands were defined. The "Strategic Framework for Transport and Infrastructure Development in centrope" represents the common answer to the needs thus identified. Main points of the politically agreed Strategic Framework include: (ibid.: p. 4):

- "Vision 2030" for main rail and road networks in centrope
- Implementation and upgrading of various regional cross-border connections
- Strategic development of the Danube as an important transport axis, further capacity enhancement of the centrope airport system
- Development of integrated cross-border public transport services
- The implementation of a multimodal and multi-lingual traffic information system
- The development of joint cross-border planning instruments, centrope traffic model, a market analysis and mobility surveys

To support the implementation of the adopted Strategic Framework, new **coordination structures** are proposed. The goals and specifications must be considered when implementing the proposed network modification.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns a part of the Central European Region (centrope), it also creates conditions for the future development of the transport sector in this region. The proposed network modification may therefore have an influence on the achievement of the objectives of the Infrastructure Needs Assessment Tool.

Strategic Framework for Transport and Infrastructure Development in centrope

Building on **INAT**, a **Strategic Framework for Transport and Infrastructure Development** in centrope (centrope Agency 2012c) was developed. The document adopted by the cities and regions participating in centrope defined **objectives and principles** for joint infrastructure development (ibid.: p. 4):

- *"Strengthening competitiveness by improving international accessibility, expanding intraregional connections and strengthening the node function in the European context [...]*
- *Sustainable mobility through the development of public transportation, the establishment of traffic information and management systems and the efficient and environmentally friendly management of freight transport [...]*

- *Development of a biosphere growth region with comprehensive protection of the climate, water, soil, air and nature as well as low resource consumption [...]*
- *Compact settlement structures, conservation of land when building land and coordination of spatial and transport planning [...]*"

Moreover, joint **visions for a high-level rail and road network** have been developed, which should serve as a basis for future development.

Further **priorities** are the expansion of regional cross-border rail and road connections as well as trans-regional bike path connections and cross-border public transportation. The aim is to better connect the trans-regional airports in Vienna and Bratislava and make use of synergies between the airports. The use of the Danube waterway is to be promoted. The infrastructure development measures are to be supported by the development of a multilingual multimodal traffic information system and the development of cross-border planning instruments. The **feasibility and appropriateness** of extending the 1,520 mm rail network into the *Vienna* area for the centrope region must be examined (ibid.: p. 15).

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns a part of the Central European Region (centrope), it also creates conditions for the future development of the transport sector in this region. With the extension of the 1,520 mm rail network into the *Vienna* area, the proposed network modification represents the explicit content of the Strategic Framework for Transport and Infrastructure Development. The proposed network modification may therefore have an influence on the achievement of the objectives of the Strategic Framework for Transport and Infrastructure Development.

Interreg V-A Slovakia – Austria 2014–2020

INTERREG Va fosters cross-border, transnational and interregional cooperation. The undertaking partners agreed the following **priorities** in the **cross-border Cooperation Programme Slovakia – Austria 2014 – 2020** (Joint Technical Secretariat, European Territorial Cooperation Slovakia - Austria 2019):

- Contributing to a smart cross-border region
- Fostering natural and cultural heritage and biodiversity
- Supporting sustainable transport solutions
- Strengthening cross-border governance and institutional cooperation
- Technical assistance

Supporting sustainable transport solutions requires **the improvement of regional accessibility** by developing environmentally friendly transport solutions and boosting joint planning, coordination as well as

practical solutions in order to guarantee an environmentally friendly, low-carbon and safe transport system in the programme regions.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns the area bordering Slovakia, it also creates conditions for the future development of the traffic sector in the cross-border region. The proposed network modification may therefore have an influence on the achievement of the objectives of the cross-border Cooperation Programme Slovakia – Austria 2014 – 2020.

Interreg V-A Hungary – Austria 2014-2020

Cross-border Cooperation Programme Hungary – Austria 2014–2020 (Joint Technical Secretariat, European Territorial Cooperation Hungary - Austria 2019) comprises the NUTS 3 regions North, Central and South Burgenland, Vienna, Wiener Umland-Südteil (Vienna southern surrounding area), Lower Austria south, Graz and Eastern Styria, Győr-Moson-Sopron, Vas and Zala. The programme will focus on the following **priorities** (ibid.: p. 30 et seq.):

- Enhancing the competitiveness of SME
- Protecting the environment and promoting resource efficiency
- Promoting sustainable transport and removing bottlenecks in key network infrastructure
- Enhancing institutional capacity and an efficient public administration
- Technical assistance

Promoting sustainable transport solutions requires low-priority transport nodes including multimodal nodes to be connected to the TEN transport network so as to improve regional mobility. In particular, cross-border connections are to be improved.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns the area bordering Hungary, it also creates conditions for the future development of the traffic sector in the cross-border region. The proposed network modification may therefore have an influence on the achievement of the objectives of the cross-border Cooperation Programme Hungary – Austria 2014–2020.

KOBRA – Urban Regional Cooperation Bratislava

KOBRA is a strategic target document aimed at involving the Austrian border municipalities in the immediate vicinity of Bratislava more closely (PGO 2008). The aim is to prepare the municipalities in their role as hinterland municipalities of Bratislava. Based on the results of the predecessor undertakings KOBRA

and KOBRA+, the **plan for open space, recreation and tourism** (PGO 2008) was developed as a basis for future cooperation between the urban and regional areas. The framework of this plan is the region's bicycle path network. A landscape corridor will improve the attractiveness of residential areas on both sides of the border. The plan is intended to combine the potentials of the region and draw attention to quality of life in the border region that have not yet been taken into account. A joint platform of the City of Bratislava and the Austrian hinterland municipalities is sought to ensure the ongoing coordination in matters of urban development and is further expanding the cooperation between the urban and regional areas with the support of the EU.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that conflict with other forms of land use, such as for leisure and recreation. The proposed network modification may therefore have an influence on the achievement of the objectives of the spatial development concept of the plan for open space, recreation and tourism.

Action Plan for Safeguarding the Alps-Carpathians Corridor

The Alps-Carpathians Corridor is the wildlife corridor between the eastern foothills of the Alps and the western part of the Carpathians. The action plan for the protection of this corridor describes the objectives and measures for securing and restoring the corridor by 2022 (Weinviertel Quarter Management 2014). The aim is to safeguard and conserve biological diversity. The pursued objectives include the following:

- Consistent design of roads and railway lines
- Avoiding additional fragmentation
- Embedding the Alps-Carpathians Corridor in spatial planning instruments

These objectives can be achieved through coordinated communication, awareness-raising and monitoring.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could affect natural regions and landscapes worthy of protection. The proposed network modification concerns the area or surroundings of the Alps-Carpathian Corridor. The proposed network modification may therefore have an influence on the achievement of the objectives of the Action Plan for safeguarding the Alps-Carpathians Corridor. (cf. Chapter 7.2.3).

BAUM Spatial Development Concept

A **spatial development concept** exists for 14 Austrian municipalities in the area around Bratislava (Regional Management Lower Austria, Regionalmanagement Burgenland GmbH 2014). The intentions of the coordinated regional development were formulated for the issues of population and locations, settlement development, nature and environment, green spaces and open spaces, transport and mobility as well as hydrology and flood protection. The expansion possibilities of the settlement areas are to be ensured

while protecting natural areas and taking into account the defined leading functions for the natural area in national and international planning (ibid.: p. 9). The aim is to examine and design the ring-shaped road connection around Bratislava while ensuring the expansion areas of the bordering municipalities and closing the gap in the Wolfsthal – Petržalka rail connection (ibid.: p. 10).

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that conflict with other forms of land use, such as settlement development or natural regions and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the spatial development concept for the area around Bratislava.

Urban Region + Interim Report

In its **interim report** (PGO 2011), the Planungsgemeinschaft Ost (PGO, Planning Association East) – the cooperation platform of the federal states of Vienna, Lower Austria and Burgenland – lays down the common vision of the region. The **objectives** include (ibid.: p. 48 et seq.):

- Focussing the expansion of regional development centres/locations at intersections of the high-level rail and road network
- Creating a balance between the region's resident population and its job opportunities and reducing commuting traffic
- Preserving and connecting regional green and wildlife corridors

In order to achieve the goals, **cooperation between the state and municipalities** will be strengthened and region-specific conditions will be taken into account more strongly during planning covering multiple regions. In location planning and development – especially with regard to the importance of competitive locations that span the region – inter-municipal forms of cooperation are promoted more strongly (ibid.: p. 51). These specifications must be considered when implementing the proposed network modification.

The change to the nationwide high-level transport network will create prerequisites for the future development of the transport sector in Austria in all of Europe. Since the proposed network modification concerns Burgenland, Lower Austria and the Greater Vienna area, it also creates conditions for the future development of the transport sector and city and regional development in the eastern region. The proposed network modification may therefore have an influence on the achievement of the objectives of the urban region + interim report.

Vienna Airport Region

The Vienna Airport Region is a platform that consistsof the Vienna International Airport and seven surrounding municipalities: Enzersdorf an der Fischa, Fischamend, Klein-Neusiedl, Rauchenwarth, Schwadorf, Schwechat and Zwölfaxing. The goal is to holistically develop and showcase the region as a

sustainable business and residential location (Vienna Airport Region n.d.). To this end, regional and international **location marketing** will be intensified and **Vienna Airport used as** a vehicle for advertising. The goal is also to improve accessibility and mobility and integrate nature and ecology. An Internet-based location information system and a marketing platform were developed with a view to achieving these goals.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that conflict with other forms of land use, such as settlement development or natural regions and landscapes worthy of protection. The proposed network modification may therefore have an influence on the achievement of the objectives of the Vienna Airport Region.

Strategy Paper of the Austrian Nature Parks (Strategiepapier der Österreichischen Naturparke)

The Austrian nature parks merged to become the Association of Austrian Nature Parks (VNÖ) in 1995. The qualitative development of the nature parks and the implementation of joint marketing undertakings are a central mission. The following objectives are being pursued (cf. Association of Austrian Nature Parks (n.d.)):

- Protecting natural areas through sustainable use
- Providing recreational facilities
- Education
- Boosting regional development

This also intends to strengthen the position of nature parks in nature conservation legislation.

The inclusion of a planned railway in the nationwide high-level transport network can set the framework for undertakings that could affect nature parks. The proposed network modification may therefore have an influence on the achievement of the objectives of the Strategy Paper of the Austrian Nature Parks.

4.3 ENVIRONMENTAL PROTECTION OBJECTIVES

The **environmental protection objectives** are derived from the relevant **plans and programmes** at the international, national and provincial level (cf. Chapter 4.2) as well as from **legally entrenched provisions** and **specific objectives from the statement on sensitivity** in the specific narrow investigation area (cf. Chapter 7.2).

In accordance with the requirements of the SP-V guidelines, the **environmental objectives** are **thematically assigned** in Chapter 7.2.

4.4 OBJECTIVES PURSUANT TO SEC. 5(4) OF THE FEDERAL LAW ON THE STRATEGIC ASSESSMENT IN THE TRANSPORT SECTOR (SP-V LAW)

The proposal of the network modification complies with the objectives pursuant to Sec. 5(4) of the **SP-V Law**:

"a) Ensuring sustainable passenger and freight transport in the best socially acceptable conditions with a view to safety;

b) Realising the objectives of the European Community, in particular as part of delivering a European transport network and achieving competition;

(c) Ensuring a high level of environmental protection by integrating environmental considerations;

(d) Strengthening economic and social cohesion in Austria and in the Community;

(e) Providing a high-quality transport infrastructure under the best economically viable conditions;

(f) Preserving the comparative advantages of all modes of transport;

(g) Ensuring that existing capacity is optimally used;

(h) Attaining interoperability and intermodality within and between the different modes of transport;

(i) Achieving the highest possible economic cost-benefit ratio;

(j) Building a connection to the transport infrastructure network of neighbouring countries while promoting interoperability and access to these networks."

Evidence that the objectives were considered is provided as part of the description of the methodological approach in Chapter 5.3.1 and in Table 23.

5

METHODOLOGICAL SPECIFICATIONS

The methodology is specified for the environmental report, in which the investigation is clearly defined in terms of time, space and content. The likely significant effect of the network modification are collected, described and assessed according to a transparent scheme and using mostly quantitative methods.

5 METHODOLOGICAL SPECIFICATIONS

5.1 SYSTEM DELIMITATION

5.1.1 SPATIAL DELIMITATION OF THE INVESTIGATION FRAMEWORK

The **spatial delimitation** of the investigation framework distinguishes between a functional investigation area and a narrow investigation area. That takes into account the fact that the proposed network modification will have both indirect effects as a result of the railway network extension and direct effects as a result of the realisation of the planned railway.

The **functional investigation area** is defined as the area on which the proposed network modification can have a traffic-related impact (cf. Figure 6, plan folder). For this area, **indirect (environmental) impacts** resulting from the network modification are considered (such as economic and social effects, climate effects).

The functional investigation area is primarily **concerned with network reference** and comprises the part of the high-level transport network for which the proposed network modification may result in relevant **transport-related functional changes**. This applies to the Austrian network east of the Salzburg/Villach line, the entire Slovak transport infrastructure network and the Hungarian transport infrastructure network north of the Mediterranean Corridor.

The **narrow investigation area** is defined as the area on which undertakings resulting from the network modification can have a physical impact (cf. Figure 7, plan folder). For this area, **direct (environmental) impacts** are considered that can be expected when implementing concrete railway construction undertakings including freight terminals (e.g. land use, barrier effect, crossing of ecologically sensitive river courses, noise pollution at defined nodes).

The narrow investigation area is primarily **concerned with spatial reference** and comprises the part of the Austrian national territory in which concrete **railway construction undertakings** can be **reasonably implemented** on the basis of the targeted High Performance Regulation (HL-VO). Since the proposed network modification concerns a **planned railway**, a new construction undertaking is to be expected in this area.

The **border crossing point to the Slovakian part of the overall undertaking** is defined for south of the Danube, on the Austrian-Slovakian border. Thus, the narrow investigation area is delineated by the **Danube (incl. Danube floodplains) in the north**, the **national border to Slovakia and to Hungary in the east** as well as the **northern Lake Neusiedl area and the Leitha Mountains in the south**. Burgenland south of the Leitha Mountains is not part of the narrow investigation area as there are no high-level net-

work components of the TEN-T core network with which the 1,520 mm network, which is stipulated as an objective, could be linked.

Vis-à-vis Vienna, the **Donaulände Railway/S1 Vienna Outer Ring Expressway** system marks the functional boundary of the narrow investigation area. In the west, the investigation area closes with the **Eastern Railway or the Gramatneusiedl-Wampersdorf line** as the requirement for integration into the high-level rail network can already be met, and there is no need for continuing the line to the west – also with regard to resource conservation.

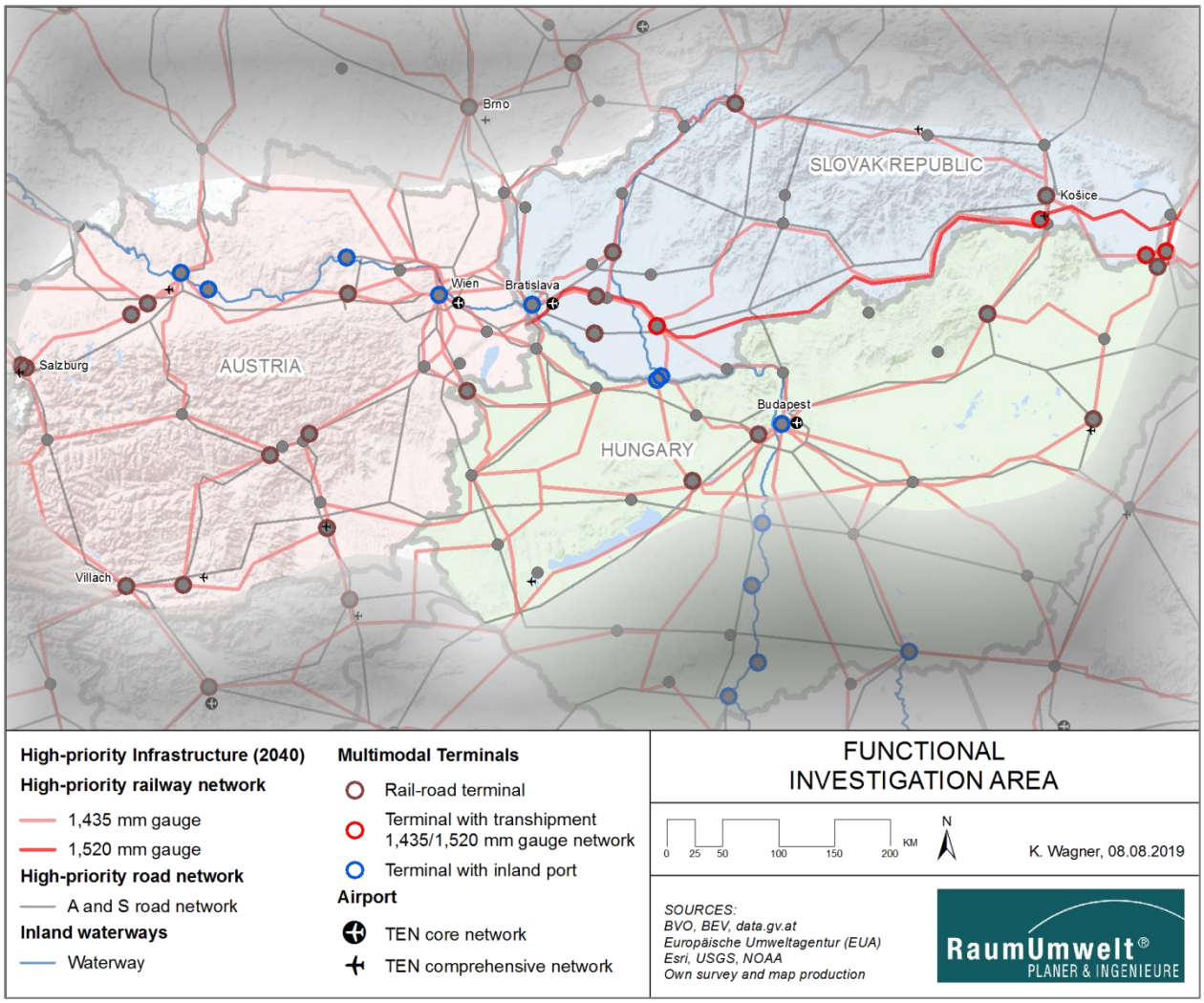


Figure 6: High-level transport network in the functional investigation area in the year 2040 (own illustration)

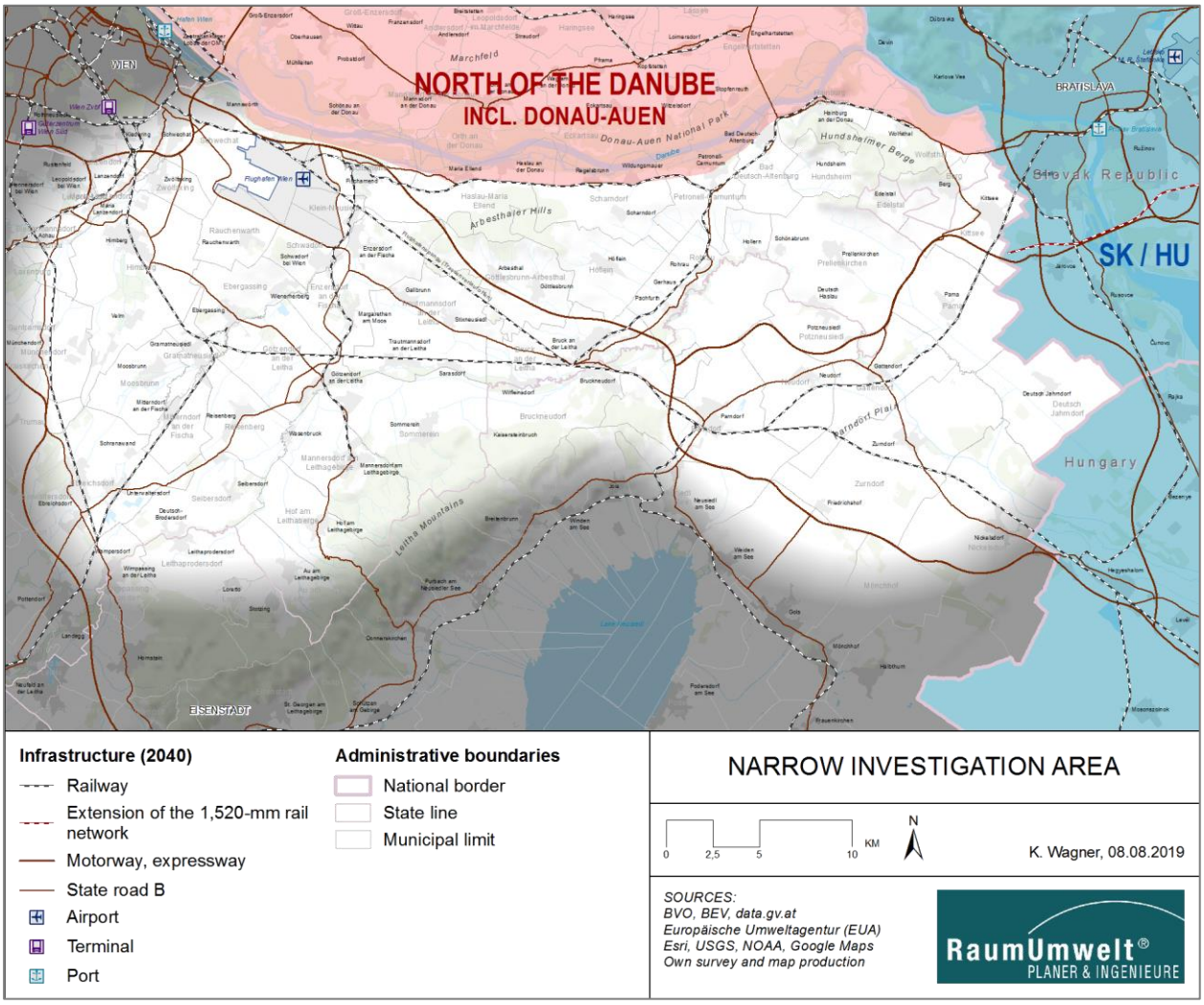


Figure 7: Narrow investigation area east of Vienna (own illustration)

5.1.2 TEMPORAL DELIMITATION OF THE INVESTIGATION FRAMEWORK

The **temporal delimitation** of the investigation framework is based on the planned railway's expected **commissioning and its effectiveness on traffic**. Currently, the Košice-Vienna railway corridor and terminals are scheduled to be commissioned in 2033. As the full effectiveness on traffic depends not only on the implementation of the planned railway but also on the development of the infrastructure in the functional investigation area, a **sufficiently broad time horizon** is chosen.

In **Austria**, rail undertakings that are necessary for the planned railway's full effectiveness on traffic are planned in the **Target Network 2025+**. At the European level, the **TEN-T core network** is set to be in place by **2030** and its full effectiveness on traffic will take several years to achieve.

The BMVIT's **overall traffic forecast**, which is currently being prepared, defines a forecast horizon for the year **2040**. In terms of the planned railway, this forecast horizon also seems realistic for estimating the full effectiveness on traffic.

With that in mind, the **temporal delimitation of the investigation framework** is limited to the year **2040**.

5.1.3 CONTENT DELIMITATION OF THE INVESTIGATION FRAMEWORK

The **content delimitation** of the investigation framework primarily comprises definitions with regard to the **transport system** that is to be considered[5]. The first step defines which **modes and types of transport** are relevant for the analysis and to what extent. In a second step, assumptions are made as to how the transport system will develop up to the temporal forecast horizon (cf. Chapter 5.1.2).

Rail and **road** are primarily considered as the **transport modes**. The former is the direct subject-matter of the proposed network modification, while the latter is very closely related to rail as a transport mode. For road as a transport mode, a full consideration is given above all to onward movement and transloading. **Inland waterways** and air traffic are considered insofar as they are related to the proposed network modification. Both modes and types of transport concern a different form of cargo handling (bulk freight, high-quality consumer goods) and thus only have a very limited direct potential of being linked with the proposed network modification. Nevertheless, both modes and types of transport are treated as parts of the multimodal Vienna/Bratislava logistics area.

Non-motorised traffic is excluded from the analysis as it has no significance within the high-level transport network.

The **general socio-economic development**, which is closely related to transport development, cannot be reliably assessed in detail in view of the forecast horizon lying far in the future (cf. Chapter 5.1.2). In principle, however, it is assumed that there will be an almost stable development, which is reflected in the **functional investigation area** as follows:

- Economic integration in the Central and Eastern European countries is progressing at moderate growth rates.
- The economic system continues to be increasingly knowledge-based, with a specialised production of goods and unchanged demand for raw materials.
- The population of conurbations is growing, while peripheral areas are stagnating in terms of population trends and economic development.

In the Environmental Report, these very general assumptions on socio-economic development are backed by forecasts.

[5] In principle, these specifications are part of the description of the relevant aspects of the current state of the environment and the likely evolution thereof within the meaning of Sec. 6(2)(4) of the SP-V Law, which is included in the Environmental Report at the relevant place. However, in order to consult the other initiators within the meaning of Sec. 1(6) who are directly concerned with the development of the transport system in a target-oriented manner during the scoping process, these specifications are appropriately addressed in the scoping document as part of the content delimitation of the investigation framework. This issue is therefore dealt with separately in Chapter 6.

These assumptions are also reflected in the **narrow investigation area**. As such, it is assumed that urban pressure will continue to increase east of Vienna. One distinctive feature in the narrow investigation area is the great potential of the space that can be used for wind energy production, which is represented to a particularly large extent.

The overall content is in accordance with the **SP-V guideline** (BMVIT 2018), ensuring that all relevant **subject areas** of this guideline are addressed. Accordingly, the focus on qualitative assessment methods is chosen for the impact assessment. This recommendation is also formulated in the **Handbook on Strategic Environmental Assessment** (Institute for Technology Assessment of the Austrian Academy of Sciences 2013: 2–29):

> *"At SEA level, data availability is often uncertain. Therefore, qualitative assessment methods, such as the verbal-argumentative description of the advantages and disadvantages of alternatives, impacts and cause-effect relationships, are particularly suitable. Quantitative calculation models must be treated with caution at the SEA level due to the high planning level and the associated forecast uncertainties (attention must be paid to false precision) – even if it is tempting to produce as many numerical results as possible."*

Thus, the chosen method is the one that provides greater clarity and more details and transparent **statements** with regard to content at a reasonable **cost**.

Due to the inevitable need to focus on qualitative evaluation methods, a **macroeconomic review of the appropriateness** is not completely possible – this also corresponds to the requirements of the SP-V guideline (BMVIT 2018). However, **preliminary economic investigations** already exist, some of which also relate to Austria and are quoted on a selective basis.

The content delimitation of the investigation framework – especially with regard to the general account of the **environmental conditions** as well as the **impact assessment** – is made in Chapter 5. Based on the SP-V Law and the requirements of the SP-V guidelines, relevant specifications for the Environmental Report are made therein.

5.2 METHODOLOGICAL APPROACH FOR PRESENTING ENVIRONMENTAL CONDITIONS

5.2.1 PROCEDURE FOR PRESENTING ENVIRONMENTAL CONDITIONS

The **environmental conditions** (state of the environment, environmental characteristics, environmental problems and environmental protection objectives) are presented separately for the functional investigation area and the narrow investigation area in accordance with the differentiated spatial delimitation of the

investigation framework (cf. Chapter 5.1.1). This is in accordance with the assumption that the likely significant effects in these two spatial types differ significantly in terms of their nature (cf. Chapter 9.1).

In the **functional investigation area**, aspects are primarily addressed that have **no** or only **little concrete spatial reference** with regard to the expected impact. These include aspects such as

- the **population** and the **economic area**,
- transport interdependencies, TEN-T developments, and
- the **traffic situation** and **developments in freight transport**.

Priority will be given to those objectives that have a general connection with sustainable or future-oriented **development of the comprehensive transport system**.

The **narrow investigation area** deals with those aspects that have a fundamental **sensitivity towards track infrastructure undertakings**. Due to the size of the narrow investigation area, the environmental conditions are presented on a spatially **abstract level**, e.g. on the basis of designated protected areas. The aspects concerned (based on Sec. 6(2)(8) of the SP-V Law) are **thematically** summarised as **subject areas**:

- **Human settlements and economic areas**
  - Population (population trends and human settlement trends, the regional economic fabric)
  - Material assets[6]
  - Cultural assets and heritage
- **People and health**
  - Human health
  - Noise and air
  - Climate factors
- **Nature and landscape**
  - Biological diversity, fauna and flora
  - Landscape
- **Water, soil and land use**
  - Water (ground and surface water)
  - Soil and surface area
  - Land use

[6] The term "material assets" in the Environmental Report covers only high-level infrastructure.

In the narrow investigation area, those objectives are primarily considered that are related to the **development and preservation** of the aforementioned aspects in a **concrete spatial context**. The **environmental protection objectives** are derived on the basis of the relevant plans and programmes, the legally entrenched provisions with and without a concrete spatial reference (e.g. ordered conservation objectives of protected areas) and on the basis of the statement on sensitivity in the narrow investigation area.

For **determining** the environmental conditions, **written sources** are used as a basis both in the functional investigation area and in the narrow investigation area.

The **development of the current state of the environment** – especially those aspects that do not concern the evolution of the high-level transport system – is presented where foreseeable. This especially applies to **general spatial development**, the presentation of which is based on legal foundations, strategies and other relevant plans and programmes (cf. Chapter 3).

The information obtained is **prepared** separately for the functional investigation area and the narrow investigation area:

- In the **functional investigation area**, the information is primarily presented as **text**, supplemented by tables or graphically prepared data, where necessary.
- In the **narrow investigation area**, the spatial information – e.g. on protected areas – is primarily **mapped out**, also indicating **space resistivity**. The translation into space resistivity is carried out on the basis of comprehensibly presented **assumptions of sensitivity** with regard to linear railway infrastructure (track systems of the railway line) and areal railway infrastructure (terminal). Space resistivity can be **aggregated** in a next step, whereby a spatial view of the entire narrow investigation area arises that corresponds to the planning stage. Explanatory information is presented as text.

The information thus prepared forms the **basis** for identifying, describing and assessing the likely significant effects (cf. Chapter 9).

Graphic representations of the examined topics and the space resistivity derived from them can also be found in the **plan folder** that is attached to the Environmental Report.

5.2.2 PROCEDURE FOR DETERMINING SPACE RESISTIVITY

Within the narrow investigation area, a large amount of **spatial information** is collected for presenting the environmental conditions (cf. Chapter 7.2). This information is attached to the Environmental Report in the form of a plan (cf. plan folder) for the following subject areas:

- Human settlements and infrastructure
- Nature and landscape conservation

- Habitat connectivity
- Types of cultural landscapes
- Water
- Soil and land use

The analysed **spatial structures differ in their sensitivity** towards the effects of railway infrastructure and demonstrate a **varying spatial suitability** for implementing such undertakings. Moreover, the topographical conditions are presented as spatial information.

This proposal for a network modification sets the framework for both a **terminal** and a **railway line** connecting this terminal to the 1,520 mm gauge network in Slovakia. To classify the sensitivity or suitability of the spatial structures, a distinction is therefore made in this case between sensitivity or suitability for a widespread terminal on the one hand and for a linear track route on the other. Finally, the possible effects of **areal railway infrastructure** differ significantly from the possible effects of **linear railway infrastructure**: while, for example, a crossing over a watercourse via railway lines can be implemented in a manner compatible with the environment with man-made structures, the widespread use of a body of water would mean its destruction.

In order to illustrate the different effects in the space resistivity analysis, **two classification systems** – one for areal and one for linear railway infrastructure – are applied.

The sensitivity primarily stems from **competing use of space** or **various protections**. Suitability usually depends on physical and topographical conditions. This results in different **space resistivity** that can be clearly named as the result of a rough review. In order to visualise these space resistivity, they are **categorised** (cf. Table 1).

Space Resistivity Category	Definition
Very high	Considerable sensitivity to the effects of areal/linear railway infrastructure undertakings and thus an impediment to receiving approval. This concerns a situation that could prevent the undertaking from being approved, usually because of a legally binding standard requiring substantial reasons that speak for the undertaking.
High	Considerable sensitivity to the effects of areal/linear railway infrastructure undertakings and very relevant to the decision-making process when weighing all aspects. This concerns a situation that is based on legal or sublegal standards, regional planning or expert assessments of environmental quality targets.
Medium	Sensitivity to the effects of areal/linear railway infrastructure undertakings and relevant to the decision-making process to a limited extent. This concerns a situation that does not have to be derived from legal standards or other binding requirements but which is taken into account when weighing the pros and cons of a location.
Low to very low	All remaining spaces in the narrow investigation area that are not covered by an area of the very high to medium space resistivity categories.

Table 1: Definition of space resistivity categories (own preparation)

According to this classification, the analysed spatial information is assigned to the various **space resistivity categories** and **clustered according to subject area** (cf. Chapter 7.3), each separately for areal or linear railway infrastructure. In order to improve **operational practicability** and **visualisation**, subject areas from the environmental conditions presentation are brought together or separated.

The space resistivity derived from the state of the environment are first presented for **each subject area** and then – separated by linear and areal railway infrastructure – mapped out in **aggregated** form (cf. Figure 8).

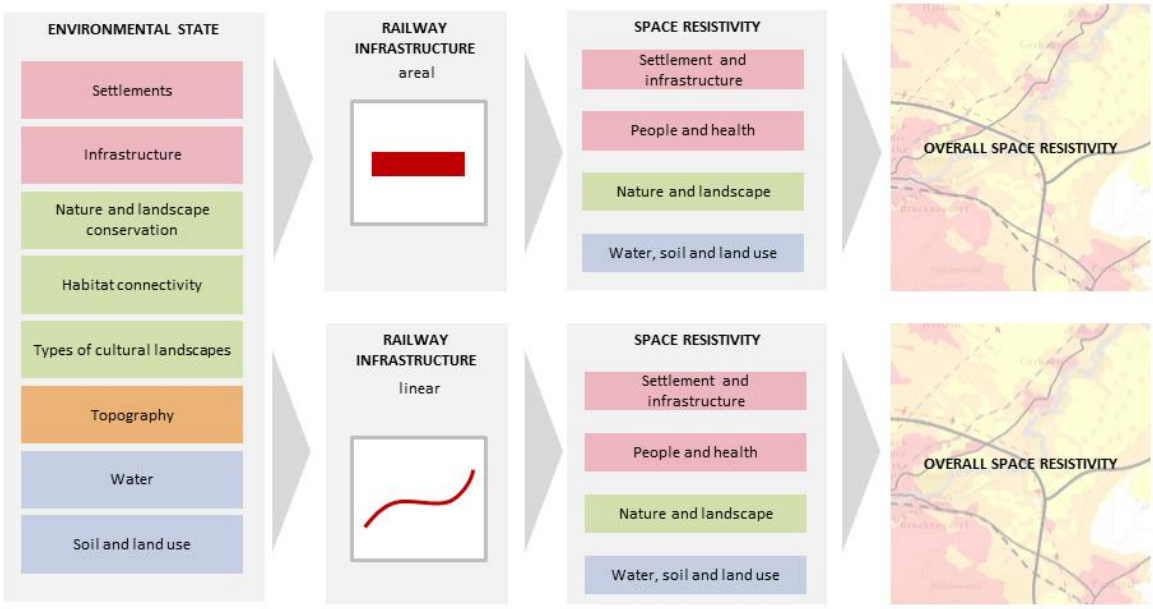


Figure 8: Translation of spatial information into space resistivity (own preparation)

When several categories of space resistivity overlap, only the **highest category** is shown. Thus, there is **no cumulation** if several different or same space resistivity are determined in a certain area.

5.3 METHODOLOGICAL APPROACH FOR IMPACT ASSESSMENT

5.3.1 ASSESSMENT FRAMEWORK

5.3.1.1 Evaluation Based on a Target System

Likely significant effects are identified, described and assessed based on a target system. As the result of a comprehensive analysis of relevant target documents (cf. Chapter 3), this target system with main goals and subgoals forms a **macrosocial frame of reference**. On the one hand, this frame of reference indicates which effects are relevant for decision-making at all and should therefore be identified and described. On the other hand, it makes clear how relevant effects should be assessed, i.e. which development is desirable or to which degree the effect can be classified as tolerable or desirable.

The target system is subdivided into **main goals**, which include very general statements without explicitly referring to transport and mobility issues. The main goals correspond to the chosen holistic approach to be taken and thus demonstrate that the decision-relevant effects are very broad and affect many areas of life.

Subgoals are assigned to each of the main goals, some of which are explicitly related to matters of transport. The subgoals function as assessment criteria when assessing the effects; a statement is therefore made on each of the subgoals as far as is possible.

In accordance with the recommendations of the SP-V guidelines, the three **sustainability dimensions** serve as a regulatory framework: nature, society and the economy:

- **Objectives relating to nature** include targets for the protection of natural resources, the sustainable use and conservation of resources and the preservation of environmental quality.
- **Social goals** include targets that concern humans, the quality of their living environment, justice, safety and well-being.
- **Economic goals** include targets that aim to strengthen and secure economic stability in Austria and the region, revolve around increasing prosperity and public welfare and ensure efficiency.

The **sustainability demands** of political goal formulations is explicitly or implicitly formulated in almost all the analysed target documents (cf. Chapter 3) and is used as proof of legitimacy for precisely these political goal formulations.

The target system, which is divided into main goals and subgoals, is the result of collecting and comprehensively analysing relevant target documents (cf. Chapter 4). The following **work steps** are carried out to creating the target system:

- **Collecting target documents:**
  Documents of all regional authority levels with different normative character are collected: relevant plans and programmes (cf. Chapter 4), legally entrenched provisions and objectives from the statement on sensitivity (cf. Chapter 7). Both documents that have a clear reference to the development of transport systems and those with a more general content are collected. The collection comprises international, national, trans-national and trans-provincial documents as well as documents from the federal states of Vienna, Lower Austria and Burgenland.
- **Evaluating target documents:**
  The above-mentioned documents are evaluated and presented with regard to their central relevant contents or goals.
- **Aggregation into a criteria catalogue:**
  The statements obtained in this way are clustered into target groups and put in relation to one another. The hierarchical target system is developed from this.

The target system is comprised of all **relevant aspects** pursuant to Sec. 6(2)(8) of the SP-V Law, which are also examined when the environmental conditions are presented (cf. Chapter 7).

5.3.1.2 Standardisation on the Basis of Target Achievement Levels

The effects are converted into target achievement levels so that they can be better compared. This **standardisation** is accordingly carried out at a very simplified level. Seven target achievement levels are used to show the extent to which an effect is favourable or unfavourable with regard to the associated test criterion. The seven **target achievement levels** (cf. Table 2) are defined as follows:

- "**mostly in line with target**": The effects are relevant with regard to the main goal and make an overall particularly positive contribution to reaching it. Negative contributions to achieving the goal do not or barely exist or are not substantial enough, with them being clearly exceeded by the positive contributions and thus negligible.
- "**partially in line with target**": The effects are relevant with regard to the main goal and make an overall positive contribution to reaching it. Negative contributions to achieving the goal may exist, whereby the positive contributions clearly outweigh the negative ones.
- "**tendency to be in line with target**": The effect is relevant with regard to the main goal and makes a slightly positive contribution to reaching it. Negative contributions to achieving the goal exist, yet the positive contributions outweigh the negative ones.
- "**neutral**": The effects are not relevant with regard to the main goal i.e. they neither make an overall positive contribution nor a negative one to reaching it. Possible minor positive or negative contributions are not substantial or balance each other out and are therefore negligible.
- "**tendency to be contrary to target**": The effects are relevant with regard to the goal and make a slightly negative contribution to reaching it. Positive contributions to achieving the goal exist, yet the negative contributions outweigh the positive ones.
- "**partially contrary to target**": The effects are relevant with regard to the goal and make an overall negative contribution to reaching it. Positive contributions to achieving the goal may exist, whereby the negative contributions clearly outweigh the positive ones.
- "**mostly contrary to target**": The effects are relevant with regard to the goal and make an overall particularly negative contribution to reaching it. Positive contributions to achieving the goal do not or barely exist or are not substantial enough, with them being clearly exceeded by the negative contributions and thus negligible.

"mostly in line with target"	"partially in line with target"	"tendency to be in line with target"	"neutral"	"tendency to be contrary to target"	"partially contrary to target"	"mostly contrary to target"
++	+	(+)	0	(-)	-	--

Table 2: Illustration of target achievement levels (own preparation)

The target achievement levels of the individual main goals are compiled for each alternative **without first weighting and aggregating** them. The individual subgoals are then no longer considered when assessing the likely significant effects of the alternatives.

5.3.2 METHODS

Likely significant effects are **identified, described and assessed** both for the **proposed network modification** and for the **alternatives** presented in Chapter 8. Likely significant effects are identified and described pursuant to the SP-V guidelines with a primarily **qualitative approach**. Statements on the effects are predominantly made using **plausibility assumptions** and showing **interdependencies**. The aim of this approach is to present the effects in their **thematic breadth** rather than to yield quantitative results that have a false precision with regard to individual effects. Accordingly, and in accordance with the specifications of the SP-V guidelines, an **effects analysis** is carried out to assess the effects.

The **likely significant effects** for the proposed network modification are presented separately for the functional investigation area and the narrow investigation area in accordance with the differentiated spatial delimitation of the investigation framework (cf. Chapter 5.1.1). It is assumed that the likely significant effects in these two spatial types **differ considerably in their nature**.

Chapter 9.2.1 identifies, describes and assesses the likely significant **effects** that are to be **expected in any case** as a result of the proposed network modification. These are primarily effects in the functional investigation area but also certain effects in the narrow investigation area, which can be expected regardless of the concrete form in which the planned railway will be implemented:

- In the **functional investigation area**, the focus of the approach is placed on **indirect effects** resulting from changes in the **comprehensive transport network**.
- In the **narrow investigation area**, the focus of the approach is placed on **direct effects**, which can be expected in any case if **railway undertakings** are implemented as part of the proposed network modification. Presenting the environmental conditions in the narrow investigation area in the form of space resistivity (cf. Chapter 7.3) allows statements to be made as to how a **spatially compatible implementation** of railway undertakings could be possible. It is explained which **likely significant effects** should be expected if a **railway undertaking is implemented**.

Chapter 9.2.3 identifies, describes and assesses the likely significant **effects** that are to be expected if the **alternatives are implemented**. In the case of zero alternatives and system alternatives, these are primarily effects in the functional investigation area; in the case of the site alternatives, these are primarily effects in the narrow investigation area.

So as to establish the link between the proposed network modification and relevant plans and programmes or main goals, the likely significant effects are identified, described and, above all, assessed on the basis of the target system (cf. Chapter 5.3.1, Chapter 9.1).

5.3.3 VALUE SYNTHESIS

The likely significant effects are already standardised as part of the impact assessment. In the course of value synthesis, the **target achievement levels per subject area** are itemised, compared and presented in a table. Based thereon, **each alternative** can be given an **overall evaluation**.

The overall evaluation for each alternative is summarised in writing, compared with and weighed against the others. The result is a **well-founded recommendation** for one of the alternatives or a modification to the nationwide high-level transport network.

5.4 CONSIDERATION OF REMARKS FROM THE SCOPING PROCESS

Before preparing this Environmental Report and in accordance with the provisions of Sec. 4 of the SP-V Law, the BMVIT **consulted** the other **initiators** affected by the impacts the proposed network modification would have, the **environmental agencies of the affected provinces** and the **Federal Minister for Sustainability and Tourism**.

The following **agencies and companies** contributed **remarks** within the specified time, which the BMVIT submitted to the initiator for consideration in the preparation of this Environmental Report:

- ASFINAG
- viadonau
- State of Burgenland (Dept. 2, Dept. 5)
- State of Lower Austria (Dept. RU2, RU5, RU7)
- City of Vienna (Dept. BD, MA 18)
- BMNT (Dept. I/1)
- Umweltanwaltschaft Burgenland (Environmental Advocacy Burgenland)
- Umweltanwaltschaft Niederösterreich (Environmental Advocacy Lower Austria)

In addition, **intra-departmental remarks** were submitted from departments IV/IVVS1 and IV/IVVS4 as well as department II/Infra2.

Table 3 **summarises** those parts of the proposals that contain content requirements for the Environmental Report and are therefore **taken into account in this Environmental Report**.

Suggestions From the Consultation Phase	Consideration in the Environmental Report
Supplement with several plans and programmes	Plans and programmes within the meaning of the SEA Directive were taken into account after they were examined for relevance (Chapter 4.2, Chapter 6, Chapter 7).
Consideration of measures in legally binding documents	The change in the nationwide high-level transport network sets the framework for concrete infrastructure measures; concrete measures are not relevant for the strategic level of the SP-V and are therefore not considered.
Presentation of air freight traffic	Air freight traffic is addressed as part of the presentation of transport structures and their development (Chapter 6.6).
Expansion of the narrow investigation area to include infrastructural aspects and aspects of traffic operations	The type of effects referred to warrants the delimitation of the functional investigation area and is thus addressed in the Environmental Report.
Presentation of the effects on the aspect of cultural heritage	Cultural heritage is considered in the narrow investigation area on which meaningful statements can be made at the strategic level of consideration of the SP-V (Chapter 7.2.1.5).
Supplementing several specifically mentioned transport infrastructures	These infrastructures are taken into account (Chapter 6).
Presentation of the function and role in relation to the TEN-T core network	Addressed as part of the presentation of traffic structures and their development (Chapter 6.1)
Updating traffic figures and timetables	The figures and timetables have been updated.
Presentation of the capacities of existing railway lines	Statements on the effects of the proposed network modification on infrastructure capacities are made in the course of the impact assessment (Chapter 9.2).
A more precise description of environmental conditions	Spatial information that can be meaningfully presented at a given scale is addressed in the environmental conditions (Chapter 7).
Presentation of key data and location of the freight terminal and, if applicable, a logistics centre	Assumptions regarding dimension and transloading volume are made but not regarding the specific location of the terminal and a logistics centre (Chapter 3.3.2).
Supplementing technical and large-scale alternatives to the overall undertaking	The alternative solution referred to was already justifiably excluded as part of the common international planning considerations. This is documented in Chapter 3.1.
Presentation of the emission and immission situation	The emission and immission situation is presented qualitatively in accordance with the strategic character of the SP-V and the SP-V guidelines.
Presentation of the changes to the comprehensive transport network	Shift effects in the comprehensive transport network are examined regardless of their nature (cf. Chapter 3.2, Chapter 9.2).
Presentation of the undertakings that have a contextual relationship: show financial and economic benefits, carry out cost-benefit analysis	The assessment of the need for expansion is carried out in the course of identifying contextual measures; contextual measures are addressed in the course of the functional requirements of the space and their construction costs are indicated (Chapter 9.2.3). In line with the strategic character of the SP-V and the SP-V guidelines, economic costs will not be quantified and CBAs will not be carried out.
Considering interdependencies with the Bratislava terminal	According to the overall undertaking planning, the terminal on the Slovak side will be used exclusively for regional distribution in Slovakia.
Qualitative data required	In accordance with the strategic character of the SP-V and SP-V guidelines, the assessment is of a mostly qualitative nature.
Description of measures to drive transloading to rail	The aim is to ensure that a large share of goods is transloaded to rail by implementing favourable infrastructure conditions; control measures beyond this are developed in the subsequent planning phases (Chapter 10.2).
Designation "Vienna" or "Vienna area" is welcomed; enables individual line sections to be allocated through interpretation	The site alternatives are being examined in the course of SP-V (Chapter 9.2.3) and a recommendation for network modification will be formulated based thereon (Chapter 10.3); the BMVIT is responsible for the final formulation.

Table 3: Consideration of suggestions in the remarks regarding the scoping document (own preparation)

5.5 CONSIDERATION OF THE SPECIFICATIONS OF THE SP-V LAW

Requirements for the Environmental Report pursuant to Sec. 6(2) of the SP-V Law	Addressed in chapter
1. A description of the content and main objectives of the proposed network modification and the relationship with other relevant plans and programmes	Chapter 2.1; (p. 5) Chapter 4 (p. 17)
2. The rationale behind the proposed network modification and a presentation of the expected benefits of the proposed network modification	Chapter 2.2; (p. 6) Chapter 2.3 (p. 7)
3. A description of the intermodal and cross-network assessment of alternatives and the rationale behind the choice of the reviewed alternatives and a description of how the environmental impact assessment was carried out	Chapter 7.3; (p. 167) Chapter 5.3 (p. 71)
4. A description of the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the proposed network	Chapter 6 (p. 79), Chapter 7 (p. 109); Chapter 9.4.1 (p. 250)
5. A description of the environmental characteristics of the areas likely to be significantly affected by the proposed network modification	Chapter 6; (p. 79) Chapter 7 (p. 109)
6. A description of the existing environmental problems relevant to the proposed network modification, in particular those relating to areas worthy of protection under Annex 2 of the Environmental Impact Assessment Act (UVP-G) 2000, Federal Law Gazette No. 697/1993	Chapter 7 (p. 109)
7. A description of the environmental protections objectives, which are relevant to the proposed network modification	Chapter 7.2 (p. 115)
8. A description of the likely significant effects on the environment, including any issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors, including secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects	Chapter 9 (p. 191)
9. A description of the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the proposed network modification and a description of the measures envisaged concerning monitoring	Chapter 10.2 (p. 260)
10. Information on any difficulties in compiling the required information (in particular technical deficiencies or lack of know-how)	Chapter 10.4 (p. 265)
11. A non-technical summary of the information given in No. 1–10	Chapter 11 (p. 269)

Table 4: Consideration of the specifications of the SP-V Law in the Environmental Report (own preparation)

6

TRANSPORT STRUCTURES AND THEIR DEVELOPMENT

The proposed network modification concerns the high-level national and international transport network and, in particular, the transport system in the area to the southeast of Greater Vienna. The traffic situation is characterised by significant cross-border traffic flows that are dynamically changing overall.

6 TRANSPORT STRUCTURES AND THEIR DEVELOPMENT

The **transport structures** and their **development** are presented in a separate chapter due to their particular significance for the proposed change to the nationwide high-level transport network. This chapter describes the relevant infrastructure network of Europe and gives a more detailed presentation of the current situation and the development of **transport infrastructure** according to modes of transport. The information is primarily presented **textually**, supplemented by tables or graphically prepared data, where necessary.

6.1 HIGH-LEVEL INFRASTRUCTURE NETWORK IN EUROPE

6.1.1 TRANS-EUROPEAN TRANSPORT NETWORK TEN-T

The **Trans-European Transport Network**, or TEN-T, is the common high-level network for road, rail, air, and inland waterway transport of the EU. Its expansion is aimed at strengthening the economic and social cohesion within the EU.

It consists of a comprehensive network and a core network. The **comprehensive network** is comprised of all existing and planned transportation infrastructure of the trans-European transport network as well as measures for fostering efficient, social, and ecological sustainable use of this infrastructure. The goal is to have it **implemented by 2050**. The **core network** consists of parts of the comprehensive network that are most important strategically. The European Commission considers it to be a priority and the vision should therefore be **realised by 2030**.

A total of **nine core network corridors** have been identified to implement the core network. European funding to expand infrastructure is primarily focussed on the core network. The **implementation** and **co-financing** of the core network are not regulated by the TEN-T guidelines but by the so-called Connecting Europe Facility (Regulation (EU) No 1316/2013).

The TEN-T in Europe has, with a few exceptions, a track gauge of 1,435 mm and is therefore **suitable for expansion**. However, there is, for the most part, still no **attractive and efficient link** between the TEN-T and the freight corridors to Asia. This is mainly due to the fact that the interconnection points between the 1,520 mm rail network and the 1,435 mm rail network are located at the outermost edge of the TEN-T, so that integrating the networks is not an attractive undertaking. One way to achieve this integration is to create interconnection points between the 1,520 mm rail network and the 1,435 mm rail network in the core area of the TEN-T. For the Ukraine, for example, "Annex III – Indicative extension to neighbouring countries" to the TEN-T guidelines (Regulation (EU) No 1315/2013) presents the **1,520 mm gauge network as a possible extension of the TEN-T**. This indicative core network should allow the Union to better target its cooperation with the Eastern Partnership countries concerned (Regulation (EU)

2019/254). The matter of efficient interfaces and connections of both systems is not addressed, opening up a fundamentally broad range of possible solutions in this respect.

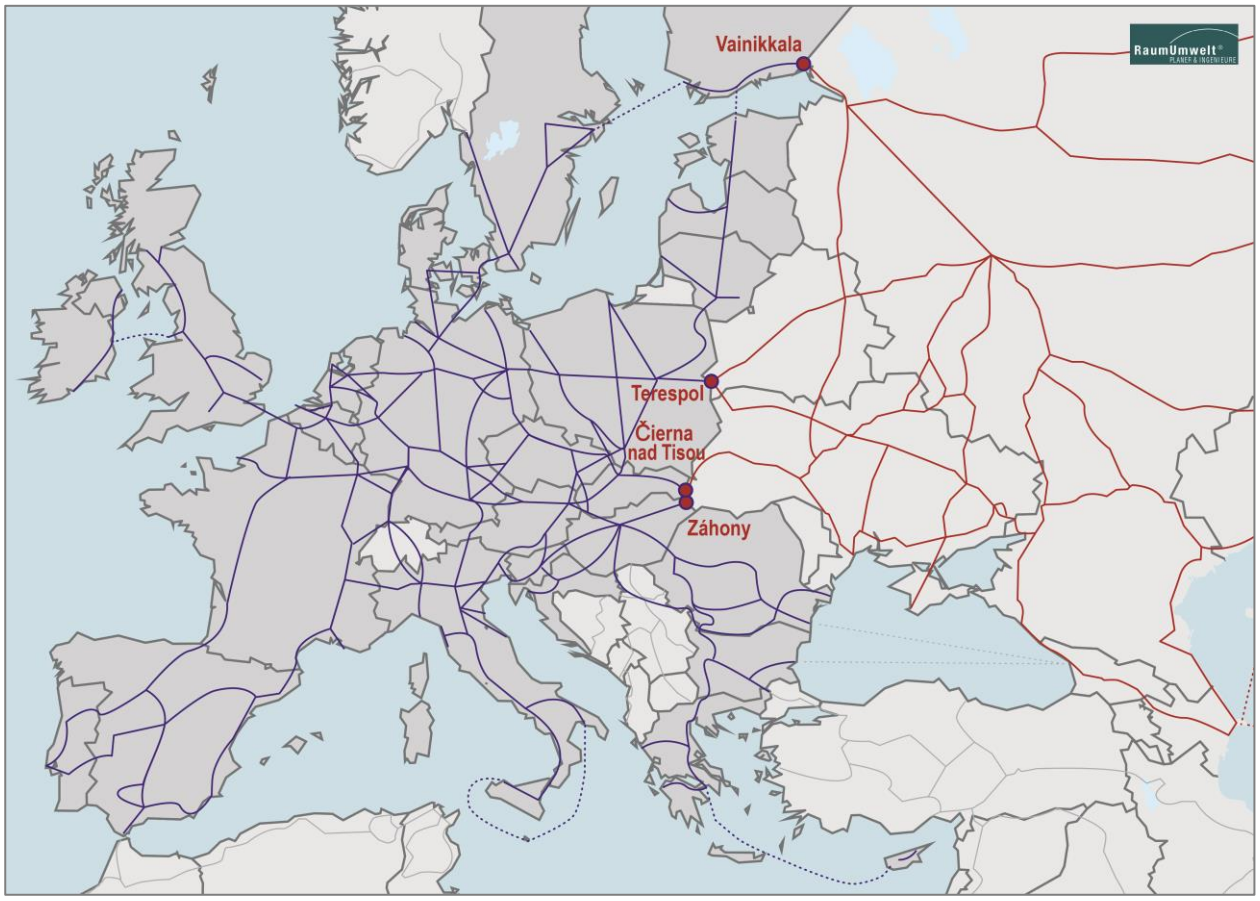


Figure 9: Interconnection points between the TEN-T core network (blue) and the 1,520 mm gauge network (red) (own illustration)

The external border of the EU currently has **four interconnection points** between the TEN-T core network corridors and the 1,520 mm rail network (cf. Figure 9).

The Finnish border town of **Vainikkala** has a transition point to Russia from the Scandinavian-Mediterranean Corridor, which runs via Sweden through Central Europe to southern Italy and Malta. With the Finnish railway network also built in a 1,520 mm track gauge, there is no need to transload goods or to perform a bogie exchange. However, freight trains routed between continental Europe and Russia via this route must be transshipped or regauged near the Baltic Sea ports of Mukran (Rügen) or Turku (southwest of Finland). Due to the peripheral location of this interconnection point and the need for transshipping and regauging in the Baltic Sea ports, this route is of only minor importance in relation to the TEN-T.

At the Belarusian border town of **Brest**, there is a further link between the TEN-T core network in the Polish city of **Terespol** and the 1,520 mm rail network. This transport hub is of great importance for both

passenger and freight transport, because Brest has a large gauge change facility and the majority of goods from or to Russia and Central Asia now pass through this border city. Regauging is a process that entails a stay of several hours. This transfer point is connected to the North Sea-Baltic Corridor, which connects Belgium, the Netherlands and Northern Germany with the Baltic States via Poland.

The tri-border area between Slovakia, Hungary and Ukraine has transfer points in the Ukrainian border town of Chop (gauge change facility for passenger transport), **Čierna nad Tisou** in Slovakia (transshipping) and **Záhony** in Hungary (transshipping). These connect the Rhine-Danube Corridor and the Mediterranean Corridor with the 1,520 mm rail network. Moreover, a route with a 1,520 mm track gauge in eastern Slovakia leads directly to a steel mill south of **Košice**.

By **leading the rail networks** to the economic centres and to the TEN-T core network corridors and their nodes, the goods can be handled directly in a more efficient manner, and logistics can take place in established and effective EU logistics centres. This will make rail freight transport between Asia and Europe much more competitive compared to seagoing vessels.

The proposed network modification must also be seen in the context of the Chinese government's plans to drive transport infrastructure expansion in a number of countries. With the "**Silk Road Initiative**", also called the "**Belt and Road Initiative"** (BRI), some USD 850bn will be spent on the construction and expansion of transport routes between Asia and Europe. The plan is for interfaces between Asian and European economies to also be expanded within Europe, especially in **Eastern and Southeastern Europe**. One of the undertakings currently being funded in Southeastern Europe is the "**Land-Sea-Express Line**" from the port of Piraeus, which is owned by the Chinese shipping company Cosco, to Budapest, with the focus placed on improving freight transport links between China and Central and Southeastern Europe. In the long term, **Central Europe** could thus become a **rail logistics hub** that distributes goods flowing in from China via Russia as well as to and from Piraeus.

The functional investigation area has three **TEN-T core network corridors** (cf. Figure 10):

- The **Baltic-Adriatic Corridor** stretches from the North Sea and Baltic Sea ports in Poland to the Mediterranean ports. This corridor connects the deep water ports on the Baltic Sea and the Mediterranean Sea with the economically important centres in Central and Eastern Europe (Southern Poland, Czech Republic, Austria, Slovenia, Northern Italy) and these economic centres in turn with each other. In order to tackle the Alps as a topographical barrier, the Semmering Base Tunnel and the Koralm Railway with the Koralm Tunnel will commence operation by 2030.
- The **Orient/East-Med Corridor** runs northwest to southeast and connects Central Europe with the northern deep water ports, most importantly Hamburg and the Mediterranean seaports in Greece and those on the Bulgarian Black Sea coasts.
- The **Rhine-Danube Corridor** connects France, Germany, Austria, the Czech Republic, Slovakia, Hungary, Romania and Bulgaria along the rivers Main and Danube to the Black Sea.

The **nodes of the TEN-T core network** within the functional investigation area are Wels/Linz, Vienna, Graz, Klagenfurt, Bratislava, Žilina and Budapest.

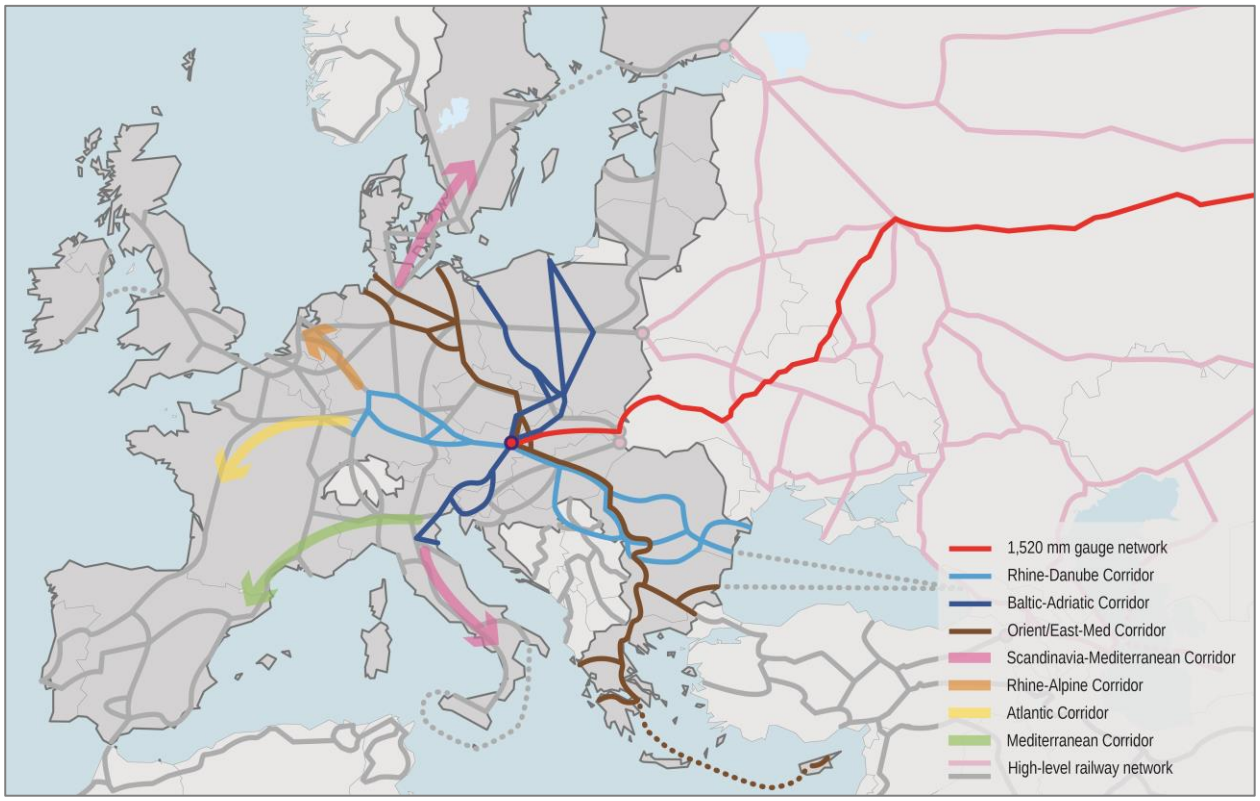


Figure 10: Integration of the Košice–Vienna railway corridor into the TEN-T core network (own illustration)

In the narrow investigation area, **these core network corridors intersect or run parallel** to each other (cf. Figure 11). The area east of Vienna within the TEN-T core network is characterised by the fact that all **important economic areas** of the EU can be **directly and reliably accessed** via well-developed rail and road infrastructure.

The attractiveness of this provided infrastructure is complemented by its location on the **Danube waterway (Port of Vienna)** and its proximity to **Vienna Airport**, a major airport in the TEN-T network.

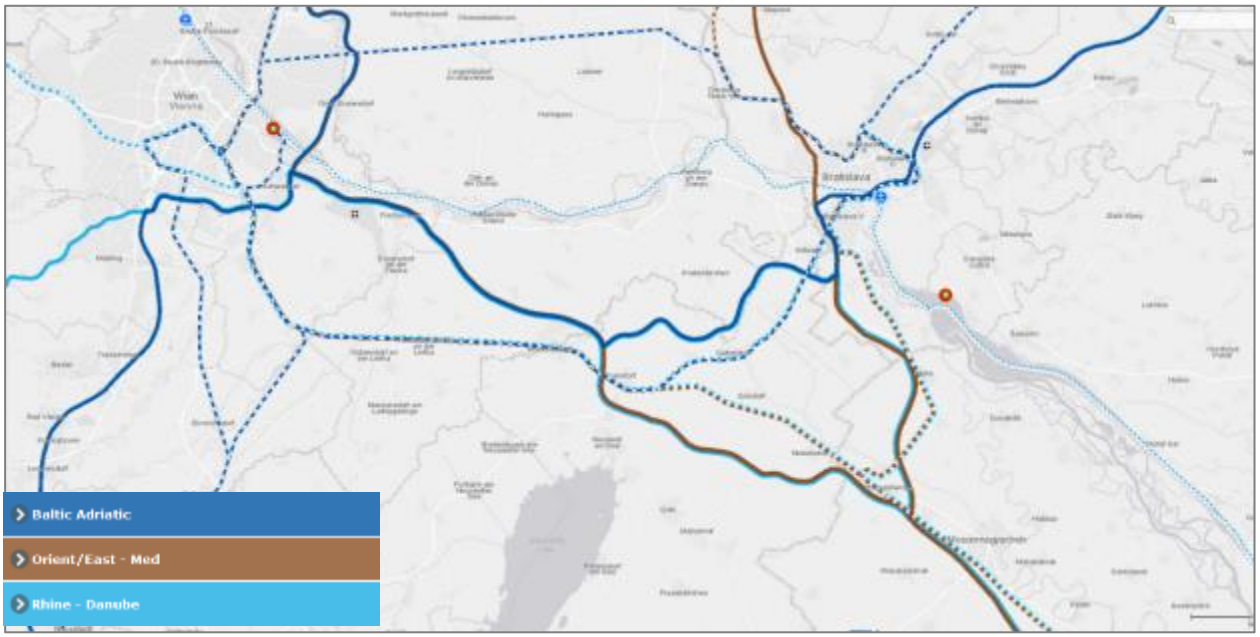


Figure 11: Routes in the TEN-T core network in the Vienna/Bratislava area (European Commission – DG MOVE; own preparation)

6.1.2 EUROPEAN RAIL FREIGHT CORRIDORS (RFCS)

The main purpose of the TEN-T core network is to create the infrastructure conditions for a single European transport area. In order to enable **competitive rail freight transport**, the EU created the legal conditions for setting up and organising **international rail freight corridors** in 2010 (Regulation (EU) No 913/2010).

In 2013, the EU decided to integrate the rail freight corridors into the TEN-T. The rail freight corridors will be aligned with the TEN-T corridors (Regulation (EU) No 1316/2013). For now, **nine rail freight corridors** (RFCs) were established, each connecting at least three EU Member States (cf. Figure 12).

The multi-corridor nodes Vienna, Bratislava and Budapest are connected by the following two rail freight corridors:

- The **Baltic-Adriatic Corridor (RFC 5)** connects the North Sea ports Świnoujście and Gdynia via Wroclaw, Katowice, Opole in Poland, Ostrava and Břeclav in the Czech Republic, Žilina and **Bratislava** in Slovakia, **Vienna**, Wiener Neustadt and Villach in Austria, Pragersko and Ljubljana in Slovenia with the Mediterranean ports Venice in Italy and Koper in Slovenia.
- The **Orient/East-Med Corridor (RFC 7)** connects Prague (Czech Republic) via **Vienna** and **Bratislava** to **Budapest** and Szolnok in Hungary, Arad and Bucharest with the Black Sea ports Constanţa (Romania) and Burgas in Bulgaria and via Sofia to Svilengrad (Bulgaria/Turkey border) and Kulata, Thessaloniki and Athens in Greece.

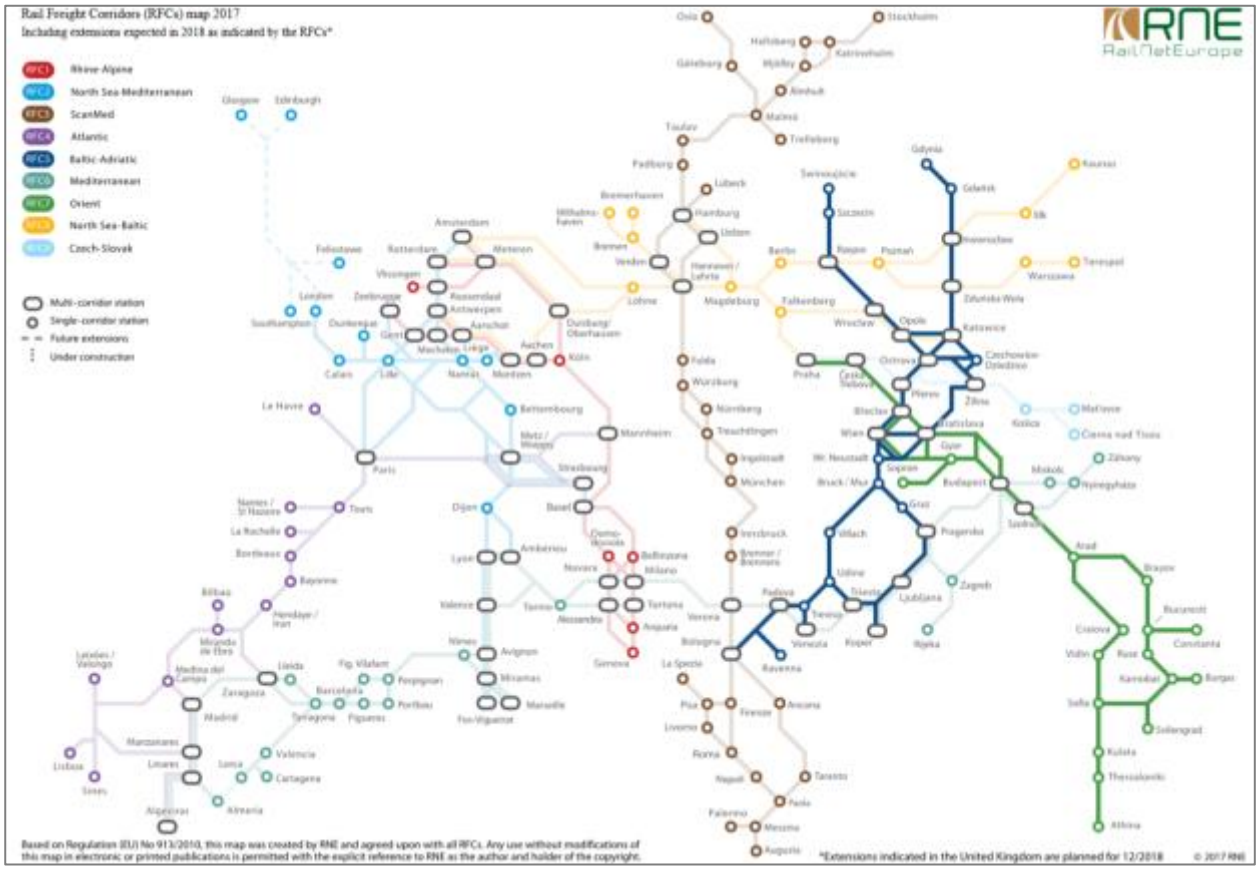


Figure 12: European rail freight corridors RFC (RailNetEurope 2018)

Establishing the RFC will **make rail freight transport more attractive** and encourage the transition from road to rail. Similar to the TEN-T core network (cf. Chapter 6.1.1), the advantageous location of the area east of Vienna as a hub for efficient rail freight transport is also reflected in the RFC network.

6.2 RAIL INFRASTRUCTURE

6.2.1 EXISTING RAIL INFRASTRUCTURE

The **high-level railway infrastructure** in the functional investigation area currently comprises the following components[7]:

High-Level Rail Network in Austria:

- South axis towards Graz/Spielfeld-Straß/Villach (Southern Railway): Vienna – Graz / Klagenfurt – Villach: Vienna via Baden to Wiener Neustadt: double track throughout and electrified (15 kV 16.7 Hz ~); Vienna via Ebenfurth to Wiener Neustadt: single track to Ebenfurth, from then on double track and electrified (15 kV 16.7Hz ~); Graz – Spielfeld-Straß: partially double track and electrified (15 kV 16.7 Hz ~); Villach – Tarvisio: double track and electrified (15 kV 16.7 Hz ~)

[7] Only those network components are presented as text that are directly related to the planned network modification:

- South axis towards Prague (Northern Railway): Vienna – Brno: double track throughout and electrified (15 kV 16.7 Hz ~ / 25 kV 50 Hz AC), level track
- West axis towards Salzburg/Passau (Western Railway): Vienna – St. Pölten – Linz[8]: four track[9] throughout and electrified (15 kV 16.7 Hz ~) VzG = 250 km/h, level track; Linz – Wels – Salzburg/Passau: double track throughout and electrified (15 kV 16.7 Hz ~)
- West axis towards Budapest: Vienna – Győr – Tatabánya – Budapest line (in the Austrian section: Eastern Railway): double track throughout and electrified (15 kV 16.7 Hz ~ / 25 kV 50 Hz AC), level track
- Franz Joseph Railway: Vienna – Tulln – Absdorf-Hippersdorf – Gmünd N.Ö. – České Velenice – České Budějovice: double track to Absdorf-Hippersdorf, from then on single track to České Velenice and electrified (15 kV 16.7 Hz ~); single track České Velenice onward and electrified (25 kV 50 Hz ~)
- Northwestern Railway: Vienna – Stockerau – Retz – Znojmo: double track to Stockerau, from then on single track and electrified (25 kV 50 Hz ~); Stockerau – Absdorf line (link between Northwestern Railway and Franz Joseph Railway): single track and electrified (25 kV 50 Hz ~)
- Summerauer Railway: Linz – Summerau – České Budějovice: single track and electrified (to Summerau 15 kV 16.7 Hz ~, from Summerau onward 25 kV 50 Hz ~)
- Pyhrn-Schober axis: Pyhrn Railway: Linz – Rohr-Bad Hall – Selzthal: at least single-track construction and electrified (15 kV 16.7 Hz ~); Schoberpass section: Selzthal – St. Michael: double track and electrified (15 kV 16.7 Hz ~)
- Ennstal Railway: Bischofshofen – Selzthal: at least single-track construction and electrified (15 kV 16.7 Hz ~)
- Tauern Railway: Bischofshofen – Spittal a. d. Drau: for the most part double track and electrified (15 kV 16.7 Hz ~); Drautal Railway: Spittal a. d. Drau – Villach: double track and electrified (15 kV 16.7 Hz ~)
- Vienna/Bratislava area (Marchegg branch of the Eastern Railway): Vienna – Marchegg – Bratislava hl. st.: single track and non-electrified between Vienna Aspern Nord and Devínska Nová Ves with level track; Gänserndorf – Marchegg line: single track and non-electrified
- Vienna/Bratislava area (Kittsee connection): Parndorf – Bratislava Petržalka: single track throughout and electrified (15 kV 16.7 Hz ~) with level track
- Gramatneusiedl – Wampersdorf line: single track and electrified throughout (15 kV 16.7 Hz ~)
- Mattersburger Railway: Wiener Neustadt – Sopron: single track and non-electrified

[8] The Linz Kleinmünchen – Linz Central Station section is currently double track only The four-track expansion of this section is planned for 2025 in the current 2017–2022 framework plan.

[9] including the new Vienna – St. Pölten line and St. Pölten freight rail bypass

High-Level Rail Network in the Slovak Republic:

- Bratislava – Košice axis: Bratislava – Nové Mesto nad Váhom – Púchov – Žilina – Košice: double track and electrified (to Púchov 25 kV 50 Hz AC; from Púchov onward 3000 V DC); Púchov – Lúkypod Makytou – Slovak-Czech border: double track and electrified (3000 V DC); Žilina – Čadca – Slovak-Czech border: double track and electrified (3000 V DC); Košice – Čaňa – Slovak-Hungarian border: single track and electrified (3000 V DC); Košice – Prešov – Plaveč – Slovak-Czech state border: single track and electrified (3000 V DC)
- Bratislava – Prague axis: Bratislava hl. st. – Devínska Nová Ves - Kúty – Slovak-Czech border – Břeclav: double track and electrified (25 kV 50 Hz AC) with level track
- Galanta – Leopoldov: double track and electrified (25 kV 50 Hz AC)
- Bratislava Petržalka – Slovakian-Hungarian border – Hegyeshalom: single track and electrified (25 kV 50 Hz AC) with level track
- Bratislava – Štúrovo – Slovak-Hungarian border: double track and electrified (25 kV 50 Hz AC); Šurany – Nové Zámky – Komárno – Slovak-Hungarian border: single track and electrified (25 kV 50 Hz AC)
- Palárikovo – Zvolen: single track and electrified (25 kV 50 Hz AC); Zvolen – Fil'akovo – Košice: single track and non-electrified; Košice – Čierna nad Tisou: double track and electrified (3000 V DC)

High-Level Rail Network in Hungary:

- Hegyeshalom – Győr – Komáron – Budapest: double track and electrified (25 kV 50 Hz AC)
- Budapest in the direction of Eastern Slovakia (Košice): Budapest – Szolnok – Debrecen – Nyíregyháza – Tuzér: double track and electrified (25 kV 50Hz AC); Budapest – Miskolc – Hidasnémeti: double track to Miskolc, single track and electrified onward (25 kV 50 Hz AC)
- Western Hungary: Sopron – Győr/Sopron – Szombathely – Szentgotthárd: single track and electrified (25 kV 50 Hz AC); Győr – Celldömölk: single track and non-electrified; Szombathely – Celldömölk – Boba: at least single-track construction and electrified (25 kV 50 Hz AC); Hegyeshalom – Csorna – Szombathely: single track and non-electrified
- Budapest in the direction of Slovenia: Budapest – Zalaegerszeg – Hodos: at least single-track construction and electrified (25 kV 50 Hz AC)
- Budapest in the direction of Croatia (Kotor): Budapest – Székesféhervár – Nagykanizsa: single track and electrified (25 kV 50 Hz AC)
- Border crossing Slovakia/Hungary: Komáron – Székesféhervár: single track and non-electrified; Strúrovó – Vác – Budapest: double track and electrified (25 kV 50 Hz AC)

The **rail network** within the **narrow investigation area** currently comprises the following lines, which have been constructed as follows[10]:

- The city train (S-Bahn) S7 Pressburger Railway (Wien Mitte – Wolfsthal, Line No. 191) is operated by ÖBB-Infrastruktur AG, is electrified and double track up to Vienna Airport and single track up to Wolfsthal.
- The Eastern Railway (Vienna – Nickelsdorf/Parndorf, Line No. 118) is operated by ÖBB-Infrastruktur AG, is electrified and is completely double tracked.
- The Fischamend – Götzendorf – Mannersdorf line (Line No. 192) is operated by ÖBB-Infrastruktur AG, is not electrified and single track.
- The Parndorf – Kittsee (Line No. 194) connection is operated by ÖBB-Infrastruktur AG, is electrified and single track, although provisions were made in the substructure for a later double-track expansion.
- The Parndorf – Wulkaprodersdorf line (Line No. 195) is largely operated by ÖBB-Infrastruktur AG and by Raab-Oedenburg-Ebenfurter Eisenbahn AG west of Eisenstadt; it is electrified and single track.
- The Wampersdorf – Gramatneusiedl line (Line No. 119) is operated by ÖBB-Infrastruktur AG and is electrified and single track.
- The Bruck an der Leitha – Petronell-Carnuntum line (Line No. 193) is owned by Niederösterreichische Verkehrsorganisationsges.m.b.H. and is operated as a connecting line within Bruck an der Leitha, is not electrified and single track.
- The Lafarge Perlmooser connecting line is not electrified and is single track.

Interoperability in Rail Transport

The European Rail Traffic Management System (**ERTMS**) is the future signalling and speed control system for rail traffic in the TEN-T core network. In November 2016, the second work plan for ERTMS (European Commission 2016) was published, which contains information on the deployment action plan. The most important component is the implementation of the European Train Control System (ETCS) at Level 2, which provides for continuous communication between the vehicle and the radio block centre (RBC). With the **ETCS Level 2**, trackside signalling can be largely dispensed with; it is designed to support speeds up to 160 km/h.

Within Austria, ÖBB-Infrastruktur AG lines listed in Table 5 and Table 6 are or will be equipped with ETCS on the western axis and the southern axis, which are located within the functional investigation area.

[10] Smaller connecting lines on the listed main lines are not shown separately.

Line designation	ETCS	km	Commissioning
Hegyeshalom – Vienna Central Station	Level 1	70	not in operation needs upgrade
Vienna – Hadersdorf-Weidlingau fork (Lainz Tunnel)	Level 2	10	in operation
Hadersdorf-Weidlingau fork – Tullnerfeld – St. Pölten	Level 2	50	in operation
St. Pölten freight rail bypass	Level 2	25	2017 timetable
Linz – Wels	Level 2	25	2025 timetable
Attnang-Puchheim – Salzburg Vöcklabruck – Straßwalchen Straßwalchen – Seekirchen am Wallersee	Level 1	75	in operation
Vöcklabruck – Hallwang-Elixhausen	Level 1	60	in operation
Wels – Passau	Level 1	80	in operation
Parndorf – Kittsee	Level 2	22	2026 timetable
Stadlau – Marchegg	Level 2	38	2022 timetable

Table 5: West axis railway equipped with ETCS (ÖBB 2016 information; own illustration)

Line designation	ETCS	km	Commissioning
Bernhardsthal – Vienna Central Station	Level 2	87	in operation
Pottendorfer Line Vienna – Wampersdorf	Level 2	30	2023 timetable
Semmering Base Tunnel	Level 2	30	2026 timetable
Werndorf – Klagenfurt (Koralm Tunnel)	Level 2	130	2023 timetable

Table 6: South axis railway equipped with ETCS (ÖBB 2016 information; own illustration)

Up to now, **ETCS systems** in Austria were primarily installed on **new lines**. That is why individual lines were equipped with ETCS instead of entire regions. Rolling stock that must be used on ETCS lines had to be equipped with two systems (Austrian Court of Audit 2015: p. 2.017).

ETCS Level 2 is set to be implemented in the entire TEN core network by 2030. In Slovakia, priority areas have been defined for the implementation of the ETCS standard and the GSM-R communication standard:

- National border near Kúty (Czech Republic) to Bratislava
- Ports, control systems, freight terminals at the Bratislava hub
- Bratislava – Nové Zámky – Komárno/Štúrovo

6.2.2 RAIL INFRASTRUCTURE DEVELOPMENT

Infrastructure modernisation is closely connected to **rail infrastructure development**. At European level, the aim is to have the **TEN-T core network** completed by 2030, towards which European funding for infrastructure development is directed.

Based on the Traffic Forecast Austria 2025+ (BMVIT 2009), the Target Network 2025+ (ÖBB- Infrastruktur AG 2011) envisions a target network adequate for the system, providing the strategic framework for developing the railway infrastructure network in Austria. The proposed measures will be implemented in several stages by 2030. In the Greater Vienna area, a tight network of axes pointing east-west but also north-south is defined as a core network or a core network with extension schemes. (cf Figure 13).

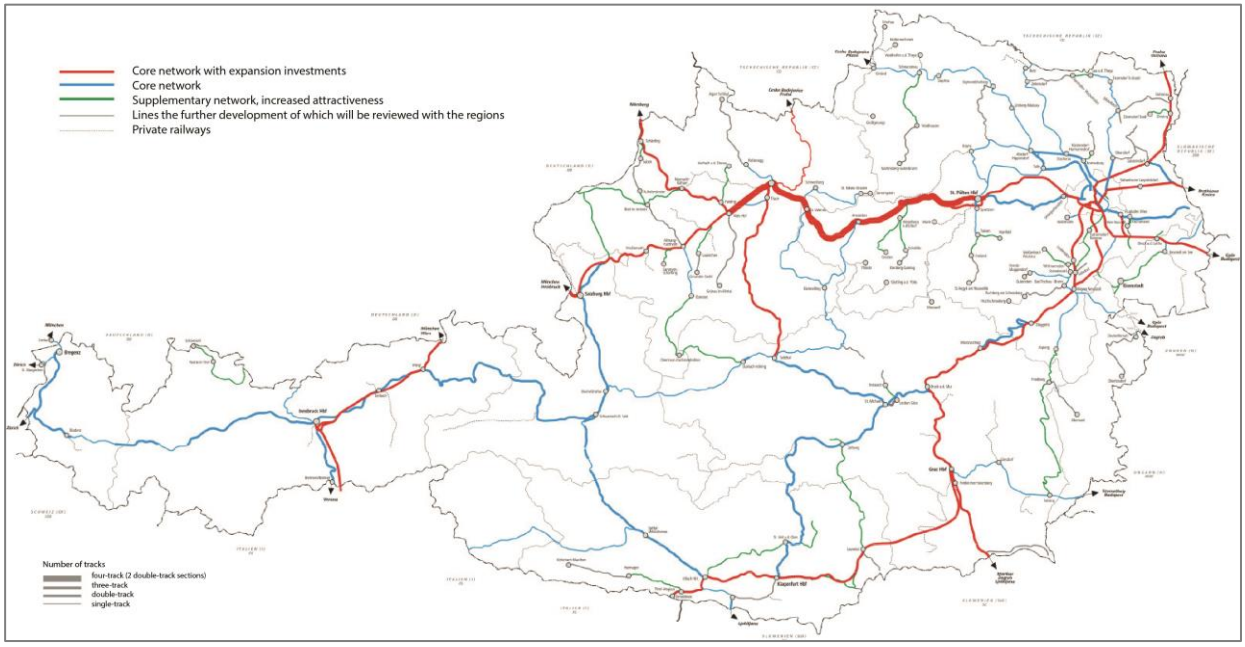


Figure 13: Target network adequate for the system (ÖBB-Infrastruktur AG 2011: p. 37)

As part of the Target Network 2025+ (ÖBB-Infrastruktur AG 2011), the proposal for a **node-edge model** for Austria as well as selected relations to nodes in neighbouring countries is made as a basis for introducing integrated regular rail service (cf. Figure 14). The expansion of the high-level rail transport network in Austria is based on this node-edge model. Rail transport undertakings that are necessary for introducing integrated regular rail service will be given priority.

The expansion of the high-level rail transport network on the basis of this node-edge model is based on a framework plan, which is regularly updated and contains the capital expenditure specifications of the Republic of Austria for each of the following six years. The current framework plan provides for capital expenditures for the years 2018–2023 (BMVIT 2018).

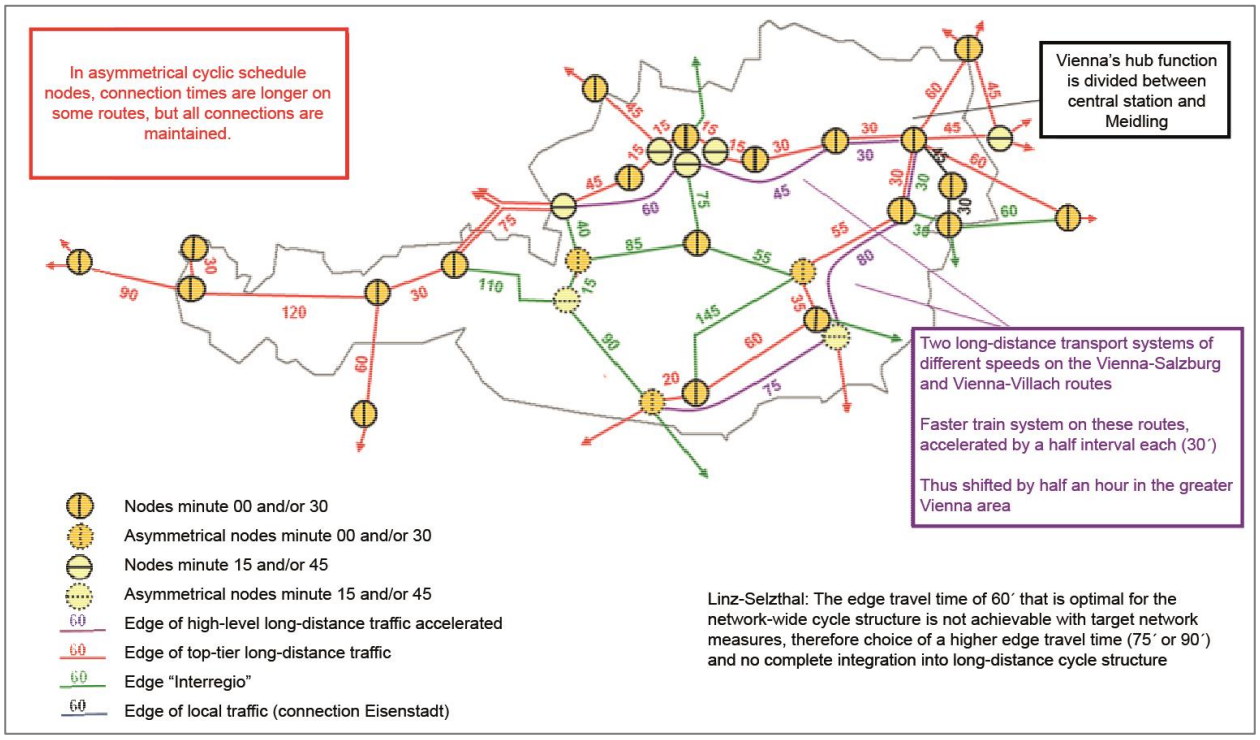


Figure 14: Node-edge model for Austria (ÖBB-Infrastruktur AG 2011: p. 43)

In the Strategic Transport Development Plan of the **Slovak Republic** (RTR 2014), the Ministry of Transport of the Slovak Republic defined measures for developing rail infrastructure up to 2020 and 2030. In addition to systemic, organisational, operational and safety-related measures, it also defines **infrastructure measures** for the various modes of transport. The most important infrastructure measures are: modernising the TEN-T network, providing the technical prerequisites for interoperability, implementing an integrated regular rail service and electrifying important railway lines.

Hungary's National Transport Strategy (NTS) sets out measures for developing its transport infrastructure by 2030 and an outlook for 2050.

The high-level rail transport network for the year 2040 would be comprised of the existing infrastructure (cf. Chapter 6.2.1) and the infrastructure listed in the strategic documents mentioned above. The assumption is that the undertakings presented as part of the national plans are more concrete than those at the European level. If contradictory information can be found in the documents, the information that is more specific is used, which is usually found in the national plan.

It is assumed that the following rail infrastructure undertakings will be commissioned and operational by 2040:

High-Level Rail Network in Austria:

- South axis in the direction of Klagenfurt (Southern Railway):

- Extension of the Vienna Meidling – Wampersdorf – Wiener Neustadt – Gloggnitz line: expansion to double track for Vienna Meidling – Altmannsdorf fork by 2023; expansion to double track for Pottendorfer line by 2023: Wien Blumental – Münchendorf, speed limit = 200 km/h until 2019; Münchendorf – Wampersdorf, speed limit = 200 km/h until 2023; Wampersdorf – Wiener Neustadt line, speed limit = 160 km/h until 2023; Wiener Neustadt – Gloggnitz line, speed limit = 160 km/h until 2026 (cf. BMVIT 2018, Slavkov 2019)
- Four-track expansion for Wien Meidling – Mödling (cf. ÖBB 2011)
- Semmering Base Tunnel Gloggnitz – Mürzzuschlag by 2026 (level track creation = 12.5‰), double track, speed limit = 230 km/h (see BMVIT 2018)
- Koralm Railway with Koralm Tunnel by 2026 (level track creation), double track, speed limit = 200 km/h (cf. BMVIT 2018)

- South axis in the direction of Prague (Northern Railway): expansion of the existing Süßenbrunn – Bernhardsthal line by 2028 (cf. BMVIT 2018), in the section Süßenbrunn – Gänserndorf speed limit = 160 km/h and increase in capacity; in the section Gänserndorf – national border near Bernhardsthal speed limit up to 200 km/h and increase in capacity (cf. BMVIT 2018, Slavkov 2019)
- West axis in the direction of Passau/Salzburg (Western Railway):
  - Modernisation of the connecting line between Hütteldorf and Meidling by 2026 (cf. ÖBB-Infrastruktur AG 2019a)
  - Four-track expansion Linz Kleinmünchen – Linz Central Station by 2030
  - Four-track expansion of the Linz – Wels line by 2026
  - Modernisation of the existing Wels – Passau line by 2024 (cf. BMVIT 2018)
- Western axis in the direction of Budapest (Eastern Railway): airport connection between Vienna Airport and Bruck an der Leitha[11], double track, speed limit = 250 km/h past 2030 (cf. Slavkov 2019)
- Vienna – Bratislava area:
  - Double-track expansion and electrification of the Marchegg branch of the Eastern Railway[12]: electrification and selective double-track expansion Vienna (Stadlau) – national border near Marchegg by 2022 (cf. BMVIT 2018)
  - Electrification of Gänserndorf – Marchegg line by 2020, speed limit = 120 km/h (cf. BMVIT 2018, Slavkov 2019)

[11] Declaration as a high-performance line according to No. 6 of the High Performance Regulation (HL-VO); not yet included in the current ÖBB framework plan. The route selection procedure for the airport connection has not yet been finalised (as of September 2019). Accordingly, this connection is shown in the plans of this Environmental Report as a straight line between the two nodes mentioned in the HL-VO.

[12] A feasibility study for the double-track expansion, including the March Bridge crossing, is underway. The continuous double-track expansion of the Marchegg branch of the Eastern Railway will depend on the expansions on the Slovakian side (cf. Baltic Adriatic Workplan: p. 34).

- Vienna/Bratislava area (Kittsee connection): the construction deadline for extending the 2nd track as part of the Parndorf–Kittsee expansion was moved to 2 September 2019. As of now, the track extension has not yet taken place (BMVIT 2019).
- Mattersburger Railway: electrification of the Wiener Neustadt – national border near Loipersbach–Schattendorf line, speed limit = 120 km/h until 2026 (cf. Slavkov 2019)
- Graz Eastern Railway: electrification of the Graz Ostbahnhof – Jennersdorf line by 2027 (cf. BMVIT 2018)
- Pyhrn-Schober axis: Pyhrnbahn: Linz – Selzthal: selective double-track expansion and railway station conversions past 2024 (cf. BMVIT 2018)
- Modernisation of the Franz Joseph Railway by 2024–2027, speed limit = 160 km/h and direct connection to Horn (cf. Austrian Parliament 2018)
- Summerauer Railway: modernisation of Linz Central Station – national border near Summerau line by 2023 (cf. Slavkov 2019)

High-Level Rail Network in the Slovak Republic:

- Bratislava – Košice axis: modernisation of the TEN-T core Rhine-Danube and Baltic Sea-Adriatic Corridors on the Bratislava – Žilina – Košice – Čierna nad Tisou line by 2023: expansion to 160 km/h to Púchov implemented, expansion Púchov – Žilina by 2020; modernisation of the Žilina node by 2022 (cf. RTR 2014, Slavkov 2019)
- Bratislava - Prague axis: modernisation of TEN-T core network Rhine-Danube and Orient/East-Med Corridors on the Bratislava – Devínska Nová Ves – Kúty – Prague line by 2022; 200 km/h; implementation of ERTMS (cf. RTR 2014, Slavkov 2019)
- Bratislava – Vienna axis: expansion of the cross-border Devínska Nová Ves – Marchegg line: electrification of the existing single-track line on the Slovakian side by 2020 (cf. RTR 2014, Slavkov 2019)
- Bratislava area: fully functioning connection between Bratislava hl. st. and Bratislava Petržalka railway stations; link to Bratislava Airport after 2023 (cf. Slavkov 2019)
- Expansion of Bratislava – Slovak-Hungarian border – Hegyeshalom line (TEN-T comprehensive network)
- Eastern Slovakia: electrification of the Zvolen – Fil'akovo line and the Haniska pri Košicach – Moldava nad Bodvou line (cf. RTR 2014)
- Bratislava – Budapest axis (via Štúrovo): modernisation of the Bratislava – Štúrovo line after 2025: expansion of the line to 200 km/h, implementation of ERTMS (cf. RTR 2014, Slavkov 2019)
- Construction of a single-track freight traffic line from Košice to the Austrian border south of the Danube (cf. BKA 2018)

High-Level Rail Network in Hungary:

- Vienna – Budapest axis: expansion of the Hegyeshalom – Győr – Budapest line as a high-performance line past 2030: expansion of the Hegyeshalom – Győr line to 200 km/h, expansion of the Budapest – Győr line to 300 km/h (cf. Slavkov 2019)
- Budapest – Komárom: elimination of the two bottlenecks Budapest-Kelenföld – Budaörs and Komárom – Almásfüzitő by 2027 (see Slavkov 2019)
- Budapest area: new construction of a bridge crossing the Danube in the south of Budapest by 2021; new construction of a third track between Budapest-Kelenföld and Budapest-Ferencváros incl. new railway stops by 2027; new construction of a double-track railway line between Kőbánya-Kispest and Monor with a connection to Budapest Liszt Ferenc International Airport Terminal 2 by 2021; construction of a railway tunnel between Budapest Kelenföld and Nyugati by 2021 (cf. Slavkov 2019)
- Budapest in the direction of Eastern Slovakia (Košice): expansion of the Budapest – Debrecen – Nyíregyháza – Tuzér line to a high-speed line (TEN-T core network)
- Western Hungary: expansion of the Sopron – Győr line; expansion of the Sopron – Szombathely – Szentgotthárd line (TEN-T comprehensive network); expansion of the Győr – Celldömölk line (TEN-T comprehensive network); expansion of the Szombathely – Csorna – Hegyeshalom line (TEN-T comprehensive network); expansion of the Szombathely – Nagykanizsa line (TEN-T comprehensive network).
- Budapest in the direction of Slovenia: expansion of the Budapest – Zalaegerszeg – Hodos line (TEN-T core network)
- Budapest in the direction of Croatia: expansion of the Budapest – Székesféhervár – Nagykanizsa line (TEN-T comprehensive network)
- Slovakia/Hungary border crossing: expansion of the Komáron – Székesfehérvár line (TEN-T comprehensive network); new Székesfehérvár – Pusztaszabolcs – Cegléd – Szolnok line (TEN-T comprehensive network); expansion of the Strúrovó – Vác – Budapest line; route expansion (TEN-T comprehensive network)
- Budapest – Belgrade axis: double-track expansion of the line to a high-speed line as part of the Belt and Road Initiative (cf. Serbian Ministry of Construction, Transport and Infrastructure 2019)

In the current framework plan 2018–2023 (BMVIT 2018), the following **measures** have been stipulated that are in **close proximity to the narrow investigation area**:

- **Selective double-track expansion and electrification of the Marchegg branch of the Eastern Railway** by 2022:
  The objectives include resuming high-level long-distance traffic between Austria and the Slovak Republic, reducing travel times on the Vienna Central Station – Bratislava hl. st. line from around

65' to 40', increasing capacity in cross-border traffic, and shifting the modal split towards railway. The total costs amount to around €539m.

- **Müllendorf – Eisenstadt; loop construction** by 2024:
  The aim is to enable passenger trains to travel directly on the Vienna – Eisenstadt line via Ebenfurth without a U-turn in Wulkaprodersdorf and thus to set up a cyclic schedule node in Eisenstadt; together with the Ebenfurth loop and the expansion of the Pottendorf line, travel time on the Vienna – Eisenstadt line can be reduced from currently approx. 60' to approx. 45'. The total costs amount to around €24m.

- **Ebenfurth; loop construction** by 2026:
  The aim is to improve the through traffic of the Ebenfurth junction by, for example, eliminating the need for a U-turn on the Vienna – Eisenstadt line (in connection with the Müllendorf – Eisenstadt loop); together with the Ebenfurth loop and the expansion of the Pottendorf line, travel time on the Vienna – Eisenstadt line can be reduced from currently approx. 60' to approx. 45'; in general, passenger and freight trains from the Raab Railway network could be routed in the direction of Vienna without an additional turning process. The total costs amount to around €205m.

In addition, the ÖBB framework plan provides for further infrastructure measures, safety measures, measures to equip the railway with ETCS, network renovation measures as well as train station upgrades including the enlargement of Park & Ride (P&R) facilities.

6.3 ROAD INFRASTRUCTURE

6.3.1 EXISTING ROAD INFRASTRUCTURE

The high-level road infrastructure in the functional investigation area currently comprises the following components[13]:

High-Level Road Network in Austria:

- Greater Vienna area:
  - A21 Vienna Outer Ring Motorway
  - S1 Vienna Outer Ring Expressway (Vösendorf – Schwechat and Süßenbrunn – Korneuburg)
- Vienna axis – (Sopron) – Budapest:
  - A4 Eastern Motorway Vienna – national border near Nickelsdorf
  - A3 Southeastern Motorway Guntramsdorf junction – Eisenstadt junction
- Vienna – Bratislava axis:

[13] Only those network components are presented textually that are part of the TEN-T core network and/or directly related to the planned network modification:

- A4 Eastern Motorway Vienna – Bruckneudorf junction
- A6 Northeastern Motorway Bruckneudorf junction – national border near Kittsee

- Vienna – Graz/Klagenfurt – Villach axis:
  - A2 Southern Motorway Vienna – Seebenstein junction – Graz – Klagenfurt – Villach – national border near Thörl-Maglern
  - S6 Semmering Expressway Seebenstein junction – St. Michael junction
  - S36 Murtal Expressway St. Michael junction – Judenburg
  - S37 Klagenfurt Expressway Klagenfurt – St. Veit an der Glan
- Eisenstadt – Oberpullendorf axis:
  - S31 Burgenland Expressway Eisenstadt – Oberpullendorf South
  - S4 Mattersburg Expressway Wiener Neustadt junction (A2) to Mattersburg junction (S31)
- Vienna – St. Pölten – Linz – Wels – Salzburg/Passau axis:
  - A1 Western Motorway Vienna – Linz – Voralpenkreuz junction – Salzburg
  - A8 Innkreis Motorway Voralpenkreuz junction – national border near Suben
  - A3 Passau – border crossing Suben (Germany)
- Linz – Freistadt – Ceske Budějovice axis:
  - A7 Mühlkreis Motorway Linz junction – Unterweitersdorf
  - S10 Mühlviertler Expressway Unterweitersdorf – Freistadt North
- Graz – Liezen – Wels axis (Pyhrn-Schober axis):
  - A9 Pyhrn Motorway Spielfeld – Graz – Voralpenkreuz junction
  - A8 Innkreis Motorway Voralpenkreuz junction – Wels
- National border AT/SLO – Salzburg axis:
  - A10 Tauern Motorway Villach junction – Bischofshofen – Salzburg junction
  - A11 Karawanken Motorway national border AT/SLO – Villach junction
- Vienna – Brno axis (currently unfinished):
  - S1 Vienna Outer Ring Expressway – Eibesbrunn junction
  - A5 Northern/Weinviertler Motorway Eibesbrunn junction – Poysbrunn
  - B7 Schrick – national border near Drasenhofen (Czech Republic)
  - D52 Brno – Pohořelice (Czech Republic)

- R 52 Pohořelice – national border near Mikulov (Czech Republic)

- Vienna – Krems/Znaim axis
  - A22 Danube Bank Motorway Vienna – Stockerau junction
  - S5 Stockerau Expressway Stockerau junction – Krems
  - S3 Weinviertler Expressway Stockerau junction – Hollabrunn

High-Level Road Network in the Slovak Republic:

- D1 from Bratislava via Žilina to Košice
- D2 from Kúty (Czech border) via Bratislava to Rusovce (Hungarian border)
- R1 Expressway from Trnava via Nitra and Banská Bystrica
- A6 from Jarovce (Austrian border) to Bratislava

High-Level Road Network in Hungary:

- M0 Budapest Ring Motorway
- M1 Budapest – border crossing Hegyeshalom (west-east connection AT-HU); M15 fork at Mosonmagyaróvár in the direction of Rajka linking to the Slovakian D2
- M2 Budapest in the direction of Vác (north-south connection Slovak Republic – Hungary)
- M3 Budapest heading east in the direction of Ukraine; M30 fork at distance marker 151 in the direction of Miskolc; M35 fork in the direction of Debrecen
- M5 Budapest via Kecskemét and Szeged to Röszke (direction of Serbia)
- M6 Budapest in the direction of Dunaújváros
- M7 Budapest – Siófok – Letenye (motorway towards Zagreb and Split)
- M86 between Mosonmagyaróvár and Szombathely

The following sections of high-level motorways (A road network) and expressways (S road network) currently exist within or at the edge of the narrow investigation area:

- A2 Southern Motorway Vösendorf junction – Guntramsdorf junction
- A3 Southeastern Motorway (Guntramsdorf junction – Hornstein Interchange)
- A4 Eastern Motorway (Schwechat junction – national border near Nickelsdorf)
- A6 Northeastern Motorway (Bruckneudorf junction – national border near Kittsee/D4)
- S1 Vienna Outer Ring Expressway (Vösendorf junction – Schwechat junction)

In addition, numerous federal roads (B) and state roads (L) are included in the narrow investigation area, which are not listed here. They are, however, taken into account when considering the (high-level) road network.

6.3.2 ROAD INFRASTRUCTURE DEVELOPMENT

The **development of the transport system** is closely linked to infrastructure development. The aim is to have the **TEN-T core network** completed by 2030, towards which European funding for infrastructure development is directed. The expansion of the high-level road transport network in Austria is based on a **framework plan**, which is regularly updated and contains the **capital expenditure specifications of the Republic of Austria** for each of the following six years. The current framework plan provides for capital expenditures for the years 2018–2023 (BMVIT 2018).

In the Strategic Transport Development Plan of the **Slovak Republic** (RTR 2014), the Ministry of Transport of the Slovak Republic laid down measures for developing road infrastructure up to 2020 and 2030. These measures include the planning and construction of numerous motorways and expressways in the Slovak road network.

Hungary's National Transport Strategy (NTS) has set out measures for developing its transport infrastructure by 2030 and an outlook for 2050 (NTS 2013).

It is assumed that the following road infrastructure undertakings[14] will be commissioned and operational by 2040:

High-Level Road Network in Austria:

- Vienna (– Sopron) – Budapest axis:
  - A4 Eastern Motorway: lane extension and renovation for Bruck/Leitha west interchange – Neusiedl/Gewerbepark interchange by 2024 (BMVIT 2018)
  - A3 Southeastern Motorway Müllendorf – Eisenstadt improvements by 2019; to national border near Klingenbach linking the planned Hungarian M85 Motorway Csorna – Sopron; expansion by 2027 (BMVIT 2018; ASFINAG 2019)
- Greater Vienna area:
  - A2 Southern Motorway/A3 Southeastern Motorway: Expansion of the Guntramsdorf junction by connecting the northbound lane of the A3 Southeastern Motorway with the southbound lane of the A2 Southern Motorway[15]

[14] It is assumed that all A and S federal roads included in Index 1 and Index 2 of the Federal Roads Act 1971 (Bundesstraßengesetz) with reference to the functional investigation area at the time the Environmental Report was prepared have been put into operation and are effective with regard to transport. In addition, relevant expansion measures contained in the framework plan of ÖBB-Infrastruktur AG and ASFINAG 2018–2023 (cf. BMVIT 2018) are considered. State roads are not given more attention as they are not part of the nationwide high-level transport network. The planned B state roads are the exception, which can be particularly effective with regard to transport in connection with the high-level road network.

- S1 Vienna Outer Ring Expressway between Schwechat junction and Süßenbrunn (Donau-Lobau Tunnel) by 2025 (BMVIT 2018)
- S1 Vienna Outer Ring Expressway, Raasdorf – Am Heidjöchl (Seestadt Aspern connection) by 2022 (BMVIT 2018)
- B233 Zwölfaxing bypass Schwechat South interchange (S1 Vienna Outer Ring Expressway) – B9 Mannsdorfer Straße by 2021 (Office of the Lower Austrian Provincial Government 2017a)
- B10/B60 Fischamend airport region – Schwadorf – Götzendorf, completion date pending (Office of the Lower Austrian Provincial Government 2017a)

❑ Vienna – Znojmo/Brno axis:

- S3 Weinviertler Expressway Hollabrunn – Guntersdorf by 2020; to national border near Kleinhaugsdorf (Czech Republic) after 2023 (BMVIT 2018)
- A5 North/Weinviertler Motorway Drasenhofen bypass open to traffic by 2019; full four-lane expansion Poysbrunn to national border near Drasenhofen after 2023 (BMVIT 2018) and D52 Brno – national border near Mikulov (Czech Republic)

❑ Vienna – Bratislava axis:

- S8 Marchfeld Expressway, S1/S8 junction – Gänserndorf/Obersiebenbrunn by 2021; to national border at Marchegg after 2023 (BMVIT 2018) linking the Slovak D4 ("Bratislava Bypass")

❑ Linz – Freistadt – Ceske Budějovice axis:

- S10 North Mühlviertler Expressway Freistadt North to Rainbach North by 2024; from Rainbach North to national border A/CZ after 2024 (BMVIT 2018)
- D3 National border near Wullowitz – ČeskéBudějovice – Prague (Czech Republic) by 2021 (BMVIT 2019)[16]

❑ Vienna – Graz/Klagenfurt – Villach axis:

- S36 Murtal Expressway St. Georgen – Scheiflinger Ofen: open to traffic expected for 2020 (BMVIT 2019); Judenburg – St. Georgen (gap closure): section by section construction under full traffic from 2027 to 2031 (BMVIT 2019)
- S37 Klagenfurt Expressway St. Veit an der Glan to Scheifling junction after 2034[17]

❑ Eisenstadt – Oberpullendorf axis:

[15] This measure is not included in ASFINAG's current construction programme; due to the forecasted capacity utilisation of the Guntramsdorf junction, however, ASFINAG assumes that this measure will be implemented up to the forecast horizon of the proposed network modification.

[16] Bilateral agreement between the Republic of Austria and the Czech Republic government on connecting the Austrian S10 Expressway and the Czech D3 Motorway at the Austrian-Czech border (Federal Law Gazette III of 11 April 2017 – No. 56);

[17] Safety features addition to St. Veit Nord – St. Veit South: expected to be completed by 2026; safety features to St. Veit South – Maria Saal: expected to be completed by 2030.

- S31 Burgenland Expressway Eisenstadt – Oberpullendorf South: safety features addition to Mattersburg junction up to Weppersdorf/St. Martin interchange (BMVIT 2018)
- S4 Mattersburg Expressway Wiener Neustadt junction (A2 Southern Motorway) up to Mattersburg junction (S31 Burgenland Expressway): safety features addition to Mattersburg junction up to Wiener Neustadt junction (BMVIT 2018)

- Graz – Szombathely – Budapest axis:
  - S7 Fürstenfelder Expressway, Riegersdorf – Heiligenkreuz by 2023 (BMVIT 2018)

High-Level Road Network in the Slovak Republic:

- Extension of the D1 from Košice to Záhor (Ukrainian border) as part of the TEN-T core network (RTR 2014)
- Expansion of the north-south link between Poland and the Czech Republic: construction of the D3 from Žilina via Čadca to Skalité (Polish border) and R5 fork of D3 at Svrčinovec (Czech border) as part of the TEN-T core network (RTR 2014)
- North-south connection in eastern Slovakia: R4 Expressway expansion from Vyšný Komárnik (Polish border) via Prešov and Košice to Milhosť (Hungarian border) (linking to the Hungarian M30) as part of the TEN-T comprehensive network (RTR 2014)
- Central west-east axis in Slovakia: expansion of the R2 Expressway from Chocholná via Zvolen to Košice as part of the TEN-T comprehensive network (RTR 2014)
- Central north-south axis in Slovakia: R1 extension from Banská Bystrica with link to the D1; R3 Expressway from Trstená (Polish border) via Martin – Žiar nad Hronom to Šahy (Hungarian border) (linking Hungarian M2) as part of the TEN-T core network or comprehensive network (RTR 2014)
- Construction of the D4 "Bratislava Bypass" from Jarovce (Austrian border) via Bratislava and Ivanka pri Dunaji to Devínska Nová Ves (Austrian border) (connection to S8) (RTR 2014)
- Expansion of the R6 Expressway from Lysá pod Makytou (Czech border) to Púchov as part of the west-east axis from Nuremberg/Dresden – Prague – Olomouc – Žilina – Košice – Záhor – Uzhorod – Lvov
- Construction of the R7 Expressway from Bratislava via Nové Zámky to Lučenec;

High-Level Road Network in Hungary:

- Completion of the M0 Budapest Ring Motorway as part of the TEN-T core network (NTS 2013)
- M2 Motorway Budapest – Vác extension to the Slovakian border (linking the Slovakian R3) as part of the TEN-T core network (NTS 2013)
- Construction of the M85 Motorway between Győr and Sopron up to the Austrian border (linking to the A3 Southeastern Motorway) by 2023

- Extension of the M3 to the Ukrainian border; extension of the M30 from Miskolc in the direction of the Slovak border with a link to the Slovakian R4 in the direction of Košice as part of the TEN-T core network (NTS 2013)
- Construction of the M4 Motorway between Budapest via Szolnok in the direction of Romania (Bucharest)
- Construction of the M8 Motorway from Szolnok via Dunaújváros to the Austrian border (link to planned Austrian S7 Fürstenfelder Expressway) as part of the TEN-T comprehensive network (NTS 2013)
- M87 Szombathely – Köszeg with possibility of linking to the S31 Burgenland Expressway near Oberpullendorf (Hungary)

In the framework plan of ÖBB-Infrastruktur AG and ASFINAG 2018 to 2023 (BMVIT 2018), the following measures are currently defined for the road network within the narrow investigation area and in the spatial environment:

- **S1 Vienna Outer Ring Expressway, Schwechat – Süßenbrunn**: open to traffic expected after 2025; total costs approx. €1.8bn
- **A4 Eastern Motorway, lane extension and renovation Fischamend – Bruck/Leitha West**: expected to be completed by 2022; total costs approx. €148.2m
- **A4 Eastern Motorway, lane extension and renovation Bruck/Leitha West interchange – Neusiedl/Gewerbepark interchange**: expected to be completed by 2024; total costs approx. €89.6m

6.4 MULTIMODAL TERMINALS

6.4.1 EXISTING MULTIMODAL TERMINALS

Multimodal terminals are **nodes in intermodal or multimodal transport systems** that have at least one connection between two modes of transport (road freight transport to rail freight transport and/or waterway transport). Multimodal terminals have the necessary infrastructure for **transloading containers and goods** (e.g. cranes, reach stackers and storage areas) and are responsible for bundling, storing and distributing cargo.

The functional investigation area has numerous **multimodal terminals** of which some are recognised as comprehensive or core network nodes of the TEN-T with significance for freight transport. TEN-T inland ports are also included in the description.

Multimodal Terminals in Austria:

Node/"Name"	Road	Rail	Port	RoLa	TEN-T node	TEN-T port
Vienna Freudenau "WienCont Container Terminal"	X	X	X			Core network
Vienna Inzersdorf "Güterzentrum Wien Süd"	X	X			Core network	
"St. Pölten Alpenbahnhof CCT"	X	X				
"Krems a.d. Donau CCT"	X	X	X			Comprehen-sive network
"Wels Vbf CCT"	X	X		X	Core network	
"Linz Stadhafen CCT"	X	X	X			Comprehen-sive network
"Enns Hafen CCT"	X	X	X			Core network
Graz (Werndorf) "Graz Süd CCT"	X	X			Core network	
"Kapfenberg CCT"	X	X				
"St. Michael CCT"	X	X				
Villach-Fürnitz "Villach Süd CCT"	X	X		X	Comprehen-sive network	
"Lambach"	X	X				
"Salzburg Frachtenbahnhof"	X	X		X	Comprehen-sive network	
"CTS Salzburg"	X	X			Comprehen-sive network	

Table 7: Multimodal terminals and the TEN-T comprehensive and core network nodes in Austria (Regulation (EU) No 1315/2013; KombiConsult 2016; own illustration)

Multimodal Terminals in the Slovak Republic:

Node/"Name"	Road	Rail*[18]	Port	RoLa	TEN-T node	TEN-T port
Bratislava "Bratislava Palenisko"	X	X	X		Core network	Core network
Bratislava "Bratislava UNS (ČSKD INTRANS)"	X	X				
Sládkovičovo Kontajnerový terminál	X	X				
Haniska pri Košicach "Košice Metrans"	X	X*				
Košice ČSKD Intans	X	X			Comprehen-sive network	
Čierna nad Tisou (Dobrá) TKD Dobrá	X	X*				
Dunajská Streda	X	X				
Žilina SKD Intrans	X	X			Core network	

Table 8: Multimodal terminals and the TEN-T comprehensive and core network nodes in the Slovak Republic (Regulation (EU) No 1315/2013; KombiConsult 2016; own illustration)

The inland ports in Komárno and Štúrovo are not multimodal terminals with infrastructure for transloading containers and goods; rather, they are primarily used for passenger traffic. These ports are presented in Chapter 6.5.

[18] *** Terminal for transloading between 1,533 mm and 1,435 mm-gauge network**

Multimodal Terminals in Hungary:

Node/"Name"	Road	Rail*[19]	Port	RoLa	TEN-T node	TEN-T port
"Törökbálint Kombiterminál"	X	X				
Budapest (Csepel) "Mahart Container Center"	X	X	X			Core network
Budapest (Soroksár) "Budapest BILK"	X	X		X	Core network	
Székesfehérvár	X	X			Comprehen-sive network	
Debrecen	X	X				
Záhony/Tuzsér	X	X			Comprehen-sive network	
"Sopron container terminal"	X	X			Comprehen-sive network	

Table 9: Multimodal terminals and the TEN-T comprehensive and core network nodes in Hungary (Regulation (EU) No 1315/2013; KombiConsult 2016; own illustration)

The inland ports in Győr-Gönyű, Komárom, Százhalombatta, Dunaújváros, Dunaföldvár, Baja, Mohác, Paks and Szeged are not multimodal terminals with infrastructure for **transloading containers and goods**; rather, they are primarily used for passenger traffic. These ports are presented in Chapter 6.5.

The density of the TEN-T core and comprehensive network nodes in the functional investigation area that are relevant to freight underlines the region's **significance** for European cross-border **freight traffic**.

The **Freight Centre Vienna South (Güterzentrum Wien Süd)** is located on the edge of the **narrow investigation area**. In 2017, the first expansion stage of the intermodal freight terminal was completed, with the goal to increase capacity and make it more attractive, to shift the modal split towards rail and to transfer road freight to the railways. The total costs amounted to around €250m.

The Freight Centre Vienna South currently covers an area of 55 hectares and is equipped with two crane bridges for handling around 210,000 international transport units per year.

6.4.2 MULTIMODAL TERMINAL DEVELOPMENT

In the functional investigation area, the following measures envisaged in connection with multimodal terminals are assumed up to the year 2040:

Multimodal Terminals in Austria:

- The **Freight Centre Vienna South** will have four crane bridges and handle up to 420,000 international transport units once fully completed.
- **Wels Vbf (Wels marshalling yard); terminal expansion by 2021**: better utilisation of existing space by using crane operations only (discontinuation of forklift operation), thereby creating additional storage space for containers (cf. BMVIT 2018).

[19] *** Terminal for transloading between 1,533 mm and 1,435 mm-gauge network**

- **Linz City Harbour Marshalling Yard; conversion and installation of CBIs** by 2021: freight track modernisation and concentration of shunting facilities (cf. BMVIT 2018)
- **Cargo Terminal Villach South; cargo handling centre conversion** by 2027 (cf. BMVIT 2018)

Multimodal Terminals in the Slovak Republic:

- Intermodal terminal **Leopoldov – Šulekovo – Pálenisko** as part of the TEN-T comprehensive network (RTR 2014)
- Trimodal terminal **Bratislava – Pálenisko** (RTR 2014)
- Intermodal terminal **Košice – Bočiar** (RTR 2014)
- Construction of a **terminal in western Slovakia** (Nové Zámky) linking the 1,520 mm gauge network with the 1,435 mm gauge network

Multimodal Terminals in Hungary:

- Intermodal terminal in **Miskolc** as part of the TEN-T comprehensive network

6.5 INLAND WATERWAY

6.5.1 EXISTING INLAND WATERWAYS AND PORTS

The **Danube** (part of the European waterway E-80) and the **Váh** (European waterway E-81 from the mouth to Žilina) are located within the functional investigation area as European inland waterways.

With an annual transport volume of 40 million tonnes, the **Danube** is one of the most **important European waterways**, for which further development is planned in accordance with the European action programme for inland waterway transport, the EU Danube Region Strategy and the Austrian National Action Plan for Danube Navigation. As of today, the Váh is not of importance for freight transport.

In addition to the ports described in Chapter 6.4.1, which function as multimodal terminals for the transloading of goods, there are other inland ports along the European waterways. Some of the inland ports in the functional investigation area are part of the TEN-T:

	Port	E inland port[20]	TEN-T
Austria	Vienna Freudenau	P 80-37	Core network
	Krems	P 80-36	Comprehensive network
	Enns-Ennsdorf	P 80-35	Core network
	Linz-Voest	P 80-34	
	Linz	P-80 33	Comprehensive network
Slovak Republic	Bratislava	P-80 38	Core network
	Komárno	P-80 40	Core network
	Štúrovo	P-80 41	
Hungary	Győr-Gönyű	P-80 39	Comprehensive network
	Komárom	P-80 40	Comprehensive network
	Budapest (Csepel)	P-80 42	Core network
	Százhalombatta	P-80 43	
	Dunaújváros	P-80 44	Comprehensive network
	Dunaföldvár	P-80 45	
	Baja	P-80 46	Comprehensive network
	Mohác		Comprehensive network
	Paks		Comprehensive network
	Szeged		Comprehensive network

Table 10: Inland ports with international significance and part of the TEN comprehensive or core network in the functional investigation area (Regulation (EU) No 1315/2013)

Several critical **shallow areas** in the **free-flow section** between Vienna and the Slovak border exist, which can impair navigation when water levels are low, as ships cannot be optimally loaded and thus not efficiently operated. The necessary **depth of the waterway** should be ensured through regular surveys and dredging. What's more, the east of Vienna struggles with the issue of **river bed degradation** in the Danube, which has led to the Donau-Auen National Park drying up because of declining groundwater levels. The conditions for the environment and shipping are continuously being improved.

Within Austria, the **four public ports** in Linz, Enns, Krems and Vienna, which are part of the TEN-T, handle almost 50% of transloading on the Austrian part of the Danube. More than one third of the goods are transloaded in **voestalpine's port**; the remaining cargo is distributed among **other private transloading ports and countries**.

One third of the goods transported on the Danube in Austria are ores, with 25% each accounting for petroleum products and agricultural products. Inland navigation was able to grow its portfolio in recent years for undertaking cargoes and the transport of heavy and oversized goods (BMVIT 2015a: p. 9 et seq.).

[20] **Pursuant to the European Agreement on Main Inland Waterways of International Importance (AGN)**

6.5.2 MEASURES ENVISAGED FOR THE INLAND WATERWAY

In addition to ecological and flood protection measures, the BMVIT's National Action Plan for Danube Navigation (NAP) up to 2022 (BMVIT 2015) provides for a series of measures for the shipping industry in Austria. In it, the following relevant measures (for infrastructure) are outlined:

- 02 Remove nautical bottlenecks in harmony with nature
- 11 Further grow transports on the Danube
- 12 Expand the range of multimodal transloading facilities on the Danube

As part of the **Integrated River Engineering Undertaking (FGP)**, viadonau is implementing various measures with the aim of improving conditions for shipping and ecology. These measures are defined in the **Catalogue of Measures for the Danube east of Vienna** (M.KAT.OST). In addition to ongoing maintenance dredging, critical shallow areas will be improved. Four measures have already been implemented. According to the current plans, those **fords** will be **improved by 2022** that can lead to considerable restrictions in freight shipping and cause an increase in maintenance costs. Since 2016, an integrative mix of measures has been taken to actively counteract river bed degradation, with the erosion rates already able to be reduced (viadonau 2018).

In the Strategic Transport Development Plan of the **Slovak Republic** (RTR 2014), the Ministry of Transport of the Slovak Republic laid down measures for inland waterways.

- Implementation of technical measures to remove nautical bottlenecks on the Danube between kilometres 1880.260 and 1843.000
- Optimisation of transport conditions on the Váh through technical measures
- Modernisation and renewal of the ports in Bratislava and Komárno

In accordance with the European Agreement on Main International Inland Waterways of International Importance (AGN), inland ports with international significance are planned along the **Váh**:

- P 81-01 to P 81-10: Šaľa, Sereď, Hlohovec, Piešťany, Nové Mesto nad Váhom, Trenčín, Dubnica, Púchov, Považská Bystrica, Žilina

In the long term, Hungary's National Transport Strategy (NTS 2013) foresees the development of TEN-T ports and the removal of nautical bottlenecks along the Danube waterway.

6.6 AIRPORTS WITH INTERNATIONAL TRAFFIC

6.6.1 EXISTING AIRPORTS WITH INTERNATIONAL TRAFFIC

The functional investigation area includes several **airports with international traffic**, with **Vienna Airport** taking the number one spot for airport with the highest number of aircraft movements, passengers and freight volume by far. Table 11 shows the data for these airports by passenger volume in descending order.

The Slovak Republic's largest airport in terms of passenger and freight volume is **Bratislava Airport**. Since 2005, an average of 93% of the total air freight volume in the Slovak Republic has been handled via Bratislava Airport, 4% via Košice Airport and 2% via Poprad Tatry Airport. The rest of the cargo is handled by the airports in Žilina, Piešťany and Sliač, which do not make up part of the TEN-T. The air freight volume in the Slovak Republic increased from 3,937.752 tonnes in 2005 to 22,725.712 tonnes in 2012 (RTR 2014).

	Location	TEN-T	Passengers	Aircraft movement	Freight [t]	Year
Austria	Vienna Schwechat	Core network	24,826,881	221,333	271,943	2018
Hungary	Budapest Liszt Ferenc	Core network	14,867,491	115,028	146,113	2018
Austria	Salzburg	Comprehensive network	1,890,164	19,479	228	2017
Slovak Republic	Bratislava	Core network	1,756,808	25,690	22,895	2016
Austria	Graz	Comprehensive network	958,848	14,271	158	2017
Austria	Linz	Comprehensive network	402,007	6,890	10,245	2017
Czech Republic	Brno	Comprehensive network	470,285	44,294	3,893	2017
Austria	Klagenfurt	Comprehensive network	218,281	4,337	0	2017
Hungary	Debrecen	Comprehensive network	318,342	2,803	n/a	2017
Slovak Republic	Košice	Comprehensive network	510,517	5,936	57	2018
Slovak Republic	Poprad Tatry	Comprehensive network	80,605	9,928	-	2017
Hungary	Sármellék	Comprehensive network	13,229	n/a	15	2017

Table 11: Airports as part of the TEN-T core and comprehensive network, all data 2014 (Vienna Airport 2019a, Statistics Austria 2018a, Budapest Airport 2018, Letisko M. R. Štefánika – Bratislava Airport 2017, Letiště Brno 2018; Hungarian Central Statistical Office 2018, Letisko Poprad-Tatry 2018, own illustration)

The **Vienna and Budapest airports** are also listed in Regulation (EU) No 1315/2013 as so-called **main airports in the TEN-T core network**. This means that they will be connected to the rail and road infra-

structure of the TEN-T by 2050 and will, if possible, be integrated into the high-performance railway network.

6.6.2 MEASURES ENVISAGED FOR AIR TRAFFIC

Flughafen Wien AG is planning to build a **third runway** (11R/29L) south of **Vienna Airport** and parallel to the existing runway 11/29 running east-west, with the intention of being able to cope with the steadily increasing number of aircraft movements at Vienna Airport in the long term. With the completion of the airport connection between Vienna Airport and Bruck an der Leitha (cf. Chapter 6.2.2), Vienna Airport will be gaining a direct rail link to the east (western Hungary to Budapest, western Slovakia), thereby considerably expanding its catchment area for rail traffic.

The four-track expansion of the Western Railway between Linz and Marchtrenk will connect Linz Airport to the high-level railway network.

In Slovakia, the following air traffic measures are envisaged in accordance with RTR 2014:

- Bratislava Airport: Modernisation and extension of runway (RWY) 13/31
- Poprad Tatry Airport: RWY and taxiway (TWY) modernisation
- Construction of an air freight terminal at Košice Airport
- Hangar construction at Košice Airport (designation “C” and “D”)

In Hungary, the NTS 2013 does not foresee any concrete measures for air traffic up to 2040. Liszt Ferenc Airport in Budapest, as part of the TEN-T, will be adapted in line with the growth in traffic.

7

DESCRIPTION OF ENVIRONMENTAL CONDITIONS

The proposed network modification concerns the dynamic conurbations and economic areas of the centrope region. This is where the Alpine, Continental and Pannonian biogeographical regions meet and shape the natural environment and the landscape as well as the cultural and economic area, all of which have varying sensitivities.

7 DESCRIPTION OF ENVIRONMENTAL CONDITIONS

7.1 FUNCTIONAL INVESTIGATION AREA

The functional investigation area comprises the area that is (indirectly) affected by the network modification: this applies to the Austrian network east of the Salzburg/Villach line, the entire Slovak transport network and the Hungarian transport network north of the Mediterranean Corridor. The region affected by the network modification comprises a large part of Austria and the Slovak Republic as well as the northern half of Hungary (cf. Figure 15).

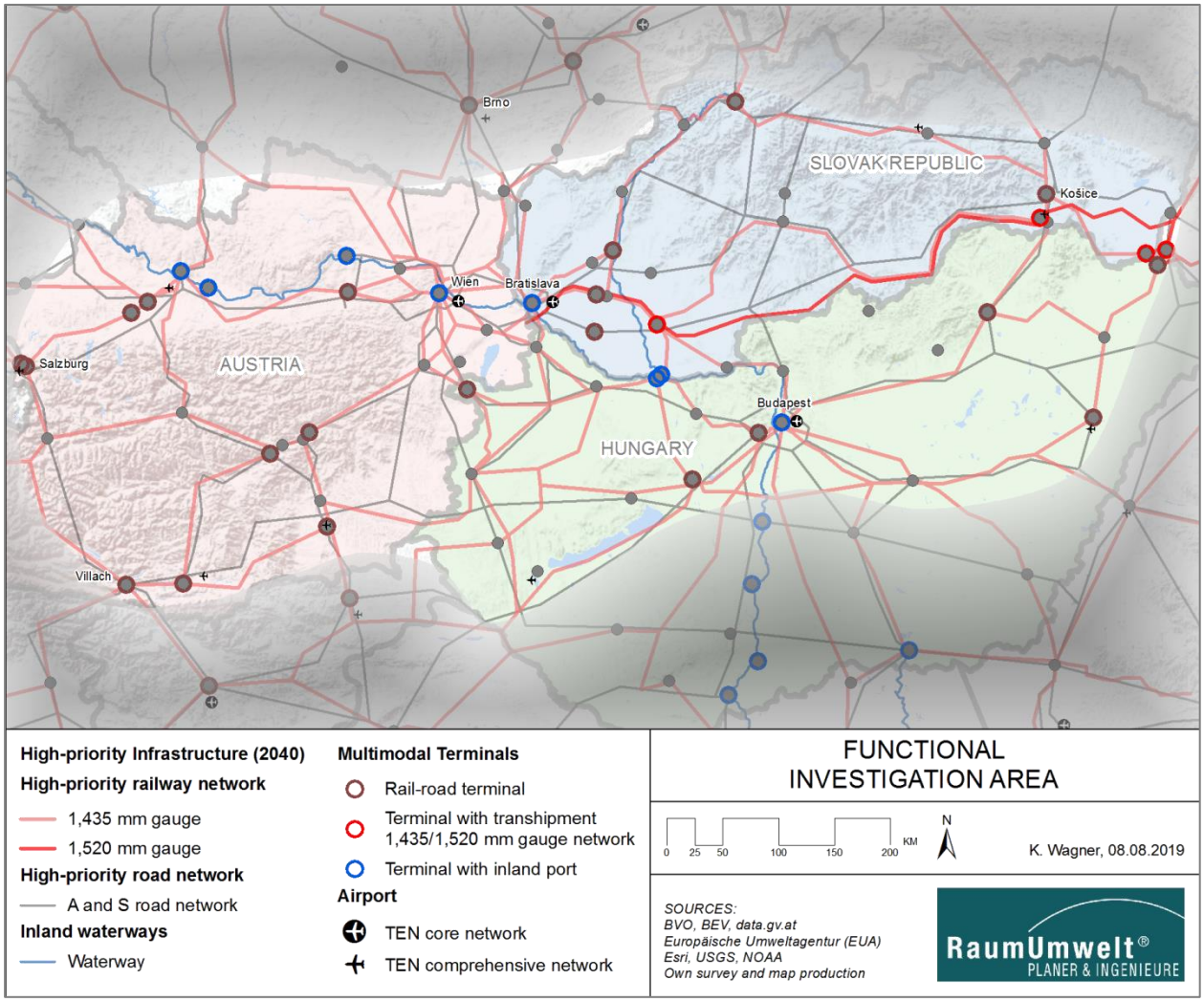


Figure 15: Functional investigation area (own illustration)

The transport structures and their development within the functional investigation area are shown for the modes of transport road, rail, inland waterway, air and multimodal terminals.

7.1.1 POPULATION AND THE ECONOMIC AREA

7.1.1.1 Population Structure and Trends

With all related NUTS 2 regions, the functional investigation area comprises a total of around **21 million inhabitants** (cf. Table 12). About 5.6 million people live in the larger cities. The **largest city** in the investigation area is **Vienna** with a population of around 1.8[21] million, followed by Budapest with about 1.7 million. Cities with a population of more than 200,000 are Bratislava (about 420,000 inhabitants), Graz (about 270,000 inhabitants), Košice (about 240,000 inhabitants) and Debrecen (about 200,000 inhabitants). Other cities that have 100,000 to 200,000 inhabitants are Linz, Miskolc, Salzburg, Győr, Nyíregyháza, Székesfehérvár and Klagenfurt (Eurostat 2018b).

Country	NUTS 2 region	Region name	2017 population
Austria	AT11	Burgenland	291,942
	AT12	Lower Austria	1,665,753
	AT13	Vienna	1,867,582
	AT21	Carinthia	561,077
	AT22	Styria	1,237,298
	AT31	Upper Austria	1,465,045
	AT32	Salzburg	549,263
Slovak Republic	SK01	Bratislavský kraj	641,892
	SK02	Západné Slovensko	1,830,751
	SK03	Stredné Slovensko	1,342,287
	SK04	Východné Slovensko	1,620,413
Hungary	HU10	Közép-Magyarország	3,000,076
	HU21	Közép- Dunántúl	1,056,097
	HU22	Nyugat-Dunántúl	983,251
	HU31	Észak-Magyarország	1,143,902
	HU32	Észak-Alföld	1,468,088

Table 12: Population in the functional investigation area according to NUTS 2 regions (Eurostat 2018a; own illustration)

In the functional investigation area, an **increase in population** was recorded in the larger cities and their surrounding areas: in the 2007–2017 period the European capitals Vienna (+12.4%), Budapest (+3.3%) and Bratislava (+8.4%) grew considerably (cf. City of Vienna 2018). Hungary's regions with the most dynamic population growth are located on the Vienna – Budapest axis, with the **city's surrounding areas** experiencing particular growth. In western Hungary, strong population growth was recorded in the border regions – both around Győr and in the environs of Sopron and Szombathely. The suburbanisation around Bratislava crosses national borders, thus affecting numerous Parndorf Plain municipalities (cf. PGO 2007-2019).

[21] Uniform population data for the above-mentioned cities (> 100,000 inhabitants) under consideration are available for the year 2014. The data is from Eurostat 2018b.

Austria has seen general **population growth** in the urban clusters around high-level transport hubs. The entire metropolitan region of Vienna/Bratislava grew significantly between 2006 and 2016. The provincial capitals Eisenstadt (+16.9%) and Graz (+14.4%) and their surrounding areas also experienced significant population growth between 2006 and 2016. The Greater Linz-Wels area is experiencing dynamic growth (cf. ÖROK 2019).

The entire functional investigation area can be characterised as a **dynamic region** in terms of population trends over the coming decades, with significant population growth expected in the cities and border regions above all.

7.1.1.2 Economic Structure

Economic cooperation in the region has gradually become stronger. Further political, economic, cultural and social interdependence are expected for the future too.

A look at the core economic indicators of the countries in the functional investigation area makes clear the **structural differences** and **economic dynamics** in the region: when comparing the 2017 gross domestic product (GDP; in €/inhabitant) of Hungary and the Slovak Republic (€12,700 and €15,600 respectively) with that of Austria (€42,100), a west-east divide can still clearly be seen from an economic point of view, which is only slowly converging with the **harmonisation of the economic systems** (cf. Figure 16).

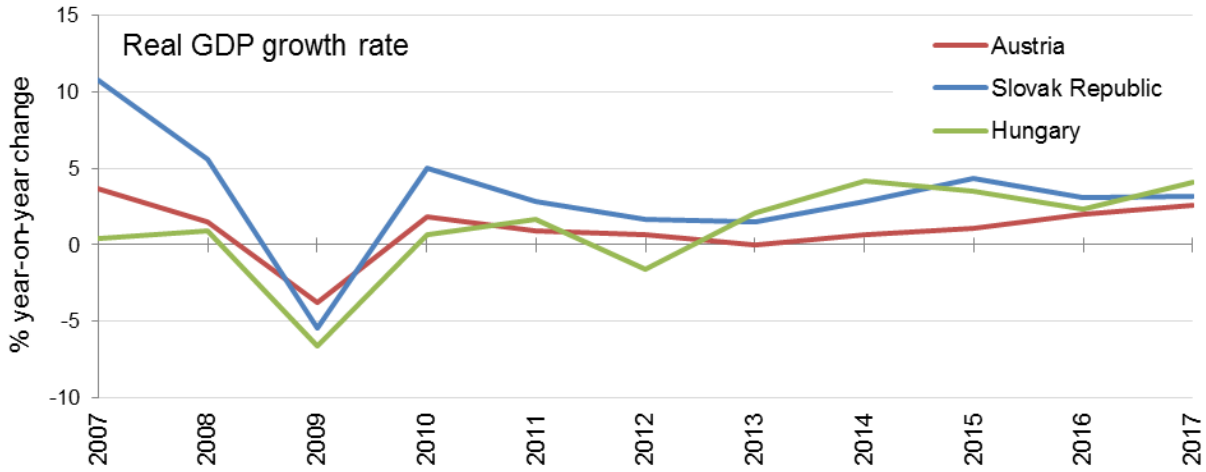


Figure 16: Year-on-year real GDP growth rate in % (Eurostat 2007–2018, own illustration)

Before the 2008 financial crisis, real GDP **growth rates** in the Slovak Republic were significantly higher than in Austria. The situation has eased in the overall investigation area since 2013, showing growth rates at around 3 to 4% (Eurostat 2007–2018).

The **East-West divide** is also becoming apparent within the individual countries: as such, the region around Bratislava in the Slovak Republic is performing much better from an economic standpoint than the eastern part of the country. The East-West divide is also reflected in the region's employment numbers.

Unemployment rates in the region between the Austrian border and Budapest are significantly lower than in the east and south of Hungary (ÖIR 2015: p. 21).

The **economic centres** in the functional investigation area are formed by the large cities: the capitals (including the environs) Vienna, Budapest and Bratislava as well as regional centres such as Graz, Linz-Wels, St. Pölten and Győr are the most economically attractive areas. The Budapest region and the county of Győr-Moson-Sopron are strongly influenced by the automotive and mechanical engineering sector, whereby the focus in the (regional) centres is on the **service sector**. Vienna and Bratislava are the closest European capitals at only 60 km apart. The location on the Danube, the common economic and cultural history and of course the proximity of the two cities have given rise to the **"Twin City" concept**, which aims to boost economic, cultural and social relations and thus strengthen the entire metropolitan region through **coordinated cooperation**. Both capitals are characterised by a strong service sector, with tourism also playing a major role. Numerous companies from the automotive sector have settled in Bratislava in the last few decades (ÖBB 2014: p. 10).

7.1.2 TRAFFIC SITUATION AND DEVELOPMENTS IN FREIGHT TRANSPORT

In European freight transport, **road traffic** is the **most important mode of transportation** in terms of **freight transport performance** (EU28: 76.4 %), followed by rail (EU28: 17.4%) and inland waterways (EU28: 6.2%). When comparing the percentage of freight carried in terms of tonne-km (cf. Figure 17) for 2016, it becomes apparent that the **percentage of freight transport performance by rail** is, in comparison, **high for all three countries in the functional investigation area**.

At 34.5% freight transport performance by rail, the Slovak Republic, ahead of Austria (31.5%) and Hungary (28.5%), is well above the European average. Approx. 62% to 66% of **freight transport performance** is carried by road; in comparison, inland waterways account for a small percentage, with 3.0% in Austria and 5.3% in Hungary (Eurostat 2018c).

At around 490 million tonnes, Austria has the largest freight transport volume in the functional investigation area. The Slovak Republic and Hungary have 210 million tonnes and 256 million tonnes respectively and thus 43% and 53% respectively of Austria's total transport volume. (cf. Figure 17)

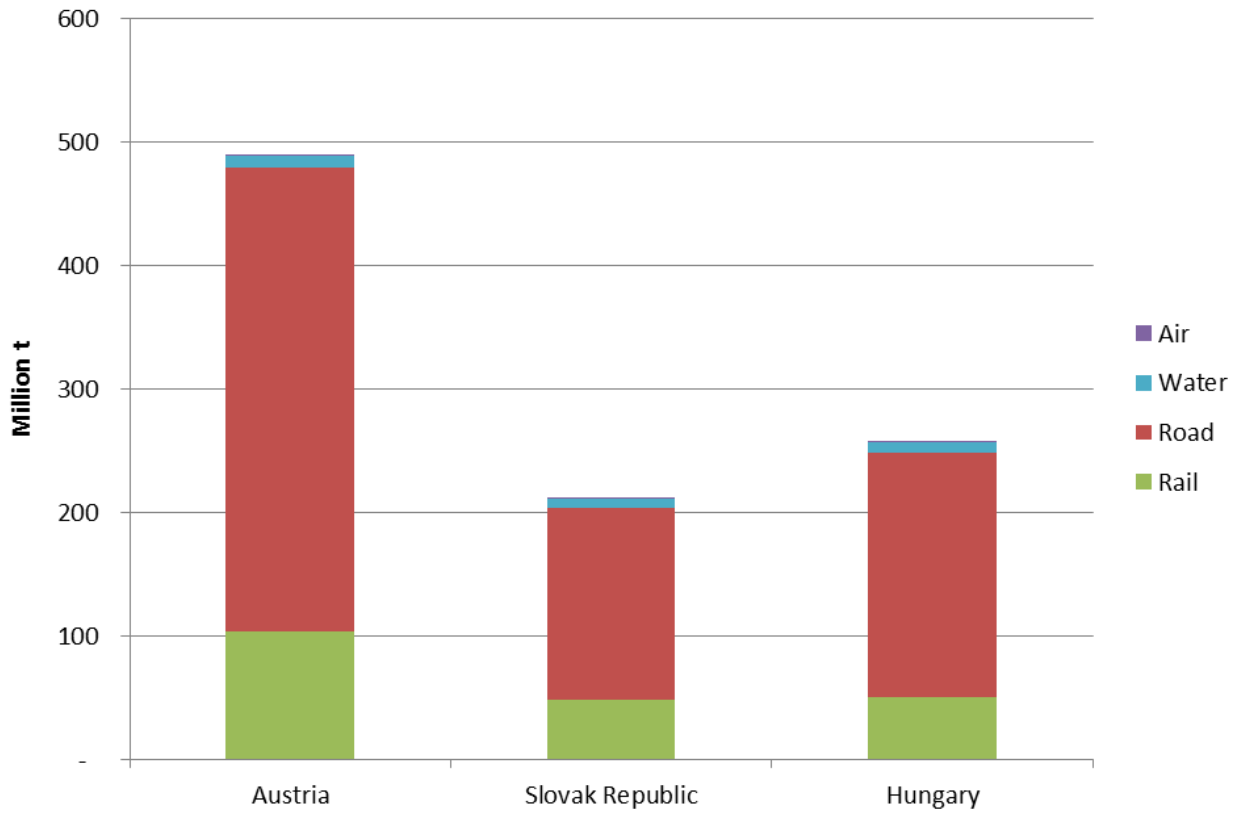


Figure 17: Freight traffic volume by mode of transport in million t, 2016 (Eurostat 2017; own illustration)

In the countries in the functional investigation area, the **total transport volume** of rail, road, inland waterways and air transport amounted to around 955 million tonnes in 2016, of which road transport made up a large share, at around 76% (approx. 730 million tonnes). The share of the transport volume carried by rail amounts to around 21.0% (approx. 200 million tonnes), and around 2.5% (24 million tonnes) of the volume is transported by inland waterways. At around 324,000 tonnes, air transport is negligible in this context in terms of the volume of freight transported (Eurostat 2018c).

Growth rates in freight traffic have seen heavy **fluctuations** since 2007. In 2009, the financial crisis led to a significant slump in freight transport. At -18.3%, the Slovak Republic was hit hardest compared to the other two countries (-11.4% in Austria, -12.2% in Hungary). In Austria, the volume of freight traffic also sharply dropped in 2012. In Austria, the total transport volume has almost returned to the transport volume before 2009, the year of the crisis (2008: approx. 500 million tonnes). The Slovak Republic and Hungary have not yet reached 2008 levels (approx. 260 million tonnes and 320 million tonnes respectively).

The curves of growth rates in freight transport (cf. Figure 18) correlate with GDP growth, although the fluctuations of each are much more pronounced (cf. Figure 16).

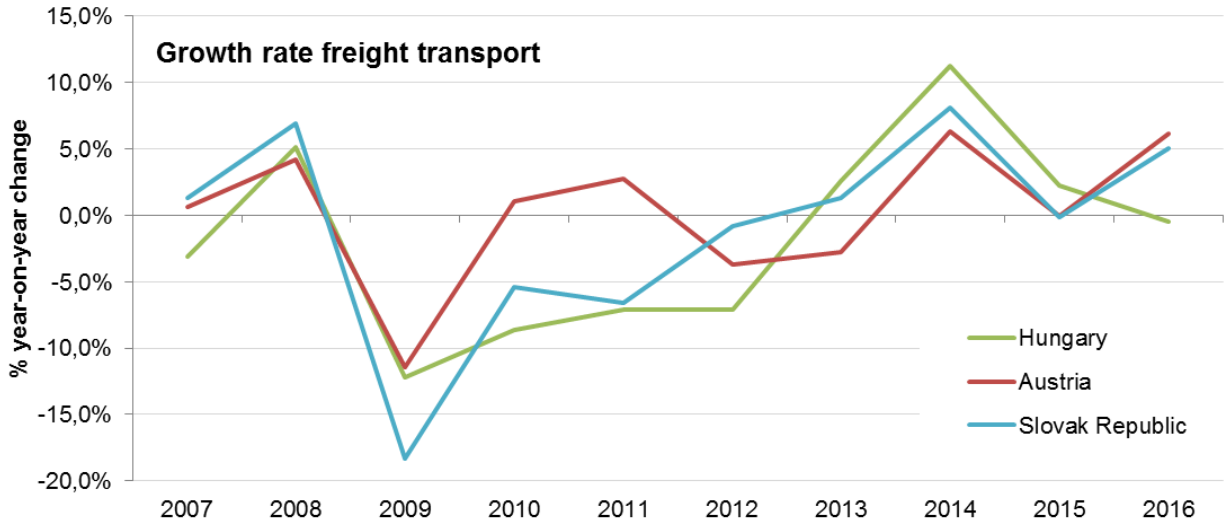


Figure 18: Year-on-year freight traffic growth rate in % (Eurostat 2018c, own calculation)

In **market development studies in freight transport** within the EU's Orient/East-Med freight corridor (cf. RFC7 2017), **freight demand is undertakinged to increase** by up to 17% by 2025 within the countries in the functional investigation area with regard to gross tonne-kilometres (cf. Figure 19). According to this forecast, freight transport would increase by three to four percentage points annually. The reasons for this are better service quality, more flexibility, reliability and the positive economic growth.

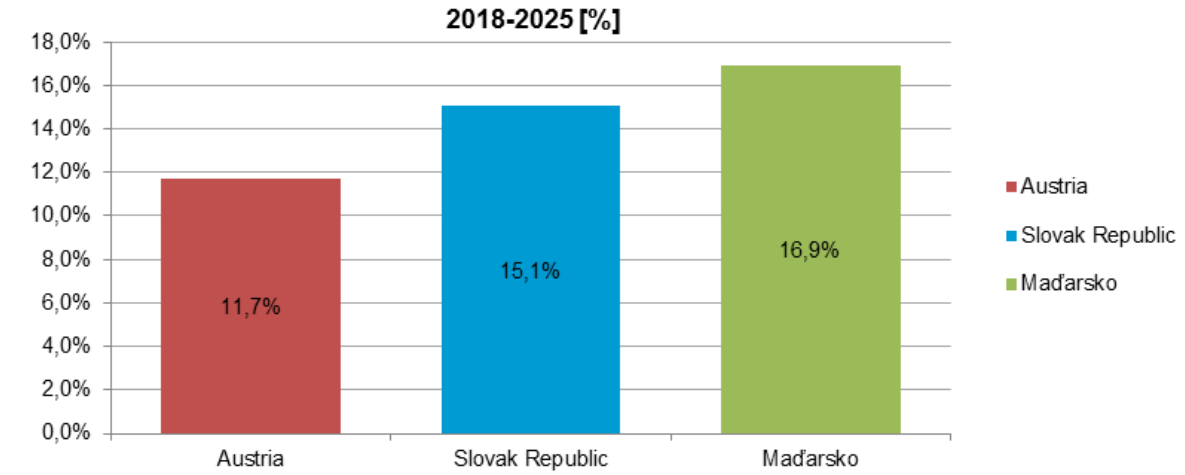


Figure 19: Gross tonne-kilometres growth forecast, realistic scenario (RFC 7 2017: p. 89 et seq.; own illustration)

With regard to **cross-border freight transport volume**, Germany is Austria's most important partner. 57.7 million t were transported from and to Germany in 2017. A total of 11.6 million t was transported to and from Hungary, and a total of 8.3 million t between Austria and the Slovak Republic, of which 1.7 million t via the Danube (cf. Figure 20).

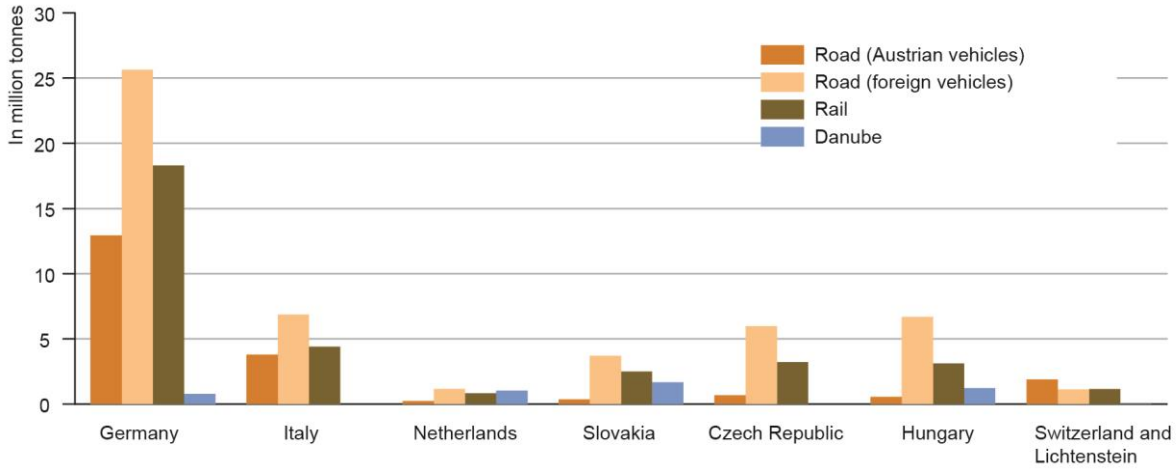


Figure 20: Cross-border transport volume in Austria (receipt and dispatch) by transport mode and select partner countries 2014 (Statistics Austria 2017: p. 24)

In 2017, about 3.7 million t of goods coming from the east were transported upstream on the **Danube** to Austria, which is a 10.5% increase compared with the prior year. Headed in the opposite direction, 1.7 million tonnes of goods were shipped downstream, which is 7.3% more than in the prior year (Statistics Austria 2017: p. 42).

Air freight transport plays a minor role in terms of volume, although the transported goods are generally of a particularly sensitive, valuable or value-adding nature. Vienna Airport transloaded approximately 0.22 million tonnes in 2017 (Statistics Austria 2017: p. 45).

7.2 NARROW INVESTIGATION AREA

The narrow investigation area comprises the area that could be **directly affected** by the proposed network modification, i.e. the area in which the network modification physically manifests itself (cf. Figure 21). The narrow investigation area alone is not enough in order to describe certain aspects, such as economic dynamics or population trends; rather, it must be regarded in the functional context as part of the Greater Vienna area.

The **narrow investigation area** is defined as the area on which undertakings resulting from the network modification can have a physical impact. For this area, **direct (environmental) impacts** are considered that can be expected when implementing concrete railway construction undertakings including freight terminals (e.g. land use, barrier effect, crossing of ecologically sensitive river courses, noise pollution at defined nodes).

The narrow investigation area comprises the part of the Austrian national territory in which concrete **railway construction undertakings** can be **reasonably implemented** on the basis of the targeted High

Performance Regulation (HL-VO). Since the proposed network modification concerns a **planned railway**, a new construction undertaking is to be expected in this area.

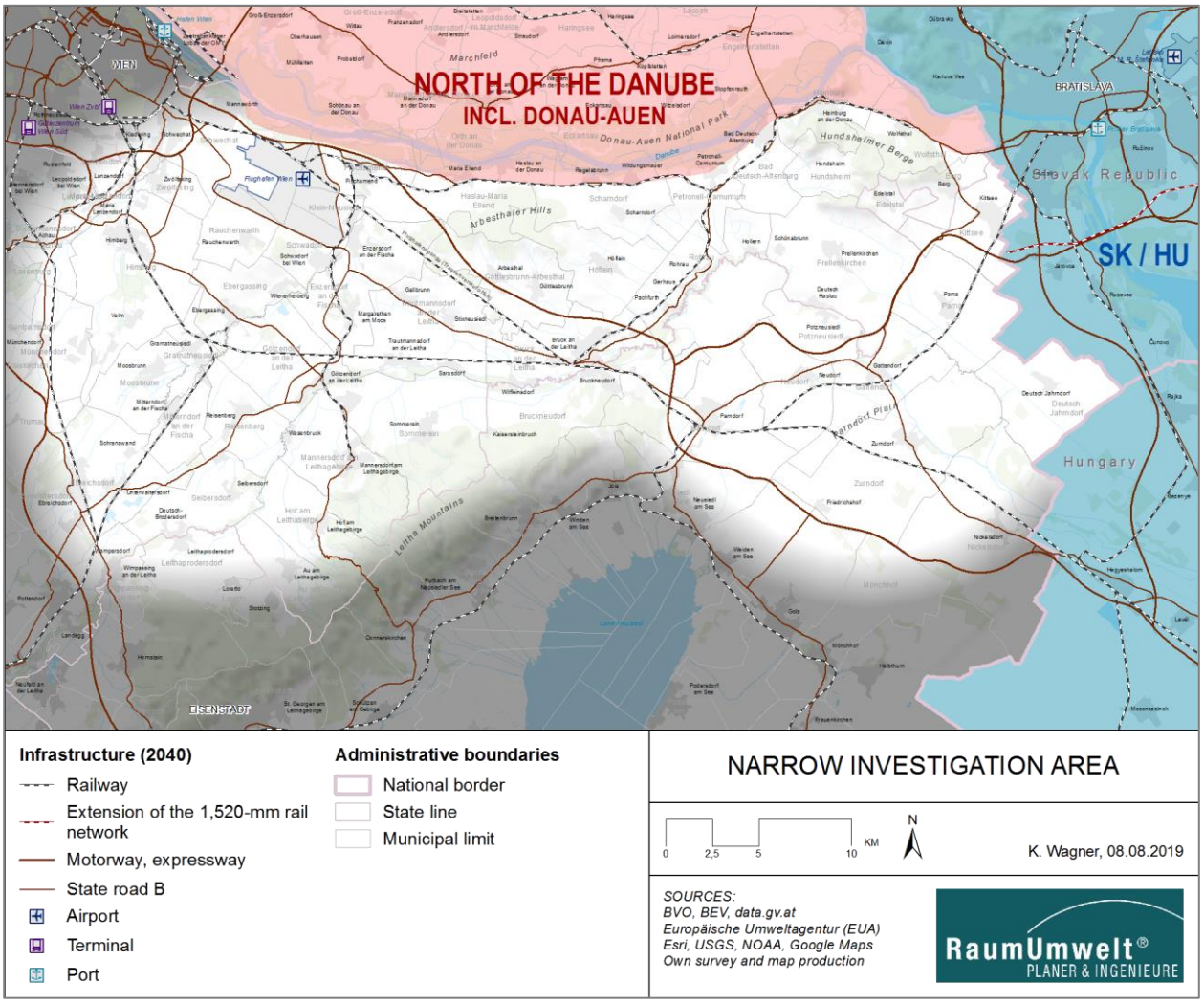


Figure 21: Delimitation of narrow investigation area and administrative units (own illustration)

The narrow investigation area stretches across the area east of Vienna to the Austrian-Slovak and Austrian-Hungarian borders. With regard to natural areas, the narrow investigation area is located in the **Vienna Basin** and the **Little Hungarian Plain**, which are separated by the Leitha Mountains and the Little Carpathians (Malé Karpaty). The western part of the narrow investigation area lies in the **Industrieviertel Quarter** of Lower Austria and is characterised by **smaller urban clusters** such as Schwechat and Bruck an der Leitha. East of the Leitha Mountains, on the side of Burgenland, is the **Parndorf Plain**. Dominated by agricultural use and – with the emergence of the energy revolution – overly shaped by **wind energy use**, this area has a much lower settlement density and village structures.

The subject-matter of the SP-V and thus also of this Environmental Report is a change to the nationwide high-level transport network within the Austrian territory. The narrow investigation area can thus be demarcated in **the east** by the **national border with the Slovak Republic and Hungary**.

The **border crossing point to the Slovakian part of the overall undertaking** is defined south of the Danube, on the Austrian-Slovakian border (cf. Chapter 3.1). Thus, the narrow investigation area is delineated by the **Danube (incl. Danube floodplains) in the north**, the **national border to Slovakia and to Hungary in the east** as well as the **northern Lake Neusiedl area and the Leitha Mountains in the south**. Burgenland south of the Leitha Mountains is not part of the narrow investigation area as there are no high-level network components of the TEN-T core network with which the 1,520 mm network, which is stipulated as an objective, could be linked.

Vis-à-vis Vienna, the **Donaulände Railway/S1 Vienna Outer Ring Expressway** system marks the boundary of the narrow investigation area. In the west, the investigation area closes with the **Eastern Railway or the Gramatneusiedl-Wampersdorf line** as the requirement for integration into the high-level rail network can already be met, and there is no need for continuing the line to the west – also with regard to resource conservation.

This network modification also comprises the **construction of freight terminals**. While the railway line can overcome topographically challenging terrain with the help of man-made structures, the freight terminal must be located on a large enough and level surface.

7.2.1 HUMAN SETTLEMENTS AND ECONOMIC AREAS

7.2.1.1 Settlement Structures and Trends

South of the Danube, between Vienna and Fischamend, is a **settlement area that is, for the most part, connected**. It includes dense residential developments, such as in Schwechat, and important infrastructure and industrial facilities such as Vienna Airport, the Schwechat refinery and various commercial centres and industrial areas. This heavily used settlement lies outside the narrow investigation area (cf. Chapter 7.2).

To the south-east, the area that borders the Slovak Republic and Hungary is mostly **agricultural in nature** and has smaller, usually **compact centres**. These towns are characteristically built along a street or around a village green. The larger settlements are situated on the existing railway lines.

Besides Vienna and Bratislava, Schwechat and Bruck an der Leitha are particularly important **supply centres** of the region. In the federal state of Burgenland, Parndorf and Kittsee are designated as **level 1 central locations** in accordance with the Regional Development Programme Burgenland (Office of the

Provincial Government of Burgenland 2012) and thus as supply centres within small regions for upscale basic and local supply.

Improved Traffic Accessibility of the Area

The connection to the **high-level road network** in the narrow investigation area is provided by the A4 Eastern Motorway, which crosses the narrow investigation area from northwest to southeast. At the level of Parndorf, the A6 Northeastern Motorway branches off toward the northeast, providing access to northern Burgenland. The regional centres of Schwechat, Bruck an der Leitha and Parndorf are thus very well connected to the high-level road network.

The high-level road network is enhanced by a **comprehensive network of state roads**. The B9 Pressburger Straße (from Vienna to Fischamend along the Danube to Hainburg headed towards Wolfsthal to the national border), the B10 Budapester Straße (from Vienna via Schwechat, Schwadorf, Bruck an der Leitha and Parndorf headed towards the national border at Nickelsdorf) and the B50 Burgenland Straße (running north-south from Berg/Kittsee via Neusiedl am See and Eisenstadt and further south) are the backbone of the road infrastructure in addition to the A4 Eastern Motorway and the A6 Northeastern Motorway.

The connection to the **rail network** in the narrow investigation area occurs via the Eastern Railway, the S7 Pressburger Bahn, the rail freight lines Fischamend – Götzendorf and Wampersdorf – Gramatneusiedl as well as the connecting lines Bruck an der Leitha – Petronell-Carnuntum and Lafarge Perlmooser.

The **Eastern Railway** runs from Vienna Central Station via Gramatneusiedl, Bruck an der Leitha and Parndorf towards Győr in Hungary (opening up access to Zurndorf and Nickelsdorf). In Parndorf, the Kittsee connection branches off from the Eastern Railway going towards Bratislava (access to Gattendorf, Pama and Kittsee), as does the Parndorf– Wulkaprodersdorf line going towards Neusiedl am See. The branch line Fischamend – Götzendorf as part of the Eastern Railway is single track, non-electrified and currently does not carry passengers but only freight. The connecting line Lafarge Perlmooser travels from Götzendorf to Mannersdorf. In Bruck an der Leitha, the single-track and non-electrified Bruck an der Leitha – Petronell-Carnuntum (– Hainburg) line branches off, currently only to the Mars Austria connecting line at marker 2.621 km. A tourist trolley line has been set up between kilometre markers 3.900 km to 13.300 km.

From Vienna, the **S7 Pressburger Railway** runs via Schwechat, Vienna Airport and Petronell Carnuntum in the direction of Wolfsthal.

The Wampersdorf – Gramatneusiedl line connects the Eastern Railway with the Pottendorfer line as part of the Southern Railway. It is a single-track, electrified line, currently only carrying freight.

Settlement Structure in the Narrow Investigation Area

The narrow investigation area stretches across parts of the provinces of Lower Austria and Burgenland and covers large parts of the district of Bruck an der Leitha and the eastern edge of the district of Baden in Lower Austria and the northern part of the district of Neusiedl am See in Burgenland.

At the northwestern edge of the investigation area, a dense built-up belt (including Zwölfaxing, Maria Lanzendorf, Achau) runs southwest along the river Schwechat, starting from its mouth into the Danube (where the municipality after which it is named is located). The western edge of the investigation area is formed by the **Eastern Railway and the Gramatneusiedl – Wampersdorf line**, which extends along the municipalities of Himberg, Gramatneusiedl and Mitterndorf an der Fischa. To the east of the airport, a continuous built-up belt stretches from the mouth of the river Fischa along the villages of Fischamend, Klein-Neusiedl, Enzersdorf an der Fischa and Schwadorf to the south. Along the river Leitha (which initially connects to the investigation area in the south and then crosses the investigation area from Bruck an der Leitha to the northeast and subsequently to the southeast) are numerous towns such as Trautmannsdorf an der Leitha, Sarasdorf and Bruck an der Leitha. In Burgenland, several municipalities such as Parndorf, Neudorf, Gattendorf, Pama and Kittsee are distributed across the Parndorf Plain.

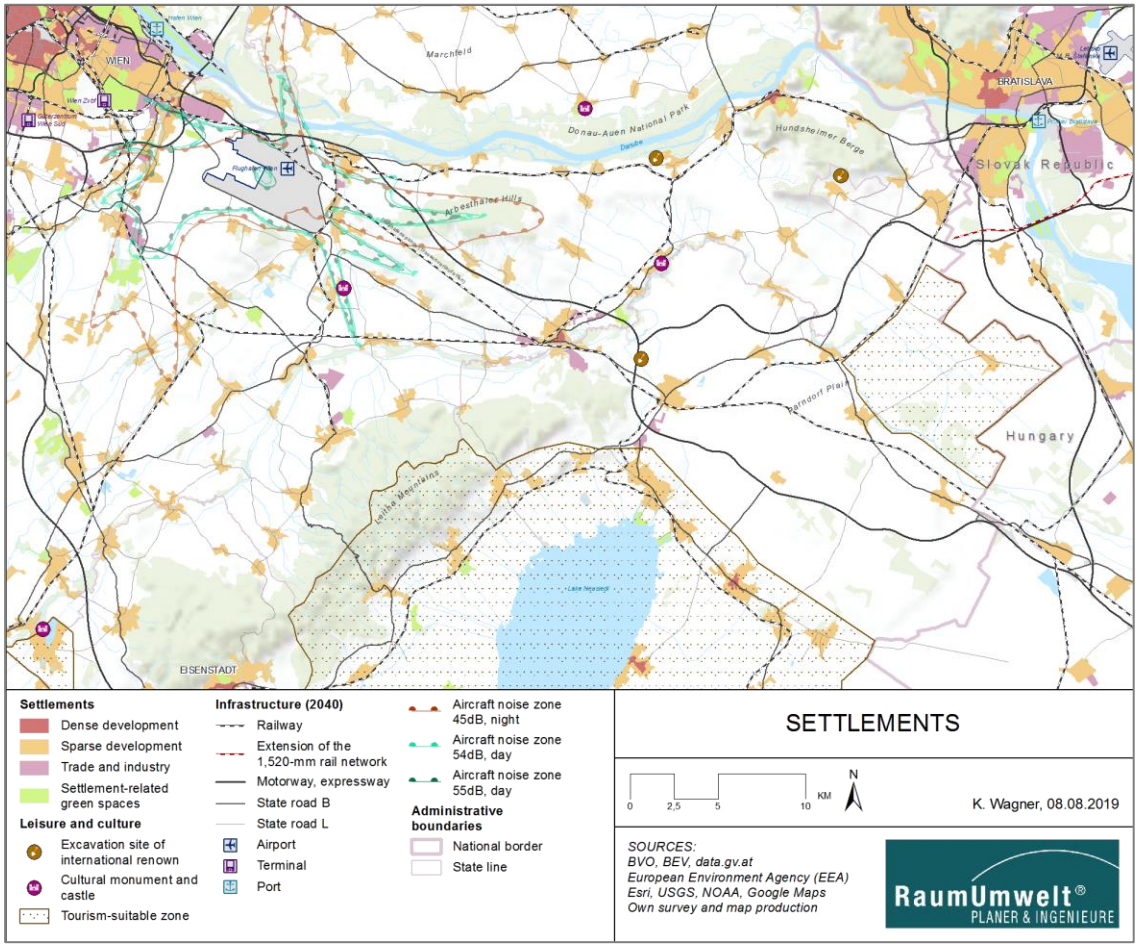


Figure 22: Settlements in the narrow investigation area (own illustration)

The narrow investigation area is mostly **agricultural in nature** and has smaller, usually **compact settlement centres** both in the Lower Austria and Burgenland regions. These towns in the investigation area are characteristically built along a street or around a village green. The larger towns such as Bruck an der Leitha (7,988 inhabitants[22]), Himberg (7,375), Parndorf (4,689), and Kittsee (3,162) lie on the existing railway lines and are also connected to the high-level road network.

The **Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland)** (cf. Figure 23) defines measures for natural areas and **measures for settlement development**. Spatial definitions concerning settlement growth include settlement boundaries, which are partly determined along individual areas (these areas may not extend across in the case that new building land is designated) or which fully enclose settlement areas (the amount of land designated for building may not be exceeded in this area). Numerous such settlement boundaries are located in the narrow investigation area, mostly in order to avoid further settlement growth in the direction of landscapes or regional green zones worth preserving.

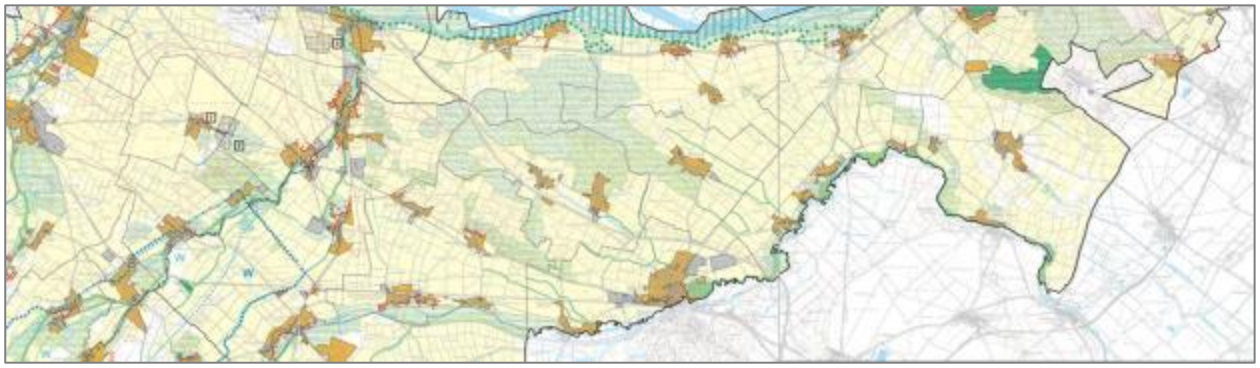


Figure 23: Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland), folio 59 – Wien Süd, folio 60 – Bruck an der Leitha and folio 61 – Hainburg an der Donau (Austrian State Law Gazette 8000/85-0 as amended by Austrian State Law Gazette No 67/2015)

In the **2011 Regional Development Programme** (LEP 2011) – issued by decree of the Provincial Government of Burgenland (Austrian State Law Gazette 71/2011) – principles of the spatial development of Burgenland, **objectives for organising and developing the spatial structure**, determinations on location and zoning, and principles of local spatial planning were formulated. Within the investigation area are a total of four municipalities, which were assigned a special function pursuant to the LEP 2011. The municipalities of Parndorf and Kittsee are recognised as central locations, i.e. as business and commercial centres and industrial sites. Parndorf is further shown as a tourist destination. The municipalities of Potzneusiedl and Nickelsdorf are also recognised as business and commercial centres and industrial sites. A zone suitable for tourism has been determined east of Gattendorf and Zurndorf (cf. Figure 24).

[22] Population as of 2017 (cf. STATcube))

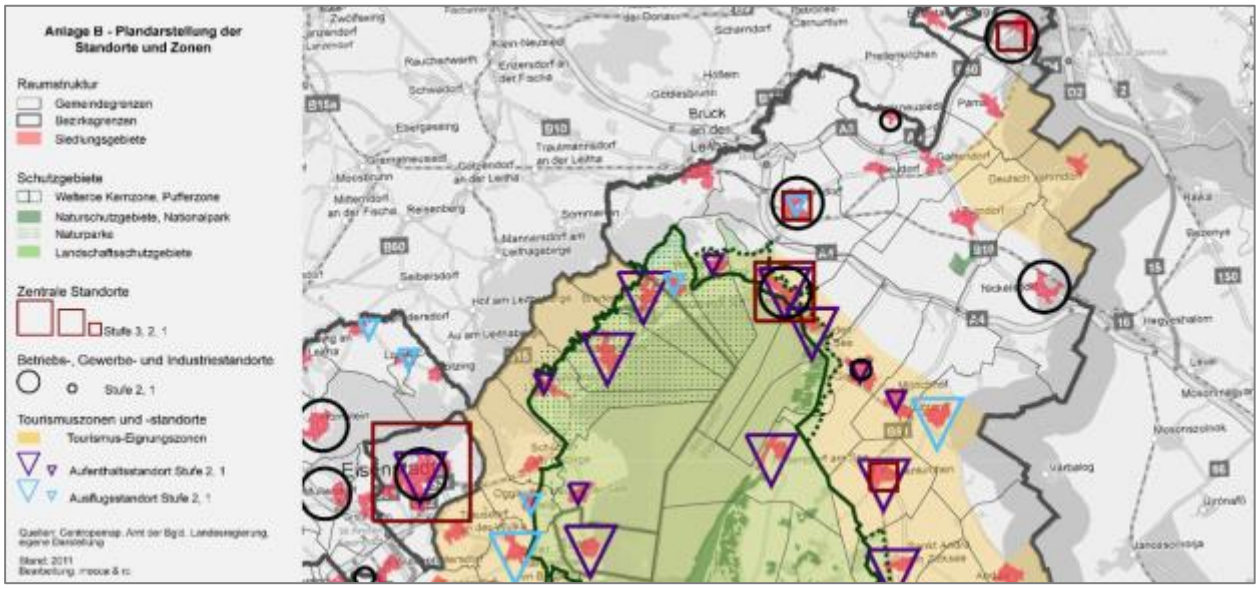


Figure 24: LEP 2011 detail (Austrian State Law Gazette 71/2011, Appendix B)

7.2.1.2 Population Structure and Trends

The narrow investigation area extends over large parts of the districts of Bruck an der Leitha and Neusiedl am See. These two districts have a total population of about 160,000. Around **85,000 people** live in the municipalities within the narrow investigation area. The largest municipality is Ebreichsdorf with about 11,000 inhabitants, followed by Bruck an der Leitha and Neusiedl am See with about 8,000 inhabitants each and Himberg and Parndorf with about 4,500 inhabitants. On average, the individual municipalities in the investigation area have around 2,800 inhabitants (cf. Statistics Austria 2018b).

The Greater Vienna area's **population trends** have gone through various phases in the last 30 years: 1981 to 1991 saw an intensive **suburbanisation phase**, especially in the southern Vienna environs. Between 1991 and 2001, the **axis focal points** shifted and growth gradually tended towards the regions a bit further away from Vienna, including along the A4 Eastern Motorway. During this period, North Burgenland, with municipalities such as Parndorf and Bruckneudorf, benefited from this the most. Since 2001, Vienna has once again experienced significant **population growth** (PGO 2009: p. 16 et seq.).

Regional differences can be seen in the population trends between the years 2006 and 2016 (cf. Figure 25): the municipalities east of Vienna with direct access, the Burgenland municipalities in the area where high-level transport infrastructure intersects (Eastern Railway, A4 Eastern Motorway and A6 Northeastern Motorway), and the municipalities in the border region with Bratislava have recorded a significant increase in population of more than 15% in the last decade. The **suburbanisation effects** can even be felt across the borders. In comparison, municipalities such as Bruck an der Leitha, Trautmannsdorf an der Leitha or Rohrau recorded a low increase in population of 5% at the most during the same period. It can generally be observed that **population growth** is considerable across the entire

Greater Vienna area. For the entire Greater Vienna area, which stretches eastwards into North Burgenland, a **significant increase in population** of more than 10% is expected by 2030 (cf. Figure 26).

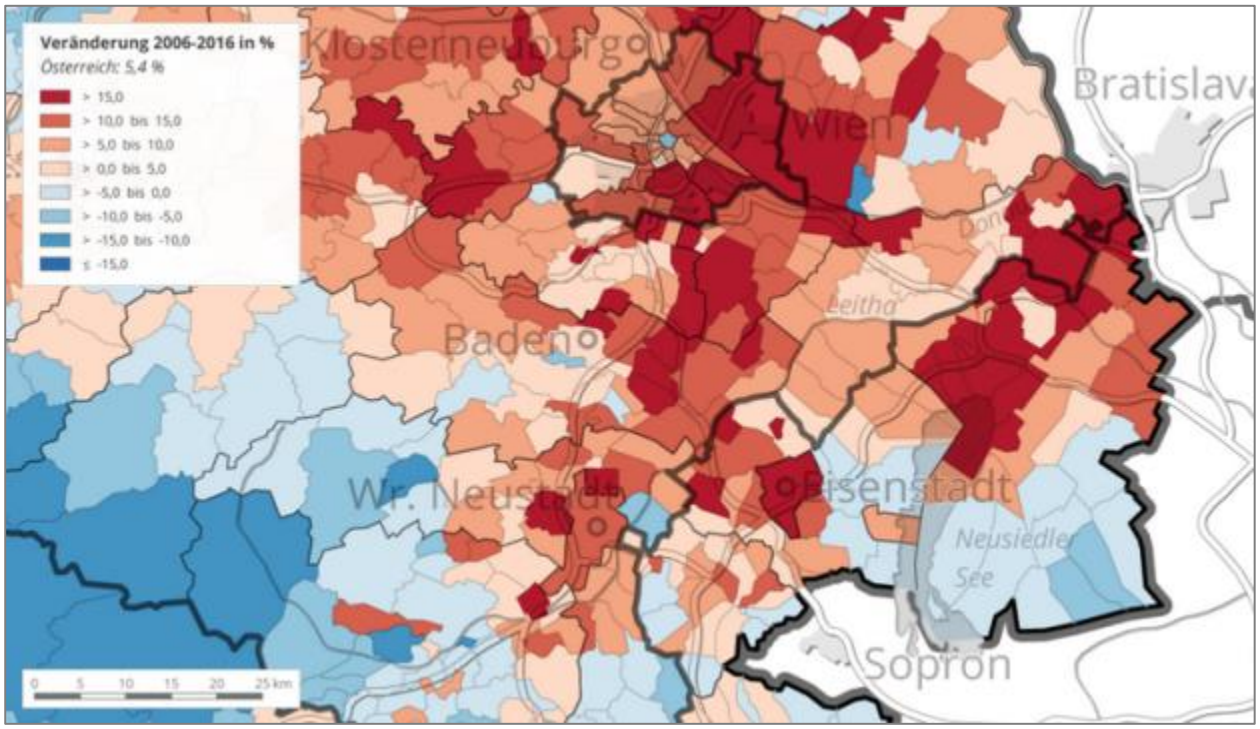


Figure 25: Population trend in the Greater Vienna area from 2006 to 2016 (ÖROK 2019)

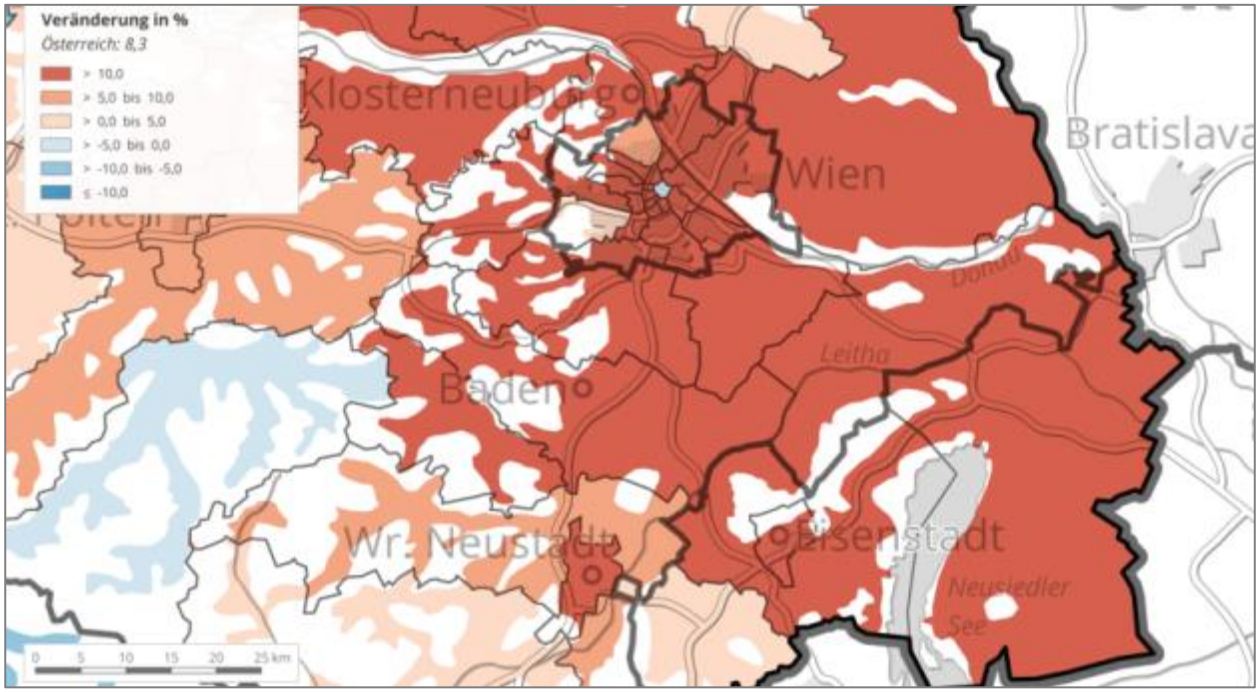


Figure 26: Population forecast in the Greater Vienna area for 2014 to 2030 (ÖROK 2019)

A differentiated analysis of the Greater Vienna area shows the **regional differences** (ÖROK 2014; cf. Table 13): in the NUTS 3 region of North Burgenland, a 15.55% increase in population by 2045 is forecast, with 21.18% in the southern Vienna environs. In Vienna, this number is as high as 26.99%. Upon closer examination, the development in the forecast region of Schwechat stands out above all: there the population is expected to grow by 31.25% by 2045. For the forecast regions of Bruck an der Leitha and Neusiedl am See, a growth rate of 18% and 19% respectively is forecast. The main drivers for this development are **immigration** and a mostly positive balance between external and internal migration.

					Population growth [abs. and %]	
		2014	**2015**	**2025**	**2035**	**2045**
						NUTS 3 Region
AT112	North Burgenland	152,539	153,617 0.71%	162,638 6.62%	170,391 11.70%	176,254 15.55%
AT127	Wiener Umland-Süd	325,895	329,652 1.15%	357,116 9.58%	378,524 16.15%	394,914 21.18%
AT130	Vienna	1,766,746	1,794,755 1.59%	2,000,125 13.21%	2,140,787 21.17%	2,243,643 26.99%
						District (forecast region)
3070	Bruck an der Leitha	43,615	44,013 0.91%	47,132 8.06%	49,625 13.78%	51,447 17.96%
3242	Schwechat	51,399	52,011 1.19%	58,553 13.92%	63,550 23.64%	67,460 31.25%
1070	Neusiedl am See	56,504	57,036 0.94%	61,194 8.30%	64,581 14.30%	67,123 18.79%

Table 13: Population forecast in the NUTS 3 regions (ÖROK 2014; own illustration)

The expected population trend makes the **growing pressure** on how the area is used very clear. At the relevant traffic junctions (Schwechat, Bruck an der Leitha) especially, as well as in the direct vicinity of Vienna, there is a great deal of pressure on settlement development.

Settlement development is **competing** with other land use: traditionally, the area has been shaped by **intensive farming**. Due to the strategically good location within the Vienna-Bratislava metropolitan area and the favourable topographical conditions, the area boasts a high **linear infrastructure** density (motorways and expressways, railways and high-voltage lines). The special suitability for **wind energy generation**, especially in the Parndorf Plain, has led to an increased demand on infrastructure in the area in recent years.

7.2.1.3 Economic Area

Economic Performance

The **gross regional product** (GRP), the regional equivalent of GDP, provides information on the individual regions' value creation and thus their economic performance. In order to make regions of different sizes or densities comparable, GRP is divided by the number of inhabitants. Table 14 shows the **economic performance** in the narrow investigation area.

NUTS 3 region		2016 total [in million €]	per capita 2016 [€]
AT112	North Burgenland	4,916	31,500
AT127	Wiener Umland-Süd	15,578	46,300
AT130	Vienna	91,222	49,200

Table 14: Gross regional product (GRP) in the NUTS 3 regions (Statistics Austria 2017; own illustration)

Vienna, with its southern environs (Wiener Umland-Süd), is one of the **best economically performing regions**[23] in Austria in terms of per capita GRP. At €49,200 per capita and €46,300 per capita respectively, Vienna and its southern environs (Wiener Umland-Süd) have a significantly higher GRP than North Burgenland with €31,500 per capita.

North Burgenland, with a per capita GRP of 76 (index value: AT=100), is well below the Austrian average; but when compared to Europe (EU27=100), the region is just above the average, at 107. After the financial crisis in 2009, positive developments in GRP could be seen between 2010 and 2014 across all the federal states. When looking at economic trends at the state level in 2014 and comparing them to the prior year, the regional differences stand out: at +3.1%, the **change in GRP** in Burgenland is above the Austrian average of +2.4%. In Lower Austria (+2.5%) and Vienna (+1.7%), the change in GRP during this period was also significantly lower (ÖROK 2019). This leads to the conclusion that the region is economically growing and dynamic despite its comparatively low current economic performance.

Workplaces and Commuter Traffic

In most of the municipalities in the narrow investigation area, the average number of **jobs** is below the national average (cf. Figure 27). The municipalities are commuter towns, with gainfully employed persons usually finding work in Vienna and in the district capitals.

The exceptions to the rule are the municipality of Schwadorf (301), where a large recruitment agency has its headquarters, and the municipality of Parndorf (61) with the Parndorf business park and a shopping centre. The municipality of Bruck an der Leitha (48) as the region's administrative centre, the municipality of Neusiedl am See (52) and the municipality of Edelstal (47) are near the national average for number of jobs per 100 inhabitants.

[23] Only in the region *Salzburg and surroundings* (€52,900/capita), *Linz-Wels* (€51,300/capita) is GRP/capita higher.

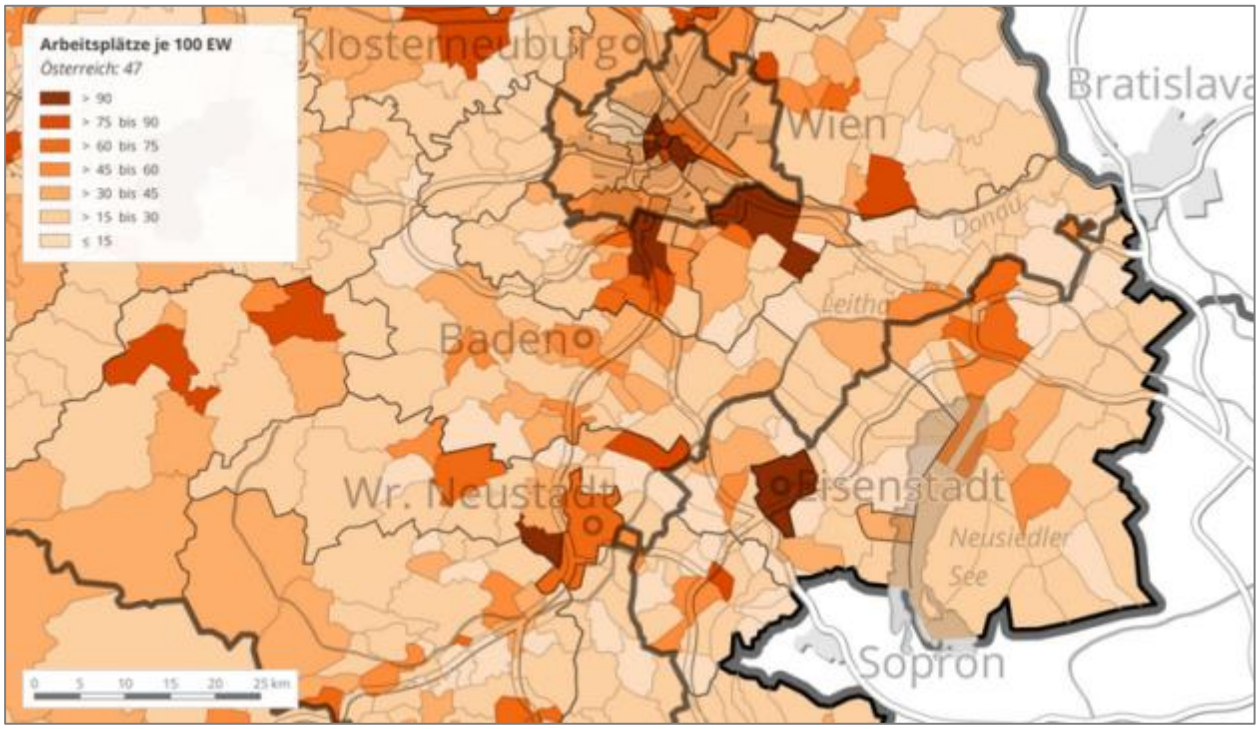


Figure 27: Jobs per 100 inhabitants (ÖROK 2019)

The narrow investigation area is located in the **commuting zone** of the Greater Vienna area. The high percentage of commuters in the region – mostly more than 70% or 80% – can also be seen in this context.

The following **workplaces** are of particular importance in the narrow investigation area and beyond:

- **Vienna Airport** is one of the most important employers in the region, employing approximately 20,000 people. In addition, there are approximately 52,000 indirect jobs related to Vienna Airport (Vienna Airport 2019b), with a considerable number of these jobs located in the immediate vicinity of the airport.
- The **ecoplus business park Bruck an der Leitha** covers a total area of 72 ha (of which 36 ha are still available); more than 60 companies with more than 700 employees are currently located there (ecoplus 2018).
- The **business park in Parndorf** has a total area of around 107 ha. It includes the **Parndorf outlet centre** with around 230 shops (160 in the designer outlet and 70 in the fashion outlet), which gets 30,000 visitors daily and counts as one of the largest employment sites in Burgenland (WiBuG 2017a). The outlet centre Parndorf has a trans-regional catchment area.
- The **Kittsee business park** covers a total area of 35 hectares in which eight businesses are currently located (WiBuG 2017b).

Economic Structure and Important Economic Sectors

The **economic structure** east of Vienna has undergone consistent change in recent decades due to the narrow investigation area's good connection to infrastructure. Accessibility by road and rail has led to commercial business establishments in new commercial areas and the creation of various business parks (such as the Parndorf business park with the Parndorf outlet centre).

The distribution of the **gainfully employed** among the **economic sectors** (ÖROK 2019) varies greatly from district to district and also clearly shows the differences between the denser **urban clusters** in the immediate Vienna environs and the increasingly **rural structures** in North Burgenland: in the districts of Bruck an der Leitha and Neusiedl am See, the share of the gainfully employed (as of 2012) in the **tertiary sector** is just under 73% (and is thus equal to the Austrian average); in the district of Vienna surroundings this number is as high as 82.5%. The share of the **secondary sector** in the Neusiedl am See district and Vienna surroundings is approx. 16%, below the Austrian average of 23.6%, while Bruck an der Leitha has a share of 21.5%. At 10.6%, the **primary sector** in the Neusiedl am See district is well above the Austrian average of 3.5%. Vienna's surroundings are slightly below (1.4%) and Bruck an der Leitha slightly above (5.8%) the Austrian average.

The following **industries** that are **dependent** on **specific spatial factors** (e.g. climatic or natural environment conditions) are of particular importance for the region:

- Power generation from wind energy
- Viticulture
- Tourism

An important economic sector in Burgenland and especially in the Parndorf Plain area is the **generation of power from wind energy**. The conditions for that are particularly good in eastern Austria, with 90% of all wind power stations in Austria located in Lower Austria and above all in Burgenland. The Parndorf Plain especially is one of the inland regions with the most wind in Europe and is therefore well suited for harnessing wind energy. In the last two decades, a large number of wind farms were built on the Parndorf Plain; now, the region has become a model for wind energy utilisation. Enercon has set up a production site for concrete towers for wind turbines in Zurndorf, which has contributed to the intensive use of wind energy on the Parndorf Plain.

The **wine-producing regions** Carnuntum and Lake Neusiedl lie within the narrow investigation area. The Burgenland municipalities of Gols, Mönchhof, Halbturn, Weiden am See, Jois, Neusiedl am See and Winden am See have large wine-producing regions. In Lower Austria, the municipality of Göttlesbrunn-Arbesthal is an important location for wine growing (Statistics Austria 2009).

In the eastern part of the narrow investigation area, the areas east of Pama and Gattendorf are recognised as **zones suitable for tourism** (Office of the Provincial Government of Burgenland 2012: p. 51). These areas focus on preserving the cultural landscape but also on developing regional agricultural product brands. For those Burgenland municipalities that belong to Lake Neusiedl, tourism (especially in the summer months) is an **important industry**, with cultural and natural landscapes playing a major role.

7.2.1.4 High-Level Technical Infrastructure

Not least due to its proximity to Vienna and its location between two European capitals, the narrow investigation area is strongly shaped by existing linear and isolated infrastructure. The traffic infrastructure has already been reviewed in Chapter 6.

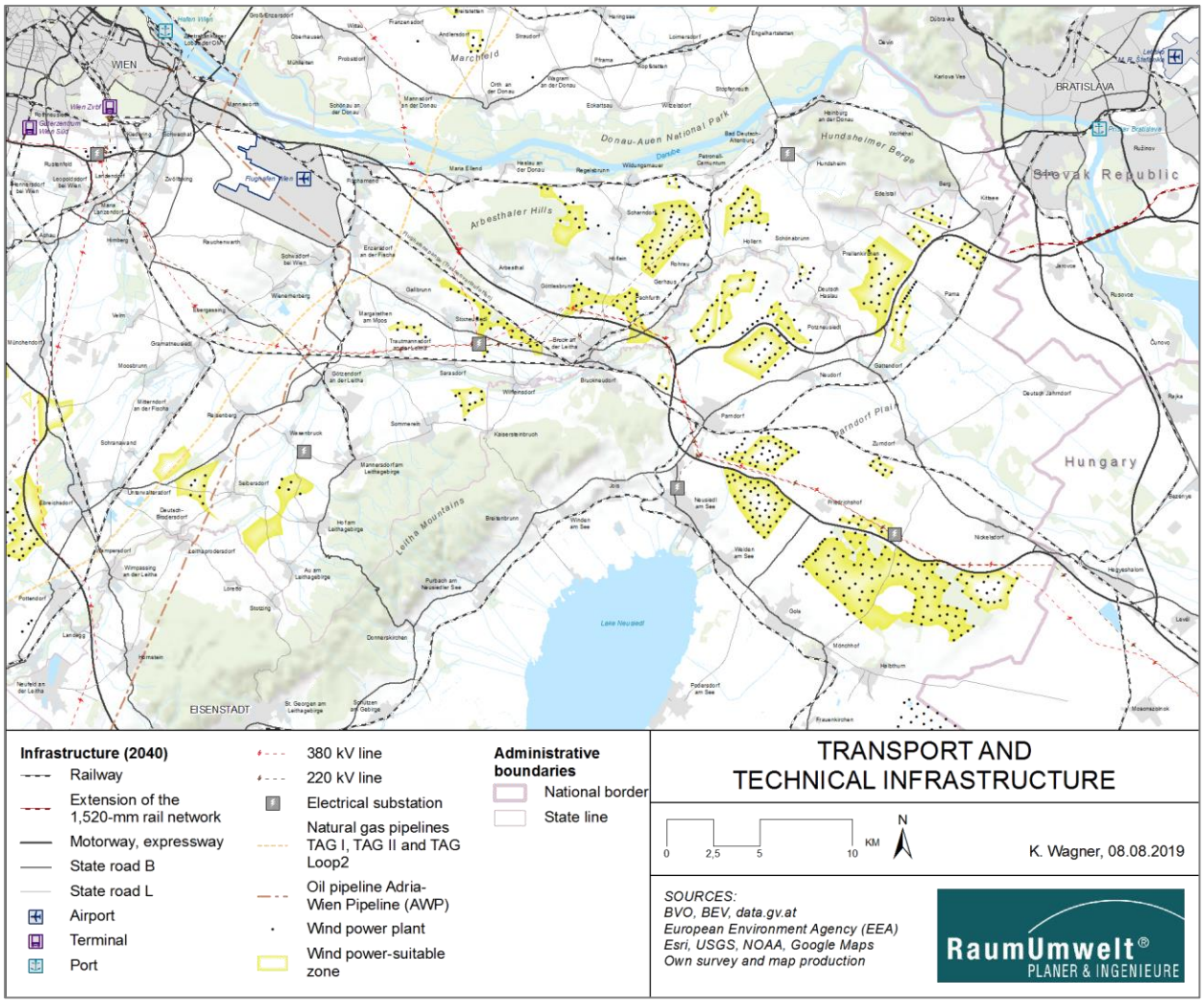


Figure 28: Infrastructure in the narrow investigation area (own illustration)

Other technical infrastructure such as **high-voltage lines, oil and gas pipelines, and wind power stations** also form an important basis for the environmental condition in the investigation area (cf. Figure 28).

High-Voltage Lines

The narrow investigation area has several **high-voltage lines** that are distributed over three voltage levels: 380 kV, 220 kV and 110 kV. Here, only the 380 kV and 220 kV lines are considered.

Specifically, the following relevant high-voltage lines and the infrastructure belonging to them are a part of the narrow investigation area (cf. Figure 29):

- 220 kV line Vienna – national border Győr
- 380 kV line Zurndorf – national border Győr/national border Szombathely
- 380 kV line Vienna – Sarasdorf – Zurndorf

The Wien Südost (southeast Vienna) and Sarasdorf **nodes** as well as the **sub-stations** Kledering, Neusiedl and Zurndorf are also located within the narrow investigation area.

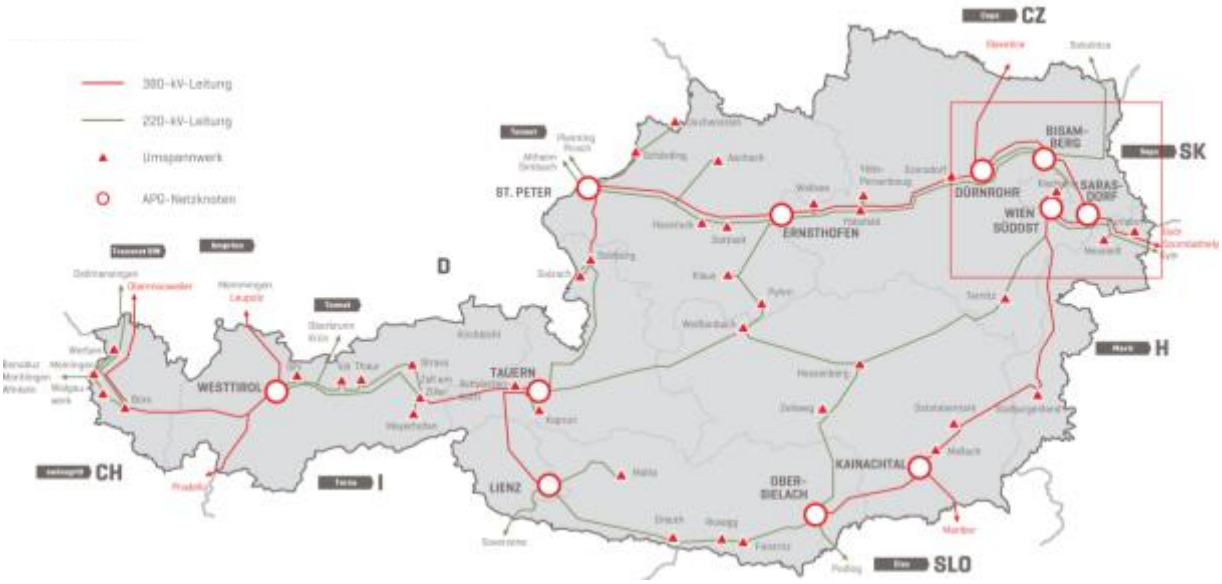


Figure 29: Austrian high-voltage grid as of 2015 (APG 2015)

According to the APG **Network Development Plan** for 2017 to 2026 (APG 2016), the following undertakings are currently in the planning stage or are being deliberated.

- **Zurndorf substation**: Expansion by a fourth 380/100 kV transformer by 2019
- **North Burgenland**: Integration of additional wind power (planning consideration)
- **Sarasdorf substation**: Third Lower Austria grid 380 kV/110 kV transformer for connecting wind power (planning consideration)

Oil and Gas Pipeline Network

Both high-level oil and gas pipelines are located within the investigation area.

- Oil pipeline Adria-Wien Pipeline (AWP)
- Natural gas pipelines TAG I, TAG II and TAG Loop2

The Adria–Wien Pipeline (AWP) is a crude oil pipeline that carries crude oil from Trieste to the Schwechat refinery. In the investigation area, it runs parallel to the B60 (west of Margarethen am Moos) starting from Seibersdorf coming from the south and crosses the Fischa between Schwadorf and Enzersdorf an der Fischa. From there it runs in a straight line towards the Schwechat refinery, partly through the current and future site of Vienna Airport. The main pipeline has an 18-inch diameter (457 mm). AWP is wholly owned by OMV Refining & Marketing GmbH.

The **Trans Austria Gas (TAG) pipeline** is a natural gas pipeline that runs between the Italian-Austrian border near Arnoldstein and the Baumgarten distribution company near the Slovak border. Within the investigation area, it consists of the largely bundled natural gas pipelines TAG I, TAG II and TAG Loop 2. Coming from the south, these pipeline sections run almost parallel to the Fischa in the east and first cross the A4 Eastern Motorway and then the Danube between Fischamend and Maria Ellend. The gas pipes have a diameter of 36" to 42" and a pressure of up to 70 bar. They are operated by Trans Austria Gasleitung GmbH.

Wind Power Stations

Austria has around 1,200 **wind power stations** with a total capacity of around 2,600 MW (IG Windkraft 2017), with 90% of wind power stations located in Lower Austria and above all in Burgenland. Both in Lower Austria and in Burgenland, framework concepts are in place that provide for **zoning or suitability zones** for the construction of wind power stations. When defining these zoning areas or suitability zones, not only the suitability of wind energy siting but also the distances to settlements and existing infrastructure were considered, as were nature conservation aspects (in particular ornithology), tourism aspects and other subject areas. Determining zoning areas or suitability zones is a prerequisite for designating land use, which in turn is mandatory for approving wind power stations (cf. Figure 30).

The marked suitability zones include some wind turbines that have already been approved but have not yet been erected. Under the assumption that wind power in Austria will continue to be expanded, one can expect that **more wind farms** will be planned or existing wind farms expanded and repowered within the – as of yet – unused wind power zoning areas or suitability zones.

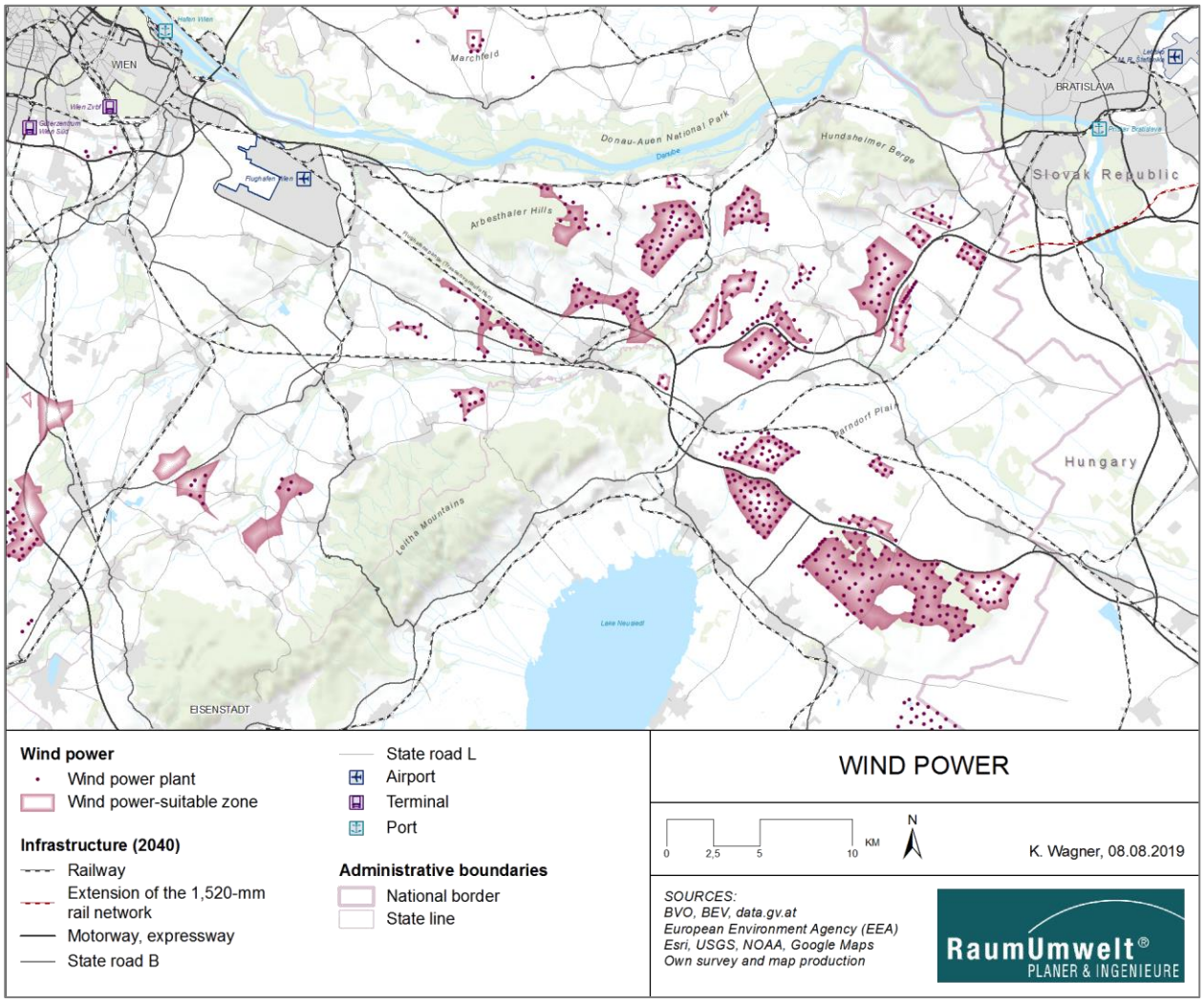


Figure 30: Wind power harnessing and suitability zones, and wind energy plants in narrow investigation area (own illustration)

7.2.1.5 Cultural Assets and Heritage

Numerous **archaeological discoveries** have been made throughout the entire narrow investigation area, documenting this area's long settlement history. The best-known site is to the north of the investigation area. The Roman legionary camp and fortress **Carnuntum** is considered to be the most important and most extensively researched excavation site from ancient times in Austria.

Numerous **archaeological sites with regional importance** (especially all Roman settlements and tombs) are spread across Burgenland settlements – in addition to individual **potential excavation areas** (GIS Burgenland 2019). One archaeological site of international importance (Roman villa and graves) is located in the immediate vicinity of the A4 Eastern Motorway south of the Bruckneudorf junction, with another one (tombs) located near the village of Edelstal.

The Prugg Castle with its English garden (Harrachpark) in Bruck an der Leitha, the historic city centre of Bruck an der Leitha with its Roman fortification, city wall, moat, and the baroque main square are consid-

ered **cultural heritage sites of (trans-) regional importance**. Additionally, Bruckneudorf is home to the ruins of a Roman manor. Kittsee has a baroque castle – an important cultural asset due to its park and ethnographic museum. Rohrau Castle houses Count Harrach's family collection, one of the most significant private art collections in Austria. Within Potzneusiedl Castle, a classical-style building from the early 19th century, is a museum of icons.

To the south of the narrow investigation area is Lake Neusiedl, which, in addition to its role as a regional and transregional recreation centre, has been included on the **UNESCO World Heritage** list of "assets of exceptional universal value" due to its cultural landscape.

7.2.1.6 Environmental Protection Objectives for the Subject Area "Human Settlements and the Economic Area"

Environmental Protection Objectives Derived From Plans and Programmes

Regional Development Programme Burgenland – LEP 2011

In the LEP 2011, the following relevant environmental protection objectives have been formulated for the subject area "Human settlements and the economic area":

- Valuable historical or traditional settlement and building structures as well as cultural heritage sites worth preserving should be secured and conserved where possible.

ESDP – European Spatial Development Perspective. Towards Balanced and Sustainable Development of the Territory of the European Union

- Preservation and further development of cultural heritage

Environmental Protection Objectives Based on Legally Entrenched Provisions

Lower Austria Spatial Planning Act 2014 (NÖ ROG 2014, Austrian State Law Gazette No 71/2018)

Lower Austria Spatial Planning Act 2014 forms the legal framework for spatial development processes in Lower Austria at the level of supra-local and local spatial planning and is thus a legally binding document. In the NÖ ROG, the following environmental protection objectives have been formulated for the subject area "Human settlements and the economic area":

- Organise individual land use in such a way that mutual disturbances are avoided and assigned to those locations best suited for this purpose. (Sec. 1 para. 2 no. 1c NÖ ROG)
- Preserve and improve the townscape and landscape (Sec. 1 para. 2 no. 1g NÖ ROG)

Burgenland Spatial Planning Act (Bgld. RPG, Austrian State Law Gazette No 44/2015)

The Burgenland Spatial Planning Act regulates supra-local and local spatial planning in Burgenland. In the Bgld. RPG, the following environmental protection objectives have been formulated for the subject area "Human settlements and the economic area":

- Natural resources must be protected and used with due care so as to preserve their quality and quantity for the future. In particular, [...] the protection and the due care of nature factors and cultural heritage sites worth preserving as well as the appearance of the landscape and townscape [should be endeavoured].
- The population must be protected in the best possible way against risks due to natural hazards, accidents of exceptional magnitude, environmental damage, hazards and burdens by choosing

locations adequate for permanently used facilities, particularly taking into account the settlement structure.

Federal Act on the Protection of Monuments (DMSG, Federal Law Gazette I No 92/2013)

In the Federal Act on the Protection of Monuments, the following environmental protection objectives have been formulated for the subject area "Human settlements and the economic area":

- Protection of monuments from destruction or alteration

Air Pollution Control Act (IG-L, Federal Law Gazette No 73/2018)

In the Air Pollution Control Act, the following relevant environmental protection objectives have been formulated for the subject area "Human settlements and the economic area":

- The objectives of this federal act are the following:
  - the permanent protection of human health, animal and plant populations, their biocoenoses, habitats and interrelationships, and of cultural and material assets against harmful air pollutants, and the protection of humans against air pollutants that are an unreasonable nuisance.

Environmental Protection Objectives Derived From Environmental Conditions

- Safeguard and preserve cultural assets and cultural heritage sites in the region
- Protect the unique, historically shaped and valuable cultural landscape along Lake Neusiedl

7.2.2 PEOPLE AND HEALTH

7.2.2.1 Noise

Noise pollution[24] exists in the narrow investigation area primarily in the vicinity of **linear transport infrastructure** and within the **aircraft noise zone** of Vienna Airport. No noisy IPPC[25] facility is located within the narrow investigation area.

The most significant sources of noise from roads on **motorway/expressway level** are the A4 Eastern Motorway, which leads via Vienna Airport towards the Hungarian border near Nickelsdorf, and the A6 Northeastern Motorway to the national border near Kittsee. The noise emissions levels are high at a distance of up to 1.5 km (> 55 – 60 dB in the 24h average L_{den}). In the municipalities of Arbesthal, Göttlesbrunn and Bruck an der Leitha, this sometimes leads to **limit values being exceeded** in the settlement areas near the A4 Eastern Motorway.

[24] Noise pollution levels along high-level transport infrastructure and in conurbations are provided by the Federal Ministry of Sustainability and Tourism (BMNT 2019a) as the basis for a noise action plan.

[25] ***I**ntegrated **P**ollution **P**revention and **C**ontrol* (IPPC) Facilities

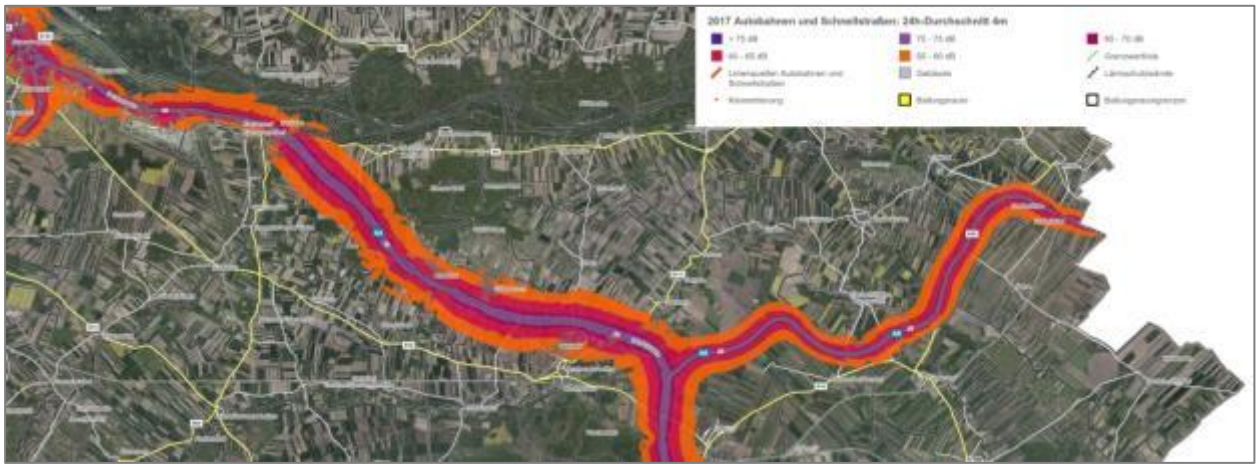


Figure 31: Motorway/expressway as a noise source: 24h average 4 m 2017 (BMNT 2019a)

The main noise generators at the **state road level** are the B10 Budapester Straße (from Vienna via Bruck an der Leitha and Nickelsdorf heading towards Hungary) and the B9 Pressburger Straße (from Schwechat along the Danube via Hainburg and Wolfsthal to the border). In the settlement areas located along the state roads, the directly affected building fronts are subject to increased noise immissions and, in some cases, limit values are exceeded.



Figure 32: State road as a noise source: 24h average 4 m 2017 (BMNT 2019a)

The main **sources of railway noise** are the Eastern Railway, which runs from Vienna via Himberg, Gramatneusiedl, Bruck an der Leitha and Parndorf to the national border near Nickelsdorf, and the S7 Pressburger Railway. On an open route, the Eastern Railway can produce significantly higher noise immissions up to a distance of 1 km (>55 – 60 dB on an average 24-hour period L_{den}). In the settlement areas connected to the railway line, noise immissions are reduced through **noise barriers** and the screening effect of the buildings.



Figure 33: Railway as a noise source: 24h average 4 m 2017 (BMNT 2019a)

Vienna Airport is a **noise polluter** in the narrow investigation area on account of **aircraft noise** (cf. Figure 34). Along the two NW-SE approach paths, at times significant increases in noise emissions can be measured for the municipalities of Schwechat, Fischamend, Klein-Neusiedl, Enzersdorf an der Fischa, Schwadorf, Margarethen am Moos as well as at the end of the eastern approach path in Göttlesbrunn and at the end of the northern approach path in Groß-Enzersdorf, which are located in the immediate vicinity of Vienna Airport. The planned implementation of the approved 3rd runway at Vienna Airport will have a significant impact on the area’s noise levels (cf. Figure 35).

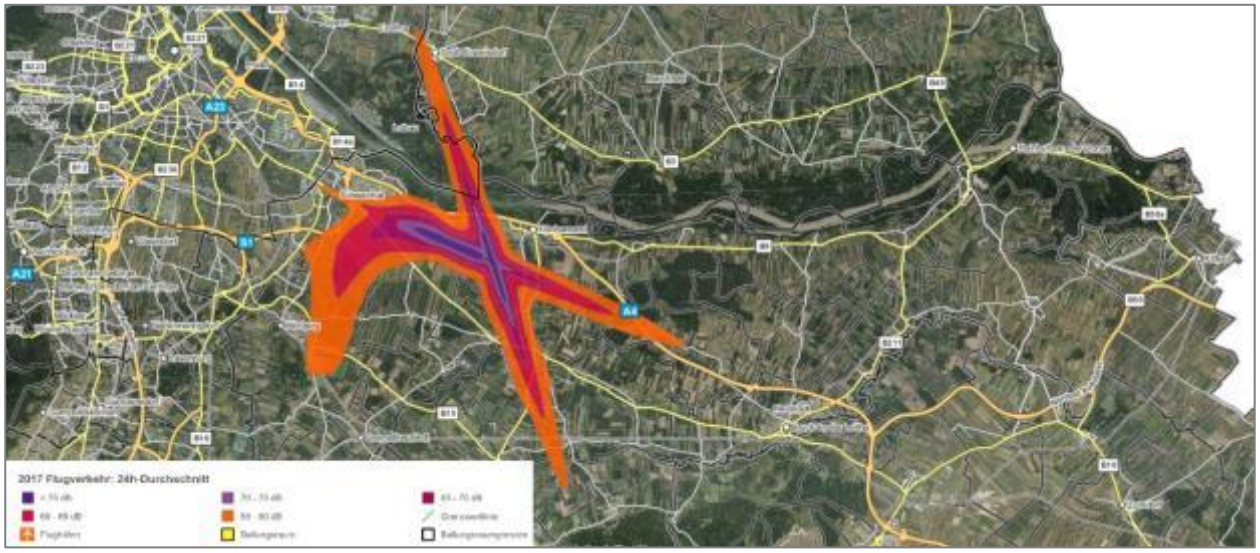


Figure 34: Aircraft noise zone in a narrow investigation area (BMNT 2019a)

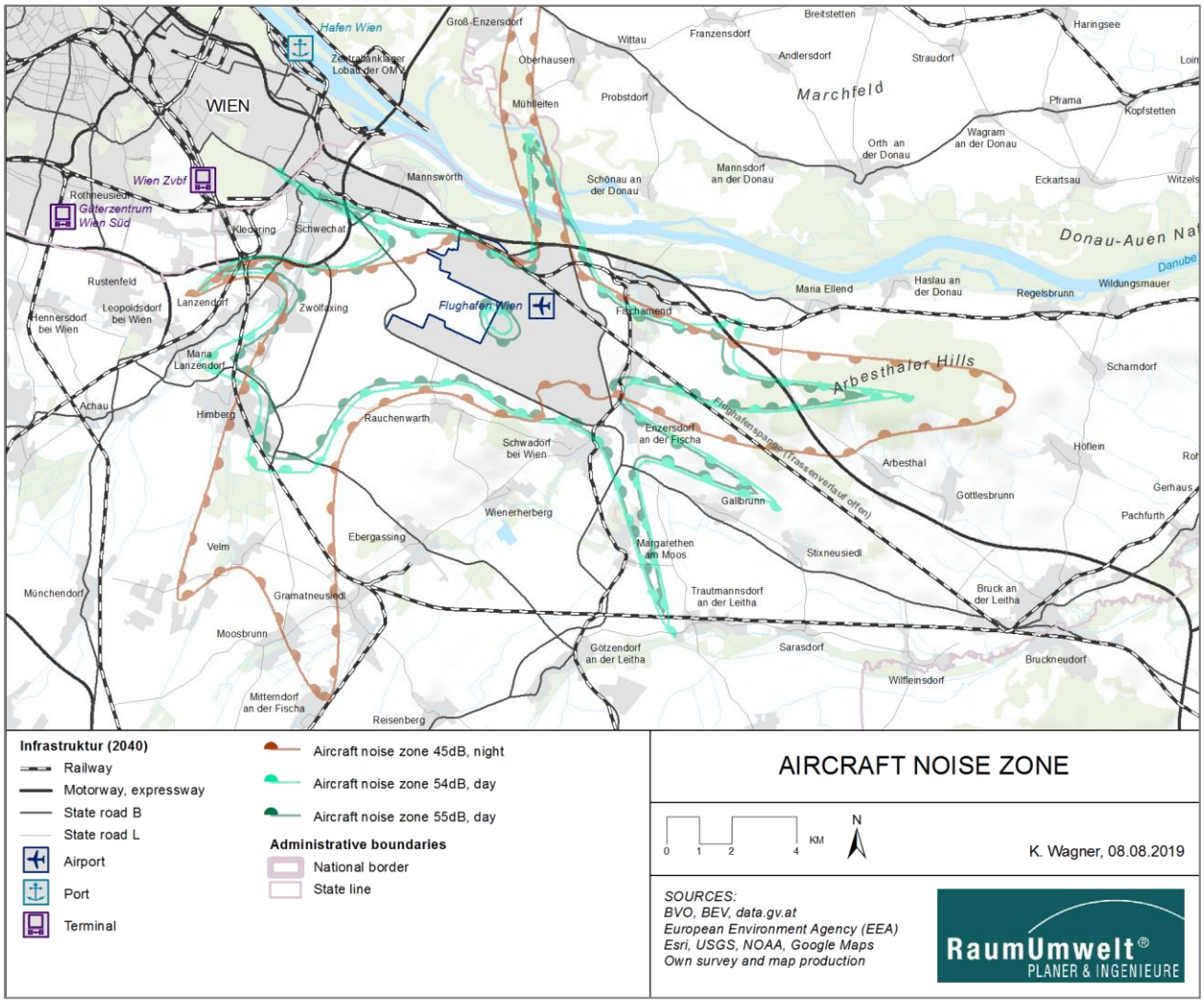


Figure 35: Aircraft noise zone Airport Vienna incl. 3rd runway (Airport Vienna AG 2019, own illustration)

In order to protect the peace and quiet of local residents, trucks over 7.5 t are **banned from driving at night** or on **weekends and public holidays** throughout Austria. Excluded from this driving ban are road service vehicles and vehicles of the armed forces in addition to low-noise emitting vehicles that are marked accordingly. For night driving bans, an additional speed limit of 60 km/h currently applies for exempted vehicles. There are **exceptions for journeys** with **combined transport** on weekends that are made within a radius of 65 km to select railway stations, ports and terminals. According to Federal Law Gazette No 855/1994 as amended by Federal Law Gazette II No 119/2007, three such facilities are located within the radius of the narrow investigation area; following the closure of the Vienna Northwest Railway Station terminal, there are now two facilities: Vienna Central Station and the Port of Vienna Freudenau CCT.

7.2.2.2 Air and Climate

The entire investigation area is designated as a PM_{10} "IG-Luft" (Air Pollution Control Act) **remediation area** (Vienna environs remediation area) according to Lower Austrian Fine Dust Remediation Area and Measures Ordinance (PM_{10})[26]. Since the BMNT Ordinance for Polluted Areas (Air) 2019[27] came into force, the investigation area is **no longer** designated as a **polluted area** in accordance with Sec. 3(8) of the Environmental Impact Assessment Act (UVP-G) 2000. The main sources of local PM_{10} pollution are **road traffic** and **space heating**. Both in Lower Austria and in Burgenland, **measures for the remediation** of polluted areas have been ordered.

Within the **IG-Luft remediation area**, there is a **ban on driving for trucks** of all weight classes that are in the EURO 2[28] emission standard or worse. Trucks driving in this area are obligated to carry emissions stickers in accordance with the IG-L Exhaust Emission Classes Labelling Ordinance.

The **fine dust concentration from PM_{10}** (inhalable particles, particulate matter with a diameter of less than 10 μm) is highest in Schwechat with 3,357 kg per km² and year, followed by Bad Deutsch-Altenburg with 2,711 kg per km² (the Hollizer quarry is located here) and Bruck an der Leitha with 2,509 kg per km² and year. The PM_{10} concentration in the other Lower Austrian municipalities of the investigation area is approx. 300 to approx. 2,000 kg per km² and year, with the higher values mostly arising in the vicinity of Vienna (NÖ Atlas 2019). No comparable data is available for Burgenland; however, due to the geographical proximity to Lower Austria, it can be assumed that the concentration is also within the range of 300 to > 1,000 kg per km² and year.

At 76 kt per km² and year, the highest **carbon emissions** by far in the vicinity of the narrow investigation area are recorded in Schwechat, with Vienna Airport and the OMV refinery; the municipalities Fischamend and Bruck an der Leitha are a distant second and third at 2.4 and 3.2 kt per km² and year respectively (NÖ Atlas 2019). According to the climate protection report of the Environment Agency Austria (UBA 2016: p. 37), the main sources of greenhouse gas emissions, including emissions trading, are the **energy and industrial sectors** (44.4%), traffic (28.5%), agriculture (10.4%) and buildings (10.0%). These sectors are responsible for about 93.3% of Austria's greenhouse gas emissions.

In contrast to the above-mentioned pollutants, the effects of which can be felt directly where they originate, the carbon emissions have an **impact on a global scale** and are therefore not directly relevant to the narrow investigation area.

[26] Austrian State Law Gazette 8103/1-0 as amended by Austrian State Law Gazette No 29/2016

[27] Federal Law Gazette II No 101/2019

[28] Valid in Lower Austria pursuant to Austrian State Law Gazette 8103/1-0 last amended by Austrian State Law Gazette No 29/2016; since 01/10/2018 this provision also applies in Burgenland pursuant to Austrian State Law Gazette No 2/2017

7.2.2.3 Natural Hazards

Natural hazards such as floods, torrents and mudslides, rockfall and landslides or earthquakes can pose safety risks to people, their habitats, settlements and economic areas, to transport routes, supply lines and infrastructure.

A nationwide **flood-zoning system** (HORA) for natural disasters has been launched to record risk areas, which allows for hazard assessments to be carried out for natural disasters throughout the Austrian territory (cf. BMNT 2019).

Within the investigation area are specific areas in which – due to topographical structures – buildings and infrastructure could be damaged because of **surface runoff**, particularly during heavy rainfall. Such areas can be found in the Arbesthaler Hills, Leitha Mountains and Hundsheimer Berge hills with moderate slopes (5–25%), north of Pama, north of Bruck an der Leitha, selectively along the Leitha as well as along the terrain edge west of Schwadorf, which has gentle slopes (less than 5% incline).

The investigation area is, for the most part, within earthquake hazard class VII, in which damage to buildings could occur in the event of an **earthquake**. The areas east of Parndorf in the Parndorf Plain to Kittsee region are within earthquake hazard class VI, in which slight damage to buildings could occur in the event of an earthquake.

The Arbesthaler Hills and Rauchenwarther Plain regions have a low to medium susceptibility to **landslides**; a medium to high disposition for landslides exists in the Hundsheimer Berge, along the Leitha in the area of Deutsch-Haslau as well as in the Leitha Mountains; actual landslides have barely been documented in the entire narrow investigation area.

The **flood risk** is addressed in Chapter 7.2.4.1. Besides these, there is no particular risk potential due to natural hazards in the narrow investigation area.

7.2.2.4 Environmental Protection Objectives for the Subject Area "People and Health"

Environmental Protection Objectives Derived From Plans and Programmes

2030 Agenda for Sustainable Development

- ❑ Combat climate change

Agenda 21 – United Nations Conference on Environment and Development

- ❑ Limit, reduce or control atmospheric pollutant emissions

Kyoto Protocol to the United Nations Framework Convention on Climate Change and its Annexes

- ❑ Reduce greenhouse gas emissions

The Paris Agreement

- ❑ Limit the increase in global average temperature

The renewed EU Sustainable Development Strategy

- Reduce pollutant emissions from transport to levels that minimise effects on human health and/or the environment.
- Reduce transport noise both at source and through mitigation measures to ensure overall exposure levels minimise impacts on health.

Danube Region Strategy

- Maintain air quality

The Austrian Strategy for Adaptation to Climate Change

- Climate protection

Climate and Energy Strategy #mission2030

- Climate protection

Lower Austrian Climate and Energy Programme 2020 (Niederösterreichisches Klima- und Energieprogramm 2020)

- Climate protection

Smart City Framework Strategy

- Reduce greenhouse gas emissions

Smart City Framework Strategy

- Climate protection, reduce greenhouse gas emissions

Strategic Framework for Transport and Infrastructure Development in centrope

- Climate protection

Strategic Framework for Transport and Infrastructure Development in centrope

- Air protection

Environmental Protection Objectives Based on Legally Entrenched Provisions

Federal Constitutional Act on sustainability, animal welfare, comprehensive environment protection, granting of water and food supply, research (Federal Law Gazette I No. 82/2019)

With the Federal Constitutional Act on sustainability, animal welfare, comprehensive environment protection, granting of water and food supply, research, the Republic of Austria has declared its support for the aforementioned government goals. The following environmental protection objectives for the subject area "People and health" have been formulated:

- Preserve the natural environment as the basis of human life, in particular as regards measures to keep the air clean [...] and to avoid disturbances caused by noise.

Lower Austria Spatial Planning Act 2014 (NÖ ROG 2014, Austrian State Law Gazette No 71/2018)

Lower Austria Spatial Planning Act 2014 forms the legal framework for spatial development processes in Lower Austria at the level of supra-local and local spatial planning and is thus a legally binding document. In the NÖ ROG, the following environmental protection objectives have been formulated for the subject area "People and health":

- Avoid risks to the health and safety of the population. Safeguard or expand the conditions for the population's health, in particular by

- ensuring the natural prerequisites for maintaining the microclimate, including climate with healing properties and purity of the air
- protecting against hazards arising from noise, dust, odour, radiation, vibrations, etc.;

Burgenland Spatial Planning Act (Bgld. RPG, Austrian State Law Gazette No 44/2015)

The Burgenland Spatial Planning Act regulates supra-local and local spatial planning in Burgenland. In the Bgld. RPG, the following environmental protection objectives have been formulated for the subject area "Human settlements and the economic area":

- Natural resources must be protected and used with due care so as to preserve their quality and quantity for the future. In particular [...] the preservation of the purity of the air and water as well as of the natural climate [should be endeavoured].

Water Law Act 1959 (WRG 1959, Federal Law Gazette I No 73/2018)

In the WRG 1959, the following environmental protection objectives have been formulated for the subject area "People and health":

- Protect and keep all waters clean, including groundwater, so that human or animal health is not at risk

Lower Austrian Nature Conservation Act 2000 (NÖ NSchG 2000, Austrian State Law Gazette No 26/2019)

In the NÖ NSchG 2000, the following environmental protection objectives have been formulated for the subject area "People and health":

- [Nature conservation] also includes endeavouring to preserve, restore or improve human health and the environment used for recreation as the best possible basis for life.

Air Pollution Control Act (IG-L, Federal Law Gazette No 73/2018)

In the IG-L, the following environmental protection objectives have been formulated for the subject area "People and health":

- The objectives of this federal act are the following:
  - the permanent protection of human health, animal and plant populations, their biocoenoses, habitats and interrelationships, and of cultural and material assets against harmful air pollutants, and the protection of humans against air pollutants that are an unreasonable nuisance.
  - reducing airborne pollutant emissions as a precaution and
  - maintaining the best air quality compatible with sustainable development in areas that show better air quality values than the immission limit and target values set out in Annexes 1, 2 and 5 or in an ordinance pursuant to Sec. 3(5), and improving air quality by taking appropriate measures in areas with worse air quality values than the immission limit and target values set out in Annexes 1, 2 and 5 or in an ordinance pursuant to Article 3(5)

Rail Traffic Noise – Immission Control Ordinance (SchIV, Federal Law Gazette II No 362/2013

- The aim of SchIV is to protect the population from the adverse effects of rail traffic noise

Federal Road Noise – Immission Control Ordinance (BStLärmIV, Federal Law Gazette II No 215/2014)

- The aim of BStLärmIV is to protect the population from health hazards and unreasonable noise

emitted from road traffic that is a nuisance

Environmental Protection Objectives Derived From Environmental Conditions

- Protect human health against harmful air pollutants and against air pollutants that are an unreasonable nuisance
- Prevent and reduce immissions (noise, air pollutants, vibrations) as a precaution that endanger human life or health or are the cause of an unreasonable nuisance
- Minimise the impact of greenhouse gas emissions by promoting alternative fuels and using environmentally friendly means of transport
- Increase road safety
- Protect humans, their habitats, settlements and economic areas (including transport routes, supply lines and infrastructure) against safety risks arising from natural hazards

7.2.3 NATURE AND LANDSCAPE

7.2.3.1 Spatial Landscape Structure

The narrow investigation area is located within the **Continental Biogeographical Region**, between the bordering Alpine Biogeographical Region in the west and the bordering Pannonian Biogeographical Region in the east (EEA 2017; cf. Figure 36).

With regard to natural areas, the narrow investigation area extends over several landscapes but is mainly characterised by a **plain that is primarily shaped by agricultural use with a low forest percentage**. The Donau-Auen National Park is to the north outside the narrow investigation area. Lake Neusiedl, with its status as a protected landscape and biosphere reserve, is at the edge of the narrow investigation area.

In addition to these areas of trans-regional importance that are in the immediate vicinity, there are other areas within the narrow investigation area that – from a nature conservation point of view – represent important **animal and plant habitats** and/or **areas with value for the landscape** (e.g. the river courses of the Fischa or Leitha, dry biotopes near the Hundsheimer Berg).

There are no areas in the narrow investigation area in which **humans have had no or little cultural influence**. Mesohemerobic areas i.e. areas moderately influenced by culture are located in the area of the Danube floodplains and in the Leithaauen region as well as along the Fischa.

With regard to **natural areas**, the narrow investigation area is located in the Vienna Basin, which is crossed by the Leitha Mountains and the Little Carpathians (Malé Karpaty). The Danube with its largely intact water meadows forms a natural border in the north. The Marchfeld, which connects to it, extends outside the narrow investigation area. To the south, Lake Neusiedl – one of the few steppe lakes in Eu-

rope – borders the Seewinkel (cf. Figure 37). The topographical conditions can be viewed in the attached plan folder.

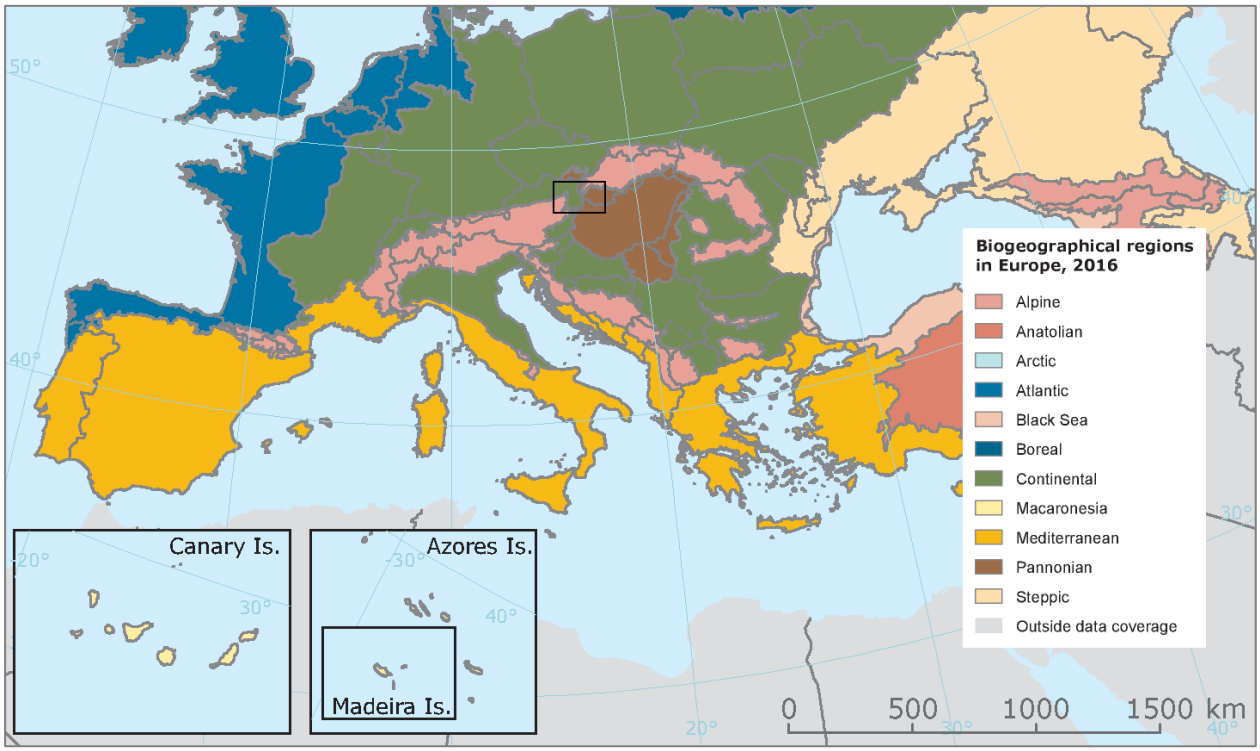


Figure 36: Biogeographical regions of Europe, 2016 (EEA 2017)

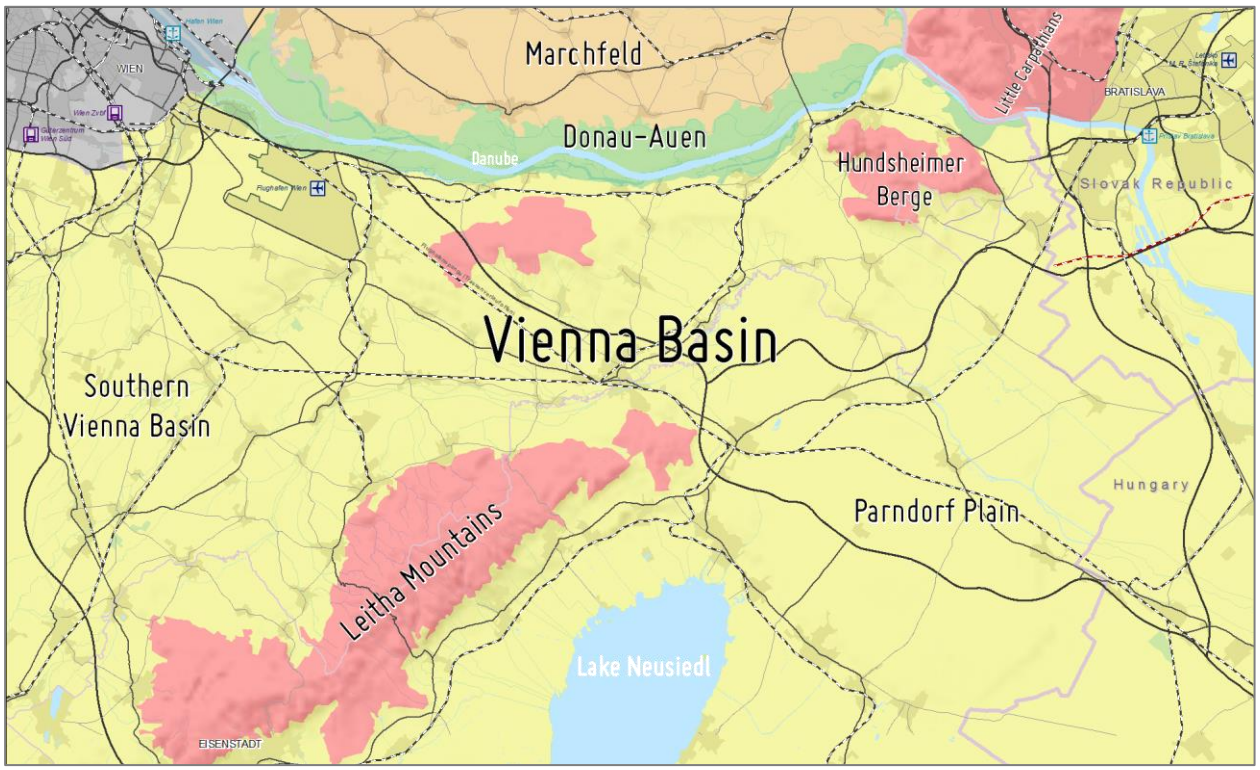


Figure 37: Spatial landscape structure (own illustration)

Southern Vienna Basin Subregion

In the west, the **Vienna Basin** borders on the end of the Alps along the line of thermal springs. The Danube forms the northern border of the southern Vienna Basin. In the southwest of this region are the Feuchte Ebene plain, the Mitterndorf depression and the Leitha lowlands. The Leitha crosses the area going east-west. To the east of the Leitha Mountains are the Prellendorfer Flur and the Parndorf Plain. The Leitha runs between them in the form of an interrupted stretch. Larger areas of forest exist in the area of the Danube floodplains and the Arbesthaler Hills as well as on the ridge of the Leitha Mountains. Adjacent to the Leitha are alluvial forests.

Several railway lines running mostly east-west, the A4 Eastern Motorway and the A6 Northeastern Motorway make up **foreign elements** in the southern Vienna Basin. To the east of Schwechat is Vienna Airport, which is widely closed off and brightly lit at night. The newly erected tower is a landmark that is visible even north of the Danube. Near Parndorf is a widespread business park with a new hotel building that can be seen from afar. Other foreign elements are wind parks, especially in the Parndorf Plain, which have overly shaped the landscape. Several high-voltage lines (220 kV and 380 kV) run through the southern part of the Vienna Basin. Other landmarks south of the Danube include castles, which are located chiefly along the Leitha.

Leitha Mountains and Little Carpathians (Malé Karpaty) Subregion

To the east of the Leitha lowlands in the area of Seibersdorf, the Leitha Mountains, which belong to the Eastern Alp, rise like an island to 480 metres above sea level. Between the Leitha lowlands and the Danube in the area north of Bruck an der Leitha, the Arbesthaler Hills rise with elevations of 170 m to 280 m and a steep downhill slope on the side of the Danube.

The Hundsheimer Berge are mountains that geologically belong to the **Little Carpathians**. They are located south of the Danube and rise east of the Prellenkirchner Flur. The Hundsheimer Berg is a hill 480 metres above sea level, the Braunsberg about 350 metres. On the west side in the Bad-Deutsch-Altenburg region is a quarry that is visible from afar. On a clear day, the entire Vienna Basin from Lake Neusiedl to the Weinviertel quarter can be seen from atop the Hundsheimer Berg hill.

Danube Floodplains Subregion

The **Danube floodplains** extend as a narrow band over an area of about 40 km between Vienna and Bratislava in the form of alluvial forests, meadows and special gravel beds in xeric alluvial biotopes. In addition to the main river, there are numerous oxbow lakes and tributaries, especially in the northern region. In the north, the area is bordered by a flood control dam. The oil port Lobau is located in the Viennese part of the Danube floodplains. At the eastern end west of Hainburg is a Danube crossing in the form of a cable-stayed bridge visible from afar, which can therefore be described as a landmark.

7.2.3.2 Nature and Landscape Conservation

Table 15 gives a condensed overview of the **nature and landscape conservation areas** in the narrow investigation area described in the next chapters. The protection areas can be viewed in the attached plan folder.

	Lower Austria	Burgenland
Protected area category	National park (IUCN)	National park (IUCN)
	European protected area	European protected area
	Nature conservation area	Nature conservation area
	Landscape conservation area	Landscape conservation area
	Nature reserve	Nature reserve
	Natural monument	Natural monument
	Regional green zone and part of landscape worth preserving	-

Table 15: Nature and landscape conservation areas in the narrow investigation area

National Park

Donau-Auen National Park

The **Donau-Auen National Park** is located at the edge of the narrow investigation area. The legal basis for the Donau-Auen National Park is the agreement pursuant to Art. 15a of the Federal Constitutional Law (B-VG) between the Federal Government and the federal states of Lower Austria and Vienna on establishing and maintaining a Donau-Auen National Park (Federal Law Gazette No 17/1997). The legal basis for the national park in Lower Austria is the Lower Austrian National Park Act (Austrian State Law Gazette No 5505-0 26/96 as amended by Austrian State Law Gazette No 14/2018) and the Ordinance on the Donau-Auen National Park (Austrian State Law Gazette No 5505/1-0 as amended by LGBl. No 57/2018). The legal basis for the national park in Vienna is the Vienna National Park Act (Austrian State Law Gazette No. 37/1996 as amended by LGBl. No 71/2018) and the Vienna National Park Ordinance (Austrian State Law Gazette No 06/2003 as amended by LGBl. No 49/2016). The **legal basis** includes a regulation on the division of the national park into a **nature zone** and a **peripheral zone**.

As a national park, the area is a **specially protected area** within the meaning of Annex II of the Environmental Impact Assessment Act (UVP-G) 2000 (Federal Law Gazette No 676/1993 as amended by Federal Law Gazette I No 80/2018).

The Donau-Auen National Park is one of seven[29] Austrian national parks. It extends in a **narrow, 38-km long band between Vienna and the mouth of the river March near Bratislava**. The Donau-Auen National Park has a total area of more than 9,600 ha, of which approx. 65% are alluvial forests, 15% mead-

[29] *Six of these national parks are recognised by the **I**nternational **U**nion for **C**onservation of **N**ature and Natural Resources (IUCN).*

ows and approx. 20% water. At its widest point, the national park measures 4 km across. The area has been protected as an IUCN Category II National Park since 1996.

The **landscape** of the Donau-Auen National Park is shaped by the **wide Danube current, flowing tributaries, silted-up oxbow lakes** and the **alluvial forests**. Situated in between are wet meadows and xeric alluvial biotopes on former gravel banks. This diverse habitat has given rise to a great **variety of species**, counting more than 800 plant species, over 30 mammal and 100 breeding bird species, eight reptile and 13 amphibian species as well as more than 60 different fish species. When including insects, the Donau-Auen National Park has more than 5,000 different animal species. In addition to playing a **protective role**, the national park is also important for **recreation and education**. There are national park centres and visitor centres and numerous hiking and bike paths (Nationalpark Donau-Auen GmbH 2011–2019).

Lake Neusiedl-Seewinkel National Park

The **Lake Neusiedl-Seewinkel National Park** is located south of the narrow investigation area and stretches across both Austrian and Hungarian national territory. It was the first Austrian national park to be internationally recognised by the IUCN. The national park covers an area of 300 km² and consists of the central **nature zone** (no land use), the **conservation zone** bordering to the south and east (cultural landscape) as well as the extensive surrounding **landscape conservation area**.

The Lake Neusiedl-Seewinkel National Park is characterised by its **steppe landscape** with extensive meadows and pastures, saline lakes, reeds and numerous animal and plant species. Particularly noteworthy are the approximately **350 different bird species** that have their breeding grounds and habitat in the national park (Nationalpark Neusiedler See – Seewinkel 2019).

Habitat connectivity

The **Alps-Carpathians Corridor**, a long-established game crossing, runs north-south through the narrow investigation area. It is an important connection between the Alps via the Leitha Mountains and the Danube floodplains to the Carpathians (cf. Figure 38). **Migration corridors** of regional to local importance can be seen south of the Danube in the Leithaauen region east of Bruck an der Leitha.

In the narrow investigation area’s agrarian landscape, forest-dwelling species can find only **few vegetation structures** serving as **connectors between their main habitats**. Moreover, there are additional restrictions due to the separation that heavily frequented streets and settlement areas bring about.

By **preserving and creating** suitable **landscape structures** and **green bridges** as well as through sustainable spatial planning, the Alps-Carpathians Corridor can be restored and secured. To this end, **measures** were outlined in a cross-border action plan. The Alps-Carpathians Corridor was anchored in the Regional Development Programme Burgenland (LEP 2011) and the Lower Austrian regional spatial planning programmes.



Figure 38: Alps-Carpathians Corridor (Weinviertel Management 2014)

The Natura 2000 Network of Protected Areas network (European Protected Areas)

The legal basis for the Natura 2000 network of protected areas is the EU Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC). The main objective is to create a permanently secured, Europe-wide network of protected areas for the protection of animals, plants and their habitats. The Natura 2000 network of protected areas, which is important for habitat connectivity, and the Alps-Carpathians Corridor are shown in Figure 39.

The two directives have been implemented **into nature protection legislation at the state level**, with a separate category of protected areas, the "European protected area", having been introduced for these areas. Designated areas under the Birds Directive or the Habitats Directive are considered **special protection areas** within the meaning of Annex II of the Environmental Impact Assessment Act (UVP-G) 2000 (Federal Law Gazette No 697/1993 as amended by Federal Law Gazette I No 80 (2018)). There are numerous areas in the investigation area that are described in detail in Table 16 and in the written text thereafter.

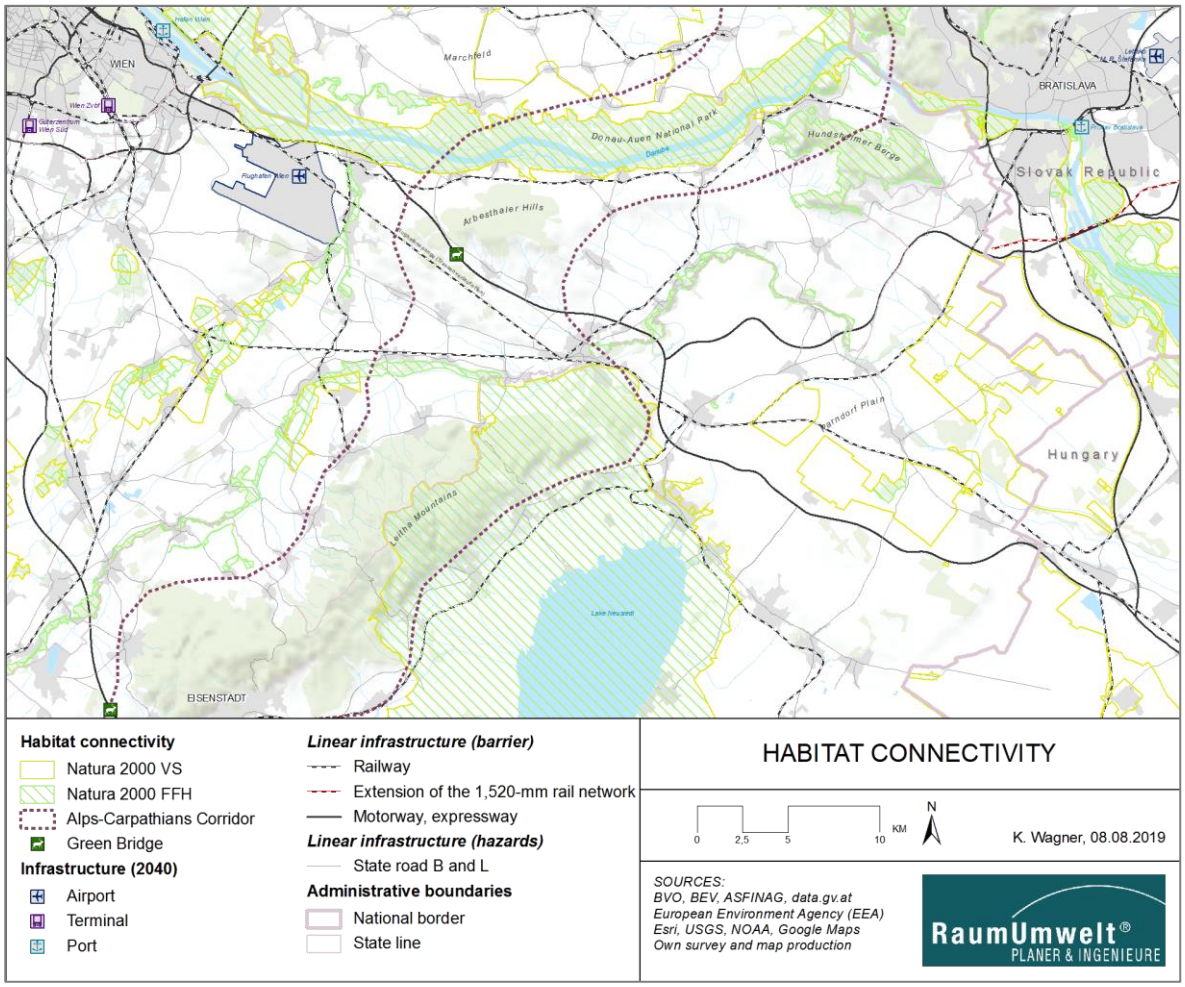


Figure 39: Habitat connectivity in the narrow investigation area (own illustration)

Federal state	Designation	Number	Political district	Protection areas
Lower Austria	Danube floodplains east of Vienna	AT1204000	incl. Bruck an der Leitha, Vienna surroundings	Wild fauna and flora and natural habitats,
		AT1204V00		Bird sanctuary
	Hundsheimer Berge	AT1214000	Bruck an der Leitha	Wild fauna and flora and natural habitats
	Feuchte Ebene – Leithaauen	AT1220000	incl. Bruck an der Leitha, Vienna surroundings	Wild fauna and flora and natural habitats
		AT1220V00		Bird sanctuary
Burgenland	Parndorf Plain – Heathland	AT1125129	Neusiedl am See	Bird sanctuary
	Parndorf Heath	AT1103112	Neusiedl am See	Wild fauna and flora and natural habitats
	Oak Woods and Pastureland of Zurndorf	AT1102112	Neusiedl am See	Wild fauna and flora and natural habitats
	Haidel near Nickelsdorf	AT1101112	Neusiedl am See	Wild fauna and flora and natural habitats
	Lake Neusiedl – northeastern Leitha Mountains		Neusiedl am See, Eisenstadt surroundings	Wild fauna and flora and natural habitats,
				Bird sanctuary

Table 16: Natura 2000 areas in the investigation area (Office of the Federal Ministry for Agriculture, Forestry, Environment and Water Management, BMLFUWb, Office of the Burgenland Provincial Government 2017; own illustration)

Donau Floodplains East of Vienna (AT1204000, AT1204V00)

The **Danube floodplains** east of Vienna are a **European protected area** and are just outside the narrow investigation area. The significance of the area lies in the large, adjacent alluvial forests, which are closely interlocked with typical floodplain meadows and waterbodies in the wetlands. Important habitats include the softwood floodplain forest (alder/ash/willow meadows) with rare silver willows and black poplars, as well as the hardwood floodplain forest. In addition to the floodplain forests, there are also nutrient-rich alluvial meadows of river valleys of the Cnidion dubii and extensively farmed meadows growing tall oat grass. In addition, there are also dry habitats such as rupicolous calcareous grasslands, semi-natural dry grasslands and scrubland facies on calcareous substrates and East European steppes. Xeric alluvial biotopes exist on former gravel banks. Of importance for Europe as a whole with regard to organisms is the fact that the European fire bellied toad, the Danube crested newt and the European pond turtle can be found here. Furthermore, the floodplains are important for the conservation of important fish species such as the white-finned gudgeon, the pigo, the common zingel and the streber. From an ornithological perspective, the area has a year-round importance and is highly diverse. Species include white-tailed eagles, other birds of prey, woodpeckers, old world flycatchers, black storks and kingfishers.

Hundsheimer Berge (AT1214000)

The region is located in the area of the Devín Gate in the easternmost part of Lower Austria. The Hundsheimer Berge are mountains that geologically belong to the Little Carpathians. The region is of international importance due to the **different forms of dry biotopes that entwine here and stretch across the expanse.** Large areas are covered by deep-reaching, semi-dry grasslands and steppes used for grazing. Important steppe plants are alpine oatgrasses, southern globethistles, and dwarf irises. The area is also important with regard to endemic species. The Hainburg *Dianthus campestris* and the Pannonian blue grass can be found here. The region is also home to butterflies. With more than 1,315 species, this area boasts about one third of Austria's entire species composition. Caves in the limestone rock are essential for bat species, such as the greater mouse-eared bat.

Feuchte Ebene – Leithaauen (AT1220000, AT1220V00)

In the southern part of the Vienna Basin, this European protected area extends along the Leitha to the Burgenland border as several individual areas. Given the scarcity of **wetlands in Austria's Pannonian east**, the area exerts a major influence. In addition, the extensive groundwater discharges, which enable habitats such as alkaline fens to be formed, are unique to Austria, with wet and dry sites tightly interweaving. The widespread meadows and moorlands are the basis for an important bird sanctuary. Noteworthy is the existence of corncrakes and marsh harriers. The region has considerable softwood ad hardwood floodplain forests. Important remaining alluvial forests and old tree populations are located in the castle gardens of Laxenburg, Ebreichsdorf and Bruck an der Leitha. With regard to the species in Annex II, vari-

ous invertebrate species such as the Alpine longhorn beetle, the hermit beetle and the green snaketail dragonfly are particularly worth mentioning.

Parndorf Plain – Heathland (AT1125129)

The Parndorf Plain is chiefly characterised by extensive **farmland**, as is the heathland, which is separated from the Parndorfer Plain by the Leitha lowland. The landscape of the Leitha lowland has a richer structure due to **meadows, remains of alluvial forests and riparian woodlands**. Together, they form the habitat of about 40 bird species according to Annex I of the Birds Directive. These include the great bustard and the eastern imperial eagle, both of international importance. Other valuable bird species include Montagu's harrier, various falcon species, ruffs, great snipes, spotted crakes, barred warblers and black storks.

Oak Woods and Pastureland of Zurndorf (AT1102112)

The European protected area is located south of Zurndorf in a **dry valley** of the Parndorf Plain **formed during the ice age**. It consists of about 100 ha of forest and 20 ha of pastureland, most of which are located on the slopes of the dry valley. Most of the woods are loess oak forest, which corresponds to the fauna and flora habitat of Euro-Siberian steppic woods, yet hardwood floodplain forests can also be found. Habitats in the pastureland are sub-pannonic steppic grasslands, semi-natural dry grasslands and scrubland facies on calcareous substrates, as well as lowland hay meadows in the north. Animal species according to Annex II are the western barbastelle and the European ground squirrel.

Haidel near Nickelsdorf (AT1101112)

The area is situated on a steep terrace edge of the Parndorf Plain sloping towards the Leitha and is **characterised by dryness**, which the **biodiverse vegetation** makes evident. The represented dry grassland communities correspond to the fauna and flora habitat type sub-pannonic steppic grasslands; other habitats are lowland hay meadows. The occurrence of *Artemisia pancicii* has trans-regional importance with regard to species. Moreover, the greater pasque flower is also found within the protected areas.

Parndorf Heath (AT1103112)

The Parndorf Heath is part of the European protected area and is located about 1 km east of Parndorf on the edge of the Parndorf Plain. It is all that **still remains of the once extensive pastureland**. The area has been designated as a nature conservation area since 1992. In the west, subpannonian steppic grasslands are widespread, while the east has higher-growing dry grasslands. The importance of the area lies in the existence of a European ground squirrel colony with around 200 animals, which are able to find ideal living conditions.

Lake Neusiedl – Northeastern Leitha Mountains

The region has an area of 571 km² and a very large variety of animal and plant species and habitats. There are oak forests, reed beds, saline lakes, open meadows and steppe-like dry grasslands with widely differing animal and plant communities. The distribution of many animal and plant species is limited to the west. Lake Neusiedl with its reed belt is one of the most important breeding, feeding and migration areas in Europe for wetland bird species. The Seewinkel is mainly characterised by rare saline lakes, grassland, vineyards and unstructured farmland. The western slopes are characterised by small vineyards and important dry grasslands and semi-dry grasslands. They provide a valuable habitat for many bird and insect species. The area of the north-eastern Leitha Mountains is mainly characterised by oak forests as well as oak-hornbeam forests, while open cultivated areas can be found on the Bruckneudorf military training site and on the southern slope towards Jois (cf. Suske 2015).

Nature Conservation Areas

The federal states may designate **natural or semi-natural areas of particular ecological importance** as nature conservation areas. This protection category is considered to be one of the strictest in Austria. Numerous **nature conservation areas** are located in the narrow investigation area (cf. Table 17).

Federal state	Legal basis Austrian State Law Gazette No.	Designation	Political district	Area [ha, rounded]
Lower Austria	5500/13-00, as amended by 43/2016	Braunsberg-Hundsheimerberg	Bruck an der Leitha	210
		Pischelsdorfer Wiesen	Bruck an der Leitha	11
		Spitzerberg	Bruck an der Leitha	226
Burgenland	50/1998	Batthyanyfeld	Neusiedl am See	30
	22/1992	Parndorf Heath	Neusiedl am See	7
	27/1969	Oak Woods and Pastureland of Zurndorf	Neusiedl am See	150
	29/1979	Haidel near Nickelsdorf	Neusiedl am See	12
	11/1988	Hutweide Mönchhof	Neusiedl am See	2
	36/1965	Jungerberg	Neusiedl am See	1
	35/1965, as amended by 23/1971	Hackelsberg	Neusiedl am See	9

Table 17: Nature conservation areas in the investigation area (NÖ Atlas 4.0, GeoDaten Burgenland; own illustration)

The narrow investigation area has **small nature conservation areas** in northern Burgenland, in the area of the Parndorf Plain as well as in Lower Austria in the area of the Vienna Basin. Nature conservation areas are regarded as special protected areas within the meaning of Annex II of the Environmental Impact Assessment Act (UVP-G) 2000 (Federal Law Gazette No 676/1993 as amended by BGBl. I Nr. 80/2018).

Wetlands According to the Ramsar Convention

In implementing the Ramsar Convention (cf. Chapter 4.2.1.1), the Federal Ministry of Agriculture, Forestry, Environment and Water Management has designated **Ramsar sites in Austria**. Close to the narrow investigation area are several **wetlands** that have been designated – according to the Ramsar Convention or their implementation into national law – as habitats of international importance for waterfowl and wading birds. They are:

- Danube-March floodplains
- Lower Lobau
- Lake Neusiedl and Seewinkel lakes

The Donau-March floodplains **extend** across a 38,500-hectre area, the Lower Lobau across 915 ha, and Lake Neusiedl and the lakes of the Seewinkel across 60,000 ha.

Landscape Conservation Areas

Landscape conservation areas are regions characterised by their **distinct diversity, uniqueness and beauty**, which are of particular importance for recreation and tourism or which comprise historically or archaeologically **significant parts of the landscape**.

Three landscape conservation areas are located in the narrow investigation area (cf. Table 18). In Lower Austria, these are the extensive landscape conservation area Donau-March-Thaya-Auen floodplains and the landscape conservation area Leitha Mountains. Burgenland is home to the wide-area landscape conservation area Lake Neusiedl and surroundings.

Federal state	Legal basis Austrian State Law Gazette No.	Designation	Political district
Lower Austria	5500/35-10	Donau-March-Thaya-Auen	incl. Vienna surroundings, Bruck an der Leitha
		Leitha Mountains	Bruck an der Leitha
Burgenland	22/1980	Lake Neusiedl and surroundings	incl. Neusiedl am See

Table 18: Landscape conservation areas in the investigation area (own illustration)

Natural Monuments

Natural monuments are **natural formations worth preserving**, which are protected because of their scientific or cultural significance, uniqueness, rarity, their special character for the landscape or a special function for maintaining natural systems. In particular, trees, groups of trees or groves, sites of rare animal and plant species and other natural formations can be declared natural monuments. Due to the **mainly isolated and small-scale occurrence** of natural monuments, this issue will not be dealt with further.

Nature Reserve

A **nature reserve** is a landscape area that is **publicly accessible and suitable for recreation or for teaching about nature**. Nature reserves attempt to implement the concept of "sustainable development" formulated in Agenda 21 of the United Nations Conference held in Rio de Janeiro in 1992. The Austrian nature reserves are faced with "protection", "recreation", "education" and "regional development" as equal challenges for sustainable development.

The Natural Park Lake Neusiedl Leitha Mountains in Burgenland is located in the narrow investigation area, with the landscape conservation area Lake Neusiedl and surroundings overlapping with the park. Due to the diversity of its landscape, the area is of particular importance and extends to five municipalities on the northwestern banks of Lake Neusiedl.

The Wüste Mannersdorf Nature Park Leitha Mountains of Lower Austria is located within the investigation area in the municipality of Mannersdorf an der Leitha. Oak-hornbeam forests on the western slope of the Leitha Mountains are home to this nature reserve. The centrepiece is formed by the former walled monastery grounds of "St. Anna in der Wüste", the ruins of which blend into the surrounding flora.

Regional Green Zones and Parts of Landscapes Worth Preserving

The Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland) (Austrian State Law Gazette 8000/85-0 as amended by Austrian State Law Gazette No. 67/2015) has certain areas that are designated as **regional green zones** or **parts of landscapes worth preserving**. **Regional green zones** are grasslands that divide and structure spaces and settlements or are important for the region because they are recreational areas close to settlements or connect valuable grasslands with biotopes. In the narrow investigation area, such green zones exist mainly **along river courses** (Leitha, Fischa, but also smaller streams and brooks). Complex landscapes or valuable individual biotopes of regional importance count among those **parts of landscapes that are worth preserving**. These areas are distributed over the entire narrow investigation area and include the areas around **rivers and streams** as well as the few **forest areas** (in particular the Hundsheimer Berge and the Arbesthaler Hills).

7.2.3.3 Environmental Protection Objectives for the Subject Area "Nature and Landscape"

Environmental Protection Objectives Derived From Plans and Programmes

Strategy Paper of the Austrian Nature Parks (Strategiepapier der Österreichischen Naturparke)

- ❑ Safeguarding the diversity and beauty of the natural environment through sustainable use and preservation of the centuries-old cultural landscape.

Convention on Biological Diversity

- ❑ The conservation of biological diversity, the sustainable use of its components and the fair and

equitable sharing of the benefits arising out of the utilisation of genetic resources

- The protection of protected areas or ecosystems and natural habitats

Ramsar Convention

- Conservation and wise use of wetlands

ESDP – European Spatial Development Perspective. Towards Balanced and Sustainable Development of the Territory of the European Union

- Preservation and further development of natural heritage

Danube Region Strategy

- Conservation of biological diversity
- Landscape preservation

EU Biodiversity Strategy to 2020

- Maintain and restore ecosystems and their services
- Increase the contribution of agriculture and forestry to biodiversity
- Combat invasive alien species
- Step-up action to tackle the global biodiversity crisis

Austrian Strategy for Sustainable Development (ÖSTRAT) – A Framework for Action for the Federal Government and Federal Provinces

- Protection of the Austrian habitat

Biodiversity Strategy Austria 2020+

- Preservation and promotion of biodiversity and its ecosystem services

Future Strategy Burgenland 2030 (Zukunftsstrategie Burgenland 2030)

- Nature conservation with environmental relevance

Regional Development Programme Burgenland – LEP 2011

In the LEP 2011, the following relevant environmental protection objectives have been formulated for the subject area “Nature and landscape”:

- The protection, preservation and regeneration of the existing natural area as well as a responsible use of the available resources must be guaranteed.
- The preservation and care of the natural area and the landscape as well as climate protection are of great importance for integrated and sustainable regional development and must therefore be considered at all levels and in all decisions regarding measures relevant to space.
- The natural area should be used in such a way that the functionality of natural systems is permanently maintained. Necessary interferences to the ecological balance should be kept to a minimum.
- The objectives of nature and landscape conservation should therefore also be implemented by

means of cross-thematic cooperation and by coordinating tourism, business, infrastructure planning, agriculture and forestry.

- The preservation of the cultural landscape must be in harmony with efficient and compact development of the local areas and settlements. Landscape parts, green belts as well as green corridors and green connections of spatial-structural importance must therefore be protected and not be built on or used in such a way that poses an increased risk to people, animals and goods.
- The existing green spaces should be preserved or improved by taking appropriate landscaping measures. In addition to conserving existing landscape features and wetlands, endeavouring to create new biotopes or merge such areas into larger and more closed biotope network systems would also be essential. The permeability of the landscape for wildlife migration must be guaranteed.
- The diversity, uniqueness and variety of the natural and cultural landscape must be guaranteed by taking maintenance, conservation and replanting measures.

Main Regional Strategy 2024 Industrieviertel Quarter

- Securing and preserving typical landscapes

Lower Austria Nature Conservation Charter (Naturschutzcharta Niederösterreich)

- Nature conservation for the safety and good of the people

Lower Austrian Nature Protection Concept

- Protecting nature
- Preserving and promoting biological diversity
- Promoting biodiversity

Strategic Framework for Transport and Infrastructure Development in centrope

- Nature protection

Action Plan for safeguarding the Alps-Carpathians Corridor

- Securing biological diversity

Urban region + interim report

- Preserving and connecting regional green and wildlife corridors

Environmental Protection Objectives Based on Legally Entrenched Provisions

Federal Constitutional Act on sustainability, animal welfare, comprehensive environment protection, granting of water and food supply, research (Federal Law Gazette I No. 82/2019)

With the Federal Constitutional Act on sustainability, animal welfare, comprehensive environment protection, granting of water and food supply, research, the Republic of Austria has declared its support for the aforementioned government goals. The following environmental protection objectives for the subject area "Nature and landscape" have been formulated:

- Preserve the natural environment as the basis of human life

Lower Austria Spatial Planning Act 2014 (NÖ ROG 2014, Austrian State Law Gazette No 71/2018)

Lower Austria Spatial Planning Act 2014 forms the legal framework for spatial development processes in Lower Austria at the level of supra-local and local spatial planning and is thus a legally binding document. In the NÖ ROG, the following environmental protection objectives have been formulated for the subject area "Nature and landscape":

- Preserve and improve the townscape and landscape
- Free access to forests, mountains, bodies of water and other beautiful landscapes and their non-disruptive accessibility (hiking paths, promenades, outdoor swimming areas or the like)
- Securing and linking valuable green spaces and biotopes and considering European protected areas

Burgenland Spatial Planning Act (Bgld. RPG, Austrian State Law Gazette No 44/2015)

The Burgenland Spatial Planning Act regulates supra-local and local spatial planning in Burgenland. In the Bgld. RPG, the following environmental protection objectives have been formulated for the subject area "Nature and landscape":

- Natural resources must be protected and used with due care so as to preserve their quality and quantity for the future. In particular, [...]
  - the protection of the ground, the flora and fauna, […]
  - and the protection and due care of nature factors and cultural heritage sites worth preserving as well as the appearance of the landscape and townscape [should be endeavoured].

Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland) (Austrian State Law Gazette No 67/2015)

In the Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland), the following relevant environmental protection goal has been formulated for the subject area "Nature and landscape":

- Securing and linking valuable biotopes

Water Law Act 1959 (WRG 1959, Federal Law Gazette I No 73/2018)

In the WRG 1959, the following relevant environmental protection objectives have been formulated for the subject area "Nature and landscape":

- Protect and keep all waters clean, including groundwater, so that human or animal health is not at risk
- Protect and keep all waters clean, including groundwater, so as to avoid impairments to the landscape and other tangible damage
- Protect and keep all waters clean, including groundwater, to prevent deterioration and to protect and improve the status of aquatic ecosystems and terrestrial ecosystems and wetlands directly dependent on them as regards water balance

Lower Austrian Nature Conservation Act 2000 (NÖ NSchG 2000, Austrian State Law Gazette No 26/2019)

In the NÖ NSchG 2000, the following relevant environmental protection objectives have been formulated for the subject area "Nature and landscape":

- The aim of nature conservation is to preserve, maintain or restore the appearance of nature in such a way that

- its own characteristics and ability to develop
- the ecologically properly functioning habitats, their diversity, biodiversity and representation of local and site-specific fauna and flora, and
- the sustainability of natural processes

are secured and developed in a way typical for the region;

- The conservation and care of nature encompasses any appearance, regardless of whether it is found in its original state or has been altered by man (cultural landscape).

Burgenland Nature Conservation and Landscape Management Act (NG 1990, Austrian State Law Gazette No 35/2018)

In the Bgld NG 1990, the following relevant environmental protection objectives have been formulated for the subject area “Nature and landscape”:

- This act serves to protect and maintain nature and the landscape, no matter the appearance
- Particular protection is afforded to:
  - nature’s diversity, uniqueness, beauty and recreational value
  - the undisturbed interaction of the natural systems (the course of natural processes and developments), and
  - the biodiversity of the native flora and fauna (protection of species) and their natural habitats and bases of life (protection biotopes)

Air Pollution Control Act (IG-L, Federal Law Gazette No 73/2018)

In the IG-L, the following relevant environmental protection objectives have been formulated for the subject area “Nature and landscape”:

- The objectives of this federal act are the following:
  - the permanent protection of human health, animal and plant populations, their biocoenoses, habitats and interrelationships, and of cultural and material assets against harmful air pollutants, and the protection of humans against air pollutants that are an unreasonable nuisance.

Lower Austria National Park Law (Austrian State Law Gazette No 14/2018)

In the Lower Austria National Park Law, the following relevant environmental protection objectives have been formulated for the subject area “Nature and landscape”:

- The aim of this law is to ensure that national parks are established and operated in such a way that
  - especially impressive and diverse landscapes are kept in their natural state and beauty and that their functionality and biodiversity of ecosystems is maintained
  - the national park area allows ecosystem dynamics that are largely uninfluenced by human activities
  - the fauna and flora that is representative of this area is preserved, including their habitats and the existing historically significant objects and landscape features

Agreement pursuant to Art. 15a of the Federal Constitutional Law (B-VG) between the Federal Government and the federal states of Lower Austria and Vienna on establishing and maintaining a Donau-Auen National Park (Federal Law Gazette No 17/1997 or Austrian State Law Gazette 5506)

In this agreement, the following relevant environmental protection objectives have been formulated for the subject area “Nature and landscape”:

- The creation and operation of the Donau-Auen National Park are based on the following objectives:
  - To promote and preserve the Donau-Auen National Park as a semi-natural and scenically valuable area of national and international importance
  - To preserve those types of landscape that are representative of the region and the flora and fauna, including their habitats
  - To guarantee the groundwater reserves in the Danube floodplains
- In pursuit of the goals [...], groundwater must be protected for use as a water reserve for drinking water supply taking into account the ecological objectives laid down in the relevant legal provisions

Environmental Protection Objectives Derived From Environmental Conditions

- Securing and preserving areas in which humans have had no or little cultural influence.
- Securing the networking of valuable animal and plant habitats, securing migration corridors for wildlife (Alps-Carpathians Corridor)

7.2.4 WATER, SOIL AND LAND USE

7.2.4.1 Surface Water

The narrow investigation area has several **rivers** that all belong to the **catchment area of the Danube**. The most important rivers are the **Danube** and **Leitha**. The 0.33% (30-year flood) and 1% (100-year flood) flood discharge areas are located along the main arms of the Leitha and Fischa. The surface water is shown in the attached plan folder.

Danube

The **Danube** is the second longest river in Europe, flowing some 2,900 km. It rises in the Black Forest and empties into the Black Sea via the Danube Delta. Almost all of Austria's territory drains into the Danube, with only a few small exceptions. The gradient in Austria is 156 metres. The catchment area covers over 100,000 km². The most important tributaries of the Danube in Austria are the Enns, Traun, Ybbs, Traisen, Kamp and March. Low water levels are usual for January and February, higher discharges for April to July. The flow rate in Vienna is on average 1,915 m³/s. There are numerous **power stations** along the Danube, with the Freudenau power station located in Vienna. In addition to its electricity-generating capacity, the Danube also serves as an important European **waterway**. Below the Freudenau barrage, alluvial forests and tributaries of the Danube extend as far as the Devín Gate.

Fischa

The **Fischa** is a southern tributary of the Danube and is about 35 km long with a catchment area of about 549 km². The Fischa has its origin in the southern Vienna Basin by Haschendorf at an altitude of 228 m. It is mainly fed by the groundwater of the Wöllersdorfer scree. The water supply is constant throughout the year from the main feeder, the Piesting, which comes from the foothills of the Alps and flows into the Fischa in Gramatneusiedl. The Fischa flows into the Danube near Maria Ellend, with the last partial section being a Danube oxbow lake.

Leitha

The **Leitha** is formed where the Pitten and Schwarza rivers merge. They come from the Central Alps and the Limestone Alps respectively and combine in the municipality of Lanzenkirchen near Wiener Neustadt. The catchment area of the Leitha covers about 2,150 km² up to the Hungarian border, with the tributaries mainly in the upper reaches. For many centuries the Leitha also served as a political border. During the time of the Austro-Hungarian Empire, the Austrian part was commonly referred to as Cisleithania and the Hungarian lands as Transleithania. In the plain of the Feuchte Ebene, the Leitha takes on the form of a meandering lowland river. From a hydrological point of view, the Leitha river regime equals that of a mountain river without glacier melt-water contribution and high summer precipitation.

Stagnant Waters

The **stagnant waters** in the narrow investigation area are mostly man-made, with a large percentage of them being **gravel pit lakes** as a result of gravel extraction. The water regime is influenced by groundwater, precipitation, evaporation and transpiration. These lakes, which can be several decades old, often have well developed riparian vegetation. Some of the former gravel pit lakes are now built up with residential houses and weekend homes.

As one of the few steppe lakes in Europe, **Lake Neusiedl**, which is located just outside the narrow investigation area, is of particular importance.

7.2.4.2 Groundwater

The **water protection zone Mitterndorfer depression** is inside the narrow investigation area. Use of the groundwater reserves is laid down in the water management framework decision for the Mitterndorfer depression (Federal Law Gazette 126/1969 as amended by Federal Law Gazette 167/2000). It regulates the use of groundwater reserves in general, listing the water supply and irrigation use. Groundwater is protected and conserved in the long-term through water protection areas.

In Burgenland, the **groundwater protection zones** Windener sources (Austrian State Law Gazette 4/1978) and Purbach (Austrian State Law Gazette No 44/2011) extend west of Lake Neusiedl to the Leitha Mountains, the groundwater protection zone Kleylehof (Nickelsdorf-Halbturn) (Austrian State Law Gazette No 78/2018) extends to the state border near Nickelsdorf, and the Kittsee groundwater protection zone (Austrian State Law Gazette No 48/2010) extends to the north.

Furthermore, there are several **small-scale water protection areas** for wells within the narrow investigation area, which will not be addressed in more detail, however, as there is only a small occurrence of them. The relevant areas are shown in the attached plan folder.

7.2.4.3 Soil and Surface Area

Soil Types and Soil Quality

The area south of the Danube in the Götzendorf region along the Leitha lowland has **grey alluvial soil**, **chernozems** and small-sized **half-bogs** in addition to larger areas with **black soil** and localised pronounced alternating water ratios. **Chernozems** are prevalent between Himberg and Schwadorf and between Schwadorf and Bruck an der Leitha; it is a soil with very high agricultural suitability (cf. Figure 43), characterised in this part of the country by its well-developed depth and largely moderate permeability. Parachernozems are dominant on the permeable, very dry to dry sites in the area of the Parndorf Plain. The area east of Gattendorf has **grey alluvial soil** and areas with characteristic **gley**. In between the two Leitha arms mostly **black soil** can be found on sites well supplied with water. On the Prellenkirchner Flur

in the north, mostly **chernozems** can be found and in the area around Prellenkirchen mostly **parachernozems**, soil complexes, and – to a small extent – **black soil**. In the area of the Haideboden, in the outermost southeast region of the narrow investigation area, **chernozems** are prevalent, with small areas covered by **parachernozems**. **Chernozems** dominate the area of the Arbesthaler Hills. **Brown chernozems** and **parachernozems** exist to a smaller extent. In the southern and western run-off zone of the Hundsheimer Berge, small-scale areas alternate with **loose sediment brown soil**, **chernozems** and **colluvium** (cf. Figure 40).

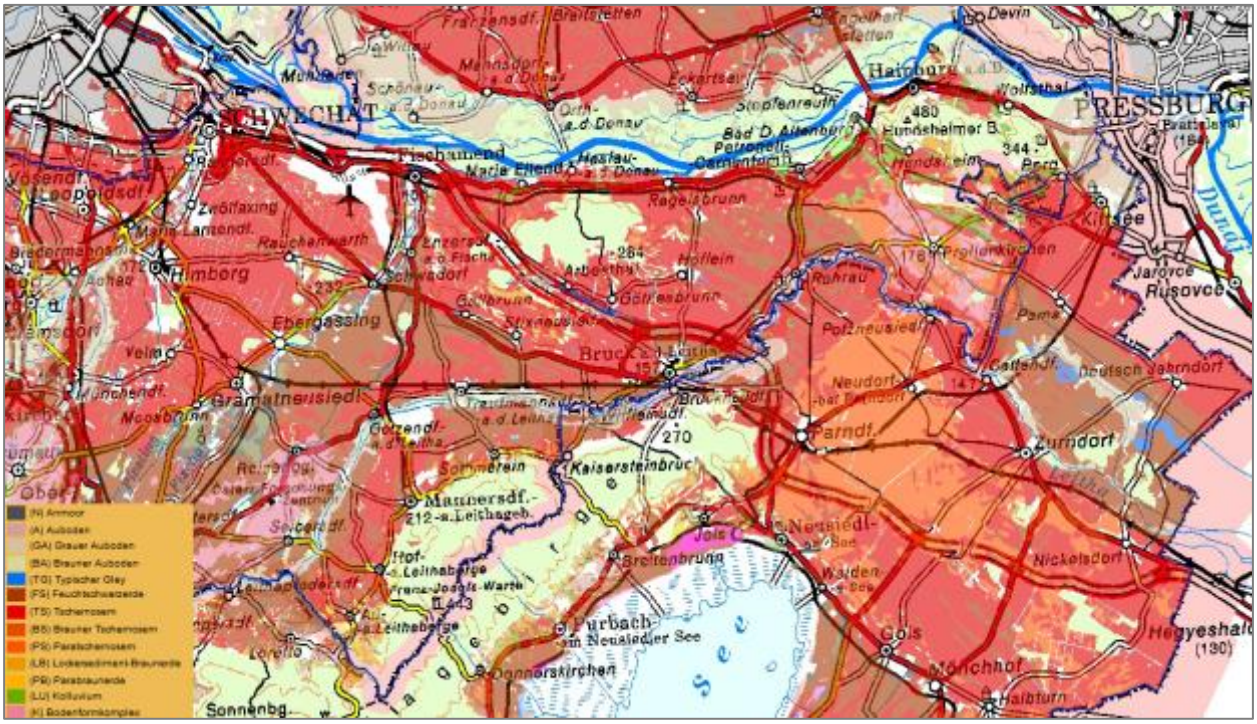


Figure 40: Soil types in narrow investigation area (BMLFUW, BFW 2009)

The soil types that can be found in the narrow investigation area give the soil a largely high **quality** or medium to high quality, making it **very suitable** for agricultural use, above all for cultivation.

Land Use and Soil Sealing

The accelerating use of land – mostly for agricultural purposes – has negative effects from both an ecological and an economic point of view:

- **Loss** of **biological functions** due to sealing,
- **Loss** of **productive soils** (soils for the production of food and biomass)
- Risk to **biodiversity** because of land use and fragmentation (linear infrastructure)
- Increased **flood risk** because water cannot drain into ground
- **Loss of dust binding**

- **Heat effects**

Sealing means covering the soil with an impermeable layer. This reduces the soil to a bare media role. It loses its productive role and many others (e.g. the ability to store water, filter, bind or break down pollutants, and evaporate water).

Land use and soil sealing in Austria are at a high level. Between 2015 and 2017, an average of 12.9 hectares of land was claimed daily in Austria, which is well above the reduction target of the Sustainable Development Strategy (approx. 2.5 hectares per day). Daily consumption in 2017 was 5.7 ha/day for construction and traffic areas, 5.5 ha/day for business areas and 1.2 ha/day for recreation and mining areas (cf. UBA 2019).

As part of the European Union's Copernicus undertaking, data on sealing was collected and examined by the national environmental authorities (in Austria, this is the Umweltbundesamt GmbH). The cartographic process was carried out by ÖROK (cf. Figure 41).

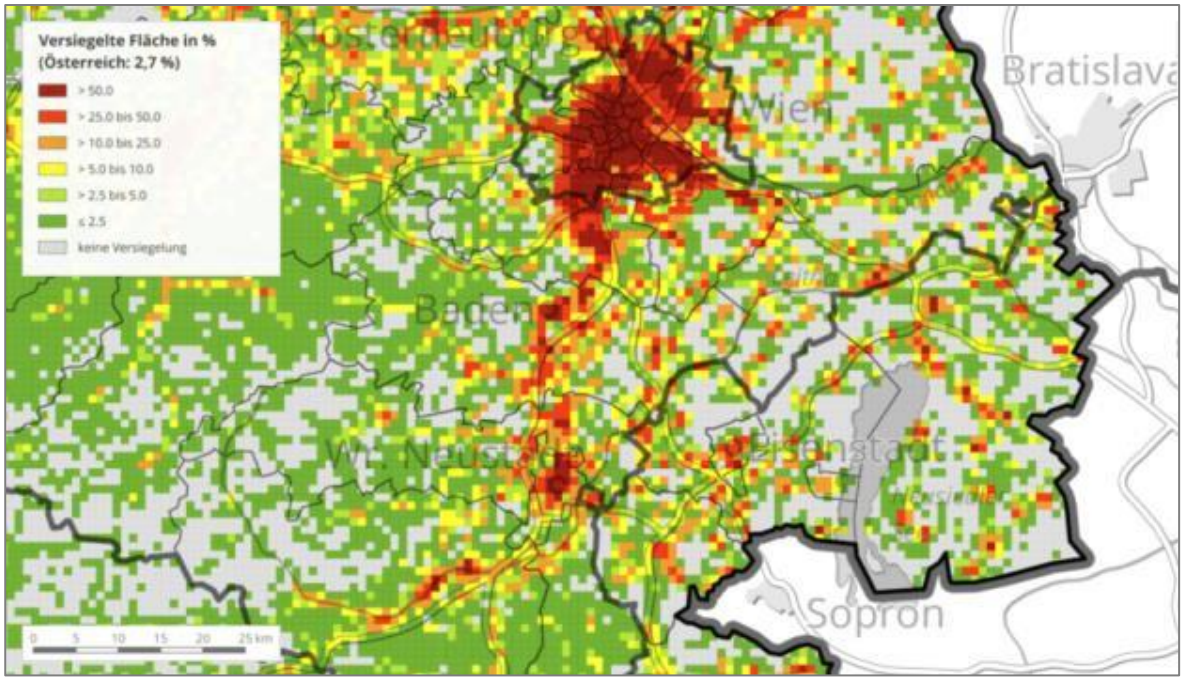


Figure 41: Sealed areas in % (ÖROK 2019)

In settlement regions in particular, a high degree of sealing of more than 50% of the area in some cases can be seen. Within the investigation area, such a degree of sealing pertains to Bruck an der Leitha and to Parndorf.

On average, 41.2% of the used areas[30] are sealed. At 39.1% in Burgenland, this number is just below the Austrian average; Lower Austria is just above, at 41.4% (cf. UBA 2018).

[30] "Land use" = construction area + traffic area + recreation area + mining area (cf. UBA 2018)

7.2.4.4 Land Use

Forest

The entire narrow investigation area can be assigned to the **forest growth area 8.1 "Pannonian lowland and hilly country"** (Federal Forestry Research Centre, FBVA[31] 1993) and is characterised by a comparatively **low percentage of forest** (cf. Figure 42). With the exception of the municipalities along the Danube (e.g. Fischamend at 23.7%) and those municipalities with a share in the Leitha Mountains, the proportion of forest does not go above 17.7% (Göttlesbrunn-Arbesthal municipality). A large percentage of the municipalities have a forest proportion lower than 10%.

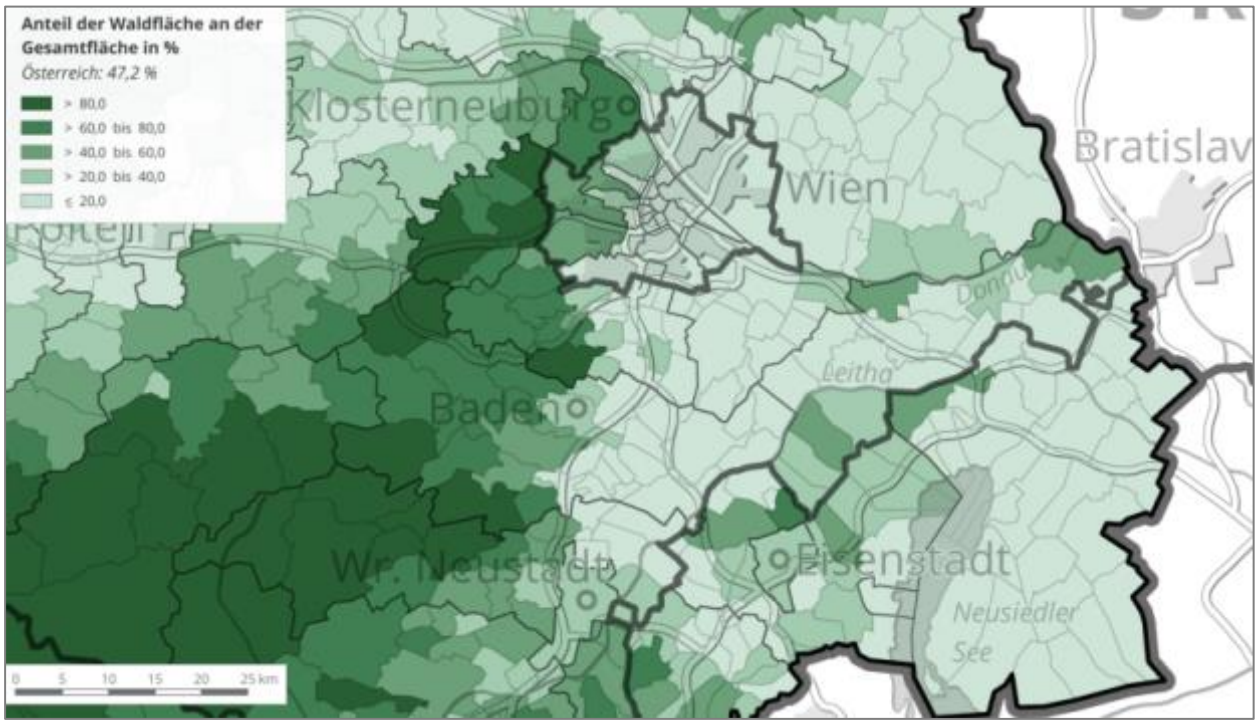


Figure 42: Forest area (% of total area) (ÖROK 2019)

In growth area 8.1, **agricultural use** is prevalent, although there are some larger forest areas. Colline/planar zones can be found on warm, moderately acidophilous sites in the turkey oak–sessile oak forests. On calcareous loess sites, there are only fragmentary loess oak forests with turkey oak, English oak, downy oak and field maple – such as can be found on the Parndorf Plain. The predominant species are oak hornbeam forests that like the warmth, sessile oaks in locations far from groundwater, and English oaks in valley bottoms and hollows. Downy oak forests can be found on sunny, dry, calcareous sites in the colline zone, predominantly in areas with hard rocks. This is the case in the **Hainburg Mountains** and the **Leitha Mountains**.

[31] Today: Federal Research and Training Centre for Forests, Natural Hazards and Landscape

In larger **river valleys**, alluvial forests abound. The white willow floodplain forest, for example, is a pioneer community on silty, sandy landings, while purple willow bushes often grow on gravel and almond willow bushes on silt. The silver poplar is particularly abundant along the Danube. The hardwood floodplain forests with English oak, ash and elm can only be found on sites that rarely flood; the Danube area also has the common ash, the Leitha and March area have the narrow-leafed ash. Floodplain sites that only rarely flood are often home to small-leaved limes and hornbeams. The lowland moors have black alder populations like a forest mire, as is the case in, for example, Marchegg or the Vienna Basin.

The **Forest Development Plan (Waldentwicklungsplan, WFP)** identifies the functions (protective, welfare and recreational) of the most important forest regions. The forests of the **Arbesthaler Hills** and the **Leithaauen** region in the narrow investigation area mainly have a **welfare function**. In the areas of the northern **Leitha Mountains** and the **Hundsheimer Berge**, which lie just outside the narrow investigation area, additional forest regions can be found that have a welfare function.

The comparatively **small forest area** in the narrow investigation area and the importance of the existing forests with their respective **functions** confirm just how **valuable** the forest areas in the narrow investigation area are. That is why the forest has a particular **sensitivity** towards human interference.

Agriculture

Large parts of the narrow investigation area are **used for agriculture**. High sunshine duration, a long vegetation period and high temperatures are **favourable climatic conditions**. **Low precipitation**, however, has a limiting effect. South of the Danube, in the small-scale production area of Wiener Boden, **crop farms** are common. The area also has a high proportion of **wine-making businesses**. The size of crop farms is above the national average. The area south of the Danube, the Parndorf Plain, is also home to small-scale farmers. This area, too, is dominated by crop farming, with **farm sizes** also **above the national average**.

Particularly in the Lower Austrian part of the narrow investigation area, the predominant soil types can be classified as **medium to high-quality farmland.** The Mitterndorfer depression, the Parndorf Plain and the Prellenkirchner Flur areas have **low to medium-quality farmland** (cf. Figure 43).

Because quality farmland is so valuable, large parts of the narrow investigation area are of great importance for **agricultural production**. Accordingly, there is not only a high sensitivity towards **using land** but also to **fragmentation**, which can make efficient agricultural production more difficult. The way land is currently used is shown in the attached plan folder.

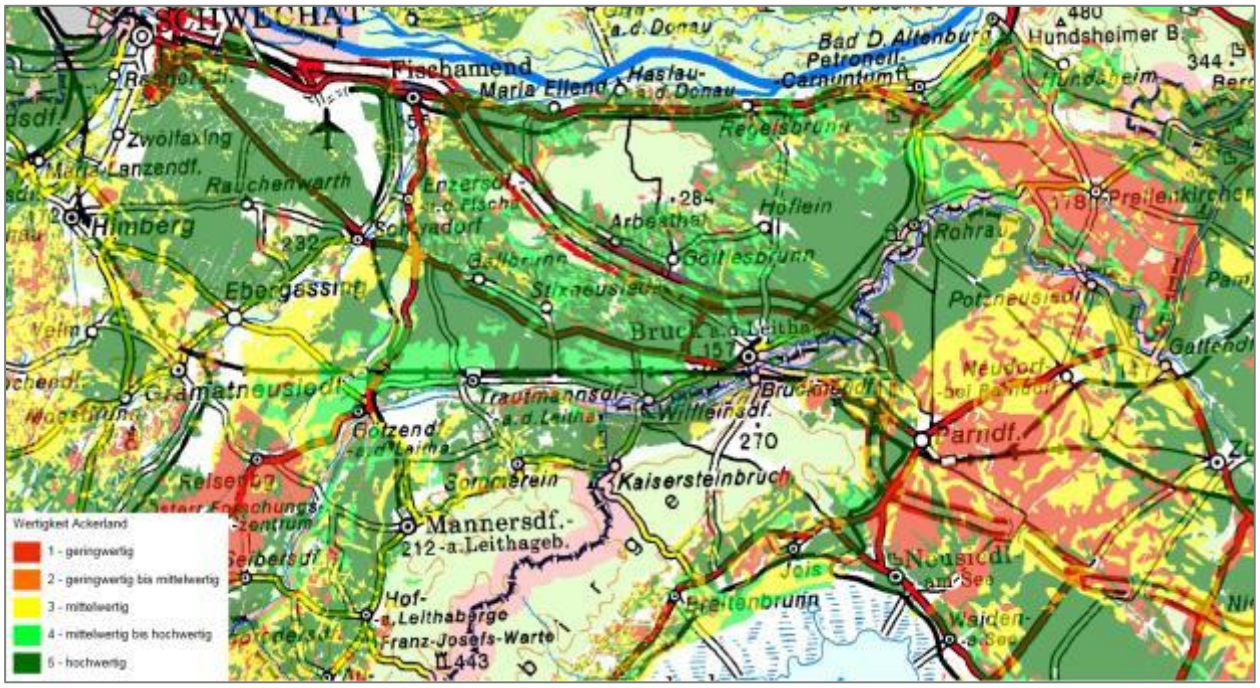


Figure 43: Farmland value in narrow investigation areas (BMLFUW, BFW 2009)

Raw Material and Mining Areas

The Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland) (Austrian State Law Gazette 8000/85-0 as amended by Austrian State Law Gazette No 67/2015) has recognised numerous **suitable zones for the extraction of sand and gravel** in the narrow investigation area. These are areas which, due to their geological pre-requisites and spatial location, are suitable for the economically and ecologically justifiable extraction of surface minerals. To the south of the Danube are **suitable zones for the extraction of sand and gravel** in the Rauchenwarth and Schwadorf regions, to the south of Tattendorf and in Fischamend. **Suitable zones for the extraction of natural stone, clay and gypsum** are located in Bad Deutsch-Altenburg (lime and dolomite), in Mannersdorf am Leithagebirge (lime), in Sommerein (clay and mica slate) and in the Hennersdorf and Biedermannsdorf region (clay).

In Burgenland, a framework programme for gravel mining on the Parndorf Plain was drawn up between 2016 and 2017. This framework programme provides for suitability and exclusion zones for gravel mining and is intended to be a basis for land zoning. The aim of the Provincial Government of Burgenland is to make the statements on the cultivation, recultivation and afteruse of the material extraction sites legally binding and to thus incorporate them into a regional development programme (pursuant to Sec. 7 of the Burgenland Spatial Planning Act) and a development objectives ordinance (pursuant to Sec. 6a of the Burgenland Nature Conservation and Landscape Management Act).

Contaminated Sites and Suspected Contaminated Sites

There is a **contaminated site** within the narrow investigation area according to the contaminated sites portal of the BMNT (cf. Table 19).

Federal state	Municipality	Type	Designation	Status	Remediation status
Burgenland	Parndorf	Former landfill	Municipal landfill Parndorf	Contaminated site remediated	remediated

Table 19: Contaminated sites pursuant to the contaminated sites portal (BMNT 2019b; own illustration)

7.2.4.5 Environmental Protection Objectives for the Subject Area "Water, Soil and Land Use"

Environmental Protection Objectives Derived From Plans and Programmes

Regional Development Programme Burgenland – LEP 2011

In the LEP 2011, the following relevant goals have been formulated for the subject area "Water, soil and land use":

- The spatial structure is intended to ensure that a diverse sustainable self-supply of high-quality regional food can be maintained. High-quality agricultural production areas must be maintained and protected from being sealed permanently.
- The importance of agriculture and forestry for sustainably maintaining the landscape and providing high-quality regional products that can withstand crises must be taken into account.
- Land and soil cannot be reproduced. Permanent soil sealing should only be carried out where absolutely necessary and revitalisation and unsealing measures must be pushed.
- In flood-prone areas, suitable agricultural measures must be taken in cooperation with landowners and municipalities (such as through special farming systems or protective planting undertakings) to boost flood protection.
- Riparian and littoral zones of stagnant and flowing waters should be freely accessible if this is justifiable from an ecological standpoint and of public interest. Lakefronts should, for the most part, not be built up. Hydraulic engineering measures should preserve the character of the landscape and should not impair the ecosystems near shorelines or riverbanks or the ecology of watercourses.
- Multifunctional and sustainable agriculture and forestry typical for the region must also be maintained and developed in the future, especially in rural areas that are particularly suitable for this.

Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland) (Austrian State Law Gazette No 67/2015)

In the Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland), the following relevant environmental protection objectives have been formulated for the subject area "Water, soil and land use":

- Take care with bodies of groundwater relevant for water supply
- Ensure spatial conditions for efficient agriculture and forestry.

Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Danube River Protection Convention)

- Improvement and rational use of surface waters and ground water

Danube Region Strategy

- Maintain soil quality

The EU Biodiversity Strategy to 2020

- Ensure the sustainable use of fisheries resources

National Flood Risk Management Plan RMP 2015

- Avoiding new risks prior to a flood event
- Reducing existing risks prior to a flood event
- Reducing adverse consequences during and after a flood event

Future Strategy Burgenland 2030 (Zukunftsstrategie Burgenland 2030)

- Protection of water and bodies of water

Lower Austria Nature Conservation Charter (Naturschutzcharta Niederösterreich)

- Water protection for the safety and good of the people

Strategic Framework for Transport and Infrastructure Development in centrope

- Protection of water and soil

Environmental Protection Objectives Based on Legally Entrenched Provisions

Federal Constitutional Act on sustainability, animal welfare, comprehensive environment protection, granting of water and food supply, research (Federal Law Gazette I No. 82/2019)

With the Federal Constitutional Act on sustainability, animal welfare, comprehensive environment protection, granting of water and food supply, research, the Republic of Austria has declared its support for the aforementioned government goals. The following environmental protection objectives have been formulated for the subject area "Water, soil and land use":

- Preserve the natural environment as the basis of human life, in particular as regards measures to keep the water and soil clean
- Ensure the supply and quality of water
- Ensure the supply of the population with high-quality food of animal and plant origin
- Sustainable extraction of natural raw materials in Austria to ensure supply reliability

Lower Austria Spatial Planning Act 2014 (NÖ ROG 2014, Austrian State Law Gazette No 71/2018)

In the NÖ ROG, the following environmental protection objectives have been formulated for the subject area "Water, soil and land use":

- Free access to forests, mountains, bodies of water and other beautiful landscapes and their non-disruptive accessibility (hiking paths, promenades, outdoor swimming areas or the like)
- Avoid risks to the health and safety of the population. Safeguard or expand the conditions for the

population's health, in particular by

- Ensure the natural water regime including that of mineral springs
- Ensure an adequate supply of drinking water and orderly sewage and waste disposal

Burgenland Spatial Planning Act (Bgld. RPG, Austrian State Law Gazette No 44/2015)

The Burgenland Spatial Planning Act regulates supra-local and local spatial planning in Burgenland. In the Bgld. RPG, the following environmental protection objectives have been formulated for the subject area "Water, soil and land use":

- Natural resources must be protected and used with due care so as to preserve their quality and quantity for the future. In particular [...] the protection of the soil [must be endeavoured]:
- Ensure that viable agriculture and forestry can be maintained. It must be developed in such a way that it can guarantee a sustainable supply of high-quality foods and raw materials to the population and keep nature intact. To this end, sufficient cultivable land must be secured for indefinite agricultural and forestry use and agricultural structures must be improved, taking ecological aspects into account.
- Areas with usable water and raw material deposits should not be used in such a way as to impair these deposits and prevent their extraction. Hydropower may only be used while ensuring the landscape and the natural environment are protected in the best way possible

Water Law Act 1959 (WRG 1959, Federal Law Gazette I No 73/2018)

In the WRG 1959, the following relevant environmental protection objectives have been formulated for the subject area "Water, soil and land use":

- Protect and keep all waters clean, including groundwater, so that human or animal health is not at risk
- Protect and keep all waters clean, including groundwater, so as to avoid impairments to the landscape and other tangible damage
- Protect and keep all waters clean, including groundwater, to prevent deterioration and to protect and improve the status of aquatic ecosystems and terrestrial ecosystems and wetlands directly dependent on them as regards water balance
- Protect and keep all waters clean, including groundwater, so as to promote sustainable water use based on the long-term protection of existing resources
- Keep groundwater and spring water clean
- Protect groundwater from pollution
- Keep surface waters clean

Forest Act 1975 (Federal Law Gazette I No 56/2016)

In the Forest Act 1975, the following relevant environmental protection goal has been formulated for the subject area "Water, soil and land use":

- Preserve forests and the forest floor

Environmental Protection Objectives Derived From Environmental Conditions

- Protect and preserve soil functions by avoiding land use and soil sealing
- Protect and preserve areas with high-quality farmland
- Protect and safeguard forests with a protective, welfare and recreational function, especially in areas that have a limited forest area
- Ensure the spatial conditions for efficient agriculture and forestry
- Maintain and develop regional, multifunctional and sustainable agriculture and forestry in rural areas that are particularly suitable for this
- Protect the population and human settlements from floods

7.3 SPACE RESISTIVITY ANALYSIS IN THE NARROW INVESTIGATION AREA

7.3.1 SPACE RESISTIVITY CATEGORIES AND APPLYING THE ENVIRONMENTAL CONDITIONS TO SPACE RESISTIVITY

Based on the described environmental conditions, the sensitivity of an area to the effects of areal and linear railway infrastructure is translated into space resistivity and presented in two classification systems (cf. Chapter 5.2.2).

Some of the aspects presented in the context of environmental conditions in the narrow investigation area (cf. Chapter 7.2) will not be presented as space resistivity (cf. Chapter 5.2.2). **Reasons for not including** them may be:

- a particularly small-scale occurrence
- no expected negative effects from an areal or a linear railway infrastructure or its operation
- widespread occurrence and therefore does not have a differentiating character

There may be differences depending on whether the area is sensitive to areal or linear railway infrastructure.

Both for **areal and linear railway infrastructure**, the following aspects in the various subject areas are not presented as part of the space resistivity analysis:

- **Polluted areas pursuant to the Air Pollution Control Act (IG Luft)**: Polluted areas pursuant to IG Luft are not addressed in terms of sensitivity to the effects of linear railway infrastructure as they are widespread and thus do not have a differentiating character.
- **Noise**: Areas that are heavily affected by noise are not presented as space resistivity in terms of sensitivity to the effects of linear railway infrastructure because the proposed network modification

is unlikely to worsen the immission situation near existing infrastructure. Areas that are sensitive to noise pollution (e.g. 300 m buffer around settlements) are already covered by space resistivity in the subject area “People and health”.

- **Suspected contaminated sites and contaminated sites**: Suspected areas and contaminated sites only exist to a small extent and are in effect not relevant to decision-making.

For **linear railway infrastructure**, the following aspects in the various subject areas are not presented as part of the space resistivity analysis:

- **Linear infrastructure**: For sensitivity to the effects of linear railway infrastructure – in contrast to wind power stations – the existing linear infrastructure (e.g. road, rail and pipeline infrastructure) is not classified into an space resistivity category but is merely presented. While linear infrastructure can be underlaid, overlaid or moved by means of structural measures to make way for a crossing, the affected wind power stations would inevitably be removed and could only be relocated under certain conditions due to spatial restrictions (site suitability for wind power).

Table 20 shows the planned classification for each subject area for **areal railway infrastructure**. In Table 21, the planned classifications for each subject area for **linear railway infrastructure** is shown.

Space Resistivity Categories – Areal Railway Infrastructure				
Subject area	**Very high**	**High**	**Medium**	**Low to very low**
Settlements and transport and technical infrastructure	• Settlement areas, industrial and commercial areas • Archaeological sites and cultural assets of trans-regional importance • Motorway, expressway • Railway • Airports • 380 kV transmission grid • Substation	• Wind power stations • Wind power suitability zones • State roads L and B • 220 kV transmission grid • Gas and oil pipelines		indirectly defined
People and health	• Settlement areas • 300 m buffer around settlement areas	• 600 m buffer around settlement areas • Green spaces and leisure facilities in the settlement area • National park (in connection with recreational function) • Forests with a protective, recreational and welfare function	• Tourism suitability zones • UNESCO World Heritage Site	indirectly defined
Nature and landscape	• National parks • Nature conservation areas • Ramsar sites • European protected areas (wild fauna and flora and natural habitats, bird sanctuaries) • Landscape conservation areas • UNESCO World Heritage site • Biosphere reserve	• Mesohemerobic areas • Nature reserve	• Regional green zones • Parts of the landscape worth preserving • Alps-Carpathians Corridor	indirectly defined
Water, soil and land use	• Wine-growing regions	• Mining areas • Extraction of materials • Forest areas with productive function • 1% (100-year flood) floodplain • Bodies of water • Groundwater protection areas	• High and medium-quality farmland	indirectly defined
Topography	• Topographical constraint[32] • Longitudinal slope > 6‰	• Longitudinal slope 4 to 6‰	• Longitudinal slope 2 to 4‰	indirectly defined

Table 20: Classification of the analysed spatial structures in space resistivity categories – areal railway infrastructure (own illustration)

[32] Topographical constraints include both waterways and lakes (including wetlands, e.g. the reed beds around Lake Neusiedl) and mountain ranges (in this investigation area areas 250 m above sea level: Leitha Mountains, Hundsheimer Berge and small areas of the Arbesthaler Hills).

Space Resistivity Categories – Linear Railway Infrastructure				
Subject area	**Very high**	**High**	**Medium**	**Low to very low**
Settlements and transport and technical infrastructure	• Settlement areas, industrial and commercial areas • Archaeological sites and cultural assets of trans-regional importance • Airports • Substation	• Wind power stations	• Wind power suitability zones	indirectly defined
People and health	• Settlement areas	• 300 m buffer around settlement areas • Green spaces and leisure facilities in the settlement area • National park (in connection with recreational function) • Forests with a protective, recreational and welfare function (high)	• Tourism suitability zones • UNESCO World Heritage Site	indirectly defined
Nature and landscape	• National parks • Nature conservation areas • Ramsar sites • European protected areas (wild fauna and flora and natural habitats)	• Landscape conservation areas • Mesohemerobic areas • European protected areas (bird sanctuaries) • UNESCO World Heritage site • Biosphere reserve	• Regional green zones • Parts of the landscape worth preserving • Nature reserve • Alps-Carpathians Corridor	indirectly defined
Water, soil and land use		• Mining areas • Extraction of materials • Wine-growing regions	• High and medium-quality farmland • Forest areas with productive function • 1% (100-year flood) floodplain • Bodies of water[33] • Groundwater protection areas	indirectly defined
Topography	• Topographical constraint	• Longitudinal slope of the terrain > 20‰	Longitudinal slope of the terrain 12.5‰ to 20‰	indirectly defined

Table 21: Classification of the analysed spatial structures in space resistivity categories – linear railway infrastructure (own preparation)

The possible effects of areal and linear railway infrastructure differ in some aspects, which is why there are deviations in the classification systems for space resistivity in the following **subject areas**:

[33] Only the *Danube* and *Lake Neusiedl* were included as bodies of water in the space resistivity map for linear railway infrastructure. Stagnant waters such as gravel pit lakes and the like were not included due to their small-scale occurrence. Tributaries entering the *Danube* were also not included in the space resistivity analysis because crossing smaller watercourses by taking appropriate (environmental) technical precautions is not expected to have any significant negative effects.

- **Settlements and transport and technical infrastructure**: The suitability zones for wind power stations are classified as having "high sensitivity" for areal railway infrastructure and as having "medium sensitivity" for linear infrastructure.
- **People and health**: Settlement areas are classified as having "very high sensitivity" for areal railway infrastructure including a 300 m buffer. For areal railway infrastructure, a buffer of 600 m is classified as having "high sensitivity"; for linear infrastructure, a buffer of 300 m.
- **Nature and landscape**: European protected areas (bird sanctuaries), landscape conservation areas, UNESCO World Heritage sites and biosphere reserves are classified as having "very high sensitivity" for areal railway infrastructure and as having "high sensitivity" for linear railway infrastructure.
- **Water, soil and land use**: Wine-growing areas are classified as having "very high sensitivity" for areal railway infrastructure and as having "high sensitivity" for linear railway infrastructure. Forested areas with a productive function, 1% (100-year flood) floodplain areas, bodies of water and groundwater protection areas are classified as having "high sensitivity" for areal railway infrastructure and as having "medium sensitivity" for linear railway infrastructure.
- **Topography**: The topographical requirements differ considerably between areal and linear railway infrastructure. Areal railway infrastructure can only be realised in practically level terrain, while an unsteady topography can be compensated by structural measures for linear railway infrastructures – even if at great technical effort and cost, in some cases. To determine space resistivity for areal and linear railway infrastructure, **different methodological approaches** were additionally applied. In both cases, **raster data** (100 x 100 m) is used containing the value of the average altitude for each raster cell. While the change of the longitudinal slope to each neighbouring cell is calculated for linear infrastructure, the average altitude difference within a 200-metre radius of each cell is considered for areal infrastructure.

Overall, the **sensitivity** of the space to the **effects of areal railway infrastructure facilities** is categorised as being **higher** than for linear railway infrastructure facilities. The reasons for **deviations** in the sensitivity classification between areal and linear infrastructure are as follows

- Interferences of linear railway infrastructure are **locally more limited** compared to areal railway infrastructure, the interferences of which are generally more extensive due to their spatial expanse.
- With regard to linear infrastructure, it is possible to **circumvent** highly sensitive areas to a small extent via routing; with regard to the layout and sizing of areal railway infrastructure, there is less room for manoeuvre during later planning phases.
- In the case of linear railway infrastructure, certain space resistivity can be overcome by means of **man-made structures** (e.g. bridge construction for crossing bodies of water), which is only possible to a limited extent in the case of areal railway infrastructure.

For all areas that have neither a **very high, high nor medium impediment to feasibility**, a **low to very low impediment to feasibility** is indirectly defined. Areas without any space resistivity do not exist.

7.3.2 SPACE RESISTIVITY FOR THE SUBJECT AREA "HUMAN SETTLEMENTS AND INFRASTRUCTURE"

7.3.2.1 Sensitivity to Areal Railway Infrastructure

The -**settlements** with a rural character that are scattered throughout the narrow investigation area, including industrial, commercial and traffic areas, plus Vienna Airport with its runways, have a very high impediment to feasibility. The area is characterised by numerous **high-level linear infrastructure** (motorways and expressways, railways and 380 kV transmission grid) that give loosely-knit access to the investigation area as well as to isolated infrastructure (substation), which also exhibit a very high impediment to feasibility compared to areal railway infrastructure. West of the narrow investigation area, a built-up belt extends from Schwechat via Rannersdorf and Zwölfaxing towards the south. Along the north-south running Fischa are several settlements with Fischamend, Klein-Neusiedl, Schwadorf, Ebergassing and Gramatneusiedl, which show a **very high impediment to feasibility**.

To the east of the Fischa – both in Lower Austria and in Burgenland in the area of the Parndorf Plain – are numerous **wind farms** within (and here and there also outside) **wind power suitability zones**, some of which have an expansive area with high space resistivity. **Linear infrastructure** such as the state road network, which tightly connects the entire investigation area, the 220 kV grid and natural gas and oil pipelines are also reasons for **high space resistivity**.

The space resistivity for areal and linear railway infrastructure are shown in Figure 44 for comparison; more detail can be found in the attached plan folder.

7.3.2.2 Sensitivity to Linear Railway Infrastructure

The -**settlements** with a rural character that are scattered throughout the narrow investigation area, including industrial, commercial and traffic areas, plus Vienna Airport with its runways, have a very high impediment to feasibility. West of the narrow investigation area, a built-up belt extends from Schwechat via Rannersdorf and Zwölfaxing towards the south. Along the north-south running Fischa are several settlements with Fischamend, Klein-Neusiedl, Schwadorf, Ebergassing and Gramatneusiedl, which show a **very high impediment to feasibility**.

To the east of the Fischa – both in Lower Austria and in Burgenland in the area of the Parndorf Plain – are numerous **wind farms**, some of which have an expansive area with **high space resistivity**. The **wind farm suitability zones**, which have a **medium impediment to feasibility**, are already largely used for existing wind farms in the narrow investigation area.

The space resistivity for areal and linear railway infrastructure are shown in Figure 44 for comparison; more detail can be found in the attached plan folder.



Figure 44: *Space resistivity for the subject area "Settlements and transport and technical infrastructure"; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration)*

7.3.3 SPACE RESISTIVITY FOR THE SUBJECT AREA "PEOPLE AND HEALTH"

7.3.3.1 Sensitivity to Areal Railway Infrastructure

To protect people and their health, especially with regard to noise pollution, the settlement areas and their **immediate surroundings** show a **very high impediment to feasibility** (300-metre distance from the settlement area).

High space resistivity exist in **areas near settlements** (600 m distance to the settlement area), in **green spaces** and leisure facilities in the settlement area, in nature parks and in **forests with a recreational function** (e.g. Donau-Auen, Leithaauen, Arbesthaler Hills and the forests in the Leitha Mountains). The reason for the classification as "high" is due to the relatively limited forest regions found in the entire narrow investigation area and the therefore limited opportunities for using the forest as a recreational area.

The **tourism suitability zones** in Burgenland around Lake Neusiedl and east of Gattendorf and Zurndorf, in which the preservation of the landscape has been determined an essential tourism factor, as well as the **UNESCO World Heritage site** on Lake Neusiedl with regard to its tourist function, are designated as areas with **medium space resistivity** with regard to human health.

The space resistivity for areal and linear railway infrastructure are shown in Figure 45 for comparison; more detail can be found in the attached plan folder.

7.3.3.2 Sensitivity to Linear Railway Infrastructure

To protect people and human health, especially with regard to noise pollution, the **settlement areas** show a very **high impediment to feasibility** and their **immediate surroundings** (300-metre distance from the settlement area) show a **high impediment to feasibility**.

High space resistivity exist in **green spaces** and leisure facilities in the settlement area, in nature parks and in **forests with a recreational function** (e.g. Donau-Auen, Leithaauen, Arbesthaler Hills and the forests in the Leitha Mountains). The reason for the classification as "high" is due to the relatively limited forest regions found in the entire narrow investigation area and the therefore limited opportunities for using the forest as a recreational area.

The **tourism suitability zones** in Burgenland around Lake Neusiedl and east of Gattendorf and Zurndorf, in which the preservation of the landscape has been determined an essential tourism factor, as well as the **UNESCO World Heritage site** on Lake Neusiedl with regard to its tourist function, are designated as areas with **medium space resistivity**.

The space resistivity for areal and linear railway infrastructure are shown in Figure 45 for comparison; more detail can be found in the attached plan folder.



Figure 45: Space resistivity for the subject area "People and health"; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration)

7.3.4 SPACE RESISTIVITY FOR THE SUBJECT AREA "NATURE AND LANDSCAPE"

7.3.4.1 Sensitivity to Areal Railway Infrastructure

The **Donau-Auen National Park**, the **Ramsar site** in the Lake Neusiedl region, the **nature and landscape conservation areas**, **European protected areas** (wild fauna and flora and natural habitats, bird sanctuaries), **UNESCO World Heritage sites** and the **biosphere reserve** have a **very high impediment to feasibility**. The various **protected areas** are mainly concentrated on the Danube floodplains, Lake Neusiedl and the banks along the Schwechat, Fischa and Leith and frequently overlap.

Mannersdorf Nature Park in the Leitha Mountains and the **mesohemerobic areas**, which are also located in the Arbesthaler Hills region, are areas with **high space resistivity**.

A **medium impediment to feasibility** is formed by **regional green zones** and **parts of landscapes worth preserving** according to the Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland) (Austrian State Law Gazette 8000/85-0 as amended by Austrian State Law Gazette No 67/2015) as well as the **Alps-**

Carpathians Corridor, which extends in a north-south direction through the narrow investigation area. The regional green zones and parts of landscapes worth preserving are already completely superimposed by higher space resistivity categories.

The space resistivity for areal and linear railway infrastructure are shown in Figure 46 for comparison; more detail can be found in the attached plan folder.

7.3.4.2 Sensitivity to Linear Railway Infrastructure

The **Donau-Auen National Park**, the **Ramsar site** in the Lake Neusiedl region, the **Natura 2000 wild fauna and flora and natural habitats areas** and the **nature conservation areas** have a **very high impediment to feasibility**. The various **protected areas** are mainly concentrated on the Danube floodplains and the banks along the Schwechat, Fischa and Leitha and are superimposed several times.

The **Natura 2000 bird sanctuaries** along the Fischa and the Leitha as well as the eastern part of the Parndorf Plain, the **landscape conservation areas** in the Danube floodplains, Lake Neusiedl and the Leitha Mountains as well as the **mesohemerobic areas**, which are also located in the Arbesthaler Hills region, are areas with **high space resistivity**.

A **medium impediment to feasibility** is formed by **regional green zones** and **parts of landscapes worth preserving** according to the Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland) (Austrian State Law Gazette 8000/85-0 as amended by Austrian State Law Gazette No 67/2015) as well as the **Alps-Carpathians Corridor**, which extends in a north-south direction through the narrow investigation area. The regional green zones and parts of landscapes worth preserving are already completely superimposed by higher space resistivity categories.

The space resistivity for areal and linear railway infrastructure are shown in Figure 46 for comparison; more detail can be found in the attached plan folder.



Figure 46: Space resistivity for the subject area "Nature and landscape"; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration)

7.3.5 SPACE RESISTIVITY FOR THE SUBJECT AREA "WATER, SOIL AND LAND USE"

7.3.5.1 Sensitivity to Areal Railway Infrastructure

The **wine-growing regions**, especially around Lake Neusiedl and in the Arbesthaler Hills, are classified as areas having **very high space resistivity** to areal railway infrastructure.

The Mitterndorfer depression **groundwater protection zone** and all flowing and stagnant **waters** as well as **forest areas with a productive function** and **100-year-flood discharge areas** form areas with a high impediment to feasibility.

Especially in Lower Austria, large areas with **high and medium-quality farmland** lie in between, which are assumed to have a **medium impediment to feasibility**.

The space resistivity for areal and linear railway infrastructure are shown in Figure 47 for comparison; more detail can be found in the attached plan folder.

7.3.5.2 Sensitivity to Linear Railway Infrastructure

In the case of linear railway infrastructure, there are **no areas with a very high impediment to feasibility** in the narrow investigation area for the subject area "**Water, soil and land use**".

Small-scale **mining areas and material extraction sites** in the vicinity of settlement areas and the **wine-growing regions**, especially around Lake Neusiedl and in the Arbesthaler Hills, are assumed to have **high space resistivity** to areal railway infrastructure.

All remaining areas are assumed to be widespread areas with medium space resistivity. They include **high and medium-quality farmland**, **forest areas**, **1% (100-year flood) flood discharge areas**, the Mitterndorfer depression **groundwater protection zone** and relevant **stagnant and flowing bodies of water**.

The space resistivity for areal and linear railway infrastructure are shown in Figure 47 for comparison; more detail can be found in the attached plan folder.



Figure 47: Space resistivity for the subject area "Water, soil and land use"; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration)

7.3.6 SPACE RESISTIVITY FOR THE SUBJECT AREA "TOPOGRAPHY"

7.3.6.1 Sensitivity to Areal Railway Infrastructure

The **Danube** as an important waterway, **Lake Neusiedl** incl. its reed belt and the **gravel pit lakes** that are found in the area together with parts of the **Leitha Mountains**, the **Arbesthaler Hills**, areas **south of Vienna Airport** and the **Hundsheimer Berge**, which represent an absolute topographical constraint due to their height, are zones with **very high space resistivity**. In addition, there are terrain levels in the southern Parndorf Plain as well as in the area of the Fischatal vallley, which are clearly visible in the topography. South of Vienna Airport in the Schwadorf region are also small-scale areas with terrain differences of more than 6‰.

The space resistivity for areal and linear railway infrastructure are shown in Figure 48 for comparison; more detail can be found in the attached plan folder.

7.3.6.2 Sensitivity to Linear Railway Infrastructure

The **Danube** as an important waterway, **Lake Neusiedl** and the **gravel pit lakes** that are found in the area together with parts of the **Leitha Mountains**, the **Arbesthaler Hills**, areas **south of Vienna Airport** and the **Hundsheimer Berge**, which represent an absolute topographical constraint due to their height, are zones with **very high space resistivity**.

Around these areas, the terrain initially drops significantly (longitudinal slope of more than 20‰), thus forming a **high impediment to feasibility**. The outermost spurs, which have a longitudinal slope of more than 12.5‰, are defined as having a **medium impediment to feasibility**.

The space resistivity for areal and linear railway infrastructure are shown in Figure 48 for comparison; more detail can be found in the attached plan folder.

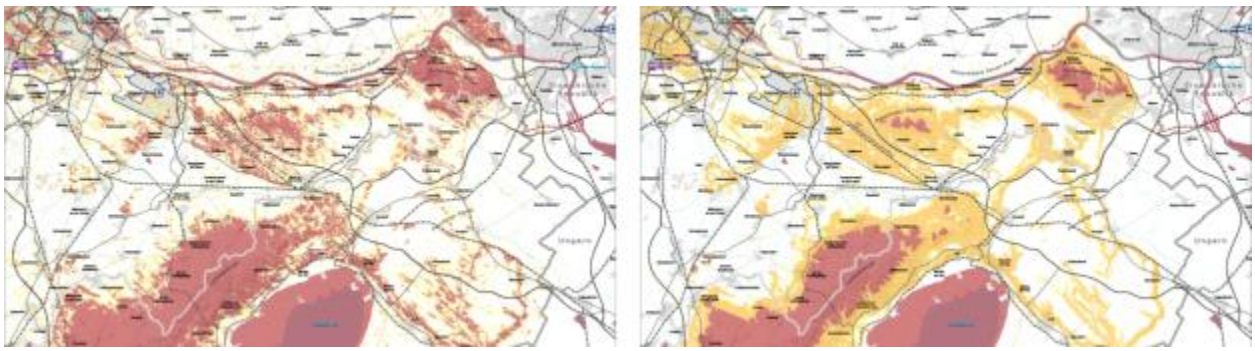


Figure 48: Space resistivity for the subject area "Topography"; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration)

7.3.7 SUMMARY OF SPACE RESISTIVITY IN THE NARROW INVESTIGATION AREA

When **superimposing all space resistivity** of the individually grouped subject areas, the **space resistivity** zones can be derived for the narrow investigation area, which is shown in Figure 49, differentiated according to linear and areal infrastructure.[34]



Figure 49: Total space resistivity for the narrow investigation area, areal railway infrastructure (left), linear railway infrastructure (right) (own illustration)

From the technical point of view of nature conservation, the **Danube** with its high-quality **floodplain landscape** forms a **barrier to the north** with a very high impediment to feasibility. In this area, several protection categories are superimposed with high to very high space resistivity from a nature conservation point of view, which entail considerable potential for conflict with regard to both areal and linear infrastructure undertakings.

In the south, the **Leitha Mountains** from a topographical point of view and **Lake Neusiedl** from a nature conservation point of view form large-scale barriers with very high impediment to feasibility with regard to the special ecological and landscape features. Around Lake Neusiedl are several towns, which in themselves represent very high space resistivity for areal and linear infrastructure.

Between these spatial barriers is a wide area in which, in addition to the scattered settlement areas, **three largely continuous barriers extend in a northeast-southwest direction** with a very high impediment to feasibility:

- Directly adjacent to the Vienna municipal region, from Schwechat via Zwölfaxing to Himberg, a **dense settlement belt, for the most part completely built-up, runs north-south**, which new linear infrastructure could only cross with a high conflict potential.

  To the west of this built-up belt are only small-scale areas with at least high space resistivity to areal railway infrastructure.

- Further east, another **barrier that runs north-south** is the **Vienna Airport and the settlement belt**, which extends from Fischamend via Schwadorf, Ebergassing, Gramatneusiedl and Mittern-

[34] The topographical conditions are not represented in the cumulative space resistivity because the topography itself is not sensitive to infrastructure undertakings; rather, it is relevant whether or not it is technically possible to overcome the impediments. The topography itself is the subject of subsequent route and location selection processes.

dorf an der Fischa to Ebreichsdorf and Wampersdorf in a south and south-west direction. The settlement areas are somewhat less densely staggered than the immediately neighbouring municipalities of Vienna and have possibilities for linear infrastructure to cross in some places. Especially in the north, near Fischamend, planning a route that is far away from the settlement is not possible; in the south, too, the towns are close to each other. At the level of Fischamend, the Fischa coming from the south flows into the Danube with its adjacent riparian zones, which are important from a nature conservation and landscape point of view.

Between Zwölfaxing, Himberg, Vienna Airport and Ebergassing there is a level area, which has a medium impediment to feasibility due to the soil that is suitable for farming. In addition, no further space resistivity are superimposed in this area. Southwest of Himberg are areas with low space resistivity.

- The Leitha with its Leithhaauen that are worth protecting also forms a **barrier that runs straight across the narrow investigation area**. There are several settlement areas along the Leitha, some of which are only a short distance from each other. In several places, however, the settlement areas are so far apart that a crossing with a new line infrastructure that is relatively far away from the town seems to be possible.

In the space that stretches between the two large-scale barriers to the north and south are several **scattered, compact settlements** with very high space resistivity. Between the Fischa and the Leitha by the **Arbesthaler Hills**, there is a large-scale area with high or very high space resistivity, owing to the topographical conditions as well as their associated use (forests, viticulture). Not least because of the region's limited forest areas, forests with a protective, recreational and welfare function are of great importance. This area has a very high impediment to feasibility for areal infrastructure, in particular due to the topography. South of the towns of Gallbrunn and Stixneusiedel, the terrain becomes more level again, with space resistivity to areal infrastructure being classified as at least medium.

To the east of the Fischa in Lower Austria and to the east of the Leitha in Burgenland, the numerous existing **wind power stations** form areas with **high space resistivity**. The large-scale **bird sanctuaries** in Burgenland are also **very highly sensitive** to linear and areal infrastructure undertakings. Furthermore, a **medium impediment to feasibility** due to **high and medium-quality farmland, tourism suitability zones** and **forests with a productive function** can be found almost throughout the entire narrow investigation area.

On the Parndorf Plain are connected areas away from the settlement areas, some of which only have a low impediment to feasibility. Such is the case northwest of Prellenkirchen, between Kittsee and Pama and northeast of Parndorf.

8

ALTERNATIVES

ÖBB-Infrastruktur AG kept the proposal for the network modification deliberately general. The environmental report examines different sites for the terminal within the possible space in which the proposed network modification is to be implemented. The locations of these site alternatives are different from high-level transport networks in terms of their functionality. A zero alternative is also examined.

8 ALTERNATIVES

8.1.1 ZERO ALTERNATIVE

The **zero alternative** consists of **maintaining the status quo without implementing the proposed network modification**; it therefore assumes "*that no network modification will take place and that only those measures will be taken or developments will occur up to the forecast horizon that are independent of the proposed network modification*" (cf. BMVIT 2018, p. 86). This covers all existing and planned transport infrastructure undertakings in the space, which – at the time this Environmental Report is prepared – are expected to be completed by 2040 (Chapter 6).

The zero alternative serves as a **reference point** for the alternatives that are to be considered for a comparative assessment. Only such a zero alternative makes a **comparative assessment** of the environmental effects of the proposed network modification possible in methodologically correct terms.

The zero alternative comprises the **implementation of the undertaking on Slovak national territory**: it is assumed that the 1,520 mm route from eastern Slovakia to Greater Bratislava will be extended. Two terminals are planned as a result: a terminal will still be built in Nové Zámky for the regional distribution of goods within Slovakia. In addition, a **hypothetical terminal southeast of Bratislava** will be an interconnection point between the extended 1,502 mm gauge network and the 1,435 mm gauge network as well as the high-level road network.

8.1.2 SITE ALTERNATIVES

As site alternatives for the proposed network modification, various spatial possibilities for connecting the extended 1,520 mm gauge network on the one hand and the high-level TEN-T infrastructure east of Vienna on the other hand are being examined, in line with the nature of the proposed network modification. They therefore only represent rough **spatial alternatives** for the location of the terminal site in the narrow investigation area. In addition to their spatial location, the site alternatives differ primarily in the way they are connected to the high-level rail and road network (cf. Figure 50). BPG examined and confirmed the technical feasibility of all alternatives.

Due to the different locations of the individual site alternatives in the area and, above all, their distance from the defined border crossing point of the extended 1,520 mm gauge network near Kittsee, each site alternative comprises **route infrastructure between the terminal location and the border crossing point that differs in scope**. For this route infrastructure, assumptions can be made regarding the rough course, length and special features for construction.

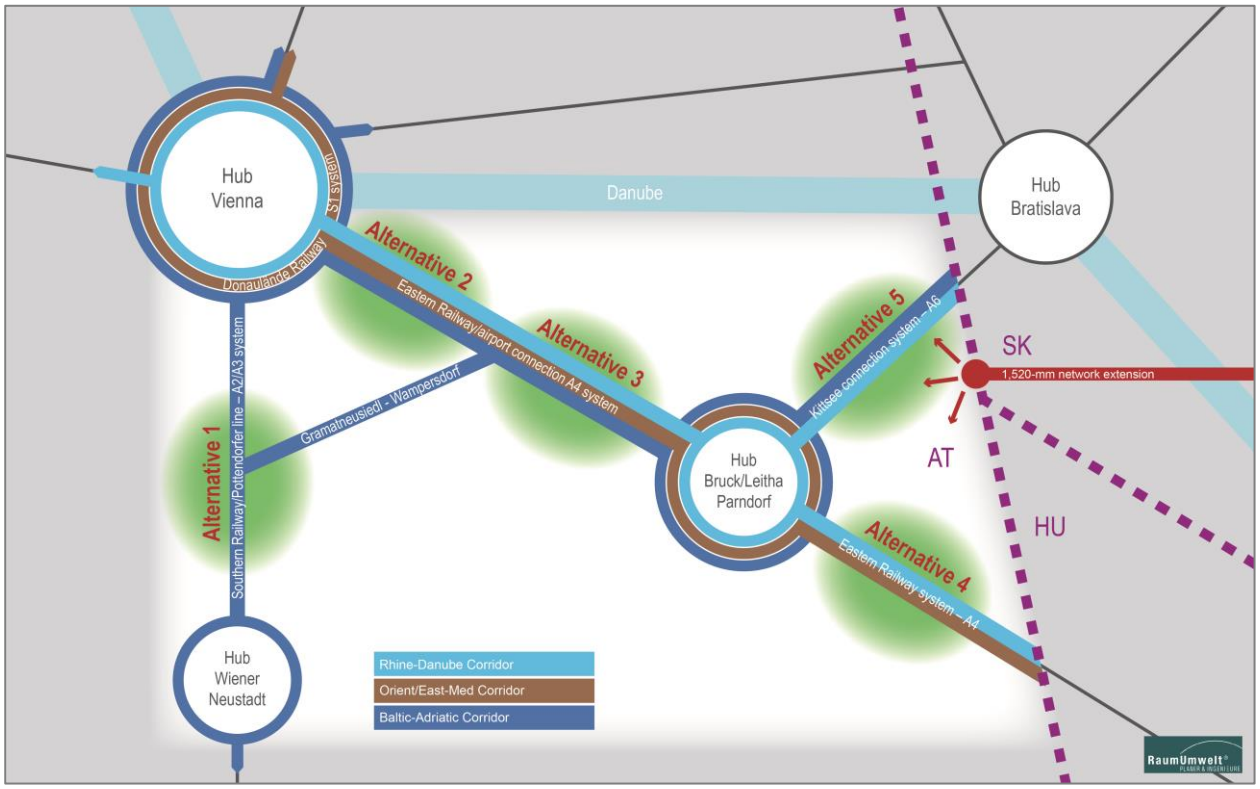


Figure 50: Site alternatives presentation in the narrow investigation area in the context of their functional location in the TEN-T core network (own illustration)



Figure 51: Site alternatives presentation in the narrow investigation area in the context of their spatial location in the high-level transport network (own illustration)

The site alternatives do not mean to anticipate or replace the location and route selection process, which would be the next planning phase following the modification of the nationwide high-level transport network; rather, they represent a systematic localisation of the proposed network modification within the high-level transport network.

8.1.2.1 Site Alternative 1 (ST-1)

Site alternative 1 (ST-1) provides for a link for the extended 1,520 mm gauge network with the 1,435 mm gauge network and the high-level road network in the **southwestern part of the narrow investigation area**. The **link** to the TEN-T core network (Baltic-Adriatic Corridor) will be made via the following routes:

- Eastern Railway between Gramatneusiedl and Götzendorf or the Gramatneusiedl-Wampersdorf line
- B60 between Götzendorf and Unterwaltersdorf

A terminal in site alternative 1 could be oriented in the main direction of traffic flows. The technical feasibility of a terminal under the given requirements was examined and found to be feasible.

To connect site alternative 1 with the border crossing point of the extended 1,520 mm gauge network near Kittsee requires a **route** that is **approx. 40–45 km** long. This route has the following characteristics and requirements – regardless of the course it would take, which is yet to be defined in the route development and selection process:

- The route is a single-track, electrified railway.
- The Bruck an der Leitha junction will be bypassed to the north or south.
- Bundling the routes with existing high-level transport infrastructure is possible to the west (Eastern Railway) and to the east (A6 Northeastern Motorway or Kittsee connection) of the Bruck an der Leitha junction.
- The route crosses the Fischa regardless. Crossing the Leitha is not absolutely necessary.

The functional location of ST-1 in relation to the high-level transport network and logistics centres is shown in Figure 52.

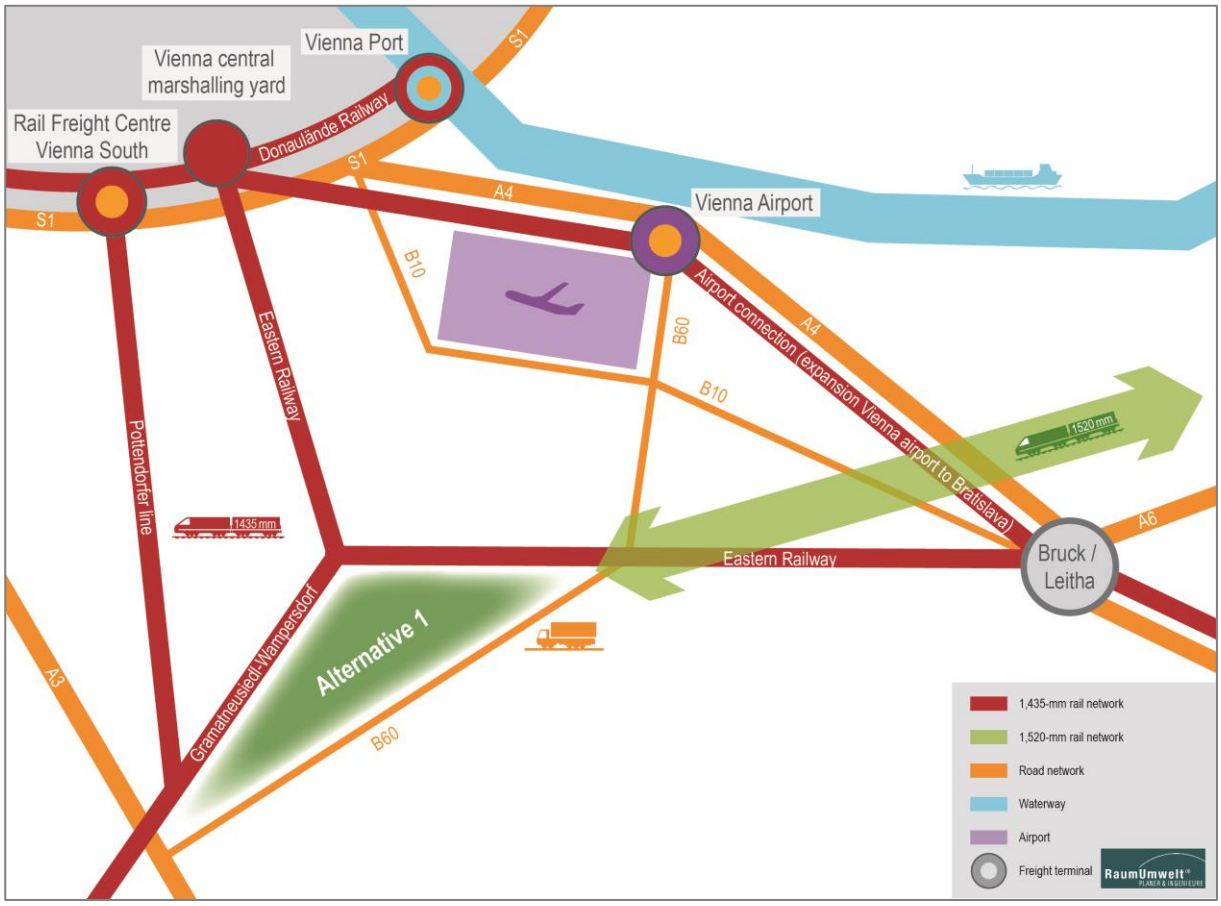


Figure 52: Functional location of site alternative 1 (own illustration)

8.1.2.2 Site Alternative 2 (ST-2)

Site alternative 2 (ST-2) provides for a link for the extended 1,520 mm gauge network with the 1,435 mm gauge network and the high-level road network in the **northwestern part of the narrow investigation area**. The **link** to the TEN-T core network (Rhine-Danube Corridor, Orient/East-Med Corridor and Baltic-Adriatic Corridor) will be made via the following routes:

- Eastern Railway in the section between Vienna and Gramatneusiedl or Donaulände Railway in the area of Wien Zvbf (Vienna marshalling yard)
- S1 Vienna Outer Ring Expressway between Freight Centre Vienna South and Schwechat South junction

Moreover, site alternative 2 is close to other multimodal nodes and logistics centres:

- Güterzentrum Wien Süd (Freight Centre Vienna South) (rail/road)
- Wien Zvbf (Vienna marshalling yard) (rail/rail)
- Port of Vienna (rail/road/waterway)
- Vienna Airport (road/air)

A terminal in site alternative 2 could be oriented in the main direction of traffic flows. The technical feasibility of a terminal under the given requirements was examined and found to be feasible.

To connect site alternative 2 with the border crossing point of the extended 1,520 mm gauge network near Kittsee requires a **route** that is **approx. 45–50 km** long. This route has the following characteristics and requirements – regardless of the course it would take, which is yet to be defined in the route development and selection process:

- The route is a single-track, electrified railway.
- The Bruck an der Leitha junction will be bypassed to the north or south.
- Bundling the routes with existing high-level transport infrastructure is possible to the west (Eastern Railway) and to the east (A6 Northeastern Motorway or Kittsee connection) of the Bruck an der Leitha junction.
- The route crosses the Fischa regardless. Crossing the Leitha is not absolutely necessary.

The functional location of ST-2 in relation to the high-level transport network and logistics centres is shown in Figure 53.

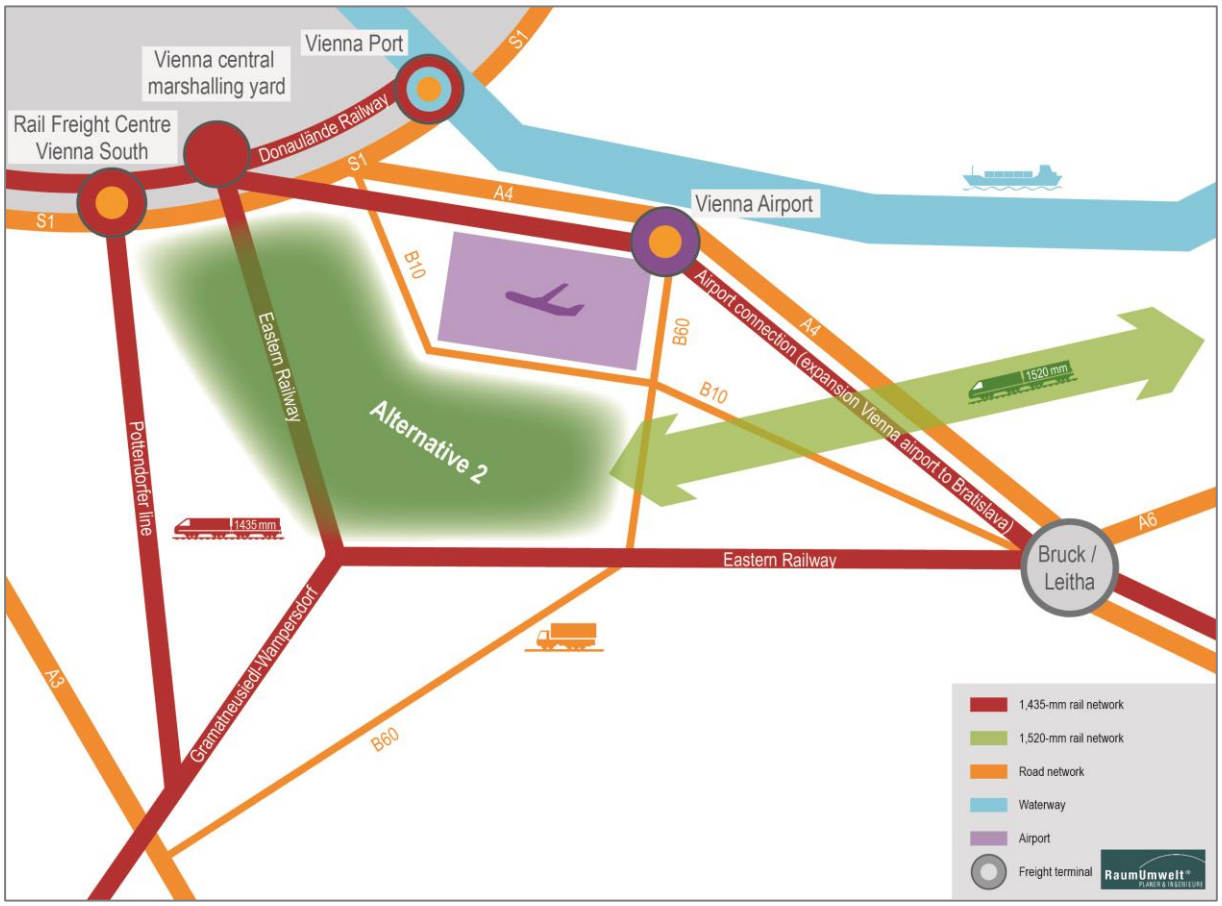


Figure 53: Functional location of site alternative 2 (own illustration)

8.1.2.3 Site Alternative 3 (ST-3)

Site alternative 3 (ST-3) provides for a link for the extended 1,520 mm gauge network with the 1,435 mm gauge network and the high-level road network in the **middle part of the narrow investigation area**. The **link** to the TEN-T core network (Rhine-Danube Corridor, Orient/East-Med Corridor and Baltic-Adriatic Corridor) will be made via the following routes:

- Eastern Railway between Bruck an der Leitha and Götzendorf
- B10 between Bruck an der Leitha and the B10/B60 junction and B60 between the B10/B60 junction and Götzendorf

Moreover, site alternative 2 has a proximity to Vienna Airport (road/air) as a multimodal node and to logistics centres:

A terminal in site alternative 3 could be oriented in the main direction of traffic flows. The technical feasibility of a terminal under the given requirements was examined and found to be feasible.

To connect site alternative 3 with the border crossing point of the extended 1,520 mm gauge network near Kittsee requires a **route** that is **approx. 30–35 km** long. This route has the following characteristics and requirements – regardless of the course it would take, which is yet to be defined in the route development and selection process:

- The route is a single-track, electrified railway.
- The Bruck an der Leitha junction will be bypassed to the north or south.
- Bundling the routes with existing high-level transport infrastructure is possible to the west (Eastern Railway, B10) and to the east (A6 Northeastern Motorway or Kittsee connection) of the Bruck an der Leitha junction.
- The route crosses the Fischa regardless. Crossing the Leitha is not absolutely necessary.

The functional location of ST-3 in relation to the high-level transport network and logistics centres is shown in Figure 54.

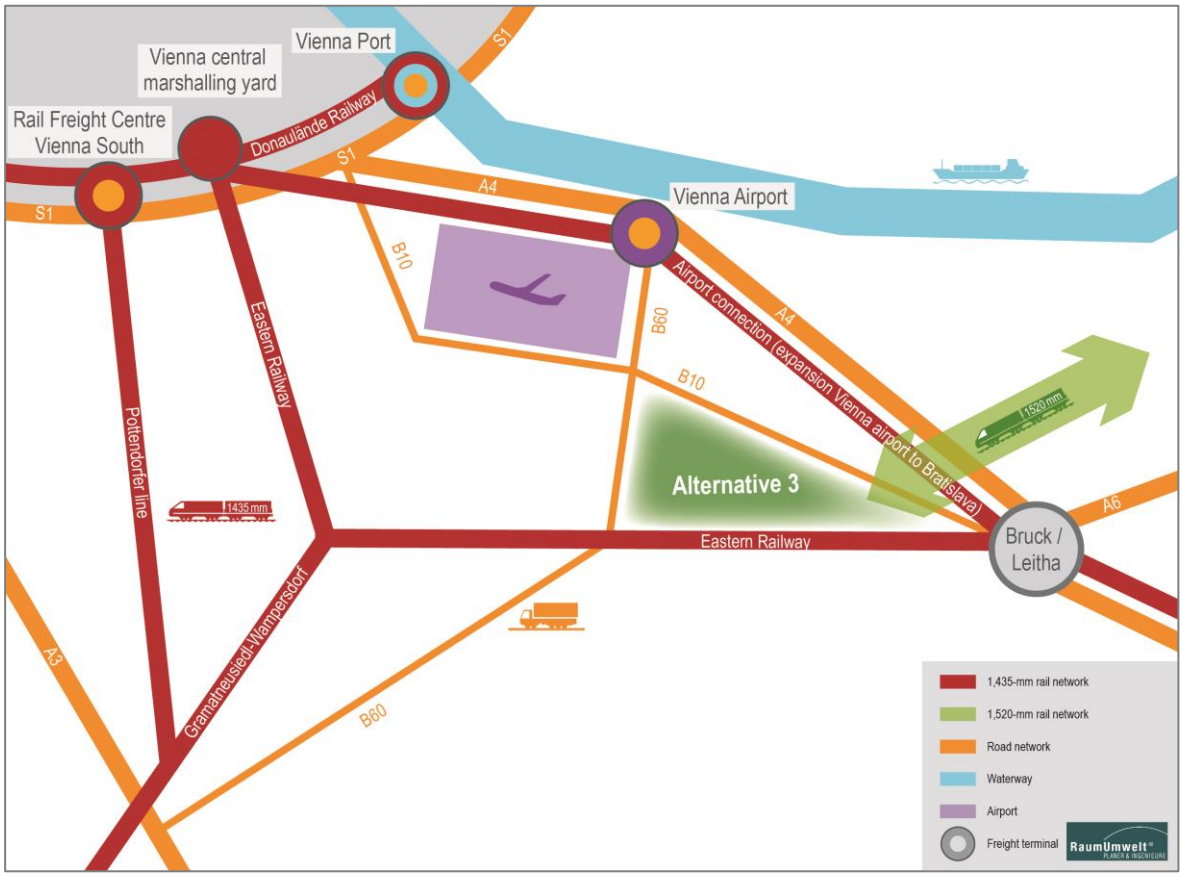


Figure 54: Functional location of site alternative 3 (own illustration)

8.1.2.4 Site Alternative 4 (ST-4)

Site alternative 4 (ST-4) provides for a link for the extended 1,520 mm gauge network with the 1,435 mm gauge network and the high-level road network in the **southeastern part of the narrow investigation area**. The **link** to the TEN-T core network (Rhine-Danube Corridor and Orient/East-Med Corridor) will be made via the following routes:

- Eastern Railway between Parndorf and border crossing near Nickelsdorf
- A4 Eastern Motorway between Parndorf and border crossing near Nickelsdorf

A terminal in site alternative 4 could be oriented in the main direction of traffic flows to a limited extent. The technical feasibility of a terminal under the given requirements was examined and found to be feasible.

To connect site alternative 4 with the border crossing point of the extended 1,520 mm gauge network near Kittsee requires a **route** that is **approx. 15–20 km** long. This route has the following characteristics and requirements – regardless of the course it would take, which is yet to be defined in the route development and selection process:

- The route is a single-track, electrified railway.

- Bundling the routes is partly possible with the Kittsee connection.
- The route crosses the Leitha regardless.

The functional location of ST-4 in relation to the high-level transport network and logistics centres is shown in Figure 55.

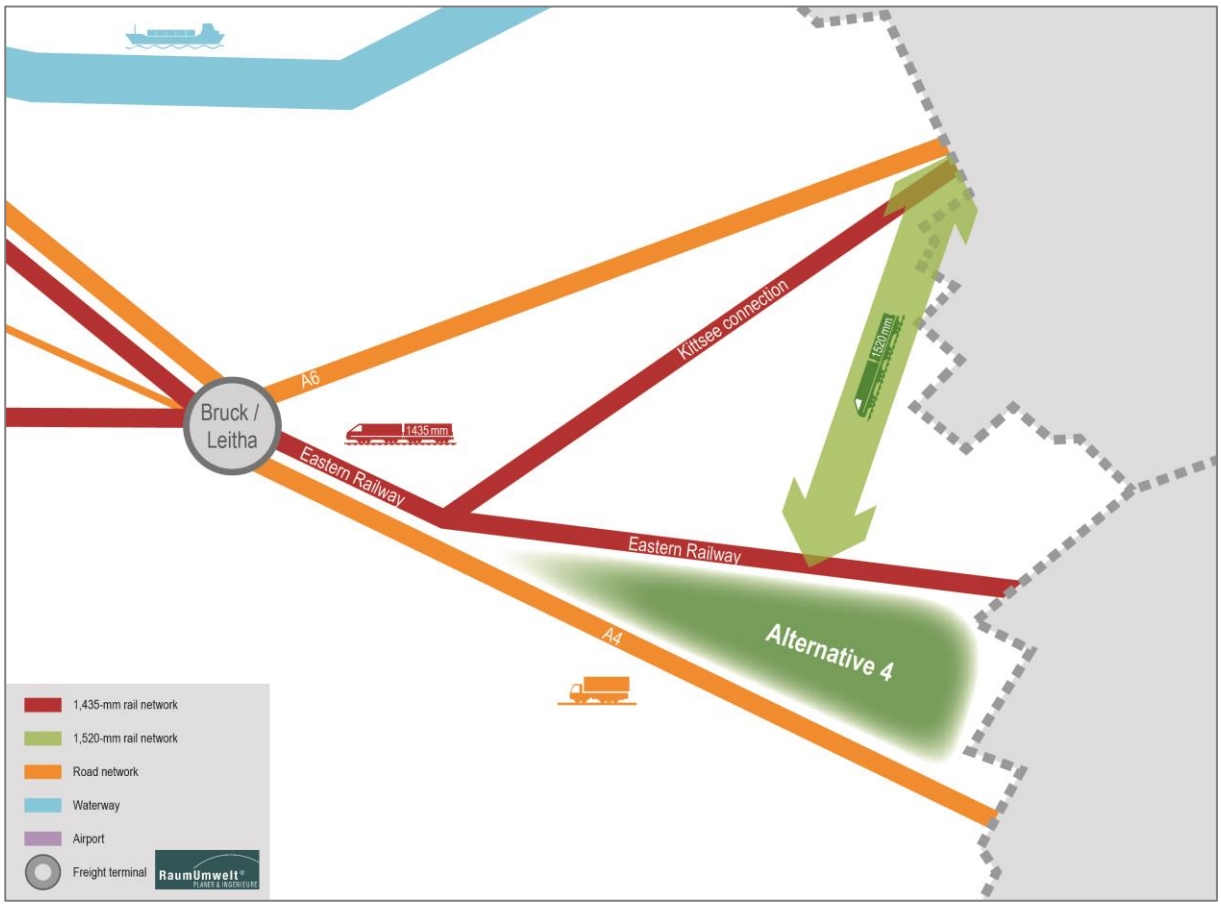


Figure 55: Functional location of site alternative 4 (own illustration)

8.1.2.5 Site Alternative 5 (ST-5)

Site alternative 5 (ST-5) provides for a link for the extended 1,520 mm gauge network with the 1,435 mm gauge network and the high-level road network in the **northeastern part of the narrow investigation area**. The **link** to the TEN-T core network (Rhine-Danube Corridor, Orient/East-Med Corridor and Baltic-Adriatic Corridor) will be made via the following routes:

- Kittsee connection or Eastern Railway
- A6 Northeastern Motorway

A terminal in site alternative 5 could be oriented in the main direction of traffic flows. The technical feasibility of a terminal under the given requirements was examined and found to be feasible.

To connect site alternative 5 with the border crossing point of the extended 1,520 mm gauge network near Kittsee requires a **route** that is **approx. 1–15 km** long. This route has the following characteristics and requirements – regardless of the course it would take, which is yet to be defined in the route development and selection process:

- ❑ The route is a single-track, electrified railway.
- ❑ Bundling the routes with existing high-level transport infrastructure is possible (A6).
- ❑ Crossing the Leitha is not absolutely necessary.

The functional location of ST-5 in relation to the high-level transport network and logistics centres is shown in Figure 56.

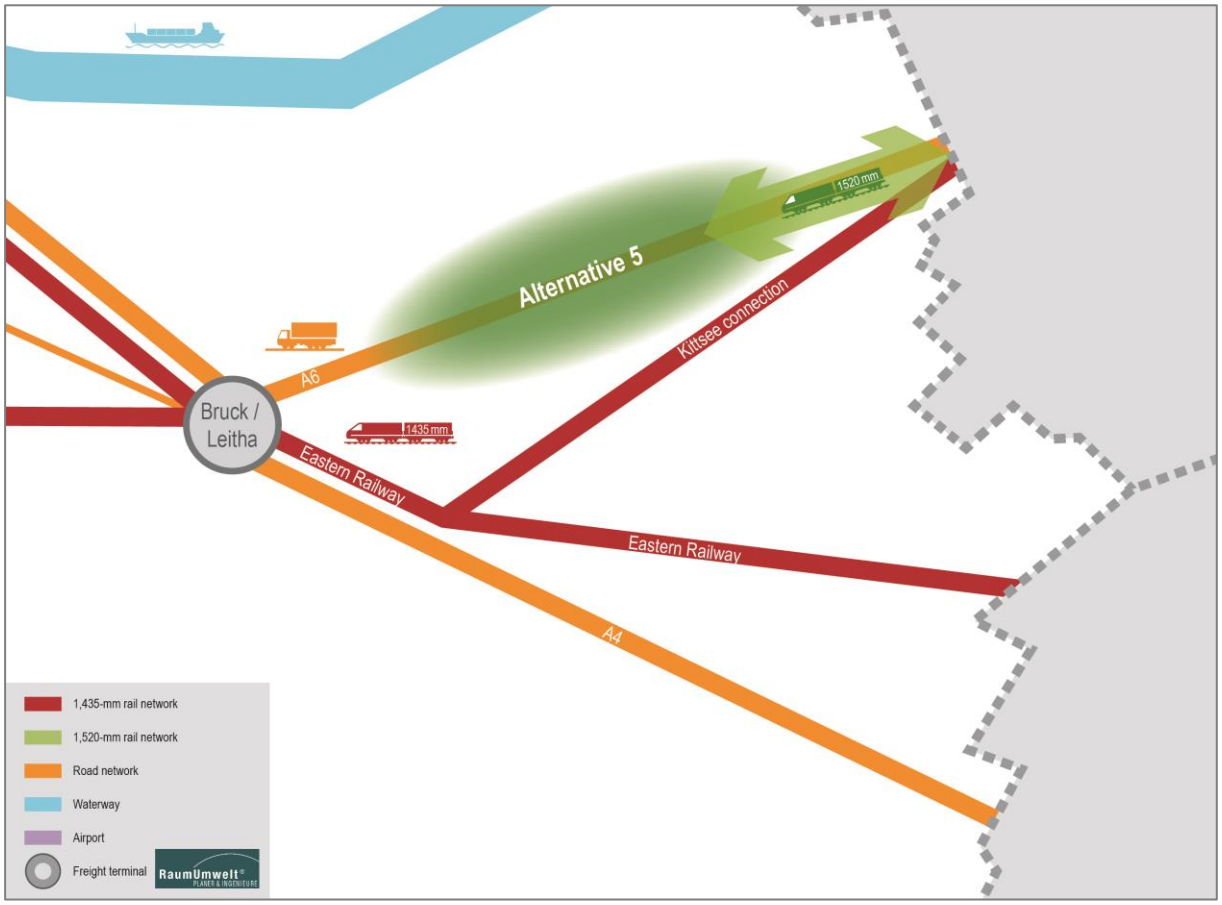


Figure 56: Functional location of site alternative 5 (own illustration)

9

IMPACT ASSESSMENT

The site alternatives each have different spatial effects. These sites differ in terms of their natural, economic and social conditions. Depending on the location of the terminal and the length of the route, varying positive and negative effects are determined.

9 IMPACT ASSESSMENT

9.1 ASSESSMENT FRAMEWORK

Table 22 shows the **target system with main goals and subgoals** that was developed as a result of the work process described in Chapter 5.3.1. With the help of this target system, the presumably considerable impacts are evaluated.

Sustainability dimension	Main goal		Subgoal	
Environment	EN1	Protection and sustainable use of resources	a	Air pollution control and climate protection
			b	Protection of water resources
			c	Protection of soil resources
	EN2	Protection of biological diversity	a	Habitat connectivity
			b	Protection of animals including their habitats
			c	Protection of plants including their habitats
	EN3	Natural heritage conservation	a	Preservation of the landscape (cultural landscape)
			b	Preservation of semi-natural areas and structures
Economy	EC1	Strengthening Austria as a business location	a	Increasing competitiveness
			b	Preserving and increasing prosperity
			c	Strengthening the labour market
	EC2	Promoting and protecting the regional economy	a	Preserving and promoting existing economic systems linked to surface area
			b	Creating potential for the region
			c	Making use of and promoting regional potentials
	EC3	Efficient use of public funds	a	Developing an efficient and needs-based transport system
			b	Developing the transport system in line with main transport policy objectives
			c	Optimising total cost
Society	S1	Protecting human well-being	a	Noise pollution protection
			b	Air pollution protection
			c	Increasing safety
	S2	Cultural identity preservation	a	Cultural asset protection
			b	Preserving the regional character
	S3	Securing existing use of the space	a	Preserving the space as a recreational space
			b	Protecting material assets

Table 22 Target system with main goals and subgoals (own preparation)

The integral target system also takes into account and integrates the **goals for the nationwide high-level transport network** set out in Sec. 5(4) of the SP-V Law, which must be considered by any proposed network modification. Table 23 provides evidence of this consideration and integration by comparing these goals with the main goals of the integral target system. The main goals and subgoals are subsequently described.

			Main goal pursuant to target system								
			EN1	EN2	EN3	EC1	EC2	EC3	S1	S2	S3
Goals pursuant to Sec. 5(4) of the Federal Law on the Strategic Assessment in the Transport Sector (SP-V Law)	No. a	Ensuring sustainable passenger and freight transport in the best socially acceptable conditions with a view to safety	x						x		
	No. b	Realising the objectives of the European Community, in particular as part of delivering a European transport network and achieving competition				x		x			
	No. c	Ensuring a high level of environmental protection by integrating environmental considerations	x	x	x				x	x	x
	No. d	Strengthening economic and social cohesion in Austria and in the Community				x	x			x	
	No. e	Providing a high-quality transport infrastructure under the best economically viable conditions						x			
	No. f	Preserving the comparative advantages of all modes of transport				x		x			
	No. g	Ensuring that existing capacity is optimally used						x			
	No. h	Attaining interoperability and intermodality within and between the different modes of transport						x			
	No. i	Achieving the highest possible economic cost-benefit ratio						x			
	No. j	Building a connection to the transport infrastructure network of neighbouring countries while promoting interoperability and access to these networks				x		x			

Table 23: Evidence of goal consideration pursuant to Sec. 5(4) of the SP-V Law in the target system (own preparation)

The rating is based on the 7-point rating scale (cf. Table 24).

"mostly in line with target"	"partially in line with target"	"tendency to be in line with target"	"neutral"	"tendency to be contrary to target"	"partially contrary to target"	"mostly contrary to target"
++	+	(+)	0	(-)	-	--

Table 24: Illustration of target achievement levels (own preparation)

A detailed description of the rating scale and further methodological notes are provided in Chapter 5.3.

Environment Dimension[35]

EN1 – Protection and sustainable use of resources

The main goal is air and climate protection, the protection of water resources and of soil resources.

The **reduction of mobility-related emissions and greenhouse gases** is central to the sustainable design of the transport system and the creation of modern infrastructure. The main objective of climate protection is anchored in strategies and target documents at all regional authority levels. Moving away from fossil fuels as the primary energy sources, which is essential for achieving the goal, will require medium- and long-term changes. Modifications to the transport systems, which contribute significantly to global fuel emissions, are essential for achieving this. This also contributes to **air purity and air quality**.

The protection and sustainable use of water resources affects both **groundwater** and **surface water**. Infrastructure planning can have a negative impact on water resources, e.g. through sealing, pollution or pollutant inputs. In order to preserve the natural water cycle, it is also important to avoid impairing protected areas and sanctuaries.

Quality soils and their sustainable use are important for food production, climate stabilisation and ecosystem services. Transport infrastructure can have a negative effect on soil quality and functions, such as through sealing. Economical land use and avoiding sealing are central to soil protection.

EN2 – Protection of biological diversity

The main goal comprises the habitat connectivity, the protection of animals including their habitats and the protection of plants including their habitats.

Habitat connectivity is essential for conserving species diversity. Existing **protected areas, forests and wildlife corridors** are important for **habitat connectivity**. These semi-natural habitats can be fragmented or destroyed by transport infrastructures, which can contribute to the loss of species and biological diversity.

[35] The environment dimension comprises the following aspects pursuant to Sec. 6(2)(8) of the SP-V Law: biological diversity, fauna, flora, soil, water, air, climatic factors, landscape

Indicators for **animals and their habitats** are species diversity and the existence of native species. The ecologically properly functioning habitats and the biotope connectivity also provide information on the condition of the fauna. Transport infrastructures can have a negative impact on the fauna through destruction, fragmentation of habitats or disturbance.

The condition of the **fauna** can be measured including through species diversity, ecological functionality or the existence of native species. Transport infrastructures can disturb or destroy species and biotopes, such as through fragmentation.

EN3 – Natural heritage conservation

The main goal is the preservation of semi-natural areas and structures.

The **cultural landscape** is a key element of natural heritage the diversity, uniqueness and beauty of which must be protected and preserved. The preservation of this cultural and landscape heritage can be jeopardised by transport infrastructure development, e.g. by fragmentation or disruption.

The preservation of **semi-natural areas and structures** such as floodplain forests is very important for safeguarding the natural heritage as they also have significant ecological functions. Transport infrastructures can destroy or fragment this area.

Society Dimension[36]

S1 – Protecting human well-being

The main goal comprises noise and air pollution protection and increased safety.

Transport infrastructure inevitably emits **noise**, which can negatively impact **human health**. For this reason, infrastructure planning must pay attention to avoiding these negative effects wherever possible, reducing them or moving them to less sensitive areas. Conflicts could arise between settlement areas and those areas used for leisure and recreation.

Transport infrastructure inevitably emits **air pollutants**, which can negatively impact **human health**. For this reason, infrastructure planning must pay attention to avoiding these negative effects, reducing them or moving them to less sensitive areas. Conflicts could arise between settlement areas and those areas used for leisure and recreation. In the case of this network modification, a direct cause of air pollutants is not to be expected due to the intended electrification of the planned railway. However, air pollutants are caused by the proportion of trucks in the terminal's hinterland traffic and by traffic in connection with the logistics centre.

[36] The society dimension comprises the following aspects pursuant to Sec. 6(2)(8) of the SP-V Law: population, human health, material assets, cultural heritage including architectural and archaeological heritage

The transport system can have an impact on **transport safety** and the effects of **natural disasters**. Since the planned railway is for freight transport, there is no direct relevance for the safe transport of people. At the same time, the type of transport infrastructure planning and implementation, for example, can change the flood hazard in a certain area.

S2 – Cultural identity preservation

The main goal comprises the protection of cultural assets and the preservation of the regional character.

The narrow investigation area has individual **ground monuments and archaeological excavation sites**. In addition to having cultural and historical value, they are also relevant for the region's identity. An infrastructure undertaking could put these monuments at risk or destroy them.

In addition to its cultural and historical treasures, the region is also characterised by **land use** and a settlement structure **typical of the region**. The existing, small-scale settlement types can be disturbed in their scale by implementing new infrastructure.

S3 – Securing existing use of the space

The main goal comprises the preservation of the space as a recreational space and the protection of material assets.

The region of concern is often used as a **space for recreation**, with connected open spaces used for outdoor physical and leisure activities by the local population. Traffic infrastructures can fragment or destroy existing spaces or can lead to conflicts of use.

The narrow investigation area has numerous **high-level infrastructures** such as traffic routes, power lines or underground lines such as gas pipelines. This infrastructure could be destroyed by other infrastructure or would have to be moved, or it could malfunction in some cases.

Economy Dimension

EC1 – Strengthening Austria as a business location

The main goal is to increase competitiveness, preserve and increase prosperity and strengthen the labour market in Austria.

Transport infrastructure contributes to building a strong **business location** and **international competitiveness**. Companies and enterprises that are located at transport hubs can benefit from that, or they benefit from an overall improved accessibility. Connectivity and increased infrastructure efficiency can have a positive impact on competitiveness and the quality of the business location.

Economic performance is one of the decisive factors for the prosperity of a society. The increase in GDP and the increase in added value are key indicators of this. Transport infrastructures can provide an important direct and indirect economic boost for a business location.

The **labour market** is a central factor for Austria as a business location. This includes labour supply and accessibility to jobs as well as the employment rate. Infrastructures can provide an economic boost for a business location.

EC2 – Promoting and protecting the regional economy

The main goal comprises to preserve and promote existing economic systems linked to surface area, create potentials for the region and to make use of and promote regional potentials.

Regional economies and economic systems that are linked to the surface area depend on the specific conditions of each region. Agricultural farming systems, energy management in the form of wind power and the extraction of raw materials are particularly pronounced in the narrow investigation area. These existing forms of cultivation should be further promoted and should continue to grow. New infrastructure can destroy existing economic forms, disturb their functionality or lead to conflicts of use arising.

The regional economy has **growth potential**, regardless of its current state. The aim is to create new potential in order to further strengthen the regional economy. Transport infrastructures can provide an economic boost that in turn stimulates innovation.

At the same time, existing **regional potential** can be inhibited by infrastructure development. Small and medium-sized enterprises or the tourism industry can be disturbed by large-scale infrastructure, which means that the existing potential cannot be made use of.

EC3 – Efficient use of public funds

The main goal comprises developing an efficient and needs-based transport system, developing the transport system in line with the main transport policy objectives and optimising the total costs.

The transport system is **needs based** when it is verifiably best suited to meet mobility demands. Verification must be provided both across modes of transport and within a single mode. This means that the need is met both by creating modern infrastructures and by enabling interoperable and multimodal transport operations.

Efficiency in the transport system also concerns the **sustainable design** of a transport system and the associated shift of freight traffic from road to rail. The same applies to the creation of an effective, interoperable and linked European transport system.

In the interests of an efficient transport system, attention must also be paid to the appropriate **use of funds**. This applies to direct capital costs above all but also to the costs of the contextual measures and

operating expenses. The use of funds should be efficiently designed for construction, purchase of property, and operations.

9.2 DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

The overall likely significant effects are **determined, described and evaluated** from the point of view of the (main) goals that are to be achieved (cf. Chapter 5.3.1). In accordance with an integral target system, the effects of sustainability on the three dimensions are described as follows:

- Environment
- Society
- Economy

The effects are determined, described and evaluated according to the differentiated spatial delimitation, **separated by functional and narrow investigation area** since the likely significant effects in these two spatial types **differ considerably in terms of their nature**.

In the **functional investigation area**, the focus of the approach is placed on **indirect effects** resulting from changes in the **comprehensive transport network** (e.g. change in freight traffic flows, shift of freight traffic from road to rail, economic boosts, etc.).

In the narrow investigation area, the focus of the approach is placed on **direct effects**, which can be **expected in any case** if railway undertakings are implemented as part of the proposed network modification. Since the narrow investigation area permits several ways to implement railway undertakings, it is not possible to propose **site-accurate, concrete descriptions of the effects**. For this reason, priority is given to describing those effects that are to be expected in any case (e.g. land use, fragmentation of the landscape from linear infrastructure, noise immissions from freight terminals, etc.).

9.2.1 ZERO ALTERNATIVE

A **zero alternative** is defined as a reference case for describing and evaluating alternatives; it assumes the rail network to have no proposed network modification. It is assumed that the **developments will be continued with the existing rail infrastructure** (cf. Chapter 6.2). Apart from the necessary replacement investment and maintenance measures, there is no intention to further expand the railway network east of Vienna.

In Slovakia, the 1,520 mm gauge network will be extended from Košice to the **east of Bratislava**, where the planned end terminal will be built. Due to differing infrastructure conditions found in Slovakia and Austria, the modal split is different than the implementation of the proposed network modification: for the zero

alternative, **29% of the goods** are transported onward **by rail** and **71% by road** (BPG's own calculations). This suggested modal split is based on the following assumptions:

Connection to the European rail network

Both Vienna and Bratislava are well integrated into the TEN-T. However, the Bratislava node is primarily oriented in a **north-south direction** and has good connections headed to the Czech Republic and Hungary, which play only a minor role for the hinterland traffic of a terminal between 1,435 and 1,520 mm gauge networks. In addition, **infrastructure heading to Poland** is currently being improved, with Slovakia being an important link between the Polish Baltic Sea ports and the Adriatic ports in the Balkans (cf. the international rail freight corridor AMBER).

Vienna, on the other hand, already has a well-developed **connection to the west and southwest**, which will be further **improved** in the next decade, especially for rail transport (cf. Chapter 6.2.2). In addition, there are direct connections to the Czech Republic and Hungary just like there are in Bratislava.

Since the shortest route for traffic from the Bratislava region to the west and south-west is via the Vienna junction, yet the **additional capacity** of the 1,520 mm gauge network extended to the east of Vienna is **not available**, a terminal south-east of Bratislava represents a **logistical challenge** for traffic between Bratislava and Vienna.

Planned Development of Infrastructure Independent of the Proposed Network Modification

The rail infrastructure in Austria will be expanded efficiently over the next decade, regardless of the proposed network modification (cf. Chapter 6.2.2). On the one hand, this will create **additional capacities** along the southern and western axes even before a terminal between 1,435 and 1,520 mm gauge networks goes into operation that can accommodate the foreseeable hinterland traffic by rail.

In Slovakia, on the other hand, undertakings are in the foreground that run along the Bratislava-Žilina-Košice axis as well as other undertakings that will make areas in central and eastern Slovakia accessible (Ministry of Transport, Construction and Regional Development of the Slovak Republic 2016).

The **Bratislava junction**, which would have to be crossed in the case of a terminal to the southeast of the city, is also expected to be expanded, especially for local public transport. As a result, it can be anticipated that in the future the Bratislava junction will continue to show **comparatively low west-east permeability** for rail freight traffic.

Traction Power Supply

The Austrian rail network is operated with alternating current, which has a voltage of 15 kV at 16.7 Hz. The rail network around Bratislava, however, is operated on alternating current with a voltage of 25 kV at

50 Hz. The **Austrian traction power system** is also used in **Switzerland and Germany**, while the Slovakian system is mainly used in Southeast and Western Europe.

Thus, a freight train from a terminal between 1,435 and 1,520 mm gauge networks east of Vienna could be operated **continuously with one locomotive** to pertinent destinations such as Duisburg. From a terminal southeast of Bratislava, however, either a **two-system locomotive or a locomotive change** at the border would be necessary for the same connection due to the short distance to the border with Austria. This makes rail transport in hinterland transport considerably more expensive, despite only a small additional distance needing to be covered between Bratislava and Vienna.

Railway Policy

Railway policy in Austria and Slovakia has different priorities for the long term, which has consequences for the competitiveness of rail freight transport. While Austria has ambitious and quantifiable **objectives for expanding** and promoting rail freight transport (BMVIT 2012, p. 66), the objectives set by the Slovak Republic for the rail network make less of a distinction between passenger and freight transport. (Ministry of Transport, Construction and Regional Development of the Slovak Republic 2016: p. 54). In the case of a terminal to the south-east of Bratislava, the political conditions for pushing hinterland transport by rail are therefore expected to be much less pronounced.

Derived Freight Volume of Hinterland Traffic

It is assumed that approx. 3.3 million tonnes of goods are transported annually via Marchegg and further via the Marchegg Eastern Railway i.e. the Gänserndorf-Marchegg branch of the Eastern Railway. Approx. 1.8 million tonnes of goods are transported via Kittsee and the Eastern Railway. (cf. Figure 57)

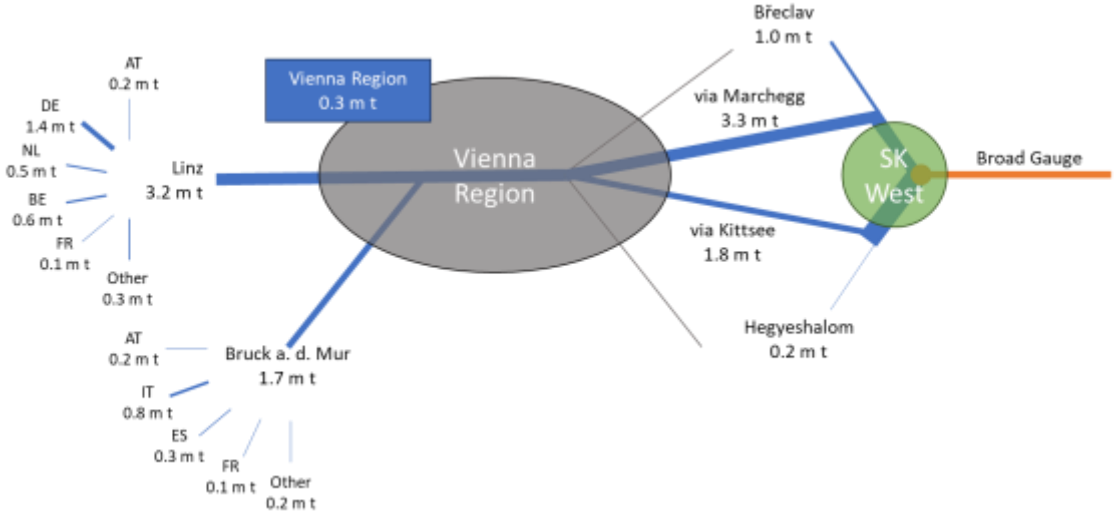


Figure 57: 2050 freight traffic volumes for rail zero alternative (own BPG calculations)

Compared to the implementation of the proposed network modification, considerably **more trucks** needed for road traffic will be a burden on Slovak and Austrian road networks: around 12 million tonnes of goods will be transported via the A6 and over 2 million tonnes via the S8 (cf. Figure 58).

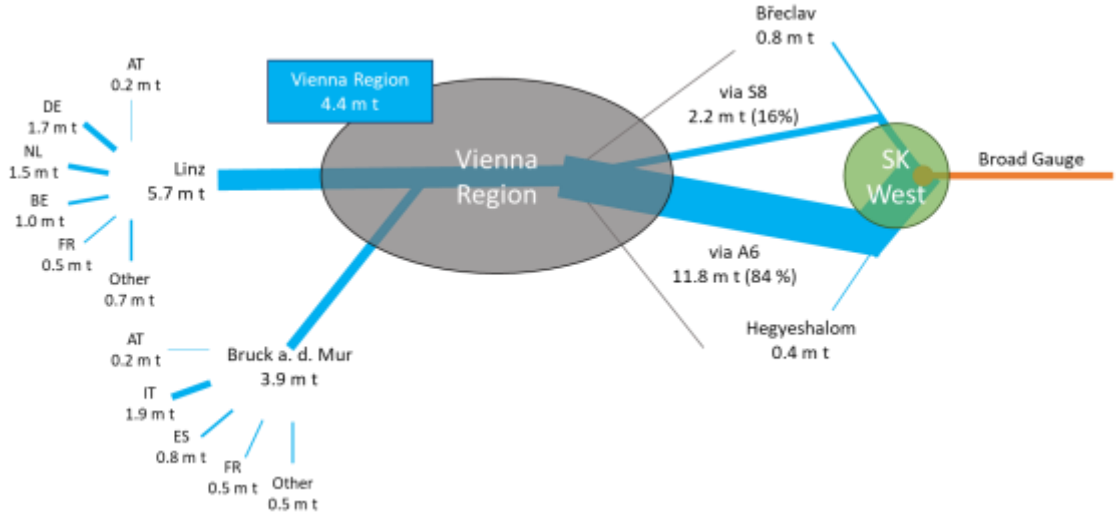


Figure 58: 2050 freight traffic volumes for rail zero alternative (own BPG calculations)

At the same time, the number of trips made by the employees employed at the terminals and the expected logistics centres will be reduced if the terminal in Slovakia is implemented, compared to if the terminal is implemented in Austria. Nevertheless, the road network will be burdened with around **5,000 more freight transport trips** (cf. Table 25). In comparison, more than 100,000 vehicles travelled daily on the A4 Eastern Motorway at the Schwechat junction in May 2019, of which around 12,000 vehicles were over 3.5 t[37]. The additional trips brought about by the terminal are spread over several routes; even in comparison to the current load – which is continuously growing – the additional load is not disproportionately high.

	Employee traffic (Passenger vehicles/24 h)	Freight traffic (Trucks/24 h)[38]	Total (Vehicles/24 h)
Terminal	-	-	-
Logistics centre	-	5,030	5.030
Total	**-**	**5,030**	**5,303**

Table 25 Traffic generation per 24 h 2040 zero alternative in the Austrian network (own BPG calculations, own illustration)

Below, the effects of the zero alternative are described in detail.

[37] Motor vehicles/24 h between Monday and Friday, Mannswörth counting station (ASFINAG 2019b)
[38] Delivery vans, trucks, semi-trailer trucks

EN1: Protection and sustainable use of resources

The undertaking contributes to the global shift from freight transport to rail as a climate-friendly mode of transport. In the case of the zero alternative, there is no such contribution, which tends to have a **negative effect on climate protection and air pollution control**.

Non-implementation means that water resources are **not additionally affected**; furthermore, this would entail that soil is not sealed or consumed. At the same time, this does not provide for the protection or improvement of these resources.

This means that the zero alternative can be given a **slightly negative** assessment in relation to the goal of protection and sustainable use of resources.

EN2: Protection of biological diversity

In the case of the zero alternative, neither a positive nor a negative contribution is made to the protection of biological diversity. For this reason, the zero alternative must be assessed as being **neutral** in relation to the subgoal EN2.

EN3: Natural heritage conservation

In the case of the zero alternative, neither a positive nor a negative contribution is made to the conservation of the natural heritage. For this reason, the zero alternative must be assessed as being **neutral** in relation to the subgoal EN3.

EC1: Strengthening Austria as a business location

For Austria as a business location, the zero alternative means a **relatively worse situation** compared to the implementation of the undertaking. **Competitiveness** is **not strengthened** because Austria is at a disadvantage compared to competing logistics hubs in Europe. The logistics sector is becoming increasingly important, among other things due to the growing online trade and the increased demand for goods transport on a global, regional and local level. An increased risk of **relocation** exists for logistics-related companies or companies with logistics business units if the attractiveness of Austria as a business location decreases in comparison to other logistics hubs.

This also increases the risk that **value added** will flow out of Austria and have negative effects on GDP growth. A zero alternative would mean a worsening of the situation. Not implementing the proposed network modification also increases the risk of jobs having to be relocated in certain sectors.

EC2: Promoting and protecting the regional economy

The zero alternative **neither has positive nor negative effects** on the regional economy: though existing economic systems linked to surface area such as agriculture or the energy sector are not disturbed, they

are not supported either. Also, no potentials are created for the region and the exploitation of existing regional potentials is jeopardised.

EC3: Efficient use of public funds

The zero alternative **tends to have a negative** effect on the efficient use of public funds goal. The proposed network modification contributes to the development of an efficient and demand-driven transport system: the creation of modern infrastructures promotes the multimodal use of existing capacities. In the case of the zero alternative, no contribution is made to an efficient transport system; on the contrary, it leads to an **additional burden on the road network**.

Furthermore, because the **rail infrastructure** is in a good state to be expanded, there is **high potential for shifting freight traffic** to the railways in Austria. The proposed network modification would contribute to making use of this potential; if there is no network modification, this potential will not be made use of.

Measures to the rail transport network become necessary with the zero alternative, not owing to the elimination of capacity bottlenecks, but due to the **creation of a new small-scale connection** along the Eastern Railway in order to manage freight flows more efficiently. The measures will be necessary in the following areas of the Austrian rail network:

- Eastern Railway
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction
  - Parndorf railway station: additional track, erect new island platform
  - Gattendorf railway station: track extension

An initial rough cost estimate has shown additional costs of about **EUR 158 million** for upgrading the rail network (based on 2019 prices).

Furthermore, the zero alternative would make road construction measures for eliminating congestion caused by terminal traffic[39] necessary. This includes **expanding the capacity** of existing transport nodes in the following areas of the Austrian road network.

- S1 Schwechat junction
  - Additional lane
  - 2-lane ramp guidance

[39] The need for additional measures is assumed if the level of service worsens from E to F.

- Widening of trough and bridge structure

- A4 Bruckneudorf junction
  - 2-lane ramp guidance
  - Widening trough
- A1 St. Pölten junction
  - 2-lane ramp guidance S33
  - Widening bridge structure S33

In addition, the **need to park** the increased number of trucks in the ASFINAG network is growing. An initial rough cost estimate shows expected additional costs of at least around **EUR 39 million** (based on 2019 prices) for contextual measures for the high-level road transport network.

The costs for the contextual measures for the rail and road network and thus the total costs of the zero alternative amount to **approximately EUR 197 million** (based on 2019 prices) (cf. Table 26).

Zero Alternative Costs [million EUR], based on 2019 prices	
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	-
Contextual measures rail overall (measures in addition to already envisaged measures)	EUR 158 million
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction	
Parndorf railway station: additional track, erect new island platform	
Gattendorf railway station: track extension	
Contextual measures road overall (Measures in addition to already envisaged measures)	EUR 39 million
S1 Schwechat junction: Additional lane	
S1 Schwechat junction: 2-lane ramp guidance	
S1 Schwechat junction: Widening of trough and bridge structure	
A4 Bruckneudorf junction: 2-lane ramp guidance	
A4 Bruckneudorf junction: Widening trough	
A1 St. Pölten junction: 2-lane ramp guidance S33	
A1 St. Pölten junction: Widening bridge structure S33	
Truck parking	
Total costs	**EUR 197 million**

Table 26: Summary of zero alternative costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

The above-mentioned contextual measures in the Austrian rail and road network represent **capacity expansions of the existing network**. As a result, their planning and implementation is possible without any prior modification of the nationwide high-level transport network. The possible need for an environmental impact assessment for the individual contextual measures is dealt with in each **subsequent planning phase**.

S1: Protecting human well-being

The zero alternative signifies a strong **additional burden** for human well-being. If the proposed network modification is not implemented, a strong increase in road freight traffic is to be expected in the narrow investigation area, which will increase both **noise and air pollution**. The **risk of accidents** also increases compared to the implementation of the proposed network modification.

S2: Cultural identity preservation

The zero alternative neither **positively nor negatively** influences the cultural assets in the narrow investigation area. The zero alternative also has no influence on the regional character, i.e. the existing settlement structure or land use typical to the region, since no new infrastructure elements are built and thus no conflicts of use can arise.

S3: Securing existing use of the space

The recreation area or existing material assets are **neither positively nor negatively** affected by the zero alternative.

Impact Assessment of Zero Alternative Summary

The zero alternative does not positively contribute to any subgoal (cf. Table 27). This is mainly due to the fact that if the proposed network modification is not implemented, no new network component will be created; this will **not provide a positive boost,** e.g. for the national economy or the regional economy in the narrow investigation area. Accordingly, effects on existing resources, biological diversity or natural heritage are not expected. At the same time, **existing potentials**, e.g. in rail freight transport, are **not made use of**. Austria then also loses its attractiveness as a location. Due to the expected additional road freight traffic, negative impacts such as additional noise and air pollution as well as increased accident risks are expected.

At the same time, the **goals of the network modification are not achieved** with the zero alternative. No infrastructural requirements will be created for an efficient freight transport connection with global relevance or for handling this land-based freight transport via the Vienna area as an important TEN-T core network node.

Environment								Economy									Society						
EN1			EN2			EN3		EC1			EC2			EC3			S1			S2		S3	
a	b	c	a	b	c	a	b	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
-	o	o	o	o	o	o	o	-	-	(-)	o	o	o	(-)	(-)	(-)	-	-	-	o	o	o	o

Table 27: Target achievement level of zero alternative (own preparation)

9.2.2 GENERAL LIKELY SIGNIFICANT EFFECTS OF THE NETWORK MODIFICATION

9.2.2.1 Description of General Likely Significant Effects in the Functional Space under Consideration

The proposed network modification is based on a **concrete undertaking**: the extension of the 1,520 mm gauge network from Košice in eastern Slovakia to the area east of Vienna. The **route on the Slovak side** has already been specified; an **environmental impact assessment** is currently being carried out (cf. Chapter 1). The proposed network modification is based on the premise that the extended 1,520 mm route on the Slovak side will lead to the Austrian-Slovak border near Kittsee. If the proposed network modification is not implemented, it is assumed that the 1,520 mm gauge will be extended east of Bratislava (zero alternative; cf. Chapter 8.1.1). When comparing it to the zero alternative, the functional investigation area is expected to have few effects that would make a difference for this reason.

The terminal in Nové Zámky and above all the terminal east of Vienna are expected to have economic effects to a lesser extent: The implementation of the undertaking is expected to strengthen **Austria as a business location** as a whole. Such a unique undertaking with global significance can make an important contribution to **the positioning of Austria in the global economy**. **Competitiveness** will be increased and connections to Asia and the rest of Europe improved. **Location quality** will be improved. This is also expected to have positive effects on the **labour market**: **labour supply and accessibility to jobs** will be improved – especially through the indirect effects of the undertaking and its expected impact on the economy. This will positively impact the preservation and growth of Austria's **prosperity**. The undertaking thus contributes to the **economic growth** and **prosperity** of Austria as a business location.

Positive effects on the **European and global comprehensive transport system** can also be expected. The undertaking contributes to an efficient, competitive and ecological transport system: it meets **modern standards** and promotes **multimodal** freight transport handling. Existing capacities can be optimally used by creating a **new, needs-based offering**. This will also strengthen the **TEN-T core network**, as it will significantly improve links to the 1,520 mm gauge network, make overall rail freight transport more attractive and promote the shift of rail freight transport. These effects are in line with the **objectives of European transport policy**.

Regardless of where the terminal is built, the implementation of the comprehensive undertaking will make an important contribution to making the **global freight transport system more ecological**. Compared to all other modes of transport (trucks, seagoing vessels, air), rail transport emits lower greenhouse gases in comparison (in terms of performance). Shifting goods to rail thus contributes to **climate protection**. The goods can also be redistributed by rail in an especially **efficient way** through a conurbation such as Vienna. In addition, transport by rail is much safer than transport by road and the level of pollutants is low in comparison.

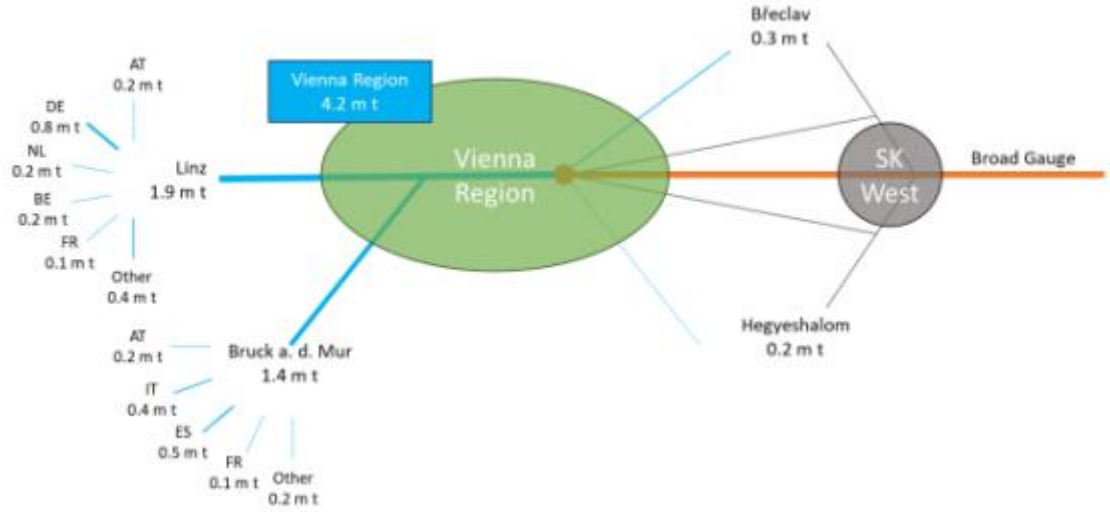


Figure 59: 2050 freight traffic volumes for road (own BPG calculations)

The effects on the traffic system in Slovakia are expected to be of little relevance: in Nové Zámky, approx. 1.4 million tonnes are loaded onto **trucks to be locally distributed**. From the Austrian terminal, approx. 37% of the goods (around 8 million tonnes) are transported onwards by truck. About half of it is redistributed in the Greater Vienna area; about 1.9 million tonnes are redistributed to the west and about 1.4 million tonnes to the south. The remaining 0.5 million tonnes are distributed to the north and east (cf. Figure 59). This means that the traffic load on the regional road network increases significantly in parts. Additional traffic of a total of 5,900 vehicles (freight traffic and employee traffic) is expected in 2050 (cf. Table 28)[40]. In comparison, more than 100,000 vehicles travelled daily on the A4 Eastern Motorway at the Schwechat junction in May 2019, of which around 12,000 vehicles were over 3.5 t[41]. The additional trips brought about by the terminal are spread over several routes; even in comparison to the current load – which is continuously growing – the additional load is not disproportionately high. The **effects on the minor road network i.e. the redistribution routes** depend on the concrete terminal location and are addressed in Chapter 9.2.3.

[40] The road traffic analysis assumes that traffic forecasts for 2050 will already be reached by 2040.
[41] Motor vehicles/24 h between Monday and Friday, Mannswörth counting station (ASFINAG 2019b)

	Employee traffic (Passenger vehicles/24 h)	Freight traffic (Trucks/24 h)[42]	Total (Vehicles/24 h)
Terminal	260	1,930	2,190
Logistics centre	1,710	2,000	3,710
Total	**1,970**	**3,930**	**5,900**

Table 28 *2040 traffic generation per 24 h site alternatives 1–5 in the Austrian network (own BPG calculations, own illustration)*

The remaining 63% of the goods are **transported onward by rail**. They are largely transported between the terminal and Germany (19%) and Italy (12.5%). Furthermore, goods will be transported on routes between the terminal and the Netherlands, Belgium, France or Spain. Five per cent of all goods will be transported by rail within Austria. Most of the goods transshipped or originating in eastern Slovakia and transported on the **1,435 mm route** to and from Vienna are distributed among the rest of Austria (61%) and Germany and Italy (11% each) (cf. Figure 60).

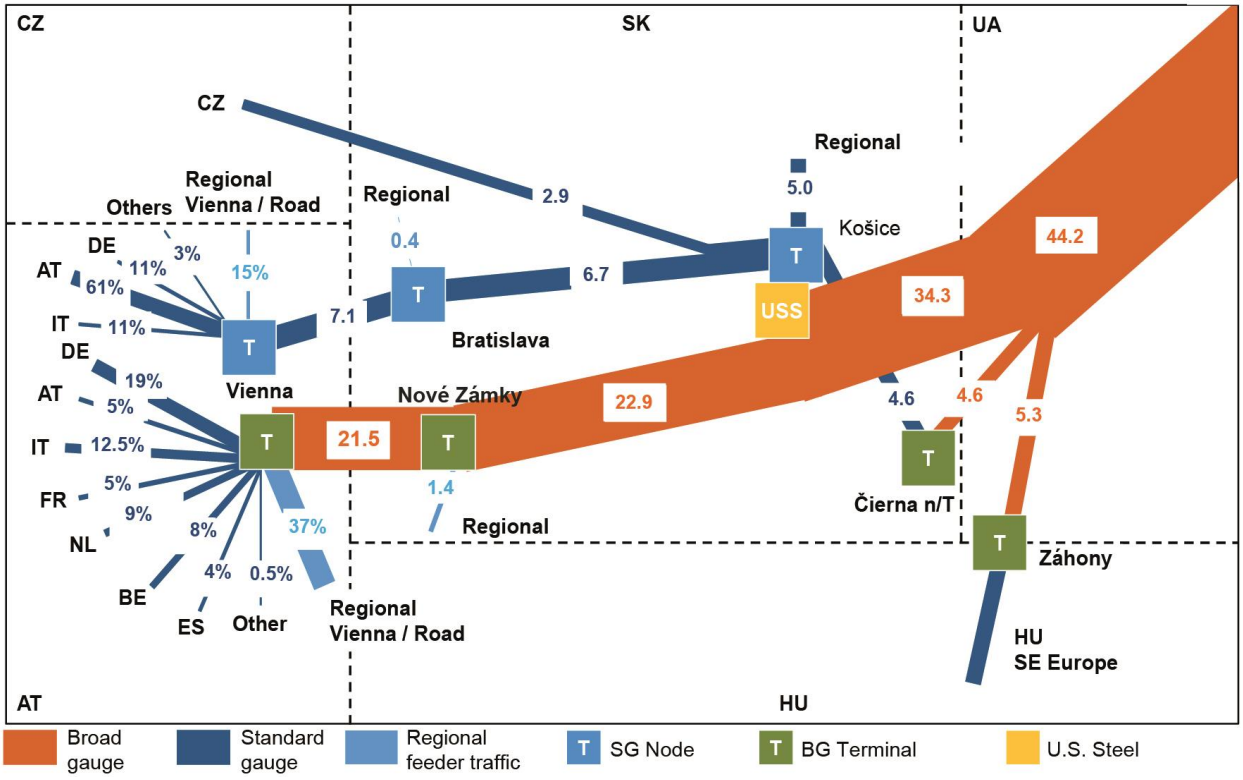


Figure 60: *2050 freight traffic volume in million t on the Košice-Vienna route with implementation of the undertaking (own BPG calculation)*

[42] Delivery vans, trucks, semi-trailer trucks

This means that around 7 million tonnes are redistributed to the west, around 4 million tonnes to the south and around 0.5 million tonnes in the Greater Vienna area. The remaining 2 million tonnes are distributed to the north and east. (cf. Figure 61)

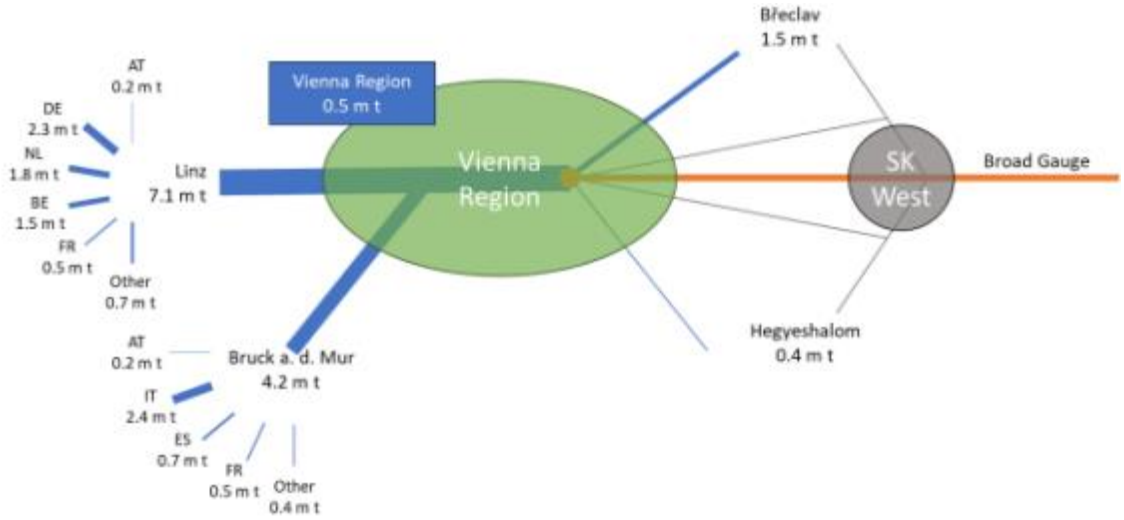


Figure 61: 2050 freight traffic volumes for rail (own BPG calculations)

It is expected that the implementation of the undertaking will result in an additional **56 trains** daily (1,435 mm track gauge network) to and from the terminal. Ten trains (six via Villach, four via Spielfeld) will run on the southern axis and 42 trains on the western line (32 via Passau, ten via Salzburg). In comparison: in 2018, an average of 219 trains ran along the southern axis daily, of which 100 were freight trains.[43] Along the western axis, this number was 359 trains, of which 147 were freight trains[44]. That means that even in comparison to the current load – which is continuously growing – the additional load is not disproportionately high. The new traffic will increase the train kilometres by 17% compared to 2016 and the gross tonne-kilometres transported by 19% in freight traffic in the ÖBB network (own ÖBB-Infrastruktur AG calculations). That only puts a moderate burden on railway capacities; towards the southwest, 21% of the capacity required for rail freight transport is needed; towards the west, this figure is 14%, while on the other routes it is less than 10% (own BPG calculations).

9.2.2.2 Description of General Likely Significant Effects in the Narrow Investigation Area

The proposed network modification will create the conditions for a new route for freight traffic, the end point of which is located east of Vienna. The route is a single-track, electrified new line. Its starting point is at the national border near Kittsee; a terminal will be built at its end point.

The **site-accurate spatial effects** in the narrow investigation area cannot be described in the current planning phase. The location of the end terminal is not yet fixed; therefore, the route or length of the route

[43] Wiener Neustadt – Ternitz cross-section
[44] Ybbs a.d. Donau – Amstetten cross-section (total old and new line)

is not determined either. The **nature and intensity** of the effects in the narrow investigation area depend especially on the **location of the end terminal**. Nevertheless, certain spatial effects are **definitely to be expected**:

- Constructing a new route and a terminal will **use up space**, which
- has an impact on the **landscape**. Whether this means further fragmenting the landscape or reinforcing the barrier effect of existing linear infrastructures depends on the actual location of the route. The effects of the terminal on the landscape also depend on the exact location and the site-specific conditions as well as on the way the design embeds it into the landscape.
- Additional **noise emissions and immissions** can be expected along the route and in the vicinity of the terminal.
- Some of the goods will be loaded onto trucks at the planned terminal. This will result in an **increase in air pollutants emitted locally** from truck traffic. The same applies to the transport of workers on account of the newly created jobs.
- Depending on the location of the terminal, the **Leitha** or the Leitha and the **Fischa** may have to be **crossed**. Accordingly, Natura 2000 areas may be crossed along the river courses of the two bodies of water.
- Depending on the location of the terminal, the **Alps-Carpathians Corridor** may be **crossed or bordered**.

The nature and intensity of the spatial impact therefore highly depend on the location of the terminal and the course and length of the route.

The narrow investigation area is shaped by its large number of compact settlement areas that have a rural character, among other things. In addition to agricultural use, the generation of wind power and tourism are particularly important (cf. Chapter 7.2.1). The planned terminal has a size of approx. 150 ha and therefore **differs in size from the existing structures** for the most part. This means that, depending on the location of the terminal, the **scale of land use typical for the region** may be disturbed. This jeopardises the regional character.

Regardless of where the terminal will be erected, the terminal itself will provide **approx. 130 jobs**. Higher **employment effects** compared to those of the terminal itself can usually be achieved in connection with neighbouring logistics centres. This is where a more **labour-intensive increase in the value** of the goods transloaded in the terminal takes place. In comparison, around 2,100 people are employed at the Container Terminal Enns Ennshafen (BMVIT 2019a). In addition, positive **indirect employment effects** in the supply industry are expected for the necessary transloading technologies.

In addition, it is expected that the construction of the railway line and the terminal will lead to further logistics-related companies settling in the immediate vicinity (cf. Chapter 3.3.3). The terminal and the compa-

nies give **regional economic boosts**, such as through higher tax revenues from property tax and jobs, in a region that has mostly commuter towns (see Chapter 7.2.1).

9.2.3 LIKELY SIGNIFICANT EFFECTS OF SITE ALTERNATIVES

9.2.3.1 Alternative ST-1

Site alternative 1 provides for a terminal location in the southwestern part of the investigation area (cf. Chapter 8.1.2.1, Figure 62). The likely significant effects are described below with reference to the target system (see Chapter 5.3.1).

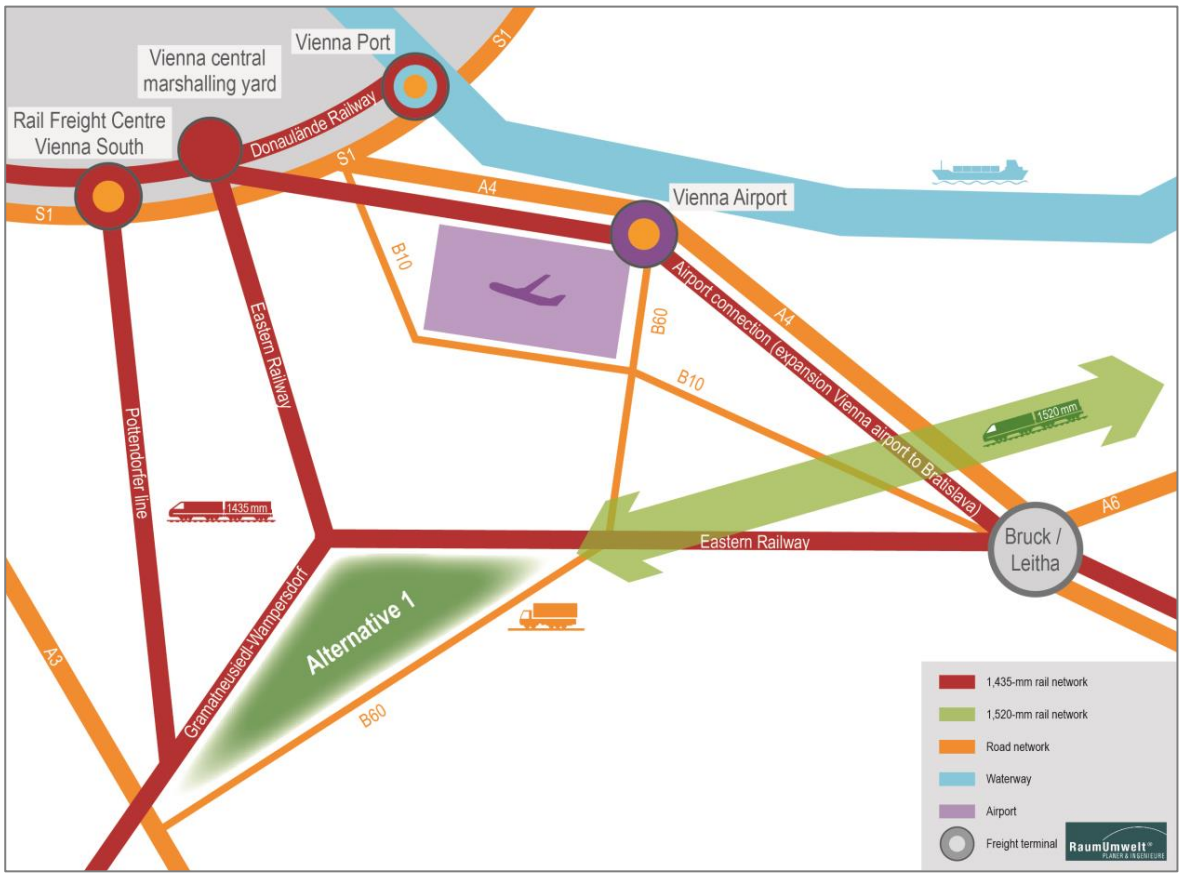


Figure 62: Functional location of site alternative 1 (own illustration)

ST-1 – EN1: Protection and sustainable use of resources

In terms of air pollution control and **climate protection**, freight transport by rail is an environmentally friendly mode of transport compared to freight transport by other modes of transport; with regards to this, the different site alternatives do not differ. Site alternative 1, like all other site alternatives, lies within the **redevelopment area** of the Vienna environs, with driving bans in place for trucks of all weight classes having a EURO 2 emissions standard and worse.

The Mitterndorfer depression **water protection zone** and a water management priority area are located in site alternative 1. To the west of Reisenberg is a large well protection area. The railway line crosses the Fischa regardless. Crossing the Leitha is – depending on the routing – not absolutely necessary.

Both south and north of Reisenberg is **high-quality farmland** consisting of black earth, which the site alternative can potentially come right up to. To the west of Reisenberg are scattered areas with moors and half-bogs with moist to wet soils, which is not high-quality farmland. The single-track railway line, which is longer for this site alternative, also leads to **soil use and soil sealing**, the qualitative effects of which will depend on routing. In the majority of the investigation area, high-quality farmland is available throughout the area, which means that a high level of use is to be expected from the route.

ST-1 – EN2: Protection of biological diversity

The site is located just outside the European protected area Feuchte Ebene – Leithaauen, which is part of a Europe-wide ecological network of special protection areas. Regardless of routing, the railway line crosses the **Alps-Carpathians Corridor**, which is an established wildlife migration path. Crossing the Leitha and thus crossing the European protected area Feuchte Ebene – Leithaauen with the railway line is – depending on routing – not absolutely necessary.

The bird sanctuary Feuchte Ebene – Leithaauen and the wild fauna and flora and natural habitat of the same name are located in site alternative 1. Impairments of each protection and conservation goal cannot be ruled out. The terminal will put strain on agricultural land as well as on the wind protection belt and – depending on the exact location – also on the potential use of the Fürbach riparian woodlands, which serves as a habitat for certain **animal and plant species**. A loss of habitats is therefore to be expected. A single-track railway line with a length of 40 to 45 km is expected to have a relatively great impact on animals, plants and their habitats because of fragmentation and land use. However, the exact routing is not covered by the SP-V and will only be determined in later planning phases.

ST-1 – EN3: Natural heritage conservation

Site alternative 1 is located in an open **cultural landscape** characterised by grassland and grain production, some of which are used on a small scale. The agricultural areas are structured by wind protection belts. On the Reisenberg itself as well as along the surrounding watercourses there are parts of the landscape worth preserving. The terminal would be inappropriate in scale and a disturbance in this region and would overshadow the open space around the characteristic Reisenberg. To the east of Bruck an der Leitha, the landscape is **again fragmented** by the railway line. To the west of Bruck an der Leitha an optical disturbance can be reduced by **bundling** existing high-level infrastructure. Depending on routing, it is not necessary to cross the Fischa and thus to cross parts of the landscape that are worth preserving. **Parts of the landscape that are worth preserving** might have to be crossed along lesser watercourses in the Leitha inlet.

In the area of site alternative 1, there are only a few **semi-natural elements**; rather, the area is mostly a cultural landscape characterised by grassland and grain production. Due to the at least 40-km-long section in the 1,520 mm gauge network that is required to connect the terminal, more or less semi-natural structural elements may have to be used; crossing the Fischa is, depending on the routing, not necessary.

ST-1 – EC1: Strengthening Austria as a business location

Regardless of the exact location, the proposed network modification will contribute to **strengthening Austria's competitiveness** (cf. Chapter 9.2.2.1). Nevertheless, site alternative 1 is not an established logistics location, which means that there are no synergy effects, for example with existing business industries. The space is delimited by the Eastern Railway and the Gramatneusiedl-Wampersdorf line/the B60. As a result, there is only **limited direct accessibility** to the high-level transport network. Existing logistics service providers at the Vienna hub are also not directly accessible. In addition, this **area is comparatively small in size**, which means that certain industries may only be able to settle to a limited extent.

The proposed network modification contributes to **GDP growth** in Austria, by giving regional economic boosts and increasing added value. Due to the relative **location disadvantages**, however, it can be expected that this site alternative will have a lower contribution in this regard than other site alternatives. Due to the **proximity to Vienna** and the availability of qualified workers, there is potential for high value-added industries moving into the region.

In any case, the proposed network modification is expected to lead to **job creation**. The proximity to Vienna and the relatively good accessibility ensure that the newly created labour market centres can be reached easily.

ST-1 – EC2: Promoting the regional economy

The area of site alternative 1 is characterised by **small-scale agricultural farming systems**; a terminal at this location requires a correspondingly high number of individual surface areas. Furthermore, the terminal has **no relation whatsoever to the existing economic systems**. The distance from the national border to site alternative 1 is long compared to other site alternatives (40–45 km), which means that there is a higher risk of destruction or disruption of existing land use, e.g. of agricultural land and wind power stations or wind power suitability zones. In the south of site alternative 1 is a wind power suitability zone that – depending on the exact location – could be cut up when connecting the site alternative to the existing transport infrastructure network, in addition to the use of agricultural land.

Regardless of the exact location of the site alternative, the implementation of the proposed network modification will **create jobs** and promote the **settlement of further businesses**, thereby creating new re-

gional economic potential. Due to the spatial limitations and the existing economic structures, however, these potentials are severely limited compared to other site alternatives.

With regard to making use of and promoting existing potentials, the site alternative conflicts with the existing regional economic structures: there is further growth potential due to the beauty of the landscape, especially for **tourism and landscape-related recreation**. The railway line itself is comparatively long (40–45 km) and could potentially lead to more **conflicts** with existing tourism and small-scale farming systems, especially east of Bruck an der Leitha (in comparison to site alternatives 4 and 5).

ST-1 – EC3: Efficient use of public funds

Site alternative 1 is located directly on the **TEN-T-Baltic-Adriatic Corridor** and close to the **TEN-T hub of Vienna**. By redirecting traffic flows to the railways and redistributing them to the TEN-T core network, existing capacities in Austria will be better utilised along the west and south axis.

The proposed network modification contributes to the **modal shift of freight transport** to rail and thus to achieving transport policy objectives at the national and international level. Although the proposed network modification is not part of the TEV-V core network, it nevertheless contributes to introducing the 1,520 mm gauge network to the main node of Vienna. On the whole, this will create a **modern and efficient link** between these networks.

Site alternative 1 is located close to the Vienna conurbation. **Land prices** are higher in comparison with site alternatives further east; the **costs for purchasing property** for the terminal are thus that much higher. At 40–45 km, the route is long in comparison, which results in higher planning and land acquisition costs; furthermore, additional **man-made structures** (passing loops, bridges) become necessary. Based on an initial rough cost estimate, **undertaking costs (1,520 mm route, terminal, connection to the existing network)** of **approx. EUR 1,314 million** (based on 2019 prices) are expected.

Measures to the rail transport network become necessary with site alternative 1, This includes **capacity expansion** and **quality assurance measures** in the following areas of the Austrian rail network:

- Eastern Railway
  - Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)
  - Gramatneusiedl West: new construction of flying junction west
  - Gramatneusiedl-Wampersdorf section: double-track expansion in the Gramatneusiedl section to the terminal exit

- Vienna area
  - Kledering node: new 2-track west loop, new 2-track bridge Donaulände Railway, Lanzendorf conversion
  - Wiener Neustadt Central Station: expansion of access and entrance areas
  - Wiener Neustadt Central Station: quality assurance measures
- Western axis
  - double-track expansion of Tullnerfeld-Herzogenburg section

Further measures along the western axis are not induced causally by this undertaking, but could, for example, be necessary earlier or to a different extent and are therefore not fully attributable to this undertaking in terms of their costs. An initial rough cost estimate has shown additional costs of about **EUR 786 million** for the rail network (based on 2019 prices).

Furthermore, that would make road construction measures for eliminating congestion caused by terminal traffic[45] necessary. This includes on the one hand **expanding the capacity** of existing transport nodes. On the other hand, the **need to park** the increased number of trucks in the ASFINAG network is increased. An initial rough cost estimate shows expected additional costs of at least around **EUR 3 million** (based on 2019 prices) for contextual measures for the high-level road transport network.

The contextual measures for the rail and road network thus amount to **approximately EUR 789 million** (based on 2019 prices). The total volume (undertaking costs including contextual measures) amounts to **around EUR 2,103 million** (based on 2019 prices) (cf. Table 29).

The above-mentioned contextual measures in the Austrian rail and road network represent **capacity expansions of the existing network**. As a result, their planning and implementation is possible without any prior modification of the nationwide high-level transport network. The possible need for an environmental impact assessment for the individual contextual measures is dealt with in each **subsequent planning phase**.

[45] The need for additional necessary measures is assumed if the level of service worsens from E to F.

ST-1 costs [million EUR], based on 2019 prices	
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	EUR 1,314 milion
Contextual measures rail overall (measures in addition to already envisaged measures)	EUR 786 million
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)	
Gramatneusiedl West: New construction of flying junction west	
Gramatneusiedl-Wampersdorf section: double-track expansion in the Gramatneusiedl section to the terminal exit	
Kledering junction: new double-track west loop, new double-track bridge Donaulände Railway, Lanzendorf conversion	
Wiener Neustadt Central Station: expansion of access and entrance areas	
Wiener Neustadt Central Station: quality assurance measures	
Western axis double-track expansion of Tullnerfeld-Herzogenburg section	
Contextual measures road overall (measures in addition to already envisaged measures)	EUR 3 million
Truck parking	
Total costs	**EUR 2,103 million**

Table 29: Summary of site alternative 1 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

ST-1 – S1: Protecting human well-being

Site alternative 1 is located outside the aircraft noise zone of Vienna Airport and away from areas that are affected by traffic noise. Depending on the specific location, the area may be **close to settlement areas** (Reisenberg, Mitterndorf a.d. Fischa, Gramatneusiedl, Götzendorf) and recreational areas (Fischa, Reisenberg). Depending on the location and orientation of the terminal, **distances** of at least 600 m to the nearest settlement areas, but in most cases considerably more than one kilometre, are possible.

Most of the goods are transloaded onto the 1,435 mm gauge network and then distributed to the railway network via the Eastern Railway or the Gramatneusiedl-Wampersdorf line. The goods are distributed over the road network via the B60 and subsequently via the A3 Southeastern Motorway in the west and the A4 Eastern Motorway in the north. In the towns situated on this axis along the B60 (e.g. Ebreichsdorf, Unterwaltersdorf, Reisenberg, Götzendorf, Margarethen am Moos and Enzersdorf), **mobility-related noise emissions** from truck traffic could lead to additional local pollution. Due to the expected establishment of a logistics centre in the area of the site alternative, a local increase in **commuter traffic** by car in the minor state road network can also be expected.

The at least 40 km long section in the 1,520 mm gauge network required to connect the site alternative to the national road network leads through several municipalities and thus could be a potential source of **noise pollution** for the towns and the leisure and recreation areas close to them. If existing infrastructure

west of Bruck an der Leitha (Eastern Railway, Gramatneusiedl-Wampersdorf line) is bundled with it, the local population can expect additional pollution in these areas. In principle, the route can run north or south of Bruck an der Leitha. This area is characterised by dynamic settlement development, which is why conflicts with regard to noise pollution are a possibility. The disturbance potential in this area varies depending on routing. It is possible to be close to individual towns east of Bruck an der Leitha.

In connection with the **air pollution** that is caused by mobility – due to the terminal's location away from the motorway – truck traffic and employee traffic in the minor road network or state road network, which partly includes through roads, would make for the greatest potential for disturbance. Considerable negative effects from the railway line with regard to air pollutants are not to be expected.

Site alternative 1 lies outside the 100-year-flood discharge areas and is not exposed to **natural hazards** such as rockfall, landslides or damage caused by surface runoff, etc. due to its being located on a mostly level surface, which is required by the terminal prerequisites. The site is within earthquake hazard class VII, in which damage to buildings could occur in the event of an earthquake.

Due to the terminal's location away from the motorway and the resulting truck traffic and employee traffic in the minor road network or state road network, which sometimes includes through roads, there is a statistically higher **risk of accidents**. The railway line does not pose an increased traffic safety risk.

ST-1 – S2: Cultural identity preservation

There are no cultural assets of regional or trans-regional importance in and around the site alternative. The possible impairment of cultural assets depends on routing. The possible impairment of small monuments is not covered by the SP-V and will be addressed in the following planning steps.

The **settlements** in the immediate vicinity of site alternative 1 (Reisendorf, Mitterndorf a. d. Fischa, Schranawand, Gramatneusiedl and Götzendorf) are all **rural in nature** and have extensive single-family house neighbourhoods and no large commercial areas. The research centre Seibersdorf is located south of site alternative 1. Residential homes, agricultural use (in some areas wine-growing) and recreational use (riding stables, hiking trails, etc.) are prevalent throughout the area. A terminal would be **atypical of the area and an infrastructure inappropriate in scale**. It would overshadow the regional character, which has structures that are used on a small scale and no existing high-level infrastructure. The railway line required to connect the terminal does not represent a significant impairment of the cultural identity of the investigation area as the area of concern is already strongly characterised by both linear infrastructure and isolated infrastructure.

ST-1 – S3: Securing existing use of the space

The characteristic Reisenberg with its vineyards on the northern slope and the adjacent open fields north and south of Reisenberg provide a **recreational area** for the local population. The possible proximity of

the terminal to settlement areas and recreational areas (Fischa, Reisenberg) represents a potential impairment. A railway line to the east of Bruck an der Leitha could potentially be used to separate settlement-related recreational areas from the settlement areas.

In the area of site alternative 1, no **high-level infrastructure** or other material assets would be destroyed, moved or impaired in their functionality by the construction. The railway line may come into contact with wind power stations.

Effects of Site Alternative 1 Summary

The area of site alternative 1 is characterised by agricultural and recreational use. With the exception of climate protection and air pollution control, this alternative **tends to have a negative effect on ecological conditions**. Due to the fact that the Mitterndorfer depression water protection zone is located in this site alternative, the potential negative effect of a terminal on **water resources** is particularly severe. Compared to other alternatives, the route is long, which tends to increase the risk of **habitat and landscape degradation**.

The proposed network modification is beneficial to **Austria as a business location**, regardless of the exact location of the terminal. Moreover, a contribution is made to **shifting freight traffic** to rail and creating a modern, efficient transport service. **Synergy effects** with existing regional potentials do not arise with site alternative 1; a terminal in this area would harm the potentials for **recreational use**. Existing **agricultural use** will be disturbed or destroyed by the terminal.

When it comes to the goals with regard to protecting human well-being, site alternative 1 is unfavourable. The terminal will increase local truck traffic and commuter traffic, resulting in higher **noise and air pollution concentration**. The **risk of accidents** is also expected to increase. The terminal is a major impairment due to the existing land use and the spatial and landscape conditions.

Environment								Economy									Society						
EN1			EN2			EN3		EC1			EC2			EC3			S1			S2		S3	
a	b	c	a	b	c	a	b	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
+	--	-	-	-	(-)	-	o	+	+	+	-	+	-	(+)	+	(-)	-	-	-	o	--	-	(-)

Table 30: Target achievement level of site alternative 1 (own preparation)

9.2.3.2 Alternative ST-2

Site alternative 2 provides for a terminal location in the northwestern part of the investigation area (cf. Chapter 8.1.2.2, Figure 63). The likely significant effects are described below with reference to the target system (see Chapter 5.3.1).

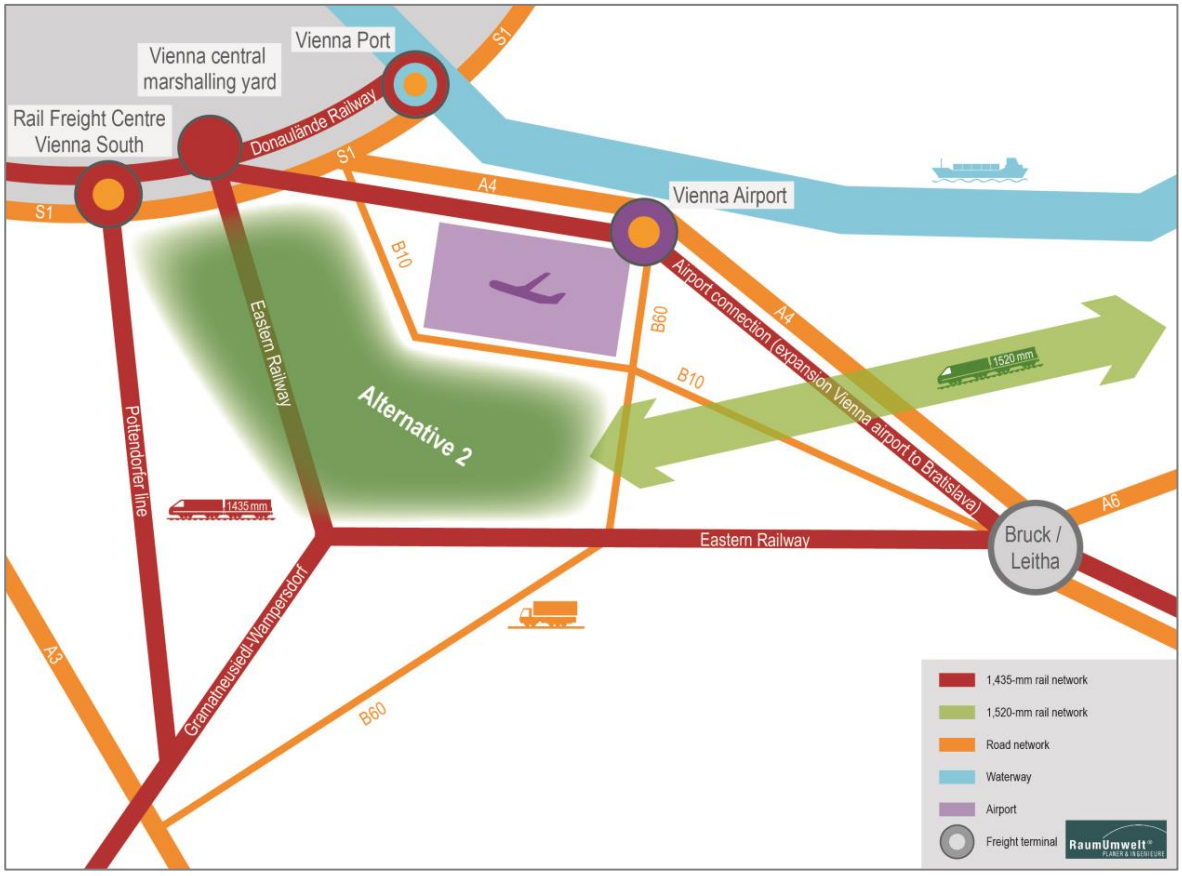


Figure 63: Functional location of site alternative 2 (own illustration)

ST-2 – EN1: Protection and sustainable use of resources

In terms of **air pollution control and climate protection**, freight transport by rail is an environmentally friendly mode of transport compared to freight transport by other modes of transport; with regards to this, the different site alternatives do not differ. Site alternative 2, like all other site alternatives, lies within the **redevelopment area** of the Vienna environs, with driving bans in place for trucks of all weight classes having a EURO 2 emissions standard and worse.

Site alternative 2 is located outside of water protection zones but potentially within the **water management priority area** to secure the drinking water supply in the area of Zwölfaxing and Schwechat. There are no large-scale water protection areas in this area. The railway line crosses the Fischa regardless and the **Mitterndorfer** depression **water protection zone** and a water management priority area. In addition,

the railway line also comes up to the 100-year-flood discharge area of the Fischa. Crossing the Leitha is not absolutely necessary.

The entire Rauchenwarth Plain is covered with **high-quality farmland** with deep-reaching, moderately dry black soil, which would be strained by a terminal location regardless. The single-track railway line, which is longer for this site alternative, also leads to soil use and soil sealing, the qualitative effects of which will depend on routing. In the majority of the investigation area, high-quality farmland with chernozems is available throughout the area, which means that a high level of use is to be expected from the route.

ST-2 – EN2: Protection of biological diversity

There are no European protected areas or other nature conservation areas in site alternative 2. Regardless of routing, the railway line crosses the **Alps-Carpathians Corridor**, which is an established wildlife migration path. In any case, the route crosses the European protected area Feuchte Ebene – Leithaauen in the area of the Fischa. Crossing this European protected area along the Leitha is – depending on routing – not absolutely necessary.

The terminal will put strain on agricultural land as well as on the wind protection belts, which serve as a habitat for certain **animal and plant species**. A loss of habitats is therefore to be expected. A single-track railway line with a length of about 40 to 45 km is expected to have a relatively great impact on animals, plants and their habitats because of fragmentation and land use. However, the exact routing is not covered by the SP-V and will only be determined in later planning phases.

ST-2 – EN3: Natural heritage conservation

Site alternative 2 is located in an open, undeveloped area with predominantly agricultural use and loosely-knit land-use structures. Structural elements, such as the **characteristic wind protection belts**, are fragmented by a terminal. In particular, the northern area of site alternative 2 is already heavily burdened by existing large-scale infrastructure that dominates the landscape, such as Vienna Airport or OMV in Mannswörth. Linear infrastructure (S1 Vienna Outer Ring Expressway, B10 Budapester Straße, B9 Pressburger Straße, B15 Mannersdorfer Straße, Eastern Railway) surrounds the area. Because the space is already overly shaped by existing **large-scale infrastructure**, the negative effects of the terminal on the landscape are smaller in comparison.

To the east of Bruck an der Leitha, the landscape is **again fragmented** by the railway line. To the west of Bruck an der Leitha an optical disturbance can be reduced by bundling existing high-level infrastructure. A crossing of the Fischa is necessary; parts of the landscape worth preserving are potentially affected, depending on routing. Parts of the landscape that are worth preserving might have to be crossed along lesser watercourses in the Leitha inlet.

In the area of site alternative 1, there are only a few **semi-natural elements**; rather, the area is mostly a cultural landscape characterised by grassland and grain production. Due to the at least 40-km-long section in the 1,520 mm gauge network that is required to connect the terminal, more or less semi-natural structural elements may have to be used; crossing the Fischa is, depending on routing, not necessary.

ST-2 – EC1: Strengthening Austria as a business location

Regardless of the exact location, the proposed network modification will contribute to **strengthening Austria's competitiveness** (cf. Chapter 9.2.2.1). There are **several established logistics centres** in the vicinity of this site alternative: with the Freight Centre Vienna South, Wien Zvbf (Vienna marshalling yard), the Port of Vienna and Vienna Airport, the area has a collection of **multimodal terminals** in a comparatively small space. This proximity offers **high synergy potential** with existing logistics-related business and industrial locations; synergy effects with locations in Himberg are also potentially high. Synergies with the Kledering marshalling yard can also possibly be achieved but cannot be assumed from the outset due to the fact that the terminal's location has not yet been defined in more detail. The **Vienna Airport Region**, consisting of Vienna Airport and its surrounding municipalities, aims to holistically develop the region as a business and residential location (cf. Chapter 4.2.4). A terminal within this region and further logistics-related companies expected to open establishments can contribute to this goal or create synergy effects. Site alternative 2 is spatially delimited by the S1 and the B10 in the road network and the Eastern Railway (i.e. the Pottendorf line). In addition, the Danube waterway with the **Port of Vienna** and **Vienna Airport** are close by. This provides a **direct link** to the high-level transport network and, in contrast to the other site alternatives, to all **four modes of transport**. Further distribution of goods to Vienna as an important market is best done by this site alternative than by all the other site alternatives; it can also handle distribution to other markets well. Compared to other site alternatives, this location **highly contributes to increasing competitiveness**. The relatively large area of the site alternative and the associated high potential for **other relevant companies settling** in the area as well as the high quality of the location also contribute to strengthening Austria as a business location.

The proposed network modification would lead to increasing **GDP** and **value creation**. Site alternative 2 is located in an **established logistics cluster**. A terminal at this location can serve as a **catalyst** for its further development regardless of its specific location. Due to the geographical proximity to the Vienna conurbation and the **availability of qualified workers**, this site alternative has the greatest potential for high value-added industries moving into the region.

In any case, the proposed network modification is expected to lead to **job creation**. The proximity to the conurbation and the **relatively good accessibility** ensure that the newly created labour market centres can be reached easily. The potential for creating more and better qualified jobs is the highest in comparison due to the spatial and structural conditions of site alternative 2.

ST-2 – EC2: Promoting and protecting the regional economy

Especially in the western part, the area of site alternative 2 is characterised by extensive **agricultural structures**. That is why a terminal at this location requires a small number of individual areas. Furthermore, the terminal has **no relation whatsoever to the existing economic systems**. The distance from the national border to site alternative 1 is long compared to other site alternatives (40–45 km), which means that there is a higher risk of **destruction or disruption** of agricultural land and wind turbines or wind power suitability zones.

Regardless of the exact terminal location, the implementation of the proposed network modification will **create jobs** and promote the **settlement of further businesses**, thereby creating new regional economic potential. An economic boost will be given to the existing business and industrial areas intensively using land; they will be more easily reached and accessible and will thus see an increased **competitive advantage**. Site alternative 2 is already **shaped by logistics companies**, thereby offering great potential for innovation and growth. For these companies and the Vienna Airport Region, the proposed network modification, the terminal and the associated establishment of further companies can serve as a **catalyst**.

In any case, the proposed network modification contributes to the exploitation and promotion of regional potential: site alternative 2 is already a **logistics-related business location** today. Existing medium-sized and large companies can certainly benefit from the proposed network modification or from the terminal. The railway line itself is comparatively long (40–45 km) and could potentially lead to more **conflicts with existing tourism and small-scale farming systems**, especially east of Bruck an der Leitha (in comparison to site alternatives 4 and 5).

ST-2 – EC3: Efficient use of public funds

Site alternative 2 is located directly on the **TEN-T-Baltic-Adriatic Corridor, Orient/East-Med Corridor** and **Rhine-Danube Corridor** and is close to the **TEN-T hub of Vienna**. By redirecting traffic flows to the railways and redistributing them to the TEN-T core network, existing capacities in Austria will be better utilised along the west and south axis.

The proposed network modification contributes to the **modal shift of freight transport** to rail and thus to achieving transport policy objectives at the national and international level. Although the proposed network modification is not part of the TEV-V core network, it nevertheless contributes to introducing the 1,520 mm gauge network to the main node of Vienna. On the whole, this will create a **modern and efficient link** between these networks.

Site alternative 2 is located close to the Vienna conurbation. **Land prices** are higher in comparison with site alternatives further east; the costs for purchasing property for the terminal are thus that much higher. At 45–50 km, the route is long in comparison, which results in higher planning and land acquisition costs; furthermore, additional **man-made structures** (passing loops, bridges) become necessary. Based on an

initial rough cost estimate, **undertaking costs (1,520 mm route, terminal, connection to the existing network)** of **approx. EUR 1,560 million** (based on 2019 prices) are expected.

Measures to the rail transport network become necessary with site alternative 2. This includes **capacity expansion** and **quality assurance measures** in the following areas of the Austrian rail network:

- Eastern Railway
  - Gramatneusiedl West: new construction of flying junction west
- Vienna area
  - Kledering node: new 2-track west loop, new 2-track bridge Donaulände Railway, Lanzendorf conversion
- Wiener Neustadt area
  - Wiener Neustadt Central Station: expansion of access and entrance areas
  - Wiener Neustadt Central Station: quality assurance measures
- Western axis
  - double-track expansion of Tullnerfeld-Herzogenburg section

Further measures along the western axis are not induced causally by this undertaking, but could, for example, be necessary earlier or to a different extent and are therefore not fully attributable to this undertaking in terms of their costs. An initial rough cost estimate has shown additional costs of about **EUR 448 million** for the rail network (based on 2019 prices).

Furthermore, site alternative 2 would make road construction measures for eliminating congestion caused by terminal traffic[46] necessary. This includes **expanding the capacity** of existing transport nodes in the following areas of the Austrian road network.

- S1 Schwechat junction
  - Additional lane between interchange Schwechat south and interchange Schwechat east
  - 2-lane ramp guidance on the Schwechat lane
  - Widening ramp
  - New green bridge construction

In addition, the **need to park** the increased number of trucks in the ASFINAG network is growing. An initial rough cost estimate shows expected additional costs of at least some **EUR 9 million** (based on 2019 prices) for contextual measures for the high-level road transport network. Additional measures that are necessary for site alternative 2 are difficult to quantify due to already existing pollution or difficult to

[46] The need for additional measures is assumed if the level of service worsens from E to F.

associate solely with the implementation of this undertaking and would have to be seen in the overall context of the road network south of Vienna. These possible measures additionally increase the total costs of the contextual measures to an undefined extent.

The contextual measures for the rail and road network thus amount to **approximately EUR 457 million** (based on 2019 prices). The total volume (undertaking costs including contextual measures) amounts to **around EUR 2,017 million** (based on 2019 prices) (cf. Table 31).

The above-mentioned contextual measures in the Austrian rail and road network represent **capacity expansions of the existing network**. As a result, their planning and implementation is possible without any prior modification of the nationwide high-level transport network. The possible need for an environmental impact assessment for the individual contextual measures is dealt with in each **subsequent planning phase**.

ST-2 costs [million EUR], based on 2019 prices	
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	EUR 1,560 million
Contextual measures rail overall (measures in addition to already envisaged measures)	EUR 448 million
Gramatneusiedl West: New construction of flying junction west	
Kledering junction: new double-track west loop, new double-track bridge Donaulände Railway, Lanzendorf conversion	
Wiener Neustadt Central Station: expansion of access and entrance areas	
Wiener Neustadt Central Station: quality assurance measures	
Western axis double-track expansion of Tullnerfeld-Herzogenburg section	
Contextual measures road overall (measures in addition to already envisaged measures)	EUR 9 million
S1 Schwechat south interchange: Additional lane between interchange Schwechat south and interchange Schwechat east	
S1 Schwechat south interchange: 2-lane ramp guidance on the Schwechat lane	
S1 Schwechat south interchange: Widening ramp	
S1 Schwechat south interchange: New green bridge construction	
Truck parking	
Total costs	**EUR 2,017 million**

Table 31: Summary of site alternative 2 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

ST-2 – S1: Protecting human well-being

Site alternative 2 is located within the **aircraft noise zone** of Vienna Airport and is superimposed by areas that are affected by traffic noise in the peripheral areas bordering linear transport infrastructure. Depending on the specific location, the area may be **close to settlement areas** (Zwölfaxing, Ebergassing,

Wienerherberg, Rauchenwarth). The settlement areas of Schwechat and Himberg are separated from the potential terminal location by existing linear infrastructure (S1 Vienna Outer Ring Expressway and B15 Mannersdorfer Strasse). Depending on the location and orientation of the terminal, distances of at least 600 m to the nearest settlement areas are possible, but in most cases considerably more.

Most of the goods are transloaded onto the 1,435 mm gauge network and then distributed to the railway network via the Eastern Railway. The distribution of the goods over the road network depends on the location of the terminal; the S1 is the nearest high-level road network component. With the terminal and the expected establishment of additional logistics companies, a local increase in truck traffic and commuter traffic can also be expected. This will also lead to a local increase in the **noise and air pollution caused by mobility**. A superimposition with the existing aircraft noise zone is possible, with the additional noise pollution that is caused by the route and the terminal being comparatively low.

The at least 40-km-long section in the 1,520 mm gauge network required to connect the site alternative to the national road network leads through several municipalities and thus could be a potential source of **noise pollution** for the towns and the leisure and recreation areas close to them. If existing infrastructure west of Bruck an der Leitha (Eastern Railway, Gramatneusiedl-Wampersdorf line) is bundled with it, the local population can expect additional pollution in these areas. In principle, the route can run north or south of Bruck an der Leitha. This area is characterised by dynamic settlement development, which is why conflicts with regard to noise pollution are a possibility. The disturbance potential in this area varies depending on routing. It is possible to be close to individual towns east of Bruck an der Leitha.

Site alternative 2 lies outside the 100-year-flood discharge areas and is not exposed to **natural hazards** such as rockfall, landslides or damage caused by surface runoff, etc. due to its being located on a mostly level surface, which is required by the terminal prerequisites. The site is within earthquake hazard class VII, in which damage to buildings could occur in the event of an earthquake. The railway line runs over the Fischa and thus definitely through 100-year flood areas. Depending on the route, it is not necessary to cross the Leitha.

Due to the terminal's location away from the motorway and the resulting truck traffic and employee traffic in the minor road network or state road network, which sometimes includes through roads, there is a statistically higher **risk of accidents**. The railway line does not pose an increased traffic safety risk.

ST-2 – S2: Cultural identity preservation

There are no cultural assets of regional or trans-regional importance in and around the site alternative. The possible impairment of cultural assets depends on routing. The possible impairment of small monuments is not covered by the SP-V and will be addressed in the following planning steps.

Site alternative 2 is located in the urban area surrounding Vienna in a region that is already heavily dominated by technology with various commercial areas, the OMV refinery and the airport. For this reason, the terminal is integrated into the regional character of the area and, in comparison to the other site alternatives, would not be a disturbance of relevance with regard to cultural identity. Moreover, the railway line required to connect the terminal does not represent a significant impairment of the cultural identity of the investigation area as the area of concern is already strongly characterised by both linear infrastructure and isolated infrastructure.

ST-2 – S3: Securing existing use of the space

The area of site alternative 2 is an open area with a local recreational function. A terminal would restrict these local recreational areas. A railway line to the east of Bruck an der Leitha could potentially be used to separate settlement-related recreational areas from the settlement areas. Crossing the Fischa also has a negative effect on the river's function as a recreational area.

The area of site alternative 2 has power lines, which a terminal could come right up against depending on the exact location. Depending on the exact routing, wind power stations are either touched or destroyed by the railway line.

Effects of Site Alternative 2 Summary

The area of site alternative 2 is characterised by extensive farmland and technical infrastructure. With the exception of climate protection and air pollution control, this alternative **tends to have a negative effect on ecological conditions**. Compared to other alternatives, the route is long, which tends to increase the risk of **habitat and landscape degradation**.

The proposed network modification is beneficial to **Austria as a business location**, regardless of the exact location of the terminal. Moreover, a contribution is made to **shifting freight traffic** to rail and creating a modern, efficient transport service. Compared to the other site alternatives, site alternative 2 is the one closest to Vienna and thus in the immediate vicinity of existing logistics businesses. In addition, this site is characterised by the proximity of several multimodal terminals and relatively good connections to all four modes of transport. Economic synergy potentials are particularly high as a result.

When it comes to the goals with regard to protecting human well-being, site alternative 2 is slightly unfavourable. The terminal will increase local truck traffic and commuter traffic, resulting in higher **noise and air pollution concentration**. The **risk of accidents** is also expected to increase. The regional character is only affected a little in comparison due to existing land use and the proximity to the Greater Vienna area.

Environment								Economy									Society						
EN1			EN2			EN3		EC1			EC2			EC3			S1			S2		S3	
a	b	c	a	b	c	a	b	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
+	-	-	-	-	-	-	o	++	++	++	-	++	+	+	+	(-)	-	(-)	-	o	o	-	(-)

Table 32: Target achievement level of site alternative 2 (own preparation)

9.2.3.3 Alternative ST-3

Site alternative 3 provides for a terminal location in the southwestern part of the investigation area (cf. Chapter 8.1.2.3, Figure 64). The likely significant effects are described below with reference to the target system (see Chapter 5.3.1).

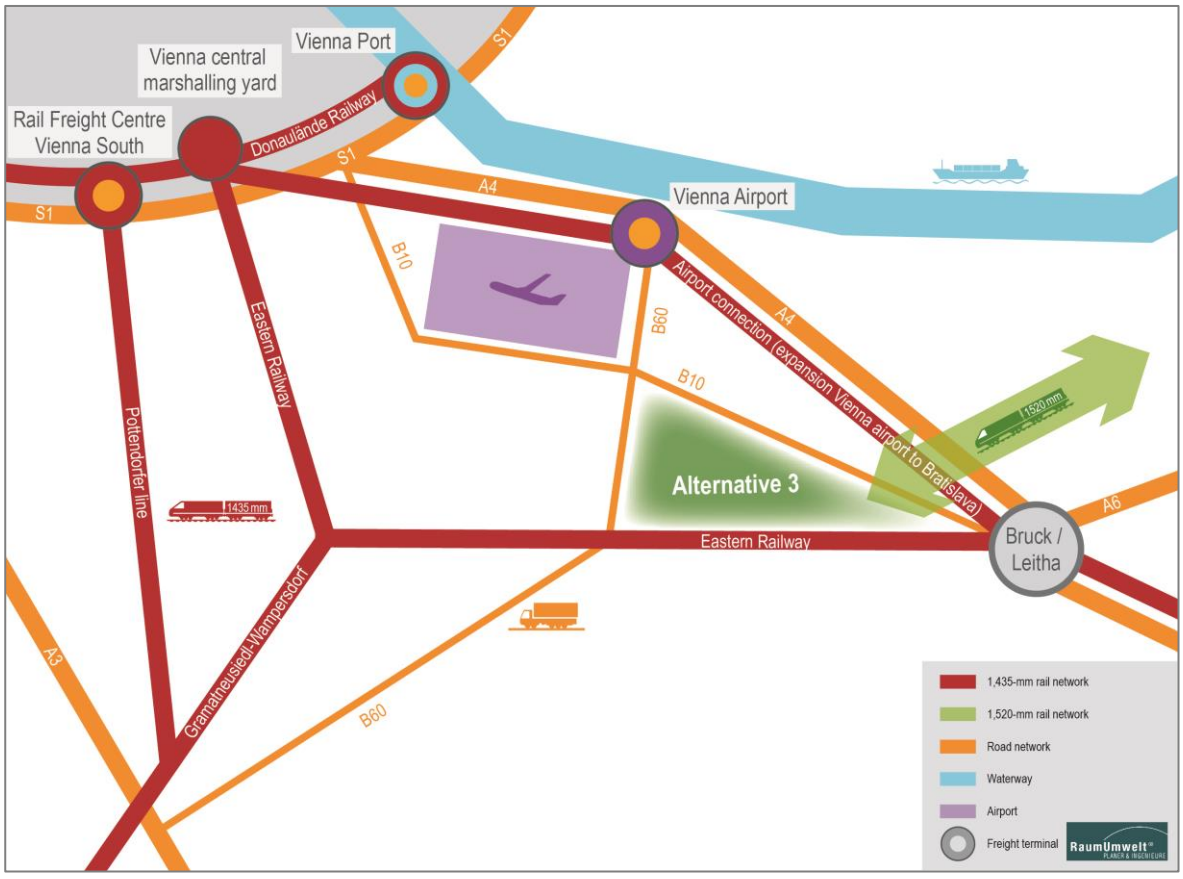


Figure 64: Functional location of site alternative 3 (own illustration)

ST-3 – EN1: Protection and sustainable use of resources

In terms of **air pollution control and climate protection**, freight transport by rail is an environmentally friendly mode of transport compared to freight transport by other modes of transport; with regards to this, the different site alternatives do not differ. Site alternative 3, like all other site alternatives, lies within the **redevelopment area** of the Vienna environs, with driving bans in place for trucks of all weight classes having a EURO 2 emissions standard and worse.

There are no bodies of water, water protection zones or areas relevant to water management in site alternative 3. Crossing the Leitha with the railway line is not necessary. Site alternative 3 therefore has a **neutral effect** with regard to the goal of **water resource protection**.

The entire area of site alternative 3 contains **high-quality farmland** with deep-reaching black soil, which the terminal would put a strain on. The railway line itself also causes strain on the soil and soil sealing. To the east of Bruck an der Leitha are some high-quality arable soils which could be strained depending on routing.

ST-3 – EN2: Protection of biological diversity

The **Alps-Carpathians Corridor** runs in a north-south direction directly through the area of site alternative 3, which is why it is highly likely that the terminal is at least partially located within the Alps-Carpathians Corridor, crosswise to it. Accordingly, site alternative 3 conflicts with the goal of habitat connectivity. Crossing the Leitha, which is an important habitat, with the railway line is not absolutely necessary, depending on the exact routing.

The **Natura 2000 wild fauna and flora and natural habitat region** Feuchte Ebene – Leithaauen is located north of Margarethen am Moos in the area of site alternative 3. Impairments of each protection and conservation goal cannot be ruled out. The terminal will put strain on agricultural land as well as on the wind protection belts, which serve as a habitat for certain **animal and plant species**. Habitat loss or disturbance is therefore to be expected. The railway line itself is approx. 30–35 km long; compared to site alternatives 4 and 5, it is expected to have a relatively great impact on animals, plants and their habitats because of fragmentation and land use. Crossing the Leitha, which is an important habitat, with the railway line is not absolutely necessary, depending on the exact routing.

ST-3 – EN3: Natural heritage conservation

The area of site alternative 3 is already heavily influenced by technical infrastructure (high-voltage line, sub-station, wind turbines). A terminal at this location would therefore only additionally disturb the landscape to a small degree. In the east are small-scale landscape parts worth preserving along minor watercourses in the Leitha inlet, which may have to be crossed by the railway line. East of Bruck an der Leitha, the landscape is fragmented again; the extent depends on the exact routing and whether it is bundled with existing linear infrastructure. Depending on routing, it is not necessary to cross the Fischa and thus to cross parts of the landscape that are worth preserving.

In the area of site alternative 3, there are only a few **semi-natural elements**, which means that the terminal itself has a neutral effect on the subgoal of preserving semi-natural areas and structures. The approximately 30–35 km long railway line east of Bruck an der Leitha can put a strain on semi-natural structural elements; depending on routing, it is not necessary to cross the Fischa.

ST-3 – EC1: Strengthening Austria as a business location

Site alternative 3 contributes to **Austria's competitiveness** regardless of the exact terminal location (cf. Chapter 9.2.2.1). However, this effect may be smaller than for other site alternatives, as this is not an established logistics location. However, it cannot be ruled out that other business industries will move into Bruck an der Leitha. Spatially, the site alternative is delimited by the Eastern Railway in the south and by the B10 and B60. As a result, the high-level road network (A and S roads) cannot be directly reached and **the high-level rail network is directly accessible**. Existing logistics service providers at the Vienna node are a middle distance away in comparison, and the Eastern Railway provides good access to businesses industries in neighbouring countries. Due to its small size and existing technical infrastructure, the site alternative is very limited in terms of space; **growth potential** with regard to the establishment of further logistics-related companies is therefore limited.

The proposed network modification contributes to **GDP growth** in Austria, by giving regional economic boosts and increasing **value creation**. Due to the relative **location disadvantages**, however, it can be expected that this site alternative will have a lower contribution in this regard than other site alternatives. Due to the proximity to Vienna and the **availability of qualified workers**, there is potential for high value-added industries moving into the region; but only to a minor extent, however, due to the spatial conditions.

In any case, the proposed network modification is expected to lead to **job creation**. The proximity to Vienna and the relatively good accessibility ensure that the newly created workplace centres can be reached easily.

ST-3 – EC2: Promoting and protecting the regional economy

The area of site alternative 3 is characterised by **technical infrastructure** and **large agricultural areas**. A terminal at this location would demand a lot from these agricultural areas, but due to the structure, the amount would be lower compared to other alternatives. The existing **wind power stations** are potentially affected or destroyed. The terminal therefore has no relation to the existing local economic systems. The distance to site alternative 3 is long compared to the other site alternatives 4 and 5 (30–35 km), which means that there is a risk of destruction or disruption of agricultural land and wind turbines or wind power suitability zones east of Bruck an der Leitha.

Regardless of the exact terminal location, the implementation of the proposed network modification will **create jobs** and promote the **settlement of further businesses**, thereby creating new regional economic potential. Due to the spatial limitations and the existing economic structures, however, these potentials are severely limited compared to other site alternatives.

The terminal has no interrelationships with **regional potentials**. Compared to site alternatives 4 and 5, the railway line itself is long (30–35 km) and could potentially lead to more conflicts with existing tourism

and small-scale farming systems, especially east of Bruck an der Leitha (in comparison to site alternatives 4 and 5).

ST-3 – EC3: Efficient use of public funds

Site alternative 3 is located directly on the **TEN-T-Baltic-Adriatic Corridor, Orient/East-Med Corridor** and **Rhine-Danube Corridor** and is close to the TEN-T nodes Bruck an der Leitha and Parndorf. By redirecting traffic flows to the railways and redistributing them to the TEN-T core network, existing capacities in Austria will be better utilised.

The proposed network modification contributes to the **modal shift of freight transport** to rail and thus to achieving transport policy objectives at the national and international level. Although the proposed network modification is not part of the TEN-T core network, it nevertheless contributes to introducing the 1,520 mm gauge network to the main node of Vienna. On the whole, this will create a **modern and efficient link** between these networks.

Site alternative 3 is located west of Bruck an der Leitha. The **price of land** tends to rise the closer it is to the Vienna conurbation; accordingly, the costs for purchasing property are expected to be lower compared to site alternatives 1 and 2, and higher compared to site alternatives 4 and 5. At 30–35 km, the route is long compared to site alternatives 4 and 5, which results in higher planning and land acquisition costs; furthermore, additional **man-made structures** (passing loops, bridges) become necessary. Based on an initial rough cost estimate, **undertaking costs (1,520 mm route, terminal, connection to the existing network)** of **approx. EUR 1,165 million** (based on 2019 prices) are expected.

Measures to the rail network become necessary with site alternative 3. This includes **capacity expansion** and **quality assurance measures** in the following areas of the Austrian rail network:

- Eastern Railway
  - Bruck/Leitha Ost-Kledering section: four-track expansion eastern part (Bruck/Leitha-Ost-Gramatneusiedl)[47]
  - Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction

[47] Because the terminal is located between the start and end points of this section of the line, irrespective of its exact location, this measure is only partially necessary, i.e. it becomes necessary from the point at which the terminal exit is integrated into the Eastern Railway heading west to Gramatneusiedl. This partial implementation is also reflected in this measure's lower costs, compared to site alternatives 4 and 5.

- Vienna area
  - Kledering node: new 2-track west loop, new 2-track bridge Donaulände Railway, Lanzendorf conversion
- Wiener Neustadt area
  - Wiener Neustadt Central Station: expansion of access and entrance areas
  - Wiener Neustadt Central Station: quality assurance measures
- Western axis
  - double-track expansion of Tullnerfeld-Herzogenburg section

Further measures along the western axis are not induced causally by this undertaking, but could, for example, be necessary earlier or to a different extent and are therefore not fully attributable to this undertaking in terms of their costs. An initial rough cost estimate has shown additional costs of about **EUR 1,120 million** for the rail network (based on 2019 prices).

Furthermore, site alternative 3 would make road construction measures for eliminating congestion caused by terminal traffic[48] necessary. This includes **expanding the capacity** of existing transport nodes in the following areas of the Austrian road network.

- S1 Schwechat junction
  - Additional lane
  - 2-lane ramp guidance
  - Widening of trough and bridge structure

In addition, the **need to park** the increased number of trucks in the ASFINAG network is growing. An initial rough cost estimate shows expected additional costs of at least around **EUR 20 million** (based on 2019 prices) for contextual measures for the high-level road transport network.

The contextual measures for the rail and road network thus amount to **approximately EUR 1,140 million** (based on 2019 prices). The total volume (undertaking costs including contextual measures) amounts to **around EUR 2,305 million** (based on 2019 prices) (cf. Table 33).

[48] The need for additional measures is assumed if the level of service worsens from E to F.

ST-3 costs [million EUR], based on 2019 prices	
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	EUR 1,165 million
Contextual measures rail overall (measures in addition to already envisaged measures)	EUR 1,120 million
Eastern Railway Bruck/Leitha Ost-Kledering section:[49] four-track expansion eastern part (Bruck/Leitha-Ost-Gramatneusiedl)	
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction	
Kledering junction: new double-track west loop, new double-track bridge Donaulände Railway, Lanzendorf conversion	
Wiener Neustadt Central Station: expansion of access and entrance areas	
Wiener Neustadt Central Station: quality assurance measures	
Western axis double-track expansion of Tullnerfeld-Herzogenburg section	
Contextual measures road overall (measures in addition to already envisaged measures)	EUR 20 million
S1 Schwechat junction: [50] Additional lane	
S1 Schwechat junction:[51] 2-lane ramp guidance	
S1 Schwechat junction:[52] Widening of trough and bridge structure	
Truck parking	
Total costs	**EUR 2,305 million**

Table 33: Summary of site alternative 3 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

The above-mentioned contextual measures in the Austrian rail and road network represent **capacity expansions of the existing network**. As a result, their planning and implementation is possible without any prior modification of the nationwide high-level transport network. The possible need for an environmental impact assessment for the individual contextual measures is dealt with in each **subsequent planning phase**.

ST-3 – S1: Protecting human well-being

The region in and around site alternative 3 is partially located within the aircraft noise zone of Vienna Airport. Several **settlement areas** are located nearby (Margarethen am Moos, Gallbrunn, Stixneusiedl, Trautmannsdorf an der Leitha, Sarasdorf). Due to the comparatively small spatial extent of the site, the

[49] The costs of this measure differ for ST-3 compared to other alternatives on account of the expected location of the terminal and its integration along the Bruck/Leitha-Ost-Gramatneusiedl section. The assumption is that half of the capital costs are required for expanding the entire route.

[50] The costs of this measure differ for ST-3 compared to other alternatives on This is due to the comparatively lower additional strain placed on the road network and the consequently lower capital cost requirements.

[51] The costs of this measure differ for ST-3 compared to other alternatives on This is due to the comparatively lower additional strain placed on the road network and the consequently lower capital cost requirements.

[52] The costs of this measure differ for ST-3 compared to other alternatives on This is due to the comparatively lower additional strain placed on the road network and the consequently lower capital cost requirements.

terminal is expected to be located close to the settlement areas and to cause **noise pollution** as a consequence. The additional truck and commuter traffic is also expected to lead to increased noise pollution in the state road network. The impairments caused by the railway line depend on the actual route; a proximity to settlement areas and thus increased noise pollution cannot be ruled out. The potential for disturbance at Bruck and Bruckneudorf also depends on routing.

Due to its location away from the high-level road network, **truck and commuter traffic** arising from the terminal would be routed to the next junction point in the minor road network or in the state road network, which can include through roads. This leads to increased air pollution for residential areas and leisure and recreation areas. Considerable negative effects from the railway line with regard to air pollutants are not to be expected.

Site alternative 3 lies outside the 100-year-flood discharge areas and is not exposed to **natural hazards** such as rockfall, landslides or damage caused by surface runoff, etc. due to its being located on a mostly level surface, which is required by the terminal prerequisites. The site is within earthquake hazard class VII, in which damage to buildings could occur in the event of an earthquake. Due to the terminal’s location away from the motorway and the resulting truck traffic and employee traffic in the minor road network or state road network, which sometimes includes through roads, there is a statistically higher **risk of accidents**. The railway line does not pose an increased traffic safety risk. Depending on the route, it is not absolutely necessary to cross the Leitha, because that would potentially increase the risk.

ST-3 – S2: Cultural identity preservation

There are no cultural assets of regional or trans-regional importance in and around the site alternative. The possible impairment of cultural assets depends on routing; yet no significant negative impact is expected.

The **settlements** in the immediate vicinity of site alternative 3 are all small, **compact linear villages** with a village-like centre and extensive single-family house neighbourhoods and isolated agricultural halls on the outskirts, but without any larger commercial areas. The area is mainly used for residential and agricultural purposes and for technical infrastructure. A terminal’s atypical regional scale would disturb the regional character of the partially small-scale land use structures. In contrast to other site alternatives, however, the negative impact is much smaller due to the large number and density of existing technical infrastructure. The railway line required to connect the terminal does not represent a significant impairment of the cultural identity of the investigation area as the area of concern is already strongly characterised by both linear infrastructure and isolated infrastructure.

ST-3 – S3: Securing existing use of the space

Site alternative 3 has the greatest local importance as a recreational area, whereby the recreational areas of the adjacent settlement areas extend either to the north or south of the site alternative (Arbesthaler Hills in the north and Leithaauen in the south); therefore, no significant negative effects from the terminal can be assumed at this point. The railway line itself can be used to separate local recreational areas from settlement areas, depending on the specific routing.

Site alternative 2 is already overly shaped by technical infrastructure. The terminal could conflict with the existing sub-station, 380 and 220 kV lines, wind farms or wind farm suitability zones as well as state roads is very likely. Depending on the exact routing, wind power stations are either touched or destroyed by the railway line.

Effects of Site Alternative 3 Summary

Site alternative 3 is mainly used for agriculture and is also strongly shaped by technical infrastructure. With the exception of climate protection and air pollution control, this alternative **tends to have a negative effect on ecological conditions**. Due to the fact that the Alps-Carpathians Corridor runs directly through the area, a terminal would have a tremendously negative effect on habitat connectivity.

The proposed network modification is beneficial to **Austria as a business location**, regardless of the exact location of the terminal. Moreover, a contribution is made to **shifting freight traffic** to rail and creating a modern, efficient transport service. **Synergy effects** with existing regional potentials do not arise with site alternative 3; due to the overly technically shaped site, it would have only a small negative effect on regional potentials – apart from its demands on agricultural land.

When it comes to the goals with regard to protecting human well-being, site alternative 3 is unfavourable. The terminal will increase local truck traffic and commuter traffic, resulting in higher **noise and air pollution concentration**. The **risk of accidents** is also expected to increase. Due to the comparatively high density of technical infrastructure, a strong negative impact on tangible assets is to be expected.

Environment								Economy									Society						
EN1			EN2			EN3		EC1			EC2			EC3			S1			S2		S3	
a	b	c	a	b	c	a	b	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
+	o	-	--	(-)	(-)	-	o	+	+	+	-	+	(-)	(+)	+	-	-	-	-	o	-	-	--

Table 34: Target achievement level of site alternative 3 (own preparation)

9.2.3.4 Alternative ST-4

Site alternative 4 provides for a terminal location in the southwestern part of the investigation area (cf. Chapter 8.1.2.4, Figure 65). The likely significant effects are described below with reference to the target system (see Chapter 5.3.1).

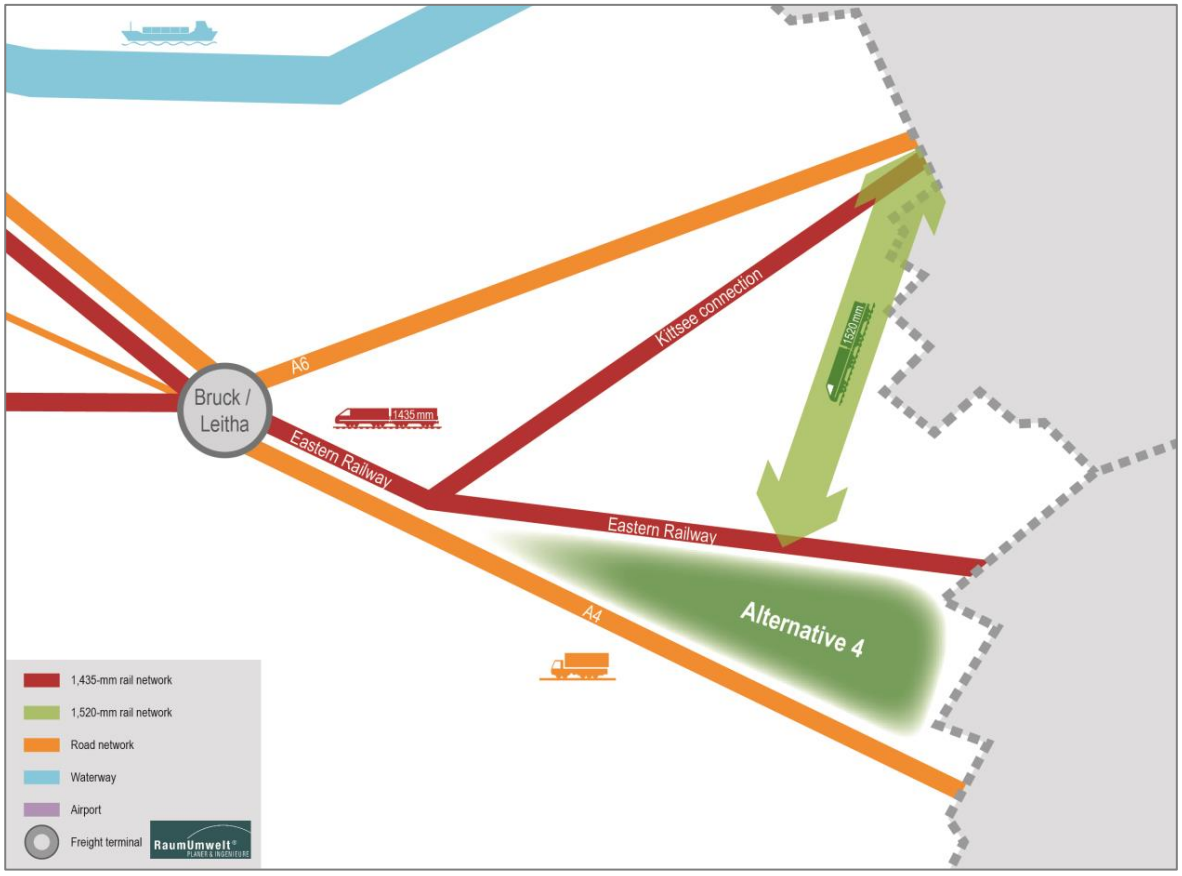


Figure 65: Functional location of site alternative 4 (own illustration)

ST-4 – EN1: Protection and sustainable use of resources

In terms of **air pollution control and climate protection**, freight transport by rail is an environmentally friendly mode of transport compared to freight transport by other modes of transport; with regards to this, the different site alternatives do not differ. Site alternative 4, like all other site alternatives, lies within the **redevelopment area** of the Vienna environs, with driving bans in place for trucks of all weight classes having a EURO 2 emissions standard and worse.

There are no bodies of water, water protection zones or areas relevant to water management in site alternative 4. It is necessary to **cross the Leitha** with the railway line and to thus come up close to the **100-year-flood discharge areas** of the Leitha.

There is **no high-quality farmland** between Parndorf and Friedrichshof. Individual, isolated areas with high-quality soil for farming lie between Friedrichshof and Nickelsdorf. The terminal site is potentially

close to mining areas east of Parndorf and Friedrichshof as well as south of wine-growing regions near Zurndorf; however, no direct encroachment is expected. The railway line is short compared to other site alternatives, whereby **demand on the soil and soil sealing** can be minimised; however, the route could potentially lead through largely high-quality farmland.

ST-4 – EN2: Protection of biological diversity

Large areas of site alternative 4 are overlapped by the **Natura 2000** bird sanctuary Parndorf Plain – Heideboden. The Natura 2000 wild fauna and flora and natural habitat area Oak Woods and Pastureland of Zurndorf is located to the south of Zurndorf. Furthermore, there are no nature conservation areas in and around the site alternative. The railway line for making the terminal accessible is comparatively short, but inevitably leads to the Leitha having to be crossed, which, however, is not designated as a Natura 2000 region on the Burgenland side. The railway line potentially crosses the Natura 2000 bird sanctuary Parndorf Plain – Heideboden, which is extensive east and south of Pama.

The terminal will put strain on agricultural land as well as on the wind protection belt, which serves as a habitat for certain **animal and plant species**. A loss of habitats is therefore to be expected. A single-track railway line with a length of about 15 to 20 km is expected to have a relatively small impact on animals, plants and their habitats because of fragmentation and land use. Crossing the Leitha is definitely necessary. The Leitha is not legally protected on the Burgenland side and the riparian zone is almost completely gone. Exact routing is not covered by the SP-V and will only be determined in later planning phases.

ST-4 – EN3: Natural heritage conservation

Site alternative 4 is located in an open, **agrarian landscape**, dominated by grain production and with predominantly large-scale land use structures. South of Zurndorf is an area with small-scale vineyards and orchards. The landscape is characterised by wind farms, which are located both in site alternative 4 and in its surrounding area. Linear infrastructure (A4 Eastern Motorway, B10 Budapester Straße, Eastern Railway) also acts as a type of prior burden. In this area, however, the terminal would denote a dominant landscape feature inappropriate in scale. The single-track railway line will further fragment the area east of Bruck an der Leitha.

Besides the Natura 2000 wild fauna and flora and natural habitat area **Oak Woods and Pastureland of Zurndorf**, there are no semi-natural areas near site alternative 4. The Leitha would have to be crossed with a railway line, whereby the semi-natural areas near Gattendorf and west of Gattendorf do not necessarily have to be crossed, depending on routing.

ST-4 – EC1: Strengthening Austria as a business location

Site alternative 4 contributes to **Austria's competitiveness** regardless of the exact terminal location (cf. Chapter 9.2.2.1). However, this effect may be smaller than for other site alternatives, as this is not an

established logistics location. However, it cannot be ruled out that other business industries will move into the area. Spatially, site alternative 4 is delimited by the Eastern Railway in the north and the A4 in the south, which provides a direct **connection to the high-level rail and road network**. Nevertheless, the location is removed from established logistics sites, with **existing logistics service providers** in the Vienna hub relatively far away in comparison. However, there is good access to business industries in neighbouring countries. Although this site alternative has a large spatial extent compared to other alternatives, further business industries are only expected to move into the area to a limited extent given the circumstances: existing technical infrastructure such as wind parks and high-voltage lines limit **growth potential**, as does the large Natura 2000 region.

The proposed network modification contributes to **GDP growth** in Austria, by giving regional economic boosts and increasing **value creation**. Due to the relative location disadvantages, however, it can be expected that this site alternative will have a lower contribution in this regard than other site alternatives. There is potential for **high value-added industries moving into the region**; due to the spatial conditions and the distance to Vienna as an established logistics location, however, only to a minor extent.

In any case, the proposed network modification is expected to lead to **job creation**. Due to its location close to the border and the easier accessibility because of it, the location may be more attractive for the workforce from Slovakia and Hungary than for domestic workers. In any case, this site alternative will create jobs in a relatively underdeveloped region with few employment opportunities.

ST-4 – EC2: Promoting and protecting the regional economy

Site alternative 4 is characterised by **small-scale agricultural farming systems**, **mining areas**, **wind power stations** and a **high-voltage line**. That is why a terminal at this location would require a large amount of agricultural land. The wind power stations and mining areas are potentially affected or destroyed. The terminal therefore has no relation to the existing local economic systems. The distance to site alternative 4 is short compared to site alternatives 1, 2 and 3 (15–20 km); for this reason, this alternative is expected to disturb or destroy relatively little agricultural land and wind power stations or wind power suitability zones.

Regardless of the exact terminal location, the implementation of the proposed network modification will **create jobs** and promote the **settlement of further businesses**, thereby creating new regional economic potential. Due to the distance to the Vienna logistics cluster and the comparatively poor accessibility as well as the existing regional structures, however, the possibility of creating new potentials for the economy is limited. Widespread Natura 2000 regions also have a strong restrictive effect on this subgoal.

A terminal at site alternative 4 conflicts with existing use of the region. Existing potentials such as in **tourism** and **landscape-related recreation** arising from the region's nature and countryside also conflict with the terminal. The railway line potentially passes through tourism suitability zones, but is short (15–20 km)

at the same time, compared to site alternatives 1, 2 and 3; as a result, the line is slightly unfavourable for reaching the subgoal.

ST-4 – EC3: Efficient use of public funds

Site alternative 4 is located directly on the **TEN-T Orient/East-Med Corridor** and **Rhine-Danube Corridor** and is close to the Austria-Hungary border. By redirecting traffic flows to the railways and redistributing them to the TEN-T core network, existing capacities in Austria will be better utilised.

The proposed network modification contributes to the **modal shift of freight transport** to rail and thus to achieving transport policy objectives at the national and international level. Although the proposed network modification is not part of the TEN-T core network, it nevertheless contributes to introducing the 1,520 mm gauge network to the main node of Vienna. On the whole, this will create a **modern and efficient link** between these networks.

Site alternative 4 is located close to the Austria-Hungary border. The **price of land** tends to be higher in the west i.e. with increasing proximity to Vienna, while the costs for purchasing property in this site alternative are expected to be low in comparison. Compared to site alternatives 1, 2 and 3, the route is short in terms of its length (15–20 km), with the need for additional **man-made structures** anticipated (bridges). Based on an initial rough cost estimate, **undertaking costs (1,520 mm route, terminal, connection to the existing network)** of **approx. EUR 1,014 million** (based on 2019 prices) are expected.

Measures to the rail transport network become necessary with site alternative 4, This includes **capacity expansion** and **quality assurance measures** in the following areas of the Austrian rail network:

- Eastern Railway
  - Bruck/Leitha Ost-Kledering section: four-track expansion eastern part (Bruck/Leitha-Ost-Gramatneusiedl)
  - Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction
- Vienna area
  - Kledering node: new 2-track west loop, new 2-track bridge Donaulände Railway, Lanzendorf conversion

- Wiener Neustadt area
  - Wiener Neustadt Central Station: expansion of access and entrance areas
  - Wiener Neustadt Central Station: quality assurance measures
- Western axis
  - double-track expansion of Tullnerfeld-Herzogenburg section

Further measures along the western axis are not induced causally by this undertaking, but could, for example, be necessary earlier or to a different extent and are therefore not fully attributable to this undertaking in terms of their costs. An initial rough cost estimate has shown additional costs of about **EUR 1,408 million** for the rail network (based on 2019 prices).

Furthermore, site alternative 4 would make road construction measures for eliminating congestion caused by terminal traffic[53] necessary. This includes **expanding the capacity** of existing transport nodes in the following areas of the Austrian road network.

- S1 Schwechat junction
  - Additional lane
  - 2-lane ramp guidance
  - Widening of trough and bridge structure

In addition, the **need to park** the increased number of trucks in the ASFINAG network is growing. An initial rough cost estimate shows expected additional costs of at least around **EUR 23 million** (based on 2019 prices) for contextual measures for the high-level road transport network. Additional measures that are necessary for site alternative 4 are difficult to quantify due to already existing pollution or difficult to associate solely with the implementation of this undertaking and would have to be seen in the overall context of the road network south of Vienna. These possible measures additionally increase the total costs of the contextual measures to an undefined extent.

The contextual measures for the rail and road network thus amount to **approximately EUR 1,431 million** (based on 2019 prices). The total volume (undertaking costs including contextual measures) amounts to **around EUR 2,446 million** (based on 2019 prices) (cf. Table 35).

The above-mentioned contextual measures in the Austrian rail and road network represent **capacity expansions of the existing network**. As a result, their planning and implementation is possible without any prior modification of the nationwide high-level transport network. The possible need for an environmental impact assessment for the individual contextual measures is dealt with in each **subsequent planning phase**.

[53] The need for additional measures is assumed if the level of service worsens from E to F.

ST-4 costs [million EUR], based on 2019 prices	
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	EUR 1,014 million
Contextual measures rail overall (measures in addition to already envisaged measures)	EUR 1,408 million
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion eastern part (Bruck/Leitha-Ost-Gramatneusiedl)	
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction	
Kledering junction: new double-track west loop, new double-track bridge Donaulände Railway, Lanzendorf conversion	
Wiener Neustadt Central Station: expansion of access and entrance areas	
Wiener Neustadt Central Station: quality assurance measures	
Western axis double-track expansion of Tullnerfeld-Herzogenburg section	
Contextual measures road overall (measures in addition to already envisaged measures)	EUR 23 million
S1 Schwechat junction: Additional lane	
S1 Schwechat junction: 2-lane ramp guidance	
S1 Schwechat junction: Widening of trough and bridge structure	
Truck parking	
Total costs	**EUR 2,446 million**

Table 35: Summary of site alternative 4 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

ST-4 – S1: Protecting human well-being

Several settlement areas (Parndorf, Zurndorf, Nickelsdorf, Friedrichshof) are located in or near site alternative 4. Depending on the location and orientation of the terminal, **distances** of at least 600 m to the nearest settlement areas, but in most cases considerably more than one kilometre, are possible. The additional truck and commuter traffic is also expected to lead to increased **noise pollution** in the state road network. The impairments caused by the railway line depend on the actual route; a proximity to settlement areas and thus increased noise pollution cannot be ruled out.

Due to its location away from the high-level road network, **truck and commuter traffic** arising from the terminal would be routed to the next junction point in the minor road network or in the state road network, which can include through roads. This leads to increased air pollution for residential areas and leisure and recreation areas. Considerable negative effects from the railway line with regard to air pollutants are not to be expected.

Site alternative 4 lies outside the 100-year-flood discharge areas and is not exposed to **natural hazards** such as rockfall, landslides or damage caused by surface runoff, etc. due to its being located on a mostly level surface, which is required by the terminal prerequisites. The railway line itself will highly likely run through a **100-year-flood floodplain** and will in any case cross the Leitha. The terminal site is within earthquake hazard class VII, in which damage to buildings could occur in the event of an earthquake. The terminal itself is relatively close to the high-level rail and road network, which means that relatively short access routes are necessary. For this reason, there is a comparatively low **risk of accidents**. The railway line also does not pose an increased traffic safety risk.

ST-4 – S2: Cultural identity preservation

There are no cultural assets of regional or trans-regional importance in and around the site alternative. The possible impairment of cultural assets depends on routing. The possible impairment of small monuments is not covered by the SP-V and will be addressed in the following planning steps.

The comparatively few **settlements** in the immediate vicinity of site alternative 4 are all **compact linear villages with a rural character** with extensive single-family house neighbourhoods on the outskirts. With the exception of the Parndorf Designer Outlet, there are no large commercial areas in the vicinity of the site alternative. The area is mainly used for residential, agricultural and various recreational purposes. A terminal would be **atypical of the area and an infrastructure inappropriate in scale**. It would overshadow the regional character, which has structures that are used on a small scale and no existing high-level infrastructure. The railway line required to connect the terminal does not represent a significant impairment of the cultural identity of the investigation area as the area of concern is already strongly characterised by both linear infrastructure and isolated infrastructure.

ST-4 – S3: Securing existing use of the space

Site alternative 4 is used for recreational purposes; it can be assumed that a terminal at this location will impair or destroy the existing leisure infrastructure, regardless of its exact location. The railway line itself can be used to separate local recreational areas from settlement areas, depending on the specific routing. In addition, the route is expected to pass through a tourism suitability zone.

Site alternative 4 has a sub-station, 380 kV and 220 kV lines and wind farms/wind farm suitability zones; it is likely that a conflict with these infrastructures will arise. Negative effects relevant to material assets because of the railway line are not expected.

Effects of Site Alternative 4 Summary

The area of site alternative 4 is characterised by agricultural and recreational use. With the exception of climate protection and air pollution control, this alternative **tends to have a negative effect on ecological conditions**. Due to the existing large-scale Natura 2000 protected areas, the effects on animals, in-

cluding their habitats, are very negative. Compared to other alternatives, the route is short, which tends to decrease the risk of **habitat and landscape degradation**.

The proposed network modification is beneficial to **Austria as a business location**, regardless of the exact location of the terminal. Moreover, a contribution is made to **shifting freight traffic** to rail and creating a modern, efficient transport service. **Synergy effects** with existing regional potentials do not arise with site alternative 4; a terminal in this area would harm the potentials for **recreational use**. Existing **agricultural use** will be disturbed or destroyed by the terminal.

When it comes to the goals with regard to protecting human well-being, site alternative 4 is unfavourable. The terminal will increase local truck traffic and commuter traffic, resulting in higher **noise and air pollution concentration**. The **risk of accidents** is also expected to increase. The terminal is a major impairment due to the existing land use and the spatial and landscape conditions.

Environment								**Economy**									**Society**						
EN1			EN2			EN3		EC1			EC2			EC3			S1			S2		S3	
a	b	c	a	b	c	a	b	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
+	**-**	**(-)**	**-**	**--**	**-**	**(-)**	**(-)**	**+**	**(+)**	**+**	**-**	**(+)**	**-**	**(+)**	**(+)**	**-**	**o**	**(-)**	**-**	**o**	**--**	**(-)**	**-**

Table 36: Target achievement level of site alternative 4 (own preparation)

9.2.3.5 Alternative ST-5

Site alternative 5 provides for a terminal location in the northeastern region of the investigation area (cf. Chapter 8.1.2.5, Figure 66). The likely significant effects are described below with reference to the target system (see Chapter 5.3.1).

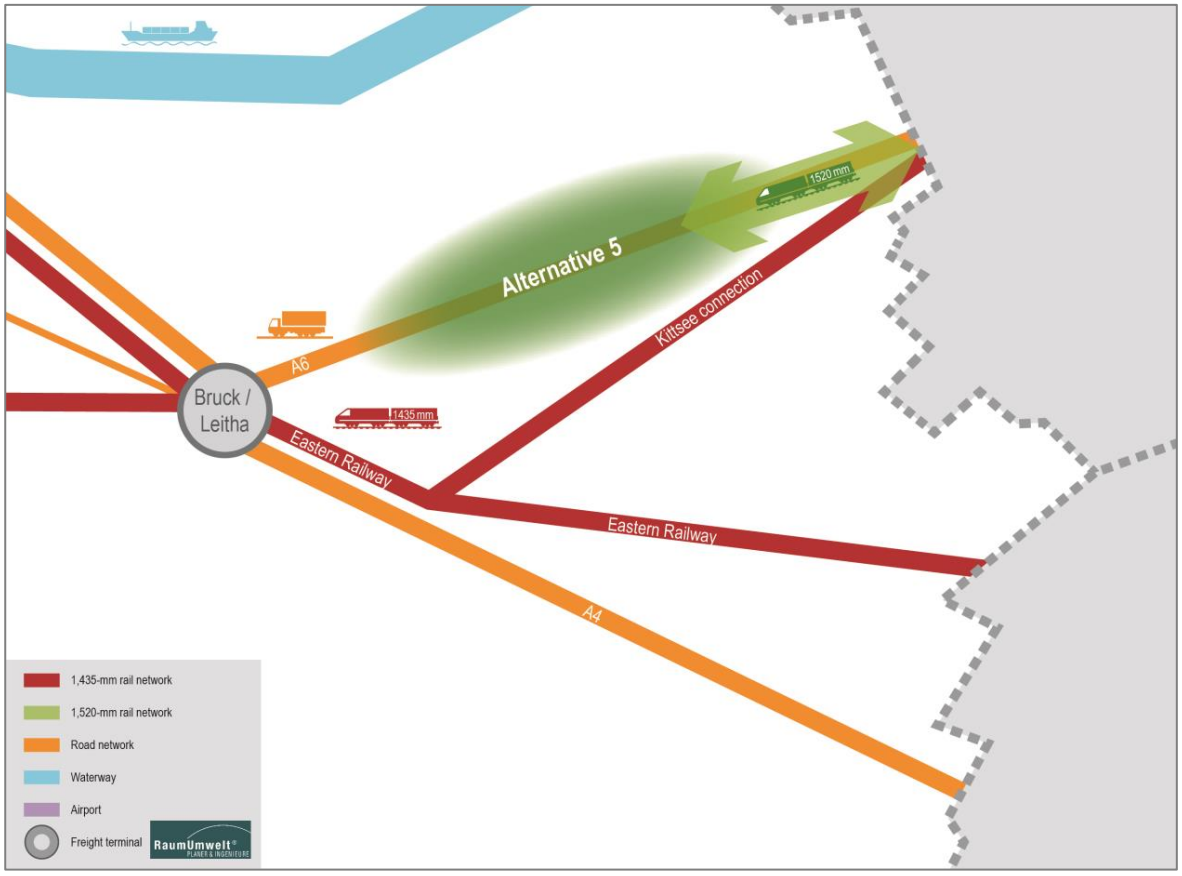


Figure 66: Functional location of site alternative 5 (own illustration)

ST-5 – EN1: Protection and sustainable use of resources

In terms of **air pollution control and climate protection**, freight transport by rail is an environmentally friendly mode of transport compared to freight transport by other modes of transport; with regards to this, the different site alternatives do not differ. Site alternative 5, like all other site alternatives, lies within the **redevelopment area** of the Vienna environs, with driving bans in place for trucks of all weight classes having a EURO 2 emissions standard and worse.

There are no water protection zones or areas relevant to water management in site alternative 5. Depending on the location of the terminal, it is possible that it will come up right to 100-year-flood discharge areas of the Leitha. If the terminal is connected to the high-level railway network, it is probable that the **Leitha will be crossed** or that it will come up to **100-year-flood discharge areas**.

Depending on the location of the terminal, an encroachment on **high-quality farmland** can be expected. To the east of the A6 Northeastern Motorway Pama area, there is high-quality farmland with deep-reaching black soil. In the Prellenkirchen area and south of Potzneusiedl, the value of farmland can be classified as medium to low. The railway line is short compared to other site alternatives, whereby **demand on the soil and soil sealing** can be minimised; however, the route could potentially lead through largely high-quality farmland.

ST-5 – EN2: Protection of biological diversity

Site alternative 5 does not affect Natura 2000 sites, forest areas or other areas that are particular important for habitat connectivity. The railway line for accessing the terminal is comparatively short; the **Leitha** has to be crossed to connect the terminal to the high-level rail network. On the Burgenland side, however, the river is not designated as a Natura 2000 area.

The terminal will put strain on agricultural land as well as on the wind protection belt, which serve as a habitat for certain animal and plant species. As a result, a loss of **habitat** is therefore to be expected. A single-track railway line with a length of about 1 to 15 km is expected to have a relatively small impact on animals, plants and their habitats because of fragmentation and land use. It will probably become necessary to cross the Leitha when connecting the terminal to the high-level rail network. However, the exact routing is not covered by the SP-V and will only be determined in later planning phases.

ST-5 – EN3: Natural heritage conservation

Site alternative 5 is located in an open, **agrarian landscape**, dominated by grain production and with predominantly large-scale land use structures. The **Leitha** with its riparian woodlands, isolated smaller forest fragments and wind protection belts give structure to the region. The landscape is characterised by wind farms. **Linear infrastructure** (A6 Northeastern Motorway, B50 Burgenlandstraße, Eastern Railway) has already put a previous burden on the landscape. In this area, however, the terminal would denote a dominant landscape feature inappropriate in scale. Due to the proximity to the border crossing point in Kittsee, the single-track railway line will further fragment the space, albeit slightly.

There are **no semi-natural** areas in site alternative 5, which is largely characterised by grain production. The railway line will probably lead across the Leitha when connecting it to the high-level network; its riparian woodlands give the river an ecological profile.

ST-5 – EC1: Strengthening Austria as a business location

Site alternative 5 contributes to **Austria's competitiveness** regardless of the exact terminal location (cf. Chapter 9.2.2.1). However, this effect may be smaller than for other site alternatives, as this is not an established logistics location. However, it cannot be ruled out that other business industries will move into the area. Site alternative 5 is located directly on the A6; whether the terminal is located north or south of it

is yet to be decided. Towards the south, the terminal is located north of the Kittsee connection. A connection to the high-level road network can thus be made, while direct access to the high-level rail network depends on the specific terminal location. Nevertheless, the location is removed from established logistics sites, with existing logistics service providers at the Vienna hub not directly accessible. The site alternative is also comparatively far away from established transport hubs. There is good access to **sector businesses** in neighbouring countries. Due to the fact that this is not an established logistics location, no synergy effects can be achieved as compared to other site alternatives. Site alternative 5 hardly has any spatial restrictions, which makes it possible for logistics-related companies to locate here. However, this potential is limited due to the spatial distance to existing logistics locations in Austria.

The proposed network modification contributes to GDP growth in Austria, by giving regional economic boosts and increasing value creation. Due to the relative **location disadvantages**, however, it can be expected that this site alternative will have a lower contribution in this regard than other site alternatives. There is potential for high value-added industries moving into the region; due to the spatial conditions and the distance to Vienna as an established logistics location, however, only to a minor extent.

In any case, the proposed network modification is expected to lead to **job creation**. Due to its location close to the border and the easier accessibility because of it, the location may be more attractive for the workforce from Slovakia and Hungary than for domestic workers. In any case, this site alternative will create jobs in a relatively underdeveloped region with few employment opportunities.

ST-5 – EC2: Promoting and protecting the regional economy

Site alternative 5 is characterised by **small-scale agricultural farming systems**, and **wind power stations**. That is why a terminal at this location would require a large amount of agricultural land. The wind power stations and mining areas are potentially affected or destroyed. The terminal therefore has no relation to the existing local economic systems. The distance to site alternative 5 is very short compared to the other site alternatives (1–15 km); for this reason, this alternative is expected to disturb or destroy relatively little agricultural land and wind power stations or wind power suitability zones.

Regardless of the exact terminal location, the implementation of the proposed network modification will **create jobs** and promote the settlement of further businesses, thereby creating new regional economic potential. Due to the distance to the Vienna logistics cluster and the comparatively poor accessibility as well as the existing regional structures, however, the possibility of creating new potentials for the economy is limited.

A terminal at site alternative 5 conflicts with existing uses of the region. Existing potentials such as in **tourism** and **landscape-related recreation** arising from the region’s nature and countryside also conflict with the terminal. The route itself is very short compared to other site alternatives (1–15 km), which is why it is expected to have an influence only to a small extent.

ST-5 – EC3: Efficient use of public funds

Site alternative 5 is located directly on the **TEN-T Rhine-Danube Corridor** and the **Baltic-Adriatic Corridor** and is close to the Austria-Hungary border. By redirecting traffic flows to the railways and redistributing them to the TEN-T core network, existing capacities in Austria will be better utilised.

The proposed network modification contributes to the **modal shift of freight transport** to rail and thus to achieving transport policy objectives at the national and international level. Although the proposed network modification is not part of the TEN-T core network, it nevertheless contributes to introducing the 1,520 mm gauge network to the main node of Vienna. On the whole, this will create a **modern and efficient link** between these networks.

Site alternative 5 is located close to the Austria-Slovakia border. The **price of land** tends to be higher in the west i.e. with increasing proximity to Vienna, while the costs for purchasing property in this site alternative are expected to be low in comparison. Compared to the other site alternatives, this route is very short at 1–15 km. Based on an initial rough cost estimate, **undertaking costs (1,520 mm route, terminal, connection to the existing network)** of **approx. EUR 910 million** (based on 2019 prices) are expected.

Measures for the rail transport network become necessary with site alternative 5. This includes **capacity expansion** and **quality assurance measures** in the following areas of the Austrian rail network:

- Eastern Railway
  - Bruck/Leitha Ost-Kledering section: four-track expansion eastern part (Bruck/Leitha-Ost-Gramatneusiedl)
  - Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop
  - Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction
- Vienna area
  - Kledering node: new double-track west loop, new double-track bridge Donaulände Railway, Lanzendorf conversion
- Wiener Neustadt area
  - Wiener Neustadt Central Station: expansion of access and entrance areas
  - Wiener Neustadt Central Station: quality assurance measures

- Western axis
  - double-track expansion of Tullnerfeld-Herzogenburg section

Further measures along the western axis are not induced causally by this undertaking, but could, for example, be necessary earlier or to a different extent and are therefore not fully attributable to this undertaking in terms of their costs. An initial rough cost estimate has shown additional costs of about **EUR 1,408 million** for the rail network (based on 2019 prices).

Furthermore, site alternative 5 would make road construction measures for eliminating congestion caused by terminal traffic[54] necessary. This includes **expanding the capacity** of existing transport nodes in the following areas of the Austrian road network.

- S1 Schwechat junction
  - Additional lane
  - 2-lane ramp guidance
  - Widening of trough and bridge structure
- A4 Bruckneudorf junction
  - 2-lane ramp guidance
  - Widening trough

In addition, the **need to park** the increased number of trucks in the ASFINAG network is growing. An initial rough cost estimate shows expected additional costs of at least around **EUR 31 million** (based on 2019 prices) for contextual measures for the high-level road transport network. Additional measures that are necessary for site alternative 5 are difficult to quantify due to already existing pollution or difficult to associate solely with the implementation of this undertaking and would have to be seen in the overall context of the road network south of Vienna. These possible measures additionally increase the total costs of the contextual measures to an undefined extent.

The contextual measures for the rail and road network thus amount to **approximately EUR 1,439 million** (based on 2019 prices). The total volume (undertaking costs including contextual measures) amounts to **around EUR 2,348 million** (based on 2019 prices) (cf. Table 37).

[54] The need for additional measures is assumed if the level of service worsens from E to F.

ST-5 costs [million EUR], based on 2019 prices	
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	EUR 910 million
Contextual measures rail overall (measures in addition to already envisaged measures)	EUR 1,408 million
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion eastern part (Bruck/Leitha-Ost-Gramatneusiedl)	
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction	
Kledering junction: new double-track west loop, new double-track bridge Donaulände Railway, Lanzendorf conversion	
Wiener Neustadt Central Station: expansion of access and entrance areas	
Wiener Neustadt Central Station: quality assurance measures	
Western axis double-track expansion of Tullnerfeld-Herzogenburg section	
Contextual measures road overall (measures in addition to already envisaged measures)	EUR 31 million
S1 Schwechat junction: Additional lane	
S1 Schwechat junction: 2-lane ramp guidance	
S1 Schwechat junction: Widening of trough and bridge structure	
A4 Bruckneudorf junction: 2-lane ramp guidance	
A4 Bruckneudorf junction: Widening trough	
Truck parking	
Total costs	**EUR 2,348 million**

Table 37: Summary of site alternative 5 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

The above-mentioned contextual measures in the Austrian rail and road network represent **capacity expansions of the existing network**. As a result, their planning and implementation is possible without any prior modification of the nationwide high-level transport network. The possible need for an environmental impact assessment for the individual contextual measures is dealt with in each **subsequent planning phase**.

ST-5 – S1: Protecting human well-being

Several settlement areas (Potzneusiedl, Deutsch Haslau, Prellenkirchen, Pama, Gattendorf) are located in or near site alternative 5. Depending on the location and orientation of the terminal, **distances** of at least 600 m to the nearest settlement areas, but in most cases considerably more than one kilometre, are possible. Due to the site alternative's location directly on the A6 Motorway, no additional noise and air

pollution of any relevance is to be expected from truck and commuter traffic. And the very short railway line is not expected to have any additional effects.

Site alternative 5 lies outside the 100-year-flood discharge areas and is not exposed to **natural hazards** such as rockfall, landslides or damage caused by surface runoff, etc. due to its being located on a mostly level surface, which is required by the terminal prerequisites. Depending on the route, the comparatively short railway line crosses the Leitha and thus a 100-year-flood area. The terminal site is within earthquake hazard class VII, in which damage to buildings could occur in the event of an earthquake. The terminal itself is relatively close to the A6 Motorway, which means that relatively short access routes are necessary. For this reason, there is a comparatively low **risk of accidents**. The railway line also does not pose an increased traffic safety risk.

ST-5 – S2: Cultural identity preservation

There are no cultural assets of regional or trans-regional importance in and around the site alternative. The possible impairment of cultural assets depends on routing. The possible impairment of small monuments is not covered by the SP-V and will be addressed in the following planning steps.

The comparatively few **settlements** in the immediate vicinity of site alternative 5 are all compact villages built along a street or around a village green with **centres with a rural character** and sometimes extensive single-family house neighbourhoods on the outskirts. Larger commercial areas do not exist. The area is mainly used for residential, agricultural and various recreational purposes and has, in parts, cultural landscapes with small-scale vineyards and orchards. A terminal would be **atypical of the area and an infrastructure inappropriate in scale**. It would overshadow the regional character, which has structures that are used on a small scale and no existing high-level infrastructure. The railway line required to connect the terminal does not represent a significant impairment of the cultural identity of the investigation area; it is very short and located directly by the A6 Motorway.

ST-5 – S3: Securing existing use of the space

Site alternative 5 has bike paths; it can be assumed that a terminal at this location will impair or destroy the existing leisure infrastructure, regardless of its exact location. Any relevant negative effects because of the railway line are not expected due its short distance.

Site alternative 5 has wind farms/wind farm suitability zones; it is likely that a conflict with these infrastructures will arise. Negative effects relevant to material assets because of the railway line are not expected.

Effects of Site Alternative 5 Summary

The area of site alternative 5 is characterised by agricultural and recreational use. With the exception of climate protection and air pollution control, this alternative **tends to have a negative effect on ecological conditions**. Due to how short the railway line is, the negative ecological effects are much lower.

The proposed network modification is beneficial to **Austria as a business location**, regardless of the exact location of the terminal. Moreover, a contribution is made to **shifting freight traffic** to rail and creating a modern, efficient transport service. **Synergy effects** with existing regional potentials do not arise with site alternative 5; a terminal in this area would harm the potentials for **recreational use**. Existing **agricultural use** will be disturbed or destroyed by the terminal.

When it comes to the goals with regard to protecting human well-being, site alternative 5 is unfavourable. The terminal will increase local truck traffic and commuter traffic, resulting in higher **noise and air pollution concentration**. The **risk of accidents** is also expected to increase. The terminal is a major impairment due to the existing land use and the spatial and landscape conditions. The route is comparatively short, which means that its negative effects on society are rather small.

Environment								Economy									Society						
EN1			EN2			EN3		EC1			EC2			EC3			S1			S2		S3	
a	b	c	a	b	c	a	b	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
+	-	-	(-)	-	-	(-)	(-)	(+)	(+)	+	-	(+)	(-)	(+)	(+)	-	o	(-)	o	o	--	(-)	-

Table 38: Target achievement level of site alternative 5 (own preparation)

9.3 INTERRELATIONSHIPS

In any case, ecological, economic and social impacts are expected with regard to the proposal for a network modification. The individual effects may **interact with each other** and thus may in turn have short-term, medium-term, long-term, positive or negative effects. In accordance with the strategic character of the SP-V, only very **general statements** on interrelationships can be made.

The area in which the proposed network modification manifests itself structurally (narrow investigation area) is characterised by certain ecological conditions. Depending on routing and the location of the terminal, the existing protected areas, habitats and farmland are negatively affected to varying degrees. Accordingly, negative interrelationships with already **existing pollution and strains on nature** cannot be ruled out.

In any case, positive economic **secondary effects** from the proposed network modification are expected. An international undertaking of this kind will send a strong economic signal for Austria as a business location and give the country a stronger position in the European economic area. Potential **investments** that do not have a causal connection to the undertaking will be attracted. The proximity to Vienna as a strongly growing market can further strengthen these effects.

This unique undertaking will create **jobs** in the region, which will enable the location to better market itself. This makes the region more attractive to **logistics-related companies** and can stimulate the re-

gional economy. It is assumed that a **logistics centre** will be established – a consideration that is already benchmarked in this Environmental Report as part of the impact assessment. Since, however, planning a logistics centre is the responsibility of the federal states and above all of the municipalities, interrelationships between the network modification with the terminal itself and the far-reaching effects of a logistics centre must be dealt with in each planning process and environmental assessment at state or municipal level.

There is a possibility of further interrelationships with already planned undertakings; more specifically, a transportation corridor is currently being selected for the **airport connection** – a new railway connection for passengers travelling between Vienna Airport and Bruck an der Leitha (as of September 2019). This undertaking improves the connection of Vienna Airport to the east on a regional (districts of Bruck an der Leitha, Neusiedl am See and Eisenstadt surroundings) and trans-regional level (western Hungary, Bratislava area). The **cumulative negative effects** of this undertaking and the proposed network modification in the narrow investigation area include land use, fragmentation and possible superimpositions of noise pollution at a local level. On the other hand, both undertakings increase the accessibility of the region and its overall attractiveness as a business location, with **positive synergy effects** therefore to be expected.

9.4 ASSESSING AND COMPARING THE EFFECTS

9.4.1 ZERO ALTERNATIVE

The **zero alternative** presupposes that the proposed network modification will not be implemented. It is, however, assumed that the 1,520 mm route will be implemented and that a terminal will be built east of Bratislava. This will **not have any direct negative ecological effects** on Austrian national territory. The zero alternative is therefore to be assessed as having a neutral effect vis-à-vis the environmental sustainability dimension (cf. Table 39).

Due to the fact that the majority of goods are redistributed by road in the zero alternative, truck traffic also increases in the Austrian road network. This leads to **additional noise and air pollutants and an increased accident risk** along the routes affected by the zero alternative. This does not have any impact on cultural identity or existing spatial use. The zero alternative is therefore to be assessed as having a tendency to be contrary to the target vis-à-vis the social sustainability dimension (cf. Table 39).

Not implementing the proposed network modification will not lead to **any direct costs** in Austria. However, due to the expected redistribution of goods via the Austrian rail network and above all the road network, **contextual measures** will also become necessary for the zero alternative. At around EUR 197 million, their costs are significantly lower than those of all other site alternatives (cf. Table 40). In addition, overall negative effects are expected for the Austrian economy: establishing a terminal with global significance in the Bratislava area creates jobs and attracts further logistics-related companies. This effect is

lost for Austria in the case of the zero alternative. It is also a possibility that logistics-related companies in eastern Austria could relocate parts of their establishments to the new terminal in the Bratislava area or expand their operations into that area. The zero alternative is therefore to be assessed as having a tendency to be contrary to the target vis-à-vis the economic sustainability dimension (cf. Table 39).

Similarly, the goals of the network modification are not achieved with the zero alternative.

Environment								Economy									Society						
EN1			EN2			EN3		EC1			EC2			EC3			S1			S2		S3	
a	b	c	a	b	c	a	b	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
-	o	o	o	o	o	o	o	-	-	(-)	o	o	o	(-)	(-)	(-)	-	-	-	o	o	o	o

Table 39 Target achievement level of zero alternative (own preparation)

Zero Alternative Costs [million EUR], based on 2019 prices	
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	-
Contextual measures rail overall (measures in addition to already envisaged measures)	EUR 158 million
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop	
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction	
Parndorf railway station: additional track, erect new island platform	
Gattendorf railway station: track extension	
Contextual measures road overall (measures in addition to already envisaged measures)	EUR 39 million
S1 Schwechat junction: Additional lane	
S1 Schwechat junction: 2-lane ramp guidance	
S1 Schwechat junction: Widening of trough and bridge structure	
A4 Bruckneudorf junction: 2-lane ramp guidance	
A4 Bruckneudorf junction: Widening trough	
A1 St. Pölten junction: 2-lane ramp guidance S33	
A1 St. Pölten junction: Widening bridge structure S33	
Truck parking	
Total costs	**EUR 197 million**

Table 40: Summary of zero alternative costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

9.4.2 SITE ALTERNATIVES

Site Alternative 1

In principle, site alternative 1 contributes to **achieving the network modification targets**. The terminal and route are assessed positively with regard to **technical feasibility**.

Due to the natural environment conditions in particular and how the area is currently used, a terminal in this region tends to have negative to strongly negative effects. With regard to the **environmental and social sustainability dimensions**, the site alternative can be assessed as being **mostly contrary to target**.

Positive economic effects are expected. The creation of jobs and the attracting effect the undertaking will have on Austria as a business location are also provided for by site alternative 1. With its proximity to Vienna, this alternative has an advantage over site alternatives 4 and 5. However, a terminal has no relation to existing economic systems, which means that potential synergy effects will fail to come about. With regard to the **economic sustainability dimension**, the site alternative has a **tendency to be in line with the target**.

The **total costs** of site alternative 1 are about **EUR 2.10 billion** in total (based on 2019 prices) (cf. Table 41). With **undertaking costs** (line and freight terminal) of around **EUR 1.31 billion** (based on 2019 prices), the site alternative is more costly in comparison. This is mainly due to the comparatively longer route. The **contextual measures** amount to around **EUR 0.79 billion** (based on 2019 prices) and thus have a lower price point.

Site Alternative 2

In principle, site alternative 2 contributes to **achieving the network modification targets**. The terminal and route are assessed positively with regard to **technical feasibility**.

The area is characterised by agricultural use and technical infrastructure. Compared to other site alternatives, it is characterised by its proximity to several multimodal freight terminals and logistics-related businesses. The proposed network modification has negative effects on the spatial conditions with regard to nature. In comparison to other alternatives, however, these effects are slightly lower due to the space being overly shaped by existing technology. With regard to the **environmental sustainability dimension**, site alternative 2 can be assessed as having a **tendency to be contrary to the target**.

The site alternative tends to have negative effects on how the region is currently used and on the population. This is due to, for example, the locally increasing air pollutants and noise pollution. Compared to site alternatives 1 and 3, however, these negative impacts are not as serious. With regard to the **social sustainability dimension**, site alternative 2 can be assessed as being **partially negative**.

When compared to all other site alternatives, the proposed network modification at site alternative 2 clearly has the most positive economic effects. Synergy effects are expected due to the proximity to Vienna and the proximity to terminals, businesses and manufacturers. This concerns both stimulating the economy in the region and strengthening the effects for Austria as a business location. With regard to the **economic sustainability dimension**, site alternative 2 has a **tendency to be mostly in line with the target**.

The **total costs** of site alternative 2 amount to about **EUR 2.02 billion** (based on 2019 prices) (cf. Table 41). This site alternative is the most costly in comparison. With **undertaking costs** (line and freight terminal) of around **EUR 1.56 billion** (based on 2019 prices), the site alternative is more costly in comparison. This is mainly due to the comparatively longer route and the high prices for land. The **contextual measures** amounting to a total of round **EUR 0.46 billion** (based on 2019 prices) are by far the lowest.

Site Alternative 3

In principle, **site alternative 3** contributes to **achieving the network modification targets**. The terminal and route are assessed positively with regard to **technical feasibility**.

The area is overly shaped by technical infrastructure. The Alps-Carpathians Corridor runs in a north-south direction. A terminal at this point would have a relatively strong negative effect. That is why site alternative 3 is, with regard to the **environmental sustainability dimension**, seen as being **mostly contrary to target**.

The site alternative tends to have negative effects on how the region is currently used and on the population. This is due to, for example, the locally increasing air pollutants and noise pollution. Existing material assets tend to be at risk. That is why site alternative 3 is, with regard to the **social sustainability dimension**, seen as being **mostly contrary to target**.

The proposed network modification is expected to have positive effects on regional and national economics. Compared to site alternatives 4 and 5, they tend to be stronger due to the relative proximity to Vienna. At the same time, they are significantly weaker than for site alternative 2, as no strong synergy effects can be expected with the existing economic structure. With regard to the **economic sustainability dimension**, site alternative 3 can be assessed as being **partially in line with the target**.

The **total costs** of site alternative 3 amount to about **EUR 2.31 billion** (based on 2019 prices) (cf. Table 41). With **undertaking costs** (line and freight terminal) of around **EUR 1.17 billion** (based on 2019 prices), the site alternative has mid-range costs. At around **EUR 1.14 billion** (based on 2019 prices), the costs for the **contextual measures** rank in the middle.

Site Alternative 4

In principle, **site alternative 4** contributes to **achieving the network modification targets**. The terminal and route are assessed positively with regard to **technical feasibility**.

The area is shaped by agricultural use and widespread Natura 2000 regions. A terminal site would tend to have negative effects on this comparatively sensitive semi-natural site. Site alternative 4 is, with regard to the **envirnmental sustainability dimension**, seen as being **mostly contrary to target**.

A terminal in site alternative 4 has negative effects on the cultural identity because a terminal in this rather natural region has a comparatively large negative influence. Due to the comparatively short route and the proximity to the high-level transport network, the negative effects stemming from air and noise pollution are relatively low. With regard to the **social sustainability dimensions**, the site alternative can be assessed as being **partially contrary to target**.

The proposed network modification is expected to have positive effects on regional and national economics. With the area of site alternative 4 being comparatively far away from the economic centre that is Vienna, comparatively smaller positive effects are expected, however. With regard to the **economic sustainability dimension**, site alternative 4 has a **tendency to be positive**.

The **total costs** of site alternative 4 are about **EUR 2.45 billion** in total (based on 2019 prices) (cf. Table 41). With **undertaking costs** (line and freight terminal) of around **EUR 1.01 billion** (based on 2019 prices), the site alternative is more cost effective in comparison. The necessary **contextual measures** amounting to a total of round **EUR 1.43 billion** (based on 2019 prices) are, on the other hand, much costlier in comparison.

Site Alternative 5

In principle, **site alternative 5** contributes to achieving the network modification targets. The terminal and route are assessed positively with regard to **technical feasibility**.

The area is characterised by agricultural use and wind turbines. Site alternative 5 is the alternative closest to the planned border crossing point near Kittsee. Since the route is comparatively short, the negative effects on the natural environment are smaller than with all other site alternatives. The undertaking nevertheless uses ecological resources. Site alternative 5, with regard to the **environmental sustainability dimension**, can be assessed as having a **tendency to be contrary to the target**.

A terminal in the area of site alternative 5 has negative effects on the cultural identity because a terminal in this rather natural region has a comparatively large negative influence. Due to the comparatively short route and the proximity to the high-level transport network, the negative effects stemming from air and noise pollution are relatively low. With regard to the **social sustainability dimensions**, the site alternative can be assessed as being **partially contrary to target**.

The proposed network modification is expected to have positive effects on regional and national economics. With the area of site alternative 5 being comparatively far away from the economic centre that is Vienna, comparatively smaller positive effects are expected, however. With regard to the **economic sustainability dimension**, site alternative 5 has a **tendency to be positive**.

The **total costs** of site alternative 5 are about **EUR 2.35 billion** in total (based on 2019 prices) (cf. Table 41). With **undertaking costs** (line and freight terminal) of around **EUR 0.91 billion** (based on 2019 prices), the site alternative is more cost-effective in comparison. This is mainly due to the comparatively very short route. The necessary **contextual measures** of around **EUR 1.44 billion** (based on 2019 prices) are, on the other hand, much costlier in comparison.

Cost factor [million EUR], based on 2019 prices	ST-1	ST-2	ST-3	ST-4	ST-5
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	1,314	1,560	1,165	1,014	910
Contextual measures rail (Measures in addition to already envisaged measures)	786	448	1,120	1,408	1.408
Contextual measures road (Measures in addition to already envisaged measures)	3	9	20	23	31
Total [million EUR]	**2,103**	**2,017**	**2,305**	**2,446**	**2,348**

Table 41: Overview of total costs for site alternatives 1–5 in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

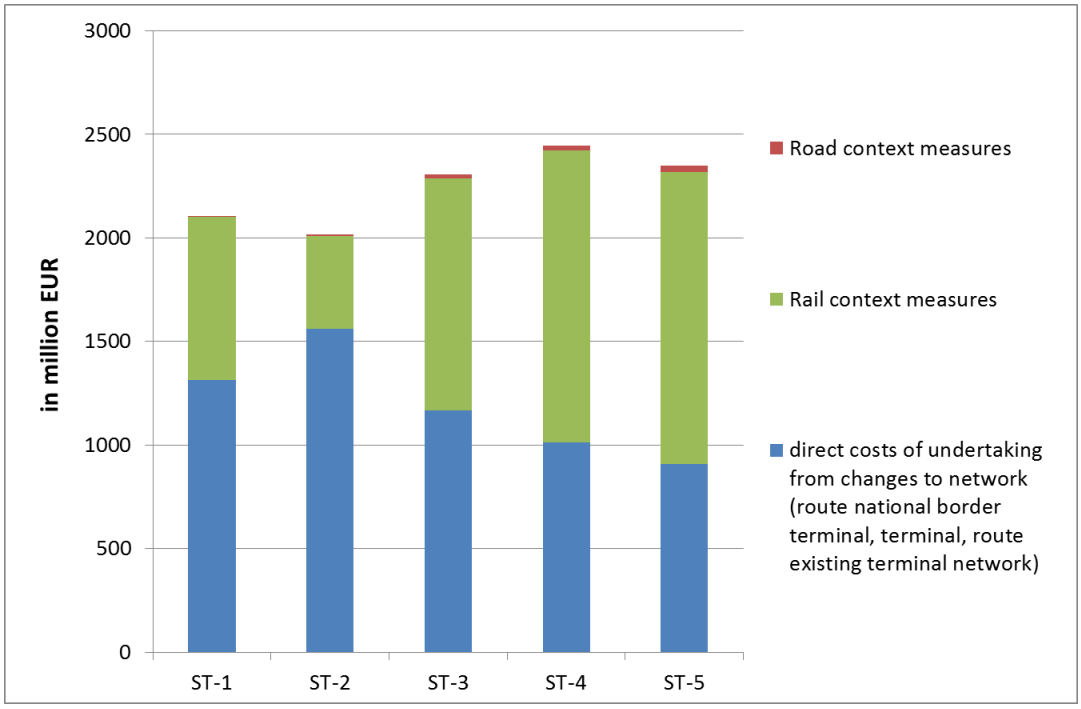


Figure 67: Diagram of total costs for site alternatives 1–5 in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration)

An overview of the respective necessary contextual measures is given in Table 42.

Measures for each alternative [million EUR], based on 2019 prices	**ST-1**	**ST-2**	**ST-3**	**ST-4**	**ST-5**
direct undertaking costs from changes to network (route national border terminal, terminal, route existing terminal network)	1.314	1.560	1.165	1.014	910
Contextual measures rail overall (measures in addition to already envisaged measures)	786	448	1.120	1.408	1.408
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion eastern part (Bruck/Leitha-Ost-Gramatneusiedl)	-	-	x	x	x
Eastern Railway Bruck/Leitha Ost-Kledering section: four-track expansion western part (Gramatneusiedl – Kledering)	x	-	x	x	x
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of a (level) south loop	-	-	x	x	x
Gramatneusiedl loop (connecting the Eastern Railway to the Wampersdorf-Gramatneusiedl line): new construction of flying junction	-	-	x	x	x
Gramatneusiedl West: New construction of flying junction west	x	x	-	-	-
Gramatneusiedl-Wampersdorf section: double-track expansion in the Gramatneusiedl section to the terminal exit	x	-	-	-	-
Kledering junction: new double-track west loop, new double-track bridge Donaulände Railway, Lanzendorf conversion	x	x	x	x	x
Wiener Neustadt Central Station: expansion of access and entrance areas	x	x	x	x	x
Wiener Neustadt Central Station: quality assurance measures	x	x	x	x	x
Western axis: double-track expansion of Tullnerfeld-Herzogenburg section	x	x	x	x	x
Risk markup	x	x	x	x	x
Contextual measures road overall (measures in addition to already envisaged measures)	3	9	20	23	31
S1 Schwechat south interchange: Additional lane between interchange Schwechat south and interchange Schwechat east	-	x	-	-	-
S1 Schwechat south interchange: 2-lane ramp guidance on the Schwechat lane	-	x	-	-	-
S1 Schwechat south interchange: Widening ramp	-	x	-	-	-
S1 Schwechat south interchange: New green bridge construction	-	x	-	-	-
S1 Schwechat junction: Additional lane	-	-	x	x	x
S1 Schwechat junction: 2-lane ramp guidance	-	-	x	x	x
S1 Schwechat junction: Widening of trough and bridge structure	-	-	x	x	x
A4 Bruckneudorf junction: 2-lane ramp guidance	-	-	-	-	x
A4 Bruckneudorf junction: Widening trough	-	-	-	-	x
Truck parking	x	x	x	x	x
Total costs [million EUR]	**2.103**	**2.017**	**2.305**	**2.446**	**2.348**

Table 42: Overview of measures for each alternative, costs in million euros, based on 2019 prices (own illustration)

				ST-1	ST-2	ST-3	ST-4	ST-5
Environment	EN1	Protection and sustainable use of resources	Air pollution control and climate protection	+	+	+	+	+
			Protection of water resources	--	-	o	-	-
			Protection of soil resources	-	-	-	(-)	-
	EN2	Protection of biological diversity	Habitat connectivity	-	-	--	-	(-)
			Protection of animals including their habitats	-	-	(-)	--	-
			Protection of plants including their habitats	(-)	-	(-)	-	-
	EN3	Natural heritage conservation	Preservation of the landscape (cultural landscape)	-	-	-	(-)	(-)
			Preservation of semi-natural areas and structures	o	o	o	(-)	(-)
Economy	EC1	Strengthening Austria as a business location Austria	Increasing competitiveness	+	++	+	+	(+)
			Preserving and increasing prosperity	+	++	+	(+)	(+)
			Strengthening the labour market	+	++	+	+	+
	EC2	Promoting and protecting the regional economy	Preserving and promoting existing economic systems linked to surface area	-	-	-	-	-
			Creating potential for the region	+	++	+	(+)	(+)
			Making use of and promoting regional potentials	-	+	(-)	-	(-)
	EC3	Efficient use of public funds	Developing an efficient and needs-based transport system	(+)	+	(+)	(+)	(+)
			Developing the transport system in line with main transport policy objectives	+	+	+	(+)	(+)
			Optimising total cost	(-)	(-)	-	-	-
Society	S1	Protecting human well-being	Noise pollution protection	-	-	-	o	o
			Air pollution protection	-	(-)	-	(-)	(-)
			Increasing safety	-	-	-	-	o
	S2	Cultural identity preservation	Cultural asset protection	o	o	o	o	o
			Preserving the regional character	--	o	-	--	--
	S3	Securing existing uses of the space Land use	Preserving the space as a recreational space	-	-	-	(-)	(-)
			Protecting material assets	(-)	(-)	--	-	-

Table 43: Assessment of site alternatives 1–5 (own preparation)

10

BASIS FOR THE OVERALL ASSESSMENT OF THE NETWORK MODIFICATION

On the basis of the investigations carried out, ÖBB-Infrastruktur AG recommends building the route “Wien (Zentralverschiebebahnhof mit Terminal 1.435-/1.520-mm-Spurnetz) - Staatsgrenze bei Kittsee” as a high-performance line. Compared with the other alternatives, site alternative 2 – on which this recommendation is based – has the strongest positive effects with the lowest negative impacts on the environment. The high-level character of the recommended network modification is clearly substantiated. In order to reduce negative impacts on the environment, implementation and monitoring measures are proposed.

10 BASIS FOR THE OVERALL ASSESSMENT OF THE NETWORK MODIFICATION

10.1 RATIONALE BEHIND THE HIGH-LEVEL CHARACTER OF THE NETWORK MODIFICATION

Methodology

The **rationale behind the high-level character** of the network modification is explained in accordance with the SP-V guidelines (BMVIT 2018: p. 100 et seq.) at several **levels of consideration**, which are addressed in stages. Each level of consideration contains different criteria and notes (ibid.: p. 102). If the high-level character is successfully substantiated at one level, the subsequent levels no longer need to be addressed.

1st Level of Consideration: Intergovernmental Provisions

This proposed network modification is the logical continuation at the Austrian level of a previous planning process spanning several countries (cf. Chapter 1 and Chapter 3). To date, however, there are **no explicit intergovernmental provisions** that require the Republic of Austria to amend the nationwide high-level transport network and to plan and build appropriate infrastructure measures.

This proposed network modification is also **indirectly related to realising the TEN-T core network and establishing the RFC** (cf. Chapter 6.1) but does not directly help towards their implementation.

It is therefore not possible to comprehensively rationalise the high-level character of the network modification at the 1st level of consideration. Although the network modification helps with **continuing intergovernmental planning on a consistent basis**, there is currently no flexible intergovernmental agreement in place. However, it is **possible** that such an **intergovernmental agreement** will be concluded as a result of the planning preparations that are underway in the Slovak Republic and Austria.

2nd Level of Consideration: Cross-Border Connection to Neighbouring Countries

The extension of the 1,520 mm gauge network from the current end point in Košice in eastern Slovakia to the border crossing point near Kittsee is currently being examined as part of an **environmental impact assessment**, in which the impact the undertaking has on the environment will be analysed and assessed. This assessment is already based on a concrete route, the course of which was already selected in Slovakia as a result of the preliminary studies mentioned. The **screening phase** has already been concluded; in it, a preliminary environmental study (scoping report) (PES) was drawn up.

The modification to the nationwide high-level transport network in Austria is for creating a suitable **connection between the existing nationwide high-level transport network in Austria and this planned**

section of the high-level transport network of Slovakia. This fulfils one of several possible criteria at the 2nd level of consideration according to the SP-V guideline, with which the high-level character of the network modification can be rationalised.

Due to its nature as part of the extension of the 1,520 mm gauge network from the current end point in Košice in eastern Slovakia into the Vienna area, the planned railway in Austria also has a **defined function in efficient freight transport with international connections**. This fulfils a central requirement according to Sec. 1(1) of the High-Performance Lines Act (HIG), according to which the federal government can declare a planned railway to be a high-performance line.

Due to the different track gauge of the planned section of the high-level transport network of Slovakia, the existing nationwide high-level transport network is not suitable for creating the planned connection between the existing nationwide high-level transport network in Austria and this planned section of the high-level transport network of Slovakia. For this reason and due to the **planned railway** being **functionally independent** in Austria up to the planned freight terminal, it would be best to decree the **planned railway to be a new high-performance line** so as to reach the target.

Summary of the Rationale Behind the High-Level Character of the Network Modification

Due to its **connecting function with the planned high-level transport network of Slovakia** and its **special significance for efficient freight transport with international connections** in accordance with Sec. 1(1) HIG, the proposed network modification has a **high-level** character. Moreover, the proposed network modification is the logical continuation at Austrian level of a previous planning process spanning several countries.

From the initiator's point of view, therefore, the **declaration of the planned railway as a high-performance line** appears to be **justified and advisable**. Due to the planned railway being functionally independent up to the planned freight terminal, it would be best to decree the planned railway to be a **new high-performance line** so as to reach the target.

10.2 MEASURES

10.2.1 MEASURES TO PREVENT, REDUCE OR OFFSET LIKELY SIGNIFICANT EFFECTS

The measures to prevent, reduce or offset likely significant adverse effects are largely of a **general nature** on account of a lack of a site-accurate, concrete description of the impacts (cf. Chapter 9.2) and in accordance with the requirements of the SP-V guidelines. They are therefore primarily specifications for the **subsequent planning steps**, which are recommendations for the implementation of railway undertakings that are as compatible with the space as far as possible.

Implementing undertakings for high-performance lines always goes hand in hand with spatial and landscape interferences and their structures. Identifying **spatial points of conflict** early on and considering them in the entire planning process ensures an **increase in implementation compatible with the space**. On the basis of the preceding spatial investigations in the functional investigation area and in the narrow investigation area, the following measures are recommended for the subsequent planning steps for **routing** and **terminal alignment and location**:

- Further planning of the high-performance line should be carried out in such a way that it, where possible, does not come up to, or only comes to the edge of, the identified and mapped zones with high and very high space resistivity. This is to minimise the impact on the affected population and its living environment (including nature and the landscape) as far as possible. Unavoidable impacts must be reduced by taking appropriate **measures**.
- Therefore, in particular the direct use of **settlement areas** should be avoided so as to protect human habitat.
- Negative impacts on **settlement areas**, such as noise, should be mitigated by taking appropriate measures. A sufficient distance to settlement areas and recreation areas should be maintained.
- Existing **technical infrastructure** (high-voltage lines, wind power stations and the like) must be taken into account when laying out the route.
- **Game crossings and migration corridors** for wildlife must be observed. In order to maintain them, it is recommended to plan sufficient wildlife bridges and/or passage structures. This applies in particular to the areas that cross the Alps-Carpathians Corridor.
- The planned infrastructure should be **bundled** with existing line infrastructure in order to prevent additional fragmentation of the **landscape**.
- The function of existing **protected areas** and ecologically high-quality habitats must be guaranteed. If the environmental value is directly impaired, sufficient **compensatory and replacement measures** must be provided.
- If possible, **high-quality farmland** should not be used. Wherever this cannot be avoided, care should be taken to ensure that the route uses the space as economically as possible with few dissections or elevations.
- Special consideration must be given to the Mitterndorfer depression **water protection zone**, which is located in this area; if it is to be affected, expert opinions must be obtained and taken into account to assess the risk to groundwater. Special protective measures must be taken when crossing **bodies of water** (Fischa, Leitha).
- Appropriate measures must be taken to promote the transloading of goods to rail. Fitting **concepts to ensure the highest possible share of rail traffic** for the redistribution of goods should be developed in the course of the subsequent planning steps.

The above-mentioned measures to prevent negative effects concern the route and the terminal. The following measures are additionally recommended **especially for the planning stage of the terminal**:

- The terminal should be **connected** to the existing rail and road network with the **shortest route possible**. The terminal should therefore be located as close to existing high-level transport infrastructures as possible.
- In order to minimise the negative effects of commuter traffic in private motor vehicles, a connection to the **public transportation system** to and from the terminal must be made **attractive**. Possible synergy effects with another logistics centre must be taken advantage of.
- If the terminal is close to the Kledering marshalling yard, **synergies** should be pursued between it and the terminal with regard to the **joint use of infrastructure**. This can **keep land use in check** and **reduce the cost of infrastructure**.

The recommended measures are general in nature; depending on the exact location of the terminal and the route, the **measures must be selected, enhanced and specified**.

10.2.2 MEASURES CONCERNING MONITORING

Railway undertakings for which the proposed network modification provides the framework must be subject to the relevant **approval and substantive procedures** in the subsequent planning phases; that would guarantee that the generated effects continue to be dealt with. The declaration of the line "east of Vienna – national border near Kittsee (line and freight terminal)" as a high-performance line with an accompanying strategic assessment in the transport sector (SP-V) is the first step in a **staged planning process**.

The declaration of the line "east of Vienna – national border near Kittsee (line and freight terminal)" as a high-performance line does **not yet have any information** as to the **actual location** of the route or how it will be implemented in the future. What the presentation of the expected adverse effects says is limited to the task and planning phase. With the level of detail of the planning, the underlying investigations in the subsequent planning phases also increase with each step. The findings from the previous planning phases serve as the **basis for more in-depth/ more spatially specific investigations**.

Once the route has been declared a high-performance line, a **selection procedure** must be carried out for the route or terminal location, in which different routes are designed and examined and then measures formulated for the subsequent undertaking approval procedure. Devising measures concerning monitoring at the very **abstract, long-term level** of the SP-V is difficult; it is normally done within the framework of downstream planning processes and procedures when more concrete and spatially localised plans are available. Due to the distinctive features of the SP-V in general (cf. Chapters 3 and 10.4) and its global dimension, it is also relatively difficult to monitor the results of its effects. In the context of this Environmental Report, reference is made to measures concerning monitoring that are specifically related to the

spatial implementation of the network modification and that become conclusive in downstream planning processes.

The narrower investigation area has a functioning network of **monitoring instruments specific to the environment**. Construction and operation phases of concrete undertakings should therefore be monitored with the aid of these instruments.

Measures concerning monitoring are thus carried out in **close cooperation** with the environmental agencies and other initiators who have monitoring systems. The findings, recommendations for implementation and suggestions for measures in this Environmental Report and the SP-V in general (cf. Chapter 10.2.1) must be taken into account as a **starting point for all subsequent planning steps**.

10.3 RECOMMENDATION FOR THE NETWORK MODIFICATION

Starting Point

The proposed network modification has **several distinctive features**: it is the Austrian section of the extension of the 1,520 mm gauge network from eastern Slovakia to the area east of Vienna. The extended 1,520 mm gauge network is supposed to be connected to the high-level European 1,435 mm gauge network as well as to the high-level road network with a terminal. While concrete planning and approval procedures (environmental impact assessment) are already being carried out in Slovakia, the route in Austria has not yet been determined; only the **border crossing point near Kittsee** is defined as the result of previous feasibility studies and the ongoing procedures in Slovakia. (cf. Chapter 3)

This Environmental Report presents the essentials of this starting point: while the **border crossing point** can be presumed, the **five site alternatives are examined with no predisposition towards any particular outcome** and to identify the **most suitable area** in the high-level network east of Vienna in order to connect the networks as intended. This impartiality to the outcome is also reflected in the wording at the beginning of the network modification proposal “Area East of Vienna – national border near Kittsee (line and freight terminal)“ (cf. Chapter 2).

Recommendation

In the course of the **impact assessment**, **five site alternatives** and one **zero alternative** were examined. Based on the developed target system, the effects and their implications were described, assessed and weighed against each other. On the basis of these results, the following **final recommendation for the modification of the nationwide high-level transport network** is hereby introduced:

The Federal Minister of Transport, Innovation and Technology may submit to the Austrian government a draft ordinance in accordance with Sec. 1(1) of the High-Performance Lines Act (HIG) on declaring the planned railway line

" Wien (Zentralverschiebebahnhof mit Terminal 1.435-/1.520-mm-Spurnetz) - Staatsgrenze bei Kittsee "

as a high-performance line.

This corresponds to examined **site alternative 2**.

Impact Assessment

Site alternative 2 contributes to **achieving the objectives of the proposed network modification** to a great extent. By changing the nationwide high-level transport network, the infrastructural requirements for a high-performing land-based freight transport connection between the European Economic Area on the one hand and Russia, Central and East Asia on the other hand are created as a fast, efficient, secure and environmentally friendly additional service to the intercontinental exchange of goods. In addition, the infrastructural requirements for handling this land-based freight traffic via the Vienna area as an important TEN-T core network node are created.

Other investigated site alternatives also contribute in large part to achieving these targets. However, the **recommended network modification** represents the alternative which, after weighing the relevant aspects, is **most suitable** for connecting the networks in the area east of Vienna. The negative impacts within the environmental sustainability dimension also exceed those of other site alternatives due to the comparatively long length of the route. At the same time, the recommended network modification – unlike other site alternatives – has **no singular, significant negative effects** within the environmental sustainability dimension. At the same time, the recommended network modification has **particularly positive economic effects**. Compared to all other alternatives, the positive contribution to Austria as a business location is the greatest for this site alternative.

Due to the comparatively low negative effects on the social and environmental sustainability dimension, site alternative 5 is the alternative that, behind site alternative 2, is most likely to conform to the developed target system.

High-Level Character of the Proposed Network Modification

The **proposed network modification** is for creating the **best possible connection** between the existing nationwide high-level transport network and the planned section of the high-level transport network of Slovakia. Due to its nature as part of the extension of the 1,520 mm gauge network from the current end point in Košice in eastern Slovakia into the Vienna area, the planned railway in Austria also has a **defined function in efficient freight transport with international connections**.

This fulfils a central **requirement according to Sec. 1(1) of the High-Performance Lines Act (HIG)**, according to which the federal government can declare a planned railway to be a high-performance line.

Moreover, the proposed network modification is the logical continuation at Austrian level of a previous planning process spanning several countries.

Summary

After weighing the results of the impact assessment of the five investigated site alternatives and the zero alternative against each other, the planned railway

> ***"Wien (Zentralverschiebebahnhof mit Terminal 1.435-/1.520-mm-Spurnetz) - Staatsgrenze bei Kittsee "***

is **recommended** for **inclusion in the nationwide high-level transport network**.

10.4 DIFFICULTIES IN COMPILING THE REQUIRED INFORMATION

In the course of **compiling** the required **information** for the Environmental Report pursuant to Sec. 6(2) of the SP-V Law, the following **difficulties** with regard to methodology and content became apparent:

- The proposed network modification is based on a concrete and unique undertaking with global reach. This undertaking has **several distinctive features**: It is an undertaking in which four different countries are planning a cross-border route for their national railways. Its purpose is to create a **new global rail freight transport service** between Europe and Asia. It is not, therefore, a direct solution to a specific transport issue but rather the forward-looking transport alternative that goes far beyond Austria. It is the **only route in Austria with a 1,520 mm track gauge**; also, the proposed network modification is not part of the TEN-T core network. These specificities also require individual approaches when implementing the SP-V. Due to these specific characteristics, **system alternatives** pursuant to the SP-V Law were treated as part of a generalised undertaking rationale (cf. Chapter 3.1).
- Although the route has already been defined on the Slovak side, the **route and location of the terminal** on Austrian territory are **yet to be resolved**. The investigated site alternatives differ considerably in terms of their characteristics and location. This makes it difficult to identify and describe the tangible, spatially concrete effects they have. Under these circumstances, the impact assessment is often limited to **qualitative statements and assumptions on plausibility**.
- Although the network modification only includes the 1,520 mm route including the terminal and the subsequent direct integration into the high-level rail and road network in Austria, the expected economic effects and the **expected increase in logistics companies** associated therewith meant that their likely significant effects were also taken into account in the impact assessment. Although this goes beyond **what is legally required**, it is necessary and realistic considering the distinctive features of the proposed network modification.
- Given the global significance the underlying undertaking has, the effects of the proposed network modification go well beyond the potentially directly **impacted area** (the narrow investigation area)

and are sometimes difficult to circumscribe. The effects on transport were dealt with in the functional investigation area; due to its complexity, **expected effects going beyond this** are not addressed in the impact assessment but are described more generally (cf. Chapter 3).

- The **temporal forecast horizon** allows only limited statements on the development of environmental conditions. In accordance with the long implementation horizon of railway undertakings, the 2040 temporal forecast horizon is in the distant future. This circumstance allows only limited reliable statements to be made on the development of the state of the environment. The deviation from the usual forecast horizons (2025, 2030, 2050) arises from weighing a realistic implementation time period against the validity of the forecast assumptions (2040 is thus to be given preference over 2050). Since most forecasts for 2025 were prepared before the financial crisis, the values assumed for 2025 remain valid. However, it is to be expected that their appearance (in freight transport) will be delayed by around 10 years (cf. IHS 2009).

- The description of environmental conditions and their probable development draws on a large amount of **different data** from various sources. The analyses or forecasts used are not always subject to the same basic assumptions and generally have **varying forecast horizons**. Therefore, data from different sources can only be compared with regard to orders of magnitude or trend.

- The **narrow investigation area** has a **large spatial extent**. That is why the environmental conditions can only be presented very generally. In showing them, existing baseline data, in particular that of the federal states and municipalities was used according to the "flight altitude" of the SP-V. On-site surveys proved inadequate for achieving the targets due to the large size of the investigation area and were therefore not included. They are reserved for subsequent planning phases; corresponding measures are addressed in this Environmental Report (cf. Chapter 10.2).

- While preparing the **integral target system**, around 65 documents on legal bases, strategies, plans and programmes were analysed and summarised. Turning to the scoping information provided by the relevant environmental agencies, this comprehensive analysis regarded the supranational, EU, federal and state levels as relevant regional authority levels. Documents at the regional level are only considered in justified cases, because they generally make no relevant reference to the national high-level transport network. For the neighbouring states Slovak Republic and Hungary, which are affected by the proposed network modification, reference is made to selected documents at national level, available in **German or English**. Therefore, the Environment Report does **not claim to be complete** with regard to the target system, even though the results at hand are highly accurate when it comes to representing the transportational, spatial and environmental goals under a macrosocial aspect due to how extensively and conscientiously they were handled.

- Due to the uncertainties and limitations mentioned above, the **cost estimates** are also to be taken only as orders of magnitude. Actual costs largely depend on the concrete implementation of the planned railway, which is to be developed and examined in subsequent planning phases. However, the **ratio of the calculated total costs** of each site alternative and the zero alternative to each other is **accurately** shown.

- The previously mentioned limitations with regard to the forecast horizon, degree of abstraction and lack of information on the location and characteristics of railway undertakings that determine the nature of the SP-V therefore also apply to the development, description and assessment of the **site alternatives**, which were also at an abstract level.
- The assessment of the defined site alternatives with regard to their contribution to achieving the macrosocial goals is **methodologically demanding**. It is necessary to assess the contribution of those site alternatives to achieving the individual goals defined in the integral target system in such a comprehensive manner so as to ensure a balance between the requirement of a verifiable and flexible assessment on the one hand and the restrictive framework of the Environmental Report on the other. For this reason, the assessment is usually carried out on an **argumentative-qualitative level** and supported by criteria. These criteria were selected according to the assumptions on plausibility through which the bases for the assessment were deliberately limited.

The difficulties mentioned above do not detract from the fact that this Environmental Report sets out the **most relevant strategic bases for decision-making** for the proposed network modification that are **known at the time it is written**.

11

NON-TECHNICAL SUMMARY

The non-technical summary presents the environmental report in a highly simplified and condensed form. It provides a comprehensible overview of the most important information and results.

11 NON-TECHNICAL SUMMARY

In Brief

In recent years, Austria, Slovakia, Russia and Ukraine have been considering extending the **broad-gauge railway network into the Vienna area**. For certain **high-value goods**, **rail transport** between Asia and Europe by land poses an **interesting alternative**. In Slovakia, the Environmental Impact Assessment (EIA) process for extending the broad gauge is already underway.

The **Greater Vienna area** was chosen as the **end point** of the broad-gauge extension because of how many **important European transport axes intersect** there, allowing for the goods to be quickly transported onwards, especially by rail. The undertaking **promotes the Austrian economy** and creates numerous jobs. Developing infrastructure therefore contributes to **maintaining prosperity** in Austria's eastern region.

ÖBB-Infrastruktur AG has now started on plans for the Austrian side and has submitted a **proposal** to the competent Federal Ministry of Transport, Innovation and Technology. This **proposal** makes provisions for the construction of a terminal to the east of Vienna, **connecting** it to the planned broad-gauge railway in Slovakia. This proposal is now the subject of a so-called **strategic assessment in the transport sector (SP-V)**. The Environmental Report **carefully examines this proposal and the impact it has**. **Alternatives** will also be reviewed.

When the investigation was concluded, it was found that an extension of the broad gauge to the east of Vienna would bring **many economic advantages** and be an **opportunity** for increasingly transporting goods by an **environmentally friendly means of transport – by rail.** Naturally, **negative effects would also** arise from constructing a terminal and a route.

A **terminal that is situated as close as possible to Vienna** has **many advantages**. At the same time, this has the **lowest negative impact** on the environment. For this reason, ÖBB-Infrastruktur AG **recommends** that **this terminal location be promoted further in subsequent planning steps**.

Framework conditions

This document is called the Environmental Report. It constitutes the **centrepiece** of the "Strategic Assessment in the Transport Sector", or SP-V. The SP-V is a process with the aim of bringing transport infrastructure within the **competence of the federal government** – through a law or an ordinance.

This Environmental Report deals with a **railway line** that is expected to run from the Austrian border near Kittsee to the east of Vienna. This line is part of an **international undertaking**: it starts in eastern Slovakia and spans the whole country all the way to the Austrian border.

At 1,520 mm, the **track gauge**, i.e. the distance between the rails, is **wider** on this line than on all other lines in Austria. This track gauge is widespread in Russia and the Baltics, among other countries. In most of Europe, however, the track gauge measures 1,435 mm. The difference is a mere 8.5 centimetres. Where there is a break of gauge because of these networks meeting, the goods have to be **transshipped** in terminals so that they can be transported onwards, or the trains have to be **regauged**. By extending this route, these rail systems will be **better linked with each other**. This saves time and money during transport. The planned railway is **single track** and **only intended for freight traffic**. East of Vienna, where the railway lines with different track gauges meet, a **terminal** is necessary. This terminal is also connected to the **road network**.

A **regulation** is to be laid down for this undertaking. In so doing, the Republic of Austria is expressing its public interest in this undertaking. An SP-V must be carried out for this purpose. This is done by means of a so-called **proposal for a network modification**, because it concerns the nationwide and high-level transport network. ÖBB-Infrastruktur AG submitted this proposal in November 2018 to the Federal Ministry of Transport, Innovation and Technology (BMVIT).

The Environmental Report examines and justifies the proposed network modification at a **strategic level**. It first presents the **goals** it pursues. Then it is examined **spatial aspects** in which the undertaking will later be implemented. To this end, the goals are described which – broadly speaking and thus also for the whole of Austria – apply to the space. This includes, for example, economic goals or environmental protection objectives. It also explains what is located in this space and how it is likely to develop further. This includes, for example, roads or recreational paths and nature conservation areas and bodies of water.

The proposal for the network modification itself is then reviewed. For this purpose, the **path** the route could take in the area east of Vienna is examined as are the effects of the **terminal location**. This is done in the course of the so-called **impact assessment of the site alternatives**. The effects that would arise if the network modification or the undertaking were not implemented at all are also described. **Both the negative and positive effects** are reviewed. The assessment framework is the concept of sustainability, which means that impacts on the environment, on society and on the economy are investigated simultaneously, ultimately

resulting in a recommendation for the network modification.

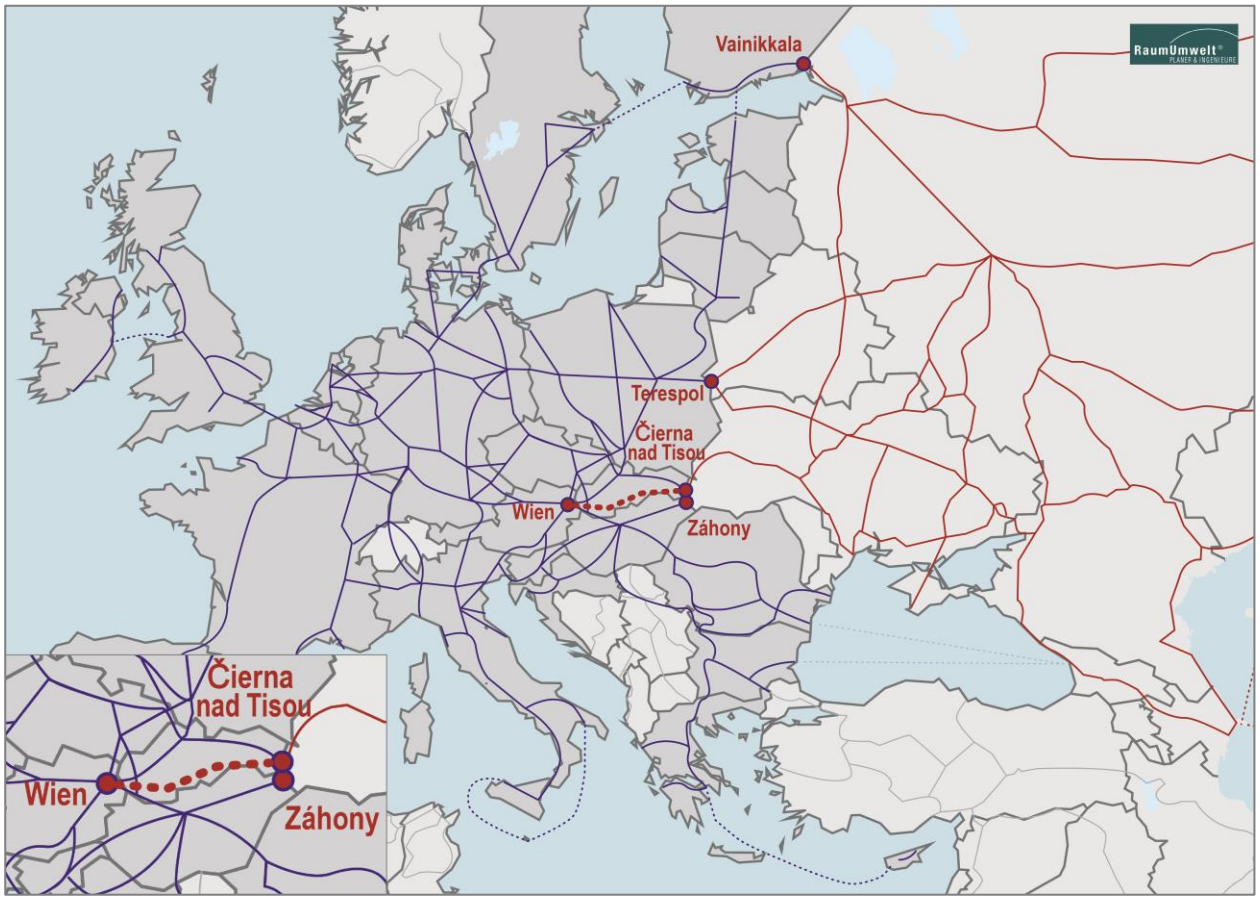
Obviously, the route between the Austrian border and Vienna will only be built if the Slovak section is also built. Needless to say, the route regulation does **not constitute a building permit**. It is only permission for ÖBB-Infrastruktur AG to continue with the planning.

Content, Goals, Justification and Benefits of the Network Modification

The proposed network modification has specific goals. The undertaking will create an entirely **new connection** between the 1,435 mm rail network and the 1,520 mm rail network. This does not only have implications for Austria and Slovakia. The line is important for **freight transport between Asia and Europe**. Seagoing vessels are currently handling the majority of the goods between these economic areas. Transporting goods this way is a lengthy process and is harmful to the environment. The undertaking will make it possible to transport these goods by rail, which is **faster and cheaper** and is also better for the **environment**.

Another advantage is that the route leads directly to the **Greater Vienna area**, where there is a fully developed **rail and road system**. The Greater Vienna area is located where three so-called TEN-T core network corridors meet. These corridors connect the whole of Europe and will be expanded further by 2030. The European Union has defined them together with the EU Member States and is funding their expansion. From Vienna as a crossroads, a **large part of Europe** can be reached without any great obstacles to speak of and relatively quickly – especially by rail. This makes the rail freight transport that much more attractive and could also mean that the transport of goods could be carried out in a more **environmentally friendly way** at a global level. The railway connection is of great strategic importance and promotes the Austrian economy. Because the transport network there is already very well developed, the additional traffic will hardly be noticeable.

The proposed network modification creates the **conditions for this undertaking**.



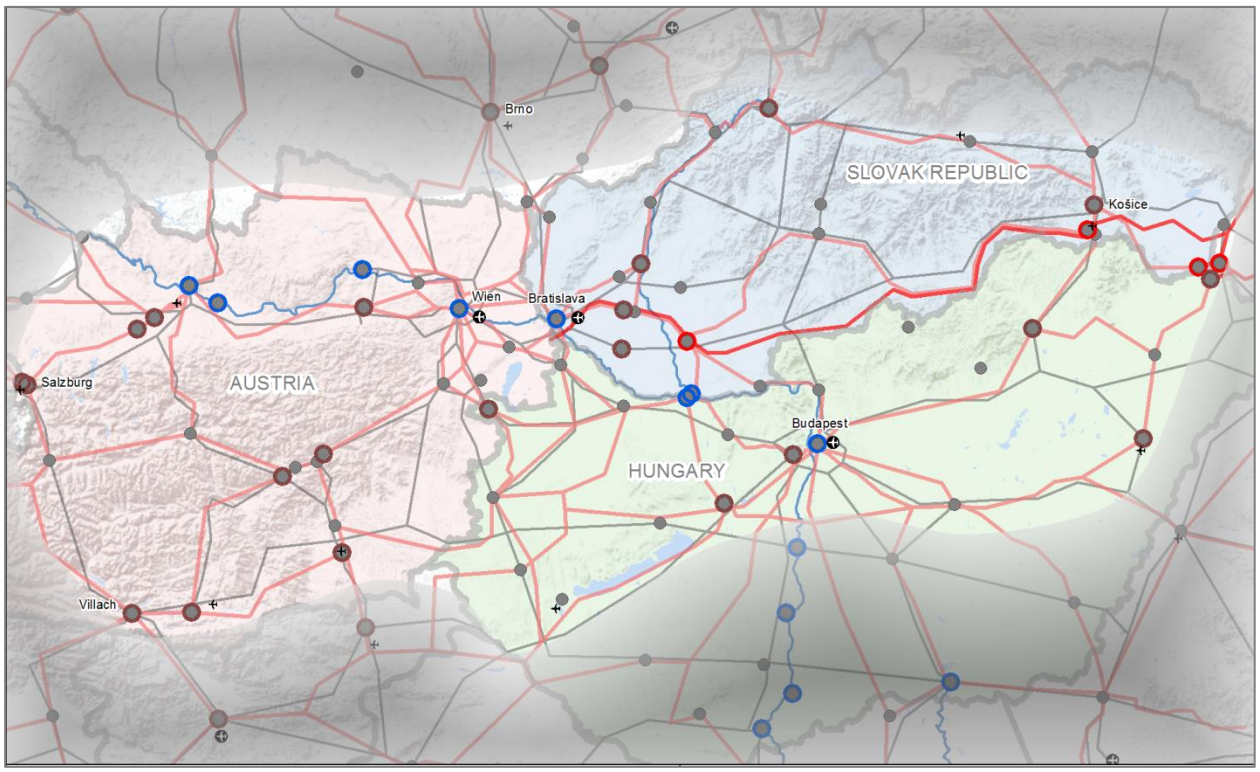
This map shows the rail network with the 1.520-mm track gauge in red, which also runs through Russia. The European TEN-T core network is depicted in blue, which is mainly built as a 1.435-mm track gauge. The new connection, which has a 1,520 mm track gauge, connects these two networks in the Greater Vienna area – in the heart of Europe (red dashes). The red dots symbolise the existing or planned location where the two networks converge and the goods are transhipped.

Environmental conditions

For the investigation of the **environmental conditions** and subsequent description of the effects of the network modification, two different spaces are investigated: in the so-called **functional investigation area**, effects on the transport network are expected from the network modification. It is therefore only indirectly affected. The undertaking will later be built in the **narrow investigation area**. This area is therefore directly affected by the rail construction and operation.

The **functional investigation area** comprises parts of **Austria**, **Slovakia** and **Hungary**. About **21 million people** live there. The largest cities are the capitals Vienna, Budapest and Bratislava. The number of inhabitants increases especially in the cities. The economically strong areas, e.g. Vienna and Bratislava, are located more to the west of the functional investigation area. The number of economically weak regions grows to the east.

Freight transport is increasing in the entire functional investigation area. About a third of the goods are transported by rail in Austria, Slovakia and Hungary. This means that rail freight transport in these countries is above the EU average, which also stems from these countries' lack of access to the sea.

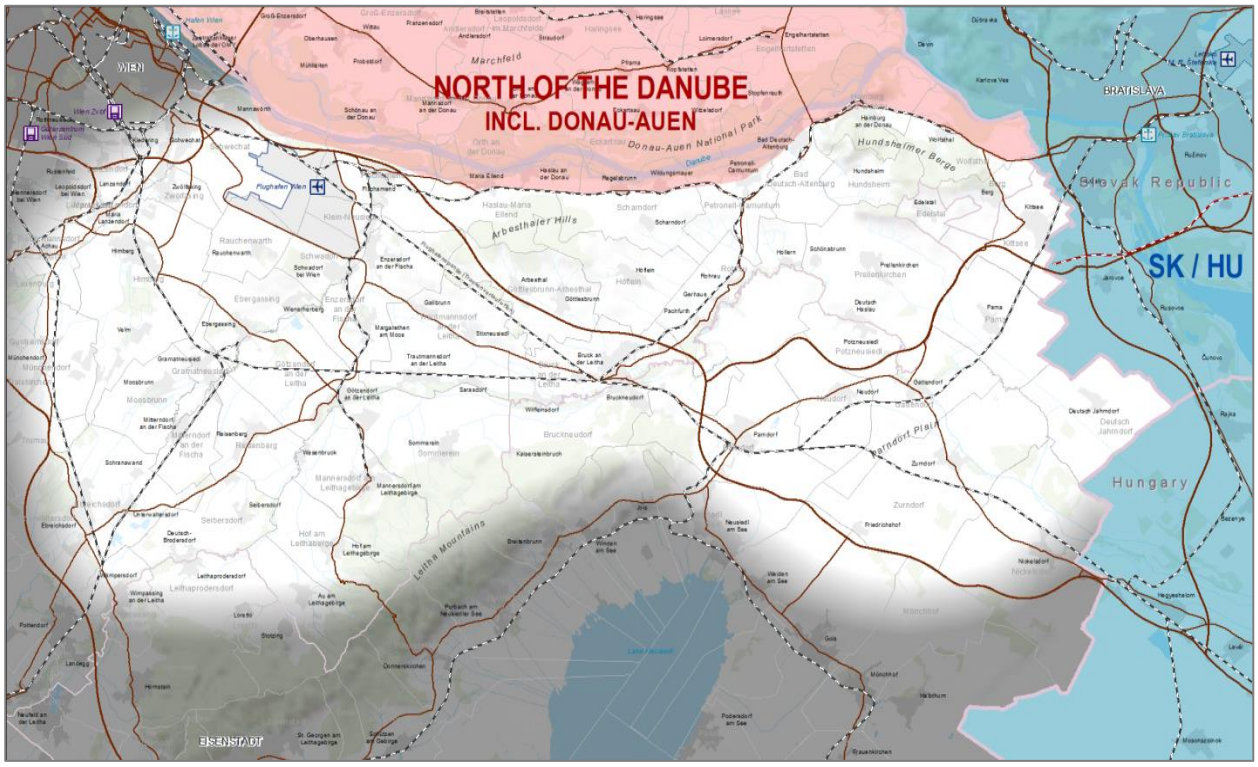


The functional investigation area goes beyond the narrow investigation area, covering parts of Austria, Slovakia and Hungary. Effects on transport are expected in this area as a result of the network modification.

The **narrow investigation area** is the area in which the proposed network modification and thus the undertaking will be implemented. The area comprises the area **east of Vienna**, west of the national border, south of the Danube and north of the Leitha Mountains. This area is comparatively **large**,

with a number of roads, railways and other technical infrastructure. There are also several plans for the further development of the transport network. As such, a third runway is being built at Vienna Airport. A new railway connection between Vienna Airport and Bruck an der Leitha is also in the making. This so-called airport connection is mainly intended for passengers. It will be implemented independently of the proposed network modification.

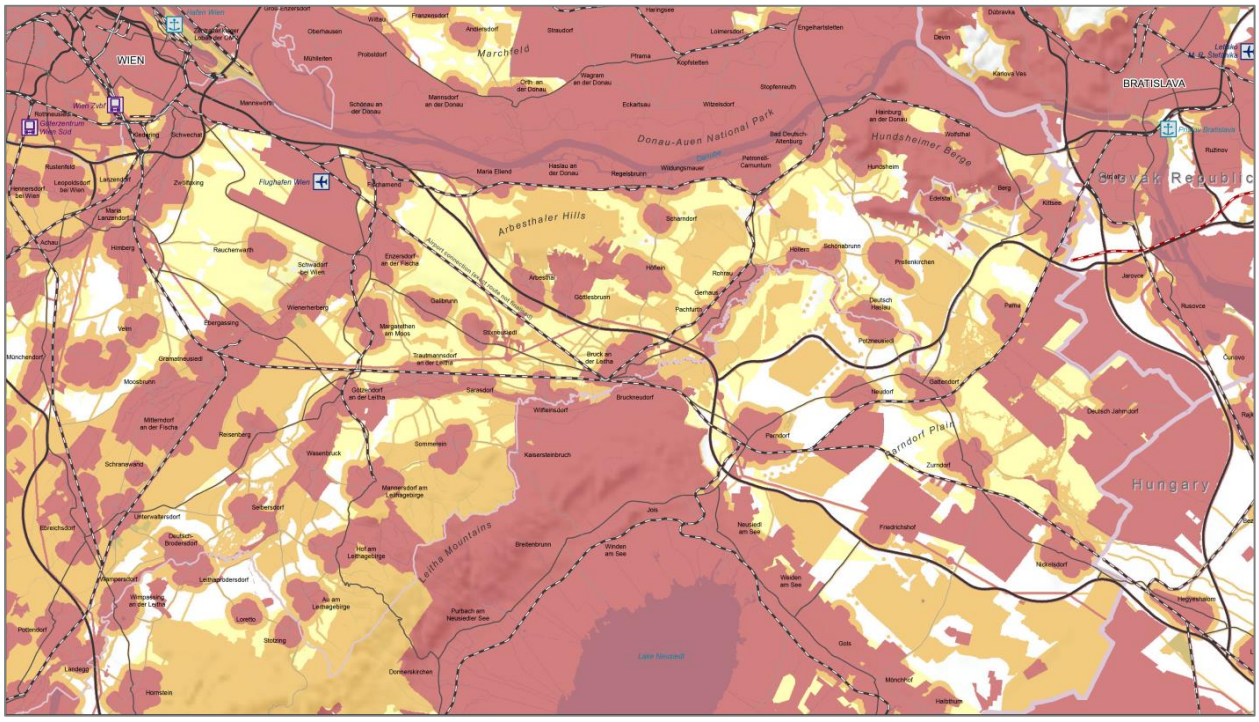
The region is also characterised by several smaller **settlements and towns**, with agriculture being very important. Most of the space is used for agriculture; some of the land is of very high quality. Likewise, there are pristine areas here and there, e.g. along the Fischa and Leitha rivers. Some areas are also protected by nature conservation laws.



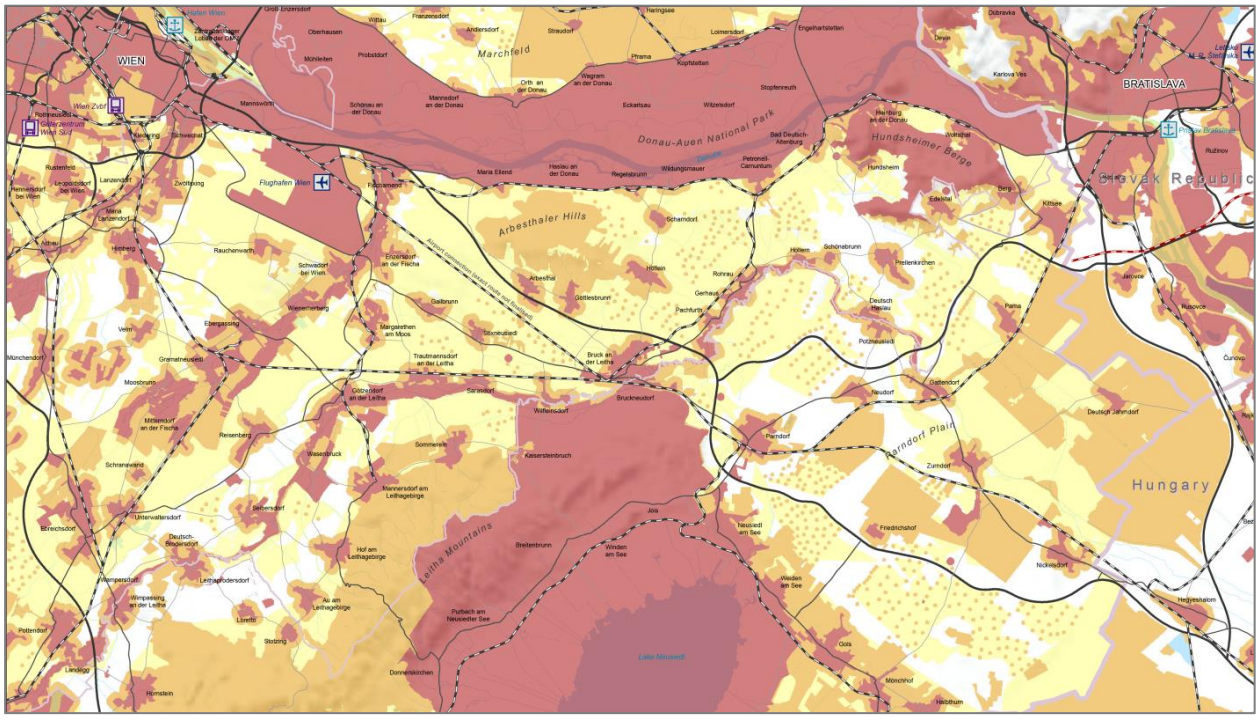
The narrow investigation area is the area in which the proposed network modification and thus the undertaking are implemented. It concerns the area east of Vienna and south of the Danube. In the south it is delimited by the Leitha Mountains. In the east it reaches up to the national border. Transport infrastructure is shown that is expected to be implemented in 2040.

These different aspects of the narrow investigation area have **different sensitivities** towards a railway line and a terminal. As such, a nature conservation area through which the line runs will definitely be disturbed. If the new railway line runs close to and parallel to an existing railway line, the negative effects on the landscape can be kept to a minimum. In other subject areas, such as the economy, the undertaking can also have a positive impact.

The different sensitivities of the space to such an undertaking are shown in so-called **space resistivity maps**. The maps show how strongly the space would “resist” the construction or operation of the railway line and the terminal. The maps make it possible to depict areas on which the route and the terminal have more or less negative effects. However, non-spatial effects, such as economic ones, cannot be represented in this way.



The impediment to feasibility depicted in the narrow investigation area shows the regions’ sensitivity towards a terminal. It becomes obvious that especially the settlement areas should be given enough distance (red dots). The space is more sensitive to the terminal than to the railway line due to the terminal’s spatial extent.



The impediment to feasibility depicted in the narrow investigation area shows the individual regions’ sensitivity towards a railway line. It becomes clear that especially the settlement areas should be avoided (red dots). The widespread orange areas are protected areas, landscapes worth preserving or semi-natural areas that are just as sensitive to railway lines.

Effects of the Network Modification

The investigation of **alternatives** and their likely **effects** makes up an important part of the Environmental Report. More specifically, this means that different terminal **site locations** are examined. It does not, however, mean that the terminal's exact location or orientation will be determined. The exact location of the route to the terminal is not investigated either, because it will only be reviewed and determined in subsequent planning steps. Accordingly, the site alternatives are quite **extensive** and only delimited by existing (or planned) roads or tracks. The effects of the so-called zero alternative – the **non-implementation** of the proposal to modify the network – were also investigated.



The site alternatives presented are areas in which the terminal can be located. The exact location of the terminal or the route leading up to it has not yet been determined and is not the subject of investigation in this Environmental Report. The sensitivity of these locations is examined and the impact of the undertaking is assessed and described.

The **zero alternative** is based on the assumption that the **terminal is located southeast of Bratislava**. A line and a terminal will not be built in Austria. This would mean that nature would not be directly negatively affected. However, the jobs created at the terminal would not be in Austria either. Furthermore, the **objectives** of the network modification would not be achieved. Because the rail network in Slovakia is not so well developed, more goods would be transported by road, mostly via Austria. That is why certain measures must nevertheless be implemented in the Austrian rail and road network. With total costs of approx. **197 million euros** (based on 2019 prices), this alternative is of course still significantly cheaper than the site alternatives.

The different site alternatives each show **different effects**. On the one hand, this is due to the sensitivity of the area under consideration. On the other hand, the undertaking itself has different effects.

Site alternative 1 is located in the **southwestern part** of the narrow investigation area. The area in the northwest is delimited by the Gramatneusiedl-Wampersdorf railway line and the Eastern Railway. In the southeast is the B60 state road with an abundance of **farmland. Reisenberg Hill** is located in the middle of this area. **Wine** is grown there. The **landscape** in the area is varied and is considered to be appealing. A terminal at this location would have a **major impact** on the environment in comparison because such a terminal would have nothing to do with the existing landscape or the way it is used. Nevertheless, it would create **jobs** in the region. The distance to site alternative 1 is long. This uses up a lot of **land** in comparison and potentially cuts up the **landscape** more. The undertaking and the necessary measures to the road and rail network cost **about 2.1 billion euros** (based on 2019 prices), making site alternative 1 more cost-efficient than most other alternatives.

Site alternative 2 is **close to Vienna**. It is located to the north, i.e. along the Eastern Railway, and is demarcated by the B10 state road in the north and by the B60 state road in the east, with an abundance of **farmland**. Parts of the area are located in the **aircraft noise zone** of Vienna Airport. In the immediate vicinity are the freight terminal Wien Süd, the Vienna marshalling yard, the Port of Vienna and Vienna Airport. A terminal at this location could benefit these existing **logistics centres** as well as the **companies** in the region. The terminal would also **create jobs**. The distance to site alternative 2 is long. This uses up a lot of **land** in comparison and cuts up parts of the **landscape** more. The undertaking and the necessary measures to the road and rail network cost **about 2 billion euros** (based on 2019 prices), making this site alternative the most cost-efficient alternative.

Site alternative 3 is located **west of Bruck an der Leitha**. The Eastern Railway runs through the south of it. The site is demarcated by the B10 state road in the west and by the B60 state road in the north. There are **high-voltage lines**, a **sub-station,** many **wind power stations** and **farmland**. A terminal at this location would have comparatively little effect on the **landscape**. The terminal would also **create jobs**. Compared to other alternatives, the route is of medium length. The undertaking and the necessary measures to the road and rail network cost **about 2.3 billion euros** (based on 2019 prices). This site alternative is therefore more on the expensive side.

Site alternative 4 is located to the **east** of the narrow investigation area. The site is demarcated by the Eastern Railway in the north and by the A4 Motorway in the south. The region has many **wind farms** and a **high-voltage line**. There is also a lot of **farmland**. and large **nature conservation areas**. A terminal at this location would have a **major impact** on the environment in this area in comparison. It is not related in any way to the local land use. The railway line leading to the terminal is of medium length and could partially run **parallel** and close to existing rails. The undertaking and the necessary measures to the road

and rail network cost **about 2.4 billion euros** (based on 2019 prices), making this site alternative the most costly alternative.

Site alternative 5 is located very close to where the line from Slovakia leads to Austria in the **east** of the narrow investigation area. It is the area to the north and south of the A6 Motorway. There are many **wind power stations** in this area and it is mainly used for **agriculture**. A terminal at this location would have a **major impact** on the environment in this area in comparison. It is not related in any way to the local land use. The railway line leading to the terminal is very short, which is why the negative effects of the line are comparatively **small**. The undertaking and the necessary measures to the road and rail network cost **about 2.3 billion euros** (based on 2019 prices). This site alternative is therefore more on the expensive side.

Recommendation for the Network Modification

On the basis of the investigations that were carried out, the following **recommendation** is made **for the proposed network modification**:

> ***"Wien (Zentralverschiebebahnhof mit Terminal 1.435-/1.520-mm-Spurnetz) - Staatsgrenze bei Kittsee "***

The investigation of the site alternatives revealed **site alternative 2** to be the **best alternative**. It entails **negative ecological effects**. The area is, however, already shaped by **technical infrastructure**. Several **freight terminals** can be found in the surrounding area: the freight terminal Wien Süd, the Vienna marshalling yard, the Port of Vienna and Vienna Airport. There are also several **operating and industrial sites**, which bring about the **strongest positive effects**. Existing companies that have to transport their goods onwards can benefit from an international terminal. That is why the terminal also fits well into the **economic conditions** of the area in and around site alternative 2.

Taking the investigated effects into consideration, **site alternative 5** can be recommended to a lesser extent for the proposed network modification. The positive economic effects are significantly lower than for site alternative 2; however, the negative impacts on the environment are also lower.

Site alternatives 1, 3 and 4 are not recommended because the desired objectives of the network modification cannot be achieved as well through them. Their negative impacts outweigh their positive ones.

When **implementing** the undertaking, care should be taken to keep the negative spatial impacts and impacts on the environment and on humans as low as possible. If possible, care should be taken to, for example, ensure that the route runs close to and parallel to existing railway lines – this avoids additional interference with the landscape. The terminal itself should be easily accessible to the public so that employees do not have to commute by car and there is less traffic congestion in the area. These **measures**

can be **recommended** in the Environmental Report. How exactly they will be implemented will be determined later on.

The recommended network modification will be examined by the competent BMVIT. After the SP-V is completed, a High Performance Regulation (HL-VO) could be next, to be adopted by the Council of Ministers of the Austrian federal government. ÖBB-Infrastruktur AG can therefore carry out further planning with such a high performance regulation. This does not, however, constitute a building permit. Needless to say, the undertaking will only go forward if the route in Slovakia is also built as planned.

This High Performance Regulation (HL-VO) signals **Austria's interest** in the undertaking. In this planning phase, **routing** or **terminal location** has not yet been accurately determined. This will be done in **later planning phases**. Only once the route and the terminal have been selected will it be possible to more closely investigate how the region will be affected.

LISTS

List of References
Legal Bases
List of Figures
List of Tables
List of Abbreviations
Glossary

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LIST OF FIGURES

Figure 1: TEN-T rail network (blue) and 1,520 mm rail network (red) with planned rail corridor (own illustration) 2
Figure 2: Austrian high-performance line network, as of September 2019 (own illustration) 7
Figure 3: 2050 freight traffic volume in million t/year on the Košice-Vienna route with implementation of the undertaking (own BPG calculation) 12
Figure 4: Modular scheme of the planned transshipment terminal (own BPG illustration) 14
Figure 5: Sustainable Development Goals of the United Nations 21
Figure 6: High-level transport network in the functional investigation area in the year 2040 (own illustration) 64
Figure 7: Narrow investigation area east of Vienna (own illustration) 65
Figure 8: Translation of spatial information into space resistivity (own preparation) 71
Figure 9: Interconnection points between the TEN-T core network (blue) and the 1,520 mm gauge network (red) (own illustration) 80
Figure 10: Integration of the Košice–Vienna railway corridor into the TEN-T core network (own illustration) 82
Figure 11: Routes in the TEN-T core network in the Vienna/Bratislava area (European Commission – DG MOVE; own preparation) 83
Figure 12: European rail freight corridors RFC (RailNetEurope 2018) 84
Figure 13: Target network adequate for the system (ÖBB-Infrastruktur AG 2011: p. 37) 89
Figure 14: Node-edge model for Austria (ÖBB-Infrastruktur AG 2011: p. 43) 90
Figure 15: Functional investigation area (own illustration) 109
Figure 16: Year-on-year real GDP growth rate in % (Eurostat 2007–2018, own illustration) 111
Figure 17: Freight traffic volume by mode of transport in million t, 2016 (Eurostat 2017; own illustration) 113
Figure 18: Year-on-year freight traffic growth rate in % (Eurostat 2018c, own calculation) 114
Figure 19: Gross tonne-kilometres growth forecast, realistic scenario (RFC 7 2017: p. 89 et seq.; own illustration) 114
Figure 20: Cross-border transport volume in Austria (receipt and dispatch) by transport mode and select partner countries 2014 (Statistics Austria 2017: p. 24) 115
Figure 21: Delimitation of narrow investigation area and administrative units (own illustration) 116
Figure 22: Settlements in the narrow investigation area (own illustration) 119
Figure 23: Regional Spatial Planning Programme for the Southern Catchment Area of Vienna (Regionales Raumordnungsprogramm südliches Wiener Umland), folio 59 – Wien Süd, folio 60 – Bruck an der Leitha and folio 61 – Hainburg an der

Donau (Austrian State Law Gazette 8000/85-0 as amended by Austrian State Law Gazette No 67/2015) 120
Figure 24: LEP 2011 detail (Austrian State Law Gazette 71/2011, Appendix B) 121
Figure 25: Population trend in the Greater Vienna area from 2006 to 2016 (ÖROK 2019) 122
Figure 26: Population forecast in the Greater Vienna area for 2014 to 2030 (ÖROK 2019) 122
Figure 27: Jobs per 100 inhabitants (ÖROK 2019) 125
Figure 28: Infrastructure in the narrow investigation area (own illustration) 127
Figure 29: Austrian high-voltage grid as of 2015 (APG 2015) 128
Figure 30: Wind power harnessing and suitability zones, and wind energy plants in narrow investigation area (own illustration) 130
Figure 31: Motorway/expressway as a noise source: 24h average 4 m 2017 (BMNT 2019a) ... 133
Figure 32: State road as a noise source: 24h average 4 m 2017 (BMNT 2019a) 133
Figure 33: Railway as a noise source: 24h average 4 m 2017 (BMNT 2019a) 134
Figure 34: Aircraft noise zone in a narrow investigation area (BMNT 2019a) 134
Figure 35: Aircraft noise zone Airport Vienna incl. 3rd runway (Airport Vienna AG 2019, own illustration) 135
Figure 36: Biogeographical regions of Europe, 2016 (EEA 2017) 141
Figure 37: Spatial landscape structure (own illustration) 141
Figure 38: Alps-Carpathians Corridor (Weinviertel Management 2014) 145
Figure 39: Habitat connectivity in the narrow investigation area (own illustration) 146
Figure 40: Soil types in narrow investigation area (BMLFUW, BFW 2009) 159
Figure 41: Sealed areas in % (ÖROK 2019) 160
Figure 42: Forest area (% of total area) (ÖROK 2019) 161
Figure 43: Farmland value in narrow investigation areas (BMLFUW, BFW 2009) 163
Figure 44: Space resistivity for the subject area “Settlements and transport and technical infrastructure”; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration) 173
Figure 45: Space resistivity for the subject area “People and health”; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration) 174
Figure 46: Space resistivity for the subject area “Nature and landscape”; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration) 175
Figure 47: Space resistivity for the subject area “Water, soil and land use”; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration) 176
Figure 48: Space resistivity for the subject area “Topography”; areal railway infrastructure (left), linear railway infrastructure (right) (own illustration) 177
Figure 49: Total space resistivity for the narrow investigation area, areal railway infrastructure (left), linear railway infrastructure (right) (own illustration) 178

Figure 50: Site alternatives presentation in the narrow investigation area in the context of their functional location in the TEN-T core network (own illustration) 182
Figure 51: Site alternatives presentation in the narrow investigation area in the context of their spatial location in the high-level transport network (own illustration) 182
Figure 52: Functional location of site alternative 1 (own illustration) 184
Figure 53: Functional location of site alternative 2 (own illustration) 185
Figure 54: Functional location of site alternative 3 (own illustration) 187
Figure 55: Functional location of site alternative 4 (own illustration) 188
Figure 56: Functional location of site alternative 5 (own illustration) 189
Figure 57: 2050 freight traffic volumes for rail zero alternative (own BPG calculations) 199
Figure 58: 2050 freight traffic volumes for rail zero alternative (own BPG calculations) 200
Figure 59: 2050 freight traffic volumes for road (own BPG calculations) 206
Figure 60: 2050 freight traffic volume in million t on the Košice-Vienna route with implementation of the undertaking (own BPG calculation) 207
Figure 61: 2050 freight traffic volumes for rail (own BPG calculations) 208
Figure 62: Functional location of site alternative 1 (own illustration) 210
Figure 63: Functional location of site alternative 2 (own illustration) 218
Figure 64: Functional location of site alternative 3 (own illustration) 226
Figure 65: Functional location of site alternative 4 (own illustration) 234
Figure 66: Functional location of site alternative 5 (own illustration) 242
Figure 67: Diagram of total costs for site alternatives 1–5 in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 255

LIST OF TABLES

Table 1: Definition of space resistivity categories (own preparation) 70
Table 2: Illustration of target achievement levels (own preparation) 73
Table 3: Consideration of suggestions in the remarks regarding the scoping document (own preparation) 76
Table 4: Consideration of the specifications of the SP-V Law in the Environmental Report (own preparation) 77
Table 5: West axis railway equipped with ETCS (ÖBB 2016 information; own illustration) 88
Table 6: South axis railway equipped with ETCS (ÖBB 2016 information; own illustration) 88
Table 7: Multimodal terminals and the TEN-T comprehensive and core network nodes in Austria (Regulation (EU) No 1315/2013; KombiConsult 2016; own illustration) 101
Table 8: Multimodal terminals and the TEN-T comprehensive and core network nodes in the Slovak Republic (Regulation (EU) No 1315/2013; KombiConsult 2016; own illustration) 101
Table 9: Multimodal terminals and the TEN-T comprehensive and core network nodes in Hungary (Regulation (EU) No 1315/2013; KombiConsult 2016; own illustration) 102
Table 10: Inland ports with international significance and part of the TEN comprehensive or core network in the functional investigation area (Regulation (EU) No 1315/2013) 104
Table 11: Airports as part of the TEN-T core and comprehensive network, all data 2014 (Vienna Airport 2019a, Statistics Austria 2018a, Budapest Airport 2018, Letisko M. R. Štefánika – Bratislava Airport 2017, Letiště Brno 2018; Hungarian Central Statistical Office 2018, Letisko Poprad-Tatry 2018, own illustration) 106
Table 12: Population in the functional investigation area according to NUTS 2 regions (Eurostat 2018a; own illustration) 110
Table 13: Population forecast in the NUTS 3 regions (ÖROK 2014; own illustration) 123
Table 14: Gross regional product (GRP) in the NUTS 3 regions (Statistics Austria 2017; own illustration) 124
Table 15: Nature and landscape conservation areas in the narrow investigation area 143
Table 16: Natura 2000 areas in the investigation area (Office of the Federal Ministry for Agriculture, Forestry, Environment and Water Management, BMLFUWb, Office of the Burgenland Provincial Government 2017; own illustration) 146
Table 17: Nature conservation areas in the investigation area (NÖ Atlas 4.0, GeoDaten Burgenland; own illustration) 149
Table 18: Landscape conservation areas in the investigation area (own illustration) 150

Table 19: Contaminated sites pursuant to the contaminated sites portal (BMNT 2019b; own illustration) 164
Table 20: Classification of the analysed spatial structures in space resistivity categories – areal railway infrastructure (own illustration) 169
Table 21: Classification of the analysed spatial structures in space resistivity categories – linear railway infrastructure (own preparation) 170
Table 22 Target system with main goals and subgoals (own preparation) 191
Table 23: Evidence of goal consideration pursuant to Sec. 5(4) of the SP-V Law in the target system (own preparation) 192
Table 24: Illustration of target achievement levels (own preparation) 193
Table 25 Traffic generation per 24 h 2040 zero alternative in the Austrian network (own BPG calculations, own illustration) 200
Table 26: Summary of zero alternative costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 203
Table 27: Target achievement level of zero alternative (own preparation) 205
Table 28 2040 traffic generation per 24 h site alternatives 1–5 in the Austrian network (own BPG calculations, own illustration) 207
Table 29: Summary of site alternative 1 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 215
Table 30: Target achievement level of site alternative 1 (own preparation) 217
Table 31: Summary of site alternative 2 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 223
Table 32: Target achievement level of site alternative 2 (own preparation) 226
Table 33: Summary of site alternative 3 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 231
Table 34: Target achievement level of site alternative 3 (own preparation) 233
Table 35: Summary of site alternative 4 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 239
Table 36: Target achievement level of site alternative 4 (own preparation) 241
Table 37: Summary of site alternative 5 costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 247
Table 38: Target achievement level of site alternative 5 (own preparation) 249
Table 39 Target achievement level of zero alternative (own preparation) 251
Table 40: Summary of zero alternative costs in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 251
Table 41: Overview of total costs for site alternatives 1–5 in million euros, based on 2019 prices (own BPG calculations, ÖBB-Infrastruktur AG; own illustration) 255

Table 42: Overview of measures for each alternative, costs in million euros, based on 2019 prices (own illustration) 256
Table 43: Assessment of site alternatives 1–5 (own preparation) 257

LIST OF ABBREVIATIONS

ASFINAG	Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft
BGBl	Federal Law Gazette
BMVIT	Federal Ministry of Transport, Innovation and Technology
bn	billion
CCT	Combi Cargo Terminal
CO_2	Carbon dioxide
ERTMS	European Rail Traffic Management System
ESDP	European Spatial Development Perspective.
ETCS	European Train Control System
EU	European Union
GDP	Gross domestic product
GRP	Gross regional product
GVP	Gesamtverkehrsplan (Comprehensive Transport Plan for Austria)
HL-VO	Hochleistungsstrecken-Verordnung (High Performance Regulation)
Hz	Hertz
ICPDR	International Commission for the Protection of the Danube River
IPPC	Integrated Pollution Prevention and Control
IUCN	International Union for Conservation of Nature and Natural Resources
kV	Kilovolt
LEP	Landesentwicklungsprogramm (Regional Development Programme)
Leq	equivalent continuous sound energy level
LGBl	Provincial Law Gazette
m	million
MK NÖ 2030+	Mobilitätskonzept Niederösterreich 2030+ (2030+ Lower Austrian Mobility Concept)
NGP	Nationaler Gewässerbewirtschaftungsplan (National Water Management Plan)
NÖ	Niederösterreich (Lower Austria)
NTS	National Transport Strategy
NUTS	Nomenclature des unités territoriales statistiques
ÖBB	Österreichische Bundesbahnen
OMV	Österreichischen Mineralölverwaltung (Mineral Oil Administration)

ÖREK	Österreichisches Raumentwicklungskonzept (Austrian Spatial Development Concept)
ÖROK	Österreichische Raumordnungskonferenz (Austrian Conference on Spatial Planning)
ÖSTRAT	Österreichische Strategie Nachhaltige Entwicklung (Austrian Strategy for Sustainable Development)
RFC	Rail Freight Corridor
ROG	Spatial Planning Act
RoLa	Rolling Highway
SP-V	Strategische Prüfung im Verkehrswesen (Strategic assessment in the transport sector)
STEP 2025	2025 Urban Development Plan Vienna
t	Tonne
TEN-T	Trans-European Transport Network
VO	Ordinance/directive

GLOSSARY

100-Year Floodplain (or 1% Floodplain)

A 100-year-floodplain is land that is predicted to flood once every 100 years on average, which constitutes a 1% chance of flooding in any given year.

CCT

Combi Cargo Terminals (CCT) are transloading centres for unaccompanied combined transport (UCT).

Centrope

The *Central European region*, or centrope, is the name of a part of Europe comprised of regions in the Czech Republic, Slovakia, Hungary and Austria.

Cohesion

Cohesion is defined by the regional policy of the EU as the harmonious development of its Member States and regions. The aim of cohesion policy is, above all, to compensate for economic disparities within the EU, partly through active redistribution.

Comprehensive Network

The TEN-T comprehensive network consists of all existing and planned transportation infrastructure of the Trans-European Transport Network. The comprehensive network is essentially the result of a coordinated process of the Member States and is expected to be implemented by 2050.

Connecting Europe Facility

The *Connecting Europe Facility* (CEF) is the EU funding instrument for strategic investment in TEN-T undertakings. The term facility comes from the banking sector, where it refers to financial assistance programmes within defined limits.

Core Network

The TEN-T core network is the part of the Trans-European Transport Network which the European Commission considers to be the most important strategically for achieving the objectives associated with the TEN-T roll-out. The core network is expected to be completed by 2030.

Environmental Alliance

The term environmental alliance refers to all environmentally compatible modes of transport. These include non-motorised transport, public transportation and forms of shared mobility (carsharing, carpooling etc.).

ERTMS, ETCS

The *European Rail Traffic Management System* (ERTMS) is the future signalling and speed control system for rail traffic in the TEN-T core network. The ERTMS' most important component is the implementation of the European Train Control System (ETCS) at Level 2, which provides for continuous communication between the vehicle and the radio block centre (RBC).

ESDP

The European Spatial Development Perspective (ESDP) is an overall spatial planning concept at the European level that is aimed at balanced and sustainable development of the European territory. It was adopted in 1998–1999.

Hemeroby

The ecological term hemeroby is a measure of human-caused modification on natural ecosystems. Mesohemerobic areas are habitats with moderate human impact.

High-Performance Line

High-performance lines are existing or planned railways (lines or sections including the necessary railway facilities) that the federal government can declare to be a high-performance line in accordance with Sec. 1(1) of the High-Performance Lines Act; the prerequisite being that these lines are important for efficient traffic with international connections or for local traffic, or that they are directly related to high-performance lines and are required for rational railway operations or railway traffic on high-performance lines.

Level of Service (LOS)

Based on the capacity of a roadway facility, the quality of the traffic flow is categorised into levels of service. There are six levels, ranging from A (free flow) to F (forced flow).

Multimodal, Multimodality

Multimodality exists in a transport system when a need for mobility can be efficiently met by several alternative means of transport or by a combination of several means of transport.

NUTS

The *nomenclature des unités territoriales statistiques*, or NUTS, is a classification system for dividing up the territories of the EU.

One-Stop Shop

A *one-stop shop* refers to an office that offers the possibility of straightening out bureaucratic or organisational matters through a single point of contact instead of having to contact a separate specialist department for each individual aspect of the issue at hand.

Repowering

Repowering means replacing older power plant components used for generating electricity with newer ones that are, for example, more efficient. When repowering wind power stations, old turbines are usually replaced by newer, larger and/or more powerful ones.

RoLa

The Rolling Highway, or RoLa (from the German *Rollende Landstraße*), is a transport system for accompanied combined transport by rail or a special train in which entire trucks are transported by rail.

System Adequacy

According to the definition laid down in the Target Network 2025+ (ÖBB 2011), a system is used in manner adequate for the system if its system features can optimally unfold its benefits.

TEN-T

The Trans-European Transport Network, or TEN-T, is the common high-level network for road, rail, air, and inland waterway transport of the EU. It consists of an extensive comprehensive network, within which the planned implementation of a core network is given priority.

Tonne-kilometre

Tonne-kilometres (tkm) is a unit for measuring transport performance of rail freight traffic: 1 tonne-kilometre represents the transport of 1 t of goods over a distance of 1 km.

White Paper on Transport

The White Paper on Transport (full title: White Paper Roadmap to a Single European Transport Area – Towards a competitive and resource-efficient transport system) was published by the European Commission in 2011. Its main objective is to reduce carbon emissions from transportation by at least 60% below 1990 levels by 2050.