

## **Report on the state of play regarding long trains (740m)**

### **1. Reasons for the initiative to enable the running of 740m trains on RFC Rhine-Alpine**

Market demand:

The current competitive market forces RUs to improve the efficiency of their train operations. One of the most effective ways to do this is to increase the length of freight trains to 740m. The RAG of RFC Rhine-Alpine confirms this.

Rotterdam declaration:

In the Rotterdam declaration of 2016, the rail sector acknowledged the necessity of 740m trains as an essential parameter to boost rail freight traffic and committed itself to strive to the realisation of this goal.

RFC Rhine-Alpine study on 740m train length:

The RFC Rhine-Alpine study from 2013 demonstrated that the upgrade of the RFC's routes to allow for 740m trains could be realised with relatively modest investments.

### **2. Scope of the report**

The report focusses on the main lines and on the handover stations. Terminals were not investigated as they are usually not in the direct responsibility of the IMs. The possibility to use 740m trains in terminal and last mile infrastructure is, however, the subject of a different activity which was started in cooperation with the TAG.

### **3. Infrastructure concepts to secure 740m train length**

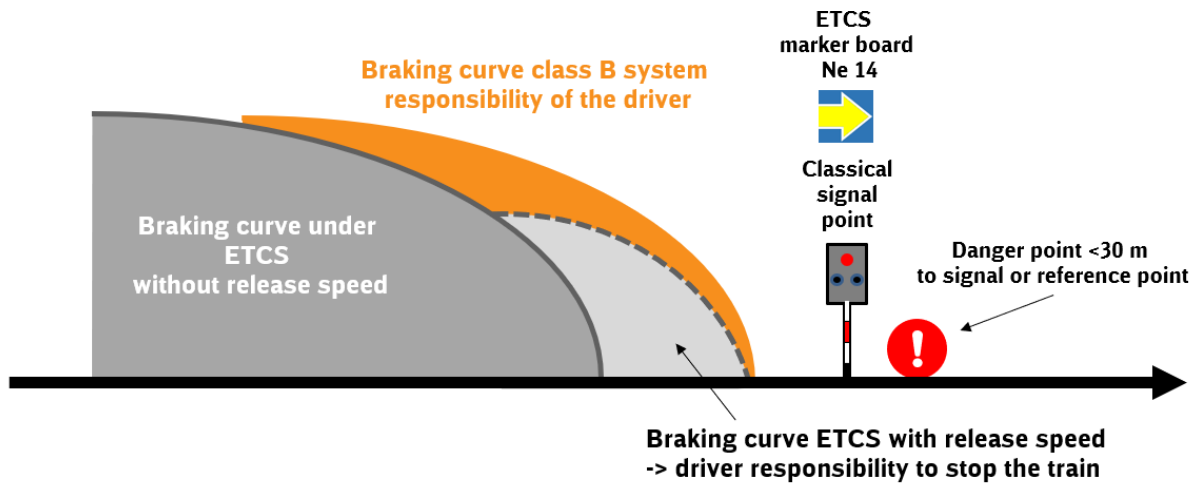
In the 2013 study regarding 740m trains on RFC Rhine-Alpine, the considered infrastructure criteria for 740m/750m trains were the physical length of the tracks in the handover stations and of the necessary side tracks. The general consensus was that this length should be 750m to 760m.

Originally the class B safety systems had not been considered as an influencing factor on the necessary track length. However, with the deployment of ERTMS, additional distances related to calculated distances to a danger point or inaccurate stopping need to be taken into account as factors to determine the necessary length of the infrastructure for 740m/750m trains. This will become an issue as ERTMS gradually replaces the class B systems and in the planning of new infrastructure.

Today, IM's have no harmonised planning standards with regard to the factors mentioned above. Currently the acceptance of a release speed is the most practicable approach to mitigate the problem on the existing infrastructure to prevent a loss of usable track length (if applicable). The WG Infrastructure and Terminals will continue to examine this issue and shall, if necessary, give specific information on line sections and / or

border crossings which might prove to be problematic. A harmonised deployment of ERTMS between IMs would be most welcome.

The following example shows how ETCS (ERTMS) can influence the train length:



**ETCS - possible impact on train length:**  
Example

**Release speed "0" + danger point < 30m:**  
Loss of 2- 4 wagons possible compared to class B



Currently the acceptance of a release speed is a practicable approach to mitigate the problem on existing infrastructure

The release speed needs to be specified in the ETCS planning phase for the affected specific local infrastructure

#### 4. Measures to enable or improve the running of 740m long trains per country

##### The Netherlands

In 2019, ProRail did a study, on behalf of the Dutch MoT, to determine which investments are needed for the main routes for rail freight transport to be in line with the requirements of the TEN-T network. This report can be found under the following link: [TEN-T-specificaties voor Kernnetwerk Goederen](#). In the following paragraph, a translation of the summarised conclusion of the study can be found.

In order to make the freight network fully compliant in 2030, investments are necessary. These investments are on top of the investments for the adaptations which have already been planned. The additional investments have an estimated cost range from € 500 million to 1 billion. These costs are relatively high because The Netherlands have the busiest railway network in Europe, resulting in the fact that capacity requests which come on top of the volume prognoses, which, contrary to the situation in the neighbouring countries, lead directly to investments for buffer and waiting tracks.

The investments are to be divided in shunting yard tracks, buffer and waiting tracks and other. 38% of the investments are directly linked to reception and departure tracks on shunting yards for freight. To guarantee the punctuality of passenger traffic, 61% of the investments is for additional waiting and buffer track. Only 1 % for the other specifications like D4/V100 and P400.

Without these investments it is not possible to guarantee the punctuality of passenger traffic and to run 740m trains to an extended degree. These investments contribute significantly to the growth goals: the growth of rail freight volume.

Already planned projects:

- At Venlo(SY) 2 additional 740m tracks are planned & funded
- 5 additional tracks are planned at Waalhaven Zuid & funded
- At Sloehaven a second bundle of tracks will be electrified by the end of 2021
- The project at Geldermalsen will be finished this year.

### Germany

The investments for 740m trains in Germany will be considered for the whole country, not only for a special part, e.g. the corridor Rhine-Alpine. In 2016, the decision was made by the government that the 740m project is part of the Bundesverkehrswegeplan (BVWP). The result of the evaluation was a positive cost-value ratio. Next step is the assignment of planning and later realisation.

The current planning for 740m projects on RFC Rhine-Alpine, as stated in the BVWP is as follows:

- |                                  |                               |
|----------------------------------|-------------------------------|
| - 2 projects in Sechtem          | foreseen for 12/2020          |
| - 1 project in Umitz             | foreseen for 12/2020          |
| - 1 Project in Bingen            | go live date to be determined |
| - 1 project in Heppenheim,       | foreseen 12/2020              |
| - 1 project in Karlsruhe-Durlach | go live date to be determined |

The construction projects Emmerich – Oberhausen, Frankfurt – Wiesbaden and Karlsruhe – Basel (planned commissioning in 2026, 2032 and 2041) also include measures to enable 740m long trains.

Timetable study: In a timetable study, solutions were found for running some 4-8 longer train pairs a day on the line section Mannheim-Basel. Mandatory for this solution is the upgrade of the node Basel. More specifically, six new tracks are required in Basel Bad Rangierbahnhof, group F. The upgrade of Basel Bad Rbf, group F is a project of DB Netz and at the moment foreseen in 2023/2024.

### Belgium

In Belgium additional waiting tracks are planned in Dendermonde and Oost Lokeren. Both projects are planned to be finished by the end of 2023/beginning 2024. Even with these two projects and others, which are embedded in larger projects, it is doubtful that the restriction for 740m trains on the routing on RFC Rhine-Alpine in Belgium (The length of freight trains is limited in principle to 750 m inclusive of traction units. The infrastructure manager's agreement must always be sought for any train longer than 650 m. The allocation of the train path will then be based on the characteristics of the infrastructure and robustness) can be overcome. Further studies are ongoing.

### Switzerland

- In Chiasso 740m trains will be able to be handled by the end of 2021
- In Basel RB there is a limited number of 740m tracks. Additional 740m tracks will be constructed by the end of 2024.
- In Brig 2 additional 740m side tracks are planned and funded.
- In the Gotthard Base tunnel only a limited number of 750m trains are possible, due to too short slip distances. This problem will be solved by a project.
- The Ceneri Base tunnel opens in 2020, allowing for 740m trains not possible via the Ceneri mountain line.
- At the border in Pino there is a crossing facility is needed. This will be resolved by the end of 2021.

### Italy

- The line from Novara to Alessandria will be ready for 740m trains by the end of 2024

- The line from Novara to Domodossola via Arona will be ready for 740m trains by the end of 2023 (first phase)
- The line from Novara to Domodossola via Borgomanero will be ready for 740m trains by the end of 2023 (first phase)
- The line from Milano to Tortona will be ready for 740m trains by the end of 2024
- The line between Luino and Novara will be ready for 740m trains by the end of 2022.
- Upgrading of Novara Node in order to manage trains of 740 m will be completed by 2030, but a first phase concerning the upgrade of Novara Boschetto and Vignale will be completed by 2025.
- Terzo Valico (Giovi pass) new line construction connecting the port of Genoa with Tortona will be finished by the end of 2024
- Overall upgrading works to 750 m sidings for all lines that allow access to the three borders with Switzerland: Domodossola, Luino and Chiasso. Putting into service will be done step by step and the main works will be completed by the end of 2022.

## 5. Remarks on the impact of train weight and its consequences

- Braking regime from P to G in Germany for trains >1600 t (technical info for RUs)
- Additional locos are required in Switzerland (e.g. Lötschberg)
- In Italy, specific studies were carried out in order to verify the conditions allowing RU to run trains heavier than 1600 t (more details are described in annex 3).

## 6. Approach regarding the classification of RFC lines regarding 740/750m long trains (annexes)

The WG I&T developed a schematic view of the corridor lines (jumping jack, JJ) to represent which is the maximum length of a train on RFC Rhine-Alpine. These jumping jacks can be found in annex 1 of this document for the present situation in 2020, the situation in 2025 and the situation in 2030.

In 2016, the WG I&T agreed with the management board to create a new classification for the corridor lines with regard to long trains. This classification focuses on the availability of 740m train paths. The classification emphasises the possibility to meet a timetable request to run a 740m train, instead of focusing on offering a certain percentage of freight train paths for 740m trains. In this way we show as IMs what our expectations are about the possibilities to make a qualitative good timetable offer for requested 740m trains. It also gives us the opportunity to take into consideration that in daily life not all freight trains will have a 740m length.

Taking this into consideration, we come to the following proposal for the classification of the corridor lines in relation to the 740m train possibilities.

Class 1: Lines where during the whole day all timetable requests to run a 740m international train can be met with a qualitative good path offer.





Class 2: Lines where during the whole day most timetable requests to run a 740m international train can be met with a qualitative good path offer.

Class 3: Lines where during the whole day only some timetable requests to run a 740m international train can be met with a qualitative good path offer.

Class 4: Lines where no timetable requests to run a 740m international train can be met with a qualitative good path offer.

In this way the JJ gives a good indication to a customer whether a request for a timetable with good quality for an international 740m (corridor) freight train can be met. We define good quality in this situation as follows: the parameters of the offered train path, except of course the train length, would be comparable with the parameters of an offered train path for a 650m train.

The intuitive colours used are:

Class 1	
Class 2	
Class 3	
Class 4	

Our interpretation of all the available information in the different countries leads to the following classification of corridor lines in 2020:

NL: Maasvlakte/Amsterdam – Zevenaar border : Class 1.  
Sloehaven/Kijfhoek to Tilburg and Tilburg – ‘s Hertogenbosch – Meteren : Class 2.  
Tilburg – Venlo and ‘s Hertogenbosch – Venlo : class 3

DE: Class 3

BE: Class 3

CH: Western part Class 1  
Eastern part at the moment Class 3

IT: Mostly Class 4 in the present situation,

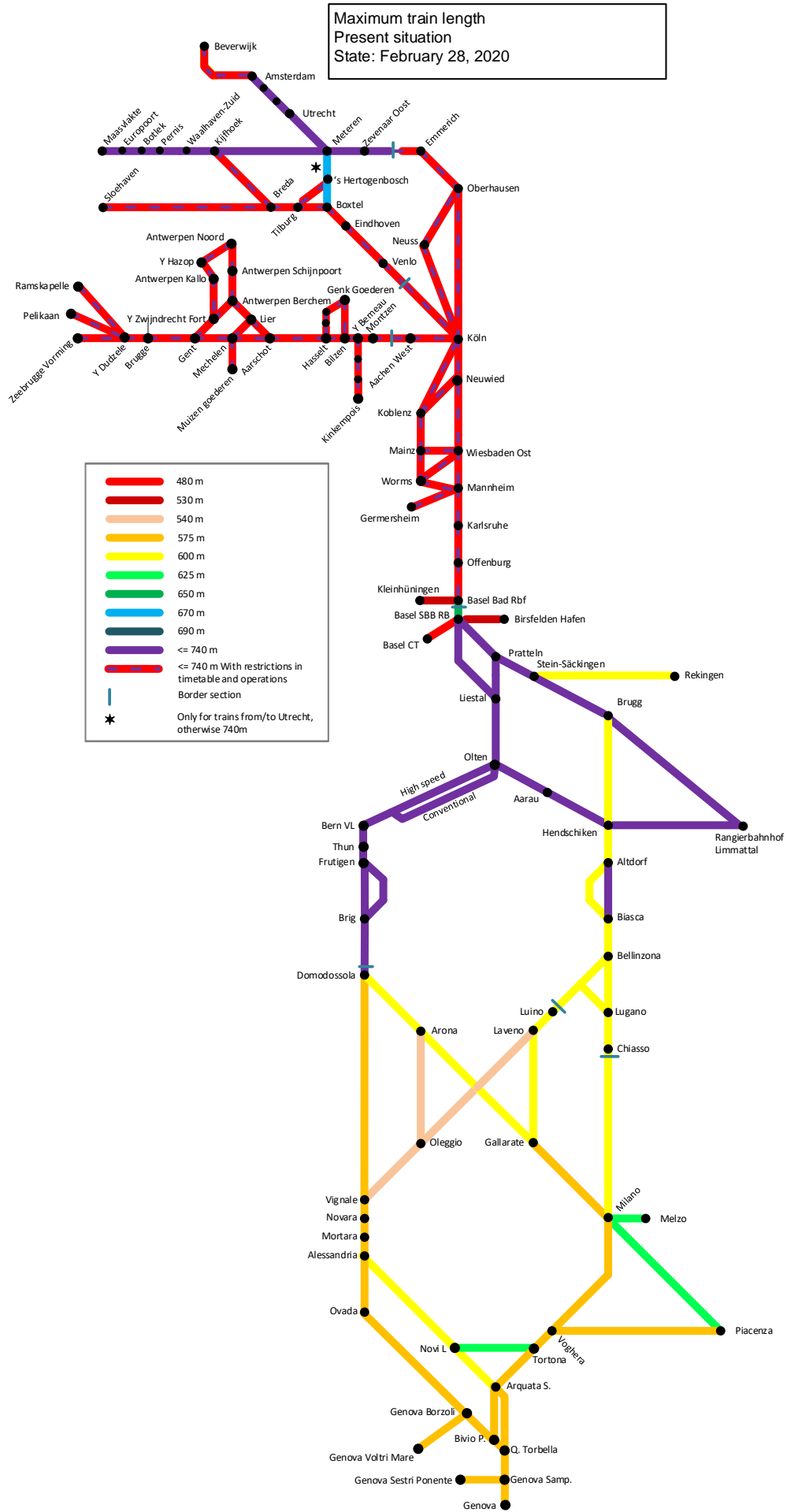
In [annex 2](#) you will find the jumping jacks presenting this information for the present day, 2025 and 2030

## 7. Conclusion

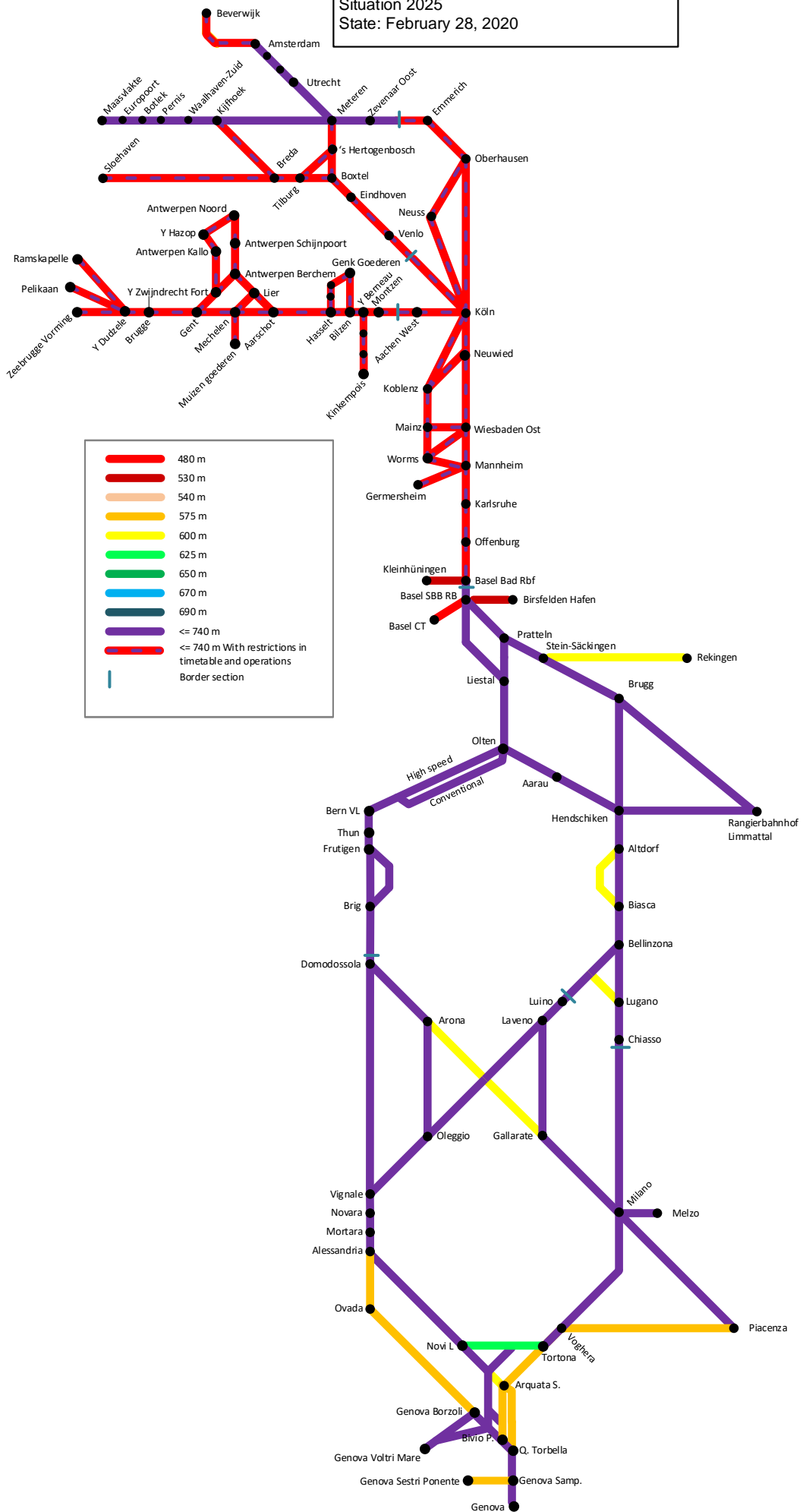
Although the situation for the running of 740m trains improves markedly by 2025/2030, it remains to be seen what the impact of the ERTMS deployment will be and, in general, if the available number of train paths for 740m trains will be sufficient to satisfy the demand.

The WG I&T of RFC Rhine-Alpine will continue to monitor the situation closely.

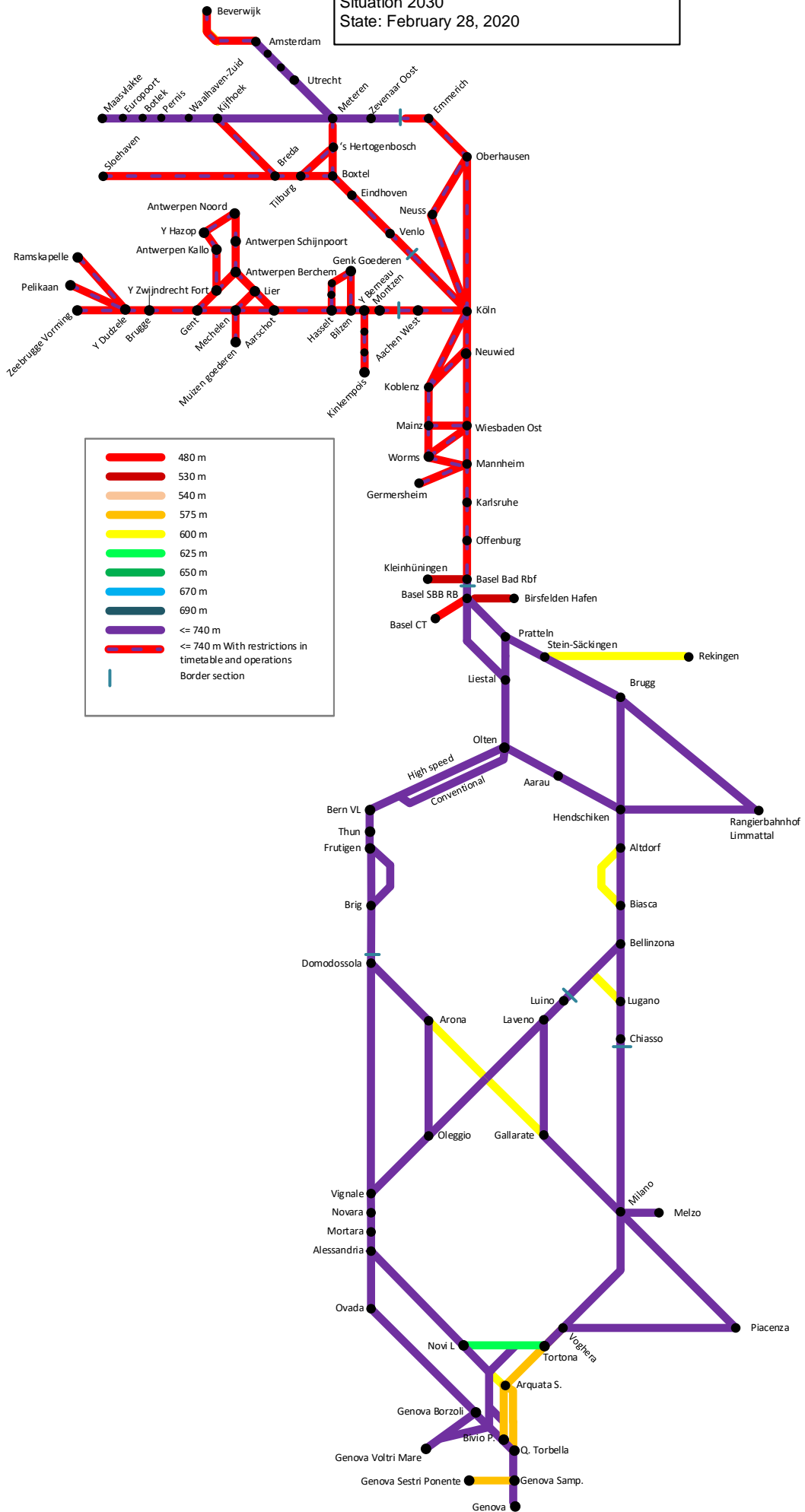
Annex 1:



Maximum train length  
 Situation 2025  
 State: February 28, 2020

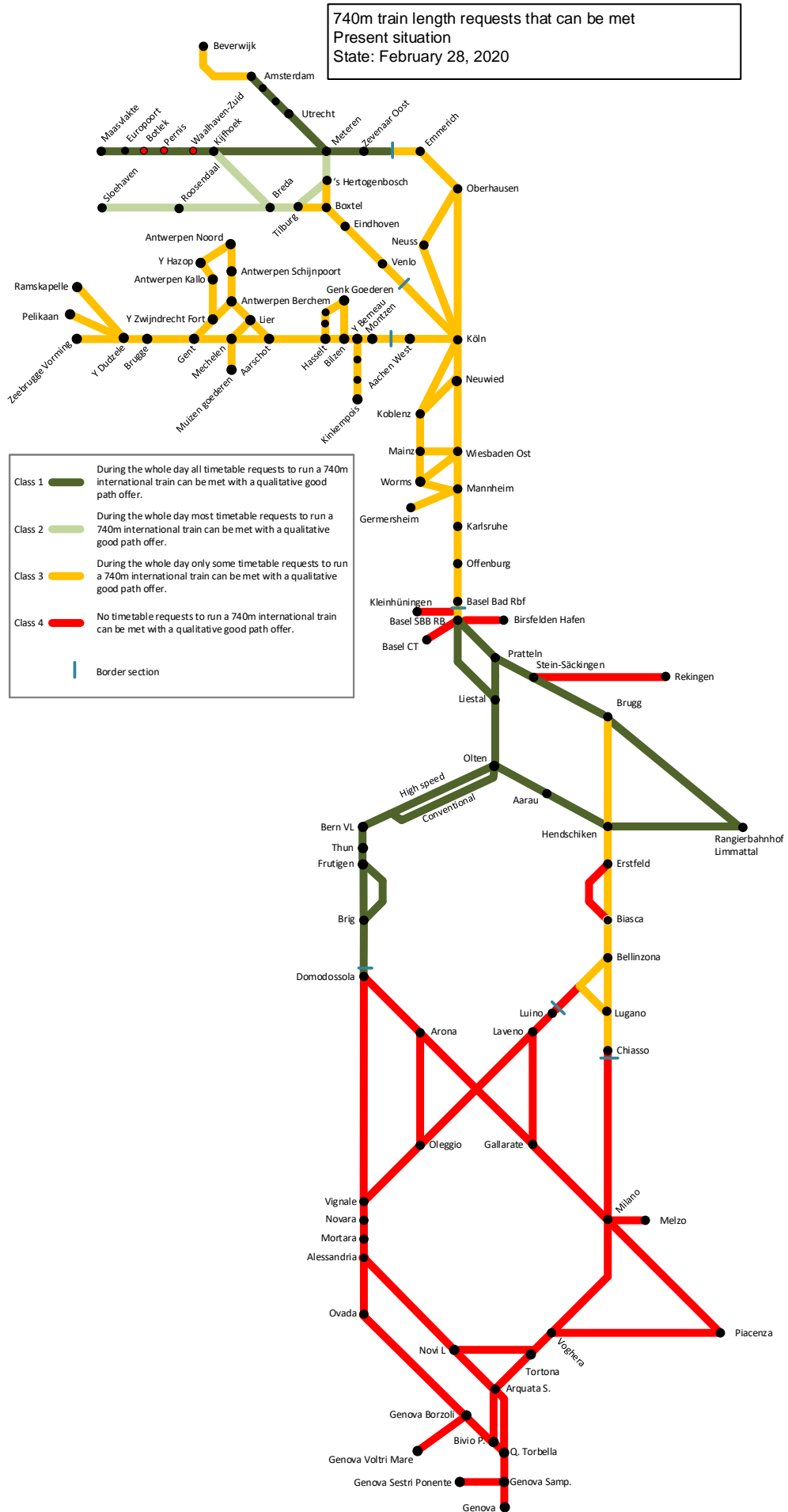


Maximum train length  
 Situation 2030  
 State: February 28, 2020

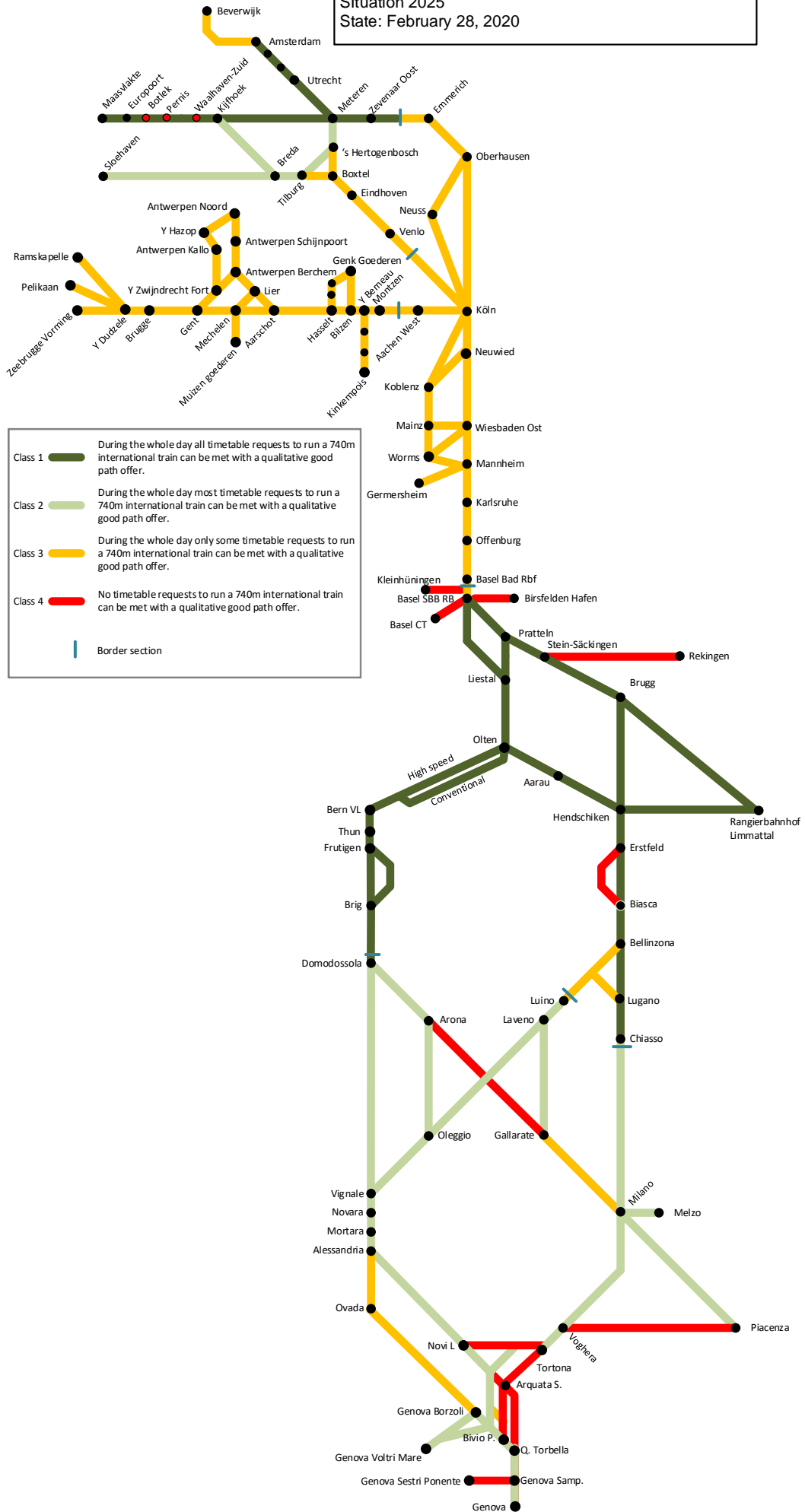




Annex 2:



740m train length requests that can be met  
 Situation 2025  
 State: February 28, 2020



740m train length requests that can be met  
 Situation 2030  
 State: February 28, 2020

