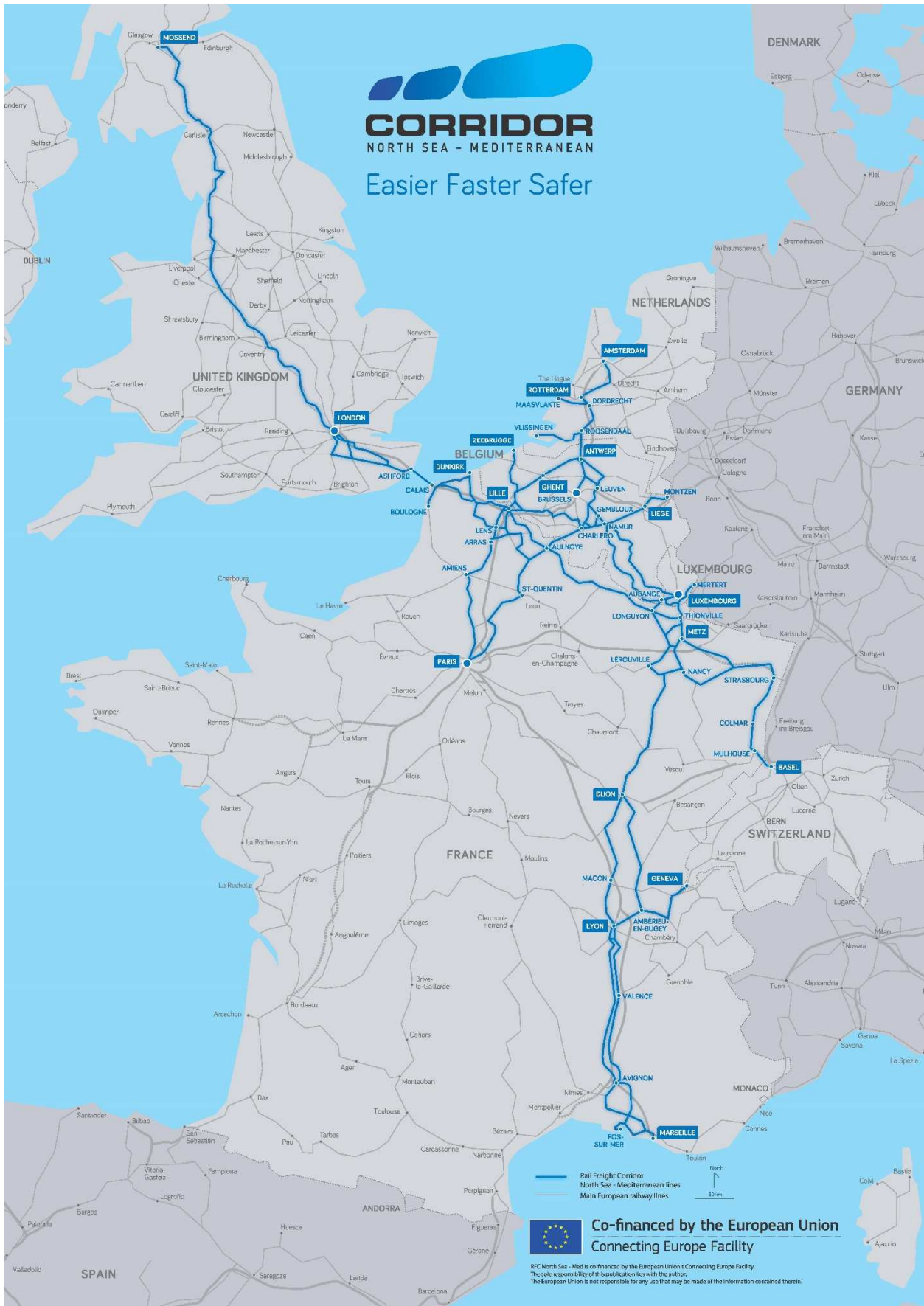


RFC NSM RE-ROUTING SCENARIOS



December 2018



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1. General Information

1.1. Introduction

Large incidents like Rastatt show that international measures must be implemented to be able to quickly organize traffic after a major interruption. European Rail Infrastructure Managers (IMs) agreed on international processes described in the “Handbook for International Contingency Management”. An important new element is an international re-routing overview for the Rail Freight Corridors (RFC) and re-routing scenarios for the critical routes.

These re-routing scenarios should help traffic management and timetabling staff members with the coordination of the deviation of freight trains in the plannable phase (as soon as possible after an incident) in case of larger incidents with an international impact.

This document includes scenarios with the possible re-routing options for all critical sections with limited re-routing capacity on RFC NSM. Railway Undertakings (RU) are consulted on re-routing overview and re-routing scenarios and asked to give information on restrictions from their point of view. The feedback is not part of this document. The re-routing scenarios shall also serve as a basis for the RU contingency management with the objective to increase possible use of deviation routes.

These rerouting scenarios can only take into account free capacity, so remaining after allocation from yearly timetable and ad hoc capacity (estimations on basis of historical information). This has led to situations that some lines are not shown because there is almost no capacity left and that the mentioned capacity in the table is lower than expected.

For heavily used networks discussions are ongoing between legislators and inframangers to get the possibility to withdraw or reschedule already allocated capacity. This possibility which is not part of the existing European legislation, could give IMs the competence to create space to reallocate the capacity in favor of the rerouting of (international) freight trains.

1.2. Publication and updates

The national IMs are responsible to distribute this document or the contained information with the re-routing scenarios within their own organization and to the RUs which run on their network. RFC NSM also publishes the document on its website and organizes the consultation with RUs.

The re-routing scenarios for RFC NSM are updated every year until the end of November by the corridor organization together with the IMs of RFC NSM.

This initial version could miss some information. An update will be published at least once a year from November 2019.

1.3. Processes and communication for international disruptions

In case of international disruptions, international processes for incident management and incident communication which shall apply during the plannable phase are described in chapter 4 of the Handbook for International Contingency Management (<https://www.rfc-northsea-med.eu/downloads>). They do not replace national incident management procedures but complement them in order to allow for a better international cooperation.

1.4. General restrictions

RUs crossing a border must take all national rules into account (see network statement). For example: language requirements for the train drivers, other signaling, and power systems, authorization requirements, etc.

1.5. Definitions of infrastructure parameters

Line section	Section of the normal RFC routing
Deviation including route	Section which replaces the normal routing on the deviation route
Passengers	Section used for passenger traffic
Freight	Section used for freight traffic
Traction power	Catenary voltage / In B also a standard thermal locomotive and a standard electric locomotive are given
Length	Maximum allowed length for a train (in meters, locomotive included)
Line category	e.g. D4, D5 in the sheets for SNCF Réseau and RFI is indicated as 22,5t
Gauge	e.g. GB, GB1, GC, etc.
Intermodal Freight Code	This is mostly filled out with the PC code e.g. PC70/400 - RFI uses the codes PC45, PC 80 etc - SNCF Réseau uses the codes C45
Signaling	This column is filled out with the version of ETCS (when in use) or the STM e.g. ATB EG, TBL1, SCMT etc.
Speed	This is filled out with either the max speed for a freight train or the maximum speed allowed on the line section (in km/h, passengers)
Weight	The maximum weight (in tons) which can be handled by one locomotive
Other border	border If the deviation section makes use of another border point than the 'normal' line section
Miscellaneous	This is used to give any useful extra information
Gradient	This is the gradient (in percentage) of the line section - mostly important in Switzerland and Austria
In re-routing scenarios	Is it in or not in the scenarios document
Length of re-routing option	In km

Capacity indications which are given in this document are indications of the free capacity on a deviation route in case of an incident based on current traffic volume.

1.6. Structure of the document

The re-routing scenarios are presented as follows:

- The chapter 2 is a description with an overview map of the critical sections as identified by Infrastructure Managers.
- The chapter 3 is a focus on the critical sections and re-routing scenarios of the RFC NSM: detailed descriptions of the main re-routing options for each critical section, including detailed maps and a description of the re-routing options with characteristics and parameters.
- Re-routing options focus on freight trains.

1.7. Disclaimer / Limitation of Liability

These re-routing scenarios serve for information only. Although every care has been taken by RFC NSM to ensure the accuracy of the information published, no warranty can be given in respect of the accuracy, reliability, up-to-dateness or completeness of this information. RFC NSM and the involved IMs/AB (Allocation body) accept no liability for direct or indirect damages of material or immaterial nature arising from use or non-use of the published information.

Moreover, all responsibility for the content of any external sites referred to by this document (links) is declined.

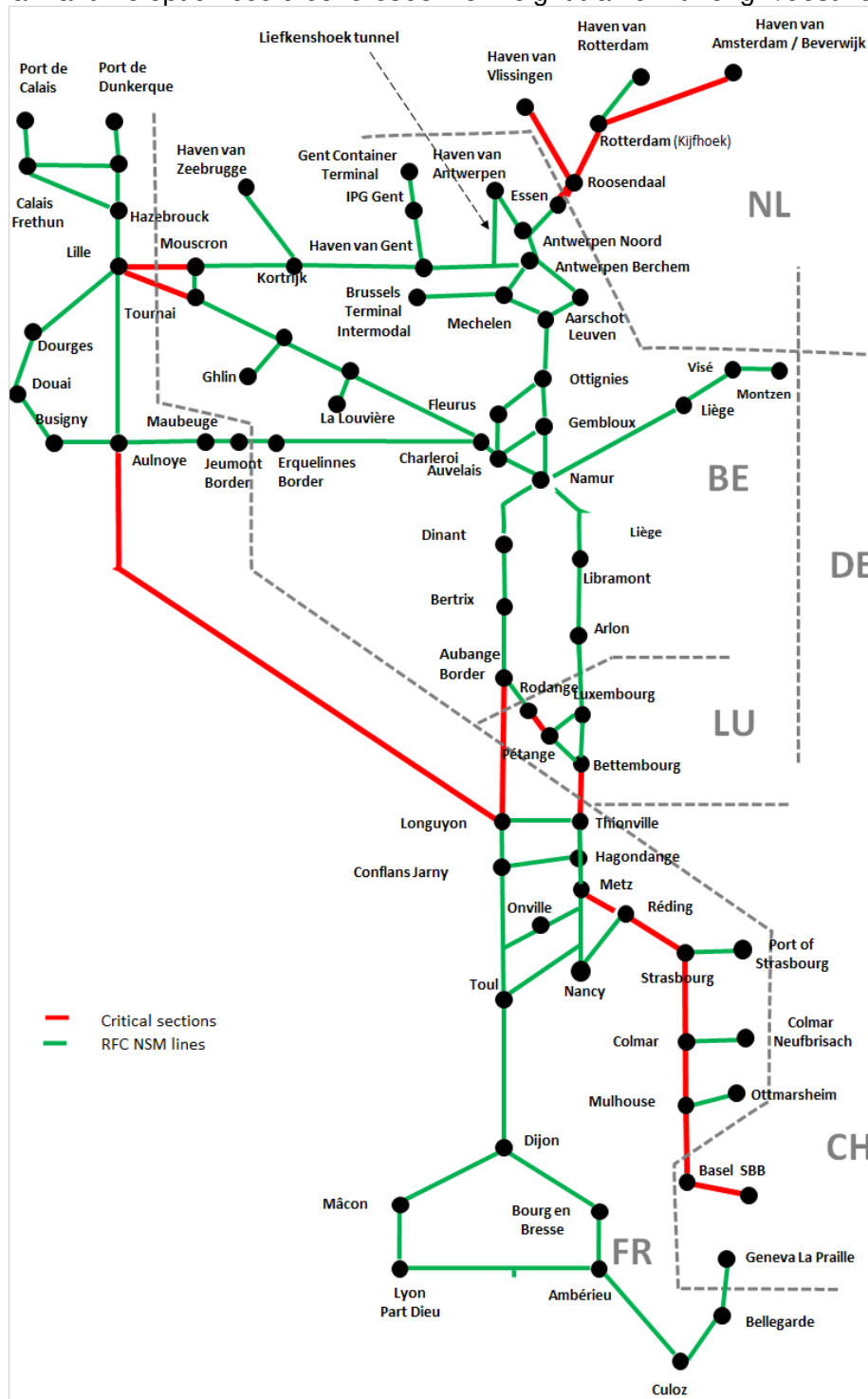
RFC NSM reserves the right to alter or remove the content, in full or in part, without prior notice.

2. Critical sections for RFC NSM and re-routing options

2.1. Overview of all critical sections of RFC NSM and re-routing options

The following critical sections in red with limited re-routing possibilities are defined for the corridor RFC NSM.

The Calais – London section is voluntary put out of this document, as no rail rerouting section can be foreseen in case of a major disruption in the tunnel. In case such an incident happened, only a maritime option could be foreseen for freight traffic with origin/destination in the UK.



Some re-routing options can be used for various critical sections.

On the RFC NSM the following routes can be used for rail freight operations. All of these routes can be used as re-routing options, depending on the line section where an incident happens.

Definition of Usability

In the event of a major incident there can sometimes be several possible re-routing options. These possible routes are for the scenarios divided into categories that give an indication of the usability of the routes. This can facilitate the process of re-routing.

The categorization is defined in options A, B and C. There is no fixed definition for the degree of usability, but the usability depends on several aspects (possibilities and limitations). The classification is based on the expert estimates of experienced train traffic controllers (aimed at rerouting freight trains).

The categories are:

- **A**: good availability (no major restrictions)
- **B**: usability is reasonable (with some restrictions)
- **C**: usability is worst (some major capacity, technical and/or organizational restrictions)

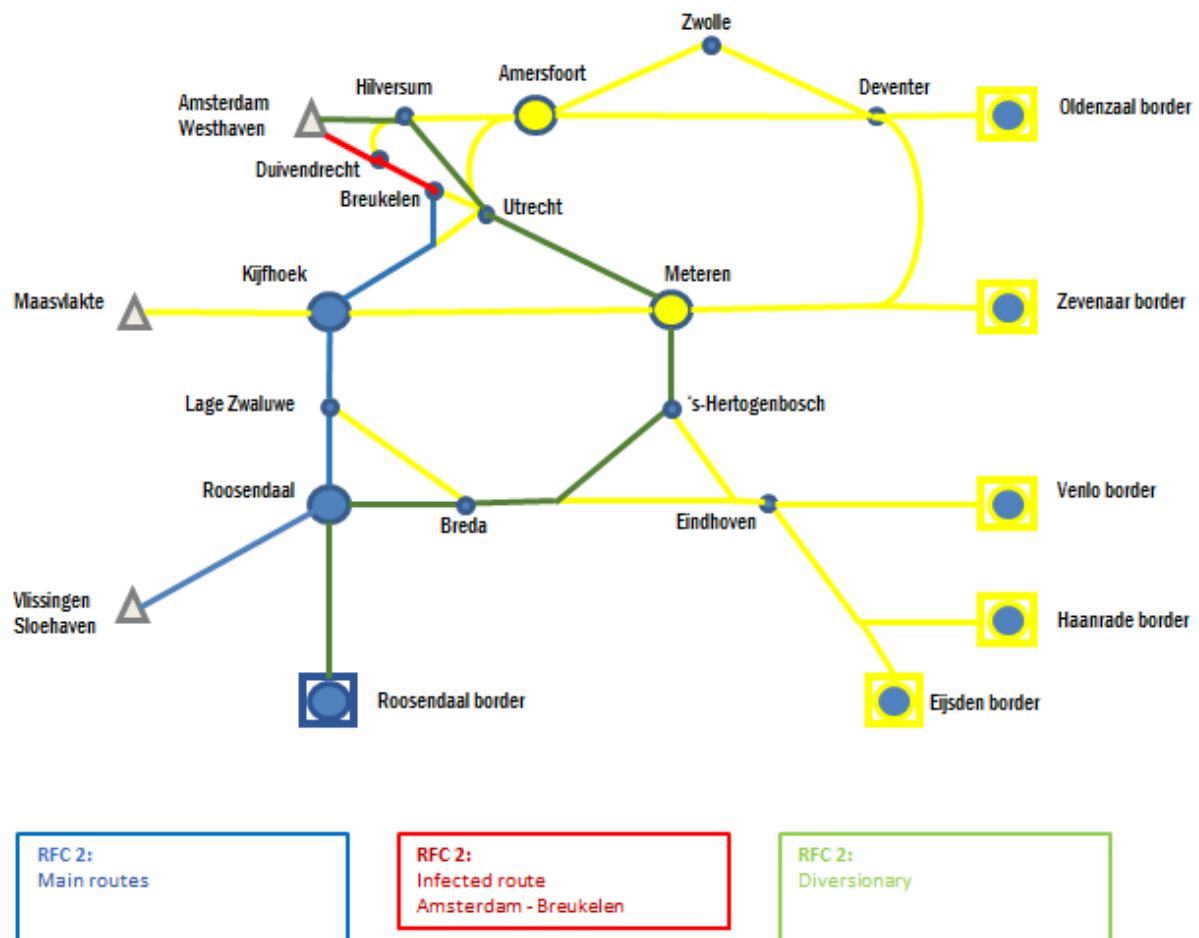
3. Re-routing scenarios

3.1. Re-routing scenarios for critical section Amsterdam - Breukelen

3.1.1. General description

Schematic map including re-routing options

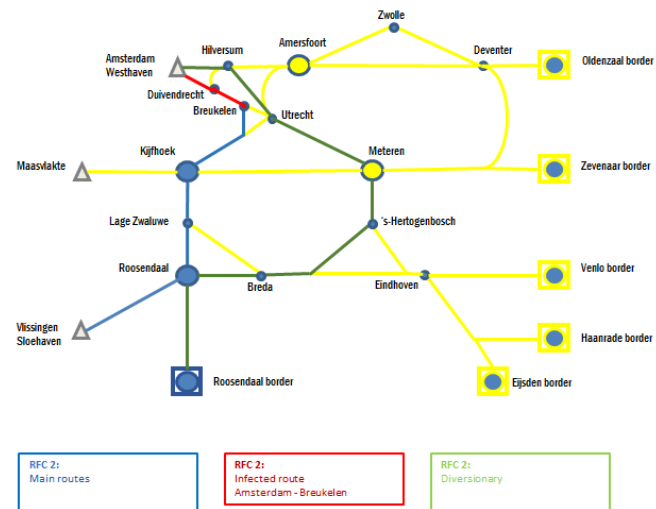
- Critical section
- Re-routing options



When the section Amsterdam - Breukelen is **blocked**, the sections to be considered for re-routing options are:

3.1.2. Technical parameters of the re-routing sections (including capacity indication)

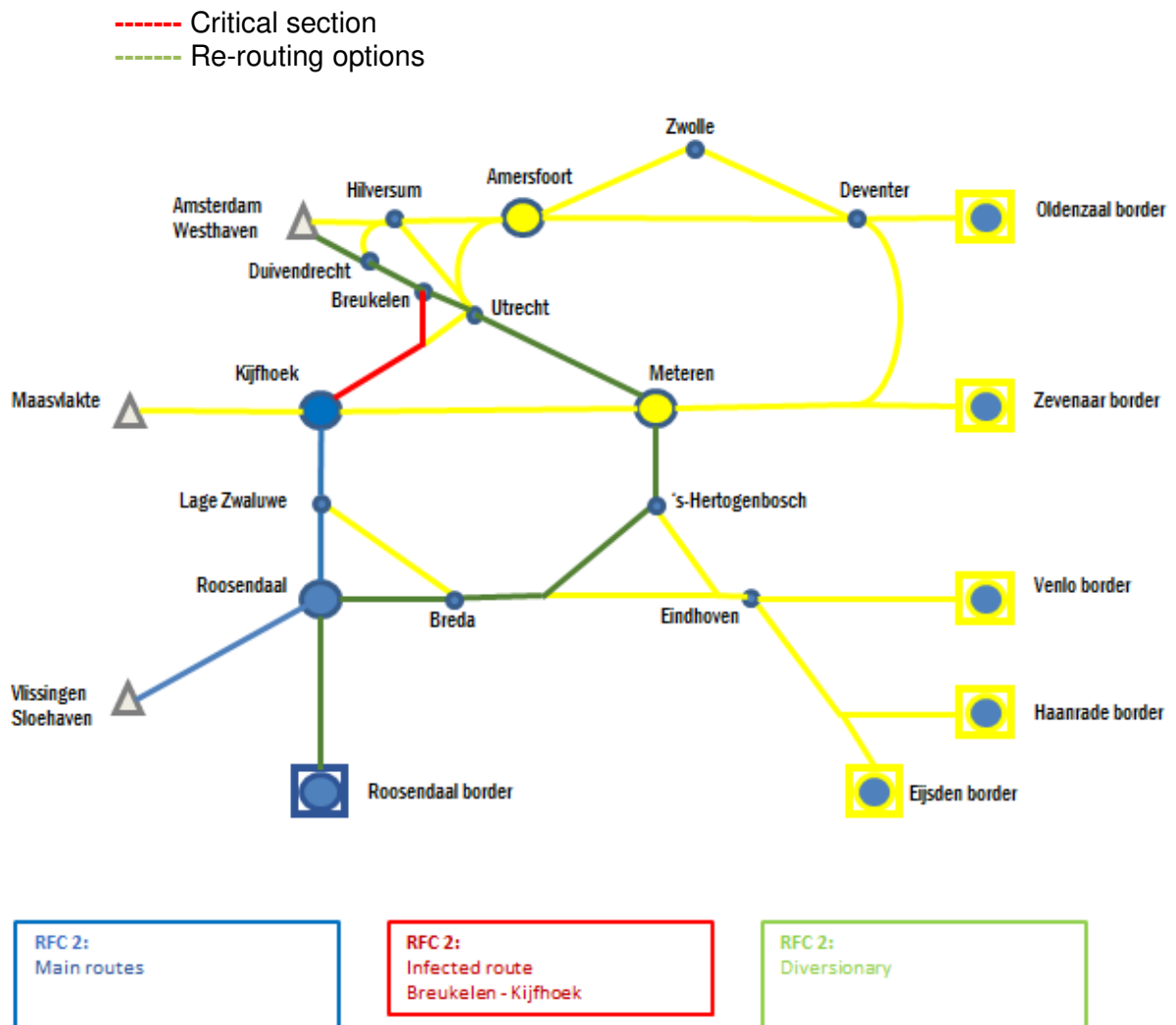
IM	Line section	Usage		Traction power	Train length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed	Length of re-routing option	Weight	Miscellaneous	Capacity Indication
		Pass	Frei													
Blocked Section: Amsterdam - Breukelen																
ProRail	Amsterdam - Breukelen	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	29,5	2100-2400		B
Impact on RFC2 Amsterdam - Roosendaal border																
ProRail	Amsterdam - Hilversum - Utrecht	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	49,3	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	's-Hertogenbosch - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	44,5	2100-2400	B*: high usage in regular traffic	B*
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	Roosendaal - Roosendaal border	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG / MEMOR	100	8,4	2100-2400		B



3.2. Re-routing scenarios for critical section Breukelen (excl.) – Kijfhoek (incl.)

3.2.1. General description

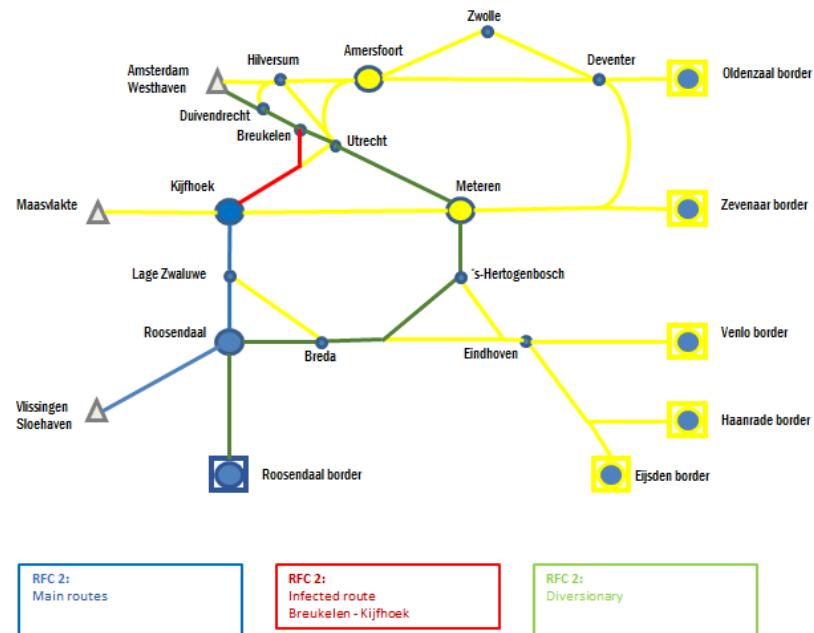
Schematic map including re-routing options



When the route Breukelen (excl.) – Kijfhoek (incl.) is blocked, the sections to be considered for re-routing options are:

3.2.2 Technical parameters of the re-routing sections (including caapcity indication)

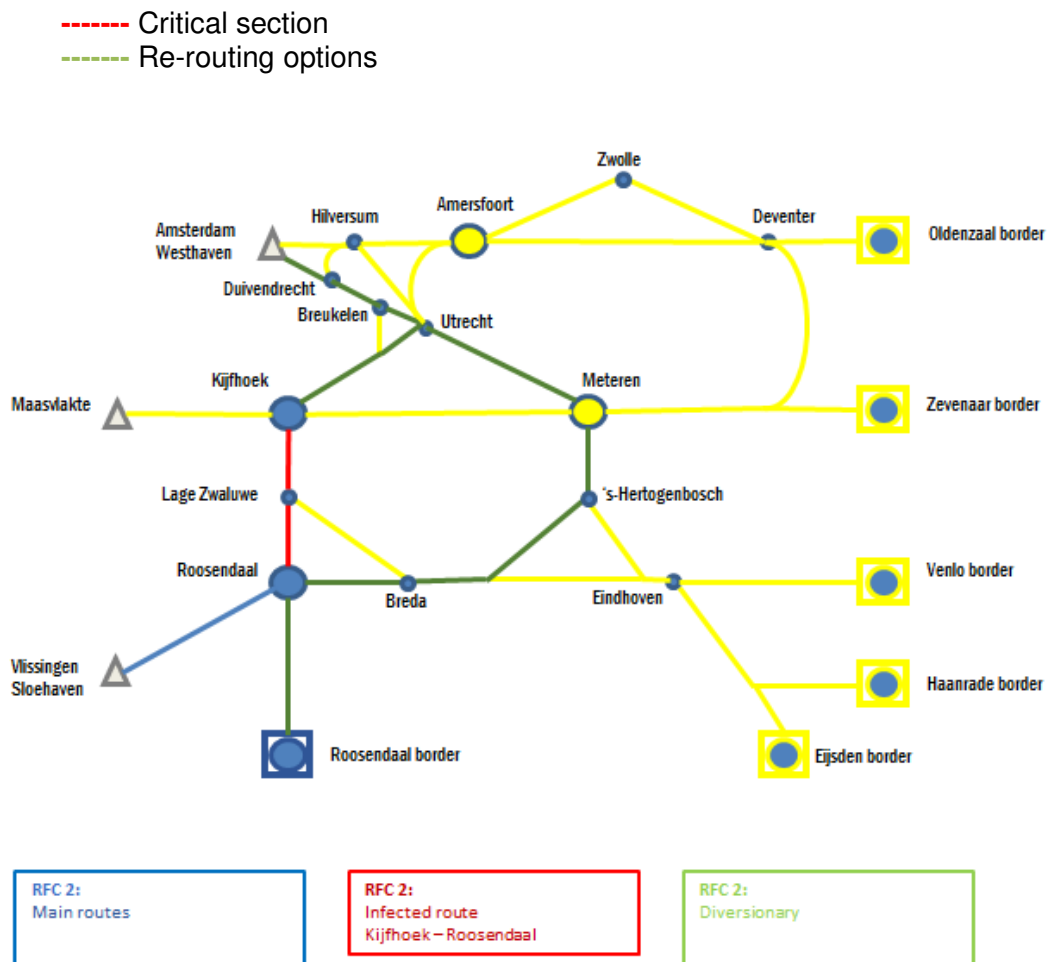
IM	Line section	Usage		Traction power	Train length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed	Length of re-routing option	Weight	Miscellaneous	Capacity Indication
		Pass	Frei													
Blocked section: Breukelen (excluded) - Kijfhoek (included)																
ProRail	Breukelen - Kijfhoek	x	x	1.5 kV DC	664	D4	2	N/A	G2	P/C 80/410	ATB EG	100	66,2	2100-2400		B
Impact on RFC2 Amsterdam - Roosendaal border																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	's-Hertogenbosch - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	44,5	2100-2400	B*: high usage in regural	B*
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	Roosendaal - Roosendaal border	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG / MEMOR	100	8,4	2100-2400		B



3.3. Re-routing scenarios for critical section Kijfhoek South (incl.)- Lage Zwaluwe (incl.) - Roosendaal

3.3.1. General description

Schematic map including re-routing options



When the route ***Kijfhoek South (incl.)- Lage Zwaluwe (incl.) – Roosendaal*** is blocked, the sections to be considered for re-routing options are:

3.3.2. Technical parameters of the re-routing options (including capacity indication)

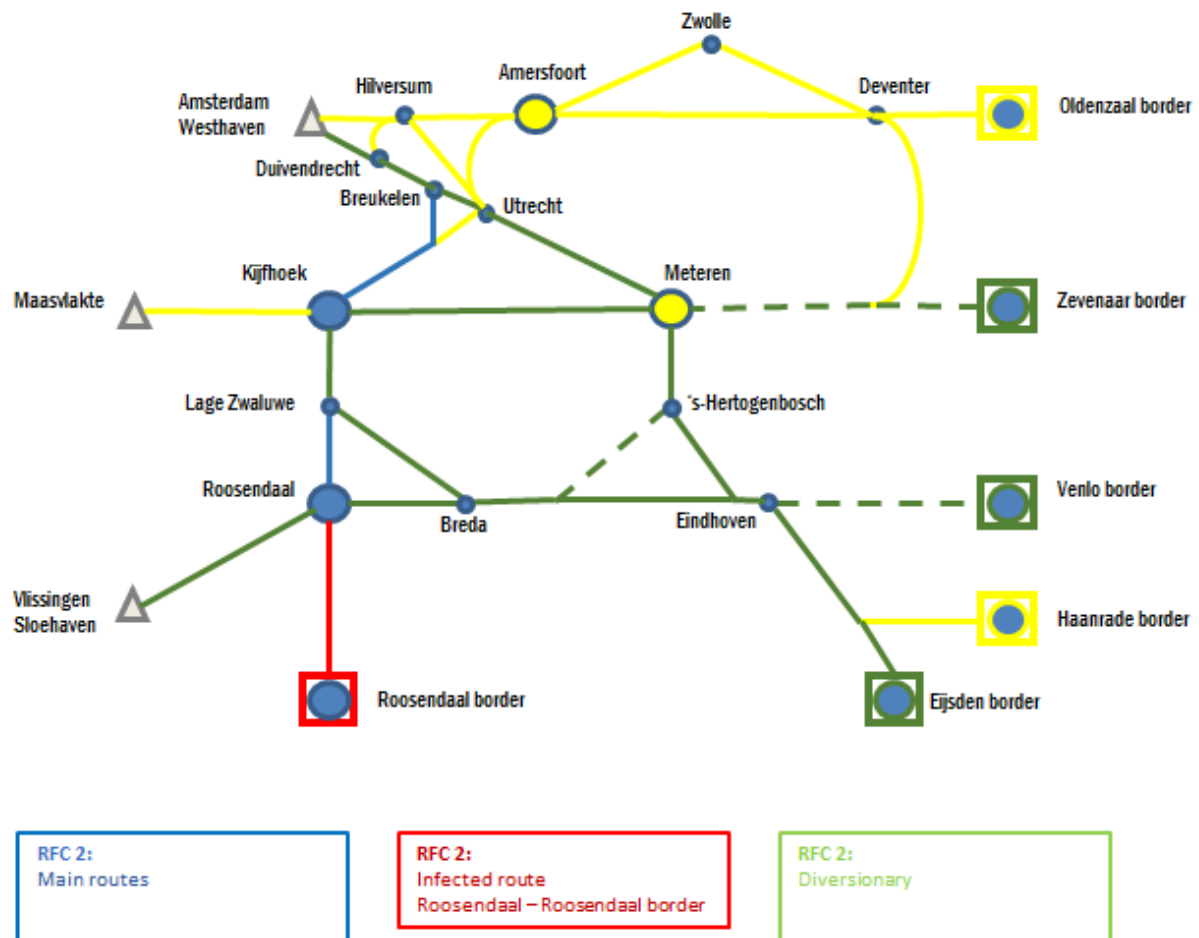
IM	Line section	Usage		Traction power	Train length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed	Length of re-routing option	Weight	Miscellaneous	Capacity Indication
		Pass	Frei													
Blocked section: Kijfhoek South (incl) - Roosendaal (excl)																
ProRail	Kijfhoek - Lage Zwaluwe	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	19,9	2100-2400	B*: high usage in regural traffic	B*
ProRail	Lage Zwaluwe - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,8	2100-2400		B
Impact on RFC2 Amsterdam - Roosendaal border																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	's-Hertogenbosch - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	44,5	2100-2400	B*: high usage in regural traffic	B*
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	Roosendaal - Roosendaal border	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG / MEMOR	100	8,4	2100-2400		B
Impact on RFC2 Rotterdam - Roosendaal border																
ProRail	Kijfhoek - Utrecht	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	68,9	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	's-Hertogenbosch - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	44,5	2100-2400	B*: high usage in regural traffic	B*
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	Roosendaal - Roosendaal border	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG / MEMOR	100	8,4	2100-2400		B

3.4. Re-routing scenarios for critical section Roosendaal (excl.) – Roosendaal border

3.4.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options



When the route **Roosendaal (excl.) – Roosendaal border** is blocked, the sections to be considered for re-routing options are described in the next paragraph (3.4.2)

3.4.2. Technical parameters of the re-routing options (including capacity indication)

Table 1/2

IM	Line section	Usage		Traction power	Train length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed	Length of re-routing option	Weight	Miscellaneous	Capacity Indication
		Pass	Frei													
Blocked section: Roosendaal (excl) - Roosendaal border																
ProRail	Roosendaal - Roosendaal border	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG / MEMOR	100	8,4	2100-2400		B
Impact on RFC2 Amsterdam - Roosendaal border, possibility 1																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	's-Hertogenbosch - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	32,1	2100-2400	B*: high usage in regural traffic	B*
ProRail	Eindhoven - Eijsden border	x	x	1.5 kV DC	630	D4	2	N/A	G2	P/C 80/410	ATB EG	100	110	2100-2400		B
Impact on RFC2 Amsterdam - Roosendaal border, possibility 2																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	28,2	2100-2400		B
ProRail	Meteren - Zevenaar border		x	25 kV AC	740 / 690	D4	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	63	2100-2400	690 on German side	A
Impact on RFC2 Amsterdam - Roosendaal border, possibility 3																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	28,2	2100-2400		B
ProRail	's-Hertogenbosch - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	20,4	2100-2400		B
ProRail	's-Hertogenbosch - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	32,1	2100-2400	B*: high usage in regural	B*
ProRail	Eindhoven - Venlo border	x	x	1.5 kV DC	650	D4	2	N/A	G2	P/C 80/410	ATB EG	100	96,9	2100-2400	B*: high usage in regural	B*
Impact on RFC2 Rotterdam - Roosendaal border, possibility 1																
ProRail	Kijfhoek - Utrecht	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	68,9	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	's-Hertogenbosch - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	32,1	2100-2400	B*: high usage in regural traffic	B*
ProRail	Eindhoven - Eijsden border	x	x	1.5 kV DC	630	D4	2	N/A	G2	P/C 80/410	ATB EG	100	110	2100-2400		B
Impact on RFC2 Rotterdam - Roosendaal border, possibility 2																
ProRail	Kijfhoek - Meteren		x	25 kV AC	740	E5	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	49,7	2100-2400	weights to be checked	A
ProRail	Meteren - Zevenaar border		x	25 kV AC	740 / 690	D4	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	63	2100-2400	690 on German side	A

Table 2/2

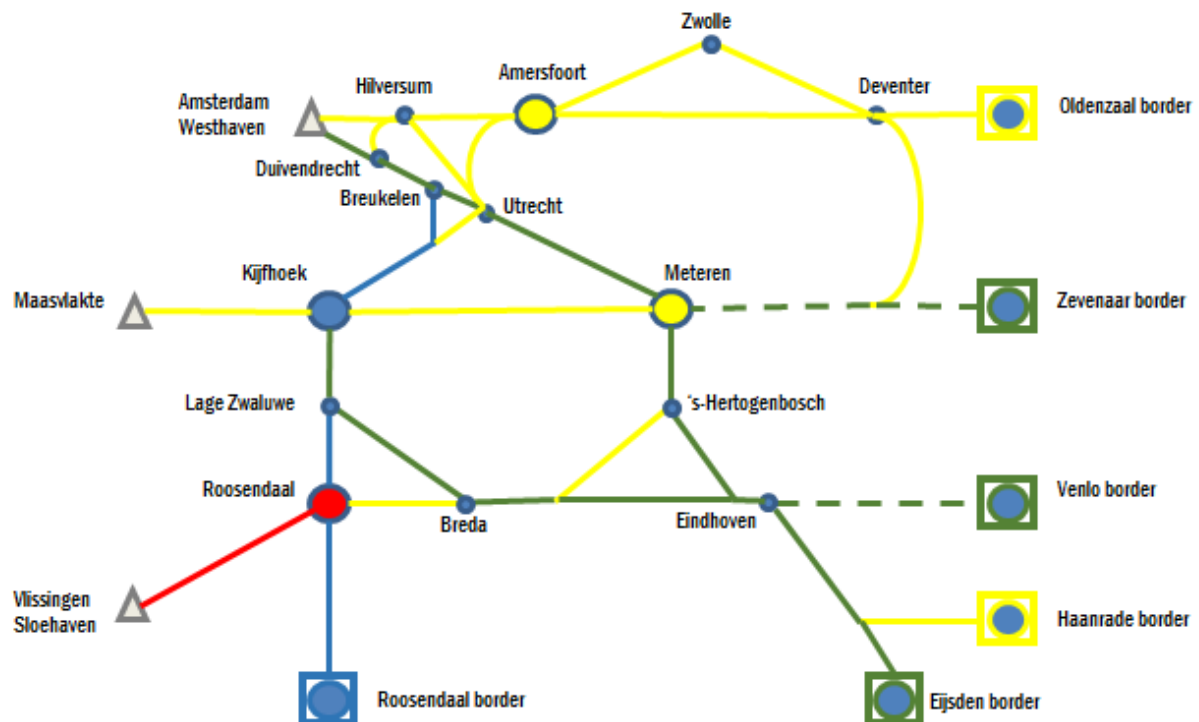
IM	Line section	Usage		Traction power	Train length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed	Length of re-routing option	Weight	Miscellaneous	Capacity Indication
		Pass	Frei													
Blocked section: Roosendaal (excl) - Roosendaal border																
Impact on RFC2 Rotterdam - Roosendaal border, possibility 3																
ProRail	Kijfhoek - Lage Zwaluwe	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	19,9	2100-2400	B*: high usage in regural traffic	B*
ProRail	Lage Zwaluwe - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	14,2	2100-2400	B*: high usage in regural traffic	B*
ProRail	Breda - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	58,9	2100-2400	B*: high usage in regural traffic	B*
ProRail	Eindhoven - Venlo border	x	x	1.5 kV DC	650	D4	2	N/A	G2	P/C 80/410	ATB EG	100	96,9	2100-2400	B*: high usage in regural traffic	B*
Impact on RFC2 Vlissingen - Roosendaal border, possibility 1																
ProRail	Vlissingen Sloehaven - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	66,9	2100-2400		B
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	Breda - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	58,9	2100-2400	B*: high usage in regural traffic	B*
ProRail	Eindhoven - Eijsden border	x	x	1.5 kV DC	630	D4	2	N/A	G2	P/C 80/410	ATB EG	100	110	2100-2400		B
Impact on RFC2 Vlissingen - Roosendaal border, possibility 2																
ProRail	Vlissingen Sloehaven - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	66,9	2100-2400		B
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	s-Hertogenbosch - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	44,5	2100-2400	B*: high usage in regural traffic	B*
ProRail	s-Hertogenbosch - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	20,4	2100-2400		B
ProRail	Meteren - Zevenaar border		x	25 kV AC	740 / 690	D4	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	63	2100-2400	690 on German side	A
Impact on RFC2 Vlissingen - Roosendaal border, possibility 3																
ProRail	Vlissingen Sloehaven - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	66,9	2100-2400		B
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	Breda - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	58,9	2100-2400	B*: high usage in regural traffic	B*
ProRail	Eindhoven - Venlo border	x	x	1.5 kV DC	650	D4	2	N/A	G2	P/C 80/410	ATB EG	100	96,9	2100-2400	B*: high usage in regural traffic	B*

3.5. Re-routing scenarios for critical section Viissingen Sloehaven – Roosendaal (incl.)

3.5.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options



RFC 2:
Main routes

RFC 2:
Infected route
Viissingen Sloehaven - Roosendaal

RFC 2:
Diversionary

When the route **Viissingen Sloehaven – Roosendaal (incl.)** is blocked, the sections to be considered for re-routing options are:

3.5.2. Technical parameters of the re-routing options (including capacity indication)

IM	Line section	Usage		Traction power	Train length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed	Length of re-routing option	Weight	Miscellaneous	Capacity Indication
		Pass	Frei													
Blocked section: Vlissingen Sloehaven - Roosendaal (incl)																
ProRail	Vlissingen Sloehaven-Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	66,9	2100-2400		B
Impact on RFC2 Amsterdam - Roosendaal border, possibility 1																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	s-Hertogenbosch - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	32,1	2100-2400	B*: high usage in regular traffic	B*
ProRail	Eindhoven - Eijsden border	x	x	1.5 kV DC	630	D4	2	N/A	G2	P/C 80/410	ATB EG	100	110	2100-2400		B
Impact on RFC2 Amsterdam - Roosendaal border, possibility 2																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	28,2	2100-2400		B
ProRail	Meteren - Zevenaar border		x	25 kV AC	740 / 690	D4	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	63	2100-2400	690 on German side	A
Impact on RFC2 Amsterdam - Roosendaal border, possibility 3																
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Utrecht - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	28,2	2100-2400		B
ProRail	s-Hertogenbosch - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	20,4	2100-2400		B
ProRail	s-Hertogenbosch - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	32,1	2100-2400	B*: high usage in regular traffic	B*
ProRail	Eindhoven - Venlo border	x	x	1.5 kV DC	650	D4	2	N/A	G2	P/C 80/410	ATB EG	100	96,9	2100-2400	B*: high usage in regular traffic	B*
Impact on RFC2 Rotterdam - Roosendaal border, possibility 1																
ProRail	Kijfhoek - Utrecht	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	68,9	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	s-Hertogenbosch - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	32,1	2100-2400	B*: high usage in regular traffic	B*
ProRail	Eindhoven - Eijsden border	x	x	1.5 kV DC	630	D4	2	N/A	G2	P/C 80/410	ATB EG	100	110	2100-2400		B
Impact on RFC2 Rotterdam - Roosendaal border, possibility 2																
ProRail	Kijfhoek - Meteren		x	25 kV AC	740	E5	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	49,7	2100-2400	weights to be checked	A
ProRail	Meteren - Zevenaar border		x	25 kV AC	740 / 690	D4	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	63	2100-2400	690 on German side	A
Impact on RFC2 Rotterdam - Roosendaal border, possibility 3																
ProRail	Kijfhoek - Lage Zwaluwe	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	19,9	2100-2400	B*: high usage in regular traffic	B*
ProRail	Lage Zwaluwe - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	14,2	2100-2400	B*: high usage in regular traffic	B*
ProRail	Breda - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	58,9	2100-2400	B*: high usage in regular traffic	B*
ProRail	Eindhoven - Venlo border	x	x	1.5 kV DC	650	D4	2	N/A	G2	P/C 80/410	ATB EG	100	96,9	2100-2400	B*: high usage in regular traffic	B*
Impact on RFC2 Vlissingen - Roosendaal border, possibility 1																
No possibilities over rail																

3.5.3. Parking possibilities and technical restrictions

Parking possibilities

ProRail	Kijfhoek	max train length 740 meters
ProRail	Valburg	5 tracks max train length 740 meters
ProRail	Valburg	4 tracks < 740 m train length
ProRail	Venlo	1 track max train length 690 meters
ProRail	Venlo	others < 690 meters
ProRail	Sittard	max train length 590 - 690 meters
ProRail	Amersfoort	Appr. 700 meters
ProRail	Roosendaal	1 track max train length 740 meters
ProRail	Roosendaal	3 tracks max train length < 600 meters
ProRail	Deventer	1 track max train length 740 meters
ProRail	Deventer	2 tracks max train length 680 meters

Technical restrictions including capacity indication (main sections considered)

IM	Line section	Usage		Traction power	Train length in m	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed in km/h	Length of re- routing option in km	Weight	Miscellaneous	Capacity Indication
		Pass	Frei													
ProRail	Amsterdam - Hilversum - Utrecht	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	49,3	2100-2400		B
ProRail	Utrecht - 's-Hertogenbosch	x	x	1.5 kV DC	611 / 635	D4	2	N/A	G2	P/C 80/410	ATB EG	100	48,1	2100-2400	611 / 635 Geldermalsen	B
ProRail	's-Hertogenbosch - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	44,5	2100-2400	B*: high usage in regural traffic	B*
ProRail	Breda - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,4	2100-2400		B
ProRail	Roosendaal - Roosendaal border	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG / MEMOR	100	8,4	2100-2400		B
ProRail	Amsterdam - Breukelen - Utrecht	x	x	1.5 kV DC	740	D4	4	N/A	G2	P/C 80/410	L2 - 2.3.0d / ATB EG	100	42	2100-2400		B
ProRail	Kijfhoek - Utrecht	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	68,9	2100-2400		B
ProRail	Kijfhoek - Lage Zwaluwe	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	19,9	2100-2400	B*: high usage in regural traffic	B*
ProRail	Lage Zwaluwe - Breda	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	14,2	2100-2400	B*: high usage in regural traffic	B*
ProRail	's-Hertogenbosch - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	32,1	2100-2400	B*: high usage in regural traffic	B*
ProRail	Eindhoven - Eijsden border	x	x	1.5 kV DC	630	D4	2	N/A	G2	P/C 80/410	ATB EG	100	110	2100-2400		B
ProRail	Vlissingen Sloehaven - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	66,9	2100-2400		B
ProRail	Kijfhoek - Meteren		x	25 kV AC	740	E5	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	49,7	2100-2400	weights to be checked	A
ProRail	Meteren - Zevenaar border		x	25 kV AC	740 / 690	D4	2	N/A	GC	P/C 80/410	L2 - 2.3.0d	100	63	2100-2400	690 on German side	A
ProRail	's-Hertogenbosch - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	20,4	2100-2400		B
ProRail	Breda - Eindhoven	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	58,9	2100-2400	B*: high usage in regural traffic	B*
ProRail	Utrecht - Meteren	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	28,2	2100-2400		B
ProRail	Amsterdam - Breukelen	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	29,5	2100-2400		B
ProRail	Breukelen - Kijfhoek	x	x	1.5 kV DC	664	D4	2	N/A	G2	P/C 80/410	ATB EG	100	66,2	2100-2400		B
ProRail	Lage Zwaluwe - Roosendaal	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	22,8	2100-2400		B
ProRail	Kijfhoek - Amersfoort	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	123,8	2100-2400	via Bkl, Dvd, Hvs, Amf	B
ProRail	Amersfoort - Deventer	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	58,3	2100-2400		B
ProRail	Deventer - Oldenzaal border	x	x	1.5 kV DC	740 / 590	D4	2	N/A	G2	P/C 80/410	ATB EG	100	68,6	2100-2400	590 on German side	B
ProRail	Deventer - Zwolle - Amersfoort	x	x	1.5 kV DC		D4	2	N/A	G2	P/C 80/410	ATB EG	100	96,9	2100-2400		B
ProRail	Utrecht - Amersfoort	x	x	1.5 kV DC	740	D4	2	N/A	G2	P/C 80/410	ATB EG	100	20	2100-2400		B
ProRail	Deventer - Arnhem - Betuweroute - Meteren	x	x	1,5 kV DC / 25 kV AC	650	D4 / E5	2	N/A	G2 / GC	P/C 80/410	L2 - 2.3.0d / ATB EG	100	100,8	2100-2400	change direction at Deventer	B
ProRail	Eindhoven - Venlo border	x	x	1.5 kV DC	650	D4	2	N/A	G2	P/C 80/410	ATB EG	100	54,8	2100-2400	B*: high usage in regural traffic	B*
ProRail	Eindhoven - Haanrade border	x	x	1.5 kV DC	520	D2	2 / 1	13,2 prom	G2	P/C 80/410	ATB EG / PZB	60	105,1	1800		C

3.6. Re-routing scenarios for critical section Essen border

3.6.1. General description

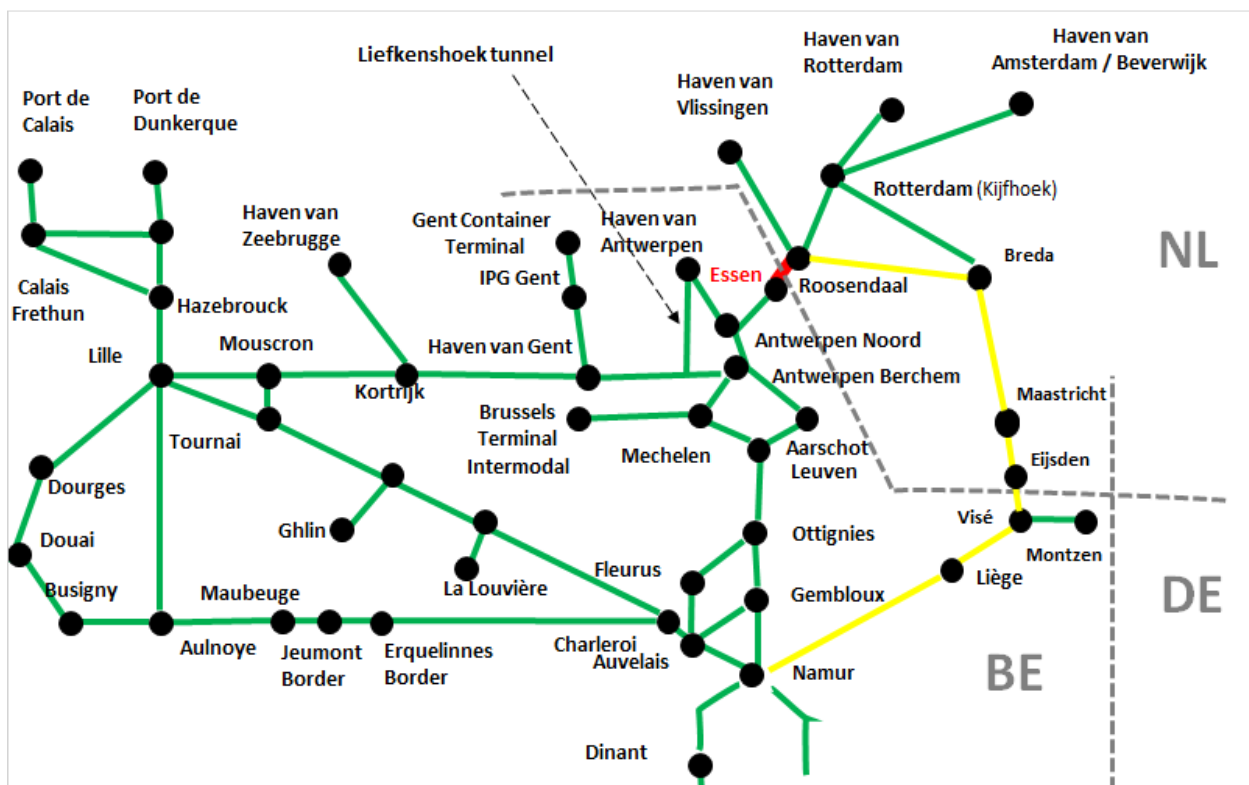
Schematic map including re-routing options

- Critical section
- Re-routing options

When the Essen border point is **blocked** for trains coming from **Belgium**, the sections to be considered for re-routing options are:

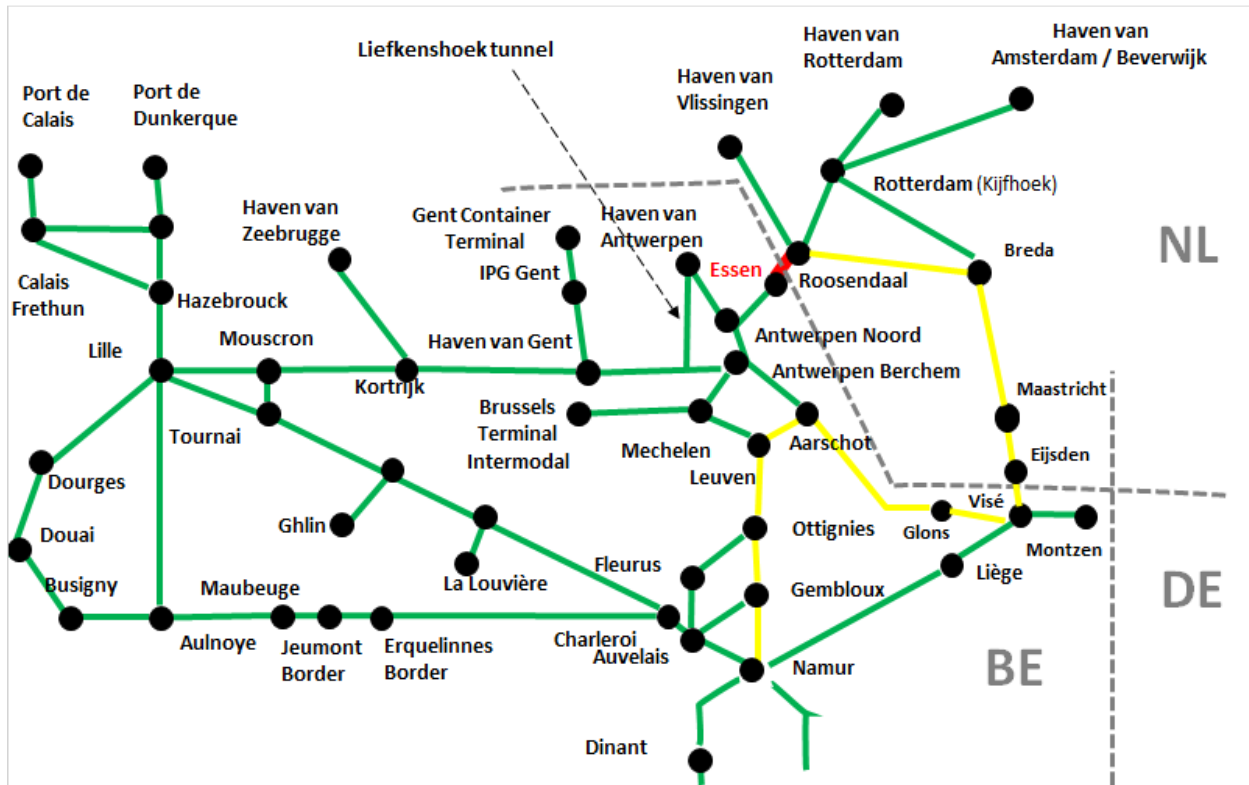
1st option :

Namur - Liège – Visé – Eijsden – Maastricht



2nd option :

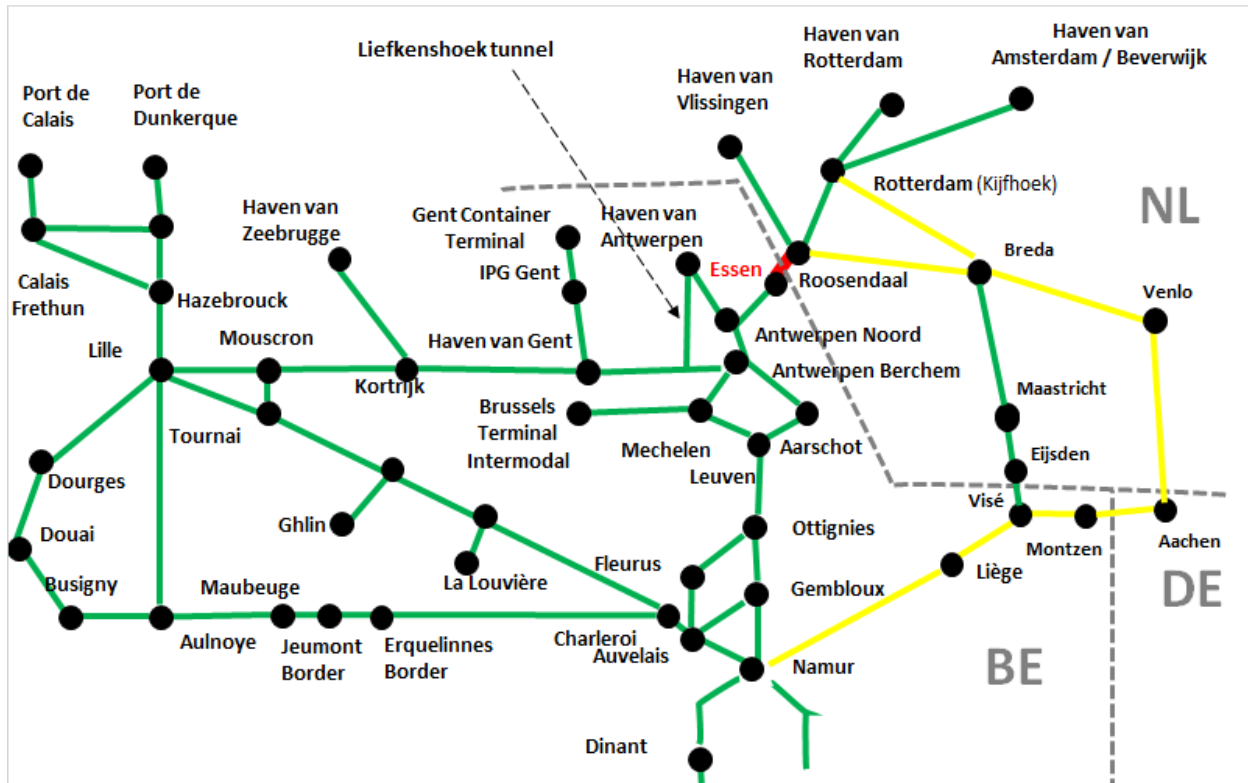
Namur - Aarschot – Glons – Visé – Eijsden - Maastricht



When coming from Aarschot, a train loop is necessary in Visé.

3rd option : via Germany

Namur - Liège – Visé – Montzen border – Aachen West – Venlo – Breda - Kijfhoek



Re-routing option	Usability	Route
BE - NL (1)	B	Namur - Liège – Visé – Eijsden – Maastricht
BE - NL (2)	C	Namur - Aarschot – Glons – Visé – Eijsden - Maastricht
BE - DE - NL	B	Namur - Liège – Visé – Montzen border – Aachen West – Venlo – Breda - Kijfhoek

3.6.2. Parking locations & capacity

Namur - Liège – Visé – Eijsden – Maastricht

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Bressoux	7	Max 796 m	Heavily used
BE	Montzen	7	Max 750 m	

Namur - Aarschot – Glons – Visé – Eijsden - Maastricht

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Ronet	5	700 m	
BE	Leuven	3	640 m	

Namur - Liège – Visé – Montzen border – Aachen West – Venlo – Breda - Kijfhoek

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Bressoux	7	Max 796 m	Heavily used
BE	Montzen	7	Max 750 m	

3.6.3. Restrictions

Each re-routing option has specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Namur - Liège – Visé – Eijsden – Maastricht	<ul style="list-style-type: none"> • Profile restriction C 60 C 390 / P 60 P 380
Namur - Aarschot – Glons – Visé – Eijsden - Maastricht	<ul style="list-style-type: none"> • No restrictions
Namur - Liège – Visé – Montzen border – Aachen West – Venlo – Breda - Kijfhoek	<ul style="list-style-type: none"> • Profile restriction C 60 C 390 / P 60 P 380 between Namur and Visé

3.6.4. Parameters of re-routing options when Essen border is blocked

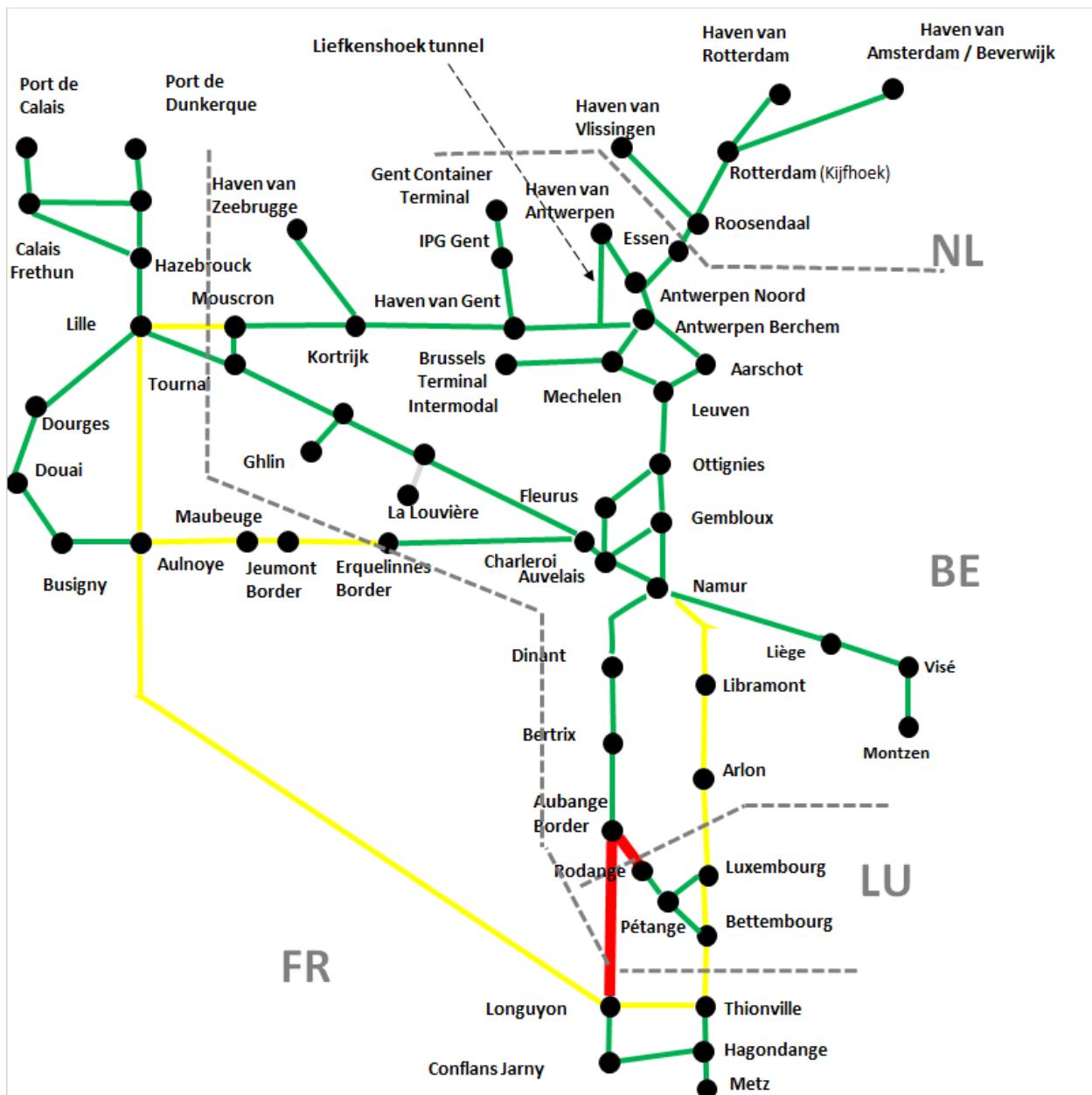
IM	Deviation including route	Usage		Traction power	Length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed (km/h)	Length of re-routing option	Weight	Miscellaneous	Capacity indication
		Pass	Frei													
Namur - Liège - Visé - Eijsden - Maastricht																
Infrabel	Namur - Liège	x	x	3 kV	700 m	D4	2	≥ 12,5 ‰	GB1	C 60	TBL1+	100 - 119	58,85			
Infrabel	Liège - Visé Frontiere	x	x	3 kV	700 m	D4	2	≥ 12,5 ‰	GB1	C 60	TBL1+	100 - 119	20			
Infrabel	Visé Frontiere - Eijsden Frontiere			3 kV and 1,5kV in Netherlands part	740	D4	2		GB1	P/C70/400	TBL1+	100 - 119	0	traxx 2000t CI 66 2300t		
ProRail	Eijsden border - Maastricht	X	X	1,5 kV	740	D4	2	n.a.	G2	P/C 80/410	TBL1+	100	10,5	2100-2400		B
Namur - Glons - Visé - Eijsden - Maastricht																
Infrabel	Namur - Ottignies	x	x	3 kV	700	D4	2	≥ 12,5 ‰	GB1	P/C70/400	TBL1+ / ETCS 1	120 - 139	31,78			
Infrabel	Ottignies - Leuven	x	x	3 kV	700	D4	2	≥ 12,5 ‰	GB1	P/C70/400	TBL1+ / ETCS 1	< 100	60,7			
Infrabel	Leuven Aarschot	x	x	3 kV	700	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+	120 - 129	15,12			
Infrabel	Aarschot - Glons	X	X	3 kV	740	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+	100 - 119	71,08	traxx 2000t CI 66 1800t		
Infrabel	Aarschot - Glons - Montzen Border north-south	X	X	3 kV	740	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+	90	137,81	traxx 2000t CI 66 1800t		
Infrabel	Aarschot - Glons - Montzen Border south-north	X	X	3 kV	740	D4	2	< 12,5 ‰	GB1	P/C70/400	TBL1+	90	137,81	traxx 2000t CI 66 2300t		
Infrabel	Glons - Visé Frontiere	X	X	3 kV	740	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+	90	20,5	traxx 2000t CI 66 2300t		
Infrabel	Visé Frontiere - Eijsden Frontiere			3 kV and 1,5kV in Netherlands part	740	D4	2		GB1	P/C70/400	TBL1+	90	0	traxx 2000t CI 66 2300t		
ProRail	Eijsden border - Maastricht	X	X	1,5 kV	740	D4	2	n.a.	G2	P/C 80/410	TBL1+	100	10,5	2100-2400		B
Namur - Visé - Aachen - Kijfhoek																
Infrabel	Namur - Liège	x	x	3 kV	700 m	D4	2	≥ 12,5 ‰	GB1	C 60	TBL1+	100 - 119	58,85			
Infrabel	Liège - Visé	x	x	3 kV	700 m	D4	2	≥ 12,5 ‰	GB1	C 60	TBL1+	100 - 119	17,5			
Infrabel	Visé F.- Montzen F	X	X	3 kV	740	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+	90	30,7	traxx 2000t CI 66 2300t		
DB Netz	Montzen - Aachen West			3 kV and 15 kV from Moresnet Viaduc	740	D4	2		GB1	P/C70/400	TBL1+	90		traxx 2000t CI 66 2300t		
DB Netz	Aachen West - Venlo border															
Prorail	Venlo border - Eindhoven	x	x	1.5 kV DC	650	D4	2		G2	P/C 80/410	ATB EG	100	54,8	2100-2400		B
Prorail	Eindhoven Breda	x	x	1.5 kV DC	740	D4	2		G2	P/C 80/410	ATB EG	100	58,9	2100-2400		B
Prorail	Breda - Kijfhoek	X	X	1.5 kV DC	740	D4	2		G2	P/C 80/410	ATB EG	100	35,5	2100-2400		B

3.7. Re-routing scenario for critical section : Aubange border point

3.7.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options



Re-routing option	Usability	Route
FR – BE (1)	B	Longuyon – Aulnoye – Maubeuge – Jeumont - Erquelinnes
FR – BE (2)	A	Longuyon – Aulnoye – Mouscron
FR – LU - BE		Longuyon – Thionville – Bettembourg – Luxembourg – Namur ¹

3.7.2. Parking locations & capacity

Longuyon – Aulnoye – Maubeuge – Jeumont - Erquelinnes

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Longuyon	>3	550	
FR	Sedan	2	400	
FR	Lumes	>3	850	
FR	Hirson	3	750	
FR	Aulnoye	>3	750	From Monday to Friday

Longuyon – Aulnoye – Mouscron

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Longuyon	>3	550	
FR	Sedan	2	400	
FR	Lumes	>3	850	
FR	Hirson	3	750	
FR	Aulnoye	>3	750	From Monday to Friday
FR	Valenciennes	>3	650	
FR	Lille	3	650	Champs de Mars
FR	Tourcoing	1	750	
BE	Mouscron	5	Max 560 m	

Longuyon – Thionville – Bettembourg – Luxembourg – Namur

Country	Location	Number of tracks	Maximum train length	Restrictions
FR				
FR				
LU	Luxembourg	4	635 m	

¹ Section on the corridor RFC NSM described in CID Book V

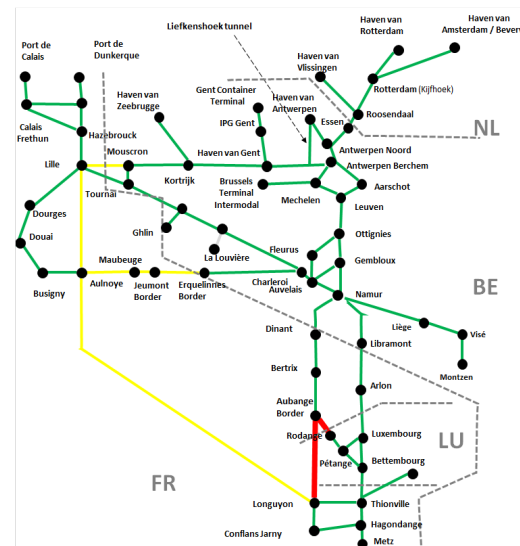
3.7.3. Restrictions

Each re-routing option has specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Longuyon – Aulnoye – Maubeuge – Jeumont - Erquelinnes	<ul style="list-style-type: none"> • No parking possibilities in Erquelinnes
Longuyon – Aulnoye – Mouscron	<ul style="list-style-type: none"> • Max 560 m train length in Mouscron for parking
Longuyon – Thionville – Bettembourg – Luxembourg – Namur	<ul style="list-style-type: none"> • The tonnage is lower on this route than via Aubange

3.7.4. Parameters of re-routing options when Aubange border is blocked

IM	Deviation including route	Usage		Traction power	Length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed (km/h)	Length of re-routing option	Weight	Miscellaneous	Capacity indication
		Pass	Frei													
Longuyon - Aulnoye- Maubeuge - Jeumont - Erquelinnes																
SNCF R	Longuyon - Aulnoye	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139				
SNCF R	Aulnoye - Maubeuge	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139				
SNCF R	Maubeuge - Jeumont	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		100 - 119				
SNCF R	Jeumont - Erquelinnes	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		100 - 119				
Longuyon - Aulnoye - Mouscron																
SNCF R	Longuyon - Aulnoye	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139				
SNCF R	Aulnoye - Mouscron	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45 (P/C/701/400 from Mouscron border)		120 - 139				



3.8. Re-routing scenario for critical section : Mouscron border point

3.8.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options



Re-routing option	Usability	Route
FR – BE (1)	B	Aulnoye - Maubeuge – Jeumont - Erquelinnes
BE - BE	B	Gembloux - Auvélais – Charleroi - Mons

3.8.2. Parking locations & capacity

Aulnoye - Maubeuge – Jeumont - Erquelles

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Aulnoye	>3	750	From Monday to Friday

Gembloux - Auvelais – Charleroi – Mons

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Mons	3	Max 670 m	

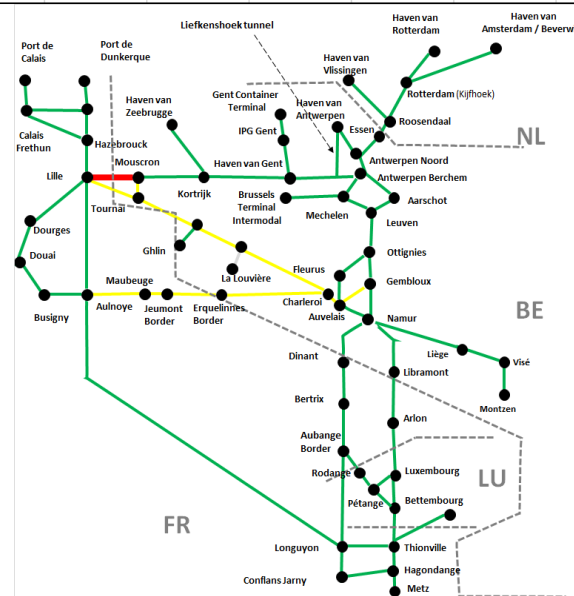
3.8.3. Restrictions

Each re-routing option has specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Aulnoye - Maubeuge – Jeumont - Erquelles	<ul style="list-style-type: none"> • From Erquelles to Charleroi: C 60 C 390 – P60 P 380
Gembloux - Auvelais – Charleroi – Mons	<ul style="list-style-type: none"> • Limited parking possibilities

3.8.4. Parameters of re-routing options whe Mouscron border point is blocked

IM	Deviation including route	Usage		Traction power	Length Without loco	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed (km /h)	Length of re-routing option	Weight	Miscellaneous	Capacity indication
		Pass	Frei													
Aulnoye - Maubeuge - Jeumont - Erquelinnes																
Infrabel	Aulnoye - Maubeuge	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45	TBL1+	120 - 139				
Infrabel	Maubeuge - Jeumont	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45	TBL1+	100 - 119				
Infrabel	Jeumont - Erqueinnes	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45	TBL1+	100 - 119				
Gembloux - Auvelais - Charleroi - Mons																
Infrabel	Gembloux - Auvelais	x	x	3 kV DC	700 m	D4	1	≥ 12,5 ‰	GB1	C 60 C 390 / P 60 P 380	TBL1+	< 100	17 km	Mons --> Gembloux: CI 66 : 700t		
Infrabel	Auvelais - Charleroi	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C/70/400	TBL1+	100 - 119	17,4 km	Traxx : 590t & Gembloux --> Mons		
Infrabel	Charleroi - Mons	x	x	3 kV	700 m	D4	2	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+	120-139	41 km	CI66: 1020t Traxx: 850t		

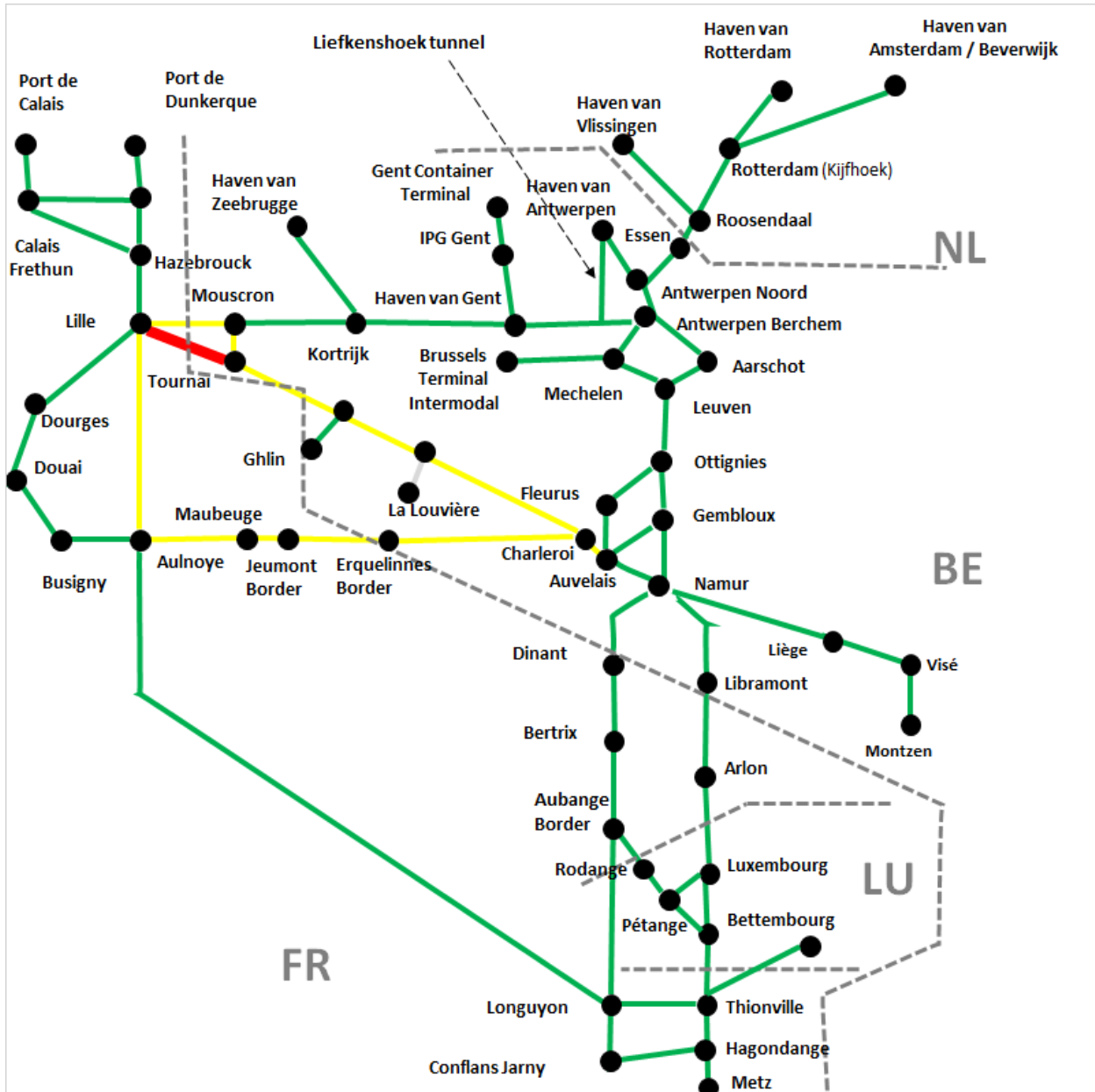


3.9. Re-routing scenario for critical section : Tournai border point

3.9.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options



Re-routing option	Usability	Route
FR – BE (1)	B	Aulnoye – Mouscron
BE - BE	A	Charleroi – Mons - Mouscron

3.9.2. Parking locations & capacity

Aulnoye – Mouscron

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Aulnoye	>3	750	From Monday to Friday
FR	Valenciennes	>3	650	
FR	Lille	3	650	Champs de Mars
FR	Tourcoing	1	750	

Charleroi – Mons – Mouscron

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Mons	3	Max 670 m	
BE	Mouscron	5	Max 560 m	

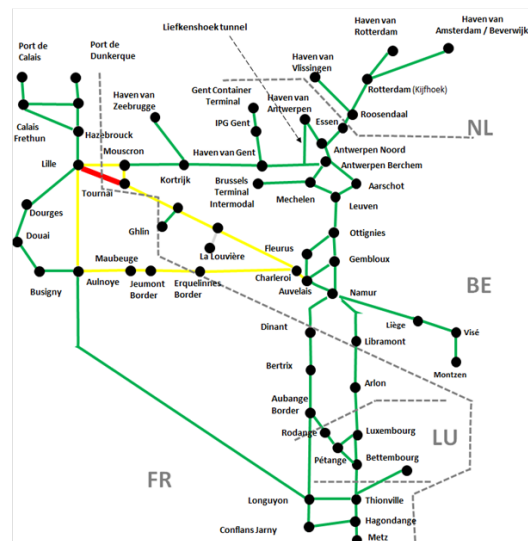
3.9.3. Restrictions

Each re-routing option has specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Aulnoye - Mouscron	<ul style="list-style-type: none"> • No specific restrictions
Charleroi – Mons – Mouscron	<ul style="list-style-type: none"> • No specific restrictions

3.9.4. Parameters of re-routing options when Tournai border point is blocked

IM	Deviation including route	Usage		Traction power	Length Without loco	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed (km/h)	Length of re-routing option	Weight	Miscellaneous	Capacity indication
		Pass	Frei													
Aulnoye - Maubeuge - Jeumont - Erqueinnes																
SNCF R	Aulnoye - Maubeuge	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45	TBL1+	120 - 139				
SNCF R	Maubeuge - Jeumont	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45	TBL1+	100 - 119				
SNCF R	Jeumont - Erqueinnes border	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45	TBL1+	100 - 119				
Gembloux - Auvelais - Charleroi - Mons																
Infrabel	Gembloux - Auvelais	x	x	3 kV DC	700 m	D4	1	≥ 12,5 ‰	GB1	C 60 C 390 / P 60 P 380	TBL1+	< 100	17 km	Mons --> Gembloux: CI 66 : 700t		
Infrabel	Auvelais - Charleroi	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C/70/400	TBL1+	100 - 119	17,4 km	Traxx : 590t & Gembloux --> Mons		
Infrabel	Charleroi - Mons	x	x	3 kV	700 m	D4	2	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+	120-139	41 km	CI66: 1020t Traxx: 850t		

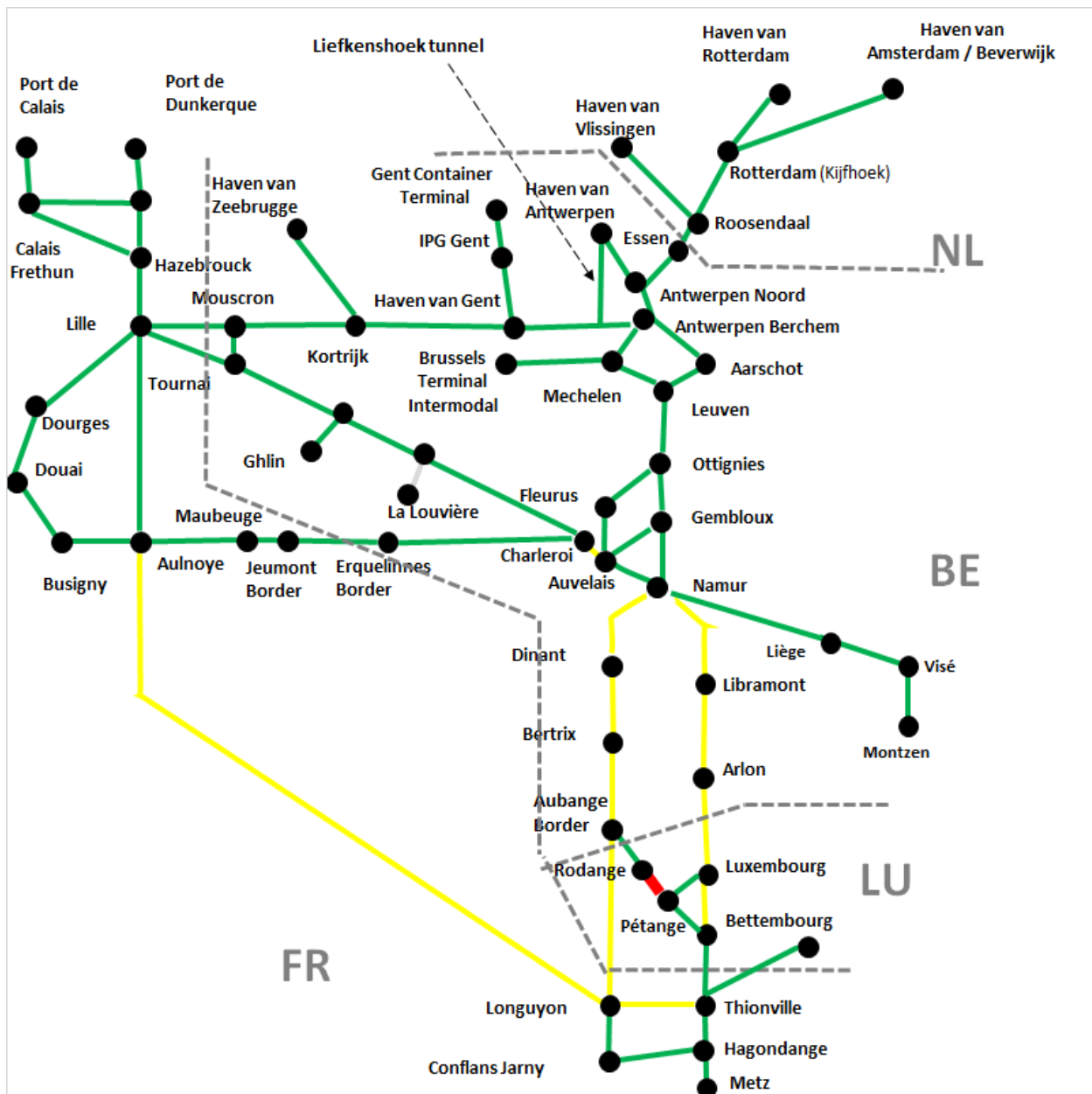


3.10. Re-routing scenarios for critical section Rodange – Pétange

3.10.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options



Re-routing option	Usability	Route
FR – FR		Aulnoye - Longuyon - Thionville
BE – LU	C	Namur - Arlon - Luxembourg – Bettembourg
BE – FR	B	Namur - Aubange - Longuyon - Thionville

3.10.2. Parking locations & capacity

Aulnoye - Longuyon – Thionville

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Aulnoye	>3	750	From Monday to Friday
FR	Hirson	3	750	
FR	Lumes	>3	850	
FR	Sedan	2	400	
FR	Longuyon	>3	550	
FR	Thionville	>3	650	

Namur - Arlon - Luxembourg – Bettembourg

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Ronet	5	700 m	
BE	Athus	3	650 m	
LU	Luxembourg	4	635m	

Namur - Aubange - Longuyon – Thionville

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Ronet	5	700 m	
BE	Bertrix	2	712 m	
FR	Longuyon	>3	550	
FR	Thionville	>3	650	

3.10.3. Restrictions

Each re-routing option has specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Aulnoye - Longuyon – Thionville	<ul style="list-style-type: none"> • No specific restriction
Namur - Arlon - Luxembourg – Bettembourg	D4, ETCS L1, 25kv 50Hz P70 / P390 /C70 / C390 <ul style="list-style-type: none"> • Weight restriction in Belgium 800 t per loco
Namur - Aubange - Longuyon – Thionville	<ul style="list-style-type: none"> • No specific restriction

3.10.4. Parameters of re-routing when the section Rodange -Pétange is blocked

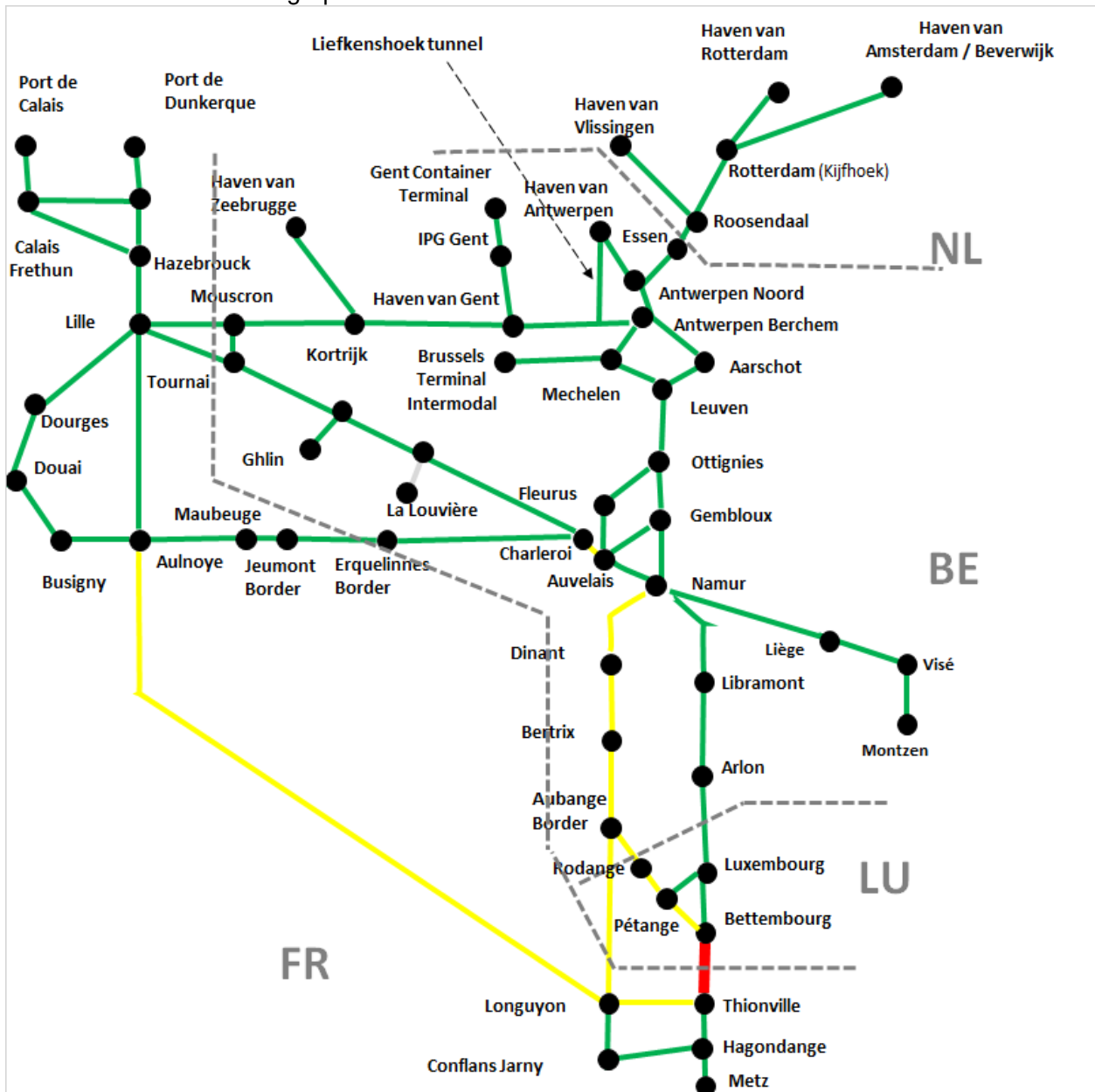
IM	Deviation including route	Usage		Traction power	Length Without loco	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed (km/h)	Length of re-routing option	Weight	Miscellaneous	Capacity indication
		Pass	Frei													
Aulnoye - Longuyon - Thionville																
SNCF R	Aulnoye - Longuyon	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139				
SNCF R	Longuyon - Thionville	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	3.3	C 22		120 - 139				
Namur - Arlon - Luxembourg - Bettembourg																
Infrabel	Namur - Arlon	x	x	3 kV DC	< 750 m	D4	2	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+	120 - 139	136,5 km	sense N/S: C166:800t Traxx 800t sense S/N: C166: 870t Traxx: 800t		
CFL	Arlon - Luxembourg	x	x	3 kV DC	< 750 m	D4	2	≤ 12,5 ‰	GB1	C 70	ETCS L1	120 - 139				
CFL	Luxembourg - Bettembourg	x	x	25 kV AC	700 m	D4	2	≤ 12,5 ‰	GB1	C 70	ETCS L1	120 - 139				
Namur - Arlon - Luxembourg - Bettembourg																
Infrabel	Namur - Dinant	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	< 100	27,4 km	sense N/S: C166: 2200t Traxx 2020t sense S/N: C166: 2200t Traxx: 2160t		
Infrabel	Dinant - Bertrix	x	x	25 kV AC	700 m	D4	2	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	120 - 139	73 km	sense N/S: C166: 1300t Traxx 1600t sense S/N: C166: 1400t Traxx: 1400t		
Infrabel	Bertrix - Aubange border	x	x	25 kV AC	700 m	D4	1	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	120 - 139	69 km	sense N/S: C166: 1200t Traxx 1800t sense S/N: C166: 1150t Traxx: 1400t		
Infrabel	Aubange - Longuyon	x	x	25 kV AC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139				
SNCF R	Longuyon - Thionville	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	3.3	C 22		120 - 139				

3.11. Re-routing scenarios for critical section Bettembourg - Thionville

3.11.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options

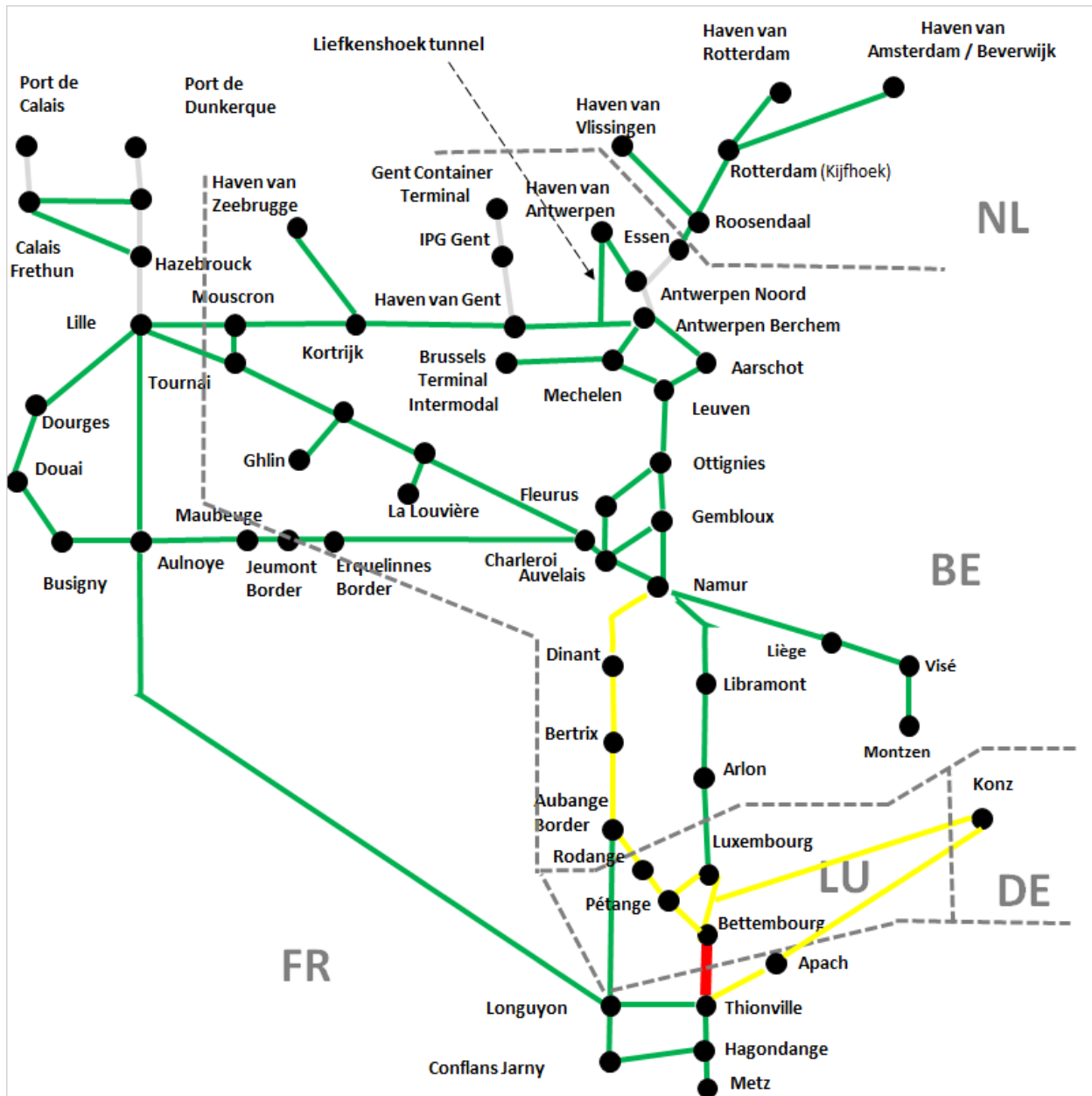


Other option for the critical section Bettembourg – Thionville:

Namur (BE) - Aubange (BE) - Luxembourg (LU) - Wasserbillig border (LU) - Konz (DE) - Apach (FR) - Thionville (FR)

Schematic map including re-routing options

- Critical section
- Re-routing options



Re-routing option	Usability	Route
FR – FR	B	Aulnoye - Longuyon - Thionville
BE – FR	B	Namur - Aubange - Longuyon - Thionville
BE – LU – DE - FR	C*	Namur - Aubange - Luxembourg - Wasserbillig - Konz (DE) - Apach (FR) - Thionville

*for Luxembourg part = B

3.11.2. Parking locations & capacity

Aulnoye - Longuyon – Thionville

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Aulnoye	>3	750	From Monday to Friday
FR	Hirson	3	750	
FR	Lumes	>3	850	
FR	Sedan	2	400	
FR	Longuyon	>3	550	
FR	Thionville	>3	650	

Namur - Aubange - Longuyon – Thionville

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Ronet	5	700 m	
BE	Bertrix	2	712 m	Heavily used
FR	Longuyon	>3	550	
FR	Thionville	>3	650	

Namur - Aubange - Luxembourg - Wasserbillig - Konz (DE) - Apach (FR) – Thionville

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Ronet	5	700 m	
BE	Bertrix	2	712 m	Heavily used
LU	Luxembourg	4	635m	
LU	Belval-Usines	3	750m	
DE				
FR	Apach	>3	750	From Monday to Saturday
FR	Thionville	>3	650	

3.11.3. Restrictions

Each re-routing option has specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Aulnoye - Longuyon – Thionville	<ul style="list-style-type: none"> • No major restrictions
Namur - Aubange - Longuyon – Thionville	<ul style="list-style-type: none"> • No major restrictions
Namur - Aubange - Luxembourg - Wasserbillig - Konz (DE) - Apach (FR) - Thionville	<ul style="list-style-type: none"> • No restrictions in Luxembourg D4, ETCS L1, 25kv 50Hz, P50 / P375 / C50 / C375. • In Germany, 15kV 16 2/3 Hz, PZB

3.11.4. Parameters of re-routing options when Bettembourg – Thionville is blocked

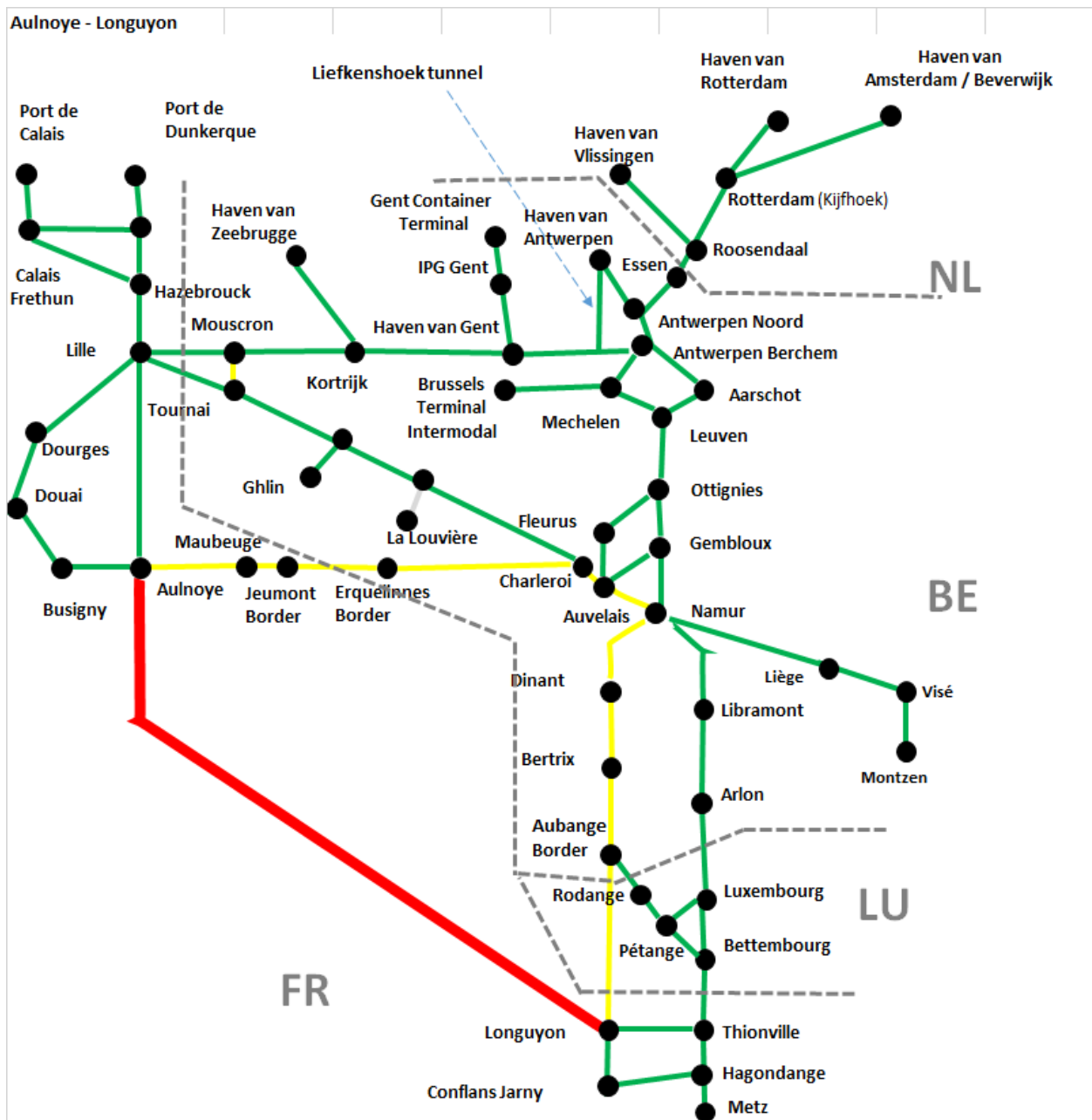
IM	Deviation including route	Usage		Traction power	Length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed (km/h)	Length of re-routing option	Weight	Miscellaneous	Capacity indication
		Pass	Frei													
Aulnoye - Longuyon - Thionville																
SNCF R	Aulnoye - Longuyon	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139				
SNCF R	Longuyon - Thionville	x	x	25 kV	700 m	D4	2	≤ 12,5 ‰	3.3	C 22		120 - 139				
Namur - Arlon - Luxembourg -Bettembourg																
Infrabel	Namur - Dinant	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	< 100	27,4 km	sense N/S: C166: 2200t Traxx 2020t sense S/N: C166: 2200t Traxx: 2160t		
Infrabel	Dinant - Bertrix	x	x	25 kV AC	700 m	D4	2	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	120 - 139	73 km	sense N/S: C166: 1300t Traxx 1600t sense S/N: C166: 1400t Traxx: 1400t		
Infrabel	Bertrix - Aubange border	x	x	25 kV AC	700 m	D4	1	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	120 - 139	69 km	sense N/S: C166: 1200t Traxx 1800t sense S/N: C166: 1150t Traxx: 1400t		
SNCF R	Aubange - Longuyon	x	x	25 kV AC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139				
SNCF R	Longuyon - Thionville	x	x	25 kV AC	700 m	D4	2	≤ 12,5 ‰	3.3	C 22		120 - 139				
Namur - Aubange - Luxembourg - Wasserbillig - Konz - Apach -Thionville																
Infrabel	Namur - Dinant	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	< 100	27,4 km	sense N/S: C166: 2200t Traxx 2020t sense S/N: C166: 2200t Traxx: 2160t		
Infrabel	Dinant - Bertrix	x	x	25 kV AC	700 m	D4	2	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	120 - 139	73 km	sense N/S: C166: 1300t Traxx 1600t sense S/N: C166: 1400t Traxx: 1400t		
Infrabel	Bertrix - Aubange border	x	x	25 kV AC	700 m	D4	1	≥ 12,5 ‰	GB1	P/C/70/400	TBL1+ / ETCS 1	120 - 139	69 km	sense N/S: C166: 1200t Traxx 1800t sense S/N: C166: 1150t Traxx: 1400t		
CFL	Aubange - Rodange	x	x	25 kV AC	700 m	D4	1	≥ 12,5 ‰	GB	C 50	ETCS L1	< 100				
CFL	Rodange - Pétange	x	x	25 kV AC	700 m	D4	2	≥ 12,5 ‰	GB	C 50	ETCS L1	< 100				
CFL	Pétange - Luxembourg	x	x	25 kV AC	700 m	D4	2	≤ 12,5 ‰	GB	C 50	ETCS L1	120 -139				
CFL	Luxembourg - Wasserbillig	x	x	25 kV	700 m	D4	2		G2	PC79/390	ETCS L1 /Memor 2+	100		2400		
DB Netz	Wasserbillig - Konz	x	x	AC 15 kV 16,7 Hz		D4	2		GA	P/C410 (P/C 80)	PZB	100	6	22,5 t		
DB Netz	Konz - Apach	x	x	AC 15 kV 16,7 Hz	630 m	D4	2		GA	P/C410 (P/C 80)	PZB	up to 120	41	22,5 t		
SNCF R	Apach - Thionville															

3.12. Re-routing scenarios for critical section Aulnoye- Longuyon

3.12.1. General description

Schematic map including re-routing options

- - - Critical section
- - - Re-routing options



When the route Aulnoye - Longuyon is blocked, the sections to be considered for re-routing options are:

Re-routing option	Usability	Route
FR – BE - FR	B	Longuyon – Aubange – Namur - Auvelais – Charleroi - Jeumont

3.12.2. Parking locations & capacity

Longuyon – Aubange – Namur - Auvelais – Charleroi – Jeumont

Country	Location	Number of tracks	Maximum train length	Restrictions
BE	Ronet	5	700 m	
BE	Bertrix	2	712 m	Heavily used
FR	Longuyon	>3	550	

3.12.3. Restrictions

Each re-routing option has specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Longuyon – Aubange – Namur - Auvelais – Charleroi – Jeumont	<ul style="list-style-type: none"> • Weight restriction in Belgium • CI66 900t Traxx 1400t

3.12.4. Technical parameters of the re-routing options when the section Longuyon – Aulnoye is blocked

IM	Deviation including route	Usage		Traction power	Length Without loco	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed (km/h)	Length of re-routing option	Weight	Miscellaneous	Capacity indication	
		Pass	Frei														
Longuyon - Aubange - Namur - Auvelais - Charleroi - Jeumont																	
SNCF R	Longuyon - Aubange	x	x	25 kV AC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		120 - 139					
Infrabel	Aubange border - Bertrix	x	x	25 kV AC	700 m	D4	1	≥ 12,5 ‰	GB1	P/C70/400	TBL1+ / ETCS L1 FS v2.3.0d	120 - 139					
Infrabel	Bertrix - Dinant	x	x	25 kV AC	700 m	D4	2	≥ 12,5 ‰	GB1	P/C70/400	TBL1+ / ETCS L1 FS v2.3.0d	120 - 139					
Infrabel	Dinant - Namur	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+ / ETCS L1 FS v2.3.0d	< 100					
Infrabel	Namur - Auvelais	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+ / ETCS L1 FS v2.3.0d	100 - 119					
Infrabel	Auvelais - Charleroi	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	P/C70/400	TBL1+	100 - 119					
Infrabel	Charleroi - Erquelinnes	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 60	TBL1+	100 - 119					
SNCF R	Erquelinnes - Jeumont	x	x	3 kV DC	700 m	D4	2	≤ 12,5 ‰	GB1	C 45		100 - 119					

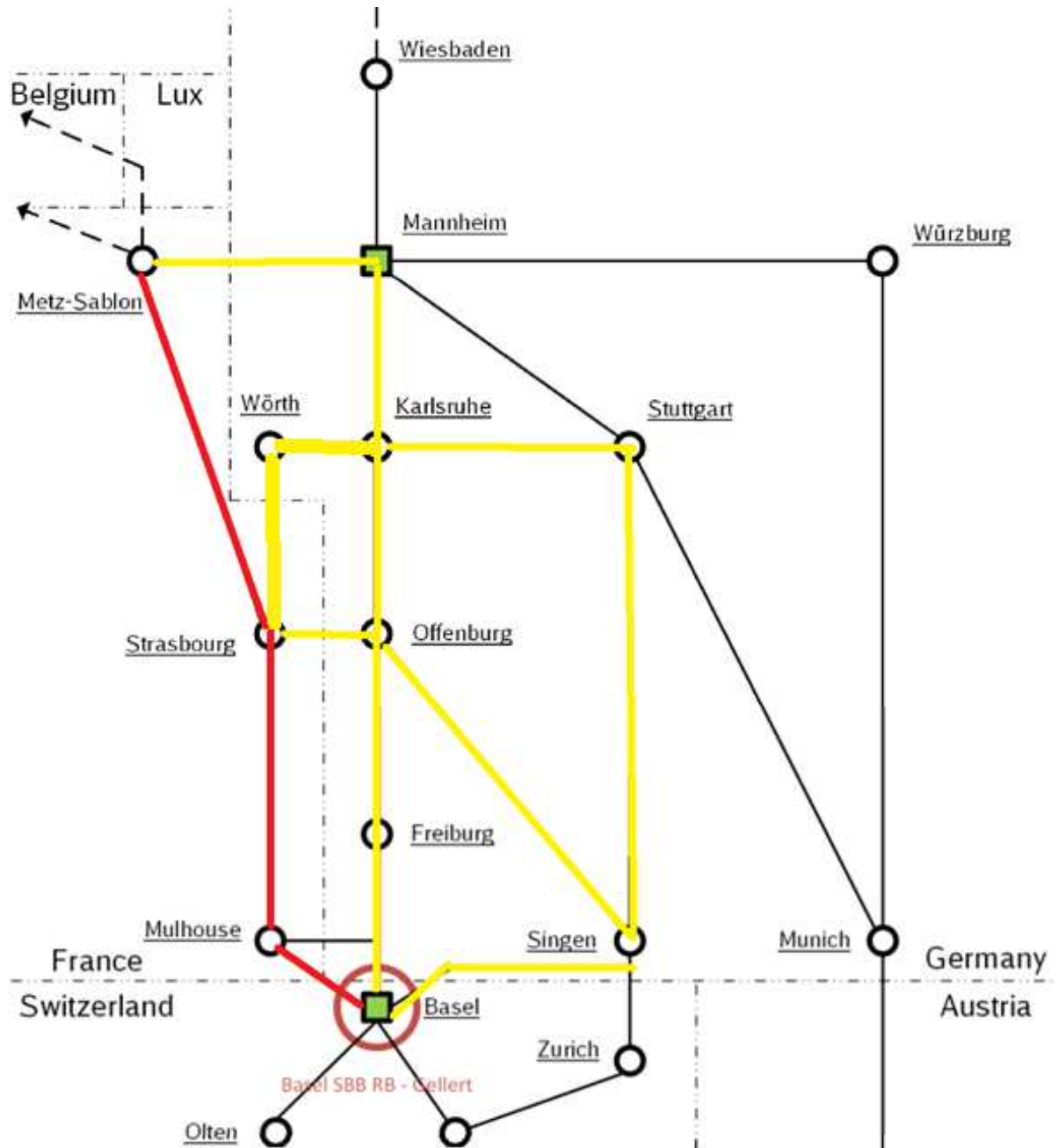


3.13. Re-routing scenarios for critical section Metz – Basel

3.13.1. General description

Schematic map including re-routing options

- Critical section
- Re-routing options



When the **route Metz - Basel** is blocked, the sections to be considered for re-routing options are:

Re-routing option	Usability	Route
FR – DE (1)	B in France	Strasbourg – Offenburg – Freiburg - Mulhouse
FR – DE (2)	B (Rotterdam/Antwerp - Belgium - Luxemburg - France – Basel)	Strasbourg – Metz – Mannheim - Karlsruhe - Freiburg
FR – DE (3)	C (Karlsruhe - Wörth - Strasbourg – Basel (b1) / Offenburg (b2))	Strasbourg – Worth – Karlsruhe – Offenbourg
FR – DE (4)	C (Karlsruhe - Wörth - Strasbourg – Basel)	Strasbourg – Wörth - Karlsruhe

3.13.2. Parking locations & capacity

Strasbourg – Offenburg – Freiburg – Mulhouse

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Strasbourg	>3	750	Hausbergen (Railway modernization)
DE	Offenburg	2	Ca. 700 m	
DE	Freiburg			
FR	Mulhouse	5	Max. 750m	

Strasbourg – Metz – Mannheim - Karlsruhe – Freiburg

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Metz	>3	700	Metz Sablon
DE	Area Mannheim	6-7	Max. 700m	
DE	Karlsruhe	1-2	Max. 700m	
DE	Freiburg			

For Strasbourg – Wörth – Karlsruhe – Offenburg

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Strasbourg	>3	750	Hausbergen (!!railway modernization!!)
DE	Karlsruhe	1-2	Max. 700m	
DE	Offenburg	2	Ca. 700 m	

Strasbourg – Wörth – Karlsruhe

Country	Location	Number of tracks	Maximum train length	Restrictions
FR	Strasbourg	>3	750	Hausbergen (!!railway modernization!!)
DE	Karlsruhe	1-2	Max. 700m	

3.13.3. Restrictons

Each re-routing option may have specific restrictions:

<u>Re-routing option</u>	<u>Restrictions</u>
Strasbourg – Offenburg – Freiburg - Mulhouse	
Strasbourg – Metz – Mannheim - Karlsruhe - Freiburg (Restrictions for following section: Rotterdam/Antwerp - Belgium - Luxemburg - France – Basel)	<ul style="list-style-type: none"> • This is the main route from the Netherlands to and from Belgium. Between Kijfhoek – Roosendaal it is a double mixed (passenger and freight trains) track with ATB signalling and 1500 V electricity. In Belgium until Roosendaal the route has TBL1 signalling and 3 KV electricity. • In Belgium the route is via Antwerp – Muizen – Leuven - Namur until the Luxemburg border at Aubange. That route has TBL1 and 3 KV. • In France the route goes via Woippy / Metz – Strasbourg – Mulhouse to Basel. In France the tracks have 25 kV electricity and KVB signalling. • Between Saint Louis Border and Basle Muttentz, the intermodal freight code is given with EBV 1 / C25/344. However, there is an annual AS-eeee-0945 (Extraordinary shipments), in which this track is recorded. According to this, consignments C45 / 353, B45 / 353, WoodTainer and other shipments are possible.
Strasbourg – Wörth – Karlsruhe – Offenburg (Restrictions for following section: Karlsruhe - Wörth - Strasbourg – Basel (b1) / Offenburg (b2))	<ul style="list-style-type: none"> • The part from Wörth to Strasbourg is a French-German railway line in the French region of Grand Est and the German state of Rhineland-Palatinate. It is not electrified and a mixed freight and passenger line. North of Lauterbourg there is only single track. The Strasbourg-Basel line is an electrified double track line. Trains must change direction in Wörth and Hausbergen. • If the incident is between Karlsruhe and Offenburg, trains can be diverted via Strasbourg and then to Offenburg again (b2). The line between Strasbourg and Offenburg is a double-track line.
Strasbourg – Wörth - Karlsruhe	<ul style="list-style-type: none"> • same information as above (Karlsruhe - Wörth - Strasbourg – Basel (b1) / Offenburg (b2))

3.13.4. Parameters of re-routing options when the section Metz – Basel is blocked

IM	Deviation including route	Usage		Traction power	Length	Line category	Number of tracks	Gradient	Gauge	Intermodal freight code	Signalling	Speed	Length of re-routing option	Weight	Miscellaneous	Capacity indication
		Pass	Frei													
DB Netz	Strasbourg (FR) - Wörth (DE) (Information from section: Wörth-Lauterbourg-Basel)	x	x	Diesel	600	D4	1		upon request	P/C 80/410	PZB	100		3030-3945 (V-Tfz DB 232/233)	Karlsruhe <-> France. Change of direction in Wörth	
DB Netz	Wörth - Karlsruhe (Information from section: (Karlsruhe Gbf-)Mannheim-Wörth)	x	x	AC 15 kV 16,7 Hz	600	D4	2		GA	P/C 80/410	PZB	120		3030-3945 (V-Tfz DB 232/233)	Karlsruhe <-> France. Change of direction in Wörth	
DB Netz	Karlsruhe-Offenburg	x	x	AC 15 kV 16,7 Hz	740	D4	2 to 4		GC	P/C 70/400	PZB LZB (4000 PZB only)	up to 250		2645-2805	5-10‰ (lines 4280 and 4000 run parallel)	
DB Netz	Metz Mannheim (Information from section: Mannheim - Kaiserslautern - Saarbrücken - Forbach border)	x	x	AC 15 kV 16,7 Hz	740	D4	2 to 4		GA	P/C 70/400	PZB	up to 160		1890-1935		
DB Netz	Mannheim - Karlsruhe (Information from section: Mannheim Hbf - Schwetzingen - Hockenheim - Waghäusel - Karlsruhe)	dim	x	AC 15 kV 16,7 Hz						P/C 80/410	PZB					
DB Netz	Karlsruhe - Freiburg	x	x	AC 15 kV 16,7 Hz	690	D4	2		upon request	P/C 70/400 (Karlsruhe-Offenburg); P/C 80/410 (Offenburg-Freiburg)	PZB LZB (4000 PZB only)	160		2645-2805	5-10‰ (lines 4280 and 4000 run parallel)	
DB Netz	Offenburg - Freiburg	x	x	AC 15 kV 16,7 Hz	690	D4	2		upon request	P/C 80/410 (Offenburg-Freiburg)	PZB LZB	160		2645-2805		
DB Netz	Freiburg - Mulhouse (Information from section: Müllheim - Neuenburg (Rhine bridge))	x	x	AC 15 kV 16,7 Hz	446m by traincrossing, 740m by free passage	D4	1		GA	P/C 80/410	PZB	up to 100		3190-3965	only direction north	