

Timetable Redesign: Capacity model 2025 Netherlands



By	ProRail Capacity management
Reference	VP20160105-304864793-30
Version	1.0
Date	30 juni 2023
Subject	TTR Capacity Model timetable 2025
Status	Definitive

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1 Introduction

It has been agreed within Europe that 2025 will be the first timetable year in which TTR (Timetable Redesign) will be partially implemented. ProRail has agreed to actively participate in TTR together with a number of other European countries. After the Capacity Strategy for 2025, the first phase within TTR, ProRail is therefore publishing the Capacity Model for 2025, the second phase within TTR.

Because this is the first time that a Capacity Model has been published for the Netherlands, we provide more information in this document on the Capacity Model for 2025. The Capacity Model itself can be found in ECMT, the European Capacity Management Tool. This document refers to ECMT.

TTR stands for redesign of the capacity allocation process. The aim of this is to achieve a harmonized timetable at European level and a uniform working method for requesting and allocating capacity. So that international train paths connect, temporary capacity restrictions are coordinated, and information about infrastructure changes is shared with each other in a timely manner. The aim is also to allocate capacity to international passenger trains earlier, so that ticket sales can start earlier and railway undertakings for passenger transport can compete with aviation. For freight railway undertakings, the goal is to keep sufficient capacity and high-quality international train paths available until the moment of operation.

The Capacity Strategy 2025 forms the input for the Capacity Model 2025. In addition, railway undertakings could indicate which train paths are desired for 2025 by means of CNAs (Capacity Needs Announcements) and they could indicate desired product steps to ProRail. ProRail has also made an estimate of the traffic requirement for freight trains based on historical data and forecasts. ProRail has processed this information into a Capacity Model in which it is indicated for each hour of the day how many train paths are available for which transport segment. The Capacity Model is then the input for the Capacity Supply.

The Capacity Model is not yet binding, but it does provide information about the intended capacity for timetable 2025, so that railway undertakings can use it to develop traffic products.

We welcome feedback from users on the Capacity Model 2025, the process surrounding the Capacity Model and the added value of the Capacity Model. Feedback can be submitted by email to TTR@prorail.nl.

2 Process and scope TTR Capacity Model

2.1 Capacity Model within the TTR-process

Timetable Redesign starts with the Capacity Strategy 5 years before the start of the timetable. This phase lasts 2 years, after which the Capacity Model phase starts. The Capacity Model phase runs from 3 years to 1.5 years before the start of the timetable. Both the Capacity Strategy and the Capacity Model fall within the Medium Term Process (MLT) with which ProRail works.

The TTR phase of Capacity Planning and Supply starts 1.5 years before the start of the timetable. At ProRail, this is the current phase of preparation of the annual timetable. The timetable preparation phase is followed by the annual timetable phase as we currently know it at ProRail 11 months before the start of the timetable.

Figure 1 indicates the different phases of TTR. The TTR process description¹ contains more information about the content of each planning phase.

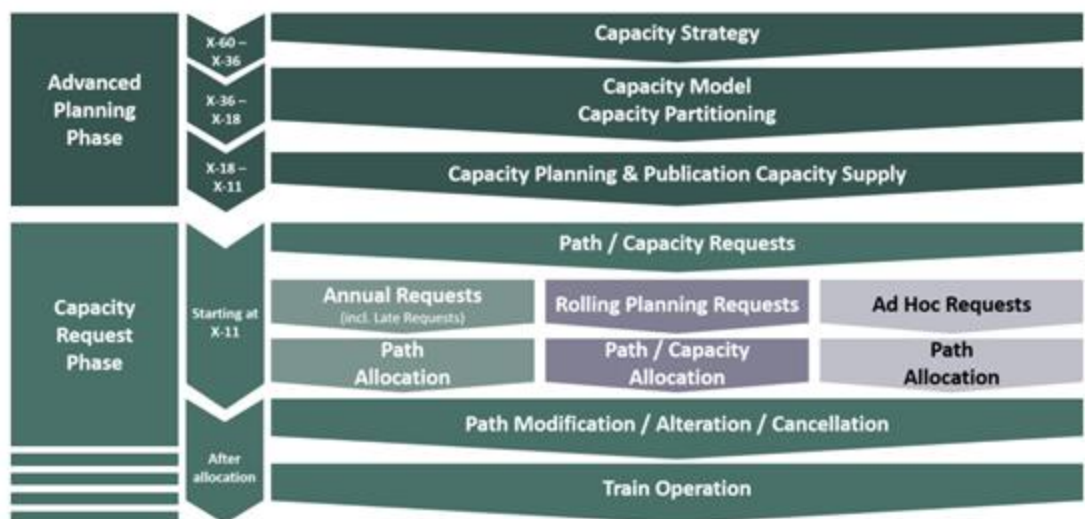


Figure 1: Scheme of TTR phases

2.2 Planning for Capacity Model 2025

The preparation of the Capacity Model for timetable 2025 started later than the 3 years stated in the TTR process description. In addition, sharing the draft version with railway undertakings has been postponed from mid-March to the end of April because publication tool ECMT still had to be adjusted on a number of points. Table 1 shows the adjusted planning for the 2025 Capacity Model.

¹ Description of the Timetabling and Capacity Redesign Process, version 3.00, https://cms.rne.eu/system/files/long_description_of_the_ttr_process_v3.0_2021-12-07_0.pdf

Table 1: Planning of Capacity Model 2025

Timeline (in months)	Timeline	Milestone / activity
X-30	July 2022	Start Capacity Model
X-30 to X-21	July 2022 – March 2023	Collect input and create draft version Capacity Model
X-20	End of April 2023	Share draft version with railway undertakings
X-18	June 2023	Create final version en publish Capacity Model

2.3 Scope Capacity Model

2.3.1 Adjusted scope for timetable 2025

Because the Capacity Model for 2025 is the first to be made, a limited scope has been chosen in consultation with other Inframanagers and RailNetEurope (RNE). This means that the geographical scope is equal to the scope used for the 2025 Capacity Strategy, see section 2.3.3. In addition, the Capacity Model is made for one standard day, a working day, without temporary capacity restrictions (TCR's). For the 2025 Capacity Model, therefore, no variants have yet been made for TCR's.

2.3.2 Time scope

Timetable 2025 starts Sunday December 15, 2024 and ends Saturday December 12, 2025.

2.3.3 Geographic scope

For the 2025 Capacity Model, the scope is equal to the scope of the 2025 Capacity Strategy, which we have expanded with the Heerlen – Herzogenrath border crossing and a number of main routes that were missing in the 2025 Capacity Strategy. Figure 2 shows the geographical scope for the 2025 Capacity Model within The Netherlands.

Within the Netherlands, ProRail will gradually expand the scope for TTR in the coming years as described in the Capacity Strategy². The aim is that the 2028 Capacity Model will consist of the entire network.

² Capacity Strategy 2025 and 2026 can be found under the heading 'Related documents 2023': <https://www.prorail.nl/samenwerken/vervoerders/network-statement>

Geographic scope Capacity Model 2025

Version 12-6-2023

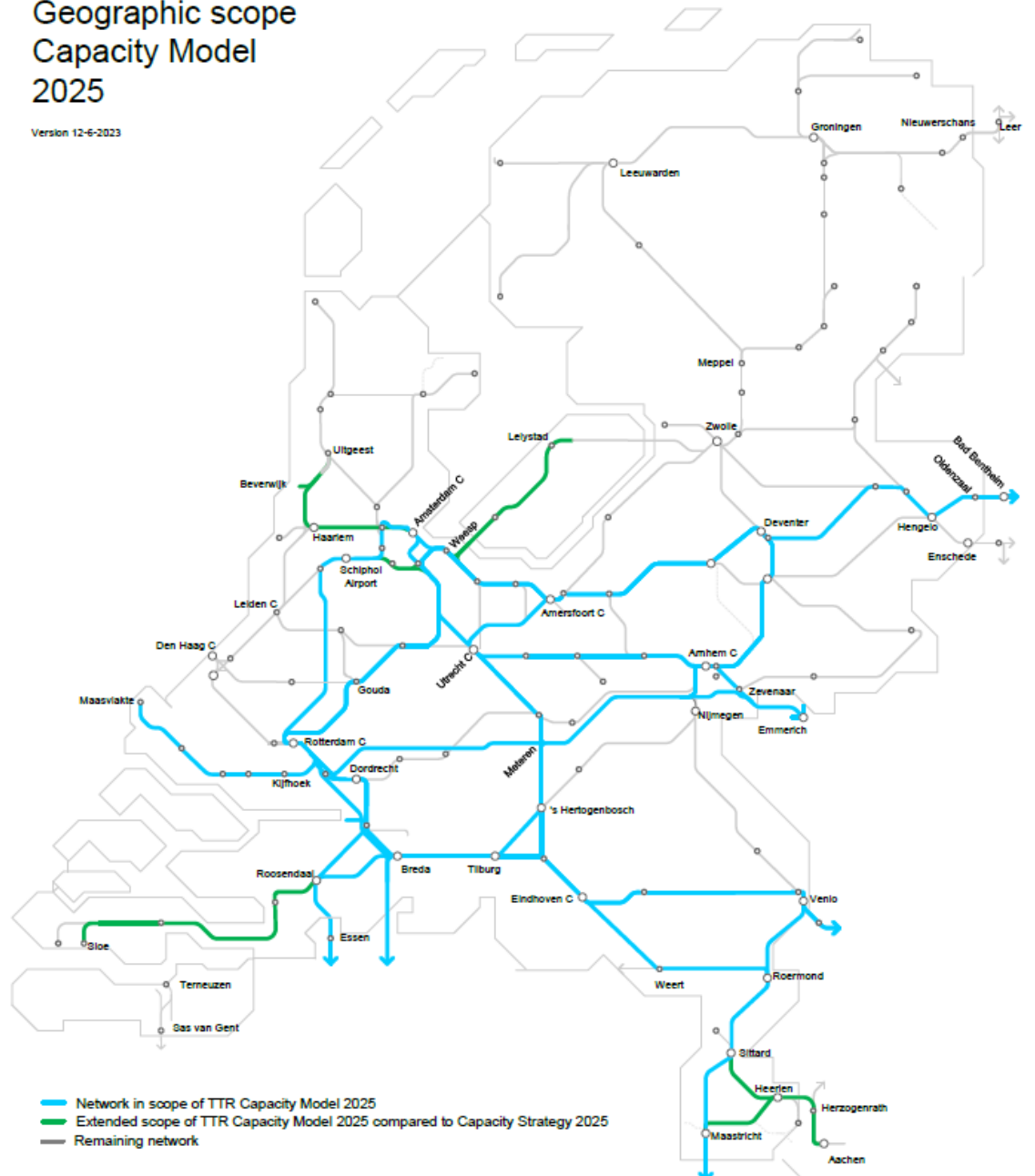


Figure 2: Geographical scope Capacity Model 2025 Netherlands

3 ECMT: European Capacity Management Tool

3.1 What is ECMT?

The European Capacity Management Tool is an application in which all Infrastructure Managers within Europe publish the Capacity Model. And later the Capacity Supply will also be published in ECMT. This application is under development at RNE. Infrastructure managers and railway undertakings draw up the specifications so that the software increasingly better meets the needs.

3.2 Accessing ECMT

ECMT can be reached via <https://ecmt-online.rne.eu/>. You need an account to view the Capacity Model. This can be requested on the home page via the link above.

3.3 Explanation of the use of ECMT for Capacity Model 2025

After you have logged in, you can view the Capacity model by clicking on 'ECMT Tabfolder' at the top of the screen. There are three different views:

- Section overview: Displays the available capacity between two adjacent timetable points;
- Line overview: Displays the available capacity per section over a specified route;
- Network overview: Shows for an entire network where capacity is still available and where the network is full.

The available capacity is displayed through CMOs; Capacity Model Objects. A CMO represents an available train path for a specific train type and product type.

Further explanation about the use of ECMT and how to obtain the above overviews can be found in the appendix, section 5.2.

3.4 CMT status and developments

ECMT is still under development. This means that not all required functionality has yet been developed and is in production. In addition, the functionality that is ready may not work properly. If there are imperfections in ECMT, or if there are specific wishes for improvement, these can be reported in the consultation of the ECMT advisory group (ECMT AG + CCB) or by e-mail to support.ecmt@rne.eu.

4 Capacity Model 2025

4.1 Input from traffic flows for the Capacity Model

Input for the Capacity Model 2025 comes from:

- Annual timetable 2023
- Timetable developments for 2024 as known in Preparation Annual Timetable
- Intended product steps as known in Medium-term process (MLT process):
 - Intended developments (product steps) for both passenger and freight traffic
 - Realization data and forecasts for numbers of freight trains
- TTR Capacity Strategy 2025 including updates for timetable 2025 from Capacity Strategy 2026
 - Available infrastructure
 - Intended traffic flows
 - Major TCR's
- Capacity Needs Announcements (CNAs)
 - Via ECMT, railway undertakings can submit desired train paths via CNAs

4.2 Traffic flows Capacity Model 2025

Due to the agreed limited scope, the Capacity Model 2025 only contains the international train paths via the border crossings within the scope of section 2.3.3. The input as described in section 4.1 was taken as a starting point.

For passenger traffic, the following changes have been included (only the international train paths have been included in the Capacity Model in ECMT):

- High-frequency regional train paths Hoofddorp – Amsterdam Central (8x/hour)
- Domestic long-distance train paths Schiphol – Rotterdam – Breda on the HSL with 200 km/h instead of 160 km/h
- Regional express trains: Aachen – Maastricht - Liège
- Acceleration of long-distance train path Amsterdam C - Berlin with temporary measures
- Connection long-distance train paths from the HSL via Amsterdam Zuid and beyond
- From 1 to 2 long-distance train paths per hour Brussels – (Breda -) Rotterdam C.

The following change has been included for freight traffic:

- Longer freight trains at Tilburg Loven possible, after track has been made suitable for trains of 660m. Train length depending on any infrastructure restrictions on hinterland connections.

Figure 3 shows all train paths that are included in the Capacity Model 2025. In addition to the frequency indicated in the legend, the operating hours of the current timetable are also included for the Capacity Model in ECMT.

In 2025, an impactful TCR is planned in Germany between Emmerich and Oberhausen. Consequence is a limited capacity throughout the year via the Zevenaar – Emmerich border crossing. That is why the starting point for the Capacity Model 2025 is the situation with a single-track closure between Emmerich and Oberhausen.

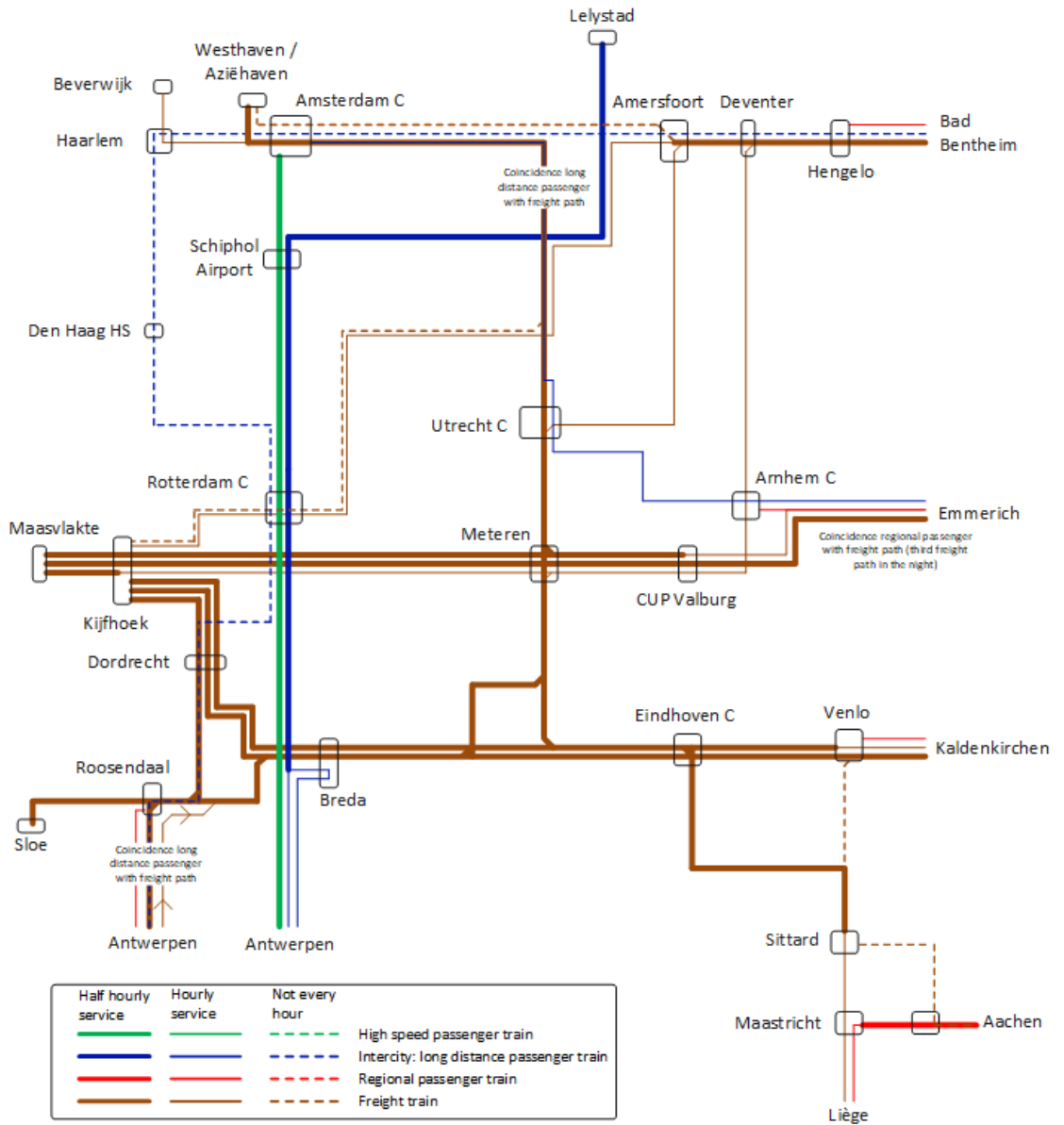


Figure 3: Intended lines for international train paths Capacity model 2025

4.3 TCR's for the Capacity Model

In accordance with the internationally harmonized, limited scope for the 2025 Capacity Model, TCR's are not yet included in the Capacity Model. Therefore, due to TCR's, the traffic from the capacity allocation may deviate from what has been entered in the standard non-TCR day of the Capacity Model 2025. This will particularly be the case on the Brabant route due to the 80-week TCR's at Emmerich – Oberhausen.

Major and large TCR's due to works in 2025, as far as they are known, have been published for the first time in December 2022 on the ProRail Logistics Portal: [X-24 Publicatie Capaciteitsverdeling](#)

In the coming years, variants of the Capacity Model will be made for TCR's. These variants show how traffic is adjusted during major and large TCR's.

4.4 Harmonization with Infrabel and DB Netz

At the border crossings, ProRail coordinates the Capacity Model with the infrastructure manager of the neighboring country concerned. The Capacity Model 2025 has been coordinated with Infrabel for the capacity at the border crossings in scope for 2025. There may still be small differences in the day edges due to the start-up and phasing out of the timetable, which have not yet been worked out in detail for this first version of the Capacity Model.

There are frequent consultations with DB Netz about border capacity due to the work on the third track between Emmerich and Oberhausen, which will last throughout 2025. In those consultations, work is being done on harmonization of the Capacity Model at the border crossings in the scope for 2025. The train paths included in ECMT on the Dutch side of the border crossings are therefore subject to change.

4.5 Status and limitations of the 2025 Capacity Model

The Capacity Model 2025 is non-binding because the legal basis has yet to be established. The proposals for new EU regulations are expected on July 11, 2023, but it is still unclear when legislation applies. It is now assumed to be 2027. Therefore, the Capacity Model for 2025 is informative.

Due to limitations in the technical infrastructure³, there may be a restriction on the use of CMOs on certain routes. This means that on some routes not all CMOs can actually be used by trains. The reason that the CMOs are included is that ProRail cannot foresee at which times of the day CMOs are required.

³ This refers to infrastructure in the technical fields of rail embankments, civil structures, traction and energy supply, level crossings, train detection, environment (noise)

5 Appendices

5.1 Appendix A: List of Abbreviations

AG:	Advisory Group
CCB:	Change Control Board
CMO:	Capacity Model Object
CNA:	Capacity Needs Announcements
ECMT:	European Capacity Management Tool
ICL:	Intended Capacity Line
MLT:	Medium term (MLT: Middellange termijn)
PLC:	Primary Location Codes
RNE:	Railnet Europe
TCR:	Temporary Capacity Restriction
TTR:	Timetable Redesign

5.2 Appendix B: Further explanation of the use of ECMT

5.2.1 Section overview

The available capacity between two adjacent primary location codes (PLCs) is available in the section overview. To view the intended capacity for a standard day for timetable 2025 at a certain location, the procedure is as follows:

- Enter the desired PLCs in the 'From location' and 'To location' fields. One or more waypoints can be entered via the input field 'Waypoints'.
 - Note: If PLCs are not adjacent to each other, ECMT shows the section between the first and second PLCs of the specified route.
- Select 2025 at 'Timetable period'
- If desired, other fields can be filled.
- Click on 'Search'

Figure 4 shows the result for the Roosendaal border – Roosendaal section for a standard day in the 2025 timetable.

Each block is a CMO (Capacity Model Object), an available train path for a certain category. The color of the CMO indicates the train type and the letters in the CMO indicate the product type, see also the legend below the graph. The horizontal axis shows hours 0 to hour 23, the vertical axis shows the number of CMOs per hour.

Clicking on a CMO will reveal further information about that CMO, including:

- The validity; daily, standard day or TCR variant
- The route
- The intended planning times
- Tonnage (by clicking on 'More values' at the route)
- Length (by clicking on 'More values' at the route)
- Timetable speed (by clicking on 'More values' at the route)

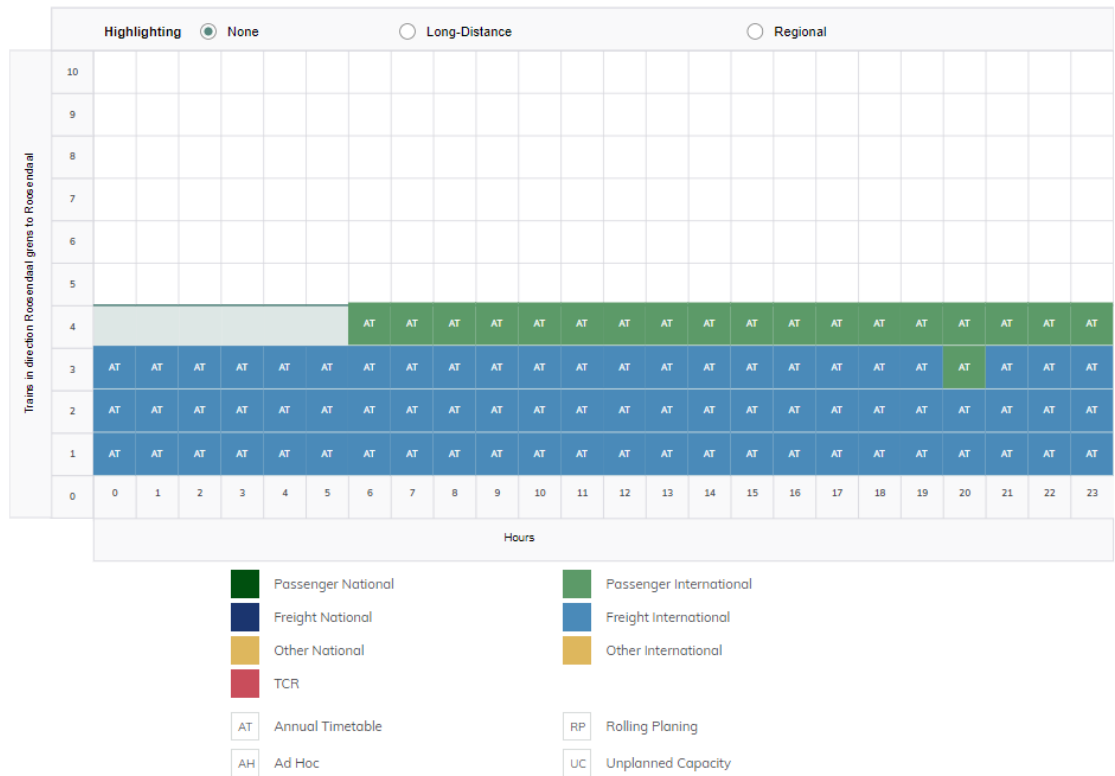


Figure 4: ECMT section overview Roosendaal grens - Roosendaal for a standard day

5.2.2 Intended Capacity Line

The Intended Capacity Line (ICL) is also shown in the section overview. This line indicates the maximum number of CMOs per hour. If there is a gap between the sum of the CMOs and the ICL in a given hour, this means that there is 'free capacity space' in that hour.

For the 2025 capacity model, we only have the international train paths in the scope. That is why we have only taken into account the international train paths for the ICL, and the ICL is actually a lot higher on many routes if domestic trains also run on the concerning route. In addition, the ICL is often equal to the sum of the CMOs because extra trains cannot simply be added because the maximum capacity has been reached on the infrastructure that is planned for 2025.

In Figure 4 there is a capacity surplus in hours 0 to 5, because the ICL is 4 and there are 3 CMOs. Whether this capacity surplus can actually be filled depends on what the infrastructure can handle in combination with the actual number of trains including the associated rolling stock characteristics.

5.2.4 Line overview

The available capacity for a route is visible in the line overview. The procedure to view a line overview for a specific route is similar to the section overview. For the line overview you can specify locations that are further apart. It is important to specify the correct via PLCs, because ECMT searches for the short route in terms of distance between the specified PLCs.

Figure 5 shows the result for the Lage Zwaluwe – Roosendaal route for a standard day in the 2025 timetable. The route is shown on the horizontal axis, with all PLCs on that route at the top. The hours of the day are shown on the vertical axis, in this example hour 0 is visible at the top and hour 9 at the bottom. The CMOs are represented by blocks/bars, where each block/bar indicates in which hour the CMO is on which part of the trajectory.

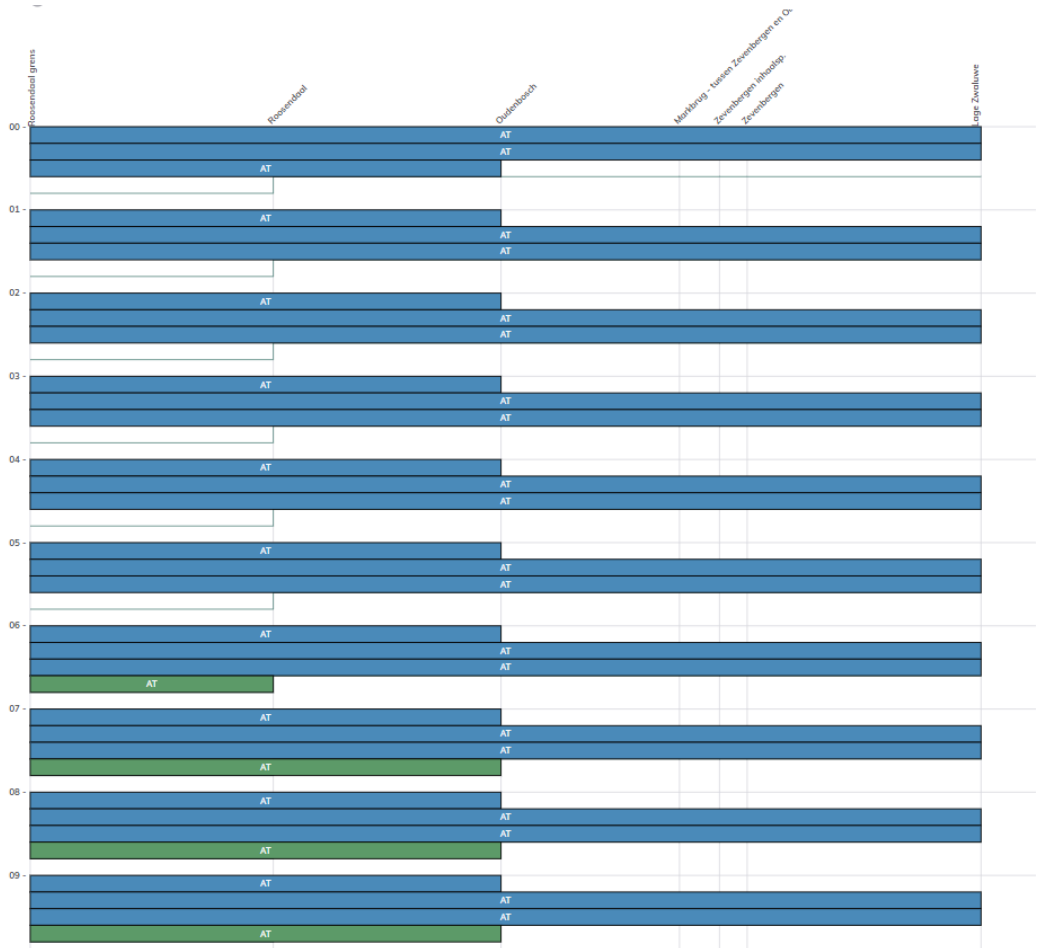


Figure 5: ECMT Line overview Lage Zwaluwe - Roosendaal grens from hours 0 to 9

5.2.5 Network overview

The available capacity for a network can be viewed via the network overview. The method to view a network overview is to enter the desired day and hour and click on 'Search'.

Figure 6 shows the network overview of a standard day in timetable year 2025. In the map, the color indicates whether there is still capacity available or whether the network is full. See the legend at the bottom of the map. The ICL is used as maximum capacity and ECMT compares the number of CMOs per section with the ICL.



Figure 6: ECMT Network overview