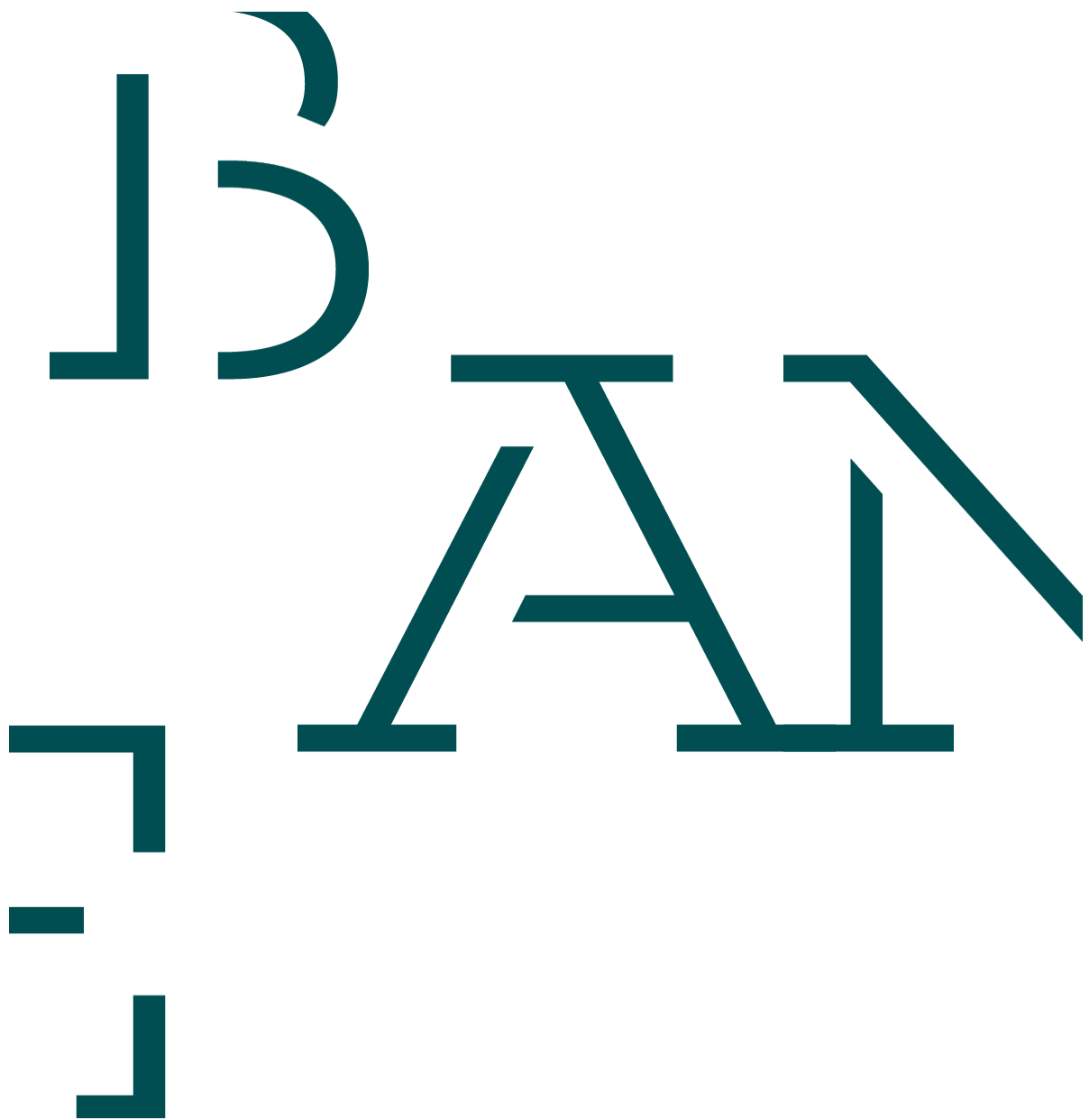




TTR

Capacity Strategy TT 2029



BANEDANMARK

Table of contents

Table of contents	2
0. Introduction	4
0.1 Contact details	4
0.2 Geographical Scope	5
0.2.1 Description of railway lines and border crossings covered by the Capacity Strategy TT2029	5
Illustration 0.2.2: Overview of the geographical scope TT2029	6
Illustration 0.2.3: Overview of tracks per line on the Danish network	8
0.3 List of involved Railway Infrastructure Managers	9
0.4 List of service facilities	10
1. Expected Capacity of Infrastructure in TT2029	11
1.1. Additional available capacity	11
Table 1.1.1: Expected changes in infrastructure capacity for TT29	11
1.2 Reduced available capacity	19
2. Temporary Capacity Restrictions	20
2.1 Principles for TCR Planning	20
Total closures	20
Sections with medium traffic	20
Sections with lower traffic	20
Single-track closures	21
Illustration 2.1: Expected capacity during single track closures.	22
2.1.1 Clustering of TCRs to minimize the gravity of impact and duration	23
2.1.2 Description of connected areas where TCRs due to shortage of capacity shall not be planned simultaneously	23
2.1.3 Description of the periods when TCRs will be executed if their nature makes it possible (nights, weekends)	25
2.1.4 Description of the periods when regular TCR windows will be planned (nights, weekends)	25
2.1.5 Description of how the TCR allocation process will look like, how the coordination and consultation will be ensured	25
2.1.6 Description of currently existing (national, bi-, trilateral) escalation process(es) in case of disagreement of the involved stakeholders	25

2.2 Pre-Announcement of Major Impact TCRs.....	26
Table 2.2.1: Major Impact TCRs TT26	26
Table 2.2.2: Major Impact TCRs TT27	29
Table 2.2.3: Major Impact TCRs TT28	33
3. Traffic Planning Principles and Traffic Flows	36
3.1 Traffic planning principles	36
3.2 Traffic flows	41
Illustration 3.1.1: Expected capacity requests.....	42
Illustration 3.2.1: Expected line diagram for passenger trains for TT29.	43
3.3 Harmonization with neighboring IMs	44
4. Validation	45
Reference documents	46

0. Introduction

An essential part of the Timetable Redesign (TTR) process is the advanced planning of which the first element is Capacity Strategy. This is the Danish Capacity Strategy document, written according to RNE's Capacity Strategy Handbook, version 3.0 (RailNetEurope, 2025) to ensure that the Capacity Strategi is in line with the TTR principles. The document is valid for the timetable year 2029 ("TT2029").

This Capacity Strategy will give a picture of the expected conditions for the use of the railway in TT2029. The purpose of this document is to roughly indicate potential future usage of the infrastructure concerned but is also considered as compliant with current railway legislation. This strategy is a mere assessment of possible future scenarios under evolving market demand, and the real outcome of the planning and allocation process may therefore differ from this strategy.

The document has five main chapters: Introduction, Expected Capacity of Infrastructure in TT2029, Temporary Capacity Restrictions, Traffic Planning Principles and Traffic Flows, and Validation.

The target groups for this document include railway undertakings, non-railway-undertaking capacity applicants, political decision makers and other stakeholders. Other infrastructure Managers, service facility and terminal operators can use this document as a coordination tool for long term planning at international level.

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0.2 Geographical Scope

The area covered in this document is most of the Danish rail network as the main corridors on the state railway for both passenger and freight traffic are included. The area goes beyond the state railway as some lines on the TEN-T¹ core network are regional and private railways. The S-bane is out of scope as it only relates to regional passenger traffic and therefore has no international relevance.

0.2.1 Description of railway lines and border crossings covered by the Capacity Strategy TT2029

Main corridors²

- Copenhagen Central Station – Fredericia
- Ringsted – Nykøbing Falster Vest - Rødby
- Næstved – Roskilde
- Roskilde – Kalundborg
- Ringsted – Copenhagen Central Station
- Copenhagen Central Station – Helsingør
- Copenhagen Central Station – Copenhagen Airport Kastrup
- Odense – Svendborg
- Fredericia – Padborg
- Tinglev – Sønderborg
- Bramming - Tønder
- Lunderskov – Esbjerg
- Esbjerg - Struer
- Thisted – Struer
- Holstebro – Vejle
- Skanderborg – Skjern
- Fredericia – Aarhus Central Station
- Aarhus Central Station – Aalborg
- Aalborg - Lindholm
- Lindholm – Frederikshavn
- Langå – Struer

Border crossings

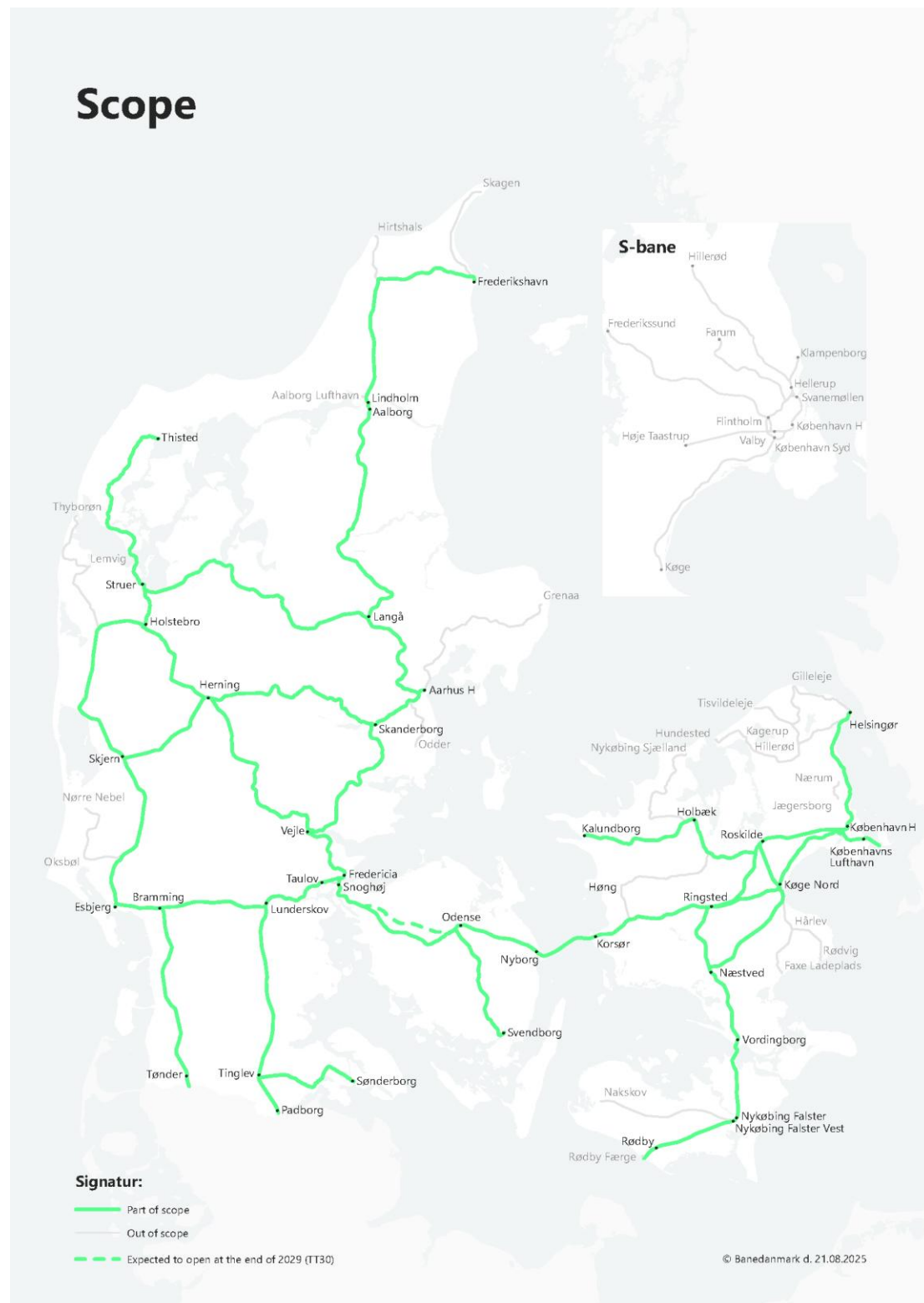
- Padborg - Flensburg
- Tønder - Nieböll
- Peberholm - Lernacken

¹ [TEN_T_straekninger_DK.pdf](#)

² [3_3B TIB straekninger \(3\).pdf](#)

Illustration 0.2.2: Overview of the geographical scope TT2029

Illustration 0.2.2 provides an overview of the geographical scope for the Danish Capacity Strategy TT2029.



The following lines are at minimum double-tracked:

- Aalborg – Aarhus Central Station
- Aarhus Central Station – Fredericia
- Fredericia – Lunderskov – Esbjerg
- Lunderskov – Tinglev
- Fredericia - Snoghøj - Odense
- Odense – Ringsted
- Ringsted - Næstved - Nykøbing Falster (except for the section between Masnedø - Orehoved)
- Nykøbing Falster - Rødby³
- Holbæk - Roskilde
- Ringsted – Roskilde - Copenhagen Central Station
- Ringsted - Køge Nord - Copenhagen Central Station
- Copenhagen Central Station – Peberholm
- Helsingør - Copenhagen Central Station

The following lines are single-tracked:

- Frederikshavn – Aalborg
- Thisted – Struer
- Struer - Langå
- Struer – Herning – Vejle
- Herning – Skanderborg
- Holstebro – Skjern
- Herning – Skjern
- Skjern – Esbjerg
- Bramming - Tønder
- Tinglev – Padborg
- Tinglev - Sønderborg
- Odense – Svendborg
- Kalundborg - Holbæk
- Roskilde - Køge Nord
- Køge - Næstved

³ Not in use. Full commissioning will take place in 2029.

Illustration 0.2.3: Overview of tracks per line on the Danish network



0.3 List of involved Railway Infrastructure Managers

Overview of all involved infrastructure managers:

Involved Infrastructure Manager(s)
Banedanmark
Sund & Bælt Holding A/S
A/S Øresund
A/S Storebælt
SVEDAB AB
Øresundsbro Konsortiet
DB Netze
Trafikverket
Lokaltog (Region H) at Elsinore, Roskilde and Køge
Lokaltog (Region S) at Holbæk, Nykøbing Falster and Slagelse
Aarhus Letbane at Aarhus Central Station
Midtjyske Jernbaner at Vemb

The Danish network is managed by two IMs: Banedanmark and Sund & Bælt Holding A/S both are owned 100% by the Danish state.

Sund & Bælt Holding A/S has the following subsidiaries to manage different railway infrastructures: A/S Øresund and A/S Storebælt.

A/S Øresund manages the sections from Copenhagen Airport Kastrup to Copenhagen Central Station and Vigerslev. The Øresund link itself from Copenhagen Airport Kastrup to Lernacken is managed by Øresundsbro Konsortiet I/S, owned by the Danish state and the Swedish state through A/S Øresund (50%) and SVEDAB AB (50%), respectively.

A/S Storebælt owns the Great Belt Link, including both Korsør Station and Nyborg Station. Ownership covers infrastructure development and maintenance.

The rest of the lines in the geographical scope are managed by Banedanmark. Banedanmark is in charge of traffic planning and management throughout the whole geographical scope, except on the following line sections:

- Thyborøn - Lemvig – Vemb
- Nørre Nebel - Oksbøl - Varde
- Hirtshals - Hjørring
- Skagen – Frederikshavn
- Nakskov - Nykøbing Falster Vest
- Slagelse - Høng - Tølløse
- Holbæk - Nykøbing Sjælland
- Jægersborg - Nærum
- Køge - Hårlev - Rødvig/Faxe Ladeplads
- Hundested - Hillerød - Kagerup – Tisvildeleje
- Hillerød - Gilleleje
- Aarhus Central Station – Odder
- Aarhus Central Station - Grenå

Neighboring IMs on major lines are DB Netze and Øresundsbro Konsortiet. Øresundsbro Konsortiet shares a border at Copenhagen Airport Kastrup station, and DB Netze shares two borders, at Padborg and Tønder, respectively. Due to the limited extensions of the Øresund fixed link and the natural extension of the traffic beyond Lernacken, Trafikverket is also considered as a neighboring IM.

Regional and local IMs are also sharing borders with Banedanmark within the geographical scope 2029:

- Lokaltog A/S
- Aarhus Letbane at Aarhus Central Station
- Midtjyske Jernbaner at Vemb
- Vestbanen A/S at Varde
- Nordjyske Jernbaner

0.4 List of service facilities⁴

Overview of the relevant service facilities

Service facility	Role & involvement
Terminal	Intermodal Terminal Høje Taastrup
Terminal	Intermodal Terminal Taulov
Terminal	Intermodal Terminal Padborg
Terminal	Intermodal Terminal Hirtshals
Terminal	Intermodal Terminal Esbjerg
Terminal	Privat Terminal Taulov Container and Rail Terminal
Terminal	Port of Fredericia
Terminal	Port of Kolding
Terminal	Port of Køge
Terminal	Port of Thyborøn
Terminal	Port of Vejle
Terminal	Port of Aalborg
Terminal	Port of Aarhus
Service facility	Depot track Copenhagen Airport Kastrup
Service facility	Depot track Copenhagen Central Station
Service facility	Depot track Østerport/Helgoland
Service facility	Depot track Roskilde
Service facility	Depot track Ringsted
Service facility	Depot track Odense
Service facility	Depot track Fredericia
Service facility	Depot track Padborg
Service facility	Depot track Esbjerg
Service facility	Depot track Aarhus
Service facility	Depot track Aalborg
Service facility	Depot track Næstved
Service facility	Depot track Nykøbing Falster

⁴ [Netredegoerelse 2026 \(1\).pdf](#) page 60-62

1. Expected Capacity of Infrastructure in TT2029

In this chapter, an overview of the different railway infrastructure projects during the period Dec 2025–Dec 2028 affecting capacity is given. This with the intent to provide available information on the expected usable permanent positive impact (additional capacity) and also the expected permanent negative capacity impact (capacity which is permanently closed). The list includes projects in the period beginning TT2026 and expected to be completed by TT2029 which will either increase or decrease the infrastructure capacity, compared to the current state.

1.1. Additional available capacity

The following table 1.1 refers to information on Banedanmark's Construction Plan available in the document "Banedanmarks Anlægsplan 2035 – Opdateret juli 2025" (Banedanmark, 2025). The projects presented in the Construction Plan have all been approved and funded. The Construction Plan is not directly coordinated with other infrastructure managers. However, it is publicly available on Banedanmark's website, so everyone, including other infrastructure managers, has access to the plan. Banedanmark regularly informs the local railway infrastructure managers about the projects. Banedanmark have previously had similar meetings with the Swedish Transport Administration, but these have been discontinued, as the Swedish Transport Administration accesses the Construction Plan on Banedanmark's website for information.

It must be noted that the main line in Eastern Denmark will be seeing a lot of activity for many years to come. As the line is electrified, track renewals, speed upgrades as well as major construction work and the roll-out of new signals are coordinated on the line. The aim is to be finished with all these projects by 2033.

The list in the table 1.1.1 is divided in Western and Eastern Denmark to provide a better overview.

Table 1.1.1: Expected changes in infrastructure capacity for TT29

Network segment	Description	Effect	Rough quantifications of the effect	Project approved by the IM's management	Financing secured
Western Denmark					
Fredericia - Padborg	The signaling system is installed and ready late April 2027	Ensures interoperability and possibility to drive and use newer trains.	Will meet the EU standards for ERTMS usage. Ensures interoperability and possibility to drive and use newer trains.	Yes	Yes
Fredericia-Aarhus	The signaling system is installed and ready for usage in the first half of 2026	The roll out of ERTMS will ensure interoperability, shorter distance between trains and a more stable operation.	Will meet the EU standards for ERTMS usage. Ensures interoperability and possibility to drive and use newer trains.	Yes	Yes
Fredericia-Aarhus	The rollout of the electrification system. Electrification of	Makes it possible to operate electric trains.		Yes	Yes

	the section is supposed to be ready for usage ultimo 2026, and thereby ready for TT27.				
Aarhus Central Station	Speed upgrades will be carried out together with track renewal and preparatory work for electrification with a view to phased commissioning of the station in 2026 and 2027 with full traffic volume by the end of 2026 (TT27).	Increase of speed	Increase of speed. Depending on the track, the speed increase is between 10-60 km/h.	Yes	Yes
Aarhus Central Station	The project 'Rebuilding Aarhus Central Station' will be carried out from 2025 to the first half of 2027. The project is coordinated with the Signalling Programme and the Electrification Programme with a view to the station being put into use for electric trains from TT27. The reconstruction of Aarhus Central Station also includes, among other things, an extension of platforms and increased capacity west of the station.	Possibility to operate with electric trains, extension of platforms and increased capacity west of the station.	Possibility of driving electrical trains to Aalborg and Fredericia.	Yes	Yes
Aarhus-Aalborg Airport	The electrification between Aarhus and Aalborg-Aalborg Airport will be put into use at the end of 2026 (TT27).	Possibility to operate with electric trains		Yes	Yes
Aalborg-Frederikshavn	Track renewal will be carried	Track renewal will result in removing	Increased speed and reduced travel time	Yes	Yes

	out on the section (Aalborg)-Frederikshavn in 2028.	the existing speed reduction.	together with a prolonged lifespan for the tracks.		
Kvisse	As part of the ongoing renewal, Banedanmark is rebuilding the platforms at Kvisse Station so that the platforms are of standard height. The project is postponed to 2026.	Level-free boarding and disembarkation for passengers will be possible.	Better alignment	Yes	Yes
Fredericia - Aarhus	Primo 2026, ERTMS will be rolled out and put into service on the line	Ensures interoperability and possibility to drive and use newer trains.	With upgrading to ERTMS this railway line will meet the newest EU signalling standards together with increased punctuality, more trains on the same line without compromising safety, increased interoperability across borders, increased speed, less maintenance and in general a more effective railway.	Yes	Yes
(Middelfart)-Fredericia-Tinglev-Padborg	In April 2027, ERTMS will be rolled out and put into service on the line	Ensures interoperability and possibility to drive and use newer trains.	With upgrading to ERTMS this railway line will meet the newest EU signalling standards together with increased punctuality, more trains on the same line without compromising safety, increased interoperability across borders, increased speed, less maintenance and in general a more effective railway.	Yes	Yes
Sønderborg-(Tinglev)	In April 2027, ERTMS will be rolled out and put into service on the line	Ensures interoperability and possibility to drive and use newer trains.	With upgrading to ERTMS this railway line will meet the newest EU signalling standards together with increased punctuality, more trains on the same line without compromising safety, increased interoperability across borders, increased speed, less maintenance and in general a more effective railway.	Yes	Yes
Skjern Station	Construction work for the first charging facilities for battery trains	Possibility to operate battery trains in the future.	This line hasn't been approved for full electrification, but to comprehend the political ambition for Co2	Yes	Yes

	has started in the first half of 2025 and expected finished late 2025		neutrality in Denmark, battery trains will be replacing the existing diesel-trains. This is why the endstations Skjern and Holstebro will be equipped with a comprehensive charging system for these trains.		
Holstebro Station	Construction work for the first charging facilities for battery trains has started in the first half of 2025 and expected finished late 2025	Possibility to operate battery trains in the future.	This line hasn't been approved for full electrification, but in order to comprehend the political ambition for Co2 neutrality in Denmark, battery trains will be replacing the existing diesel-trains. This is why the stations Skjern and Holstebro will be equipped with a comprehensive charging system for these trains.	Yes	Yes
Herning Messecenter Station	Banedanmark is constructing a new platform at Herning Messecenter Station. The project is being replanned, and the year of execution has not yet been determined.	N/A	N/A	Yes	Yes
Eastern Denmark					
Copenhagen – Roskilde	Banedanmark will carry out a track renewal between (Høje Taastrup) and (Roskilde) in 2026-2027. At Høje Taastrup Station, track renewal is expected finished in the second half of 2025.	Track renewal will result in removing the existing speed reduction.	In order to meet the political ambition of reducing the travel time between Copenhagen and Odense, the specifications for this segment will remove existing local speed reductions.	Yes	Yes
Roskilde – Korsør	A new signalling system is expected to be put into use at the end of 2030 on the section Roskilde-(Ringsted) and at the end of 2029 on the section	The track renewal (Ringsted)-(Slagelse) is a prerequisite for the increased speed on the stretch (Ringsted)-(Odense).	In order to meet the political ambition of reducing the travel time between Copenhagen and Odense the specifications for this segment will be upgraded in order to increase the speed from 180-200 km/t.	Yes	Yes

	Ringsted-(Korsør) Track renewal will be carried out between (Roskilde) and (Ringsted) in 2022-2025 and between (Ringsted)-(Slagelse) in 2026-2027. Speed upgrades are being carried out between (Ringsted) and (Slagelse), so that in the future you can drive up to 200 km/h. Will be put into use with the new signalling system on the Ringsted-(Korsør) section at the end of 2029.				
Ringsted Station	Banedanmark is planning a capacity expansion and speed upgrade at Ringsted. Execution of the project is planned for 2028-2030.	Capacity- and speed increasement	Ensuring level free crossing and speed increasement. Preparing the station for more freight- and passenger trains when Femern opens in 2029.	Yes	Yes
Korsør – Middelfart	A new signalling system on the Korsør-Middelfart section is expected to be put into use in mid-2028.	Ensures interoperability and possibility to drive and use newer trains.	With upgrading to ERTMS this railway line will meet the newest EU signalling standards together with increased punctuality, more trains on the same line without compromising safety, increased interoperability across borders, increased speed, less maintenance and in general a more effective railway.	Yes	Yes
Korsør – Nyborg	Sund og Bælt is planning track renewal on the stretch between Korsør and Nyborg. The time of execution is unclear as the project is being replanned.	Track renewal will result in removing the existing speed reduction and increasing the speed limit to 200 km/t.	In order to meet the political ambition of reducing the travel time between Copenhagen and Odense the physics for this segment will be upgraded in order to increase the speed from 180-200 km/t.	Yes	Yes

Nyborg – Odense	Speed upgrades carried out in 2023 to be able to drive up to 200 km/h can only be put into use with the new signalling system, which is scheduled to be fully rolled out on the line in 2028.	Track renewal and speed increase will result in removing the existing speed reduction, and make the tracks ready for 200 km/h.	In order to meet the political ambition of reducing the travel time between Copenhagen and Odense the specifications for this segment will be upgraded in order to increase the speed from 180-200 km/t.	Yes	Yes
Odense - Svendborg	New signalling system rolled out on the line for commissioning in the autumn of 2026.	Installation of ERTMS ensures interoperability and possibility to drive and use newer trains.	With upgrading to ERTMS this railway line will meet the newest EU signalling standards together with increased punctuality, more trains on the same line without compromising safety, increased interoperability across borders, increased speed, less maintenance and in general a more effective railway.	Yes	Yes
The Vestfunen line	It is expected that the new railway will open at the end of 2029 (TT30). Banedanmark will electrify the line in 2028, which will be put into use together with a new signalling system at the opening of the line.	With the construction of this new railway the ambition is to ensure more capacity through the ScanMed-corridor and on the Danish rail network in general.	The Danish Road Directorate (Vejdirektoratet), in collaboration with Banedanmark, is constructing a new double-track high-speed railway from Odense Vest to Kauslunde, east of Middelfart. Together with the Fynske Motorvej (Odense-Middelfart Motorway), this will form a shared transport corridor. The railroad will accommodate speeds up to 250 km/t.	Yes	yes
Ringsted – Femern Line Nykøbing Falster - Rødby	The double track from Nykøbing Falster to Rødby, completed in 2024, and the section will be prepared for the installation of ERTMS and traction power. Expected to be installed towards the end of 2028. The new signalling system is expected to be ready for commissioning at the end of 2027. The line is	More trains between Hamburg and Copenhagen, and possibility to drive trains through the southern corridor.	1. Increased number of commuters 2. Increased number of crossborder (Femern) passengers 3. Increased number of passenger train departures in the Great Belt Tunnel 4. Reduced construction costs of new railways 5. Increased volume of freight in transit 6. . Improved punctuality by fulfilling Ringsted-Femerns proportion of the corporate punctuality target.	Yes	Yes

	expected to be fully operational by the opening of the Femern Baelte link in mid-2029 at the latest.				
Ringsted – Rødby Storstrøm Bridge	The new Storstrøm Bridge, which is being built by the Danish Road Directorate, is due to be put into use in 2027. This is on the condition that Banedanmark can start the work on the bridge in time with a view to installing the signalling system and traction power. Banedanmark expects to be able to start the railway-related works in early 2026. It is expected to be able to make a partial commissioning of electric trains' operation in one track at the end of 2026, and full commissioning in both tracks in May 2027.	Possibility to operate with electric trains.	The Storstrøm Bridge will also increase the speed.	Yes	Yes
Roskilde-Kalundborg	The electrification of the Roskilde-Kalundborg section has been replanned in accordance with the political agreement from May 2020. The signals between Roskilde and Holbæk have been immunised and the electricity operation on the line was put into use in December 2024 (K25).	Possibility to operate with electric trains.	Will be ready for the new IC5 trains and Vectron locomotives and reduce the need for diesel trains in the future.	Yes	Yes

	The current Traffic Plan assumes that the line will be put into service with ERTMS to K28 at the earliest.				
Holbæk – Kalundborg	Preparatory work in the form of track lowering, bridge work and other work will be carried out in the period 2022-2026. The full electrification is expected to be completed by the end of 2027.	Possibility to operate with electric trains	Will be ready for the new IC5 trains and Vectron locomotives and reduce the need for diesel trains in the future.	Yes	Yes
Copenhagen Central Station - Peberholm	Commissioning of a new signalling system planned for April 2027	Increased capacity and punctuality	With upgrading to ERTMS this railway line will meet the newest EU signaling standards together with increased punctuality, more trains on the same line without compromising safety, increased interoperability across borders, increased speed, less maintenance and in general a more effective railway.	Yes	Yes
København Syd	In the period 2023-2025, Metroselskabet in collaboration with Banedanmark will establish platforms at the Øresund tracks and a pedestrian tunnel.	Increased capacity and simplification of platform-to-platform change, and between lines and operators, for the passengers.	N/A	Yes	Yes
Copenhagen Airport Station	Sund & Bælt will construct platforms at the current freight tracks and establish directional operations at Copenhagen Airport Station. The project is planned for execution in 2025-2026. Full functionality when ERTMS is put into service in 2027	Together with the upcoming Fehmarn Belt, the Øresund Railway will ensure a shorter connection between Scandinavia and the rest of Europe. Alongside the Fehmarn Belt Fixed Link, the Øresund Railway is a crucial component in realizing the shared European vision of a unified transport network that connects	Increased capacity – also for freight – and two new platforms.	Yes	Yes

		North, South, East, and West. This benefits passengers, freight customers, and the environment.			
Overtaking track Kalvebod	The construction of two overtaking lanes at Kalvebod is planned for execution in 2026-2028. The overtaking lanes are expected to be completed and put into service together with the new signals on the Roskilde-Copenhagen section by 2033 at the latest. Banedanmark is investigating the possibility of being able to bring forward the planned introduction of the new signals.	Increased capacity	The construction of the overtaking tracks is a prerequisite for achieving the full benefits of a southern rail corridor from Roskilde via Copenhagen South (formerly known as Ny Ellebjerg) to Copenhagen Airport. The project is also crucial for accommodating the expected increase in train traffic with the upcoming Fehmarn Belt Fixed Link.	Yes	Yes

1.2 Reduced available capacity

No permanent capacity reductions are planned until TT29.

2. Temporary Capacity Restrictions

2.1 Principles for TCR Planning

The information in this section refers directly to the documents "Generelle sporspæringsprincipper v4" (Banedanmark, 2023)

Due to the typical traffic structure and the lack of rerouting possibilities, any track possession on the lines Padborg/Aarhus - Ringsted and Copenhagen/Vigerslev - Peberholm will be expected to have major impact on the traffic. Track possessions on the two sections Copenhagen – Ringsted, via Roskilde or Køge Nord respectively, are expected to have medium impact on the traffic, because of the rerouting possibility between the two lines in question. The remainder of the network either provides rerouting possibilities, or is subject to lower traffic volumes, which leaves more room to accommodate TCRs, and thus has a lower expected impact on traffic.

Traffic in the triangle area Snoghøj - Taulov – Fredericia can be rerouted. Traffic in the area between Struer - Langaa - Skanderborg – Vejle area is possible to reroute in theory, but in practice the added time required for rerouting means that this is not a viable option.

As a general principle, TCRs are clustered to optimize overall closure of channels, and placed at weekends, at night or during holidays to limit the overall impact on traffic as much as possible. For sections with increased holiday traffic, the latter principle is not in effect.

Total closures

The geographical scope of the Capacity Strategy 2029 covers lines on the Danish national rail network with varying degrees of traffic volumes. On the main rail freight corridor total closures will be minimized, clustered, and scheduled during low-demand periods, such as holidays and school breaks. On the corridor section Padborg – Ringsted, a limit of 8,33 days/year of total closure is defined.

Generally, total closures should be planned in a way that takes all traffic on the network into account and must be harmonized and coordinated with neighboring infrastructure managers. Total closures are supposed to be planned in school holidays to the extent that this is possible. In the case that a total closure is planned, alternative planning patterns must be considered, and these should – if possible – not include total closures.

If Banedanmark has closures of 4-6 weeks, or there is a need for longer closures, an obligation to carry out several works during the closure exists. This is to limit the need for total closures over the next 10 years on the affected line. Works that could be postponed should thus be carried out during the closure.

Sections with medium traffic

On the sections with medium traffic, Aalborg – Hjørring, Hjørring – Frederikshavn, Langaa – Viborg, Viborg – Struer, Herning – Holstebro – Struer, Skanderborg – Herning, and Vejle – Herning, total closures must also be scheduled during holidays and school breaks, or a maximum of 56 hours during weekends.

Sections with lower traffic

On the section Tinglev - Sønderborg with lower traffic, total closures can be planned throughout the year. However, it must be planned in a way that ensures that as much work as possible is carried out simultaneously.

On the section Roskilde - Holbæk, total closures must be held between weeks 27 and 32.

Single-track closures

In case of a single-track closure on double track lines, the remaining active track is always operated at the maximum speed that is allowed by the type of work on the neighboring single-track closures. Generally, the speed limit on operational tracks should never be lower than 80 km/h in the daytime, but a speed limit as low as 40 km/h can be introduced during evening and night hours, when the actual work is being executed.

In the case of a single-track closure, only one section of track should be closed concurrently between two stations. In certain cases, more than one single track closure can exist simultaneously between stations. This will always be evaluated based on the number of train paths per hour.

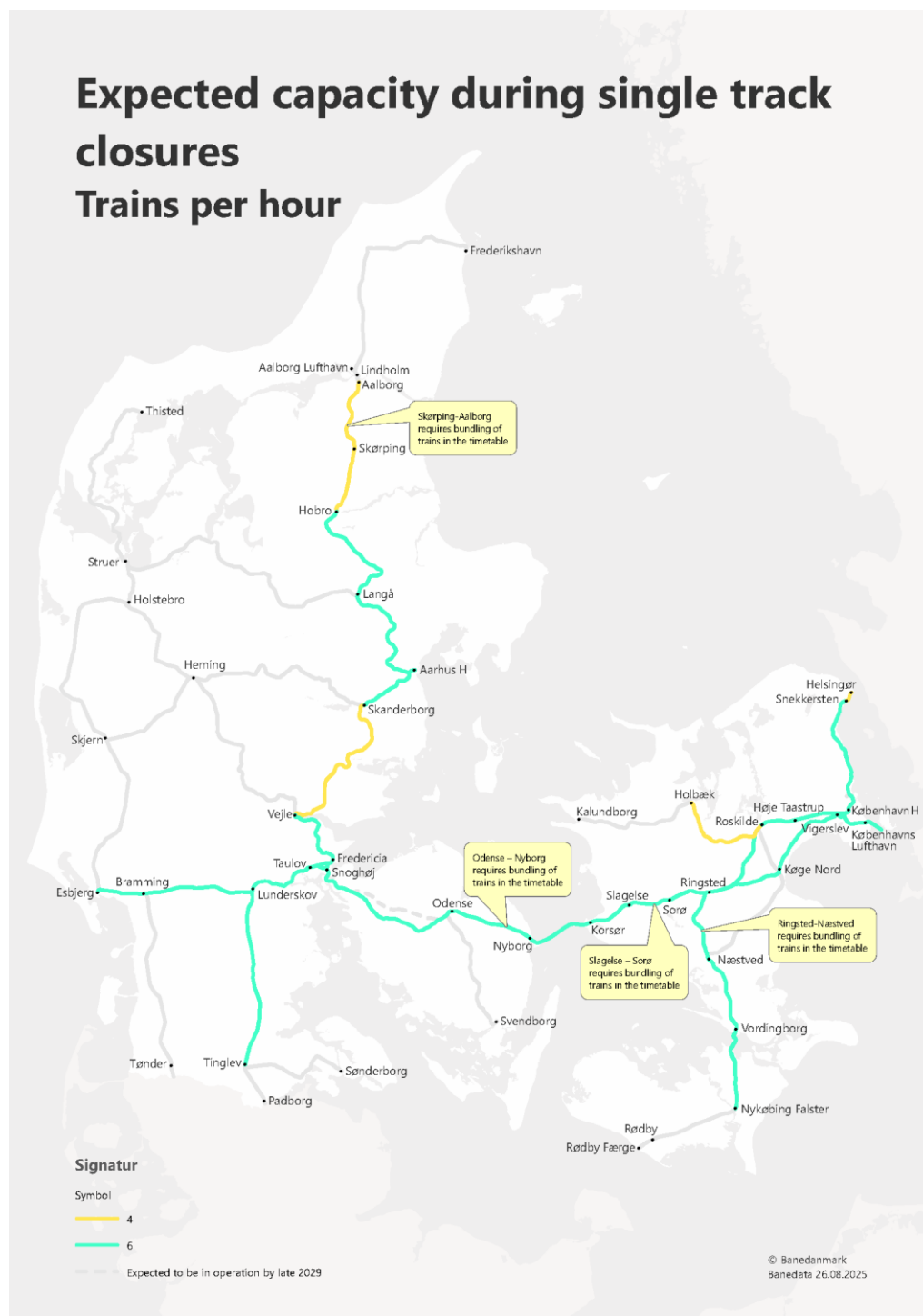


Illustration 2.1: Expected capacity during single track closures.

On the graphic above, the number of trains per hour per direction is shown, when running on one track only.

The yellow sections between Skanderborg – Vejle; Hobro-Skørping; Roskilde – Holbæk and Snekkersten – Elsinore; are limited to 4 trains per hour per direction. On the sections between Skørping – Aalborg, this requires bundling of trains in the timetable.

The green sections on Hobro – Aalborg; Hobro – Aarhus Central Station – Skanderborg; Esbjerg – Bramming – Lunderskov – Vamdrup – Tinglev; Vejle – Fredericia; Snoghøj - Odense – Ringsted;

Næstved - Nykøbing F.; Ringsted – Roskilde; Høje Taastrup – Vigerslev – Copenhagen Airport/Copenhagen Central; and Østerport - Snekkersten are limited to 6 trains per hour in each direction. On the sections between Odense – Nyborg; Slagelse – Sorø and Ringsted – Næstved, this requires bundling of trains in the timetable.

The grey sections are all single tracked, and a single-track closure can be considered a total closure, as no trains will be able to run while works are being carried out. This covers the sections Frederikshavn – Aalborg; Thisted – Struer - Langå; Struer – Holstebro – Herning; Herning – Skanderborg; Herning – Vejle; Herning – Skjern; Holstebro – Skjern – Esbjerg; Bramming - Tønder; Tinglev – Padborg; Tinglev - Sønderborg; Odense – Svendborg; Nykøbing F. – Rødby Ferry; Holbæk - Kalundborg; Roskilde - Køge Nord - Næstved;

The section between Roskilde and Høje Taastrup is exempt from this rule, as it has four tracks. Two tracks are therefore usually kept open during capacity restrictions.

2.1.1 Clustering of TCRs to minimize the gravity of impact and duration

Banedanmark is dedicated to organizing TCRs in a way to reduce their impact. Through careful planning, TCRs are grouped strategically to limit both the extent and duration of disruptions caused by the TCRs. This approach enables Banedanmark to carry out critical infrastructure work efficiently while prioritizing the reliability of the rail network.

In certain cases, however, achieving an optimal grouping of TCRs may be constrained by factors such as geographical limitations, project timelines, or specific operational requirements. In such cases, Banedanmark employs alternative strategies to schedule TCRs thoughtfully.

2.1.2 Description of connected areas where TCRs due to shortage of capacity shall not be planned simultaneously

As there are detour options via the other section TCRs due to shortage of capacity shall not be planned simultaneously on

- (Vigerslev)-Roskilde-(Ringsted) and (Vigerslev)-Køge Nord-(Ringsted).
- Odense – Snoghøj and The Westfunen line

Lines are marked with red on the map below.

Scope



2.1.3 Description of the periods when TCRs will be executed if their nature makes it possible (nights, weekends)

The planning of TCRs during periods of low network demand is made to minimize disruptions, and will be utilized as often as possible, depending on the nature of the TCRs. Typically, these periods include nights: and weekends.

TCRs are preferably scheduled during nighttime hours (e.g., 22:00–04:00) or weekends when rail traffic is less than during a weekday. This allows maintenance or other works to be done with reduced impact on passenger and freight services.

2.1.4 Description of the periods when regular TCR windows will be planned (nights, weekends)

When possible, Banedanmark schedules regular TCR windows during periods of low network demand to have as little impact on rail services as possible. These windows include nights typically set at 22:00–04:00, when traffic is low compared to weekdays,

TCR windows may also take place during weekends, such as Friday evenings to Sunday mornings, for more extensive work.

2.1.5 Description of how the TCR allocation process will look like, how the coordination and consultation will be ensured

Banedanmark schedules TCRs based on network capacity needs, prioritizing low-traffic periods. Before X-30, a major or high TCR request must be specified in great detail and submitted to Banedanmark.

All the applicants will then be coordinated with other TCRs. A similar procedure will be used for medium TCRs at X-18.

Applicants may request two alternative solutions. Banedanmark evaluates these during the finalization phase and, if possible, incorporates any changes in order to balance network stability and stakeholder needs.

Banedanmark coordinates with neighboring IMs, such as Trafikverket, BaneNOR and DB InfraGO, for cross-border TCRs.

2.1.6 Description of currently existing (national, bi-, trilateral) escalation process(es) in case of disagreement of the involved stakeholders

Banedanmark has established escalation processes to address disagreements among stakeholders regarding TCRs.

In case of disputes within Denmark, Banedanmark will engage in a direct dialogue with involved stakeholders, such as applicants.

For cross-border TCRs involving neighboring IMs, Banedanmark engages in bilateral or trilateral meetings to harmonize plans.

2.2 Pre-Announcement of Major Impact TCRs

The following Major TCRs are announced for timetable years TT26, TT27 and TT28 respectively. The Danish network is undergoing a number of changes the upcoming years, especially with regards to the Signal Programme, Electrification Programme, and general speed upgrades to the network. Besides these, the new Kastrup Airport Station and the rebuilding of Aarhus Central Station will be carried out from 2025 to the first half of 2027 and will also cause a number of Major Impact TCRs over the next few years. In the Tables below all major TCRs are listed, sorted by timetable years TT26, TT27 and TT28.

Table 2.2.1: Major Impact TCRs TT26

Network segment	Purpose	Time of execution	Start (quarterly basis)	Impact (total closure/single track operation/speed restriction)	Impact to passenger & freight traffic	Project approved by the IM's management	Financing secured
(Høje Taastrup) - (Roskilde)	Drainage works	24.03-26.04	Q1 26	Track closures	Tracks 1 and 2 closed	Yes	Yes
(Høje Taastrup) - (Roskilde)	Drainage works	26.04-20.09	Q2 26	Track closures	Tracks 2 and 3 closed	Yes	Yes
(Høje Taastrup) - (Roskilde)	Drainage works	20.09-01.11	Q3 26	Track closures	Tracks 3 and 4 closed	Yes	Yes
(Sorø) - (Slagelse)	Drainage works	31.05-09.06	Q2 26	Track closures	Single track operation. Speed restriction of 80 km/h in neighboring track	Yes	Yes
(Slagelse) - (Sorø)	Drainage works	09.06-27.06	Q2 26	Track closures	Single track operation. Speed restriction of 80 km/h in neighboring track	Yes	Yes
(Sorø) - (Fjenneslev)	Drainage works	05.07-11.07	Q3 26	Track closures	Single track operation. Speed restriction of 80 km/h in neighboring track	Yes	Yes

(Ringsted) - (Slagelse)	Drainage works, turnouts.	11.07-20.07	Q3 26	Total closure between Ringsted and Slagelse	Trains can turn back in Ringsted and Slagelse.	Yes	Yes
(Fjenneslev) - (Sorø)	Drainage works	20.07-27.07	Q3 26	Track closures	Single track operation. Speed restriction of 80 km/h in neighboring track	Yes	Yes
(Ringsted) - (Fjenneslev)	Drainage works	27.07-26.08	Q3 26	Track closures	Single track operation. Speed restriction of 80 km/h in neighboring track	Yes	Yes
(Fjenneslev) - (Ringsted)	Drainage works	06.08-17.08	Q3 26	Track closures	Single track operation. Speed restriction of 80 km/h in neighboring track	Yes	Yes
(Ejby) - Kavslunde	New track on West Funen	12.06-21.06	Q2 26	Track closures	Single track operation. Speed limit of 80 km/h for 2000 m	Yes	Yes
Kavslunde - (Ejby)	New track on West Funen	21.06-11.07	Q2 26	Track closures	Single track operation. Speed limit of 80 km/h for 2000 m	Yes	Yes
(Odense) - (Kavslunde)	New track on West Funen	11.07-20.07	Q3 26	Total closure	No trains between Odense and Middelfart	Yes	Yes
(Ejby) - (Kavslunde)	New track on West Funen	20.07-27.07	Q3 26	Track closures	Single track operation	Yes	Yes
Copenhagen Airport - Kastrup Station	New Kastrup Airport Station	27.02-01.04	Q1 26	Track closures	Track 1 closed from turnout 08 – SU11. Track 2 closed from turnout 07 – turnout 12.	Yes	Yes

Aarhus	Rebuilding Aarhus Central Station	14.12.25 - 02.01.26	Q4 25	Track closures	Tracks 4, 5, 6 and 7 closed. Only operation in tracks 2 and 3, and track 40/80 to/from Hørning.	Yes	Yes
Aarhus Central	Rebuilding Aarhus Central Station	14.12.25 - 02.01.26	Q4 25	Track closures	One track out of operation at a time	Yes	Yes
Aarhus Central	Rebuilding Aarhus Central Station	14.12.25 - 02.01.26	Q4 25	Track closures	Tracks 402, 403, 404, 405, 406, 407 no traffic. Freight must run via the harbour to/from Aalborg. Freight to Aarhus directly to harbour.	Yes	Yes
Aarhus Central	Rebuilding Aarhus Central Station	14.12.25 - 02.01.26	Q4 25	Track closure	Bridge in track 500 closed	Yes	Yes
(Skanderborg) - Aarhus - (Hinnerup)	Rebuilding Aarhus Central Station	02.01-12.01	Q1 26	Total closure	All trains canceled between Skanderborg and Hinnerup	Yes	Yes
(Hørning) - Aarhus	Rebuilding Aarhus Central Station	12.01-07.04	Q1 26	Track closures		Yes	Yes
(Hørning) - Aarhus	Rebuilding Aarhus Central Station	07.04-11.05	Q2 26	Track closure		Yes	Yes
(Hørning) - Aarhus	Electrification Aarhus	12.05-13.07	Q2 26	Track closure	During the day, lower traffic volumes between Hørning and Aarhus, single track operation.	Yes	Yes
Aarhus Central Station	Rebuilding Aarhus Central Station	12.01-07.04	Q1 26	Track closures	Track 80 and 40/80 closed.	Yes	Yes

Aarhus - Brabrand	Rebuilding Aarhus Central Station	12.01-07.04	Q1 26	Total closure		Yes	Yes
Aarhus - Brabrand	Electrification Aarhus	07.04-13.07	Q2 26	Track closures	During the day, lower traffic volumes between Brabrand and Aarhus, single track operation.	Yes	Yes
Aarhus Central Station	Rebuilding Aarhus Central Station	13.07-12.12	Q3 26	Track closures	Tracks 2 and 3 closed. No train cancellations necessary. No parking at platforms on Aarhus Central Station.	Yes	Yes

Table 2.2.2: Major Impact TCRs TT27

Network segment	Purpose	Time of execution	Start (quarterly basis)	Impact (total closure/single track operation/speed restriction)	Impact to passenger & freight traffic	Project approved by the IM's management	Financing secured
(Høje Taastrup) - (Roskilde)	Various works	08.01-04.03	Q1 27	Track closures	Track 1 and 2 closed. Speed limit 80 km/h in track 3.	Yes	Yes
(Høje Taastrup) - (Roskilde)	Various works	04.03-13.05	Q1 27	Track closures	Track 2 and 3 closed. Speed limit 80 km/h in track 1 and 4.	Yes	Yes
(Høje Taastrup) - (Roskilde)	Various works	13.05-26.06	Q2 27	Track closure	Track 3 and 4 closed.	Yes	Yes
(Høje Taastrup) - (Roskilde)	Various works	06.09-26.09	Q3 27	Track closure	Track 1 and 2 closed.	Yes	Yes
(Høje Taastrup) - (Roskilde)	Various works	26.09-01.11	Q3 27	Track closure	Track 2 and 3 closed. Speed limit 80 km/h in track 1 and 4.	Yes	Yes

(Høje Taastrup) - (Roskilde)	Various works	01.11-24.11	Q4 27	Track closure	Track 3 and 4 closed.	Yes	Yes
Sorø - (Slagelse)	Various works	25.03-30.03	Q1 27	Track closures	Single track operation. Sections on track 1 closed.	Yes	Yes
Ringsted - Slagelse	Turnout 05b Sorø.	27.03-29.03	Q1 27	Total closure	1 day and 8 hours of total closure	Yes	Yes
Sorø st.	Various works	30.03-12.04	Q3 27	Track closure	Track 3 on Sorø station closed. Only tracks 1 and 2 operational.	Yes	Yes
(Ringsted) - (Fjenneslev)	Various works	29.05-16.06	Q2 27	Track closures	Single track operation, 80 km/h in neighboring track	Yes	Yes
Fjenneslev - (Ringsted)	Various works	16.06-27.06	Q2 27	Track closures	Single track operation, 80 km/h in neighboring track	Yes	Yes
(Sorø) - Fjenneslev	Various works	27.06-02.07	Q2 27	Track closure	Single track operation, 80 km/h in neighboring track	Yes	Yes
Sorø st.	Various works	02.07-13.07	Q3 27	Track closure	Track 3 on Sorø station closed. Only tracks 1 and 2 operational.	Yes	Yes
(Slagelse) - (Sorø)	Various works	13.07-17.07	Q3 27	Track closure	Single track operation, 80 km/h in neighboring track.	Yes	Yes
Ringsted - Slagelse	Various works	17.07-26.07	Q3 27	Total closure	Total closure. Trains can turn back in Slagelse and Ringsted.	Yes	Yes
Sorø	Various works	26.07-16.08	Q3 27	Track closures	Only track 3 operational on Sorø station. Tracks 1 and 2 closed at platform.	Yes	Yes

Ringsted - Slagelse	Various works	30.07-06.08	Q3 27	Total closure	Total closure. Trains can turn back in Slagelse and Ringsted.	Yes	Yes
Ringsted - (Fjenneslev)	RPM works	06.09-17.09	Q3 27	Track closure	Single track operation.	Yes	Yes
(Sorø) - Ringsted	RPM works	17.09-24.09	Q3 27	Track closures	Single track operation Sorø - Fjenneslev – Ringsted. Track 2 Fjenneslev closed. Speed limit 80 km/h track 1 Fjenneslev.	Yes	Yes
(Fjenneslev) - Sorø	RPM works	24.09-03.10	Q3 27	Track closure	Single track operation. Speed limit 80 km/h in neighboring track. Speed limit 40 km/h for max 400 m in neighboring track	Yes	Yes
Sorø - Slagelse	RPM works	03.10-13.10	Q4 27	Track closure	Single track operation. Speed limit 80 km/h in neighboring track. Speed limit 40 km/h for max 400 m in neighboring track	Yes	Yes
Fjenneslev - Ringsted	RPM works	13.10-24.10	Q4 27	Track closure	Single track operation. Speed limit 80 km/h in neighboring track. Speed limit 40 km/h for max 400 m in neighboring track	Yes	Yes
Sorø - Fjenneslev	RPM works	24.10-01.11	Q4 27	Track closure	Single track operation. Speed limit 80 km/h in	Yes	Yes

					neighboring track. Speed limit 40 km/h for max 400 m in neighboring track		
Slagelse - Sorø	RPM works	01.11-15.11	Q4 27	Track closure	Single track operation. Speed limit 80 km/h in neighboring track. Speed limit 40 km/h for max 400 m in neighboring track	Yes	Yes
Kavslunde	New Western Funen track	26.07-08.11	Q3 27	Track closures	In case of single track operation to/from Kavslunde, shunting is required.	Yes	Yes
(Taulov) - (Snoghøj)	Bridge works	02.07-24.07	Q3 27	Track closure	Single track operation	Yes	Yes
(Snoghøj) - (Taulov)	Bridge works	24.07-16.08	Q3 27	Track closure	Single track operation.	Yes	Yes
Nykøbing F - Nykøbing F Vest	Track works	03.10-19.10	Q4 27	Total closure	No trains can run.	Yes	Yes
Nykøbing F Vest - Rødby	Track works	01.01-12.12	Q1 27	Total closure	No trains can run	Yes	Yes
(Roskilde) - Kalundborg	Signal programme	03.12-20.12	Q4 27	Total closure	No trains can run	Yes	Yes
Aarhus Central Station	Rebuilding Aarhus Central Station	13.12.26 - 26.06.27	Q4 26	Track closures	Tracks 2 and 3 closed. Parking at platforms on Aarhus Central Station not permitted. No cancellation of trains required.	Yes	Yes
Esbjerg	Platforms and track renewal	30.08-22.10	Q3 27	Track closures	Tracks 2, 3, 4, 5 and 6 closed. Trains can use tracks 0 and 1.	Yes	Yes
Esbjerg	Platforms and track renewal	22.10-15.11	Q4 27	Track closures	Tracks 0 and 1 closed.	Yes	Yes

Esbjerg - (Bramming)	Platforms	22.08-27.08	Q3 27	Track closure	Single track operation.	Yes	Yes
Esbjerg - (Bramming)	Platforms	27.08-30.08	Q3 27	Total closure	No trains can run	Yes	Yes
(Esbjerg) - (Bramming)	Platforms	27.09-25.10	Q3 27	Track closure	Single track operation	Yes	Yes
(Esbjerg) - (Varde)	Bridge works	03.09-27.09	Q3 27	Total closure	No trains can run	Yes	Yes

Table 2.2.3: Major Impact TCRs TT28

Network segment	Purpose	Time of execution	Start (quarterly basis)	Impact (total closure/single track operation/speed restriction)	Impact to passenger & freight traffic	Project approved by the IM's management	Financing secured
(Høje Taastrup) - Roskilde	Track works	TBA ⁵	Q1-Q2	Track closures	Tracks 1 and 2 closed. Speed limit 80 km/h in neighboring track	Yes	Yes
(Høje Taastrup) - Roskilde	Track works	TBA	Q1-Q2	Track closures	Tracks 2 and 3 closed. Speed limit 80 km/h in neighboring track	Yes	Yes
(Høje Taastrup) - Roskilde	Track works	TBA	Q1-Q2	Track closures	Tracks 3 and 4 closed	Yes	Yes
Ringsted - (Fjenneslev)	Track works	TBA	Q2-Q3	Track closures	Single track operation	Yes	Yes
(Sorø) - Ringsted	Track works	TBA	Q2-Q3	Track closures	Single track operation	Yes	Yes
(Fjenneslev) - Sorø	Track works	TBA	Q2-Q3	Track closures	Single track operation	Yes	Yes
Sorø - Slagelse	Track works	TBA	Q2-Q3	Track closures	Single track operation	Yes	Yes
Fjenneslev - Ringsted	Track works	TBA	Q2-Q3	Track closures	Single track operation	Yes	Yes
(Fjenneslev) - Ringsted	Track works	TBA	Q2-Q3	Track closures	Track 2 can not be used	Yes	Yes

⁵ To be announced

(Sorø) - Fjenneslev	Track works	TBA	Q2-Q3	Track closures	Single track operation	Yes	Yes
Slagelse - Sorø	Track works	TBA	Q2-Q3	Track closures	Single track operation	Yes	Yes
Hovedgård - Skanderborg	Track works	15.03-09.04	Q1	Track closures	Single track operation	Yes	Yes
Skanderborg - Hørning	Track works	09.04-20.04	Q2	Track closures	Single track operation	Yes	Yes
Hørning - Aarhus	Track works	20.04-02.05	Q2	Track closures	Single track operation	Yes	Yes
Aarhus - Hørning	Track works	02.05-15.15	Q2	Track closures	Single track operation	Yes	Yes
Hørning - Skanderborg	Track works	15.05-26.05	Q2	Track closures	Single track operation	Yes	Yes
Skanderborg - Hovedgård	Track works	26.05-20.06	Q2	Track closures	Single track operation	Yes	Yes
(Aalborg) - Hjørring	Track works	24.07-16.09	Q3	Total closure	No trains can run	Yes	Yes
(Aalborg) - Frederikshavn	Track works	16.09-02.10	Q3	Total closure	No trains can run	Yes	Yes
Hjørring - Frederikshavn	Track works	02.10-27.11	Q4	Total closure	No trains can run	Yes	Yes
Taulov	Platforms	08.04-14.05	Q2	Track closures	Track 1 closed.	Yes	Yes
Taulov	Track works	15.05-16.07	Q2	Track closures	Coordinated with Taulov Combiterminal	Yes	Yes
(Kolding) - (Fredericia)	Platform and bridge	14.05-18.06	Q2	Track closures	Single track operation	Yes	Yes
Taulov - (Kolding)	Track works	22.05-26.05	Q2	Track closures	Single track operation	Yes	Yes
Taulov - (Kolding)	Track works	29.05-30.05	Q2	Track closures	Single track operation	Yes	Yes
(Kolding) - (Fredericia)	Track works	18.06-16.07	Q3	Track closures	Freight use track 2	Yes	Yes
(Taulov) - (Kolding)	Track works	03.07-05.07		Track closures	Single track operation	Yes	Yes
(Kolding) - (Snoghøj/Fredericia)	Bridge	16.07-23.07	Q3	Total closure	No trains can run		

Taulov	Platforms	23.07-30.07	Q3	Track closures	Single track operation	Yes	Yes
Skærbæk - Ribe	Bridge	15.07-06.08	Q3	Total closure	No trains can run	Yes	Yes
(Tarm) - (Ølgod)	Bridge	01.04-30.09	Q2	Total closure	No trains can run	Yes	Yes
Bjerringbro St.	Bridge and platforms	03.04-26.04	Q2	Track closure	Single track operation	Yes	Yes
Bjerringbro St.	Bridge and platforms	26.04-10.06	Q2	Track closure	Single track operation	Yes	Yes
Bjerringbro St.	Bridge	10.06-18.06	Q2	Total closure	No trains can run	Yes	Yes
Bjerringbro St.	Platforms	18.06-16.07	Q2	Track closure	Single track operation	Yes	Yes
Bjerringbro St.	Platforms	16.07-14.08	Q3	Track closure	Single track operation	Yes	Yes
(Struer) - Thisted	Track works	19.03-19.06	Q1	Total closure	No trains can run	Yes	Yes
Lindholm – Aalborg Airport	Track works	31.07-03.10	Q3	Total closure	No trains can run	Yes	Yes

3. Traffic Planning Principles and Traffic Flows

3.1 Traffic planning principles

The following planning principles and capacity utilization levels can be expected on the different railway sections based on Banedanmark's work on future timetables. This information is used to construct the first drafts of the capacity model.

IM	Section	Principle and elements
Banedanmark	Copenhagen Central Station – Hvidovre Fjern	International line with a high level of capacity utilization. Publication of pre-planned paths for passenger trains
Banedanmark	Hvidovre Fjern – Høje Taastrup	International line with a high level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Høje Taastrup – Roskilde	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Roskilde – Ringsted	International line with a high level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Ringsted – Korsør	International line with a medium level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
A/S Storebælt	Korsør - Nyborg	International line with a medium level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Nyborg - Odense	International line with a medium level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Odense – Kauslunde (existing line)	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Odense – Kauslunde (new line)	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Kauslunde - Snoghøj	International line with a medium level of capacity utilization. Publication of pre-planned paths

		for both passenger and freight trains
Banedanmark	Snoghøj – Fredericia	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Snoghøj - Taulov	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Ringsted - Nykøbing F	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Roskilde – Køge Nord	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Køge Nord – Køge	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Køge - Næstved	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Roskilde - Tølløse	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Tølløse - Holbæk	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Holbæk - Kalundborg	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Copenhagen Central Station - Copenhagen South	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Copenhagen South – Køge Nord	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Køge Nord – Ringsted	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Copenhagen Central Station - Østerport	International regional line with a high level of capacity utilization. Pre-planned paths for international trains.
Banedanmark	Østerport – Helgoland	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark		Regional line with a high level of capacity utilization. No pre-planned paths.

Banedanmark		Regional line with a high level of capacity utilization. No pre-planned paths.
Øresundsbro Konsortiet	Peberholm - Copenhagen Airport Kastrup	International line with a high level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
A/S Øresund	Copenhagen Airport Kastrup - Kalvebod	International line with a high level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
A/S Øresund	Kalvebod – Copenhagen South	International line with a medium level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Copenhagen South – Hvidovre Fjern	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
A/S Øresund	Kalvebod - Copenhagen Central Station	International line with a medium level of capacity utilization. Publication of pre-planned paths for passenger trains
Banedanmark	Odense - Ringe	Regional line with a high level of capacity utilization. No pre-planned paths.
Banedanmark	Ringe - Svendborg	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Fredericia - Vejle	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Vejle - Skanderborg	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Skanderborg – Aarhus Central Station	International line with a high level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Aarhus Central Station - Langå	Regional line with a low level of capacity utilization. Publication of pre-planned paths for freight trains
Banedanmark	Langå - Hobro	Regional line with a low level of capacity utilization. Publication of pre-planned paths for freight trains
Banedanmark	Hobro - Aalborg	Regional line with a low level of capacity utilization. Publication of pre-planned paths for freight trains

Banedanmark	Aalborg - Lindholm	Regional line with a high level of capacity utilization. Publication of pre-planned paths for freight trains
Banedanmark	Lindholm - Hjørring	Regional line with a medium level of capacity utilization. Publication of pre-planned paths for freight trains
Banedanmark	Hjørring - Frederikshavn	Regional line with a low level of capacity utilization. Publication of pre-planned paths for freight trains
Banedanmark	Fredericia - Taulov	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Taulov - Kolding	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Kolding - Lunderskov	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Lunderskov - Tinglev	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Tinglev - Padborg	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Padborg – Padborg Border	International line with a low level of capacity utilization. Publication of pre-planned paths for both passenger and freight trains
Banedanmark	Tinglev - Sønderborg	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Lunderskov – Bramming	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Bramming - Esbjerg	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Bramming - Ribe	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Ribe - Tønder	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Tønder - Tønder Border	Regional line with a low level of capacity utilization. No pre-planned paths.

Banedanmark	Esbjerg - Skjern	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Skjern - Vemb	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Vemb - Holstebro	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Holstebro - Struer	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Langå-Viborg	Regional line with a medium level of capacity utilization. No pre-planned paths.
Banedanmark	Viborg - Struer	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Holstebro - Herning	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Herning - Vejle	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Struer - Thisted	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Skanderborg - Silkeborg	Regional line with a high level of capacity utilization. No pre-planned paths.
Banedanmark	Silkeborg - Herning	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Herning - Skjern	Regional line with a low level of capacity utilization. No pre-planned paths.
Banedanmark	Lindholm - Aalborg Airport	Regional line with a high level of capacity utilization. No pre-planned paths.

Table 3.1: Traffic planning principles for TT29 in Denmark. Geographical sections of the railway network are allocated to an infrastructure manager, and the planning principles are shortly described.

The Danish railway timetable is typically planned as a clock-faced symmetric timetable, with an hourly pattern. The pattern differs between rush, daytime, evening, and night hours.

In general, two transit freight train paths per direction per hour are planned between Peberholm (Swedish-Danish border) and Padborg (Danish-German border). During rush hours in the Copenhagen area only one freight train path per direction per hour is available. The freight train paths are planned according to the longest and heaviest model train allowed on the Danish rail network (worst case), allowing any rolling stock to run, and providing punctuality margins in case of better actual performance than planned.

Freight traffic is normally planned to run via Høje Taastrup between Copenhagen and Ringsted. However, the line via Køge Nord can also be used, although this requires the trains to be able to run under ETCS.

Fast passenger trains (InterCity Express and InterCity) are mainly scheduled to run via Køge Nord between Copenhagen and Ringsted, separating them from slower freight and regional trains on the line via Høje Taastrup. The line via Høje Taastrup is expected to be served by one fast passenger train per hour.

Passenger trains are not bundled according to their travelling speed but are planned to provide a regular service frequency, for example half hourly. This gives a traffic mix of fast and slow trains on the main lines. Fast passenger trains can be planned to overtake slower passenger trains at traffic hubs e.g., Odense station. Overtaking of freight trains is planned to take place regularly at given stations due to the traffic mix of trains.

3.2 Traffic flows

Illustration 3.1 shows a map of the expected traffic capacity demand on the line sections, included in this Capacity Strategy. The line sections depicted in red can be characterized as bottlenecks, whereas green sections are expected to accommodate all or most of the capacity requests without changes. On the yellow sections, some changes in the paths applied for might be necessary to accommodate all requests. TCRs are not yet scheduled in detail and are therefore not shown in the figure.

Expected capacity requests



Illustration 3.1.1: Expected capacity requests. Green = All requests might be met. Yellow = Changes might be necessary. Red = High demand expected, possible rejections.

In Denmark, the expected capacity demand for TT2029 is similar to past TT years, and generally rather low. In the sections Peberholm – Kastrup – Kalvebod – Vigerslev – Høje Taastrup (the Copenhagen area) the capacity utilization is higher but still in balance. The same holds true for the sections Aalborg – Hjørring (Northern Jutland), Skanderborg – Silkeborg (Eastern Jutland) and Herning – Holstebro – Struer (Western Jutland), where the capacity utilization is also higher, but not out of balance. The western part of Denmark is mainly used by regional passenger trains, and the supplied capacity is enough to accommodate all requests here as well. The same holds true for Odense – Svendborg.

The volume and structure of future railway traffic in Denmark is discussed within the "Trafikplan"-working group chaired by the Danish Ministry of Transport. Members are the major stakeholders within the Danish railway sector. Illustration 3.2 shown below shows the expected volume of passenger trains in TT2029. The plan entails two freight trains per hour per direction outside rush hours.

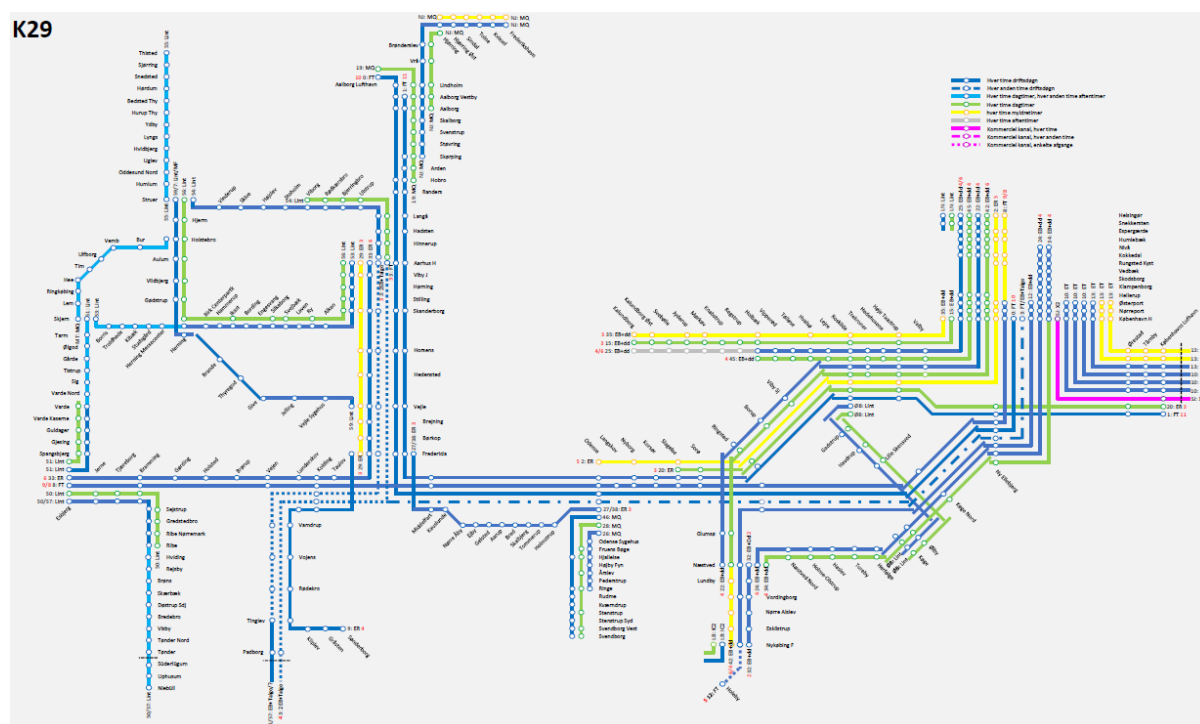


Illustration 3.2.1: Expected line diagram for passenger trains for TT29. Dark blue: Every hour during operational day. Dark blue dotted: Every second hour operational day. Light blue: Every hour during daytime hours, every second hour during evening hours. Green: Every hour during daytime hours. Yellow: Every hour during rush hours. Gray: Every hour during evening hours. Pink: Commercial train every hour. Pink dotted: Commercial train every second hour. Pink spaced dotted: Commercial train, few departures.

3.3 Harmonization with neighboring IMs

There are two railway border crossings between Denmark and Germany – one in Padborg and one in Tønder. The border crossing traffic volumes are expected to be, respectively:

Deutsche Bahn InfraGo	Banedanmark
Flensburg Weiche (D) – Padborg (DK)	
International passenger trains every 2 hours	International passenger trains every 2 hours
Regional passenger trains every 2 hours	Regional passenger trains every 2 hours
2 international freight trains per hour	2 international freight trains per hour
Niebüll (D) – Tønder (DK)	
Regional train service every hour	Regional train service every hour

Between Denmark and Sweden there is one railway border crossing: Peberholm. The traffic volumes are expected to be:

Trafikverket	Banedanmark
Lernacken (Se) – Peberholm (DK)	
3 International passenger trains per hour	3 International passenger trains per hour
International regional passenger train service every 10minutes	International regional passenger train service every 10minutes
2 international freight trains per hour	2 international freight trains per hour

4. Validation

Banedanmark

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