Procedures for Temporary Capacity Restriction Management

Complementary document (handbook) to Description of the Timetabling and Capacity Redesign Process

Version 2.0

RailNetEurope
Austria Campus 3
Jakov-Lind-Straße 5
AT-1020 Vienna

Phone: +43 1 907 62 72 00
Fax: +43 1 907 62 72 90
mailbox@rne.eu
www.rne.eu

Funded by
the European Union

Version history

VERSION	RESPONSIBLE	DATE	CHANGES
0.1	Á. Kertai P. Koiser S. Čarek Zs. Ungvári Cs. Bognár-Nyerges A. Di Paola D. Haltner Zs. Ungvári	2021-08-27	Creation of the document based on the: ➢ TCR Guidelines v3.0 ➢ TTR relevant descriptions/guidelines ➢ Task Force Meetings, ➢ Bilateral discussions with IMs,
0.2.	Ádám Kertai Head of Capacity Process Management	2021-09-17	Inclusion of remarks provided by ➢ TCR WG, ➢ TCR Q &A sessions
0.3.	Ádám Kertai Head of Capacity Process Management	2021-09-29	➢ Inclusion of remarks provided by Banedanmark ➢ Bane NOR ➢ DB Netz ➢ FTE ➢ ÖBB InfraProRail ➢ RCA ➢ SNCF Reseau ➢ Trafikverket
0.4.	Ádám Kertai Head of Capacity Process Management	2021-10-20	Inclusion of remarks provided by: ➢ DB Netz ➢ Infrabel ➢ Legal Working Group ➢ Sales and Timetabling Working Group
0.5.	Ádám Kertai Head of Capacity Process Management	2021-10-27	Inclusion of remarks provided by: ➢ Legal Working Group ➢ TTR Process Group
1.0	RNE General Assembly	2021-12-07	Approval of the version 0.5 by the RNE General Assembly on 7 December 2021
1.1	Ádám Pintér Capacity Supply & TCR Manager	2022-09-01	Inclusion of remarks provided by: ➢ TTR-PG and TCR WG on 21 June 2022
2.0	RNE General Assembly	2022-12-06	Approval of the version 1.1 by the RNE General Assembly on 6 December 2022

Disclaimer, application and transition period

This document is intended as a handbook for the implementation of the handling of the TCRs (temporary capacity restrictions) as described in the TTR Process by RNE. As neither legislation nor IT-systems are currently fully adapted to enable all the elements of TTR, individual TTR elements can only be implemented by the infrastructure managers to a limited extent for the upcoming timetable periods, starting in December 2024. If and when the legislation and IT-systems fully enable the implementation of all the elements of TTR, the different RNE handbooks on those elements should be applied to the process. Regarding TCRs, Annex VII to Directive 2012/34 is directly applicable in all Member States of the European Union. The exact details for the transitional period are elaborated in the Basic Requirements.

Infrastructure Managers and Allocation Bodies should adapt their internal processes and the Network Statement in line with the Procedures for Temporary Capacity Restriction from X-60[1], where X denotes the first timetable referring to the complete roll out of TTR.

The Basic Requirements will contain the description of the geographical scope, which might be defined differently for the first years of implementation. The Basic Requirements are subject of RNE GA.

The Handbook contains elements referring to the period after X-18, these parts of the Handbook are subject of adjustments according to the future process development (e.g. Capacity Supply Handbook).

[1] Please note that the current version of the Handbook does not describe (yet) the final TTR target picture

Contents

1. Introduction and scope of this document

The IMs apply different approaches regarding the planning and coordination of TCRs. This is mainly due to different construction and maintenance planning processes, which depend on the budget and financial planning. Furthermore, the national legislation may contain different rules in connection with the applied timeframes, periods, and communication with the applicants.

To ensure, that the applicants can provide reliable and competitive railway transportation services to the end customers, the negative effects of TCRs have to be reduced to a minimum. Therefore, the following goals must be achieved:

- Highest possible availability of infrastructure options to connect origins to destinations: Shortest possible timeframe for TCRs to reduce production costs
- Shortest possible transport time to account for customers' needs and reduce production costs

- Reliable timetables
  - Reduced delays compared to reference times to build a reputation as a reliable partner

The European Union recognised the need for common rules to enhance the competitiveness of the railways, thus, the revised Annex VII (recast in 2017) of the Directive 2012/34/EU obliges the IMs to involve known and potential applicants, main operators of service facilities, terminals and other IMs affected by a TCR already at an early stage.

The harmonised implementation of the legislation is also a clear business demand; therefore, the elaboration of the currently applicable "Guidelines for Coordination / Publication of Planned Temporary Capacity Restrictions for the European Railway Network" version 3.0 (known as TCR Guidelines) became essential. The document "Procedures for Temporary Capacity Restriction Management" (hereafter TCR Handbook) defines how to handle each step of the TCR management process both to ensure smooth and reliable TCR planning, coordination and publishing according to the deadlines set in Annex VII of the Directive 2012/34/EU.

The Handbook has been designed also to cover RFC processes and thus replace all previous RNE/RFC guidelines covering this subject, such as "Guidelines for Coordination / Publication of Planned Temporary Capacity Restrictions for the European Railway Network" version 3.0.

IMs, who are RNE members, have committed to follow this Handbook and these procedures according to the "Disclaimer, application and transition period and by this promote internationally harmonised capacity management processes over the single European railway area.

2. Added value of the Handbook

- Enhances the unified implementation of the provisions set in Annex VII of the Directive 2012/34/EU,
- Creates a clear overview on the steps to be followed during the lifecycles of TCRs,
- Facilitates the TCR Coordination process with the commonly agreed principles and methods to be used,
- Contributes to the unified clustering of TCRs,
- Contributes to the unified impact calculation of TCRs,
- Provides an overview on the relation between the TCRs and the different TTR-components,
- Contributes to the unified handling of Late TCRs,
- Provides a unified method to evaluate the planned and real TCR consumption.

3. Reference documents

Legal requirements:

- **Directive 2012/34/EU** establishing a single European railway area
- **Commission Delegated Decision (EU) 2017/2075** replacing Annex VII to Directive 2012/34/EU
- **Regulation (EU) No 913/2010** concerning a European network for competitive freight
- **Commission Implementing Regulation (EU) 2017/2177** of 22 November 2017 on access to service facilities and rail-related services

Further requirements:

- **Process Description of the 'Timetabling and Capacity Redesign Process'** which can be accessed through the following link
- **Procedures for Alteration of Allocated International Paths** which can be accessed through the following link
- **Procedures for Capacity Strategy** which can be accessed through the following link
- **Procedures for Capacity Model** which can be accessed through the following link
- **Procedures for Feasibility Study** which can be accessed through the following link

Additional documents:

- **International Leading Entities in TTR / Capacity Management** - Input for EU Impact Assessment

4. Glossary

Glossary/abbreviation	Definition
Ad hoc	Traffic for which the published capacity for Annual Timetable and Rolling Planning cannot be used (from X-2) or traffic requested in very short notice (short-term Ad hoc requested after M-1 for all remaining capacity).
Applicant	A railway undertaking (RU) or an international grouping of railway undertakings or other persons or legal entities, such as competent authorities under Regulation (EC) No 1370/2007 and shippers, freight forwarders, and combined transport operators, with a public service or commercial interest in procuring infrastructure capacity[1].' Applicants can be divided into two groups: • 'RU applicant': RU or international grouping of RUs • 'Non-RU applicant': other persons or legal entities with a public service or commercial interest in procuring infrastructure capacity.
ATT	Annual Timetable
Capacity Hub	An IT module, part of the TTR IT landscape, that will cover the IT aspect and communication for the Capacity Model and Capacity Supply phase.
Capacity Model *(X-36 – X-11)*	A Capacity Model is a visualisation of » Volumes of capacity for commercial traffic » Volumes of capacity to be used for TCR The model is used to transparently communicate and discuss more in detail the expected volumes (not path or TCR details) and detect pressure points. In the case of lines with international relevance, harmonisation with involved IMs is obligatory. The final model at X-18 is subject to the Capacity Partitioning, where the available capacity is partitioned according to market segments. The partitioning should at minimum consist of a TCR capacity consumption overview. However, on lines where the capacity is scarce, a more detailed partitioning, for instance to the particular product types, might be needed.
Capacity Needs Announcements *(until X-24)*	Applicants have required a process that enables them to participate in the design of the future capacity, balanced between freight services, passenger services, and capacity restrictions. Information parameters of applicants to indicate their future needs for capacity shall be standardised. The system should allow them to enter all necessary information and parameters for IMs to plan capacity. If possible, any data input fields should be as much as possible based on the agreed content for TAF/TAP messages for path requests (potential later utilisation for feasibility study and or path request). The entire process will be managed under the control and responsibility of the IMs, preserving full confidentiality.

[1] Article 3 paragraph 19 of directive 2012/34/EU

Capacity Strategy *(X-60 – X-36)*	IMs start the advance planning with the creation of Capacity Strategies. The focus of the strategy is on the future infrastructure development and the planning principles, already here international coordination is needed, as various planning approaches exist between IMs. The Capacity Strategy is also the main connection between the political and social requirements of citizens and the capacity planning process. The validated final strategies set the rules for the Capacity Models and next planning steps.
Capacity Supply *(X-18 – X+12)*	Based on the partitioned Capacity Model, a feasible timetable according to axis characteristics will be elaborated andpublished as Capacity Supply. The Capacity Supply is a 365- day overview that shows all the elements in the capacity diagram – TCRs, TCR windows, pre-planned paths, bandwidths, and empty spaces for tailor-made requests. All objects must be harmonised between IMs.
Consecutive days	The sequence of calendar days on which TCRs apply on each day, on the same section without any interruption. If possible, repetitive patterns should be taken into account concerning the definition of consecutive days (e.g., If a TCR occurs on every Saturday and Sunday in a month, the TCR should be coordinated with the neighbouring IMs not as 4 different TCRs, but as 1 TCR taking place on 4 weekends.)
Consultation	An active exchange process about TCR between the IM and applicants in formal communication channels. These formal communication channels might include: • Open meetings, e.g. stakeholders are invited to come to an open meeting or a series of meetings • Written information towards the stakeholders with the possibility to post comments The IM proactively initiates communication with the applicants to inform them about individual TCR or clusters of TCRs. IMs ask the opinion of applicants about the envisaged measures to be implemented for capacity restrictions for defined thresholds before publishing.
Coordination	The cooperation between IMs aimed at finding the best way to plan TCRs. The aim of coordination efforts between Infrastructure Managers is the safe implementation of railway operations and to find the best solution for planning operational restrictions resulting from construction measures while taking into consideration the requirements of the market. Simply gathering and publishing information about capacity restrictions without any coordination has little value for IMs and applicants. The coordination of TCRs shall ensure that planned capacity restrictions will consider the needs of both the IMs and the market by rationalising and minimising the gravity of impact and duration of the capacity restrictions. The coordination phase aims to guarantee the possibility to all IMs to carry out their respective TCRs, optimising their mutual interferences and minimising the impact on applicants.
Diversionary line(s)	Railway line(s) which are crucial to ensure continuity of traffic in the event of any capacity restriction (e.g. TCR, disruption) on a certain line.

ECMT	European Capacity Management Tool (ECMT) The ECMT provides the European-level IT-backbone of the Capacity Model and Capacity Supply.
Feasibility Study *(X-15 – X+12)*	Applicants have the possibility to request feasibility studies at any time after X-15. They can be used for instance to investigate: • If a new/changed traffic concept, which was not part of the Capacity Model can (and in what way) be introduced, • If the traffic concept on not pre-planned network is feasible, • If the new traffic concept is feasible, taking into consideration already allocated paths (e.g., in running timetable, • The path details in case of TCRs.
IM	Infrastructure Manager ‘‘Infrastructure Manager” means anybody or firm responsible in particular for establishing, managing, and maintaining railway infrastructure, including traffic management and control-command and signalling; the functions of the Infrastructure Manager on a network or part of a network may be allocated to different bodies or firms’ (Directive 2012/34/EU, Article 3 (2)). In this document, only the term Infrastructure Manager (IM) is used. It refers to IMs and also – if applicable – to Allocation Bodies (ABs). The aim of IMs should at all times be to maintain the predictable operation of rail traffic with maximum performance. Since TCRs cannot be avoided – they even are a means to achieve these goals – the planning of TCRs should be stable and cost-efficient.
Impact on other networks	If anticipated timetables (e.g. concept timetables) have to be re-scheduled on one network due to TCRs causing the possiblere-scheduling of timetables on other networks.
International leading entity	To be discussed after the Impact Assessment of the European Commission on the Regulation 913/2010/EU

International Supporting Entity	Besides the provision of tools for supporting cross border alignment the International Supporting Entity facilitates the conflict resulotion process and can contribute to the activities of national/internation decision-makers, if necessary. The service provider role is realised with the operation of RNE IT-tools. Concerning the monitoring, process developments and proposing recommendation roles two RNE bodies are involved: • Capacity Management Advisory Group (platform for IM-Applicant exchange) • Long Term Capacity Management Working Group (to be established)
Known TCRs	TCRs not matching with the definition of Late TCRs
Late Path Request *(X-8.5 – X-2)*	Requests for Annual Timetable are placed from the annual path request deadline (X-8.5) until (X-2); the residual capacity for Annual Timetable requests placed on time or unplanned capacity is used to accommodate them.
Late TCRs	All TCRs that are defined after the last publication deadlines (defined by Commission Delegated Decision (EU) 2017/2075 (Annex VII))
M - # days	A deadline referring to the first day of a train operation (M) and the number of days (#) in advance of this deadline.
TCR Windows	Regular capacity is blocked in advance during which preventive maintenance and TCRs are expected to be executed. The TCR windows can also serve as a cushion against fluctuations in available capacity for train runs and TCRs.
Network Statement	The statement, which sets out in detail the general rules, deadlines, procedures, and criteria for charging and capacity allocation schemes, including such other information as is required to enable applications for infrastructure capacity.
Off-the-self Capacity Model	Off-the-self Capacity Model refers to Capacity Models that have been created for previous TT periods and that have the parameters that allows IMs to reuse in the TT whose Capacity Model is under development.
Path Alteration	In case the initially allocated path is not usable anymore, IMs may start the path alteration process. In case there are no alternatives or applicants do not find the alternatives suitable the affected running days are withdrawn. One of the aims of TTR is to minimise the number of alterations and withdrawals,especially on short notice.
Representative day	A representative day is a non-TCR day used as a base for the calculation of the impact on traffic during the TCR periods. Capacity Models for different day types can serve as a representative period. Always the relevant representative period should be taken into consideration when calculating the impact of a TCR (e.g. when calculating the impact of a TCR affecting the traffic during the weekend, a Capacity Model for the weekends should be taken into consideration). If the impact calculation is to be performed before any Capacity Model is available for a certain

	TT period, the base should be from the previous TT period. For more detailed information, see chapter 6.2.
Regulatory Body	The Regulatory body in each country performs the tasks as described in article 56 of 2012/34/EU.
Rerouting	A rerouting option is an alternative route that may be taken in a situation of disruption to reach the same destination. Diversionary lines are considered for rerouting.
RFC	Rail Freight Corridor A corridor is organised and set up in accordance with the Rail Freight Regulation (RFR) 913/2010/EU. A 'List of initial freight corridors' is provided in the Annex of the RFR.
Service facilities	Service facility means the installation, including ground area, building, and equipment, which has been specially arranged, as a whole or in part, to allow the supply of one or more services referred to in points 2 to 4 of Annex II of Directive 2012/34.
Significantly modified TCRs	If a TCR is significantly modified (use cases can be found in Annex J), then the IMs are highly recommended to incorporate the adjusted TCR information into the capacity planning process according to Annex J: Significantly modified TCRs.
T – (n)	A deadline referring to the day of the start of TCRs (T) and the number of months (n) in advance of this deadline.
TCR	Planned Temporary Capacity Restrictions This term covers the earlier used 'works', 'possessions', 'works and possessions', and 'capacity restrictions. It indicates that the restrictions are planned (no force majeure restrictions) and temporary (everlasting bottlenecks).
Terminal	'Terminal' means the installation provided which has been specially arranged to allow either the loading and/or the unloading of goods onto/from freight trains, and the integration of rail freight services with the road, maritime, river, and air services, and either the forming or modification of the composition of freight trains; and, where necessary, performing border procedures at borders with European third countries' (Article 2 2. (b) of RFR 913/2010/EU).
TT	Timetable
TTR	Timetabling and Capacity Redesign for Smart Capacity Management A joint project of RNE and FTE to modify the TT planning process according to future requirements.
X-n	A deadline referring to the month of the annual timetable change (X) and the number of months (n) in advance of this deadline.

5. Capacity Management Systems

Two connected IT systems managed by RNE are to be used for the planning of TCRs:

TCR Tool: an application that shows mutual information on a common platform, with common terminology and visualization of TCRs. The further aim is to use the tool for coordination, and publication of TCRs of all IMs.

ECMT: European Capacity Management Tool (also known as TTR Capacity Hub), which is used for visualisation[2] of capacity (traffic and TCRs) of all IMs. The ECMT should support the TCR management in both phases: Capacity Model and Capacity Supply.

[2] *Please note that the exact visualisation of overviews can differ from the figures which are shown in this Handbook.*

6. Clustering TCRs

6.1. Criteria for capacity restrictions to be coordinated and published

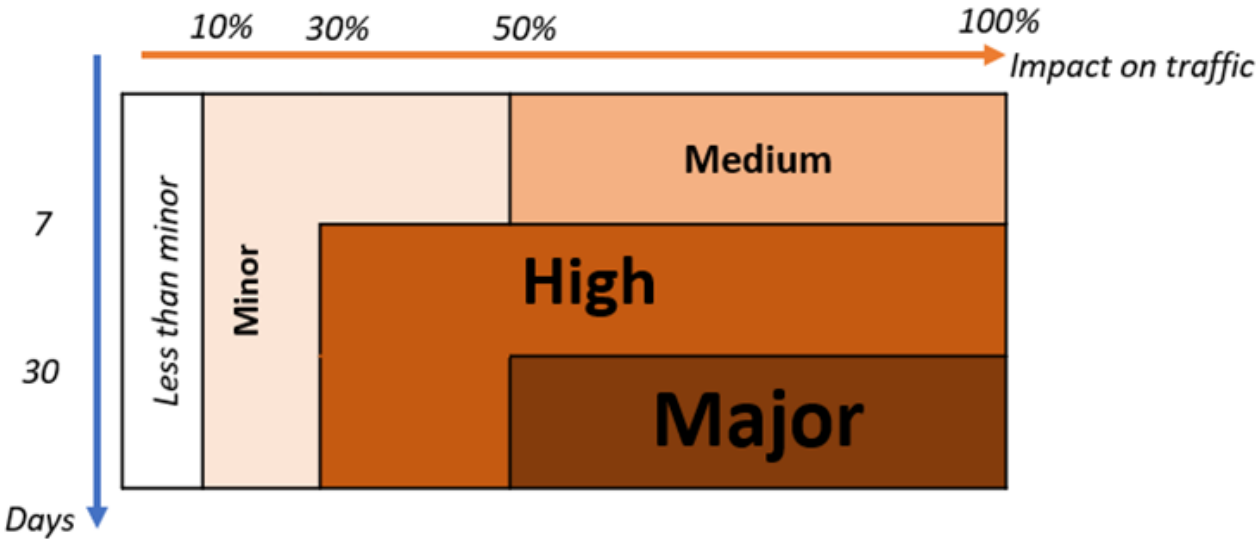
Capacity restrictions may vary widely as regards their duration and impact on rail traffic. Therefore, publication criteria must be defined for TCRs, depending on their effects on capacity and rail traffic. The documents provide a framework of criteria and thresholds to be used as a reference for the publication of TCRs. To provide a method how each TCR should be handled, an impact cluster has been created based on Annex VII of recast Directive 2012/34/EU (both criteria must be fulfilled):

	Consecutive days	**Impact on traffic (estimated traffic cancelled, rerouted, or replaced by other modes of transport)**	**First publication deadline according to Annex VII**
Major impact TCR[1]	More than 30 consecutive days	More than 50% of the estimated traffic volume on a railway line per day	X-24
High impact TCR[1]	More than 7 consecutive days	More than 30% of the estimated traffic volume on a railway line per day	
Medium impact TCR[1]	7 consecutive days or less	More than 50% of the estimated traffic volume on a railway line per day	X-12
Minor impact TCR[2]	unspecified[3]	More than 10% of the estimated traffic volume on a railway line per day	X-4
Less than minor impact TCR	unspecified	Maximum of 10% of the estimated traffic volume on a railway line per day	The IMs are recommended to comply with the Path Alteration requirements[4]: ➢ *Passenger: T-4* ➢ *Freight: T-1*

1) Annex VII of Directive 2012/34/EU, article (11);
2) Annex VII of Directive 2012/34/EU, article (12).
3) According to Annex VII of Directive 2012/34/EU, article (12) "7 consecutive days or less", modified here.
4) Data Coming from the RNE Path Alteration Handbook. Less than minor TCRs are not regulated by Annex VII.

The IMs may set additional classification of the TCRs for their national processes, however, for the international publication, coordination, and consultation, the classification according to the mentioned criteria must be met. Nevertheless, it is possible both for the national and international processes to cluster TCRs in a stricter way than it is described in present Handbook. To achieve a European-wide harmonised classification method, the IMs should not consider possible delays (e.g. by temporary speed restrictions) as part of the TCR impact calculation. All TCRs which could not be classified according to the original criteria of Annex VII (Major, High, Medium, and Minor TCRs) of Directive 2012/34/EU should be categorised as Less than minor impact TCRs.

For instance, in case a TCR requires the cancellation of 5% of the paths(e.g., last and first passenger train), the IMs are highly recommended to consider this TCR as a Less than minor impact TCRs, and the possible mitigation measures can be applied according to the Path Alteration Process, which means that the infrastructure manager provides details on the offered train paths for passenger trains no later than four months and for freight trains no later than one month before the beginning of the capacity restriction unless the Infrastructure Manager and the concerned applicants agree on a shorter lead time. Of course, the IMs are recommended to consult these TCRs with the Applicants before the deadlines defined for the Path Alteration Process.



One of the most important inputs to the TTR components is the information on different types of TCRs. The following table summarises, which types of TCRs should be included in the different TTR components. The green marking means, that the TCRs belonging to that category should be included in the concerned component, as taking into account the legal obligations the information on these TCRs should be already available. The yellow marking means, that the TCRs belonging to these categories do not have to be included in the component. However, the aim is to provide reliable and complete information to the applicants,as early as possible, therefore, the IMs have always the possibility to go even beyond, and share information on a broader scale (e.g., it is recommended to include medium TCRs in Capacity Model, depending on the available information).

Deliverables	Draft Capacity Model (X-21)	Capacity Model (X-18)	Updated Draft Capacity Model / Draft Capacity Supply (X-12)	Updated Capacity Model / Capacity Supply (X-11)	Feasibility Study result (X-9)	Draft offer (X-6.5)	Final offer (X-5.5)	Updated Capacity Supply (X-4)	Altered Path offer (T-4 or T-1)
Major impact TCR									
High impact TCR									
Medium impact TCR	*To the extent as it can be known.*								
Minor impact TCR	*To the extent as it can be known.*								
Less than minor impact TCR	*To the extent as it can be known.*								recommended
TCR windows	*To the extent as it can be known.*								

6.2. Calculation method for 'Impact on traffic'

Since the impact of TCRs is calculated significantly earlier than a complete timetable for a given period becomes available, the baseline for the calculation is:

It is important to keep the calculation simple. Therefore, in the calculation, only the relevant line section of the respective TCR is taken into consideration without the secondary effects

from TCRs on other line sections. The calculation should be supported by an IT tool (preferably Capacity Hub).

Date when the first information has become available concerning a TCR	Calculation base
X-60-X-21	Draft Capacity Model from the previous (or for the concerned if any exists) TT period including all known changes in the traffic[2]
X-21-X-18	Draft Capacity Model for the concerned TT period
X-18- X-12	Published Capacity Model for the concerned TT period
X-12-X-11	Draft Capacity Supply for the concerned TT period
X-11- X+12	Published and dynamically updated Capacity Supply

On the chosen day, all paths or traffic volumes within the geographic range of the TCR (within one line section) together will serve as a baseline ('Number of volumes/paths on a representative day'). By default, the representative day is a non-TCR working day. However, if the IMs prepare the Capacity Models and Capacity Supplies for different periods (e.g., working days vs weekends, summer period vs winter period, etc.), then the impact calculation can be adjusted, and always the relevant representative period could be taken into consideration (e.g. calculating the impact of a TCR affecting the traffic during the weekend, the Capacity Model for the weekends should be taken into consideration.) Further examples are presented in Annex C.

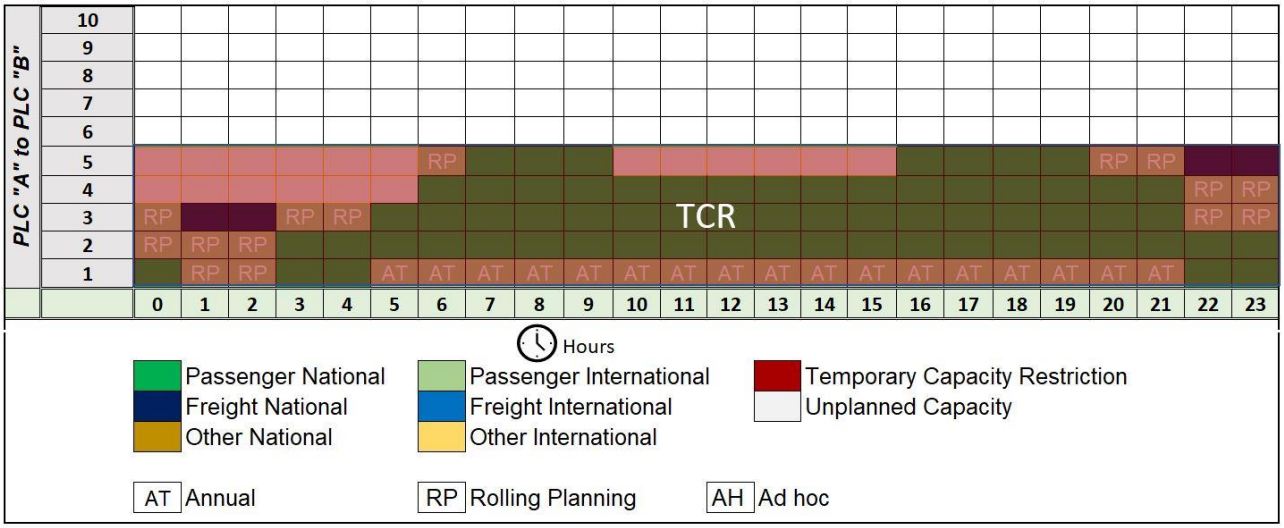
A day when a TCR is in place should be compared with a representative day. A basic timetable/capacity model must be created and the paths/volumes which are not available due to capacity restrictions must be indicated/counted ('Number of affected paths/volumes in TCR calculation').

$$[\text{TCR impact on traffic in \% }] = \left(\frac{[\text{Number of affected volumes/ paths in TCR calculation}]}{[\text{Number of volumes/paths on a representative day}]} \cdot 100\right) \quad (1)^3$$

Use cases:

The numerator in formula (1) is[4]:

- exactly the number of volumes/paths on a representative day in case of total closure (In the figure below,102 is affected and 102 was planned),

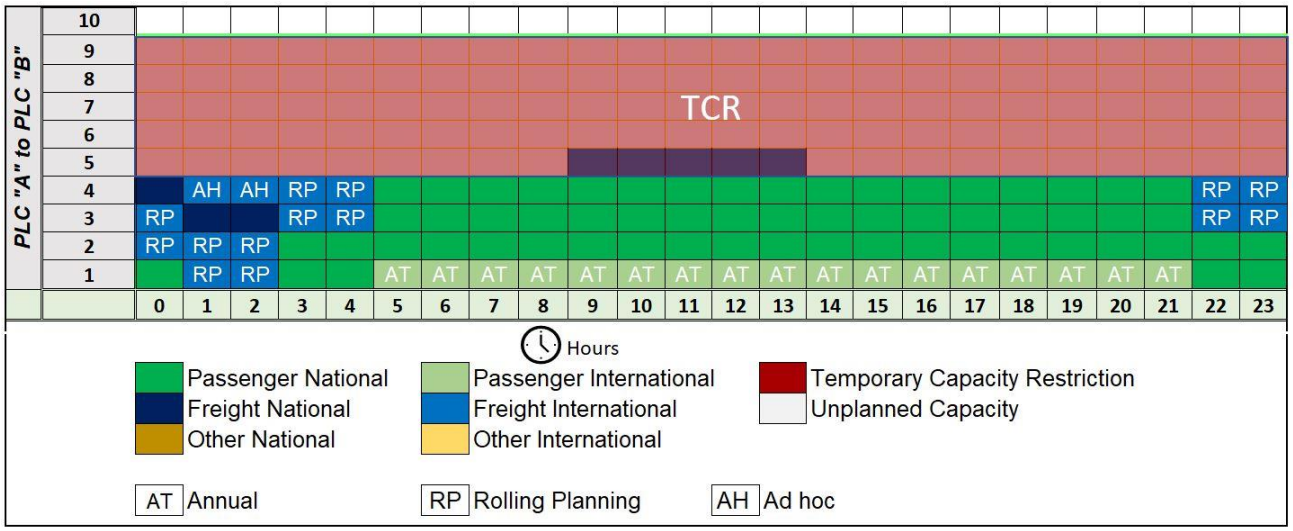


[2] In case an IM cannot estimate the TCR impact on traffic in the early stage of Capacity Planning (X-60 and X-21),the IM can do a preliminary classification based on the duration of a TCR, as defined with Use Case number 6 in Annex C. For instance, if a TCR is scheduled for 2 hours within a day, then its impact would be 2/24= 8%, meaningthe TCR would be clustered as a "Less than minor TCR". However, this preliminary categorisation has to be updated once the traffic impact can be calculated, which is X-21 at the latest (draft Capacity Model).

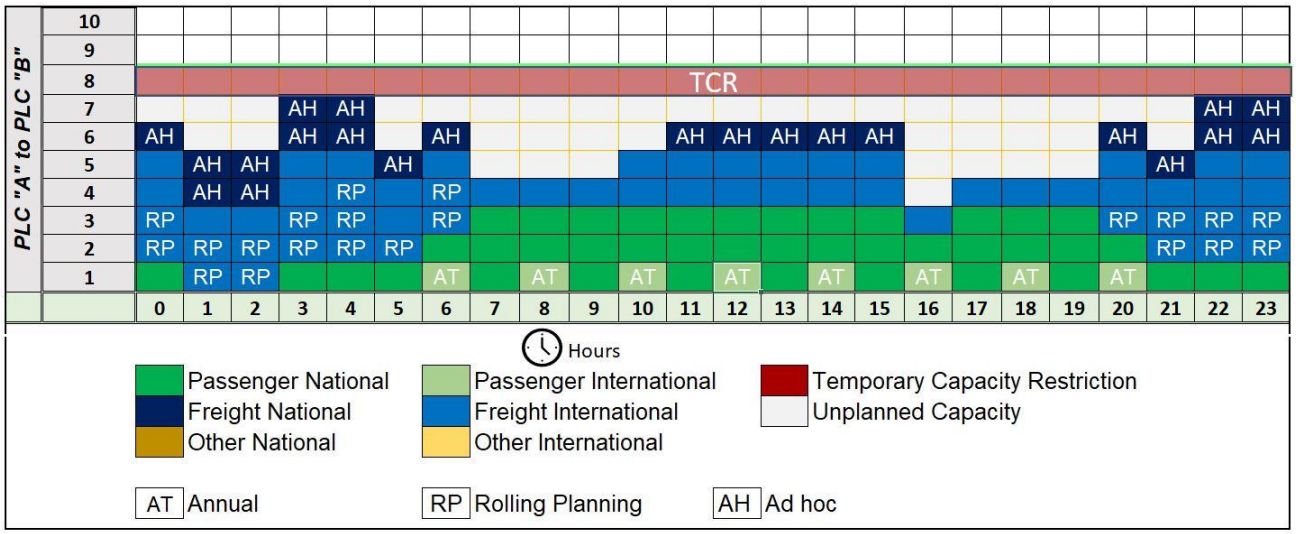
[3] Please note that the formula does not apply for the impact calculation method defined in Annex C as use case 6.

[4] Should be calculated by an IT solution.

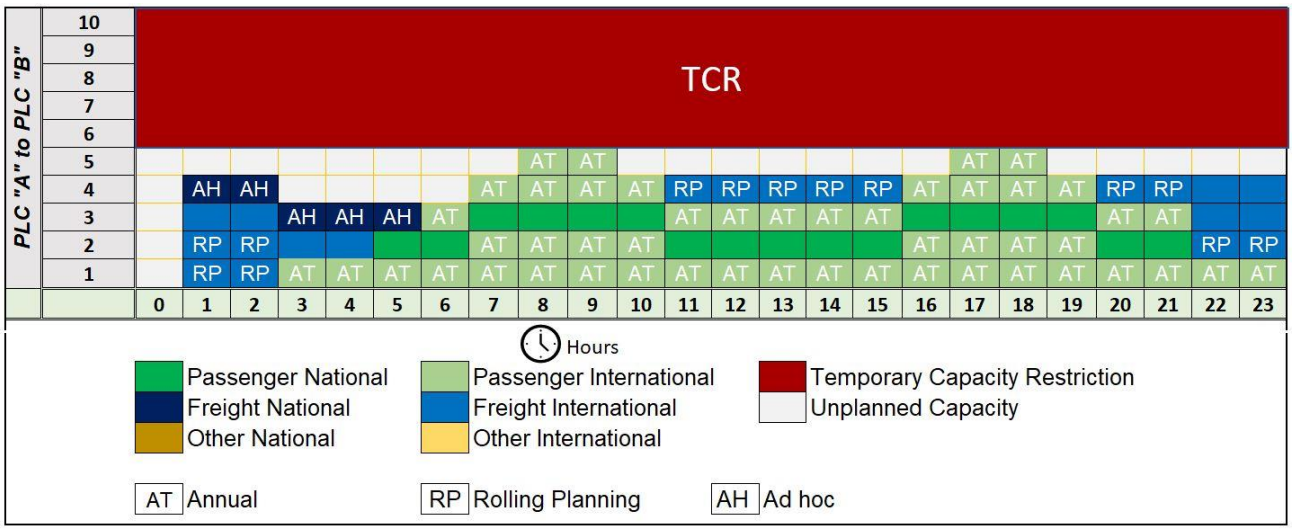
- the number of volumes overlapped by the TCR and traffic part. In the presented example, the partial closure occupies 50 % of the capacity, however only 5 volumes are affected. In that case, the calculation is 5/101.



- zero, if a certain TCR does not affect the traffic.



- zero, even if half of the capacity is not available, because the TCR does not affect the traffic.

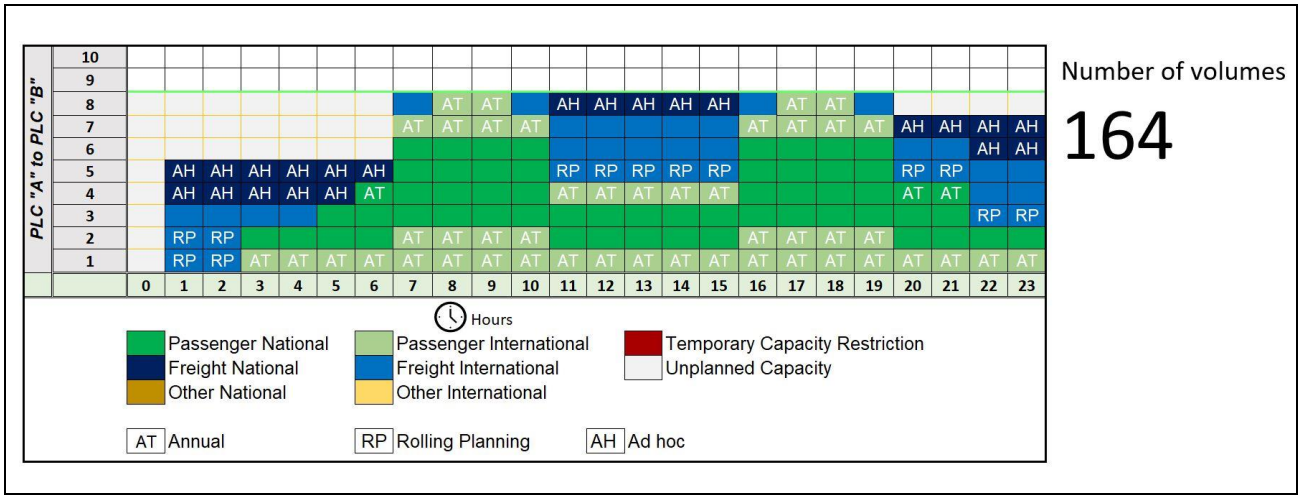


When importing the TCR information from the national system to the TCR Tool (regardless of if it is done manually or with interface), the IMs should define the capacity impact for every TCR. It should be possible for the IMs to indicate:

- if a TCR is a total closure (100% of the capacity is consumed),
- if a TCR is a partial closure (~50% of the capacity is consumed),
- and adjust the value freely (e.g. 5%, 10% etc).

More details concerning the impact calculation and special use cases can be found in Annex C.

The IMs may use their national system to calculate the impact of TCRs as long as the output of the calculation methodology is as precise as it is defined by the formula (1) in this Handbook.

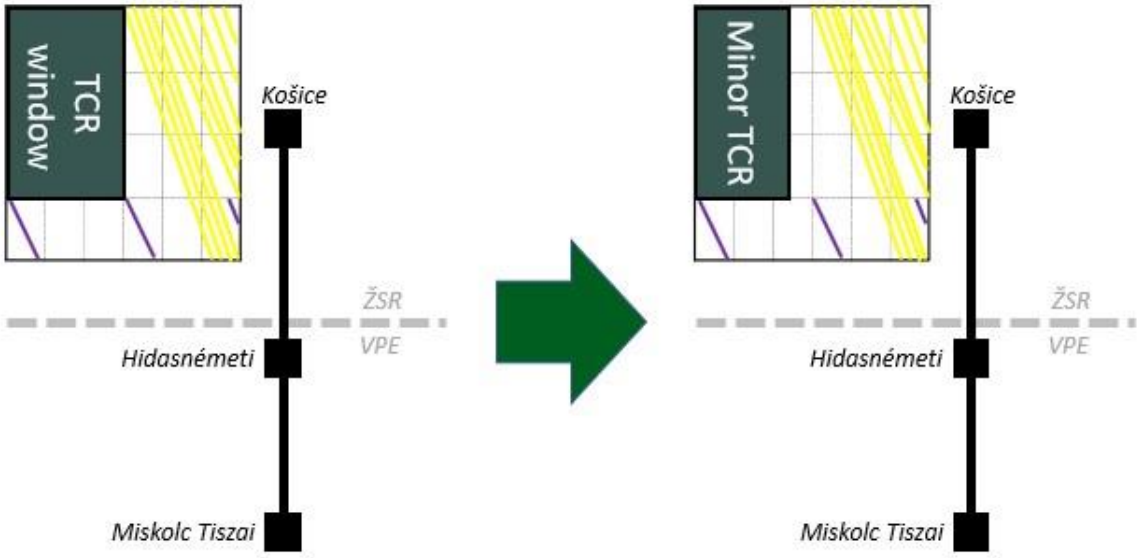


7. TCR windows

Thorough TCR planning aims to eliminate changes in the Capacity Models/Capacity Supply and minimise the impact on allocated paths. Changes in TCRs that result in major replanning and large uncertainties for the applicants need to be reduced. Similarly, Late TCRs need to be reduced as much as possible and triggered only by external factors, which are out of any IMs' control.

However, the Capacity Supply is published already at X-11, which is too early for exact details for minor impact TCRs, not to mention Late TCRs. Therefore, the IMs can establish regular TCR windows to be able to react to many of these TCRs when they become known. The TCR windows shall be sufficiently extensive for the TCRs while being ambitious to allow for all foreseeable traffic volumes. Their size has to be decided by IMs based on their experience from the past and the life-cycle of the concerned infrastructure. For the cross-border lines, TCR windows must be coordinated between the neighbouring IMs (and where applicable also other IMs that might be affected).

The aim of the coordination should be to minimise the impact on the traffic, to synchronise future TCRs on a given route, and avoid restricting capacity on diversionary routes. The TCR windows have a definite shape form, and they are part of the published Capacity Supply.



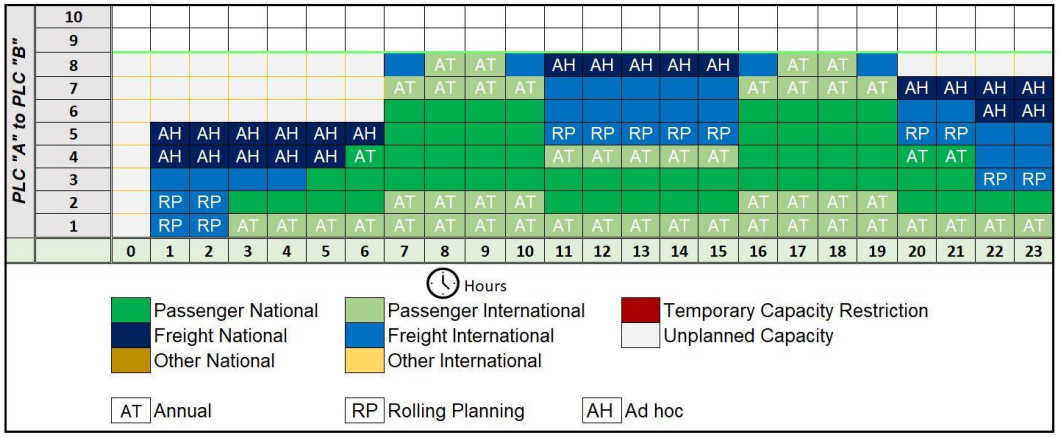
Naturally, the application of TCR windows does not eliminate the need for path alteration as not all minor and Late TCRs can be planned inside them. However, a sufficient number of TCR windows of proper duration can accommodate a substantial number of minor and late TCRs without an impact on allocated paths and without the need for coordination (as long as TCR windows were already made subject to coordination in the Capacity Supply phase).

In case an IM does not plan to make use of a particular TCR window or want to cancel an already planned TCR, it shall be released for ad hoc requests at the latest 14 calendar days before the operation day. It is in the interestof both, IMs and Applicants, to make the release as soon as reasonably possible, as the IMswish to monetise the capacity, while applicants would like to use it for train runs. On the otherhand, if the release is too early, it can lead to a situation when there is no TCR window for anunexpected Late TCR (undesired path alterations at short notice).

The most important process steps concerning TCR windows can be seen in the Table (below) and in Annex H.

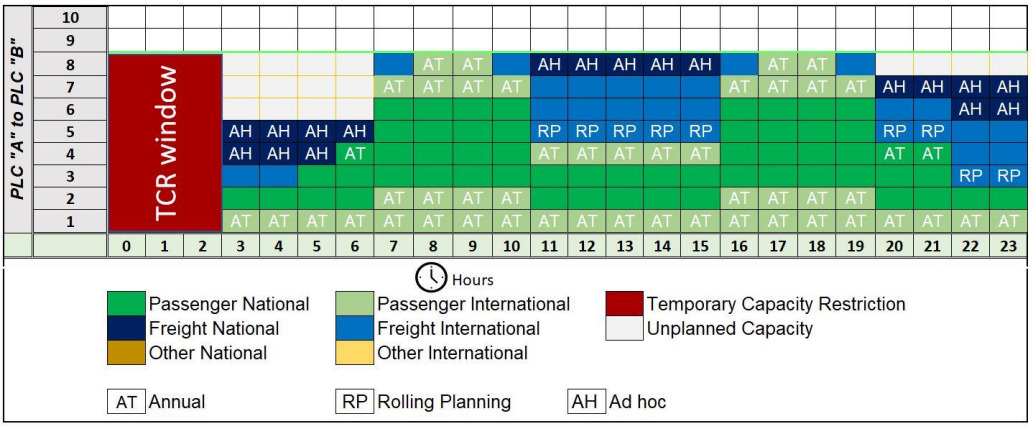
Timeline	Process Step
X-60 - X-36	TCR and TCR window planning principles defined in the Capacity Strategy, harmonisation for cross-border sections must be achieved.
X-36 - X-21	Bi/Multilateral coordination among the IMs (if relevant, other stakeholders are also involved.
X-21	Duration values of the TCR Windows are published as part of the draft Capacity Model. It is highly recommended to create Capacity Model variants for the TCR Window periods.
X-18	Duration values of the TCR windows are published in the final Capacity Model.
X-12	The exact timing of TCR Windows is published in the draft Capacity Supply.
X-11	Updated Capacity Supply published including the final placing of the TCR windows.
T-14d	Latest deadline when the unused TCR windows shall be released.

X-36	**TCR planning principles defined in the Capacity Strategy**	➢ IM 1 and IM 2 have agreed that regular TCR windows will be planned during nights on weekends.



A standard Capacity Model for a representative weekday has been created for the section between A and B.

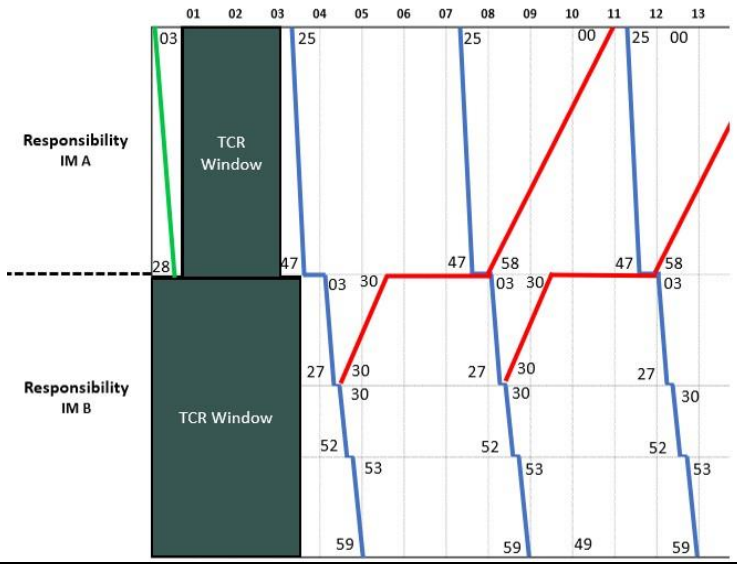
X-21



IM 1 and IM 2 have agreed that a regular TCR window will be planned every Sunday approximately from 00:00 am. until 3 am. The TCR window has been indicated in the draft Capacity Model variant.

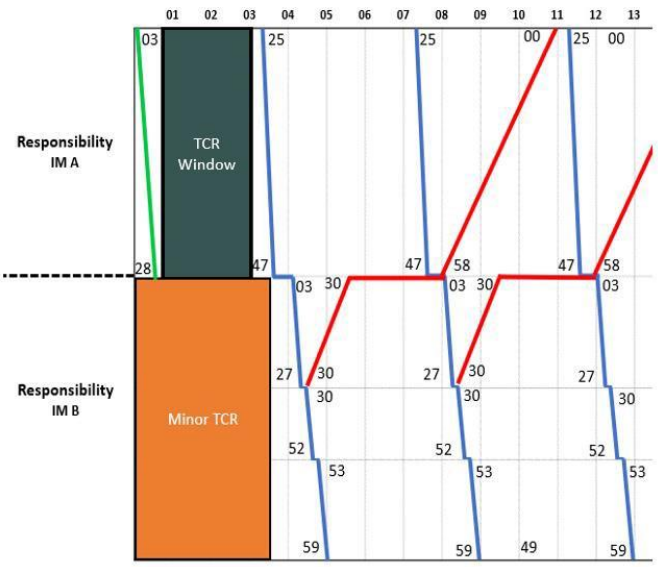
X-18 **The final Capacity Model is published.**

X-12



1. *The draft Capacity Supply variant (TCRs, pre-planned paths, bandwidths) has been created for the period when TCR windows are planned for the section. The exact timing of the TCR windows is*
   - *from 0:35 until 3:15 on the responsibility of IM A,*
   - *while 00:00 until 3:40 on the territory of IM B.*

In case an IM already knows the details of the planned works during the TCR window period, it is also free to announce it as a TCR (even from the beginning of the process), as indicated below.

X-12	 01 02 03 04 05 06 07 08 09 10 11 12 13 Responsibility IM A TCR Window Responsibility IM B Minor TCR 03 25 25 00 25 00 28 47 03 30 47 58 03 30 47 58 03 27 30 30 27 30 30 27 30 52 53 52 53 52 53 59 59 49 59

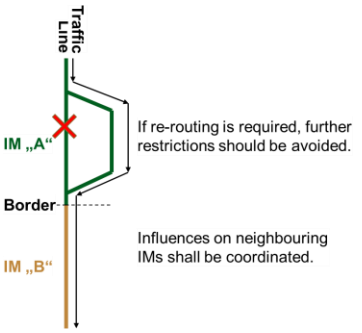
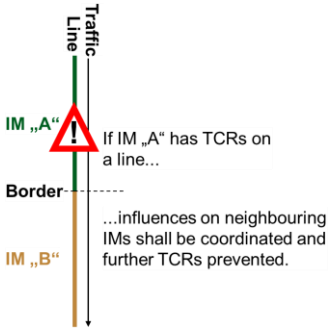
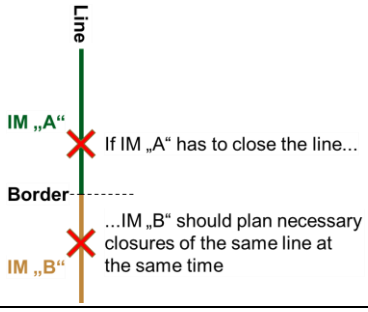
8. TCR management process

8.1. Aim of TCR coordination

Simply gathering and publishing information about capacity restrictions without any coordination has little value for IMs and Applicants. The coordination of TCRs shall ensure that planned capacity restrictions will consider the needs of both the IMs and the market by rationalising and minimising the gravity of impact and duration of the capacity restrictions. The coordination process is described in a more detailed way in Annex I.

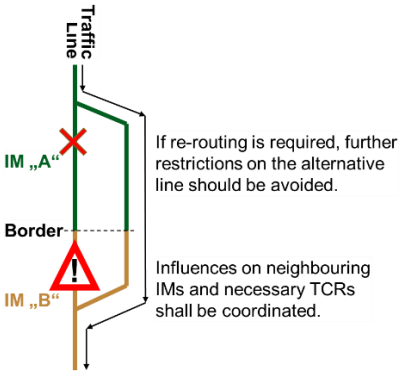
The coordination phase aims to guarantee the possibility to all IMs to carry out their respective TCRs, optimising their mutual interferences, maximise their revenue, and minimising the impact on applicants. On the other hand, an active exchange process about TCR between the IM and Applicants is also essential, which is done during the consultation process.

The coordination and consultation process should be based on the following principles:

1. TCRs of one IM which may influence traffic of other IMs should be coordinated between involved IMs.	
2. In the case of a TCR on one section of the network which does not allow reroutings, further restrictions in other sections of the network should be avoided, unless they do not affect the total capacity offer (also over a longer period) of the network in a negative way.	
3. In case of total closure, the aim should be to plan the maximum amount of works simultaneously (clustering of works) if technically possible and compatible with all kinds of traffic (passenger, freight, local trains).	

4. A TCR on one section of the network which requires rerouting of traffic shall be coordinated with capacity available over alternative routesand border crossings to limit the negative impacton the capacity offer of the IMs. This may be donefor example by avoiding, or at least coordinating, TCRs on the alternative route. Train operation must be ensured.

5. A TCR on one section of the network which requires rerouting of traffic shall be coordinated or combined with additional restrictions on a neighbouring IMs affected network if the same re-routing may be used. If possible, modifying the times of TCRs shall be taken into consideration. If possible, both IMs should work at the same time in the same operation mode.



6. Special attention should be taken if:

a. The TCR is on a border section.
b. The TCR causes a diversion of trains through another border section.
c. The TCR causes cancellation of international trains.
d. The TCR is located on a diversionary line using a border point.
e. The TCR causes delays above the thresholds agreed on by IMs concerned.

7. The second round of consultation is obligatory with the Applicants if changes were made after the first round (e.g. due to results of coordination).

8. Both the consultation and coordination process shall be done in a transparent, non-discriminatory way. The applicant has the right to appeal to the regulatory body if it believes that it has been unfairly treated, discriminated against, or is in any other way aggrieved concerning the TCR management process.

9. Therefore, it is in the best interest of all IMs to actively participate in the process and share information in due time.

8.2. Conflict resolution

The conflict resolution part will be updated based on the outcome of the International Leading Entity project.

8.3. Process steps for TCR management (Between X-60 and X-36)

The IMs prepare the Capacity Strategies, which also contain a chapter on the future TCR planning principles. During the creation of the first draft (X-60 – X-54), the aim is to describe the principles for capacity allocation for TCR windows, and the planning of TCRs. To fulfil these requirements, the IMsshould provide the needed input to the Capacity Strategy. The principles should define general rules, according to which the IMs willplan future TCRs. In addition, the strategy may refer to the already used off-the-shelf CapacityModels for TCR periods, as well. It is not the aim of the Capacity Strategy to define any TCR volumes, or TCR exact timings, however crucial Major impact TCRs, which are already known during the preparation of the Capacity Strategy should be pre-announced.In the next step (X-54 – X-36) the IMs should coordinate with the other involved IMs to find good compromises and best solutions to the identified issues, as the planning principles should be aligned. The IMs may start the initial coordination of crucial Major impact TCRs in this phase. Furthermore, the interested Applicants will also have the possibility to provide feedback to the drafts containing the TCR-planning principles.

Examples of TCR planning principles:

- TCRs should be clustered to minimise the gravity of impact and duration.
- On lines (A, B)[5] no TCRs shall be planned simultaneously.
- Due to insufficient re-routing capacity, no total closure shall be planned during peak hours.
- TCR windows on lines (A, B, C, D)[5] should be planned rather during weekends than working days.

IMs should publish in the Capacity Strategy a transparent overview of consultation options (preliminary consultation and consultation of traffic solution) including deadlines, methods and platforms used for major and high impact TCRs by highlighting the following:

- How the consultation process will be conducted for each major and high impact TCR (including preliminary consultation process).
- How and until when the Applicants can ask for two alternatives concerning major impact TCRs.

The final and validated Capacity Strategies shall be published by the IMs at X-36.

8.4. Process steps for TCR management (Between X-36 and X-18)

Between X-36 and X-24, preliminary coordinatations of the Major and High impact TCRs are held and shall be facilitated through bilateral (or multilateral) meetings of concerned IMs. Each IM should share the information with the other IMs in a transparent manner conerning all major and high-impact TCRs which are part of the lines defined in the Capacity Strategy, then each IM should indicate which other IMs might be affected by a certain TCR and any IM can identify itself as an affected stakeholder regarding other IMs' TCRs. IMs should respect other IMs' interests and invite them for the preliminary coordination. All IMs shall coordinate TCRs in such a way that their impact on capacity and Applicants is as low as possible and the use of infrastructure as efficient as possible (as described in chapter6.1) The planning has to follow the principles agreed in the Capacity Strategy.

The IMs can invite for the preliminary coordination:

- those Applicants and other IMs who have indicated their interests regarding the line affected withthe TCR,
- the main operators of service facilities, terminals,
- concerned RFCs.

The preliminary consultation for Major and High impact TCRs has to start at X-27 at the latest. In case the Applicants ask for Major impact TCR alternatives during the preliminary consultation, then at least two alternatives must be offered by IMs no later than X-25. If more than one IM is involved in this request (due to cross-border impact of the TCR), they should aim to provide a harmonised and commonly agreed response to the alternative. An alternative can offer e.g. a date adjustment and different solutions for the execution (e.g. partial closure instead of a total closure).

The IMs shall design the alternatives on the basis of the input provided by the applicants at the time of their requests and jointly with them. The comparison shall include at least the details described in Annex VII for each alternative.

[5] A generic example

The IMs invite for the preliminary consultation:

- those Applicants who have indicated their interests regarding the line affected with the TCR (it should be possible for any Applicant to join the consultation process),
- the main operators of service facilities, terminals,
- concerned RFCs.

IMs should note that according to the Capacity Model Handbook, they should provide sufficient information and data to study rerouting scenarios for Major and High impact TCRs at the latest at X-26 if they wish Applicants to take these particular TCRs into consideration when submitting Capacity Needs Announcements (CNAs).

By X-24, the status of Major and High impact TCRs should be published along with the data listed in Annex VII.

The published status of Major impact TCRs should be **one** of the following:

- preliminary coordinated and will be included in the draft (X-21) and the final Capacity Model (X-18) (in case all affected IMs agreed on that),
- preliminary coordinated, will not be included in the draft (X-21), but only in the final Capacity Model (X-18) (in case all affected IMs agreed on that),
- disagreement → escalation starts.

The published status of High impact TCRs should be **one** of the following:

- preliminary coordinated and will be included in the draft (X-21) and the final Capacity Model (X-18) (in case all affected IMs agreed on that),
- preliminary coordinated, will not be included in the draft (X-21), but only in the final Capacity Model (X-18) (in case all affected IMs agreed on that),
- preliminary coordinated, will not be included in the draft (X-21) nor in the final Capacity Model (X-18) only incorporated into the draft updated Capacity Model or draft Capacity Supply (X-12),
- disagreement → escalation starts.

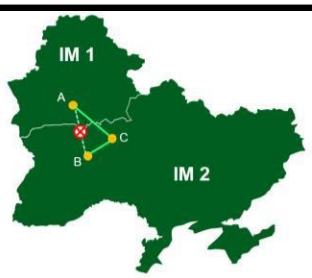
By X-24, the IMs should also indicate which TCR windows are foreseen to be included in the draft (X-21) or in the final (X-18) Capacity Models.

IMs should aim to include their TCRs in the Capacity Model at as early stage as possible.

After the first publication, IMs should finalise the coordination of the Major impact TCRs among themselves at X-18 at the latest.

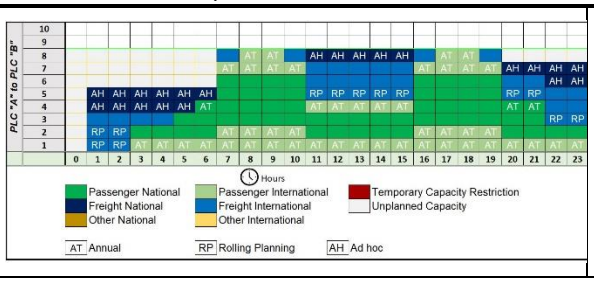
Based on all the inputs gathered (primarily discussions, off-the-shelf Capacity Models, TCR planningprinciples, the submitted Capacity Needs Announcement and the IM's estimation concerningthe future traffic demands), the IMs create draft Capacity Model variants for the periods of Major and High impact TCRs.

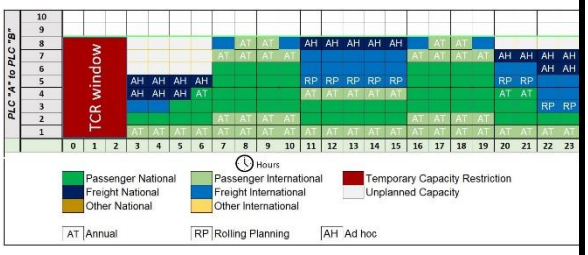
The draft Capacity Model variants should include information concerning Major and High TCRs as described in the Capacity Model Handbook.



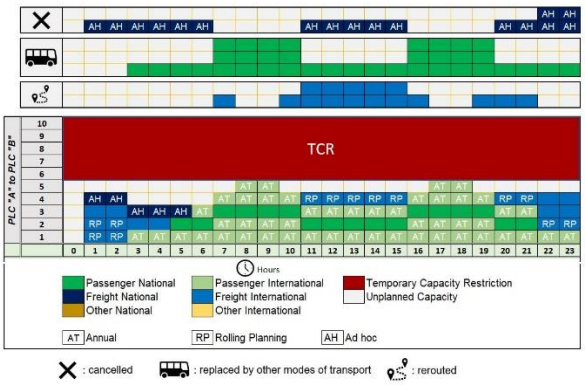
Need for TCR: partial closure of the service on A-B

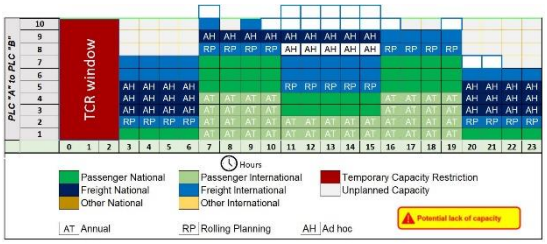
(Please note that the table contains only one example for the rerouting)



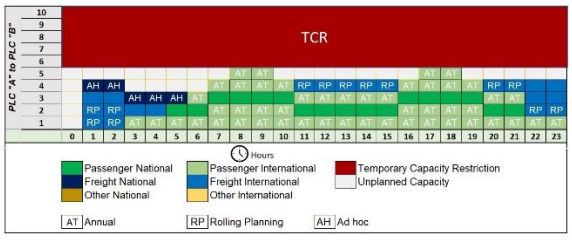


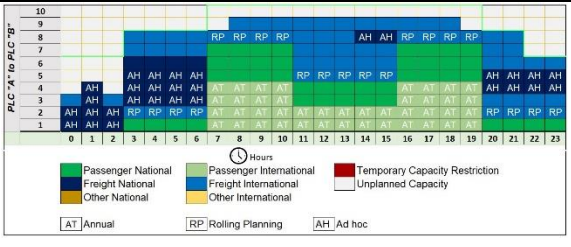
Above two original standard Capacity Models for a representative working day are presented that are part of the basic requirements of TTR Capacity Model implementation. This standard traffic situation should be now affected by a new TCR - in this example, IMs have to find a traffic solution during the partial closure on line A-B (left picture). The re-routing is possible via line A-C-B, however, there are already expected traffic flows on A-C (right picture).





A traffic solution during the partial closure (Capacity Model variant during the TCR period) is elaborated, coordinated between IMs, and consulted with interested applicants. The left TCR-capacity model shows traffic volumes that will be operable during the partial closure on the A-B line. In this traffic solution, it is proposed to reduce the capacity for ad hoc traffic, replace regional passenger trains with buses (with exception of regional express trains) and reroute freight trains to A-C. The right picture shows the new TCR capacity model on A-C under elaboration. The rerouted freight trains would mean that A-C might go beyond its capacity limits (see the situation around 07 am, 11 am-3 pm). Therefore, cancellation of the regular TCR window on A-C and reduction of several ad hoc volumes should be done to accommodate rerouted freight trains.



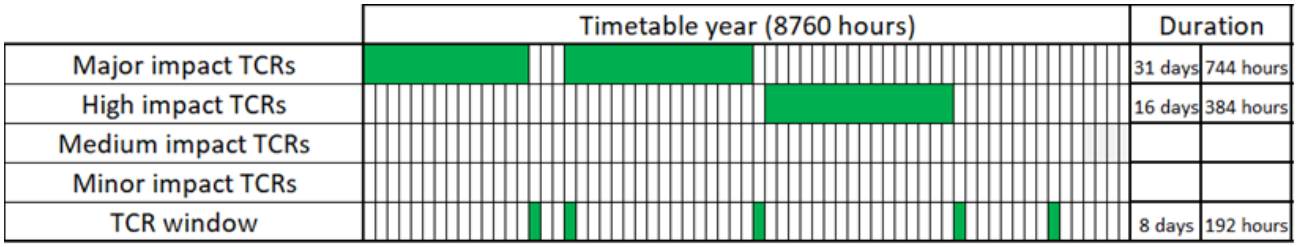


The final traffic solution agreed between the IMs and applicants is displayed above. The variant of the Capacity Model during the TCR period is published, no path details are discussed at this stage yet. That comes only during the Capacity Supply phase when the exact timing (selection of affected days) is coordinated and consulted.

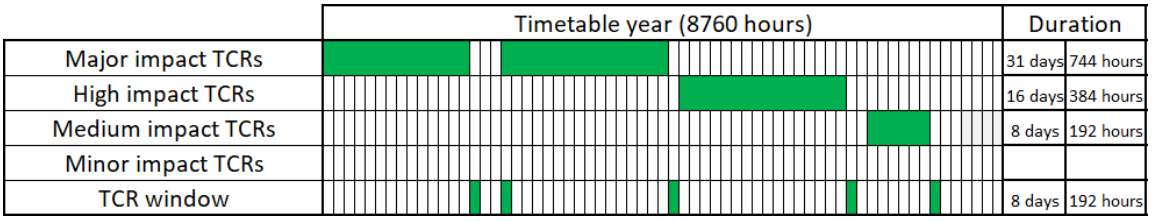
During the creation of the Capacity Model, it is also important to provide an overview concerning the future TCR duration. Based on the available information, different options exist. As the IMs are obliged to first publish the information concerning Major and High TCRs at X-24, the duration of these TCRs can be published. However, the publication of medium, minor, and less than minor impact TCRs comes later.

Due to the mentioned reasons, the TCR tool should prepare the TCR duration overview for Major and High TCRs completely, however for medium, minor, and less than minor impact TCRs to the extent as they are known by the IM. For the estimation, past statistics, already planned TCRs, future estimations, Capacity Model variants for TCR Window periods can be used.

TCRs	Description
Major impact TCR	Based on the: ➢ created Capacity Model variants for Major and High impact TCRs
High impact TCR	
Medium impact TCR	According to the ➢ created Capacity Model variants for TCR Window periods ➢ own future estimation of the IMs ➢ past statistics ➢ already planned TCRs
Minor impact TCR	
Less than minor impact TCR	



As medium impact TCR becomes known after the publication of the draft Capacity Model, the TCR duration can be updated and adjusted later according to the latest available information concerning the TCRs.



By X-21, the IMs prepare an estimation concerning the future TCR duration. The IMs have to define the TCR duration values for the Major and High impact TCRs. Nevertheless, it is also recommended to give an estimation concerning medium, minor TCRs and TCR windows. The calculation should be supported by an IT Tool.

The detailed process chart for TCR management between X-36 and X-18 can be found in Annex D and Annex I.

8.5. Process steps for TCR management (Between X-18 and X-8.5)

8.5.1. In case the IM prepares Capacity Supply on the top of the Capacity Model

Between X-18 and X-13.5 the IMs should coordinate the High and Medium[7] impact TCRs among themselves. All IMs shall coordinate TCRs in such a way that their impact on capacity and applicants is as low as possible and the use of infrastructure as efficient as possible (as described in chapter 6.1). The planning has to follow the principles agreed in the Capacity Strategy. Coordination shall be facilitated through bilateral (or multilateral) meetings of other concerned IMs. Each IM should indicate which other IMs might be affected by a certain TCR and any IM can identify itself as an affected stakeholder regarding other IMs' TCRs. IMs should respect other IMs' interests and invite them for the coordination.

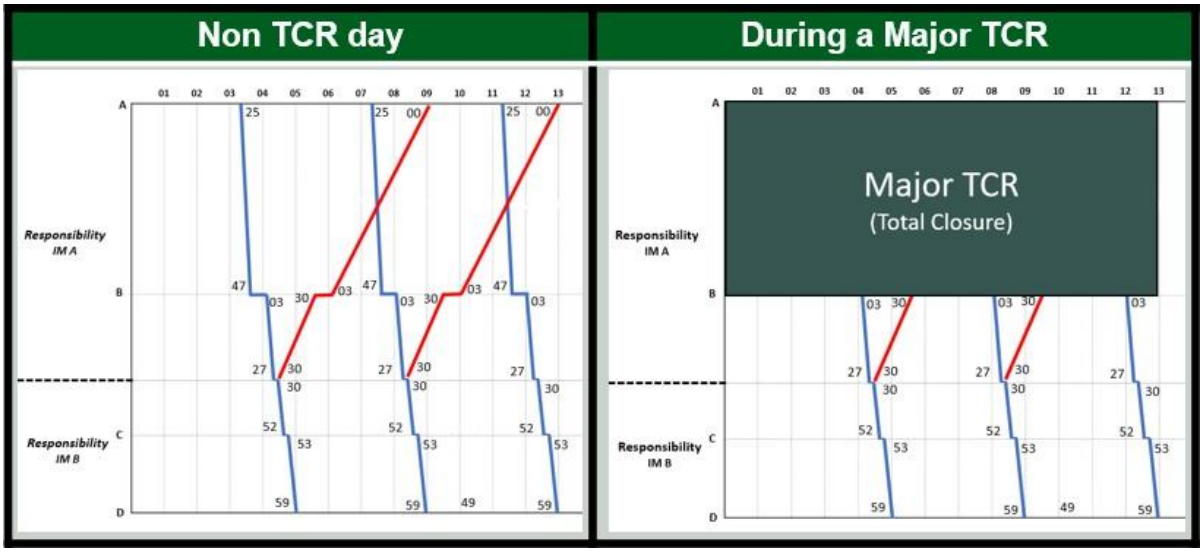
The IMs can invite for the coordination:

- those Applicants and other IMs who have indicated their interests regarding the line affected withthe TCR,
- the main operators of service facilities, terminals,
- concerned RFCs.

At X-12 the IMs should publish the draft Capacity Supply for the periods of Major, Highand Medium[7] impact TCRs. Prior to publishing the final Capacity Supply at X-11 the draft Capacity Supply should be consulted with:

- those Applicants who have indicated their interests regarding the line affected with the TCR,
- the main operators of service facilities, terminals,
- concerned RFCs.

The second consultation is not necessary for those TCR periods that have been already consulted in the previous phase (between X-21 and X-18) and no change has been made.



The draft Capacity Supply (X-12) variants contain the following information concerning Major, High, and Medium[6] impact TCRs:

a) Planned days.
b) Time of day, and, as soon as it can be set, the hour of the beginning and the end of the capacity restriction.
c) Section of line affected by the restriction.
e) The capacity of diversionary lines along with an overview of which type of service should be rerouted (if applicable).

Based on the result of this consultation and the fixed timing of Major, High, Medium TCRs

and TCR windows, the IMs publish the coordinated Capacity Supplies in a 365-day overview at X-11.

A more detailed overview concerning the process can be found in Annex E and Annex I.

8.5.2. In case the IM only prepares updated Capacity Model

Between X-18 and X-13.5 the IMs should coordinate the High and Medium[7] impact TCRs among themselves. All IMs shall coordinate TCRs in such a way that their impact on capacity and Applicants is as low as possible and the use of infrastructure as efficient as possible (as described in chapter 6.1) Coordination shall be facilitated through bilateral (or multilateral) meetings of other concerned IMs. Each IM should indicate which other IMs might be affected by a certain TCR and any IM can identify itself as an affected stakeholder regarding other IMs' TCRs. IMs should respect other IMs' interests and invite them for the coordination.

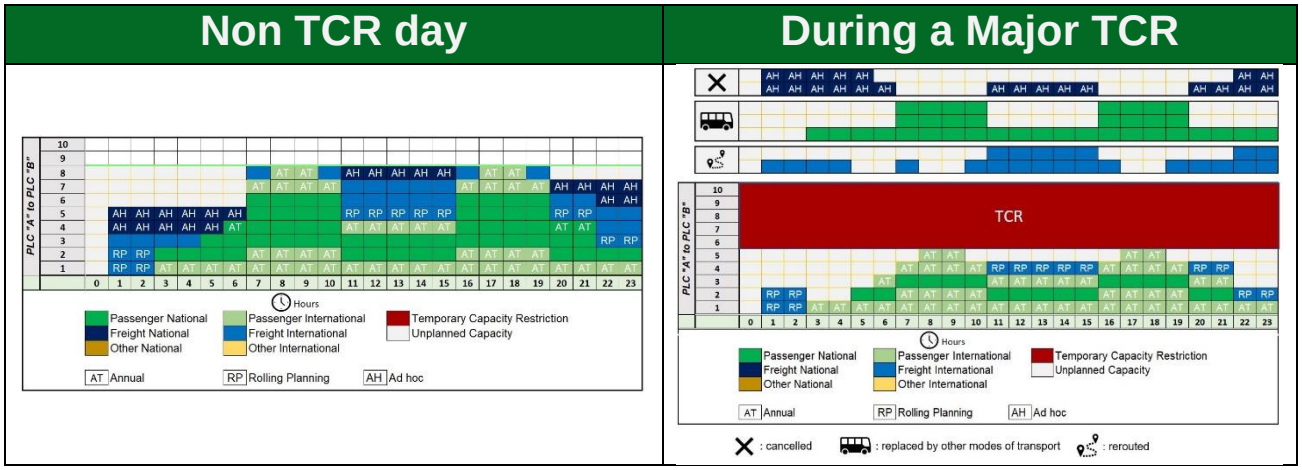
The IMs can invite for the coordination:

- those Applicants and other IMs who have indicated their interests regarding the line affected withthe TCR,
- the main operators of service facilities, terminals,
- concerned RFCs.

At X-12 the IMs should publish the draft updated Capacity Model variants for the periods of Major and High TCRs. Prior to publishing the final updated Capacity Model at X-11 the draft updated Capacity Model should be consulted with:

- those Applicants who have indicated their interests regarding the line affected with the TCR,
- the main operators of service facilities, terminals,
- concerned RFCs.

The second consultation is not necessary for those TCR variants that have been already consulted in the previous phase (between X-21 and X-18) and no change has been made.



The draft updated Capacity Model variants should include information concerning Major, High impact TCRs as described in the Capacity Model Handbook.

A more detailed overview concerning the process can be found in Annex E and Annex I.

8.6. Process steps for TCR management (Between X-8.5 and X-5.5)

The Applicants should place their request for annual traffic (until X-8.5) taking into consideration the Major, High and Medium impact TCRs.

After the path request deadline for annual traffic, the IMs will start further elaboration on the path details. However, in the meantime, the need for minor TCRs can pop up, which

sometimes makes it necessary to have further consultation/ between the Applicants and other concerned IMs. This consultation takes place in connection with the path elaboration process.

In case the TCR windows could accommodate the minor TCRs, no coordination and consultation are needed.

To trigger the consultation process, information concerning minor TCRs shall be made available to applicants and other concerned IMs at X-6.5 at the latest. Decisions made during consultations with the applicants should be in line to reduce IMs' costs and minimise the impact on applicants. The draft and final offer provided by the IMs should accommodate the impacts of the major, high, medium, and minor (to the extent as they are known) TCRs.

In case the IMs publish the capacity for most of the train in the form of pre-planned paths in the Capacity Supply, at X-4 it should be adjusted incorporating the impacts of Major, High, Medium, Minor impact TCRs and TCR Windows.

Even if the coordination of minor impact TCRs is not required by Annex VII, the IMs are highly recommended to coordinate the minor impact TCRs among themselves.

A more detailed overview concerning the process can be found in Annex F and Annex I.

8.7. Process steps for TCR management (Between X-5.5 and X+12)

Based on the contract of use, the applicant can expect that an allocated path is available for operation. However, if an event occurs that TCRs need to be changed between the capacity allocation and before the start of the operation, and requiring a change of the allocated path from either thelong term or short-term planning, the IM shall inform the Applicant as soonas it knows this fact.

In case the TCR windows could accommodate minor, less than minor or Late TCRs, no coordination and consultation are needed.

In case of traffic demands which emerged after X-8.5 (late path/ ad hoc request or rolling planning), the Applicant can place a feasibility study request before the path request to consult with the IMs on the possible effect of TCRs on a train path. However, the IMs will only be able to provide feedback to such a request (in the form of path details) if the request is placed according to the deadlines defined in the Procedures of the Feasibility Study.

At X-4, the IMs should publish in the updated Capacity Supply the following information concerning Major, High Medium and Minor TCRs:

a) Planned days.
b) Time of day, and, as soon as it can be set, the hour of the beginning and the end of the capacity restriction.
c) Section of line affected by the restriction.
d) The capacity of diversionary lines along with an overview of which type of service should be rerouted (if applicable).

In case an IM does not publish for most of the train the capacity in the form of pre-planned paths in the Capacity Supply, the available capacity of the diversionary line could be consulted with the IMs using a feasibility study procedure.

The final allocation of late path requests (X-1) and ad hoc requests should be in line with the timing of the Major, High, Medium, Minor TCRs and TCR windows.

The IM is obliged to consult the applicant with an alternative proposal together with the indication the path is not available. If no agreement with the applicants can be reached, IMs are required to take the final decision, where the applicant may refuse to use the allocated path and declare it as economically not usable. However, an alternative is not always possible. In that case, the IM shall inform the applicant immediately.

Any alteration of an allocated path (due to late or less than minor TCRs) should follow the principles and deadlines defined in the Path Alteration Handbook.

A more detailed overview concerning the process can be found in Annex G and Annex I.

8.8. Late TCRs

To be discussed at a later stage and updated in 2022.

8.9. Publication of TCRs

The IMs shall publish the information in a transparent manner concerning the TCR management process defined in this document. The future goal is to use the TCR tool and ECMT at a European-wide level. .

8.10. Exceptional process

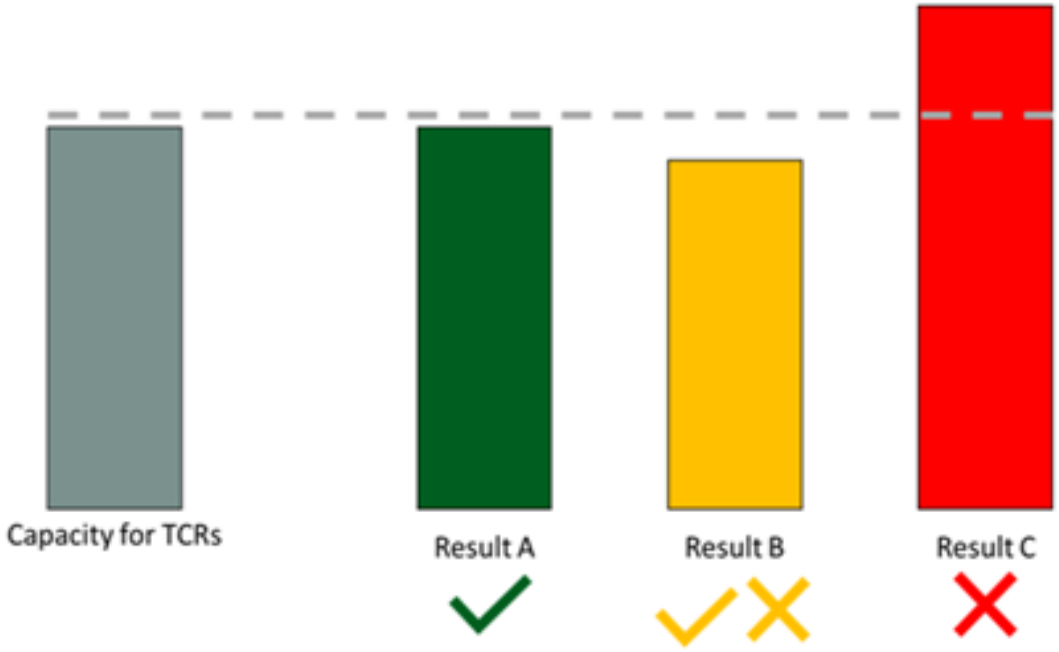
The IM may decide not to apply the periods laid down in points from 8.3 to 8.8 if the capacity restriction is necessary to re-establish safe train operations, the timing of the restrictions is beyond the control of the infrastructure manager, the application of those periods would be cost-ineffective or unnecessarily damaging in respect of asset life or condition, or if all concerned applicants agree. In those cases, and in case of any other capacity restrictions that are not subject to consultation following other provisions of Annex VII of Directive 2012/34/EU, the infrastructure manager shall consult the applicants and the main operators of service facilities concerned forthwith.

Annex A: Evaluation of compliance with the published TCR duration

At X+12, when the timetable is over, it is a good opportunity for IMs to evaluate whether they were able to keep their previous commitment from the capacity partitioning. This knowledge is essential to gather data and improve capacity partitioning and planning in the upcoming TT periods.

The most important is to evaluate whether the proportional share for TCRs was kept, and if not, why? The IMs should also evaluate whether the TCR share was sufficient for maintenance in the long-term view.

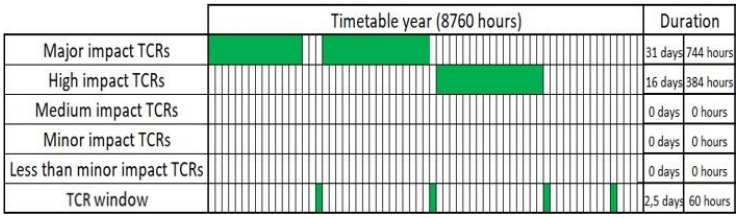
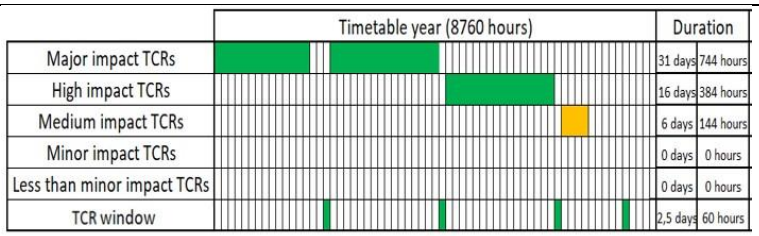
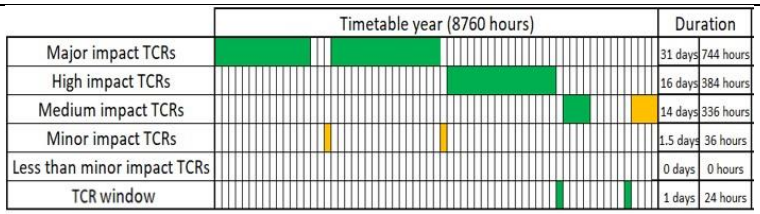
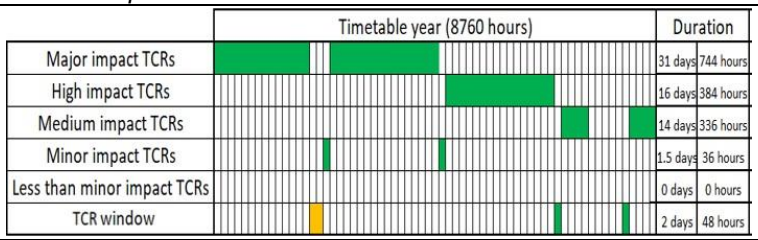
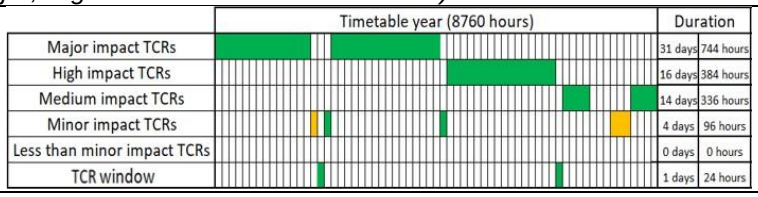
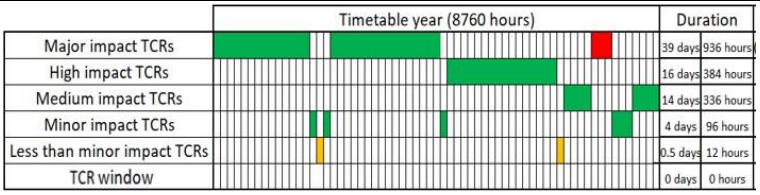
The figure below shows the amount of capacity set aside for TCRs and the possible final consumption of capacity by TCRs. The desired state is Result A (with a certainly acceptable deviation). Result B should be considered as the second-best. Here TCRs consumed finally less capacity than expected and this capacity was released for ad hoc requests. Result C has to be prevented by IMs as it would be against the transparency introduced by capacity partitioning. The only exception where Result C is acceptable are the lines with a very low level of saturation and a significant amount of unplanned capacity to accommodate late TCRs.



The evaluation of IMs should not be limited to a simple two percent figures comparison, it has to be transparent and go deeper to the particular shares of TCR impact types and were needed even to particular TCRs. The stakeholders have to understand that special attention has to be given to the TCRs caused by force majeure, of which most are unpredictable.

Furthermore, a quantitative analysis might not be sufficient to understand the effectiveness of the applied capacity planning and management. Thus, the IMs should develop a joint methodology, how to also evaluate the quality of the used capacity, and consult the methodology with applicants.

The evaluation and the update of the TCR duration are presented below. As it is indicated, a regular update is necessary in order to accommodate the changes concerning TCRs. Moreover, at X-21, the IMs have limited knowledge concerning the minor and less than minor TCRs, thus, these TCRs should be incorporated into the model in a later stage.

Milestone	Overview
X-21	
	According to the regulation of Annex VII, the Major and High impact TCRs are first published at X-24, enabling the IMs to incorporate this information into the TCR duration overview. In addition, if the IMs can fix some of the TCR windows, they are welcomed to do so.
X-18	
	By X-18, the IMs will likely have the first information concerning Medium impact TCRs. This information can be noted in the calculation and shared with other stakeholders.
X-13.5	
	By X-13.5, the coordination of Medium impact TCRs is finalised. Moreover, there is a high likelihood that some of the Minor impact TCRs also become known which makes the update of the overview possible.
X-12	
	At X-12, the update of the overview continues according to the regulation of Annex VII (timing of Major, High and Medium TCRs are fixed).
X-4	
	At X-4, the update of the overview continues according to the regulation of Annex VII (timing of minor TCRs are fixed).
X+12	
	At X+12, a clear overview can be prepared based on real TCR duration. In the presented example, there was a need to introduce a late TCR (indicated with red) which effect equals a major impact TCR. The reason should be investigated and transparently documented by the IM.

The evaluation of the TCR duration should follow the logic represented by the table (below). The exact duration of each TCR category (X+12) should be compared to the planned duration of each category taking into consideration the fact that the different TCR categories have different deadlines for publication. For instance, in the case of medium impact TCRs, the planned capacity at X-12 should be compared with X+12, while for minor impact TCR X-4 should be selected as a base.

	X-21	X-18	X-13.5	X-12	X-4	X+12	Evaluation
Major impact TCRs	744	744	744	744	744	936	
High impact TCRs	384	384	384	384	384	384	
Medium impact TCRs	0	114	336	336	336	336	
Minor impact TCRs	0	0	0	36	96	96	
Less than minor impact TCRs	qualitative assesment						
Force major	qualitative assesment						

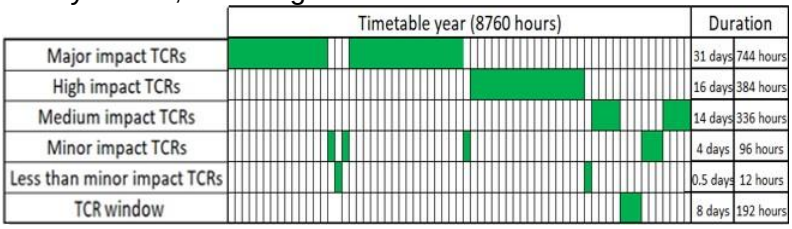
(The values in the Table are in hour)

The impact of any late TCRs should be calculated according to chapter 6.2 and then has tobe classified based on the rules described in 6.1.

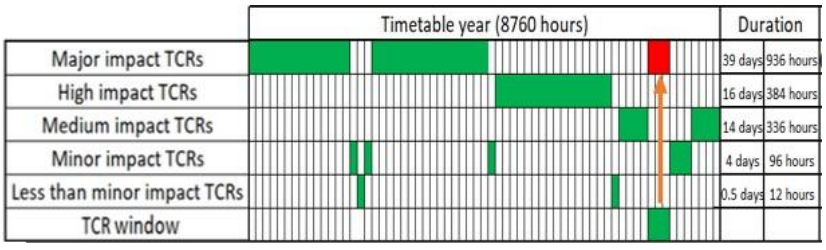
Since the “less than minor impact TCRs” have a limited effect on capacity planning, the evaluation of this category could be done using qualitative assessment.

As usually “Force majeure” are out of the scope of the IMs, qualitative assessment couldbring higher added value.

The impact of any late TCRs should be calculated according to chapter 6.2 and then has to be classified based on the rules described in 6.1. For example, at X-4, the following estimation has been published by the IM, including a TCR window with a duration of 192 hours.



When the evaluation of the TCR capacity is done (after X+12) it becomes clear that a Late TCR popped up, which had been classified as a major impact TCR.



However, as the TCR window has been used to accommodate the Late TCR, the TCR capacity estimation for Major impact TCRs has been increased at X-4 from 8.5% to 10.7% as the capacity of the TCR window was merged to it.

	X-21	X-18	X-13.5	X-12	X-4	X+12	Evaluation
Major impact TCRs	744	744	744	744	~~744~~ 936	936	
High impact TCRs	384	384	384	384	384	384	
Medium impact TCRs	0	114	336	336	336	336	
Minor impact TCRs	0	0	0	36	96	96	
Less than minor impact TCRs	qualitative assesment						
Force major	qualitative assesment						

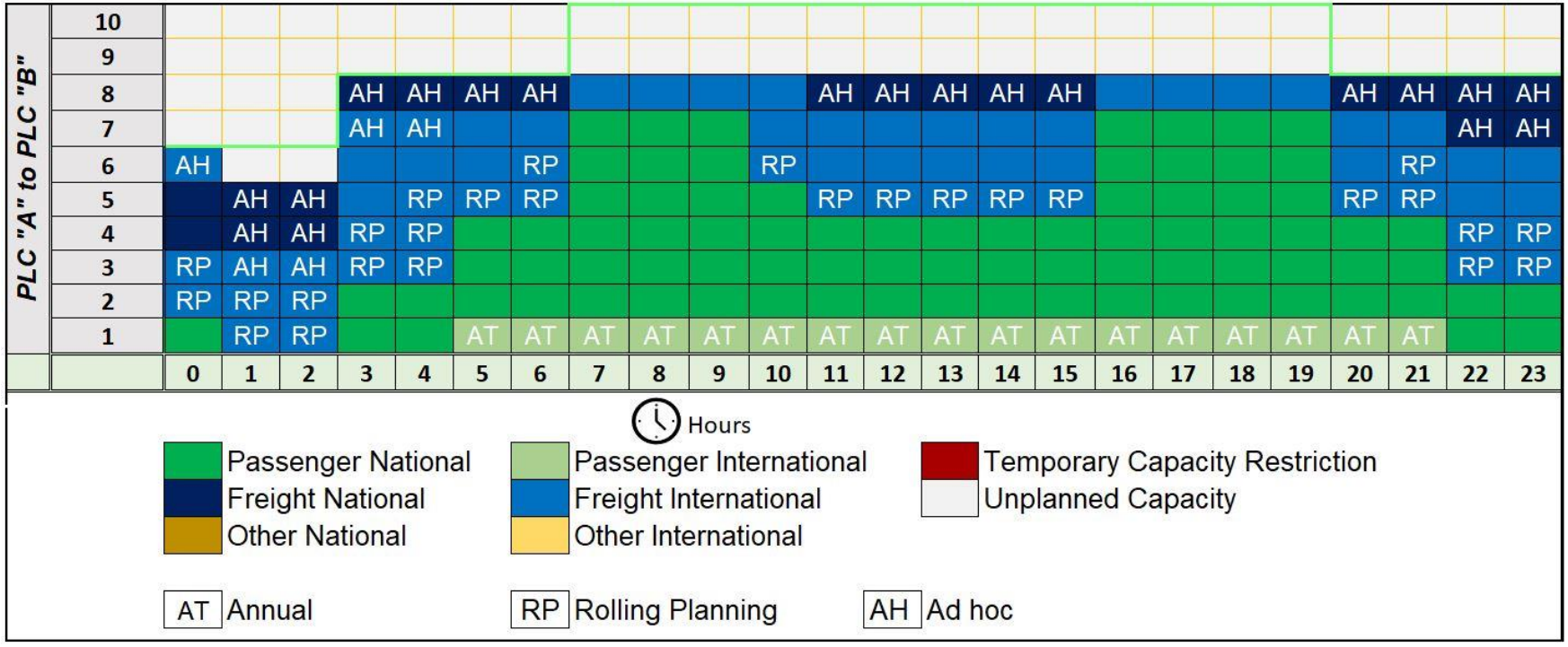
Annex B: Connection between TCRs and TTR Elements

TCR type	Capacity Strategy X-36	Capacity Model X-18	Capacity Supply X-11	Capacity Supply X-4	Capacity Supply latest at T-5	Capacity Supply latest at T-2	Capacity Supply M-14d
Major/High impact TCR	Can provide some information on future TCRs. No exact details, only principles for the TCR planning.	Fixed negative capacity on the Capacity Model variant	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).
Medium impact TCR	No information, only principles for the TCR planning (including TCR windows).	IMs can publish the traffic part of the model for the particular TCR period. Publication of TCR information to the extent as they are known,	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).	Fixed negative capacity in the diagram, marked if it is total closure or partial (requesting through allowed).
Minor impact TCR	No information, only principles for the TCR planning (including TCR windows).	Publication of TCR information to the extent as they are known,	TCR windows in the Capacity Supply as a possibility when the minor impact TCRs can be executed once the details are known.	If the exact timing is known, preferably the TCR windows could be used to accommodate these TCRs if possible (no coordination and	Fixed negative capacity in the diagram (the result of coordination, consultation). Path alteration process for	Fixed negative capacity in the diagram. Path alteration process for freight trains starts.	Fixed negative capacity in the diagram.

TCR type	Capacity Strategy X-36	Capacity Model X-18	Capacity Supply X-11	Capacity Supply X-4	Capacity Supply latest at T-5	Capacity Supply latest at T-2	Capacity Supply M-14d
				consultation needed). Otherwise, coordination, consultation, and alteration follow.	passenger trains starts.		
Late TCR	No information, only principles for the TCR planning (including TCR windows).	TCR windows in the Capacity Model as a possibility when the late TCRs can be executed once the details are known.	TCR windows in the Capacity Supply as a possibility when the late TCRs can be executed once the details are known.	If the exact timing is known, preferably TCR windows could be used to accommodate these TCRs if possible (no coordination and consultation needed). Otherwise, coordination, consultation, and alteration follow.	If the exact timing is known, preferably TCR windows could be used to accommodate these TCRs if possible (no coordination and consultation needed). Otherwise, coordination, consultation, and alteration follow.	If the exact timing is known, preferably TCR windows could be used to accommodate these TCRs if possible (no coordination and consultation needed). Otherwise, coordination, consultation, and alteration follow.	The latest deadline is when the unused TCR windows for late TCRs are released for short-term ad hoc requests.

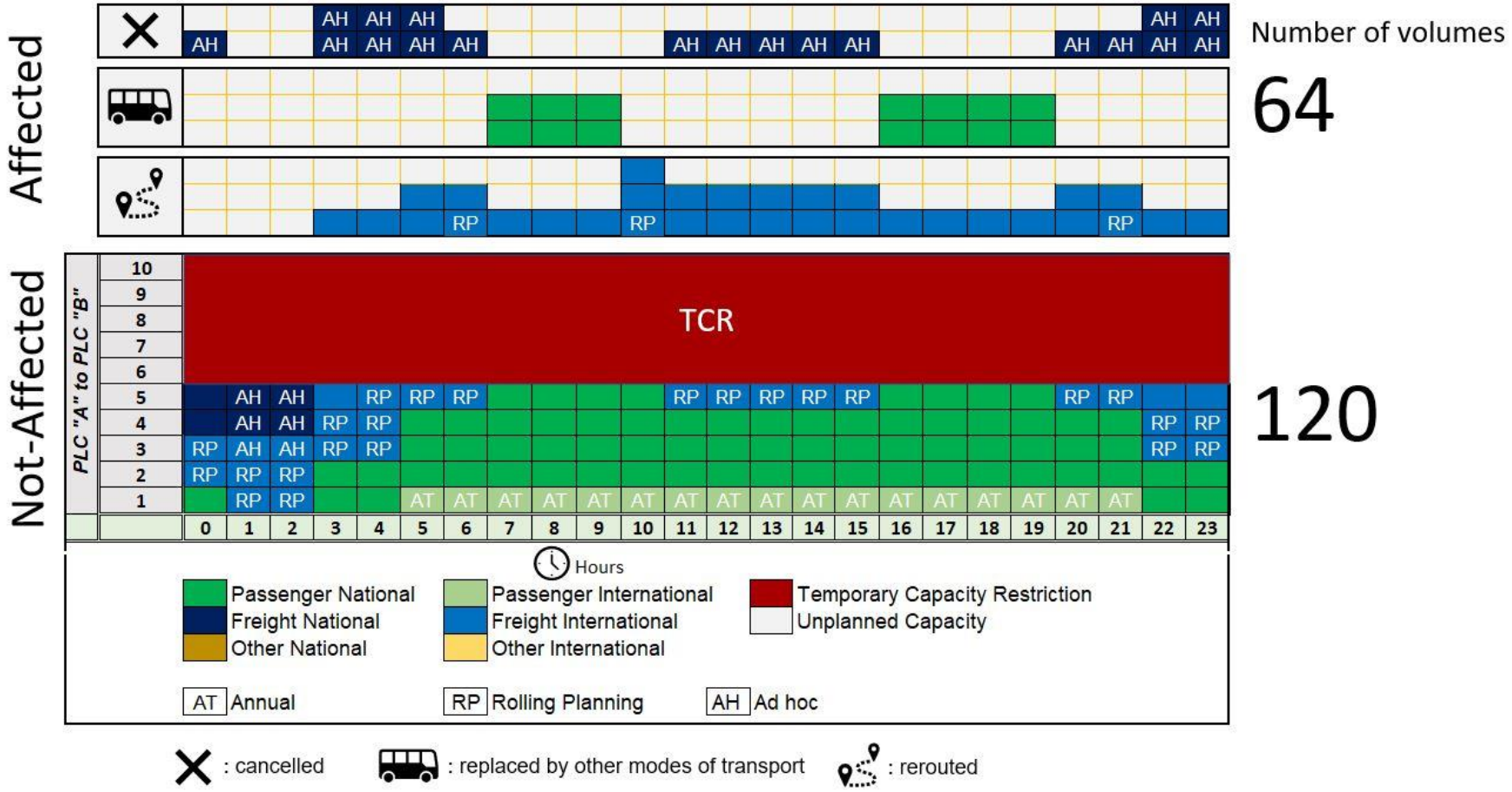
Annex C: TCR Impact Calculation use cases

Capacity Model for a regular working day



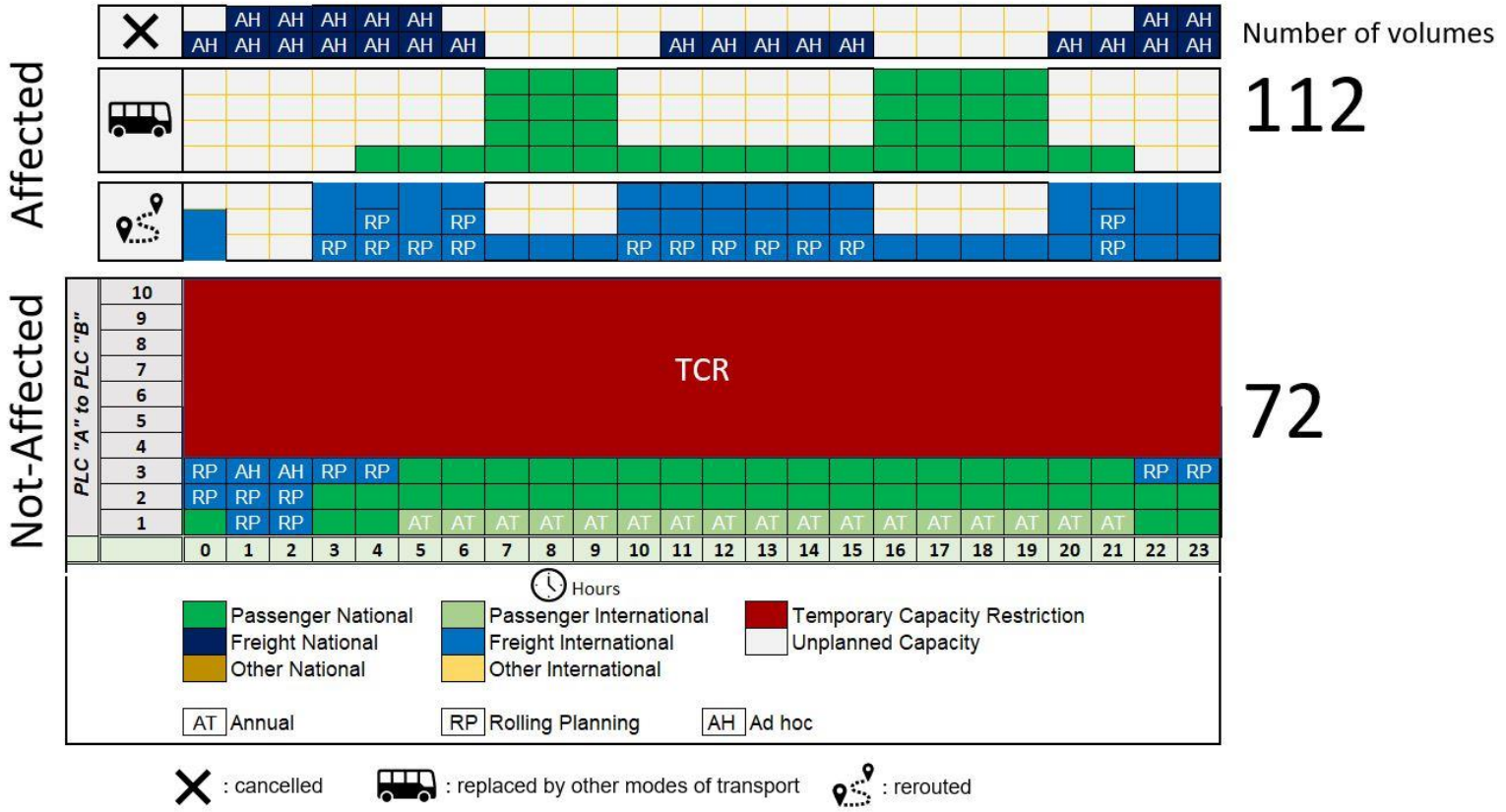
Use case No 1: High impact TCR

Total number of paths: 184
Number of paths affected by the TCR: 64
Impact on the 35% of the paths
Duration: 25 days

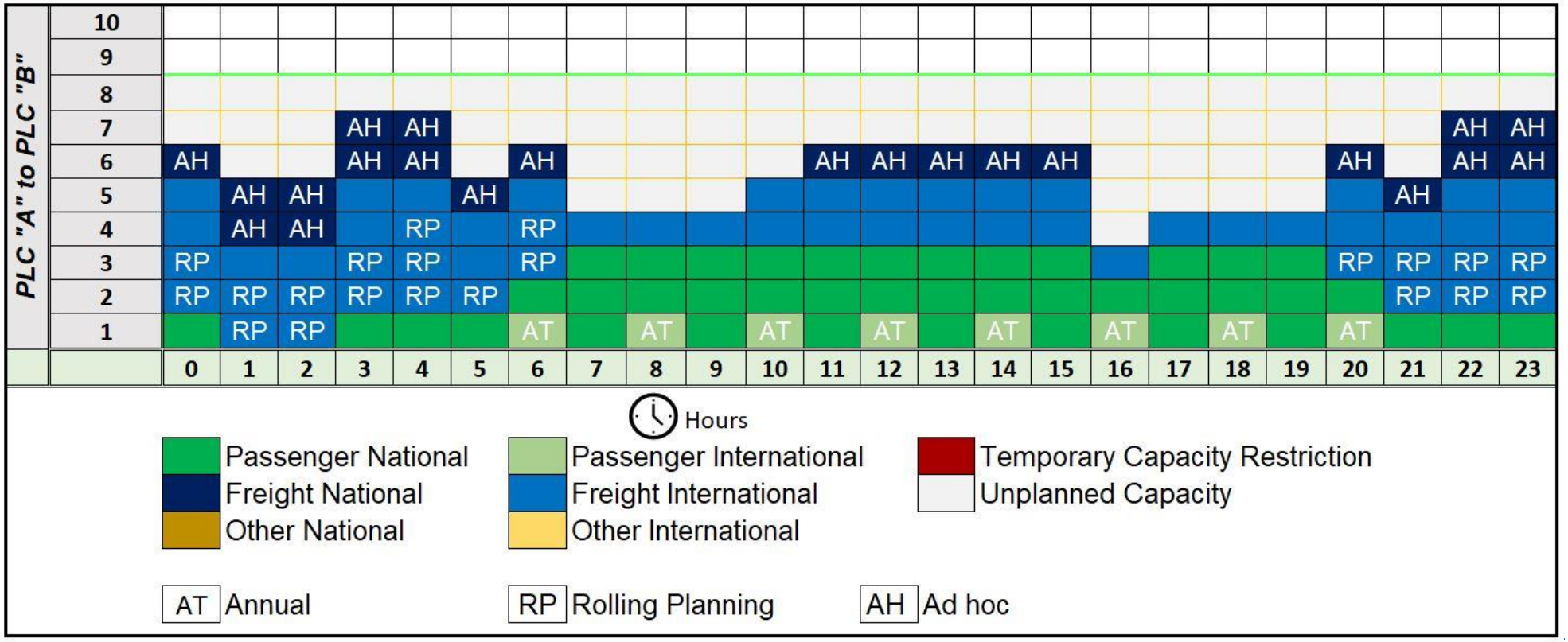


Use case No 2: Major impact TCR

Total number of paths: 184
Number of paths affected by the TCR: 112
Impact on the 61% of the paths
Duration: 45 days
Major impact TCR

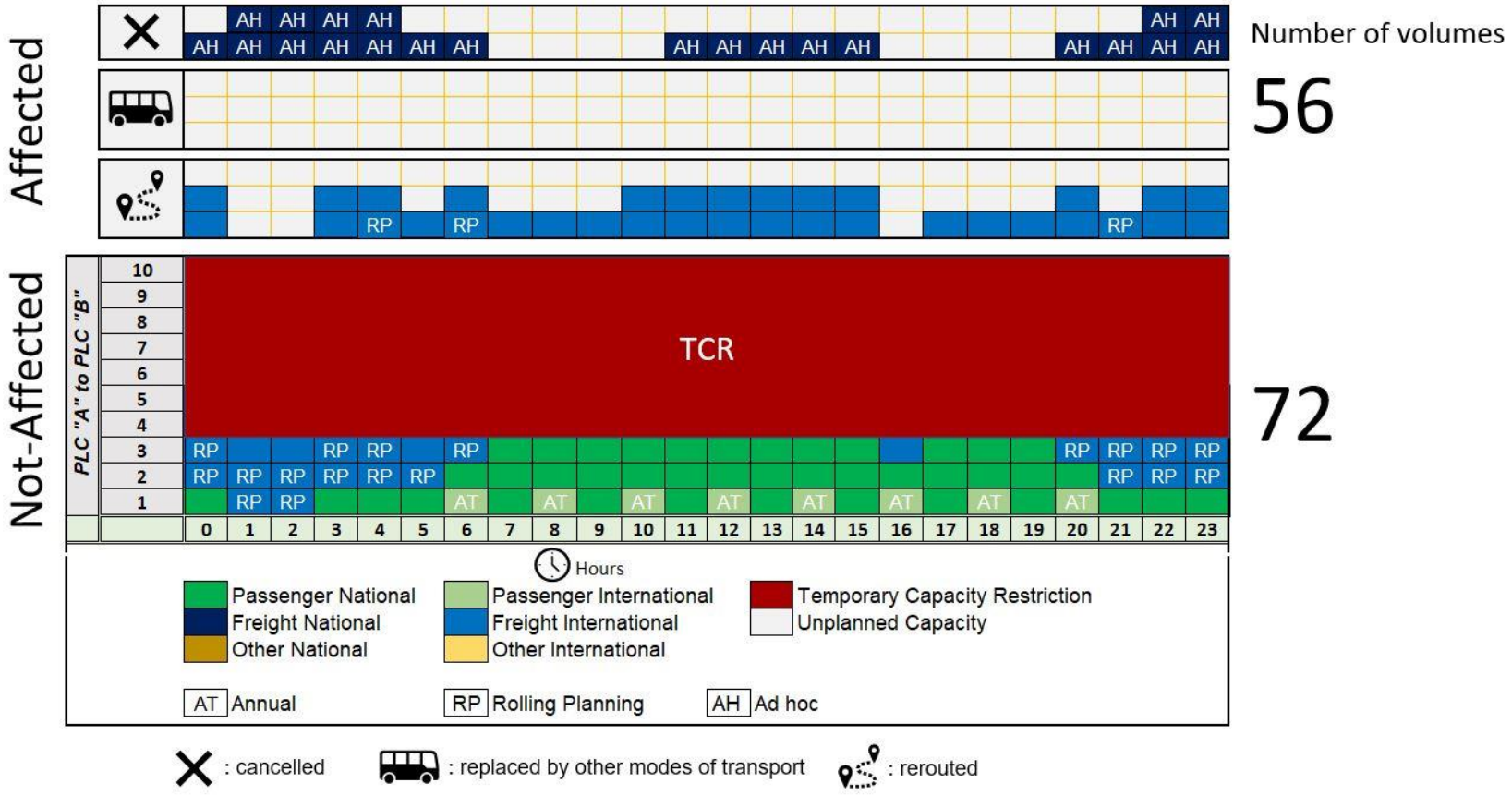


Capacity Model for a weekend day



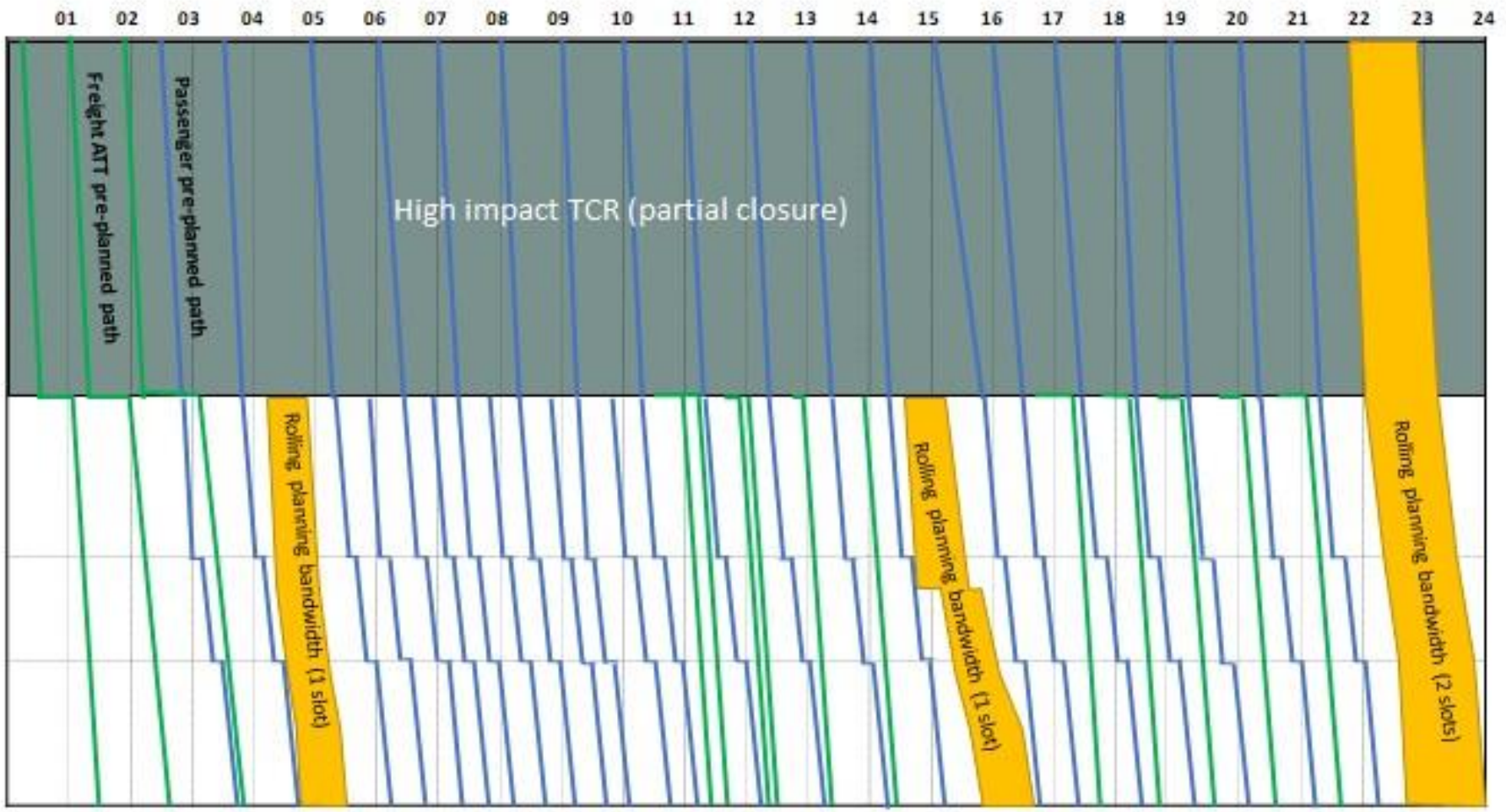
Use case No 3: High impact TCR (with the dedicated model for the weekend traffic)

Total number of paths: 128
Number of paths affected by the TCR: 56
Impact on the 44% of the paths
Duration: 45 days

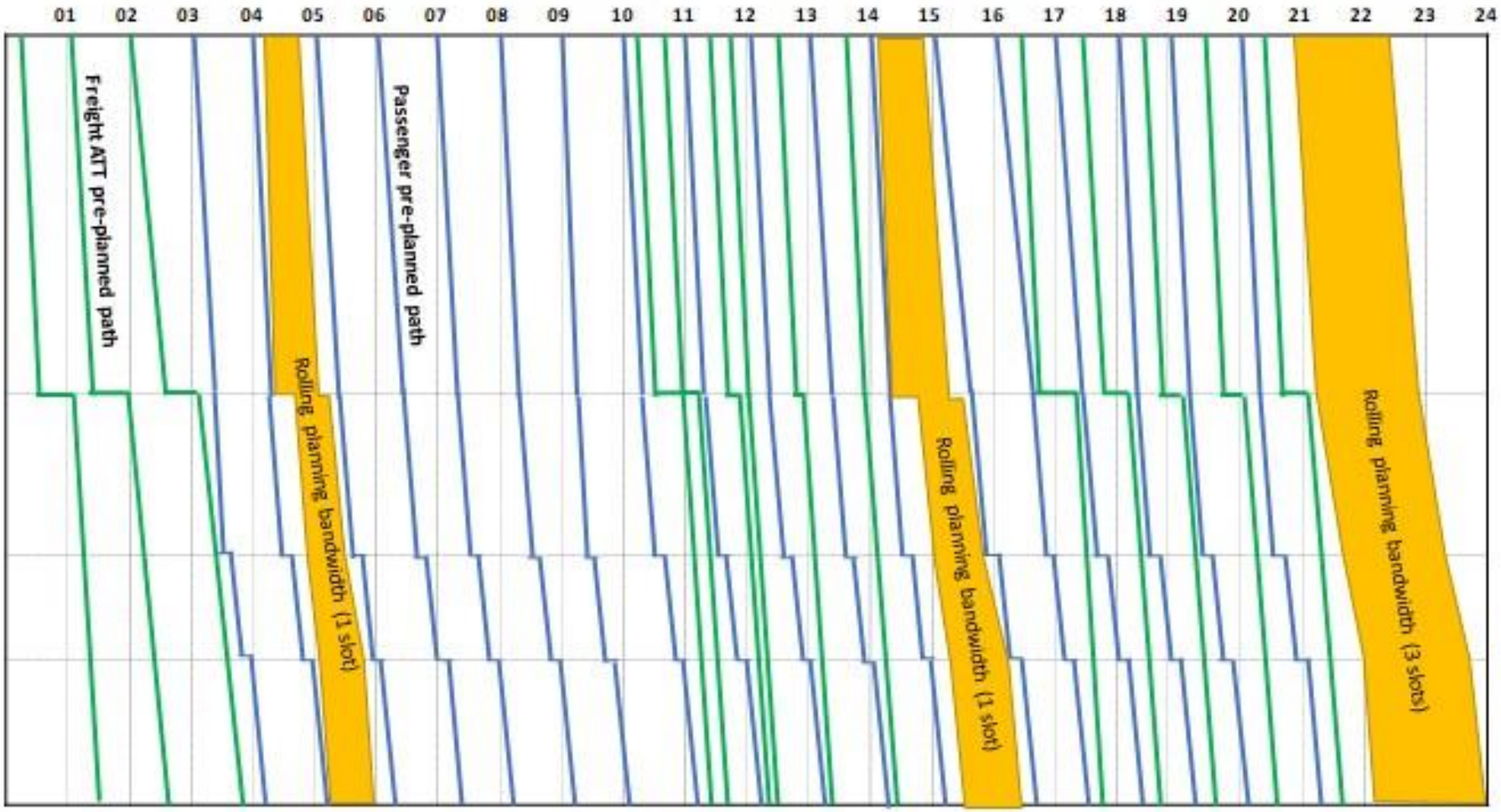


Capacity Supply for a regular working day

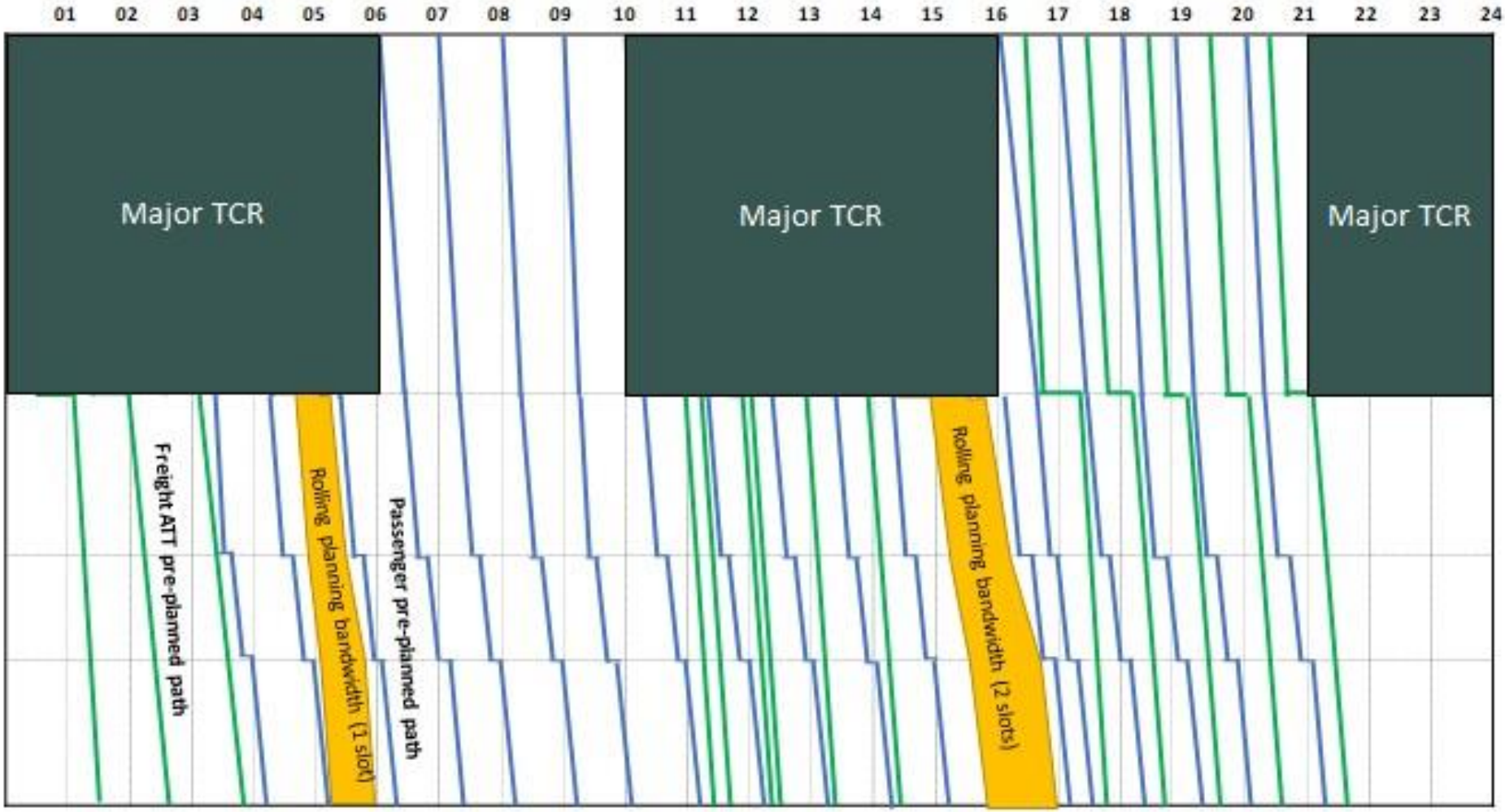
Use case No 4: High impact TCR (more than 7 consecutive days & impact: more than 30% of the estimated traffic volume on a railway line per day)



Capacity Supply for a weekend day



Use case No 5: Major impact TCR (more than 30 consecutive days- taking into the consideration of the repetitive pattern- & impact: more than 50% of the estimated traffic volume on a railway line per day)



Use case No 6: TCR Impact Calculation in the early stage of Capacity Planning

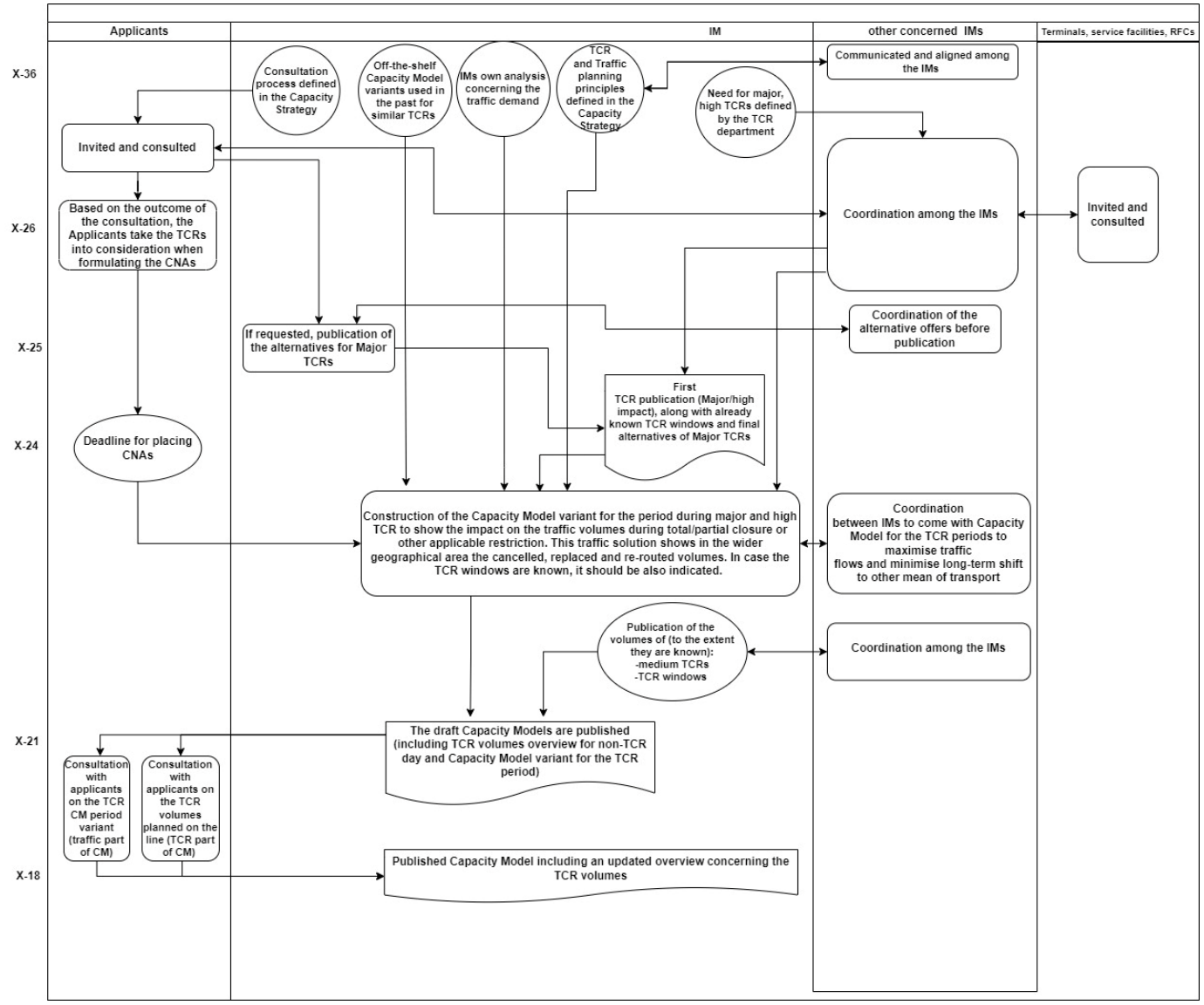
	1 Mo	2 Tu	3 We	4 Th	5 Fr	6 Sa	7 Su	8 Mo	9 Tu	10 We	11 Th	12 Fr	13 Sa	14 Su	15 Mo	16 Tu	17 We	18 Th	19 Fr	20 Sa	21 Su	22 Mo	23 Tu	24 We	25 Th	26 Fr	27 Sa	28 Su	29 Mo	30 Tu	31 We	32 Th	33 Fr	34 Sa	35 Su	36 Mo	37 Tu	38 We	39 Th	40 Fr	41 Sa	42 Su	
Less than minor	2h							2h							2h							2h							2h							2h							Less than minor
Minor							6h																																			Minor
Minor	6h	6h	6h	6h	6h	6h	6h																																			Minor
Minor	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	6h	Minor
Minor	8h	8h	8h	8h	8h	8h	8h																																			Minor
High	8h	8h	8h	8h	8h	8h	8h	8h																																		High
High (even with gap)	8h	8h	8h	8h	8h			8h	8h	8h	8h	8h																														High (even with gap)
High (even with gap)	8h	8h	8h	8h	8h			8h	8h	8h	8h	8h			8h	8h	8h	8h	8h			8h	8h	8h	8h	8h			8h	8h	8h	8h	8h			8h	8h	8h	8h	8h			High (even with gap)
Medium						12h																																				Medium
Medium				24h	24h	24h	24h	24h	24h	24h																																		Medium
High				24h	24h	24h	24h	24h	24h	24h	24h																																	High
High (even with different %)					24h	24h	24h	8h	8h	8h	8h	24h	24h	24h																														High (even with different %)
High (even with different %)					24h	24h	24h	6h	6h	6h	6h	24h	24h	24h																														High (even with different %)
High	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h														High
Major	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h												Major
Major (even with different %)	8h	8h	8h	8h	8h	8h	8h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	24h	8h	8h	8h	8h	8h	8h	8h						Major (even with different %)

When categorizing and some differences in the % of the TCR over a period or minor gaps are realized, you should follow these guidelines:

- If the gap period between two periods is fewer days than each of the periods with restrictions, it should be seen as one TCR with the total of consecutive days calculated based on the period with restriction. E.g. 5 days with restriction + 2 days gap + 5 days restriction = 10 consecutive days
- If there is a variation of the % of the restriction over a period of consecutive days, it should be interpreted as <u>one</u> TCR when all periods are at least Minor TCRs
- If there is a variation of the % of the restriction over a period of consecutive days and it is interpreted as <u>one</u> TCR, the categoriazation should be based on the worst restriction if it covers more than 2/3 of the period necessary for a category
    - >19 days of >50 % + >9 days of 30-49 % = Major impact TCR
    - >5 days of 30-49 % + >2 days of 10-29 % or >50 % = High impact TCR

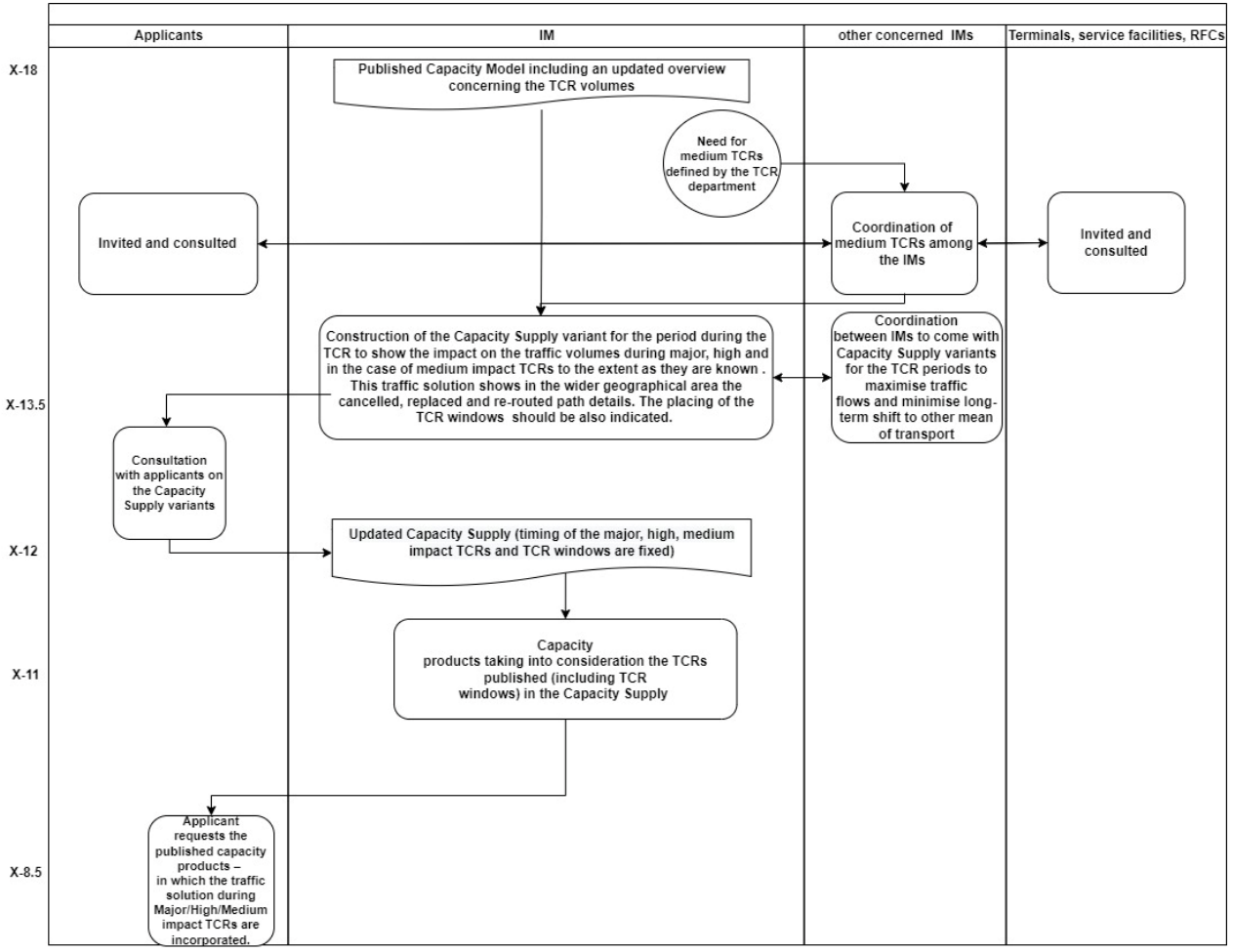
Note: The described calculation method should be supported by an IT tool.

Annex D: TCR management process (X-36 – X-18)



Annex E: TCR management process(X-18 – X-8.5)

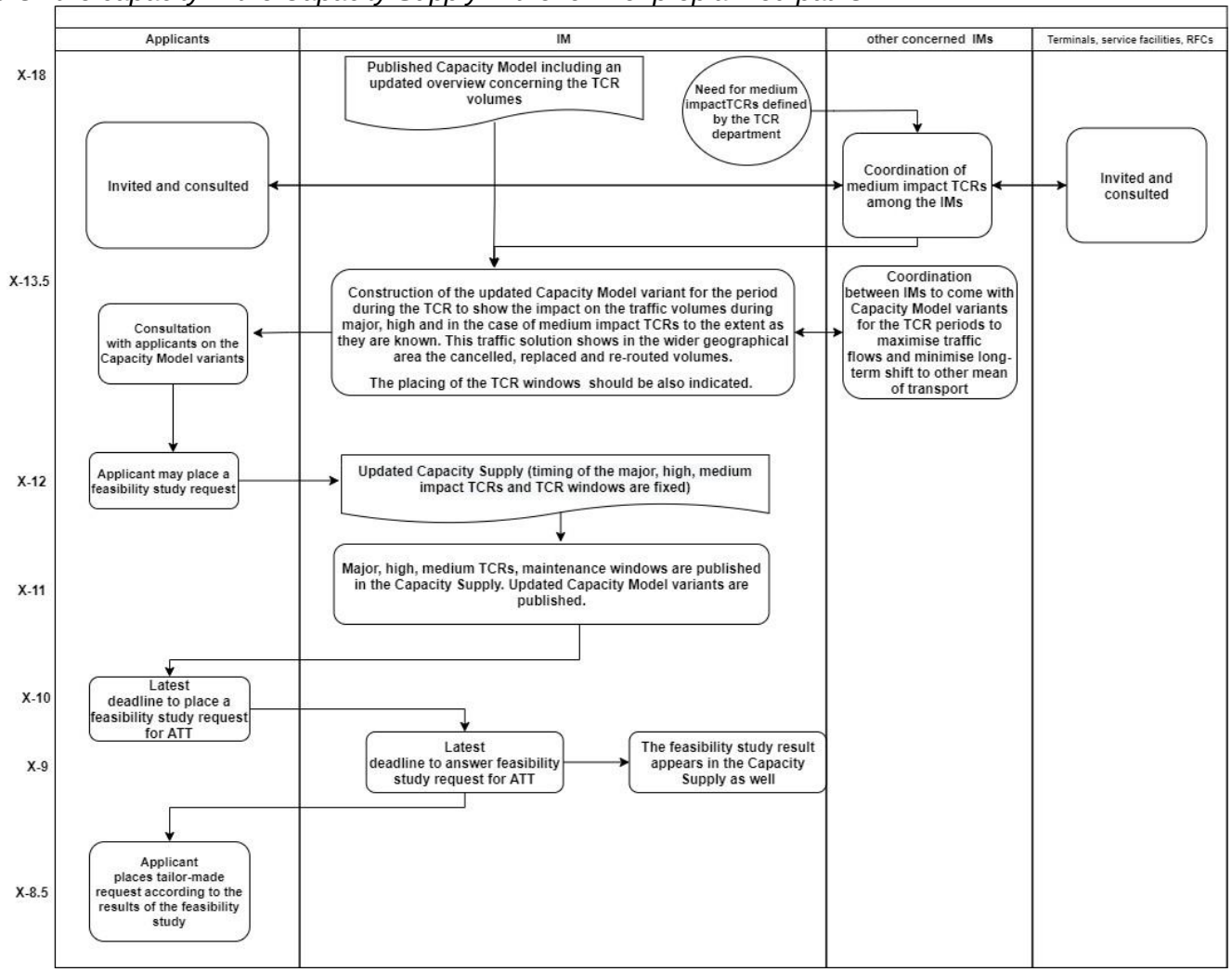
In case an IM publishes the capacity in the Capacity Supply in the form of preplanned paths.



The TCR consultation process will be finetuned next year (2022).

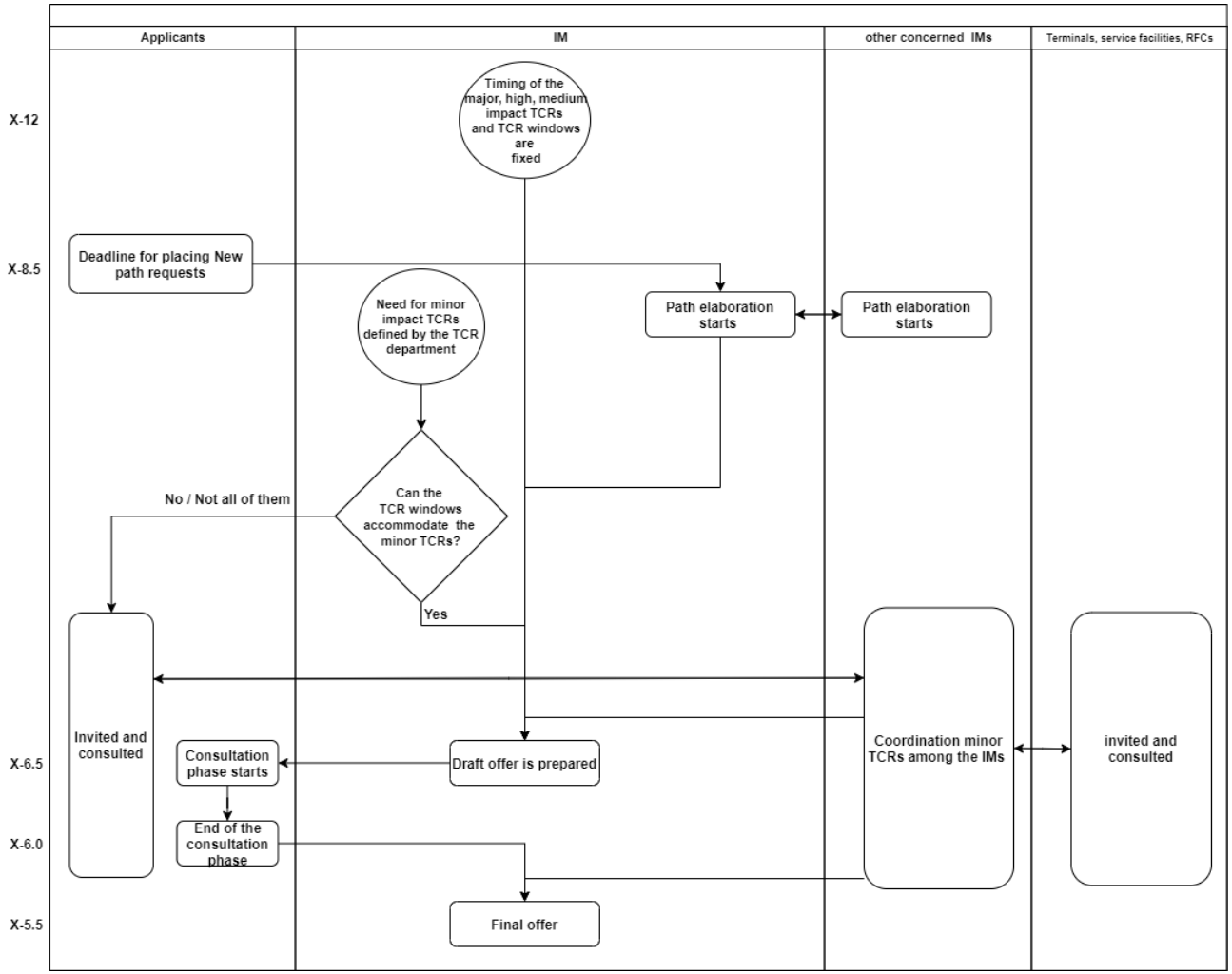
Please note that requesting feasibility study is also possible in case of preplanned Capacity Supply, however, - by default - it is not part of the process.

In case an IM does not publish the capacity in the Capacity Supply in the form of preplanned paths.



The TCR consultation process will be finetuned next year (2022).

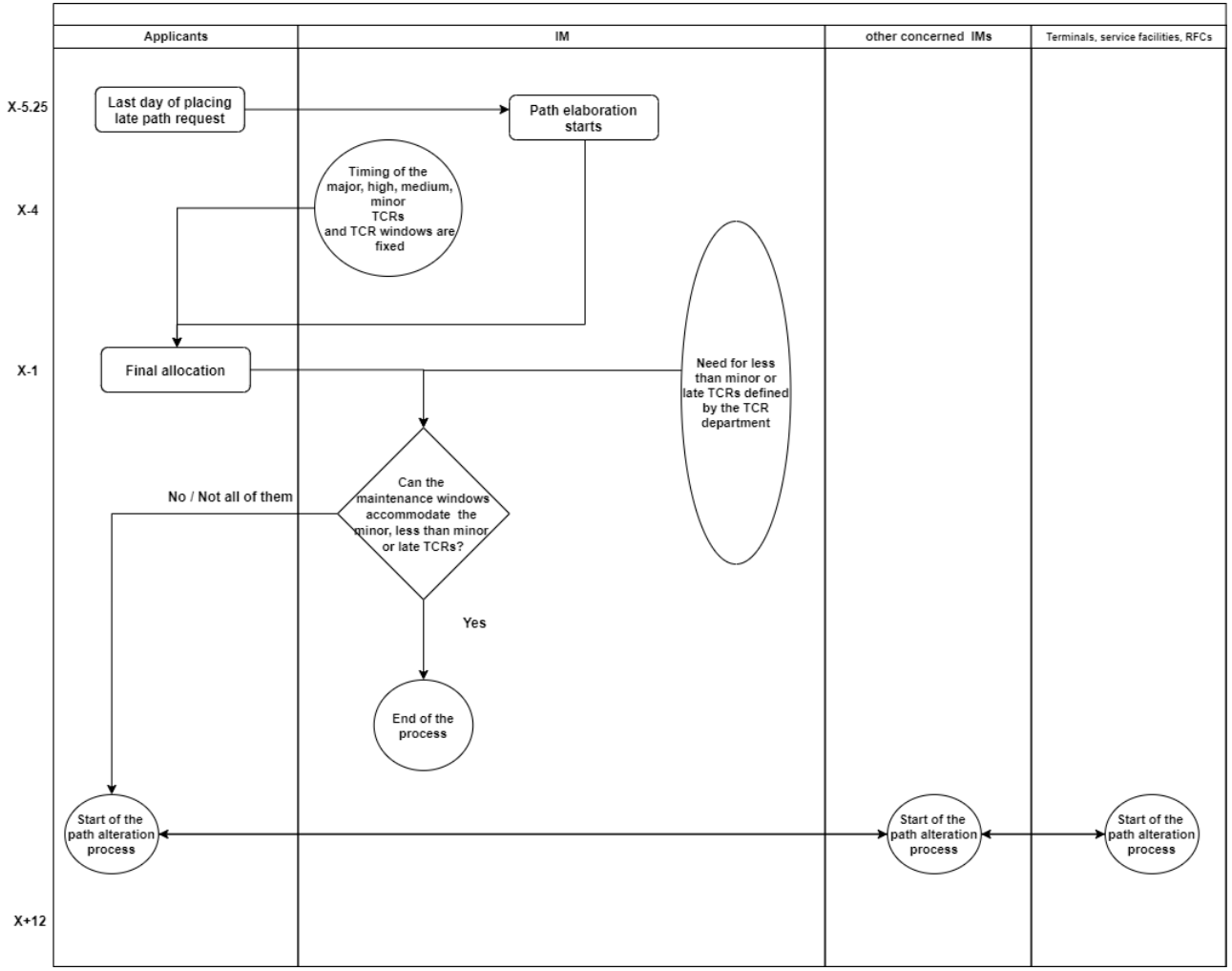
Annex F: TCR management process (X-8.5 – X-5.5)



The TCR consultation process will be finetuned next year (2022).

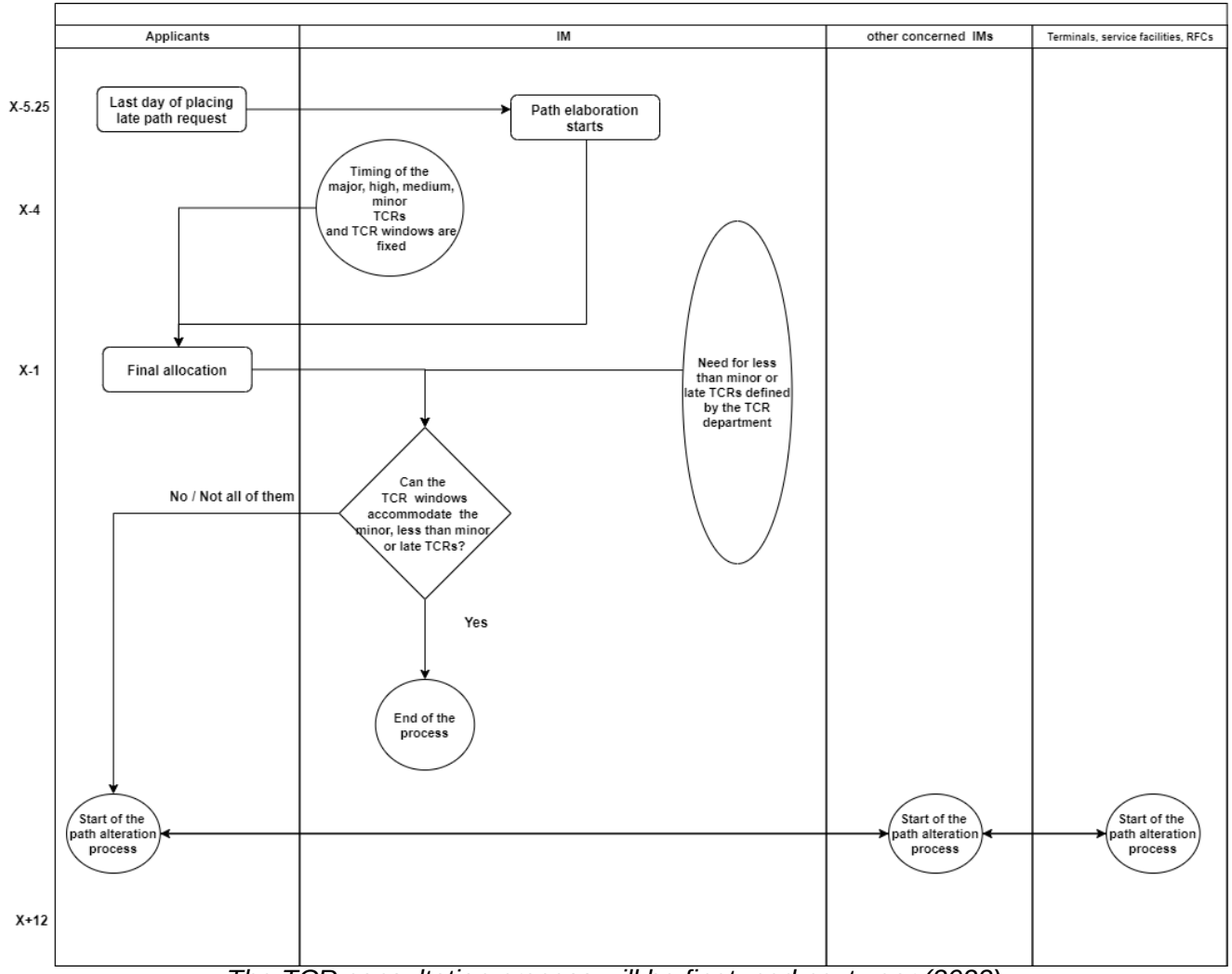
Annex G: TCR management process (X-5.5 – X+12)

In case of new path requests



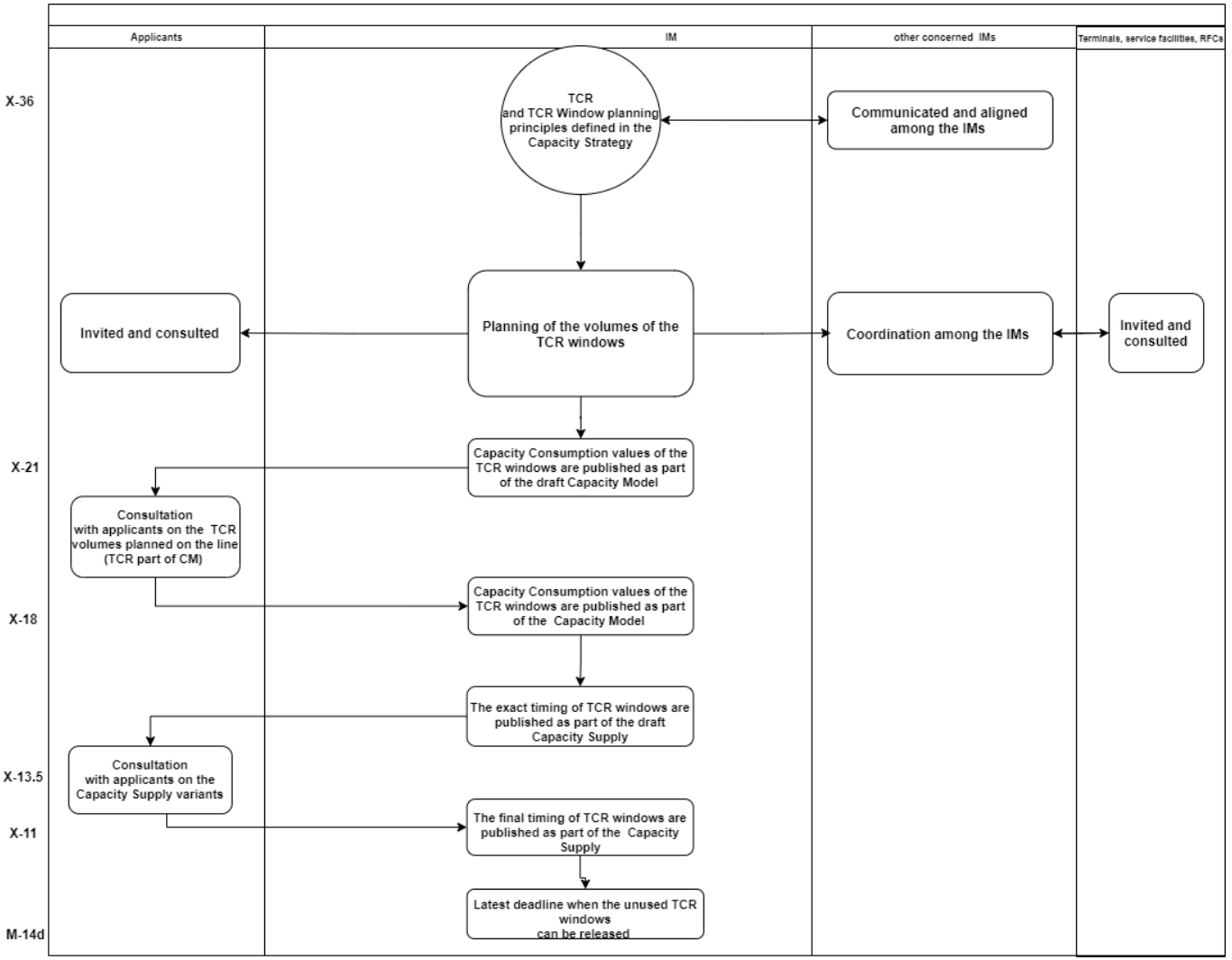
The TCR consultation process will be finetuned next year (2022).

In case of late path requests



The TCR consultation process will be finetuned next year (2022).

Annex H: Planning of TCR windows

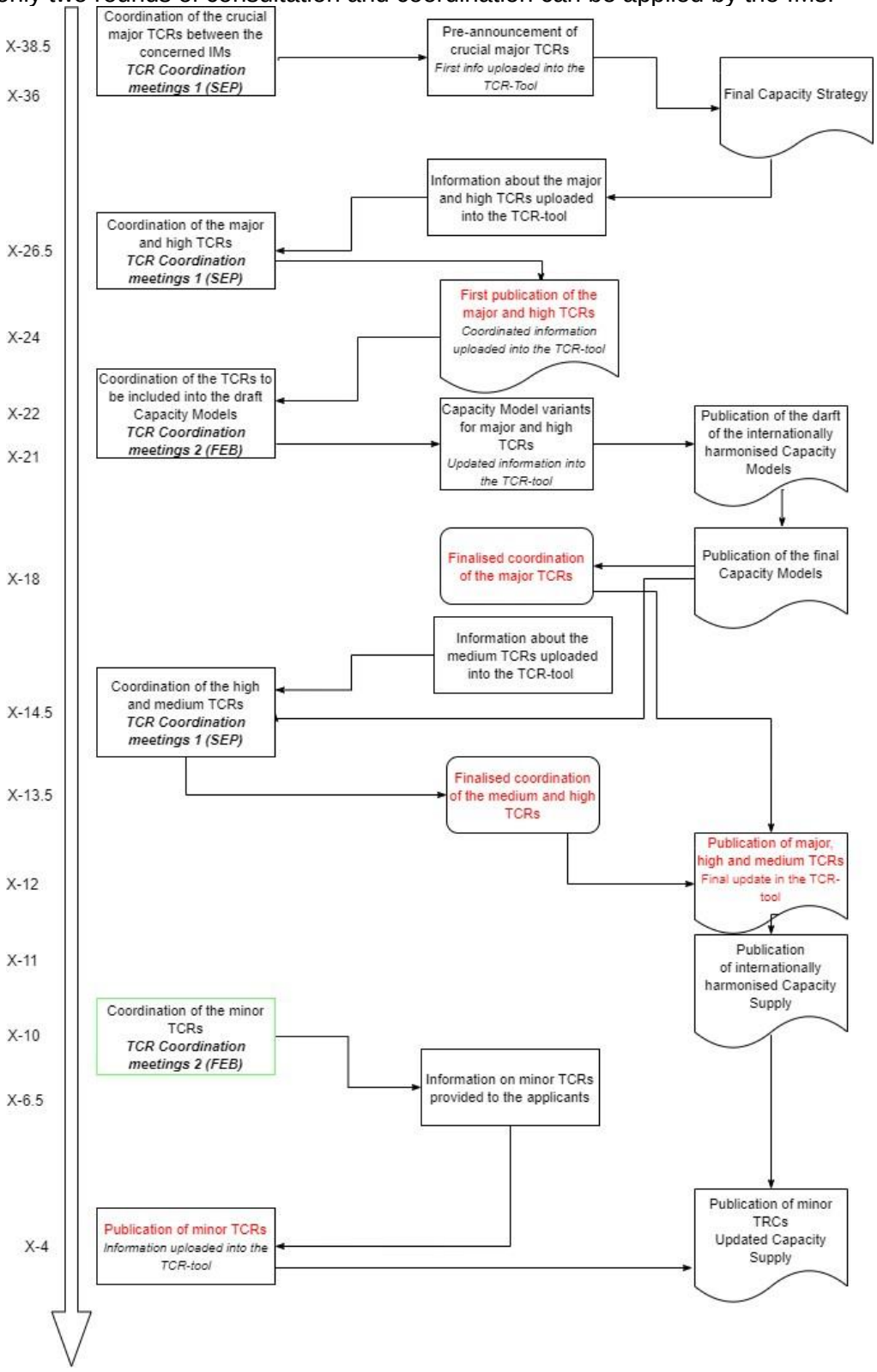


General timeline

Timeline	Process Step
X-48 - X-36	TCR and TCR window planning principles defined in the Capacity Strategy, harmonisation for cross-border sections must be achieved.
X-36 - X-21	Bi/Multilateral coordination among the IMs (if relevant, other stakeholders are also involved.
X-21	Duration values of the TCR Windows are published as part of the draft Capacity Model. It is highly recommended to create Capacity Model variants for the TCR Window periods.
X-18	Duration values of the TCR Windows are published in the final Capacity Model.
X-12	The exact timing of TCR Windows is published in the draft Capacity Supply.
X-11	Updated Capacity Supply published including the final placing of the TCR windows.

Annex I: Timeline to Coordinate TCRs

Depending on the impact cluster of the TCRs, different timelines and actions are required. Also, influence on neighbouring IMs has to be taken into consideration. Note that in any case, only two rounds of consultation and coordination can be applied by the IMs.



The TCR coordination process will be finetuned next year (2022).

Annex J: Significantly modified TCRs

Element to be considered in TCR Change	Change for which the TCR should be considered significantly changed
TCR Classification	The impact of the TCR is changed (lower to higher impact)
Geographical scope	The location of the TCR is changed, especially in the following cases: - The length of the line impacted by the TCR increases - The neighboring IMs impacted by the TCR change - Lines out of those originally defined are impacted
Alternative routes	Changes due to the cases into which alternative routes originally identified to reroute traffic from lines affected by a TCR become unavailable
Compliance with the Capacity Strategy	Changes due to which a TCR should be changed in a way that makes it conflict with the TCR Planning principles set in the Capacity Strategy

To be updated based on the use cases provided by the TCR WG next year (2022).