REPORT REGARDING MEDITERRANEAN CORRIDOR

Bottom-up analysis and proposals concerning sections:

Torino – Lyon – Marseille – Barcelona – Valencia – Murcia – Almería and Barcelona – Lleida – Zaragoza

BRUSSELS/BARCELONA, 27TH JANUARY 2015

EXECUTIVE SUMMARY

INTRODUCTION

This report has been prepared by FERRMED technical working group and by EU CORE NET CITIES PLATFORM Executive Secretariat.

It is a bottom-up analysis of the present situation in the aforementioned sections of the Mediterranean Corridor, in which it has been taken into consideration the experience and opinions of the business and administrative sectors related to its area of influence.

First of all it has to be said that the Mediterranean Corridor combines North-South traffics in its Western section and East-West in its Eastern section. The zone comprised between Barcelona – Avignon/Marseille – Lyon is the backbone of the Corridor and channels all kind of traffics to all kind of destinations. The coastal branch of the Corridor in Spain is the most crowded freight route and the Transpadane branch is the most congested route in Italy.

Another important feature of the Corridor is that it links the main western Mediterranean and Adriatic ports, with a high potential to become the great southern gate for inter-continental traffics in the European Union. It links also all the North-South Corridors like: Orient/East-Med, Baltic-Adriatic, Scandinavian-Mediterranean, Rhine-Alpine, North Sea-Mediterranean and Atlantic. In its boundaries joints EU with European and African neighboring countries.

All these issues make the Mediterranean one of the most strategic Corridor in the European Union.

LAND TRANSPORTATION INFRASTRUCTURE

The Transportation Infrastructure in the sections Turin – Almeria and Barcelona – Zaragoza is quite good regarding motorways. It only shows congestion sectors in the surroundings of big cities like Lyon, Marseille, Barcelona, Valencia, Murcia... and in some areas in Rhône Valley and Catalonia.

Concerning railways the network has significant limitations in the vicinity of Lyon, Marseille, Barcelona and Valencia due to the high traffics in commuting trains.

In Spain is where the network presents the most significant difficulties due to the different width of the tracks and the delay in the development of adequate infrastructures in the Corridor sea side branch.

Due to both infrastructural and operational limitations in the railways most of the freight traffic is concentrated in the motorways.

Traffic in cross-border sections (M ton):

- Italy – France: 47 (railway share about 11%)
- France – Spain: 51 (railway share about 4.7%)

KEY OBJECTIVE OF THE REPORT

To identify the existing problems in the land transportation network and to propose the corresponding Action Plan emphasizing short term (2÷3 years) measures, avoiding the existing delays, in order to get the Corridor fully inter-operable and capable to gradually re-balance the traffics between road and rail, reducing socio-economic costs and improving environmental conditions. To achieve this target the main actions have to be taken in the railway network.

Pre-eminent medium and long term actions will be stated as well in order to absorb the future increase of traffics.

MAIN ACTIONS TO BE TAKEN

SPECIFIC ACTIONS IN KEY SECTIONS

- Torino – Lyon section
  - New Railway base tunnel (long term)

- Lyon metropolitan Area
  - Railway by-pass for freight (medium term)
  - Operational optimization of Sibelin Terminal linked to railway by-pass (medium term)

- Lyon – Avignon – Nimes section
  - To enlarge the number of lanes of the motorway in Avignon zone (short term)
  - To promote the utilization of railway line Valence – Grenoble as by-pass of Lyon (immediate/short term)
  - ERTMS in conventional lines (short/medium term)

- Avignon – Marseille section
  - Re-opening of Mourepiane – Marseille section (short term)
  - Increase capacity of Port of Marseille Terminals including rolling motorway availability (short term)
  - ERTMS in conventional lines (short/medium term)

- Nimes – Montpellier section
  - New HS/Mixed railway line (short term)
  - ERTMS in conventional line (medium term)

- Montpellier – Perpignan section
  - To improve conventional railway line capacity as well as the inter-operability – ERTMS (short term)
  - New HS/Mixed railway line Montpellier – Béziers (medium term)
  - New HS Béziers – Perpignan (medium/long term)

- Perpignan – Barcelona section
  - 6 lanes in motorway Perpignan – French-Spanish border (immediate)
  - 4 lanes in N-II road in Girona province (short term)
  - To get new HS/Mixed line fully operational (immediate/short term)
  - To adapt to ESG (European Standard Gauge) the conventional line Vilamalla – Portbou (short term)
  - To adapt to ESG the conventional line Girona – Barcelona (mid term)
  - To add additional tracks for freight in conventional line Sant Celoni – Mollet (long term)

- Barcelona zone
  - To conclude the link between A-2 and B-30 motorways (immediate), to finish new road access to Port of Barcelona and to conclude B-40 (short term)
  - New railway access to Port of Barcelona (short term)
  - Introduction of ESG in conventional line Castellbisbal – Martorell, to build Martorell by-pass and refurbishment of Castellbisbal Station (short term)
  - ESG in La Llagosta terminal and main manufacturing companies (short term)
  - To conclude the works of "La Sagrera" station (short term)
  - Railway connections to Barcelona Airport for both conventional and HS lines (short/medium term)

- Martorell – Sant Vicenç de Calders – Tarragona
  - N-340 road with 4 lanes (short/medium term)
  - ESG in conventional line, Tarragona urban station, Port of Tarragona, Tarragona Classificació station, petrochemical terminals, etc. (short term)
  - To put in operation the ancient line Sant Vicenç de Calders – Roda de Berà – Perafort in ESG (short/medium term)
  - New link HSL to conventional line from Pobla de Montornès/Roda de Berà – Altafulla (short/medium term)

- Tarragona zone
  - 4 lanes in N-340 road, new road to Camp de Tarragona station and to finish A-27 motorway (short term)
  - New railway line Camp de Tarragona – Vandellós and multiple connections with existing lines with ESG (immediate/short term)
  - Enlargement of Constantí station (short/medium term)

- Vandellós – Castelló section
  - N-340 road with 4 lanes (medium term)
  - ESG in existing line but SEG/IG (Iberian gauge) in one track (short term)

- New access to Port of Castelló (short term)
- New HS line (medium/long term)

- Castelló –Valencia section
  - ESG in conventional line (immediate/short term)
  - New access to Port of Sagunt (short term)
  - Intermodal terminal in Parc Sagunt (medium term)
  - HSL Castelló – Valencia (medium/long term)

- Valencia zone
  - ESG in Port of Valencia and Font de Sant Lluís Terminal (immediate/short term)
  - New freight line from Font de Sant Lluís to FORD Factory (immediate/short term)
  - New access to Estació del Nord in Valencia through tunnel in Parc Central (medium term)

- Valencia – Xàtiva – La Encina – Monforte del Cid – Alicante/Crevillente
  - To finish the connections of motorways A-35 with A-31 in Font de La Figuera (immediate/short term)
  - To finish HSL Valencia – Xàtiva (immediate/short term)
  - To convert existing conventional line into HSL/ESG and to refurbish the ancient conventional line for freight trains from Xàtiva – La Encina (short term)
  - ESG in Port of Alicante access (short term)
  - ESG in conventional line La Encina – Alicante (short term)

- Alicante/Crevillente – Santomera – Murcia – Cartagena/Escombreras section
  - More lanes in motorway A-7 between Elche and Murcia(medium term)
  - To finish new HSL Alicante – Murcia (immediate/short term)
  - ESG in conventional line Alicante – Elche/Crevillente and new station in Alicante Airport (immediate/short term)
  - ESG/IG in line Murcia – Cartagena and direct connection (in North direction) to Murcia – Alicante HS line (immediate/short term)
  - ESG in Port of Cartagena access (immediate/short term)
  - New freight line Monforte del Cid – Murcia (short/medium term)

- Murcia – Lorca – Pulpí – Águilas section
  - To finish the HS/Mixed new line Murcia – Lorca – Pulpí with a third track for commuting trains (short term)
  - New line Lorca – Baza – Granada (long term)

- Pulpí – Almería section
  - Intermodal terminal in Pulpí area (short term)
  - To finish the HS/Mixed line Pulpí – Almería able for two tracks (short term)
  - ESG/IG in line Almeria – Granada (medium term)
  - Almería – Motril – Málaga new line (long term)

- Interior branch Mediterranean Corridor: Barcelona – Lleida – Zaragoza section
  - To include in the Core Network the Tarragona – Lleida – Zaragoza line
  - ESG in line Tarragona – Lleida, incorporating "triangle" connections with lines Reus – Caspe and Sant Vicenç de Calders – Valls – Picamoixons (short term)
  - ESG in section Lleida – Zaragoza (short/medium term)
  - ESG in branch Tarragona – Caspe – Zaragoza (medium term)
  - ESG in branch Sant Vicenç de Calders – Valls – Picamoixons (medium term)

COMMON ACTIONS TO ALL SECTIONS

a) INFRASTRUCTURE/OPERATION
- GC loading gauge, exceptionally GB1 (short/medium term)
- Terminals and sidings for trains length of 750m minimum (short term)
- ERTMS in all lines (short/medium term)
- FERRMED Standards gradual implementation (immediate / long term)
- Free competition (immediate/short term)

b) MANAGEMENT
- Corridor sub-coordinators at country level for infrastructure development (immediate/short term)
- Observatories about railway saturation and demand trends in key sectors of the Corridor (immediate/short term)
- International Committee in order to promote new railway routes in the Corridor to or from anywhere destinations within EU. Specialization by kind of commodities (immediate/short term)
- Organism in order to coordinate international train paths, particularly in the borders. Relationship with ERA (short term)
- Periodical bottom-up Tribunes organization to follow the real progress of the different official action plans (immediate/short term)
- New Strategic Logistics Plan at EU level (short/medium term)

NOTE:

IMMEDIATE:	**6 months ÷ 1 year**
SHORT TERM:	**2 ÷ 3 years**
MEDIUM TERM:	**4 ÷ 6 years**
LONG TERM:	**7 ÷10 years**

POTENTIAL TRAFFICS IN RAILWAY NETWORK

➢ FREIGHT

Among other sources:

- Increase of inter-continental trade (its impact in Mediterranean ports)
  - Expected growth in coming years: 3÷5% yearly)

- Mediterranean ports as southern gateway of EU
  - Expected share evolution in next 7÷10 years with regard to Total North Sea + Mediterranean: from 27% to 35÷40%
- Agro-alimentary products
- Automotive industry
- Chemical industry
- Iron and steel industry
- Tile industry
- Raw materials (particularly marble and potash)

- Expected impact in Italian/French border: 30% of share (long term), 78 trains/day (600 net tons)
- Expected impact in French/Spanish border: 20÷25% of share (medium/long term), 60÷72 trains/day (600 net tons)

➢ PASSENGERS

Additional destinations

Among others:

- Genève – Barcelona/Valencia
- Zurich – Barcelona/Valencia
- Milan – Turin – Barcelona/Valencia
- Genoa – Barcelona/Valencia
- Bordeaux – Barcelona
- Montpellier – Barcelona – Murcia/Cartagena – Almeria

Existing destinations

Increase frequency reducing lead times

SOCIO-ECONOMIC IMPACT

MEDITERRANEAN CORRIDOR ACTION PLAN DEVELOPMENT
SOCIO-ECONOMIC IMPACT IN ITALY, FRANCE AND SPAIN
ACCORDING TO FERRMED GLOBAL STUDY

Benefits in million euros (period 2016-2045)

Concept	FERRMED Great Axis Area of Influence	Italy 7,9%	Mediterranean Corridor 90% Italy	France 31,6%	Mediterranean Corrdiror 27% France	Spain 18,2%	Mediterranean Corridor 70% Spain
VOC	228.000	18.012	16.211	72.048	19.453	41.496	29.047
Savings in transport lead time	285.000	22.515	20.263	90.060	24.316	51.870	36.309
Emissions	15.000	1.185	1.066	4.740	1.280	2.730	1.911
Σ	52.800	41.712	37.541	16.684	45.049	96.096	67.267
MEDITERRANEAN CORRIDOR: 149.857 EIRR=11,1%							

MAIN CONCLUSIONS

- Investments in Infrastructure have to be made where major socio-economic impact is achieved.
- Investments in Mediterranean Corridor have high socio-economic impact and strategic incidence.
- To attain the forecasted socio-economic benefit, the action plan proposed by FERRMED and EU Core Cities Platform, has to be accomplished.
- No more delays in planned works that have to be duly coordinated.
- Observatories about railway performance, international committee to promote railway routes, one organism to coordinate international train paths and bottom-up Tribunes, are issues that have to be taken into consideration.
- Gradual FERRMED Standards implementation.
- Truly free competition is a key as well.

NOTE: See the schemes of proposed actions in Annexes

DETAILED EXPLANATION

Identification of critical points, requirements and proposals

1. Aim of the report

This document aims to show which is the real situation of Mediterranean Corridor regarding its operational feasibility and at the same time, to identify different prioritized actions and proposals in order to fix properly the Corridor, from the point of view of whole infrastructure as well as from an appropriate balance among transportation modes and an effective operation of the rail network as well.

2. Report structure

The document has been structured through the analysis of traffics, infrastructure and management/operating systems regarding the sections Torino – Lyon – Valence (– Grenoble) – Marseille – Barcelona – Valencia – Murcia – Almeria y Barcelona – Lleida – Zaragoza, that are included in regions of Piemonte, Rhône-Alpes, Provence-Alpes-Côte d'Azur, Languedoc-Roussillon, Catalunya, Comunitat Valenciana, Región de Murcia and Andalucía. Inside each region different sub-sections have been taken into account in order to facilitate the analysis. Also, different solutions have been proposed for each identified problem as well as the prioritization rank that each one of such solutions need, under FERRMED criteria.

Diagrams showing the proposed solutions are showed in Annexes at the end of this report.

3. PREVIOUS CONSIDERATIONS

3.1. Initial considerations

It has to be taken into account that Mediterranean Corridor, as it is defined in the Core Network, has some common sections with other corridors: Baltic-Adriatic, Atlantic and North Sea-Mediterranean. Most of the traffics of the Mediterranean Corridor are concentrated in the common section with North Sea-Mediterranean Corridor, since an important part of them flow to the North of France, Benelux and Germany. It has also two links between Ljubljana and Budapest, a direct one and the other through Zagreb with a connection to Rijeka. It has two branches in the Iberian Peninsula. From Tarragona a branch follows more or less all the coast (or coastal provinces), and the second one moves inwards through Ebro River valley until Zaragoza and from there to Madrid and Andalucia.

It is very important to keep in mind that the Iberian coastal branch is clearly disadvantaged compared to interior branch because of endemic delayed investments. The interior branch

has double line in almost all the way, while coastal one has mostly one single line (with only one track for many km). There are even zones with no line at all (Murcia – Almeria). Further, the lay out in Southern sector is inconsistent given that it is necessary to make a considerable detour to arrive in Algeciras.

In this report we will study the Mediterranean Corridor route from Turin to Almeria, considering in Spain both coastal branch as well as the interior branch Barcelona – Zaragoza.

3.2. Turin – Lyon sector

This one is a key sector of Mediterranean Corridor, since it belongs to the part with the more difficult orography, because of Alps crossing.

Road traffics absorb by 90% of transport between France and Italy which cross the border mainly through Frejus tunnel and coastal motorway.

Railway traffics, especially regarding freight, run through Modane – Bardonecchia tunnel, whose accesses show some slopes of more than 30 thousandths.

FERRMED fully supports all actions driven by “La Transalpine” and “Transpadana” associations, in order to get a new railway route with less slopes and at the same time reduce lead time and distances as well.

3.3. Lyon – Marsella / French-Spanish border

Very important North-South and East-West traffics pass through this sector. Just as an example, trans-border traffics in Mediterranean area of Pyrenees are even higher than those that cross French-Italian border. Most of such traffics flow through almost saturated motorways, especially in summer and peak times.

Concerning the railway, there are important bottle necks in Lyon metropolitan area and in section Nimes – Montpellier as well, although railway freight transportation is less than 10% of total (in some areas even lower as it is in case of French-Spanish border, where is less than 5%).

Anyhow if rail mode were efficient, potential railway traffics are really huge, both freight and passengers. So FERRMED considers essential to build a new High Speed line (mixed in sector Nimes – Beziers), as well as the corresponding refurbishment of existing conventional line in Montpellier – Perpignan sector.

3.4. French-Spanish border – Ameria / Algeciras sector

- First of all, it must be said that in many sections of this sector the works regarding to implementation of European Standard Gauge (ESG) are already tendered and allocated. However the works have not started yet, which means a delay of 1 or 2 years on forecasted planning.

- Also, FERRMED wants to achieve the implementation of ESG in all lines linked to railway Mediterranean Corridor. We consider this as an essential, priority and urgent objective. The proposed solutions seek to address definitively the identified problems and so to avoid temporality as much as possible.

- It has to be remarked that inter-operable gauge GC (accomplishment of Inter-operability Technical Spec – ITS) is not available in most of route. This is especially important in the sections of conventional network where arrangements for ESG implementation have been done. Implementation of GC gauge is essential to meet the estimated inter-modal potential traffics (semi-trailers and big size containers) in Mediterranean Corridor.

- Additionally it is important to highlight the lack of inter-modal railway terminals (outside of some port areas) with ESG included, as well as the insufficient number of terminals to absorb expected potential traffics.

- From French-Spanish border to Southern limit of Mediterranean Corridor, there are not enough sidings and freight railway traffic regulation stations where to park or prepare trains of 750m length or more.

- Also, it must be considered:

    - To adapt railway access to ports
    - To electrify all route
    - Availability of double line in most of sections
    - Construction of sidings adapted for freight trains of 750 m length (minimum) at least each 40 km
    - Implementation FERRMED Standards, including control systems, safety and communication ("blocking systems" and "safety and communication systems")

Concerning the road, FERRMED highlights the lack of capacity in different sections of N-II / N-340 that follows the Corridor, since it has not 4 necessary lanes.

3.5. Barcelona/Tarragona – Lleida – Zaragoza sector

This sector has several "parallel" or complementary conventional lines between Barcelona and Zaragoza:

a) Barcelona – Manresa – Lleida – Zaragoza

b) Barcelona – Sant Vicenç de Calders – Valls – Picamoixons – Lleida – Zaragoza

c) Barcelona – Sant Vicenç de Calders – Tarragona – Reus – Picamoixons – Lleida – Zaragoza

d) Barcelona – Sant Vicenç de Calders – Tarragona – Reus – Caspe – Zaragoza

Because of existing slopes in one sector of the section Manresa – Lleida, we do not consider such option in this report.

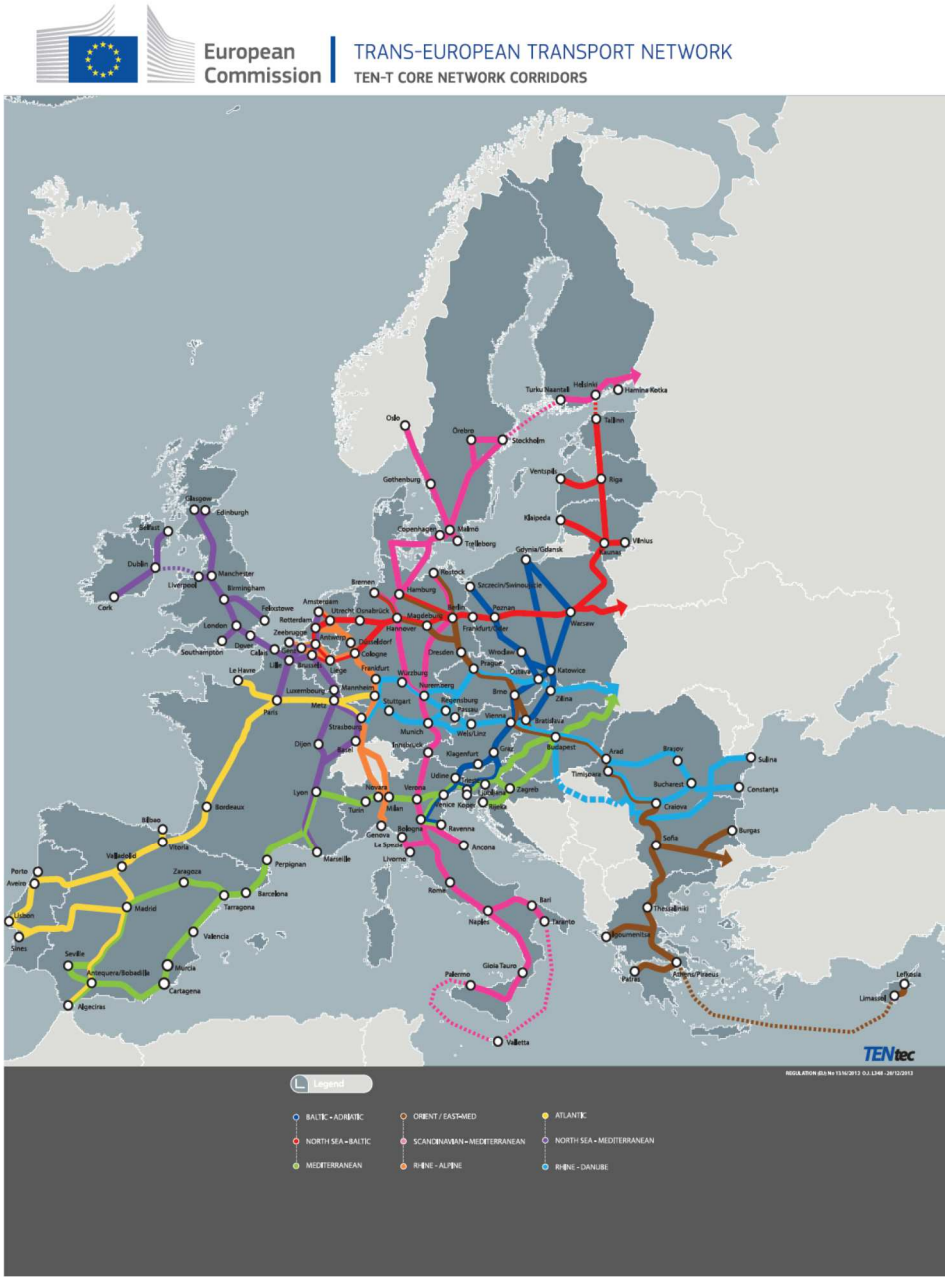
Option b) bypasses Tarragona and the route is shorter than in case of Option c).

Nowadays options c) and d), the sections Tarragona – Lleida – Zaragoza and Tarragona – Caspe – Zaragoza, are mainly used as a double virtual line and ESG is not available in both cases. ESG is not available in section Sant Vicenç de Calders – Valls – Picamoixons yet.

As with coastal branch of Mediterranean, in this interior branch the tunnel gauges have to be checked in order to adapt them to GC and enlarge existing sidings to adapt them to 750m length trains (minimum).

Further ESG has to be implemented by means of a third track and to implement FERRMED Standards including control, communication and safety systems...

The route Tarragona – Lleida – Zaragoza has to be included in the Trans-European railway Core Network as a part of interior Mediterranean Corridor.



4. Transportation Network Analysis

4.1. Present situation

4.1.1. Turin – Lyon section

The objective of the Lyon-Turin project is to absorb the growth of freight ensuring a modal shift to rail.

With the construction of the Lyon-Turin rail motorway, traffic studies forecast :

- Shifts from the road routes (Mont-Blanc and Frejus mainly but also Ventimiglia)
- 300-400 000 trucks/year less under the tunnels of Mont Blanc and Frejus at medium-term.
- 700-900 000 trucks/year less under the same tunnels at long-term
- Shifts from other Rail routes (Gotthard, Simplon...)

According to the modeling, the modal share of rail in the Franco-Italian traffic could reach **40% in 2035 with the Lyon-Turin project** against 15% if the Lyon-Turin is not realized, and 8% currently.

Note that this modal shift **will cut 1 million tons of CO2 emissions.**

This is construction of a modal shift that will also concern passengers. In the long term, with the Lyon-Turin project, traffic studies forecast (source: Study DUP access Lyon-Turin):

- 4 million international passengers per year, with **1.2 million passengers shifted from the road or air.**
- 8.7 million domestic passengers per year, with **600 000 passengers shifted from the road or air.**

The current traffic situation:

The equivalent slope of 34% between Saint-Jean de Maurienne and Suse imposes a limitation tonnage (1600 tons tracted with 3 locomotives, 1150 tons with 2 locomotives), reduced speeds (30 to 50 km/h) and prohibitive traction costs compared to the tonnage transported.

In 2012, the traffic, in the 2 directions combined, was 11 200 trains for 4.36 million tons of goods, so 390 net tons per train (source Interalpes).
http://osservatoriotrasporti.eu/doc/Observatoire_des_transports_franco_italiens_Nice_12_avril_13.pdf

This is mainly specialized traffics (chemical products, wood, cars), resulting in empty returns. The share of the combined traffic is low (20% according Alpinfo, against 62% for passages through Switzerland). The current crossing is not competitive with the road for general goods as it does not allow sufficient high volume.

The maintaining of the combined traffic in Switzerland is obtained with 152 million of euros of annual grant (aid to the train and loading). In addition, the Swiss railway network have little less high-slopes (28%), and the road is heavily taxed (RPLP). Trucks are not allowed to circulate in Switzerland at night between 10.00 PM and 5.00 AM.
The experience of the rail motorway between Aiton and Orbassano (10 trains per day) operates with a grant from the States of approximatively 400 euros per truck, for a tariff paid by the user of 280 euros.
These elements lead us to believe that a massive modal shift by the current tunnel would be extremely costly for public finances and would not comply with EU rules. It would also be

limited in volume by the low unitary train tonnage which limits the capacity of the line: It would need 200 trains per day to achieve 20 million tonnes.
Note that in 2012 as the previous years, it is 2.56 million trucks that crossed the main Franco-Italian passages, (Mont-Blanc, Frejus and Vintimille) equivalent on average of 7000 trucks per day.

On the work done and the measures taken, it must be emphasized that:

- The work to put the historical railway line up to B1 gauge was completed and since June 2012, the trains can use this gauge, which is reflected in particular by the results of a net increase of the Alpine rail motorway (around +25% per year to cross the threshold of 30 000 trucks annual) ;
- The consultation for the establishment of a new service for the Aiton-Orbassano Alpine rail motorway will continue, in accordance with the decision of the last Franco-Italian summit (November 20th, 2013 in Rome) with the aim to move from an experimental current service to a final one by the end of 2015 ;
- The tariff rates of road tunnels of Mont-Blanc and Frejus are increasing since 2010 of 3.5% above the inflation rate, during 5 years, according to the 2009 decision ;
- Traffic regulations of the two tunnels forecast :
    - Forbidding trucks from standard EURO 0 for the two tunnels.
    - Forbidding trucks from standard EURO 1 and 2 and transportation of dangerous materials in the Mont-Blanc tunnel ;
- For categories of trucks authorized, rates are adjusted according to the EURO class of vehicle.

The current actions:
The Lyon-Turin is a work in progress, with the support of Europe.

- 3 access tunnels ended in France:
    - **Access tunnel of Villarodin-Bourget-Modane (4000m)** end of the excavation in November 2007
    - **Access tunnel of La Praz (2480m)** end of the excavation in January 2009
    - **Access tunnel of Saint Martin La Porte (2400m)** end of the excavation in June 2010
- 2 exploratory galleries are in progress:
    - In Italy, **La Maddalena exploratory gallery (7500m)** since 2012
    - In France, **Saint Martin La Porte exploratory gallery (9000m)** since January 2015

1 billion Euros was already committed financed 50% by the European Union.

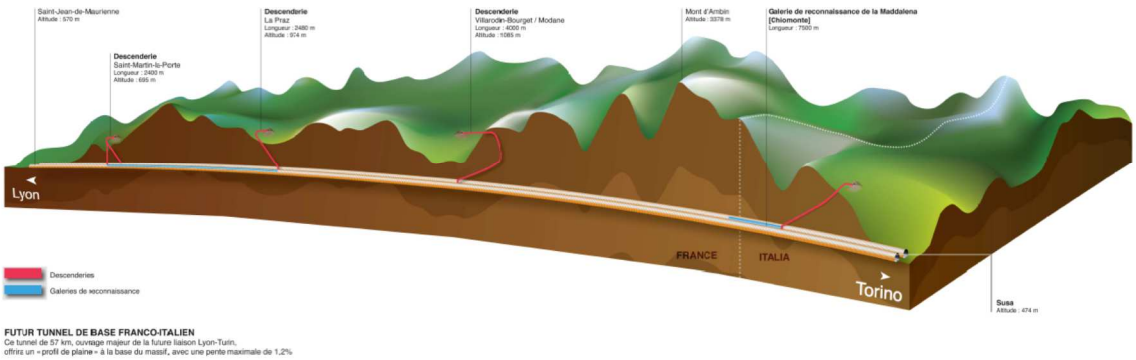
A parallel approach "Grand Chantier" was launched by the French Government: It is a support process which is materialized in an action program on the reception and social functioning of

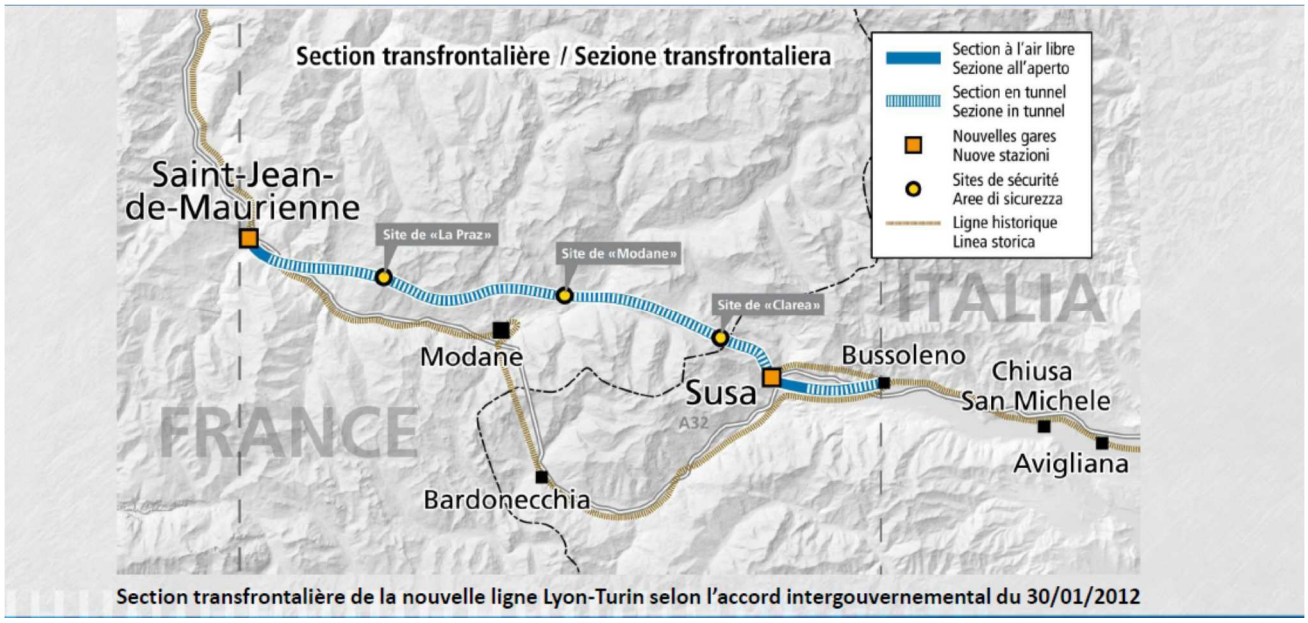
the site, employment and training, economic development through mobilization of local businesses.

A similar approach was launched in Italy: The “Smart Susa Valley”; it consists of a competitive development **project** of the Susa Valley with a strong economic approach ; it seeks to be part of the European program "Smart Cities". It addresses the issues of energy, very high speed, environment (rivers) and heritage.

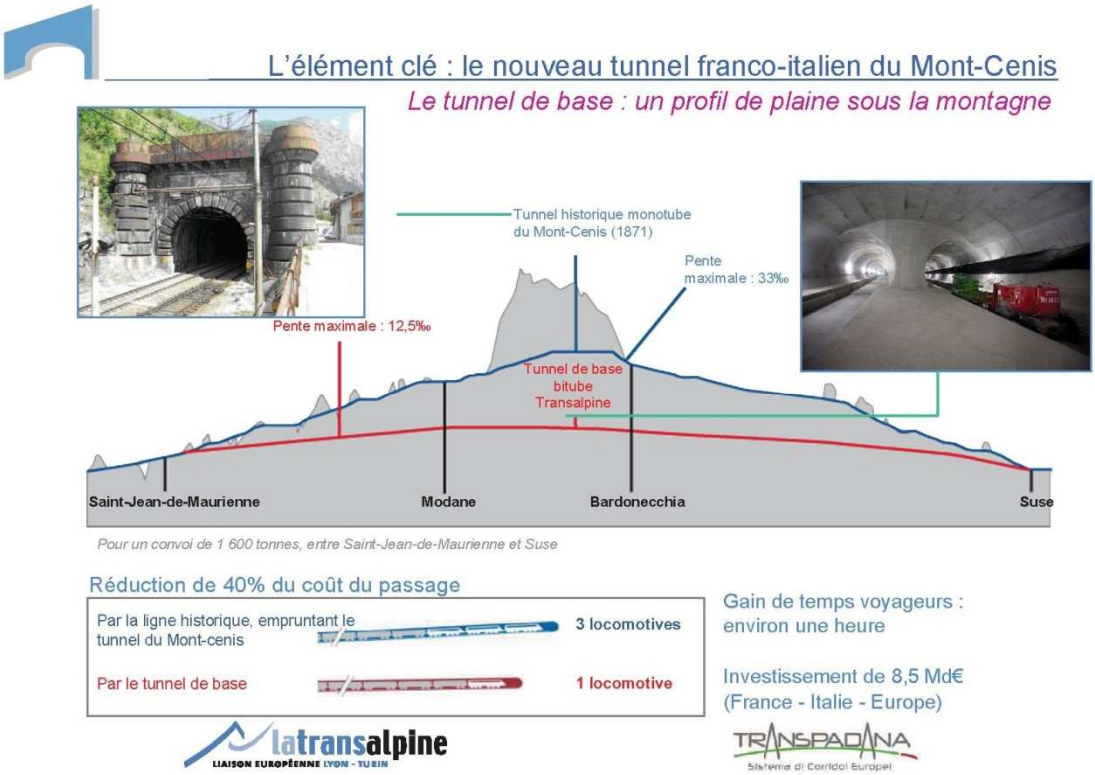
In 2015 the site of the Lyon-Turin will experience new advancement:

- The establishment of a public promoter responsible for constructing and operating the new rail tunnel.
- The response to the call for proposals from the European Union by France and Italy to finance 40% of the cross-border section.
- The signature at the next bilateral Franco-Italian summit (spring 2015?) of the final agreement necessary to enable the work.




Section transfrontalière / Sezione transfrontaliera
Section à l'air libre
Sezione all'aperto
Section en tunnel
Sezione in tunnel
Nouvelles gares
Nuove stazioni
Sites de sécurité
Aree di sicurezza
Ligne historique
Linea storica
Saint-Jean-de-Maurienne
Site de «La Praz»
Site de «Modane»
Site de «Clarea»
ITALIA
Modane
Bussoleno
Chiusa San Michele
Susa
A32
FRANCE
Avigliana
Bardonecchia
Section transfrontalière de la nouvelle ligne Lyon-Turin selon l'accord intergouvernemental du 30/01/2012

Source LTF


L'élément clé : le nouveau tunnel franco-italien du Mont-Cenis
Le tunnel de base : un profil de plaine sous la montagne
Tunnel historique monotube du Mont-Cenis (1871)
Pente maximale : 33‰
Pente maximale : 12,5‰
Tunnel de base bitube Transalpine
Saint-Jean-de-Maurienne
Modane
Bardonecchia
Suse
Pour un convoi de 1 600 tonnes, entre Saint-Jean-de-Maurienne et Suse
Réduction de 40% du coût du passage
Par la ligne historique, empruntant le tunnel du Mont-cenis
3 locomotives
Par le tunnel de base
1 locomotive
Gain de temps voyageurs : environ une heure
Investissement de 8,5 Md€ (France - Italie - Europe)
latransalpine
LIAISON EUROPÉENNE LYON - TURIN
TRANSPADANA
Sistema di Corridoi Europei

4.1.2. Lyon – Marseille section

4.1.2.1. The Great South-East of France is a border and transit territory on the national and European scale; Grand Port Maritime de Marseille, on the Mediterranean front, is confirmed on its role of major access to Europe by its presence on two European corridors.

The improving of the quality of service of these two European Corridors ("Mediterranean" and "Mediterranean North-Sea") will make this territory and its seaport even more attractive, reinforcing their synergy and operating system in a leading logistics hub.

Improving the performance of these two rail corridors is justified by:

- The dynamism of the economy and trade it induces.
- The network of cities connection,
- Its geographical position in Europe, making the Greater South-East a road and rail junction (conventional networks and existing LGV or project, including the Lyon-Turin)
- Its Mediterranean coast welcoming in particular the Port of Marseille 1st port of France and 2nd in the Mediterranean Front which is a major maritime access of Europe in the Mediterranean allowing to gain a competitive transit time and working in the reduction of the carbon footprint of freight transport. Theses growth prospects require:
  - Modernization and development of overcrowded land-connection with its hinterland in order to consolidate its position as a Mediterranean alternative to Northern range ports.

  - In the future, a large river system interconnected with the Moselle-Rhine basin, the wide gauge river basin (Saône-Rhône-Méditerranée) being currently a differentiation vector Port of Marseille-Fos.

- Projections of maritime Traffic to consumption and production zones in the heart of Europe that these corridors are making possible from the port of Marseille-Fos, rebalancing factor of flows on European transport networks.
- The existence of other North-South overcrowded European axes more in the center of Europe in direct competition with the two corridors crossing the Greater South East by running the risk of seeing France marginalized in the heart of European economic activity.
- Its borders situation with Spain, Italy and Switzerland, generating intense flows of people and goods,
- Some territories to open up or energize in Auvergne, Bourgogne, in the Southern Alps and west of the Rhône,
- Saturation and the necessary reduction of bottlenecks on roads, railways axis of the Rhône corridor and the Mediterranean Arc whose traffic is increasing continuously,
- The need to manage tourism flows (summer / winter) and exceptional transit
- Demographic changes of this area (especially the Mediterranean coast) in a strong growth for the next 20 years.

The OITC Southeast and Grand Port Maritime de Marseille emphasize that maintaining and improving the quality of overcrowded network services transport, rail in particular, in this space, will have a direct impact on its European competitiveness and attractiveness especially since it is exposed to strong competition from other European axes of neighboring countries. The issues are:

- To allow the general economy of the territory to take better advantage of the Mediterranean maritime traffic from the port of Marseille-Fos in particular, and existing or potential multimodal land flow between Spain and France toward Italy, Switzerland and Northern Europe.
- To strengthen the role of the Port of Marseille as a major multimodal gateway of Europe in the Mediterranean.
- Improving synergies between regional cities of Greater South East as well as radiation and synergy of French ports of the Mediterranean coast.
- To provide additional benefits to the territory to capture investment in the context of strong competition with other European cluster.

4.1.2.2. IT MUST BE STRESSED THAT SECTION MARSEILLE - LYON ON WHICH PASSES THE TWO EUROPEAN TEN-T CORRIDORS IS PARTICULARLY EFFICIENT

This Section hosts already trains of rail motorway up to 850 meters in length and 22.5 tons of axle loading. Long trains of combined transport are possible between Marseille and Paris, so on this section of the French Rail Network.

Trains experiments of 1500 meters were completed successfully in 2014.

If adjustments are needed (eg: sidings for long trains) this section is well suited to dense rail traffic.

The challenge for shippers therefore does not arise in terms of investment on infrastructure on this section, as provision of rail freight paths transport operators adapted to the needs of shippers (schedules, robustness, availability guaranteed over a long period).

Moreover, it must be highlighted that in the Framework Contract 2006-2013, the Rhône-Alpes Region and the State proceeded with *Réseau Ferré de France* in regeneration and total electrification of the Southern Alps path (Valence - Grenoble - Montmélian) which could allow freight trains especially from Marseille-Fos to link Italy and Switzerland without crossing the Lyon node.

The Railway Bypass of Lyon and solving the Lyon Railway Node it remains nevertheless a major issue; it will be developed below.

4.1.2.3. THE NEW LINE LYON-TURIN (INTERNATIONAL SECTION AND ACCESS ROUTES)

The realization of the international section of Lyon-Turin will solve the missing link of the Mediterranean corridor and provide a rail service capability between France and Italy.

4.1.3. Nîmes – Montpellier – Béziers – Narbonne – Le Soler – Perpignan – Cèrbere section

General: ***a)*** *Line – width of the track UIC - electrified in 1,5kV cc; signaling BAL + KVB;*
b) *The line is experiencing a decline in rail freight traffic offset by a strong movement of traffic of TER, 45% in 10 years.*

a) Nîmes – Montpellier subsection

- Heavy traffic: around 180 to 190 circulations / day
- Bypassing of the Nîmes-Montpellier section (CNM) is currently underway for commissioning planned for the end of 2017.

The CNM line speed will be 220 km/h for passenger trains and 100/120 Km/h for freight trains. The line route allows a subsequent increase to 300 km/h; electrification is 25Kv, 50Hz; signaling is BAL + KVB and ERTMS level 1.

Special features: The various connections are made flat, tracks are not trivialized (only equipped with IPCS). The CNM will not have passing tracks, except 2 circulation lines in the future train station of Montpellier.

b) Montpellier – Béziers subsection

- Heavy traffic: around 150 circulations/ day.
- Logic dictates that this section should have been included in the CNM.
- This line is more and more restraint by the presence on its route, in Sète, of the sea bridge (Maréchal Foch) to be raised 3 times a day during 20 minutes. Moreover, this centenary bridge is subject to many failures, either it remains lifted or it does not rise.

Note: Regarding the two sections: Nîmes-Montpellier-Béziers, with the commissioning of the CNM, The SNCF will open, following the request of the region, a new service TER Lunel-Sète. The facilities origin-departure (OT) is already in-progress.

c) Béziers – Narbonne subsection

- Heavy traffic, equivalent to the one of the previous section, because of the contribution of circulations of Toulouse-Narbonne line which are about 150circulations/day.

e) Narbonne – Perpignan subsection

- Section lightly loaded with only 102 Circulations / day. However, the number of traffic should increase with the traffic ramp-up on the Barcelona-Perpignan line.

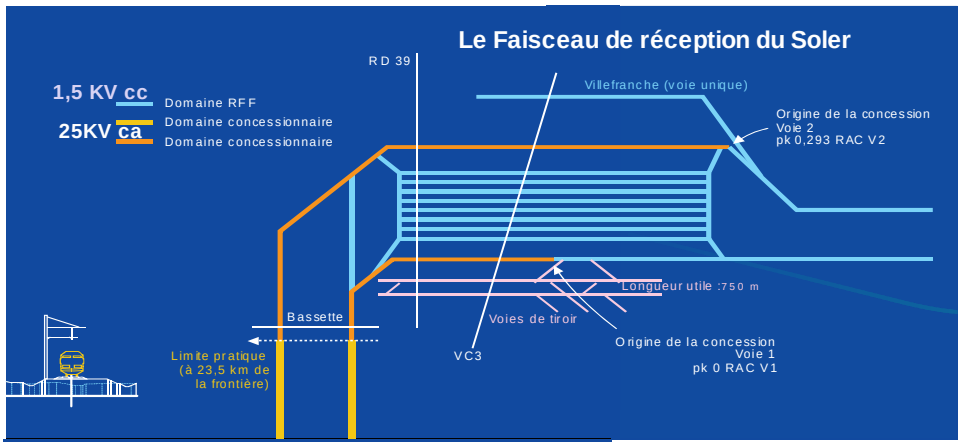
f) Perpignan – Cerbère subsection

- This is the least loaded section which can see its traffic increase rapidly, with UIC gauge standardization of a part of the Spanish network.

g) Connecting Perpignan Station to the concession TP Ferro (TPF)

- Perpignan Train Station is connected to the TPF concession from the Perpignan-Villefranche line, put to dual carriageway for the circumstance, surrounding the receiving yard Soler ("faisceau de réception du Soler").
- The power supply of the receiving yard and the connection to the Perpignan Train Station is 1,5kV cc; So there is an impossibility for a RENFE's locomotive (3 KV cc and 25 KV ca) to enter on the receiving yard, unless special arrangements, which was carried out on 4 RENFE's locomotives, type 252 who lose half of their power, imposing to have 2 locomotives.
- The locomotives are to be equipped with ERTMS and ASFA signaling.
- For the record, only two locomotives are equipped with ERTMS signaling allowing access to LGV.

Schema



4.1.4. Perpignan – Barcelona section

4.1.4.1. Traffics

According the "Observatoire Hispano-Français de trafic dans les Pyrenées - (OTP)", trans-border freight traffic in 2011 was as follows:

- Road: 45 M ton/year, equivalent to about 10.000 trucks/day
- Railway: 2,26 M ton/year, equivalent to 10÷12 freight trains/day

Concerning passenger traffic the number of trains crossing the border per each way is about 6÷9 through High Speed line and no significant traffic through conventional line in Portbou.

We do not know precisely the number of passengers crossing the border by road, but it is clearly very high especially in summer time.

Without taking into account the traffic growth for the coming years, there is a great potential for transferring traffics from road to rail if this is efficient since in this section there is double line (4 tracks) along all route.

As a critical point it has to be mentioned the sector Sant Celoni – Mollet – Barcelona because of high number of commuting trains, with more than 200 per day.

4.1.4.2. Infrastructure

a) Road

In the sector Perpignan – French-Spanish border the motorway A-9 has still pending to conclude works to have 3 lanes per way.

In the sector French – Spanish border – Palafolls, road N-II has still some sections pending of its widening.

b) Railway

4.1.4.2.1. TP Ferro granting north limit – Mollet Junction (HSL)

- This line is suitable for passenger trains up 350 km/h. Freight trains traffic is allowed even the existing slopes around 18 thousandths along different points of the route. Regarding conventional line that only has a few ramps of 15 thousandths, it represents a reduction of maximum load about 200 ton/train.
- Sector Figueres – Perpignan is granted to TP Ferro, who charges a toll to passing trains.
- Inter-operable tension of 25kV does not reach TP FERRO granting north limit, since there is a transition from 25kV (ac) to 1500V (dc) before tracks esplanade in Le Soler. Such situation penalizes the railway traffic development since tri-tension or diesel engine locomotives must be available to make the service.
- Transfer of international trains between ADIF-HS, TP Ferro and RFF is done by phone which can affect traffic flow and mislead in trains management.
- Lack of conclusion of works in the Very High Voltage (MAT) line and so primary feed networks for traction substations, creates a limitation in simultaneous number of trains in HSL, mainly because of lack of available power.
- In the sector Figueres Vilafant – Mollet Junction there is a speed limit for all trains (apparently it is a preventive safety measure which is related to freight trains load) but this especially penalizes passenger trains in HSL.
- Further, in aforementioned sector, there is a limitation up to 500 m in length of trains affecting all those trains using RENFE OPERADORA 252 series locomotives when running in ERTMS.
- Worth mention the difficult financing situation of TP FERRO, due to low number of trains using the line compared to initial forecasted level of railway traffic.

All these problems make such route not attractive especially for freight trains.

There is no passenger station in the airport of Girona-Costa Brava even it is very close to the railway HS line.

4.1.4.2.2. Perpignan – Portbou – Girona – Mollet Junction (Conventional line)

- This line joints Barcelona with Perpignan through Portbou. The features of such route show that it is useful for all kind of traffics even the different track gauge and the no availability of TALGO gauge changer in Portbou.
- Along such route the tunnels and bridges have no GC gauge so its use for Rail Motorway is very limited.
- Over the bridge of Tech River close to Elna, there is a transition from double track to a false single track (4 rails) which reduces the capacity and a speed limitation as well.
- In the sector between Vilamalla and Girona Mercaderies (conventional line) ERTMS is not in operation despite being installed (even in ADIF Network Statement it is defines as "in service"). That means to reduce the possibilities of circulating under ESG without using HS line.
- The route Girona Mercaderies – Vilamalla is the only one where third rail is installed, but without use for ESG because it only connects to HSL (Figueres Vilafant) to the north and Vilobí d'Onyar to the south, but it has no continuity to Portbou in north and to Mollet in south. In fact it only has been partially used in exceptional way (floodings in urban tunnel in Girona), since passenger trains could not use the route.
- This line has enough capacity except in Sant Celoni – Mollet – Barcelona sector, where traffic of commuting trains is very high and it is almost saturated.
- In this line are located different terminals: Cerbère, Portbou, Vilamalla, Girona Mercaderies, Granollers Mercaderies and La Llagosta. Portbou terminal neither has enough tracks in ESG nor length of 750m. Vilamalla terminal has not enough tracks and no ESG availability but it admits trains of 750m. Girona Mercaderies and Granollers Mercaderies station have a limited track esplanade with no possibility to expand. La Llagosta terminal has not ESG yet and it has to be adapted to inter-modal traffic for lengths of 750m.

4.1.4.2.3. Mollet Junction – Barcelona / Aeropuerto (HSL)

- There is no direct connection between HSL and Barcelona airport
- Sants station is almost saturated with parking, first maintenance and supply difficulties for trains starting or ending in Barcelona

4.1.4.2.4. Mollet Junction – Barcelona / Aeropuerto (Conventional line)

- No railway connection with T1 Terminal of Barcelona airport
- Sants station almost saturated

4.1.4.3. Operational management

4.1.4.3.1. High Speed Line (HSL)

Control system is ERTMS, except in Le Soler – Perpignan sector, where there is a transition to French conventional signaling system, with lateral light signaling and in-cabin KVB signal repeater system.

Inter-operability breaking because of the change of tensión from 25kV ac to 1500V dc before tracks esplanade in Le Soler, means that the locomotives must be multi-tension, hybrid ones or diesel engine ones.

This line admit freight trains, but locomotives with three control systems (KVB, ERTMS and ASFA) as well as three types of tension (1500V dc, 25kV ac and 3000V dc) are required because such freight trains have origin or destination beyond line range. This makes that cost increases .

Nowadays only RENFE Operadora is doing this route with two control system (ERTMS and ASFA) and two tension (25kV ac and 3000V dc) locomotives, which have a basic adaptation to circulate at 1500V dc to reach Le Soler, but in bad conditions in terms of power availability. As a consequence two locomotives are required to do this route which means an additional cost and a lower productivity of rolling stock as well.

Figueres – Perpignan sector to pay a high fee compared to conventional line one which means another additional cost.

According user information of Mediterranean Corridor between Barcelona and Lyon, railway freight transportation costs are almost double tan the ones between Barcelona and Madrid when the distance in km is equivalent.

There is no a coordination organism for freight trains international traffic management in cross-border area (jointly with the different requiered documents by rail operator companies) which means important delays.

Existing overcosts because of aforementioned reasons, makes that many freight trains cross the border through Portbou, despite the need to transfer containers from one train to another or the need to change the gauge of wagons.

No private rail operators use this new line; only public operator RENFE Operadora has permission, even TP Ferro allows circulations of diesel locomotives through the grant.

All these problems make that private operators do not ask for corresponding authorization.

4.1.4.3.2. Conventional line

It is an Iberian gauge line which represents a “break” in the whole transportation process for both passengers and freight when crossing the border.

The lack of coordination organism for international traffic management affects this line as well, so delays of trains can also happen.

4.1.5. TRANSPORTATION NETWORK – BARCELONA ZONE

4.1.5.1. Mollet Junction – Rubí – El Papiol – Port de Barcelona

4.1.5.1.1. Traffics

Traffics coming from most of Catalonia industrial zones, Port of Barcelona as well as from rest of Iberian Peninsula with destination or coming from other european countries converge in this section.

Traffics in Motorway B-30 and B-21 (Cinturó Litoral) are very crowded especially in peak times.

Nowadays the railway line absorbs both freight and passengers (commuting trains) traffics, with no problems of congestion (about 50÷60 trains daily).

4.1.5.1.2. Infrastructure

a) Road

From the road point of view, this section is routed by motorways B-30, A-2 and B-21 (Cinturó Litoral) at Llobregat river valley. All of them have got minimum three lanes per each way. Nevertheless they cannot absorb traffics during peak times.
Most critical points are at B-21 (Cinturó Litoral) specifically in Cornellà – Sant Feliu access and the link towards motorway C-32 and the airport.

b) Railway

From railway point of view, there is a line between Mollet and El Papiol / Castellbisbal with double track, suitable for two gauges (1435 mm y 1668 mm) through the use of a third rail.

Between Castellbisbal Junction and Port of Barcelona (Can Tunis station) it exist one line with double track and suitable for ESG and Iberian gauge, essentially for freight trains. Main operational problem is because of lack of enough tracks in ESG to prepare/dispatch trains as well as sidings for rolling stock both in Can Tunis and El Morrot stations. In this last case, the saturation has already been reached.

- Despite ERTMS is installed (even in ADIF Network Statement it is defined as “in service”), it is not operative between Mollet Junction, Castellbisbal and Llobregat River branch (route with three rails) until Can Tunis and El Morrot stations. That means to reduce the possibilities of circulating under ESG especially for other rail operators different than RENFE Operadora.
- Existing tunnels in this section are not suitable for GC gauge.

- The new forecasted link to Port of Barcelona through current FGC line has only one track and three gauges (four rails) which will represent in difficult operations as well as a low capacity according new forecasted traffics (ICL Iberia and the future transfer of El Morrot terminal in new land on the former bed of Llobregat River). Also the work itself is difficult to execute and also its possible extensions.
- Furthermore the forecasted link to Port of Barcelona through FGC line will need high costs to be adapted to GC gauge.
- In Port of Barcelona, besides already existing private ones, is still pending to build the inter-modal and train preparation terminal that should be placed on the former bed of Llobregat River.

4.1.5.1.3. Operational management

Transfer of freight trains from conventional to high speed line does not work in an agile way. There are many reasons for that, among others: lack of enough energy availability, allocation of train paths between freight and high speed trains, transition from ASFA system to ERTMS, as well as the access agreement to HSL with the Control Center of Zaragoza.

4.1.5.2. Rubí – Castellbisbal – Martorell – Railway triangle of SEAT access section

4.1.5.2.1. Traffics

In this area road traffics are concentrated in motorways AP-2 (toll) and A-2, with high density and traffic jams in peak times.

The railway line of this area belongs to Barcelona commuting trains network, connecting the city with Martorell and Vilafranca.

In the Barcelona – Martorell sector more than 200 trains run daily, so that in peak times is saturated.

It is very complicated to combine freight with passenger trains during some periods along the day.

Main international traffic generators in this area are CELSA, SEAT and SOLVAY. Railway transportation is made with Iberian gauge because of lack of connection in ESG which makes that an important part of such traffics is made by road.

4.1.5.2.2 Railway infrastructure

Right now the section between Castellbisbal and Martorell is the most important bottle neck along the Mediterranean Corridor and this will condition the operation of the entire Corridor to the south: saturation of traffics –especially commuting trains-, complex works to be done in in-servive existing tracks, lack of needed loading gauge, redefinition of tracks configuration in Castellbisbal and Martorell stations as well as accesses to surrounding private links (SEAT, CELSA, SOLVAY, etc.).

After visiting "in situ" the route between Castellbisbal and Martorell, it can be confirmed that up to now no significant works to implement ESG have been started.

- There is a specific problem with railway loading gauge in all this area. It should be highlighted the lack of free vertical distance in the tunnel of Rubí and in the new railway access to Port of Barcelona (restrictions in gauge of high parts or resigning electrification). Another critical point is the underpass under the motorway AP-7 in Castellbisbal, because of distance between tracks and between external tracks to walls (in between axis, horizontal gauge) that does not accomplish with minimum dimensions. This will be even worse when having tracks with three rails, since the two track gauges does not have the same symmetry axis.
- The tunnel between Castellbisbal – Martorell has problems with gauge and structure stability as well, which requires a complex work to solve both problems.
- The alternative to trains traffic cut during the works in section Castellbisbal – Martorell is to re-open the ancient tunnel with a single track that is currently abandoned. Before being in operation the tunnel needs some refurbishment works to be done as soon as possible. Furthermore to relocate the tracks in Castellbisbal and Martorell stations is necessary to adapt to the new situation. Up to now no activity has been detected in order to repair the ancient tunnel.
- On the other hand Castellbisbal and Martorell stations do not have siding tracks to place freight trains of 750m length.
- The urban tunnel in Martorell has also structural problems as well as possible difficulties in gauge when implementing tracks with three rails. A similar situation can occur in the tunnel of access link to SEAT.

According the experience in similar works we consider that the real time to finish all the proposed solutions in the area Castellbisbal – Martorell, is about 2÷3 years considering the dimension and the complexity of forecasted works.

4.1.5.2.3. Operational management

As it has been already said, this sector is basically a passenger commuting train line.

If the final solution were to share it with freight trains – option not recommended by FERRMED – advanced control systems with a high cost would be necessary.

Since this section is almost saturated we consider that other solutions must be taken into account because ALL Mediterranean Corridor freight traffic in this area passes through this section.

4.1.6. Access to SEAT – Sant Vicenç de Calders – Tarragona – Vila-seca section (coastal path)

4.1.6.1. Traffics

Road traffics in this area flow through AP-2 (toll motorway) and N-340 (main road). Both routes are crowded during peak times and weekends especially in summer time.

Regarding railway the daily average number of trains is about 112. Line goes parallel to coast in the section Sant Vicenç de Calders – Tarragona. This is an important touristic zone with several camping and hotels so somehow there is an opposition to the pass of freight trains especially during night periods because of noise and vibrations.

4.1.6.2. Infrastructure

a) Road

Road N-340 has only two lanes in most of its route which continuously generates traffic jams and time consuming for users.

b) Railway

After visiting "in situ" all this area, it can be confirmed that up to now no significant works to implement ESG have been started, except in one of approved links in Vila-seca Junction.

- Implementation of tracks with a third rail needs to solve the lack of gauge in tunnel of Berà (Roc de Sant Gaietà). This is an especially restrictive situation since the in-between axis distance in tracks is significantly reduced.
- According the current situation of forecasted works in this sector of Mediterranean Corridor as well as the final configuration, all freight trains will pass through coast of Tarragona province which will negatively impact in passenger traffics because of freight traffics growth. According Territorial Plan of Catalunya (area of Tarragona) it is forecasted a link between HSL and conventional line between Roda de Berà and south of Altafulla that will allow the pass of passenger trains through Tarragona urban station.
- During the visits to infrastructure it was seen that works to implement ESG in this section, neither in Tarragona urban station nor in Tarragona Classificació nor in the route until Vila-seca Junction. Such delay causes distortions in Port of Tarragona railway plan as well as in prívate companies that promote to build or adapt railway terminals in ESG (BAYER, BASF, etc.).
- According the visits the link between Tarragona – Reus line with the new path coming from Camp de Tarragona station towards Vandellós, has been forecasted with a single track, and this will create a significant bottle neck.
- The works to make possible that Tarragona urban station can receive HS trains in ESG have not started yet and so the works to adapt such station for persons with reduced mobility.

- Regarding rail access to Port of Tarragona the main problems are: exit to north of Mediterranean Corridor only through coastal path and lack of direct exit to south of Corridor for all gauges.

4.1.6.3. Operational management

- Nowadays Tarragona Classificació station is almost saturated during several periods along the day and the implementation of ESG is still pending.

4.1.7. TRANSPORTATION NETWORK – TARRAGONA ZONE

4.1.7.1. Traffics

This is a key area in railway transportation because all traffics coming from Ebro River valley and from interior of Iberian Peninsula together with traffics from Mediterranean Corridor itself converge here.
Mediterranean Corridor in this sector includes communting trains traffics of Tarragona – Reus and Tarragona – L'Hospitalet de l'Infant lines. In this last case there is only a single track for traffics about 100 trains per day which means an important bottle neck that blocks the circulation of fast trains Barcelona and Valencia.
In section Tarragona – Reus the traffic is about 80 trains per day.

4.1.7.2. Railway infrastructure

Since the railway network in this area is very complex the analysis of the infrastructure has been divided in sub-sections.

a) Tarragona – Tarragona Classificació – Port Aventura – Salou – L'Hospitalet de l'Infant sub-section

In this sub-section there is no ESG implementation works running, neither in the access to Port of Tarragona nor in Tarragona Classificació station to prepare and receive trains nor in the access to railway terminals around.

They are still pending to define the works to do once the new sector Vandellòs – Vila-seca Junction is in operation. Among them the new station of Salou-Port Aventura or its connection towards Vila-seca and the HSL Barcelona – Madrid, as well as how to deal with current commuting trains service until L'Hospitalet de L'Infant.

b) Sant Vicenç de Calders – Roda de Berà – Perafort sub-section (interior path)

- No works to re-open railway traffic from Roda de Berà to Perafort. From La Pobla de Montornès to Perafort there is continuity in the route but from Perafort to El Morell the track is interrupted because of the construction - by Ministry of Public Works - of link between Camp de Tarragona - Vandellós line with HSL Madrid – Barcelona – French border in Camp de Tarragona.

c) Perafort – Constantí – Reus – Vila-seca sub-section

- No works to restore railway traffic from Perafort towards El Morell or the construction of an alternative path if it is the case.
- No works to implement ESG from El Morell, Constantí or existing railway terminals around.
- No works to implement ESG in Reus even for HS and in the route to Vila-seca.

d) Camp de Tarragona – Reus Central (airport) – Vila-seca Junction sub-section

- There are inappropriate slopes for freight traffic.
- The platform of the station in the area of Reus Central new station is still pending to be built and now it is interrupting the continuity of new line Camp de Tarragona - Vandellós.
- There is a total interruption of Camp de Tarragona - Vandellós new line because of a wall belonging to a hydraulic work around the crossing at different level with Tarragona – Reus line. This interruption should be solved to keep the continuity of Camp de Tarragona – Vandellós line.
- There are three forecasted tracks in the already existing platform leaving the future Reus Central station (two to Vandellós and one to Vila-seca). The track to Vila-seca has no continuity to be built. Such track is the one to access Tarragona in ESG as well as to Salou/Port Aventura. Also it would be an access to future BASF terminal, as well as to Port of Tarragona once the Perafort – Roda de Berà is in operation.

4.1.7.3. Operational management

Four different control sectors converge in this area (Barcelona, Valencia, Zaragoza and Zaragoza HS) which make very difficult both works management and traffic regulation.

4.1.8. Vila seca Junction - Vandellòs – Castelló section. Branch to Tortosa

4.1.8.1. Traffics

Road traffics flow through AP-7 (toll motorway) and N-340 (main road). Since share of railway in this route is only about 3% the number of daily trucks circulating in such sector is over 11000.

Regarding railway passengers the figure is over 3 million per year including both ways (Barcelona – Alicante y Alicante – Barcelona).

Such figures could be much bigger if a HSL were available. It is difficult to understand that two of the most important cities in Spain (Barcelona y Valencia) do not have the link between them while the connections of other minor cities with Madrid go ahead, but with very poor traffics. It must be considered that the route Barcelona – Valencia takes three hours minimum for a distance of about 350 km. The route Barcelona – Madrid in high speed with direct trains takes only 2,5 hours with a distance 620 km.

The number of daily trains circulating the route Vandellós – Castelló is about 60, a very low figure because the traffics of both passengers and freight is concentrated in motorway (4 lanes) and road (2 lanes) because of limitations in railway performances.

4.1.8.2. Infrastructure

a) Road

Main road N-340 has no 4 lanes in most of the route in this area.

b) Railway

- According the visit to infrastructure the route from Vandellós to Vila-seca is being built only in Iberian gauge. As Vila-seca Junction is defined, **the connection from the south of Mediterranean Corridor towards Tarragona and the reverse way will have a sector of 1.45km with a single track** that will generate a double bottle neck in both Camp de Tarragona – Vandellós line and Tarragona-Reus line.
- It is still under construction an important part of rail platform in Cambrils area. Also the long lead time to build the new station of Cambrils Nord as well as the evidences of lack of activity in the new stations of L'Hospitalet de l'Infant and Mont-Roig del Camp, show a probable delay in the start of rail service in this sector or a restricted service since there will not be available stations.
- The public information from Ministry of Public Works states that the sector between Vila-seca and Castelló will be in ESG. After the claim of some shippers, ports and rail operators to keep the Iberian gauge it has been proposed to add a third rail in one track. The delay on the gauge decision in this sector can affect passenger services from and to Tortosa.
- The current access to Port of Castelló does not easily connect with its extended south zone and additionally there are many railway level crossings in the area of El Grau.

4.1.8.3. Operational management

Operational management in this section is complicated because of the single track sector Tarragona and L'Hospitalet de l'Infant that makes to properly schedule trains crossings.

4.1.9. Castelló – Valencia – FORD Factory section

4.1.9.1. Traffics

Road traffics mainly flow through AP-7 and A-7 motorways.

Metropolitan traffics in Valencia area often saturate such roads.

Trucks traffics coming from Murcia and Andalucia regions are very high.

Concerning railway passenger lines of commuting trains have high daily traffics about 60 trains each way in the route Sagunto – Valencia and about 98 trains per day each way in the route Valencia – Silla. In the route Silla – Xàtiva 65 trains per day each way and in the route Xàtiva – La Encina 20 trains per day each way.

Regarding freight the more significant traffics are in the sector Valencia – La Encina where traffics from the Mediterranean Corridor and traffics to the center of Iberian Peninsula converge there.

But in any case there are infrastructural and management limitations that makes the use of railway less competitive so transportation by road is higher.

4.1.9.2. Railway infrastructure

- From its initial construction the urban tunnel of Castelló has a simple and very economical system that allows changing from the iberian gauge into ESG with no problem. But to implement a third rail in existing track it would be necessary to affect partially the tunnel floor infrastructure which means an important complexity (civil works, safety facilities, electrification and tracks configuration).
- Access to Port of Sagunt in Iberian gauge is made directly from Castelló – Valencia line by means of a shearing. This represents interferences in an area with traffics of communting trains, regional trains and long distance trains. Furthermore such access goes through private properties (SIDMED factory) and it only allows dealing with southern part of Port.
- Similarly to Castelló, the undergrounding of tunnel of Cabañal in Valencia has a simple and very economic system that allows changing from the Iberian gauge into ESG with no problem. But to implement a third rail in existing track it would be necessary to affect partially the tunnel floor infrastructure which is a very difficult work because of shallow water. It is very well known the difficulties of works that this tunnel had when it was built because of shallow water problems so there is a high risk of equilibrium break, that has to be taken into account when adding a third rail in the existing track.
- Access to FORD factory from the new freight line coming from Valencia – Sant Isidre and from the link branch of Valencia – La Font de Sant Lluís is still being built in its infrastructure work stage as well as the link between Sant Isidre and La Font de Sant Lluís. Also it is pending to install the rail to get ESG until Almussafes (FORD Factory) and safety facilities electrification as well. Besides all these pending actions it is necessary to point out that there are significant slopes that avoid traffics of freight trains.
- Sagunt area has no intermodal terminal.

4.1.10. FORD Factory – Xàtiva – La Encina – Monforte del Cid – Crevillente/Alicante section

4.1.10.1. Traffics

a) Road

Road traffics in this section flow through AP-7 and A-7 motorways with a significant traffic of trucks - particularly in A-7 - being agro-alimentary products coming from Region of Murcia and Eastern provinces of Andalucia the ones with higher volumes. In average more than 1000 trucks leave this area daily with destination to center and north of Europe.

b) Railway

The line Valencia – La Encina – Alicante as a whole (pasengers and freight) including trains with origin and destination in the center of Iberian Peninsula, shows a daily traffic of 98 trains each way in the route Valencia – Silla, 65 trains each way in the route Silla - Xàtiva, 20 trains each way in the route Xàtiva – La Encina and 16 trains each way in the route La Encina – Alicante. Regarding freight due to inefficiencies of railway and the lack of ESG makes that share in the route La Encina – Alicante is one of the lowest in Spain.

4.1.10.2. Infrastructure

a) Road

The path in the area of Font de La Figuera to link motorway A-35 (Albacete – Valencia) with motorway A-31 (Madrid – Alicante) is not in operation.

b) Railway

- New HSL between Valencia and Xàtiva is being built.
- It is forecasted to adapt the existing conventional line into ESG in the route between Xàtiva and La Encina Junction in order to provide continuity to HS line, so freight trains will use the ancient single track line (adapted to double gauge both Iberian and ESG). Such adaptation and finishing of this line has an important delay. The same situation occurs in conventional line between La Encina and Alicante as well as in the new freight line that goes in parallel with HS line between Monforte del Cid and Crevillente. In this last case it is still pending to start with the project. Such delays in these three lines mean a risk for starting on forecasted time with the circulation of freight trains in ESG coming from Valencia and from north of Mediterranean Corridor (and vice-versa) with destination to Alicante, Murcia and Almeria (and also to the center of Peninsula).
- On the other hand the gauges in tunnels of conventional line between Valencia and Monforte del Cid (especially Elda's one) seems to be not enough for intermodal transportation of semi-trailers and big size containers.
- At present there is no an efficient and economical solution to avoid way reversing in San Gabriel for passenger trains leaving Alicante Término with direction to Murcia without the construction of a new path. Freight trains leaving from Port of Alicante to Murcia and Almeria have no problem since they do not need to reverse the way. But freight trains going to center of Peninsula and to Valencia have significant slopes. The same happens in conventional line between La Encina and Alicante.

4.1.10.3. Operational management

Operational management is affected since in the conventional line route Murcia/Cartagena – Alicante it is necessary to reverse the way in Alicante-San Gabriel station to continue to La Encina.

4.1.11. Crevillente – Santomera – Murcia – Access to Cartagena/Escombreras section

4.1.11.1 Traffics

a) Road

Important traffics flow through A-7 and other complementary motorways because of high density of population in the area as well as freight transportation coming from the area itself and from Andalucia to the north and vice-versa.

b) Railways

It must be pointed out as a significant figure the traffic of communting trains in the sector Alicante – Murcia – Lorca with 28 trains per day each way (single track line) and in the sector Murcia – Cartagena with 20 trains per day each way (single track line).

Passenger railway for routes like Barcelona – Murcia/Cartagena is not almost used due to slowness and bad time schedule of trains.

Concerning freight, even there are high potential traffics (only in Agro-food sector about 7,5 million ton are exported yearly with origin in Murcia and Almeria areas) lines with single track without electrification, lack of tracks with ESG as well as the inefficiency in management, make that the percentage of rail transported load compared the whole land transportation systems is almost zero.

4.1.11.2. Infrastructure

a) Road

Road infrastructure in this area is quite good but in some sectors of AP-7 would be convenient to increase the number of lanes especially in the surroundings of city of Murcia. There are important problems in A-7 and A-30 motorways at north of the city that must be solved.

b) Railway

The situation of this area concerning railway is very bad. Conventional lines have only single track with no electrification.

- The HSL coming from Monforte del Cid has been built over the Murcia – Alicante conventional line in this sector. The new line is undergrounded through Orihuela and whren leaving the urban tunnel direction to Murcia the track rises rapidly

to cross over fluvial transfer Tajo – Segura. Such slopes make the line not suitable for freight trains because of additional costs.

- Regarding the Murcia – Alicante conventional line (including problems when passing through tunnel of Elche) it is necessary to refurbish it otherwise trains leaving Murcia to the north of Mediterranean Corridor will have to make a detour through Chinchilla or to use the new HSL where are significant slopes.
- Nowadays there is no direct link from Cartagena/Escombreras to Alicante and Valencia and vice-versa. This situation forces to freight trains leaving Cartagena with direction to Alicante to go through Murcia-Estacion del Carmen (passengers), reach Murcia Mercancias, reverse the way and pass again through Murcia-Estación del Carmen to continue to Alicante.
- Railway connection with docks of Puerto de Cartagena must be improved.

4.1.11.3. Operational management

Operational management is affected since the freight trains with origin in Cartagena/Escombreras to Alicante must go up to Murcia Mercancias to reverse there the way.

4.1.12. Murcia – Lorca – Pulpí – Águilas section

4.1.12.1. Traffics

Road traffics are concentrated in A-7 with the same comments as in point 4.1.8.1.

Railway traffics are mainly passengers commuting trains (22 trains per day with single track).

4.1.12.2. Infrastructure

Regarding road the comments are the same as in point 4.1.8.2. The same comments are also for railway.

- In this part of Mediterranean Corridor there is a single track without electrification. In some sectors a new platform and track has been constructed (to adapt to new high performance line with destination Almeria) so that double or even triple track will be available in most parts of the route. As a consequence the operation with ESG with no major problems can be considered in the coming future.
- There is a lack of a multimodal terminal able to properly channel the traffics from agro-alimentary sector of the area by rail.

4.1.13. Pulpí – Almería section

4.1.13.1. Traffics

There are only road traffics since there is no railway connection. These road traffics flow through A-7 and A-92 motorways (last one links with first one coming from Granada).

4.1.13.2. Infrastructure

- New high performance railway line for both passengers and freight is under construction. A line with double track is forecasted in original project. But according last news it seems that it will be finally constructed with single track which represents another discrimination of coastal branch of Mediterranean Corridor in front of interior branch.
- On the other hand slopes about 20 thousandths are forecasted in this line which is not suitable for freight trains.

4.1.14. INTERIOR BRANCH OF MEDITERRANEAN CORRIDOR

(connection Barcelona – Tarragona – Lleida / Caspe – Zaragoza)

NOTE: The analysis has been done from Tarragona since the sector between Barcelona and Tarragona is already analyzed in coastal branch of Mediterranean Corridor (4.1.5. a 4.1.7.)

4.1.14.1. Tarragona – Reus – Lleida – Zaragoza section

a) Road network

It is still pending to conclude A-27 motorway, at least until Montblanc and the connection with AP-2 as well.

b) Railway network

There is Iberian gauge in all section and sidings do not admit trains of 750m length.

The intermodal terminal in Pla de Vilanoveta (Lleida area) does not admit trains of 750m length and it has is no enough capacity for potential traffics of agro-food products as well as other products when using the terminal as a distribution center for the zone.

Freight terminals in Zaragoza should be adapted to admit trains of 750m length, particularly TmZ and General Motors factory in Figueruelas.

4.1.14.2. Tarragona – Caspe – Zaragoza section

All section has Iberian gauge and most of the sidings do not admit trains of 750m length.

4.1.14.3. Sant Vicenç de Calders – Valls – Picamoixons section

All section has Iberian gauge and sidings do not admit trains of 750m length.

4.1.15. Global problems

In general tunnels gauge is not enough to admit trains loading trucks, trailers or big containers. Sidings do not admit mainly trains of 750m length and more.

The implementation of ESG in conventional railway lines does not prioritize the North-South way which somehow seems there is no coordination in the execution of works.

Signaling systems and electrical tension are different in every country.

There is a very low land transportation share for railway especially in freight transportation.

There is also unbalancing of flows so that the conclusions of study carried out by World Economic Forum 2009 at EU level are still valid: about 24% of vehicles run empty and the rest run with only with 57% of load in terms of weight.

All this shows that in general the transportation system within the EU and particularly in the Mediterranean Corridor (which is more peripheral) is expensive and not sustainable.

No practical measures are applied in order to reach the objectives of White Book of Transport, stated by EU regarding greenhouse gases emissions.

5. Proposals and recommendations

5.1. Proposals to solve founded problems (Action Plan)

- Nomenclature of execution proposed terms:

IMMEDIATE: 6 months ÷ 1 year

SHORT TERM: 2 ÷ 3 years

MEDIUM TERM: 4 ÷ 6 years

LONG TERM: 7 ÷ 10 years

5.1.1. Turin – Lyon section

PRIORITY: LONG TERM

New Railway base tunnel

5.1.1.1. Lyon metropolitan Area

PRIORITY: MEDIUM TERM

Railway by-pass for freight

5.1.2. Lyon –Marseille

PRIORITY: SHORT / MEDIUM TERM (2÷4 years)

IT MUST BE NOTED THE IMPORTANCE OF THE ESTABLISHMENT OF THE EUROPEAN RAIL TRAFFIC MANAGEMENT SYSTEM (ERTMS), CONSISTING IN THE STANDARDIZATION OF 27 NATIONAL CONTROL TRAIN SYSTEMS, THE IMPLEMENTATION SHOULD BE MADE HOMOGENEOUSLY ON THE CORRIDOR

To date, the installation of this signaling system has not started and deployment prospects are not known.

Economic actors in the Greater South-East of France call for the establishment of a general deployment strategy.

THE STRUCTURAL PROJECTS IN THE SECTION MARSEILLE - LYON IN PERSPECTIVE OF LANDS PLANNING AND TERRITORIES COMPETITIVENESS

If this section does not arise today technical difficulties, investments are being deployed and others are yet to be set at its extremities to improve the overall performance of the corridors and increase the use of alternatives modes to the road.

PRIORITY: SHORT TERM (2÷4 years)

THE IMPROVEMENT OF RAILWAY CONNECTION OF THE GRAND PORT MARITIME DE MARSEILLE

Projects of access improvement and rail capacity to connect port:

In particular, we will discuss the following projects of SNCF network that the Port is co-financing with the State and local authorities:

- The re-opening of a railway connection (Mourepiane in Marseille) to provide direct access to the port, including the container terminal, the national rail network, structuring project for the combined transport terminal Mourepiane;
- Clearing the rail motorway gauge from Marseille, with connection in Avignon on the Perpignan-Bettembourg line, commissioning since 2007;
- The increase in rail capacity connection with marine terminals in the basin of Fos-sur-Mer to support the rise of traffic, particularly containers.

Development projects of combined transport terminals:

These are the key points of the massification of flows, given that already more than 100 regular train shuttles are serving each week the Port of Marseille-Fos directly or via hubs. The projects are:

- The combined terminal of Mourepiane, in the basins of Marseille. Modern and efficient equipment, it will welcome trains of 1000m long. It will promote consolidation of flows by pooling together the maritime container traffic of the port and the flows serving the city of Marseille;
- The railway motorway terminal, in synergy with this combined terminal, will propose a rail alternative to road traffic, especially toward the destination of the North and North-East of France and Europe, reducing the load on the road network in the Rhône Valley in particular;
- Combined transport terminal of the industrial port zone of Fos-sur-Mer to promote the frequency and to diversify the destinations of rail services offered to customers in the port, increasing the relevance of this method of pre/post routing boxes. To do this, it will aggregate maritime and continental combined transport flows and diffuse flow of industrial port zone of Fos.

MEDIUM TERM

THE RESORPTION OF THE RAIL BOTTLENECK OF LYON: RAIL BYPASS OF LYON URBAN AREA (NORTH AND SOUTH PARTS) CAPACITY EXPANSION OF THE NODE RAIL OF LYON AND CREATION OF A RAILWAY MOTORWAY PLATFORM

The Railway Bypass of the Agglomeration of Lyon will answer many features:

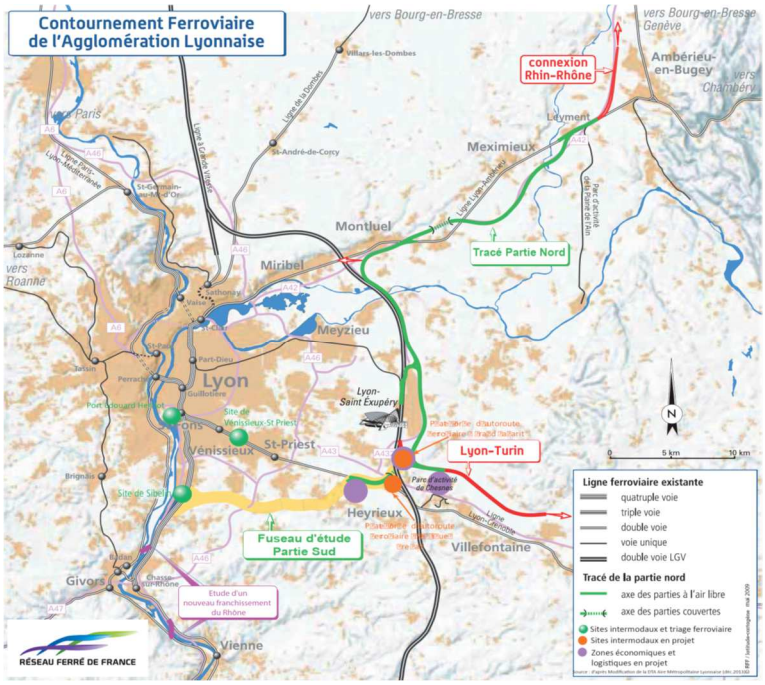
- It will fill the missing link of European rail freight network and the new Trans-European Transport Network.
  Lyon is at the interface between two corridors, whether it's TEN-T or European Rai Freight:
  - The Railway Bypass of the Lyon agglomeration is the link articulating the North-South Corridor "North Sea - Mediterranean" and the West-East Corridor "Mediterranean" of the "core network" as defined by the new European transport policy (TEN-T).
  - Moreover, Lyon is at the heart of this European Rail Freight Network, registered on two freight corridors, the corridor ❷ (Rotterdam - Lyon - Marseille [operational by November 2016]) and Corridor **6** (Spain - Marseille - Lyon - Budapest), these rail corridors

are now aligned with the TEN-T corridors. This positioning justifies the strategic nature of the proposed Railway Bypass of Lyon, capable of resolving congestion of the Railway Node of Lyon, being currently the weak link in the system.

- It will reduce the congestion of the Lyon Railway junction providing a capability answer to rail congestion of the Lyon node that is supporting today an average of 1 100 trains daily circulations.
- The Railway Bypass of Lyon agglomeration will transfer on its route the majority of the freight traffic currently transiting through the heart of Lyon, while absorbing a growing share of rail freight, particularly the traffic generated by trade with Italy via the Lyon-Turin. It will be for the rail motorway the route avoiding the center of Lyon. Finally, it will receive the circulations of the major rail line that don't need to serve the center of Lyon.
- It will help to improve the attractiveness of the Port of Marseille in its large hinterland, allowing maritime traffic both imports and exports, reaching with a high performance European production and consumption areas in the service of business competitiveness. To do this, the Port of Marseilles supports this project of Bypass, emphasizing the major challenge that is the completion of the southern section as soon as possible and in the closest possible schedule as the North part which has been already declared of public utility. It is this part of the project that will provide rail operators and their customers using the port of Marseille-Fos, some new and necessary features.
- It will improve the connection of industrial and logistics sites in the East and South of the town, in particular to strengthen the performance of the logistics activities in the Lyon area and the attractiveness of current pole and project of the plain of Saint Exupéry.
  Today, many large industrial and logistics zones are connected to the rail network with a large number of sidings (ITE). The Railway Bypass of the Lyon Agglomeration will be connected to existing large logistics and industrial areas (Vallée de la Chimie, zones of Vénissieux- Corbas et Parc des Chesnes) and tomorrow (South of Lyon - Saint Exupéry, zone of Quatre Chênes).
- It will provide a powerful connection to the Sibelin Yard, one of the three national yards, optimizing the great features already offered by the site. Maintain and develop the site of Sibelin, powerful and modern production facilities, are priorities since it concentrates in one place all rail operations on one of the most modern sites in Europe (weighing wagons, followed laser speed to adjust the brake, 44 training tracks and 2x14 receiving and departure tracks, some of 800m, computerized sorting, open 24h/24, processing 220 trains per day, etc.).
  It is an equipment that goes with the development of rail freight at a European scale and is a fundamental asset to allow Lyon to keep a leadership position in the European logistics business. This is a major tool for the performance of long-distance trains from the port of Marseille-Fos who can operate traction relay.
- It will contribute to the optimal use of existing and future multimodal platforms of the region. As such, the combined transport sites of Venissieux and Saint-Priest, Port Edouard Herriot (which rail and road accessibility are constrained), may, via the Lyon-Grenoble line, take the North CFAL for their destination Savoie-Italy, Switzerland, Germany, northern France and northern Europe, bypassing the heart of the Node Railway of Lyon and multimodal platforms Portes-Les-Valence and Vienne Sud Salaise-Sablons via the South CFAL and then its Northern part. The project equipment (Rail motorway platform of Grenay and wide gauge rail motorway platform in the south of Saint Exupéry on the link Lyon-Turin

Transalpine) may be constituted a rail motorway network by connecting to the north-south axis through the CFAL.

- However, even if the CFAL will have a positive impact on the number of trains crossing the Railway node of Lyon, it must be accompanied by shorter-term measures to improve access to the terminals in the Lyon area to/from the South : trivialization of connecting Saint-Fons by direct arrivals and departures from Venissieux terminal to the South of France, infrastructure accessible at port Edouard Herriot, new siding tracks around the agglomeration in order to improve the circulations flow of freight trains ...



5.1.3. Nîmes – Montpellier – Béziers – Narbonne – Le Soler – Perpignan – Cerbère section

a) Sub-section Montpellier – Béziers

PRIORITY: MEDIUM TERM

- This section has been formalized by the Minister for Transport Mr. Cuvillier as a mixed LGV passengers and freight.
- We believe that this section could be detached from the whole of the new Montpellier-Perpignan line in order that a request of DUP could be quickly made for this section.
- Following the DUP, the rapid completion of this section will become feasible.

b) Sub-section Béziers – Narbonne – Rivesaltes

PRIORITY: MEDIUM/LONG TERM

- This section was officially dedicated LGV passengers, however the traffic in the section Béziers-Narbonne is already heavy (140 circulations / day).

c) Connection from TPF to the historic line

PRIORITY: SHORT TERM

- The characteristics of the line are not yet determined, dedicated to passengers or LGV mixed.
- If LGV dedicated to passengers, the connection to the historical line would be at Rivesaltes.
  This solution, if it were adopted, would bring the concession freight trains to cross Perpignan station; this area, few urbanized poses no major problems. Perpignan Train Station is crossing at a speed of 60 km / h, so there is no incompatibility, with the exception of a long speed recovery, especially for long trains. However, this solution does not respect the FERRMED standards that require bypassing cities for freight trains.
- It is more likely that the chosen solution will be the second: LGV mixed with a connection at Rivesaltes. The economic situation being difficult, the previous solution could not be accepted only temporally, and only if the space is frozen for the passage of a freight line along the LGV; one or two tracks.
- The priority is to deal with the “bottleneck of Soler" and to supply the receiving yards in 25KV CA, expensive solution (between 10 and 20 Million Euros - RFF estimation).
- To provide the SNCF and RENFE with “tri-power” Locomotives. This type of engine already exists: it is the BB 36300 model, stationed in the deposit of Dijon (a certain number of these machines are used only as "dual power"). In order to limit the number of these locomotives, they should be limited to a defined area: Barcelona section, Soler Section or Narbonne, Narbonne representing a cross-section it would be more interesting to choose this section. These locomotives will be equipped with ERTMS signaling.

5.1.4. Perpignan – Barcelona section

a) Road network

PRIORITY: IMMEDIATE

- To finish the extensión to 3 lanes per way in motorway A-9 in the sector Perpignan – French-Spanish border.

PRIORITY: SHORT TERM

- To accelerate the works for widening (extensión to 4 lanes) of main road N-II in province of Girona.

b) Railway network

HSL Perpignan – Mollet Junction

PRIORITY: IMMEDIATE

- It is necessary to finish the connection works of Very High Voltage line with sub-stations in Llogàia d'Àlguema and Riudarenes in order to get them in operation as soon as possible to solve the problem of lack of enough electrical power.
- Concerning the limitation to 500m in length of trains in sector Figueres Vilafant – Mollet Junction since there is no clear data about the reason for such limitation, a technical and regulatory solution for ERTMS in affected locomotives must be defined in order to allow trains of 750 m.
- With regard to limitation in HSL (affecting all passenger HS trains as a preventive safety measure when crossing with freight trains) it is convenient to finish as soon as possible all ongoing projects so HS trains can reach the original defined speed of the 350 km/h.
- Transfer of international trains among ADIF-AV, TP Ferro and RFF should be automatic.
- The reasons why there are operating over-costs as well as the continuity to Lyon of this line should be investigated and so to propose adequate countermeasures.

PRIORITY: SHORT TERM

- All TP FERRO grant should be 25kV as well as track esplanade in Le Soler (Perpignan) to avoid the double traction used now by RENFE Operadora.

PRIORITY: SHORT / MEDIUM TERM (3÷4 años)

- Construction of passenger station in the airport of Girona-Costa Brava

Perpignan – Portbou – Girona – Mollet Junction conventional line

PRIORITY: IMMEDIATE

- ERTMS must be in effective operation in sector Girona Mercaderies – Vilamalla so that other rail operators will be motivated to install ERTMS in their locomotives. By doing so they can circulate without installing ASFA system.

PRIORITY: SHORT TERM

- Adapt to GC gauge (or at least to GB1) all tunnels and bridges in all section.
- Change from Iberian gauge to European Standard Gauge (ESG) one of the tracks in sector Vilamalla – Portbou (coastal track). The objective is to facilitate traffics of heavy trains and dangerous products in ESG starting in Girona Mercaderies. The

availability of polyvalent sleepers between Vilajuïga and Portbou as well as the need of track renewal between Vilamalla and Vilajuïga make such proposal very convenient and economical. As a consequence siding tracks for crossing and overtaking of trains will be necessary in Vilajuïga and Llançà stations.
Both the sector with a third rail (Girona – Vilamalla) and the change of gauge (Vilamalla – Portbou) make easier to solve speed limitations of passenger trains in HSL and the length of freight trains as well.
At both sides of French-Spanish border there is a wide social opinion about having a passenger trans-border commuting train service. This happens in the so called "Catalan Euro-district" (Girona – Perpignan), that would be favored because of inter-operability in track gauge.
The aforementioned option could be done by following other existing operating models in Europe (for instance the Metrolor line between Luxembourg and French Lorena region).
Finally a suitable alternative should be analyzed to preserve any right of Granting TP FERRO because of ESG implementation in one track in crossborder pass in Portbou - Cerbere.

- Endow Cerbère terminal of some track sidings for trains of 750m length. In Portbou station some track sidings for 750m trains shoul be installed. Extend track esplanade in Vilamalla and install ESG. Adapt to ESG some of existing tracks in Girona Mercaderies. Implementation of ESG, adaptation of some tracks for 750m trains and extend tracks esplanade in La Llagosta terminal.

PRIORITY: MEDIUM TERM

- It is necessary to extend ESG in conventional line from Girona until Barcelona area to facilitate the absorption of future railway freight traffics. In order not to disturb commuting trains, a specific solution (to be defined) in sector Sant Celoni – Mollet must be considered since it is the most saturated and then the one to most suffer the transfer of freight trains from HS line. Alternative solutions could be the construction of one or more paths and additional tracks is some sector as well.
- Adapt some tracks in Granollers Mercaderies station for 750m trains.

5.1.5. TRANSPORT NETWORK – BARCELONA ZONE

5.1.5.1. Mollet Junction – Barcelona / Airport (HSL)

PRIORITY: MEDIUM TERM

- Construction of a link from HSL to Barcelona-El Prat airport

5.1.5.2. Mollet Junction – Barcelona / Airport (Conventional line)

PRIORITY: SHORT TERM

- Construction of new link with T1 and T2 terminals in Barcelona-El Prat airport.

5.1.5.3. Mollet Junction – Rubí – El Papiol – Port de Barcelona section

a) Road network

PRIORITY: IMMEDIATE

- Finish the link between A-2 and B-30 motorways.

PRIORITY: SHORT TERM

- Finish the access to Barcelona Port.
- Finish the construction of B-40 motorway.

b) Railway network

PRIORITY: IMMEDIATE

- ERTMS should be in operation in the route between Mollet Junction, Castellbisbal and Llobregat branch (route with three rails) until Can Tunis and El Morrot stations in order to stimulate other rail operators to install ERTMS in their locomotives. By doing so they can circulate without installing ASFA system.

PRIORITY: SHORT TERM

- Construction of new access to Port of Barcelona using partially the existing FGC line (triple gauge) by ensuring load gauge GC.
- Adapt to load gauge GC all tunnels in this sector.
- Starting of construction works of multimodal terminal in Port of Barcelona to be placed on the former bed of Llobregat River.

PRIORITY: MEDIUM TERM

- When constructing the new Access to Port of Barcelona other difficulties can appear so that a possible measure to compensate such difficulties could be the implementation of ESG in a part of the route of FGC line (from Martorell-Vila until Suria and Sallent mines) as well as the construction of a link towards Castellbisbal station (ADIF). Such works would make no necessary the use of metric gauge in the access to Port of Barcelona, which means that all operations in the new access would be simplified. Also the link with ESG between FGC – ADIF in Castellbisbal would provide immediate access to SEAT, SOLVAY and CERESTAR by connecting their own terminals with Mediterranen Corridor (independently of works evolution in order to adapt/repair Castellbisbal and Martorell tunnels).
- Finish the construction of multimodal terminal in Port of Barcelona.

5.1.5.4. Rubí – Castellbisbal – Martorell – Railway triangle of SEAT access section

a) Road network

Main actions to be implemented are described in point 5.1.5.3.

b) Railway network

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Works to adapt the ancient and not used tunnel with single track (but with enough loading gauge) in Martorell – Castellbisbal and are urgent, in order to assure the continuity of ESG for freight trains from Rubí as well as to arrive to SEAT Factory as soon as possible and so start with return of required investment.
- Such link must be in ESG and connect with existing line just before the bridge over Llobregat River. Here a third rail in one of the tracks till railway triangle of SEAT access will be necessary. FERRMED considers that by doing so, it will not be needed to implement the gauge in the existing line until Martorell nor make works to refurbish Castellbisbal tunnel. Instead of such works it is better to start with external path works as is remarked in the proposed SHORT TERM actions.
- Construction of an additional underpass under the motorway AP-7 in Castellbisbal, to solve the problem caused by distance between tracks and distance to underpass wall (in between axis, horizontal gauge) and so to accomplish with existing safety regulations.
- Implementation of ESG until Martorell-SEAT and the access to SEAT Factory.

PRIORITY: SHORT TERM

- The definitive solution to problems caused by lack of gauge and the saturation of sector Martorell – Castellbisbal is the construction of external path in sector from Castellbisbal Junction just after the southern part of access to SEAT branch. **Right now this is the most important bottle neck along the Mediterranean Corridor**. Loading gauge restrictions make that rail motorway systems cannot be developed as it happens with the electrification, Valencia and Murcia as well as to Port of Barcelona or even to Center of Peninsula. If such external path were built following FERRMED Standards freight traffic would be boosted and the fluency in the existing commuting trains would clearly improve.
- It is urgent to restyle Castellbisbal and Martorell stations to allow trains of 750m length. In the case of Castellbisbal, the functionality of the station has to be considered taking into account network topology and different train destinations, distinguishing between freight and passengers trains.

PRIORITY: MEDIUM TERM

- To duplicate the tracks in the link triangles between the line coming from Martorell and the lines destination Mollet and Barcelona City / Port of Barcelona, in Castellbisbal junction.

5.1.6. Railway triangle of SEAT access – Sant Vicenç de Calders – Tarragona – Vila-seca section (coastal line)

a) Road network

PRIORITY: SHORT TERM

The main road N-340 has to be extended to 4 lanes as it is forecasted from many years ago.

b) Railway network

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Execution of track works to implement ESG from Railway triangle of SEAT access up to Sant Vicenç de Calders. In order to minimize sectors with third rail solution it would be convenient to build a third or a fourth track where it is possible that could be used as flexible sidings.
- Implementation of ESG (third rail) between Sant Vicenç de Calders and the urban station in Tarragona / Port of Tarragona.
- Finish construction works of connection branch with ESG Tarragona urban station with Reus Central station (Airport) and with new line between Camp de Tarragona – Vandellós in order to provide passenger services in HS to Barcelona and to Zaragoza and Madrid from the urban station of Tarragona. Also this branch is an useful exit in ESG to north for Port of Tarragona and for private existing terminals (BAYER, BASF, etc.) as well, once the refurbishment of Sant Vicenç de Calders – Rodà de Berà – Perafort line is completed.
- Implementation of ESG in urban station of Tarragona, in Tarragona Classificació station and along the route until Vila-seca Junction and accesses to railway terminals in Port of Tarragona and in private companies around (BAYER, BASF, etc.).
- Start with renovation works of Tarragona urban station in order to be able to receive HS trains in ESG and the adaptation of its platforms for reduced mobility persons.

PRIORITY: SHORT / MEDIUM TERM (3÷4 years)

- Link between HSL and conventional line should be done from La Pobla de Montornès / Roda de Berà and connect with conventional line at south of Altafulla, as it is forecasted in Catalunya Territorial Plan for Tarragona area. It means a definitive solution that in addition would use partially the initial proposal of refurbishment of Reus - Roda de Berà line and will meet social expectations of different sectors in Tarragona coastal area.
- Keeping in mind the forecasted traffics of both passengers and freight through coastal branch in Tarragona area, as well as the need to have an appropriate regulation freight trains station, it is convenient that in the near future freight trains will have to circulate through the interior route Sant Vicenç de Calders – Roda de Berà – Perafort (linking with new line Camp de Tarragona – Vandellós) once its refurbishment is finished.

An additional solution to significantly reduce freight trains circulating through coastal line is the construction of a link in Picamoixons between the line Reus – Lleida and the line Valls – Picamoixons. The link between the line Reus – Caspe and the line Reus – Lleida by-passing Reus should be also executed, in order not to have freight trains to and from center and north of Iberian Peninsula through Reus station, Vila-seca and coastal Tarragona area as well.

5.1.7. TRANSPORTATION NETWORK – TARRAGONA ZONE

a) Road network

PRIORITY: SHORT TERM

Main aspects to be developed are as follows: widening (4 lanes) of main road N-340 in all sector, improve the connection between city of Tarragona and Camp de Tarragona station and conclude the works of motorway A-27 (Tarragona – Montblanc) as well as its connection to AP-2 motorway.

b) Railway network

5.1.7.1. Tarragona – Tarragona Classificació – Port Aventura – Salou – L'Hospitalet de L'Infant sub-section

PRIORITY: IMMEDIATE

- Elaboration of a new proposal to define the actions to carry out in existing line up to L'Hospitalet de L'Infant as well as the ones corresponding in Salou – Port Aventura station.

PRIORITY: SHORT TERM

- Connection of aforementioned line from BAYER terminal area to Vila-seca and Camp de Tarragona – Vandellós line for both passengers and freight. Specifically as a way out to north from Port of Tarragona and other railway private terminals linked to existing conventional line towards Vandellós.

5.1.7.2 Access to Port of Tarragona sub-section

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Implementation of ESG in Port of Tarragona, in Tarragona Classificació station and in accesses to railway terminals in this area.

5.1.7.3. Sant Vicenç de Calders – Roda de Berà - Perafort sub-section (interior path)

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Execution of both project and works (with third rail) of sector Sant Vicenç de Calders – Roda de Berà.

PRIORITY: SHORT TERM

- Start with administrative and environmental procedures, project and works execution for route Roda de Berà – Perafort (double gauge).
- A general station for railway operations regulation of Mediterranean Corridor in Perafort must be defined. It should be said that nowadays there is no station with similar performance at south of Pyrenees. To have a similar facility one must arrive until Nîmes. Additionally such station would make possible to have trains of 1500m length. The suggested placement is strategic since to continue to Valencia, Murcia and Almeria, to center of Iberian Peninsula and to Port of Tarragona would be possible.

PRIORITY: MEDIUM TERM

- Start with administrative and environmental procedures, project and works execution for railway path of Roda de Berà.
- Once traffics show symptoms of saturation doubling of track from Perafort towards railway path of Roda de Berà and Sant Vicenç de Calders.

5.1.7.4. Perafort – Constantí – Reus – Vila-seca sub-section

PRIORITY: SHORT TERM

- Restore railway traffic in old line from Perafort to El Morell or alternatively construction of a new railway path with double gauge.
- Implementation of double gauge in existing operative line from El Morell towards Constantí and railway terminals around as well as the continuity to Reus and Vila-seca.
- When Constantí terminal will have ESG it could play an important role for multimodal train transfer from Iberian gauge to ESG and vice-versa. This would mean to have a second facility of such type besides Cerbere's one. By doing so light freight trains coming from areas with Iberian gauge lines would be able to choose using the HSL between Mollet and Perpignan instead of passing through Portbou.

5.1.7.5. Camp de Tarragona – Reus Central (airport) sub-section –Vila-seca Junction

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Construction of track platform in Reus Central station area.
- Restoration of hydraulic works that are blocking the route of Camp de Tarragona – Vandellós line.

PRIORITY: SHORT TERM

- Modification or re-styling of existing excessive slopes for freight traffic considering both technical and economic reasons.
- Construction of pending track platform from Reus Central towards Vila-seca as well as its continuity to Tarragona urban station. This track will serve also to Port of Tarragona, to railway private terminals around and to Salou – Port Aventura, or even further south through the new connection in BAYER terminal area to Vila-seca.

5.1.8. Vila-seca Junction – Vandellòs – Castelló section. Branch to Tortosa

a) Road network

PRIORITY: SHORT / MEDIUM TERM (3 ÷ 4 years)

Provide 4 lanes the main road N-340 along its route in this area.

b) Railway network

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Finishing of works of both platform and track in Cambrils area.
- Construction of Cambrils Nord, Montroig del Camp and L'Hospitalet de L'Infant stations.
- Adapted resolution to the new railway situation of Mediterranean Corridor concerning Branch to Tortosa by implementing ESG.
- **The connection from the south of Vandellós – Camp de Tarragona railway path to Tarragona and vice-versa should be in double track**, to avoid generating a double bottle neck in such path as well as in Tarragona-Reus line.
- Implementation of ESG until Castelló included. Change into ESG northern access to Port of Castelló from El Grau.

PRIORITY: SHORT TERM

- Convert existing line to ESG considering at the same time double gauge (with a third rail) in sea side track.
- Southern link of Port of Castelló should be in double gauge through third rail.
- Check the possibility to connect northern link of Port of Castelló with southern link to avoid freight trains circulating through passengers undergrounded station of Castelló.

PRIORITY: MEDIUM / LONG TERM (6÷7 years)

- New HSL Tarragona – Castelló.

5.1.9. Castelló – Valencia – FORD Factory section

a) Road network

- New road access to Valencia-Font de Sant Lluís.

b) Railway network

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- ESG fulfilment in Port of Valencia and Font de Sant Lluís Terminal.
- Implementation of a third rail in both tracks of conventional line.
- Start-up of new freight line from Valencia-La Font de Sant Lluís and Valencia-Sant Isidre towards FORD Factory.

PRIORITY: SHORT / MEDIUM TERM (3 ÷ 4 years)

- Construction of new branch of access to Port of Sagunt to solve existing problems by creating a public access to both current facilities and new port expansions without affecting railway facilities of SIDMED. The construction of such new access has to be linked to a regulation tracks esplanade to allow railway operation in Port as well as to the direct access to general railway network.
- It is necessary the construction of a intermodal terminal in Parc Sagunt to avoid circulation of several trains through center of city of (tunnel of Serreria) and additionally operations in Port of Sagunt will be strength.
- Implementation of Parc Central Project in Valencia with a new north-south tunnel to separate high speed and commuting trains traffics from the rest so that the tunnel of Serreria would be used mainly for freight.

PRIORITY: MEDIUM / LONG TERM (6÷7 years)

- New HSL Castelló – Valencia

PRIORITY: LONG TERM

- Construction of by-pass in city of Valencia (western path) to avoid pass of freight trains through urban tunnels. Furthermore such tunnels are used by commuting trains, regional trains and long-distance trains, which means that the fluency of traffics can be affected at medium term.

5.1.10. FORD Factory – Xàtiva – La Encina – Monforte del Cid – Crevillente section

a) Road network

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

Finish the construction of link between A-35 and A-31 motorways in Font de la Figuera area.

b) Railway network

- **High Speed Line**

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

New sector HSL Monforte del Cid – Crevillente.

PRIORITY: SHORT TERM

- Finish works of sector between Valencia and Xàtiva.
- Reconversion to ESG of current conventional line between Xàtiva and La Encina to preserve the continuity of HS line until connecting with HSL Madrid – Alicante. To do so it is necessary to re-open in parallel the old single conventional line and adapt it to double gauge (Iberian and ESG) to allow pass of freight and regional passenger trains.

- **Conventional line**

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Construction of a direct line for freight to Benalúa from the La Encina line (coming from Valencia and Albacete) in order to improve the access to Port of Alicante.
- Comprehensive treatment of commuting trains line Alicante – Murcia (sector Alicante – Elche). Such modification should mean to eliminate way reversing at San Gabriel, the inclusion of a station in the airport of Alicante (El Altet), doubling track in urban route of Elche and the inter-connection of commuting train lines with HSL in the new station of Elche-Matola.
- Commuting trains Alicante – Murcia should be in ESG with electrification of 25kV since they will mainly use the HSL between Crevillente and Murcia.

PRIORITY: SHORT TERM

- Re-opening and re-styling of old single conventional line and adaptation to double gauge (Iberian and ESG) between Xàtiva and La Encina by keeping in mind the corresponding sidings for trains of 750m length.

- Implementation of double gauge (with third rail) in conventional line La Encina – Monforte del Cid – Alicante by keeping in mind the corresponding sidings for trains of 750m length.
- Modification of loading gauges in all tunnels between Valencia and Monforte del Cid, specifically Elda's one, to adapt them to inter-operable load gauge GC. In case of difficulty or excessive costs to do so try to get the higher gauge over GB1.
- In the sector Monforte del Cid – Alicante line with third rail should arrive to Puerto of Alicante to provide an exit for freight in ESG and Iberian gauge as well.

PRIORITY: SHORT / MEDIUM TERM (3÷4 years)

- Construction of a conventional line for freight running in parallel to layout of new HSL between Monforte del Cid and Crevillente in order to assure continuity to La Encina – Monforte del Cid line to Murcia and Almeria. This line was already studied by Ministry of Public Works but never granted.

5.1.11. Crevillente – Santomera – Murcia – Access to Cartagena/Escombreras section

a) Road network

PRIORITY: SHORT TERM

- Arrange properly the road access to docks of Port of Cartagena.

PRIORITY: MEDIUM TERM

- Expanding the number of lanes of motorways A-7 between Elche – Murcia – Alhama and A-30 between Archena – Cartagena.

b) Railway network

- **High Speed Line**

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- Conclude works of new HSL connecting Alicante and Murcia.
- Perform the works to connect Murcia and Cartagena in ESG through third rail (or an additional parallel track) to allow the arrival of both HS and freight trains in ESG to Cartagena through existing line that should be previously re-styled and so to short the route.
- Continue with works to extend HSL to Lorca and Pulpí

- **Conventional line**

PRIORITY: IMMEDIATE / SHORT TERM (6 months ÷ 2 years)

- In this sector, where it is possible, keep current line operational since HSL is being built mainly over on top of such line. For freight trains, what is necessary to do to keep the Orihuela's sector under Tajo – Segura transfer should be done. A specific line for freight parallel to A-7 motorway has to be built and it is quite clear that in the meantime pass of freight trains between Crevillente and Murcia has to be done by using the new HSL (to avoid a detour through Chinchilla in Iberian gauge). Furthermore the HSL will have to be used by passenger commuting trains between Alicante and Murcia so that rolling stock should be adapted to ESG and electrical tension of 25kV.
- In order to facilitate the routing of freight trains from Port of Cartagena/Escombreras to Alicante and Valencia, and so avoiding pass through Murcia-El Carmen station, a direct link with Murcia – Alicante line should be constructed in El Regueron area.

PRIORITY: SHORT / MEDIUM TERM (3 ÷ 4 years)

- Construction of a new railway line for freight, in parallel to A-7 motorway, from Crevillente towards Murcia. Arriving at Santomera area perform a bifurcation to Cartagena and to Murcia, following in parallel to northern path of A-7 motorway until north of Alcantarilla, where the line will connect to Murcia – Albacete line and continue to Lorca through new already executed routes.

5.1.12. Murcia – Lorca – Pulpí – Águilas section

- **Railway network**

PRIORITY: SHORT TERM

- Adaptation to ESG and electrification of current line by considering a minimum of three tracks between Murcia and Pulpí (two tracks for HS and a complementary one to absorb local traffics).
- Commuting trains Murcia – Lorca – Pulpí – Águilas should be in ESG with tension of 25kV.
- Continue with works of construction of HSL suitable for freight traffic between Murcia and Pulpí (and continuing towards Almeria).

PRIORITY: LONG TERM

- Construction of a new high performance line (refurbishment with new layout of existing former line) between Lorca / Pulpí, Baza and Granada.

5.1.13. Pulpí – Almería section

- **Railway network**

PRIORITY: SHORT TERM

- Construction of a multimodal terminal in Pulpí area, also useful for rail motorway, in order to allow transportation by train a significant part of agro-food production from the local area. If we consider that railway absorbs only by 17% of traffic, 4 trains of 750m length per day and per way would be needed. This Terminal could give service, as well, to a wide territory of Murcia and Almería, so that the railway traffic could be significantly increased.
- Finish the construction of HSL Murcia – Almeria with infrastructure for two tracks along the route, even in some sector only one track is provisionally installed. Where possible, smooth outstanding slopes up to limit of 15 thousandths.
- Solve the railway connection of Port of Almeria in double gauge: ESG for traffics to north and Iberian one for traffics to center of Peninsula through Granada.

PRIORITY: MEDIUM TERM

- Re-styling and implementation of ESG in Almeria – Granada line.

PRIORITY: LONG TERM

- Construction of new coastal high performance mixed line in sector Almeria – Motril to provide railway transportation to agro-food productions of the area (El Ejido and Costa Tropical) as well as to traffics generated by Port of Motril. Also passenger traffic should be kept in mind since once continuity to Malaga is completed will be very significant.

5.1.14. INTERIOR BRANCH OF MEDITERRANEAN CORRIDOR

NOTE: Proposals and recommendations are made from Tarragona, since for sector between Barcelona and Tarragona have been already made in the part corresponding to coastal Mediterranean Corridor (5.1.5. to 5.1.7.)

5.1.14.1. Tarragona – Reus – Lleida – Zaragoza section

PRIORITY: SHORT TERM

- Include in Trans-European Railway Core Network Tarragona – Reus – Lleida – Zaragoza line.

- Incorporate ESG in sector Tarragona/Reus – Lleida including "in triangle" connections with Reus – Caspe and Sant Vicenç de Calders – Valls – Picamoixons lines.
- Adapt sidings for at least 750m trains in sector Tarragona – Lleida as well as the intermodal terminal in Vilanoveta.
- Adaptation of tunnels in sector Tarragona/Reus – Lleida to loading gauge GC (or at least GB1).

PRIORITY: SHORT / MEDIUM TERM (3÷4 years)

- To start the works to build a new multimodal Terminal en El Segrià region.
- Incorporate ESG in sector Lleida – Zaragoza by considering all freight terminals including General Motors Factory's one.
- Adapt sidings of this sector to minimum 750m trains as well as the involved terminals.
- Adaptation of tunnels/bridges in this sector to load gauge GC (or at least GB1).

5.1.14.2. Tarragona – Caspe – Zaragoza section

PRIORITY: MEDIUM TERM

- Incorporate ESG in all section.
- Adapt sidings for minimum 750m trains.
- Adaptation of tunnels/bridges in this sector to loading gauge GC (or at least GB1).

5.1.14.3. Sant Vicenç de Calders – Valls – Picamoixons section

PRIORITY: MEDIUM TERM

- Incorporate ESG in all section.
- Adapt sidings for minimum 750m trains.
- Adaptation of tunnels/bridges in this sector to load gauge GC (or at least GB1).

By applying all these actions in this section distance between Barcelona and Zaragoza will be shorten and also pass of freight trains through Tarragona area with destination to Ebro River valley, center and north of Iberian Peninsula will be avoided.

5.1.15. GLOBAL ACTIONS

- **Railway network**

PRIORITY: SHORT TERM

- Availability of enough sidings along the route from Turin to Almeria and from Barcelona to Zaragoza that will allow pass of 750m freight trains. Adapt also all intermodal terminals for this type of trains.
- Make a reservation of space in both sidings and terminals so length of trains can be progressively extended up to 850m, 1000 and 1500m.
- Allocate international freight traffic coordination organisms interconnected properly and interlinked with ERA (European Railway Agency) as well.
- Create observatories on both saturation and railway demand orientation in most crowded areas.

  Such observatories already exist in France particularly in Paris – Lyon and Nimes – Perpignan areas.

  In case of Spain such observatories must be created in the area of influence of cities of Barcelona and Valencia.

  In Italy should be the same in Turin – Venecia sector.

  A proper relationship among all observatories linked to Mediterranean Corridor should be established through the Coordinator responsible and so unify the observation criteria.

  Such observatories should be constituted by organisms from national, regional and local Administration as well as by infrastructure managers, manufacturing companies, rail operators, chambers of commerce, employer associations, unions… and so interchange information with the observatory of EU CORE NET CITIES PLATFORM / FERRMED concerning logistics and transport activities.
- In Spain, nominate a national coordinator from Ministry of Public Works that will be responsible for management of all planned works in Mediterranean Corridor to finish them in due time.
- Constitution of an international scope Committee to promote new railway routes in Mediterranean Corridor and its area of influence (from or to any destination within EU) in order to decrease transportation costs and decrease congestion in motorways. In this Committee, under the Corridor Coordinator responsibility (and FERRMED collaboration) chambers of commerce, multimodal logistics and rail operators, infrastructure managers, big shippers, ports, etc. should be represented.
- To update the Freight traffic, it is also necessary to have a commercial service available for customers. For example it would be desirable that the SNCF restore this service at the Port of Barcelona.
- Actions defined by the Committee will serve as input for concerned observatories on saturation and demand orientation.
- The “FERRMED – EU CORE NET CITIES Tribunes” can be useful to impel such Committees in the EU Core Network and make the corresponding follow up of results achieved as well.
- Development of a powerful Strategic Logistics Plan at EU level to get a more efficient and sustainable land transportation system in order to have a better flow balancing and so optimize the splitting between transport modes. To do so

a key aspect is "open data" availability concerning all freight transportation, from one to another destination by means of any transportation mode as is stated in FERRMED Declaration on "Transport Flows Balancing Improvement through Standards, Open Data and Smart Applications" as of March, 4th 2014.

PRIORITY: MEDIUM / LONG TERM (6÷7 years)

- Implementation in a progressive way of all FERRMED Standards.

6. ADDITIONAL POTENTIAL TRAFFICS

➢ **FREIGHT**

Among other sources:

- Increase of inter-continental trade (its impact in Mediterranean ports)
  - Expected growth in coming years: 3÷5% yearly
- Mediterranean ports as southern gateway of EU
  - Expected share evolution in next 7÷10 years with regard to total (North Sea + Mediterranean): from 27% to 35÷40%
- Agro-alimentary products
- Automotive industry
- Chemical industry
- Iron and steel industry
- Tile industry
- Raw materials (particularly marble and potash)

- Expected impact in Italian/French border: 30% of share (long term), 78 trains/day (600 net tons)
- Expected impact in French/Spanish border: 20÷25% of share (medium/long term), 60÷72 trains/day (600 net tons)

➢ **PASSENGERS**

Additional destinations

Among others:

- Genève – Barcelona/Valencia
- Zurich – Barcelona/Valencia
- Milan – Turin – Barcelona/Valencia
- Genoa – Barcelona/Valencia
- Bordeaux – Barcelona
- Montpellier – Barcelona – Murcia/Cartagena – Almeria

Existing destinations

Increase frequency reducing lead times

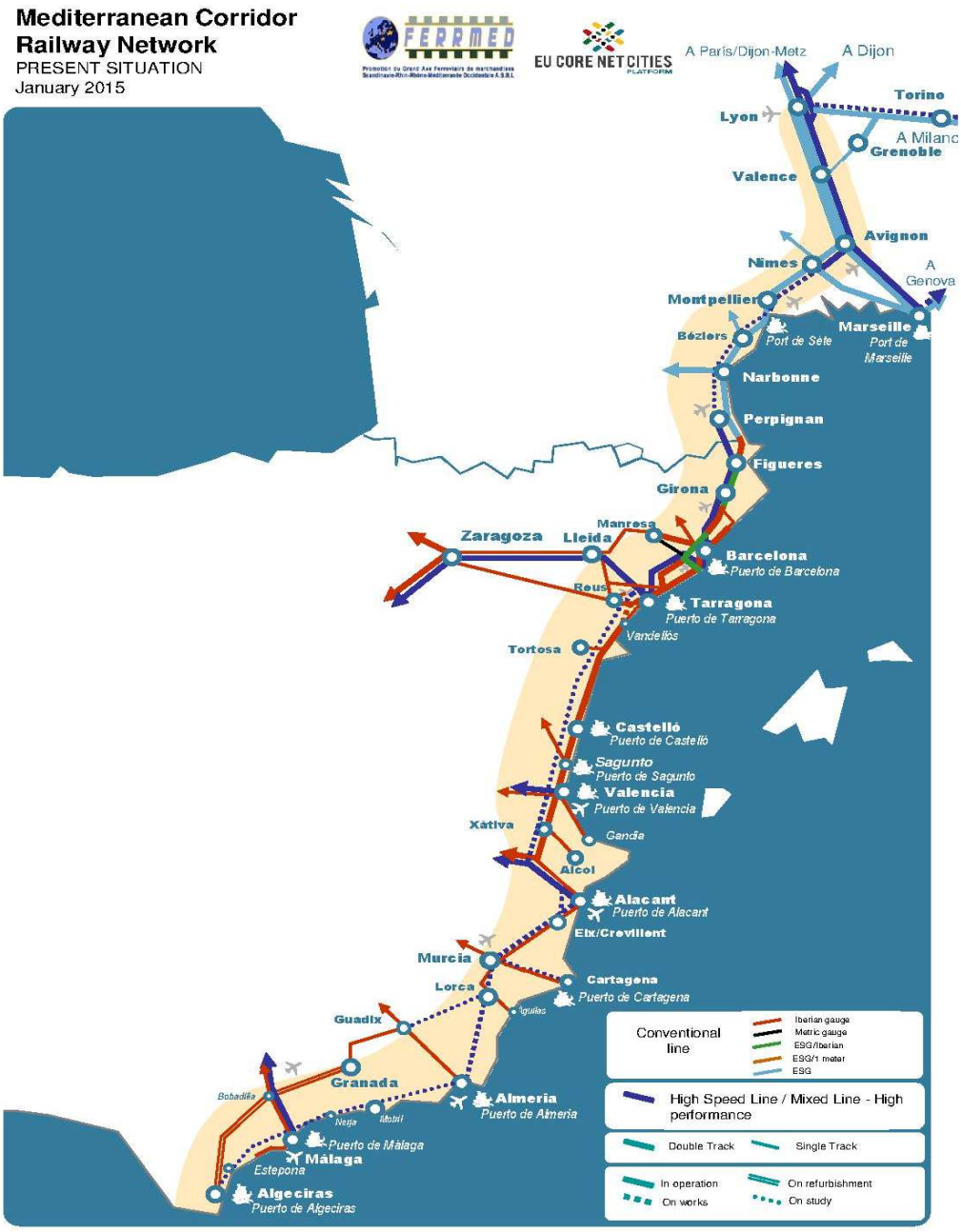
7. MAIN CONCLUSIONS

- Investments in Infrastructure have to be made where major socio-economic impact is achieved.
- Investments in Mediterranean Corridor have high socio-economic impact and strategic incidence.
- To attain the forecasted socio-economic benefit, the action plan proposed by FERRMED and EU Core Cities Platform, has to be accomplished.
- No more delays in planned works that have to be duly coordinated (globaly and at member State levels).
- Observatories about railway performance, international committee to promote railway routes, one organism to coordinate international train paths and bottom-up Tribunes, are issues that have to be taken into consideration.
- Gradual FERRMED Standards implementation.
- Truly free competition is a key as well.
- A powerful Logistics Strategic Plan has to be developed at EU level, in order to get land transportation more efficient and sustainable.

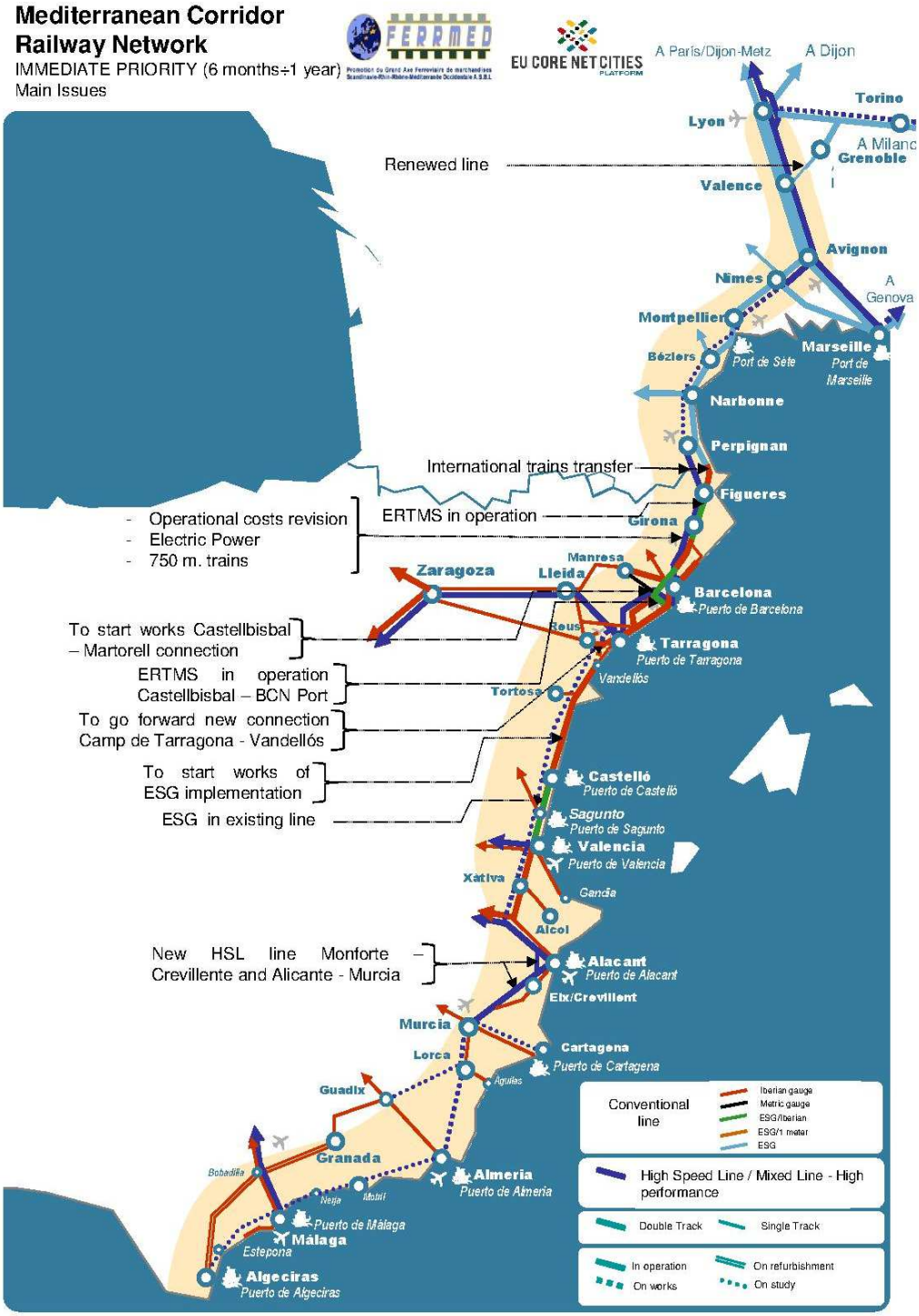
8. ANNEXES (SCHEMES)

8.1. MEDITERRANEAN CORRIDOR SCHEMES

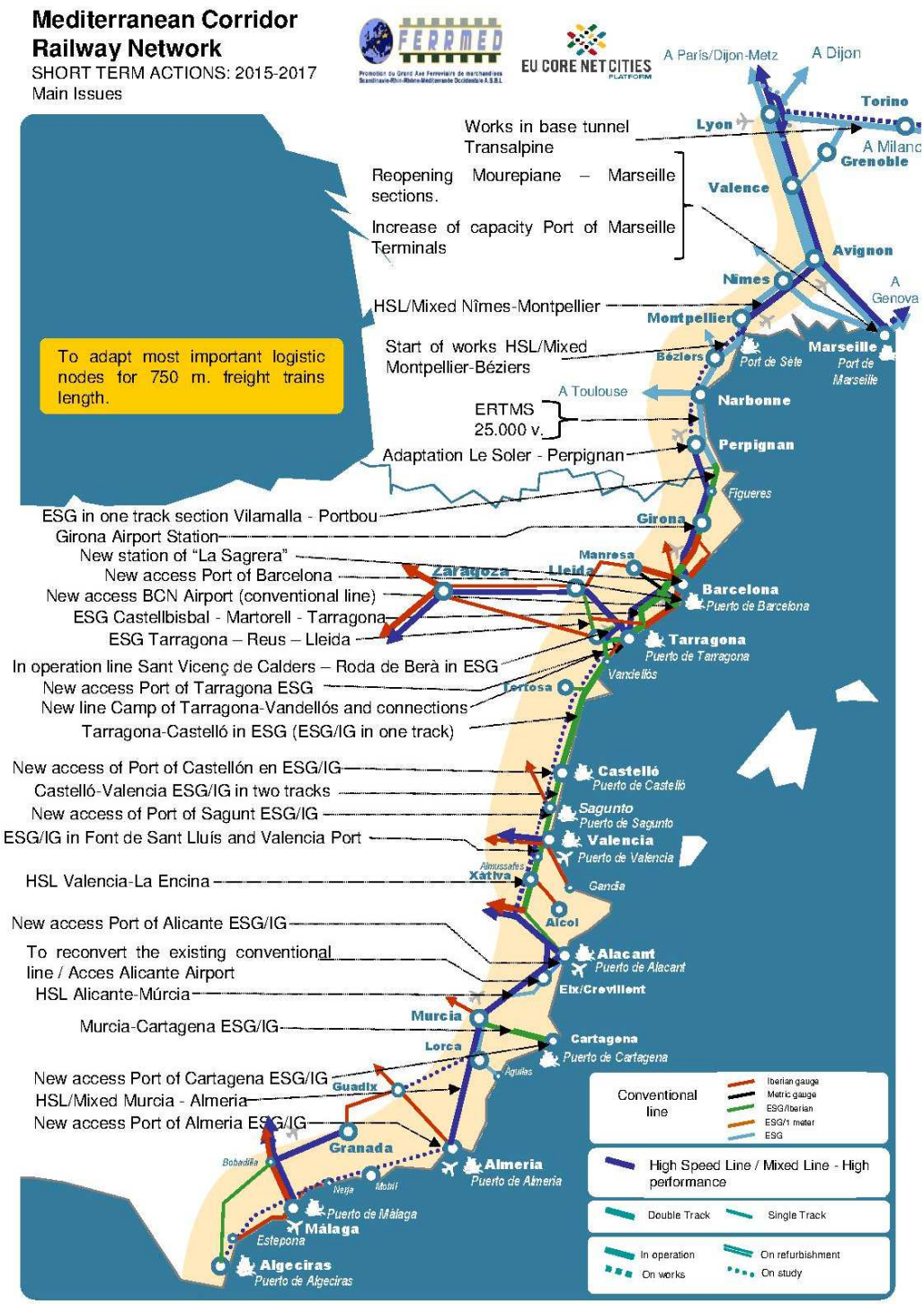
8.1.1. PRESENT SITUATION



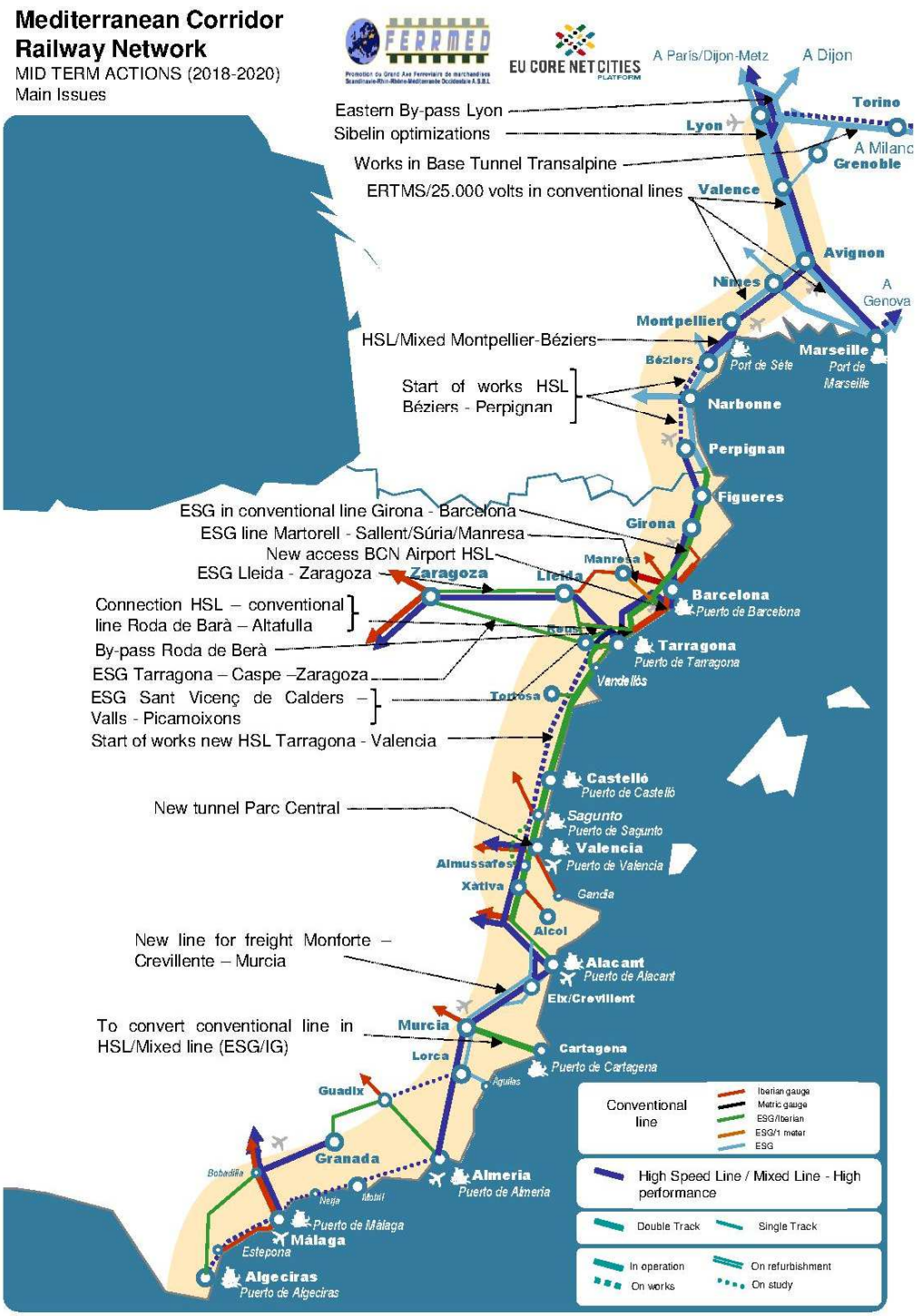
8.1.2. PRIORITY: IMMEDIATE



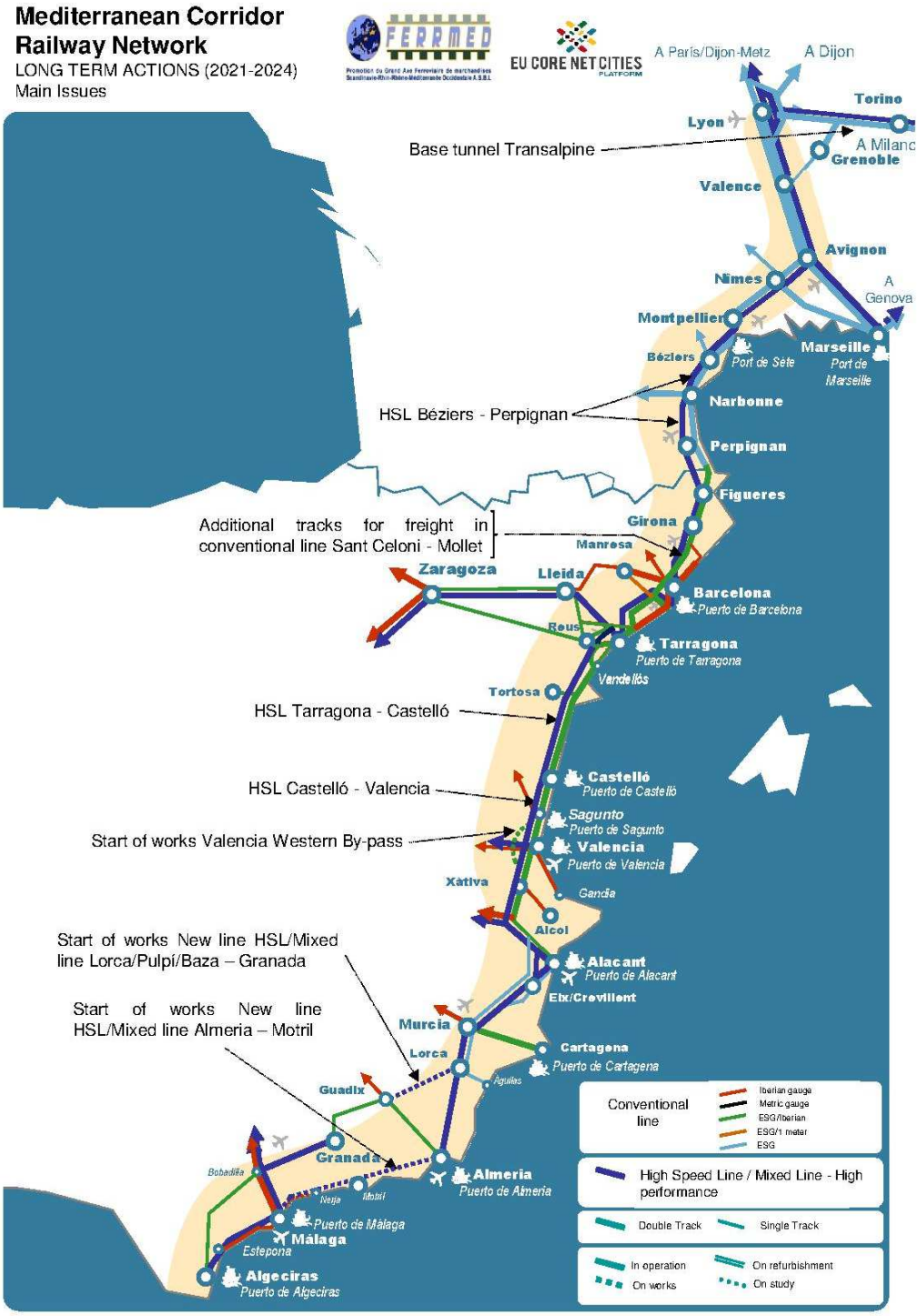
8.1.3. PRIORITY: SHORT TERM



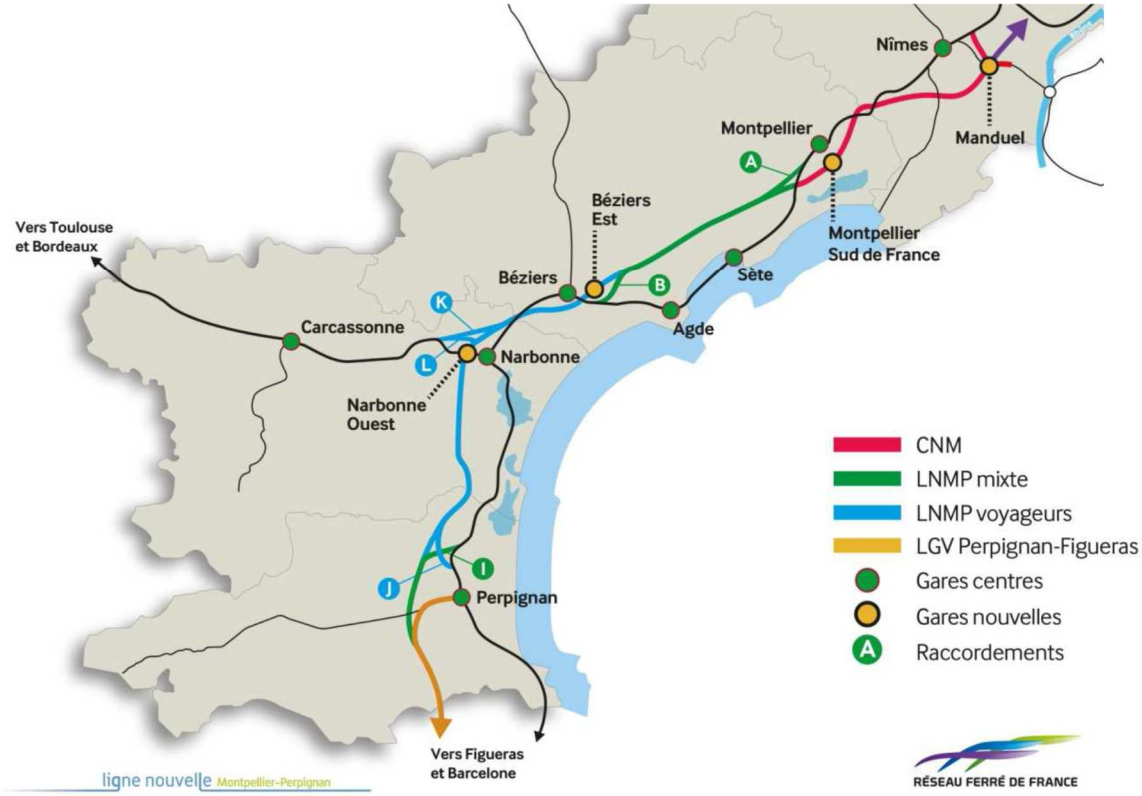
8.1.4. PRIORITY: MEDIUM TERM



8.1.5. PRIORITY: LONG TERM

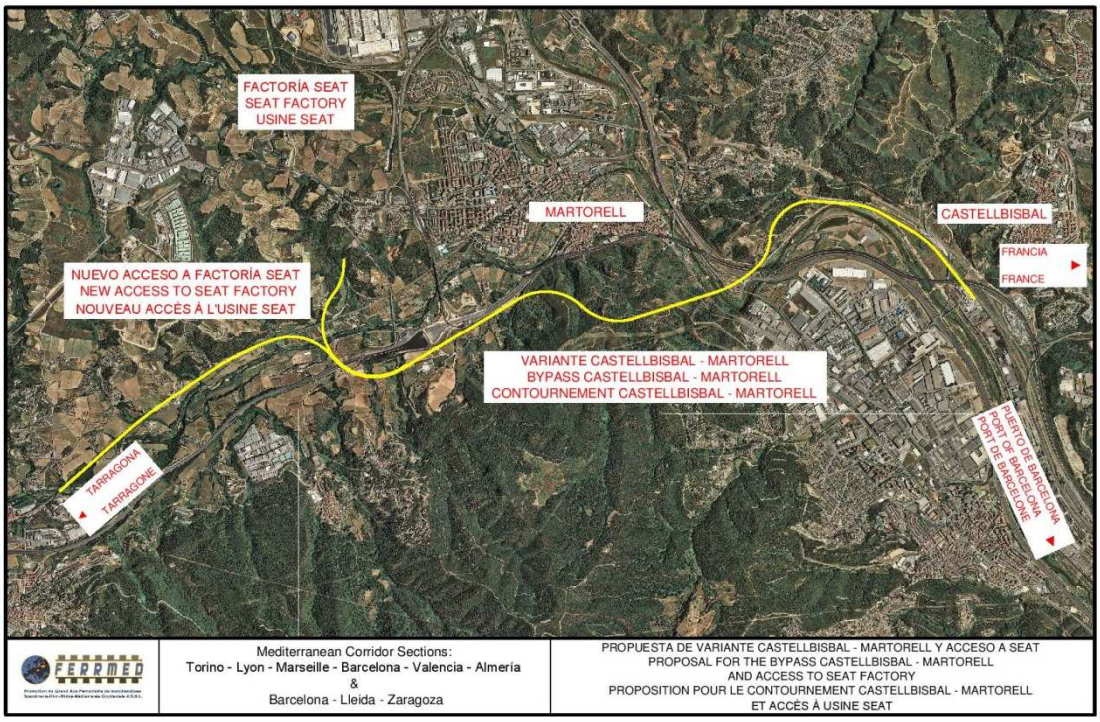


8.2. MONTPELLIER – PERPIGNAN NEW LINE PROJECT

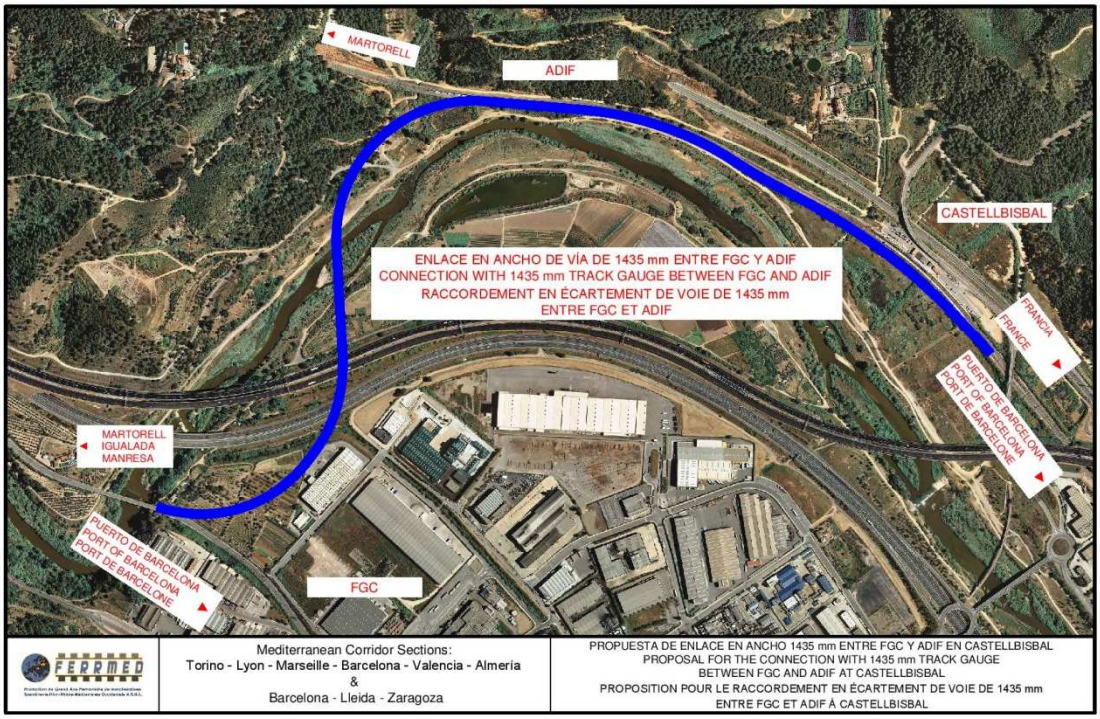


8.3. SCHEMES OF SECTIONS OF BARCELONA AND TARRAGONA AREA

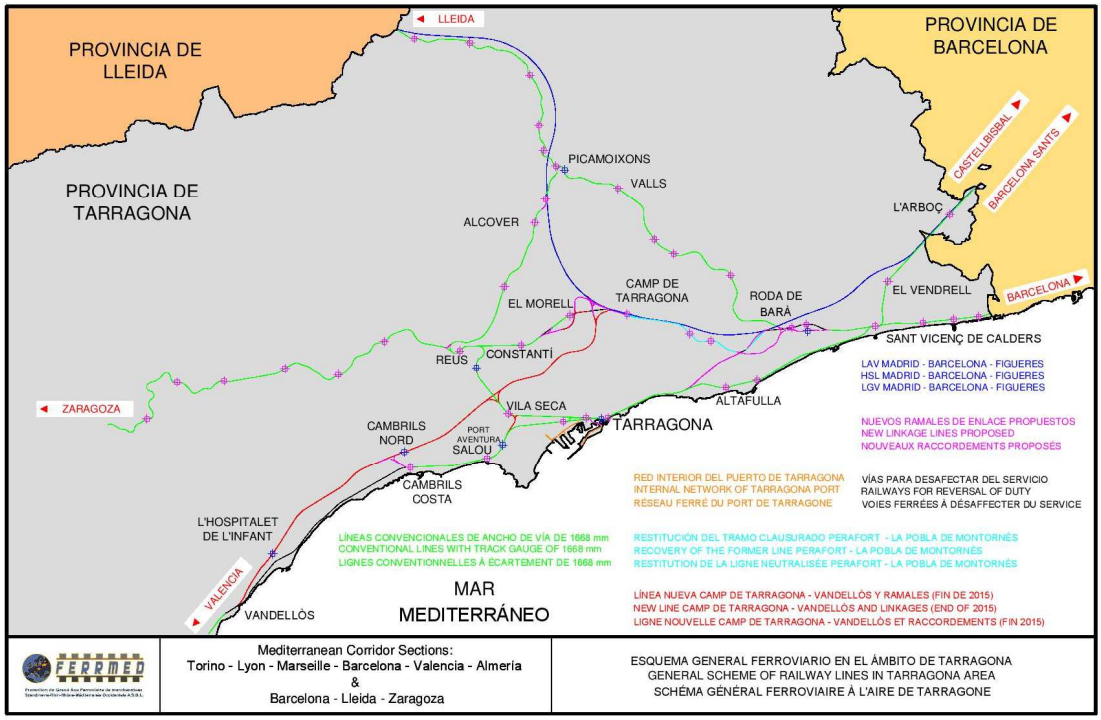
8.3.1. BY-PASS OF MARTORELL



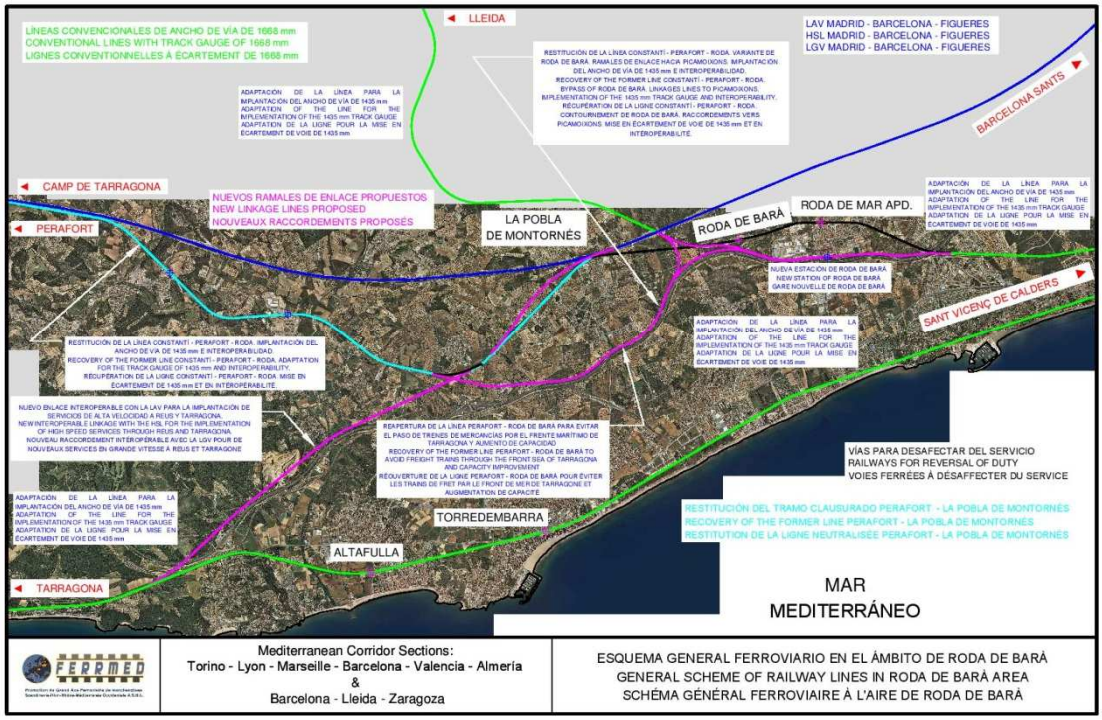
8.3.2. LINK ADIF –FGC IN CASTELLBISBAL - MARTORELL



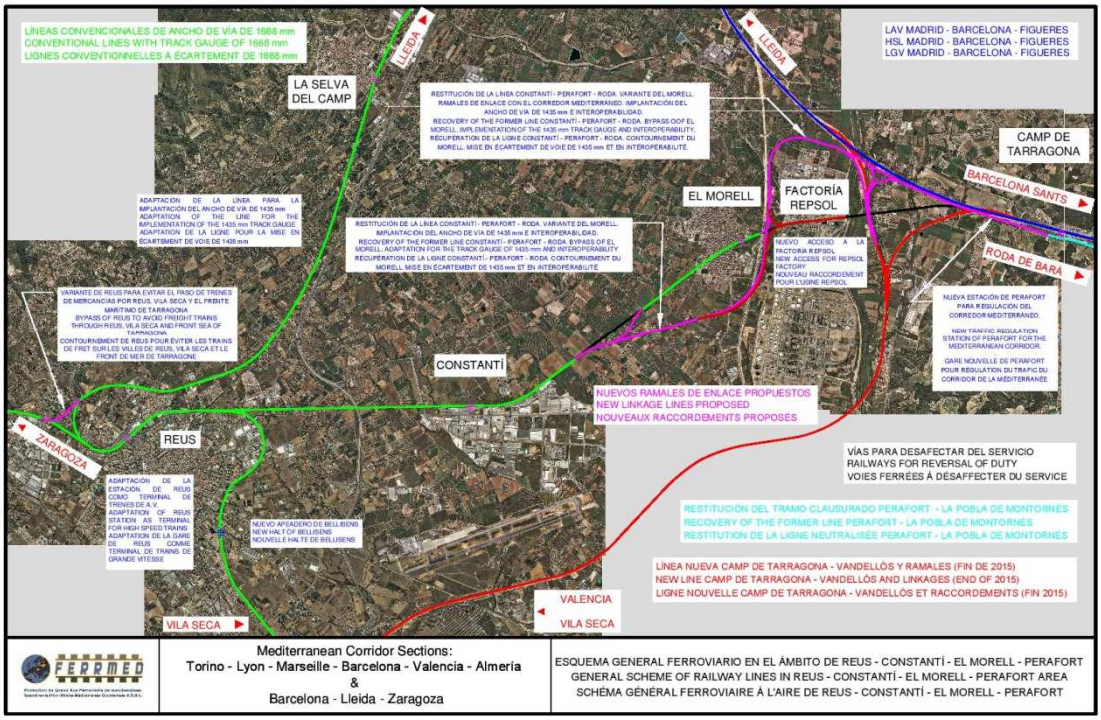
8.3.3. TARRAGONA AREA



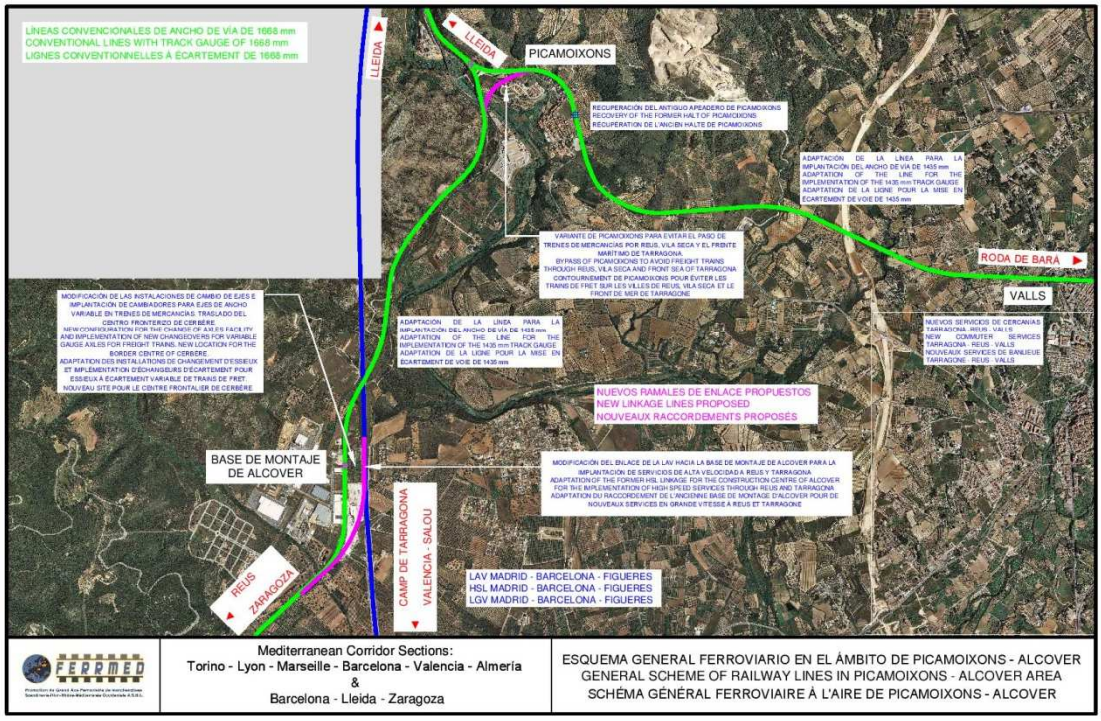
8.3.4. RODA DE BERÀ



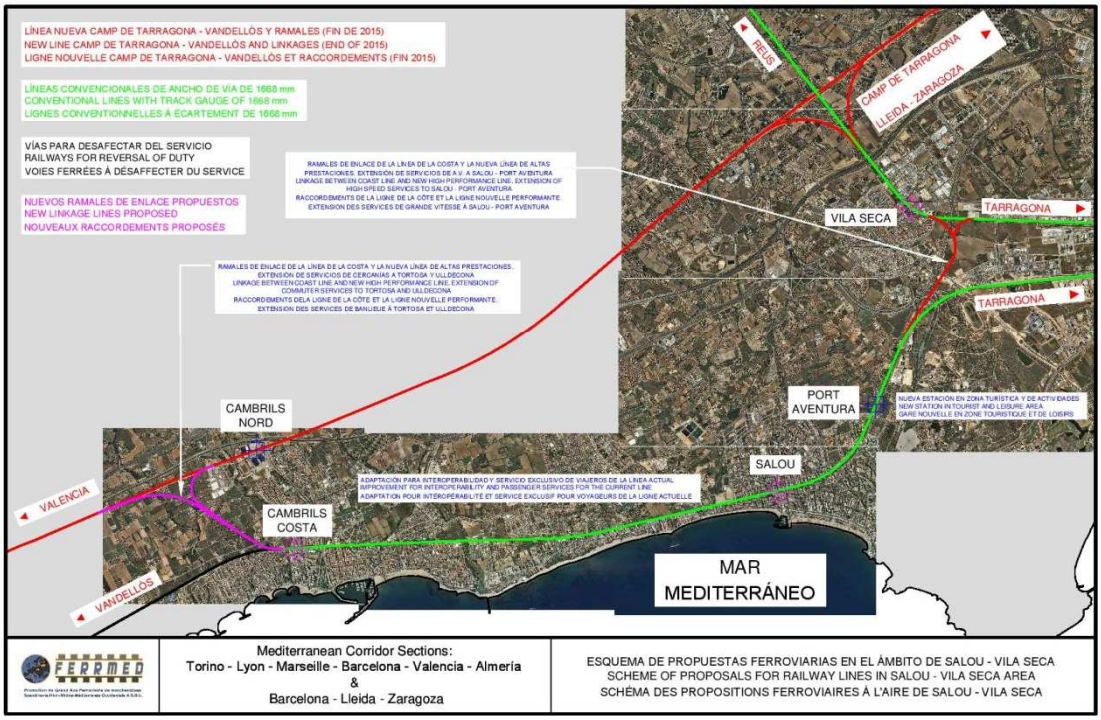
8.3.5. PERAFORT - REUS



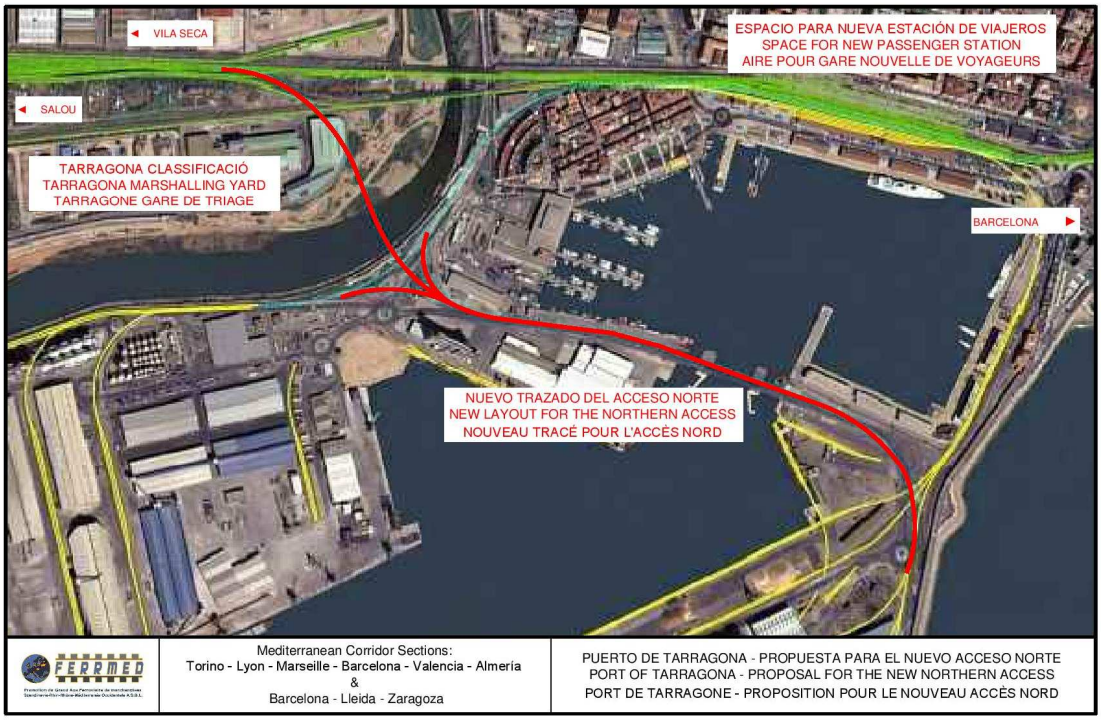
8.3.6. ALCOVER - PICAMOIXONS



8.3.7. SALOU – VILA-SECA

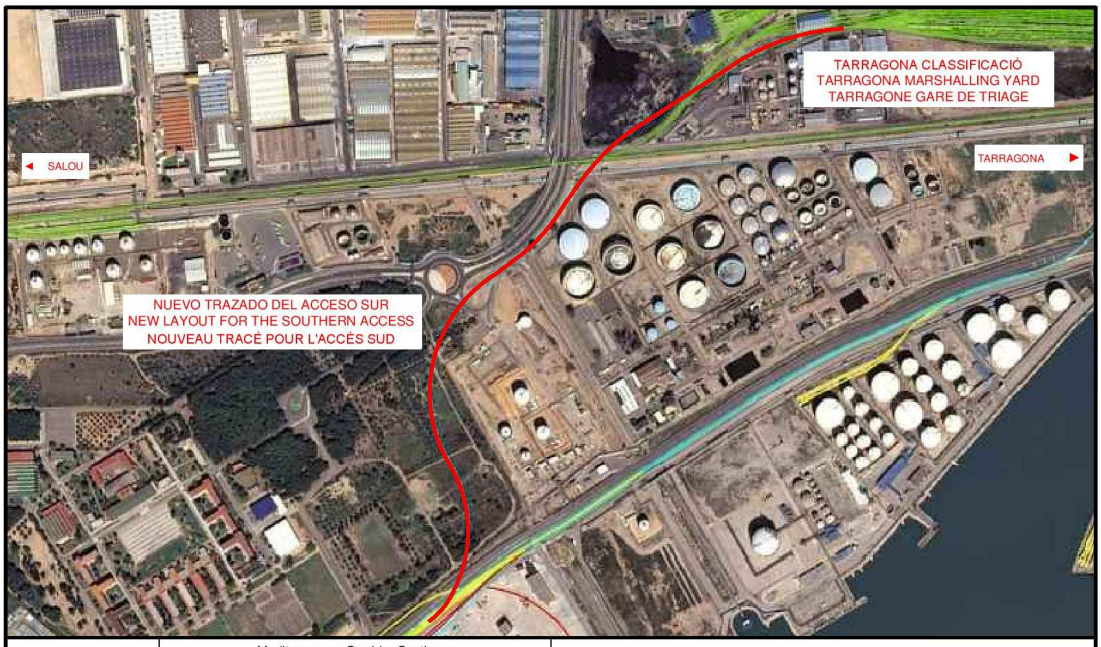


8.3.8. NORTHERN ACCESS - PORT OF TARRAGONA



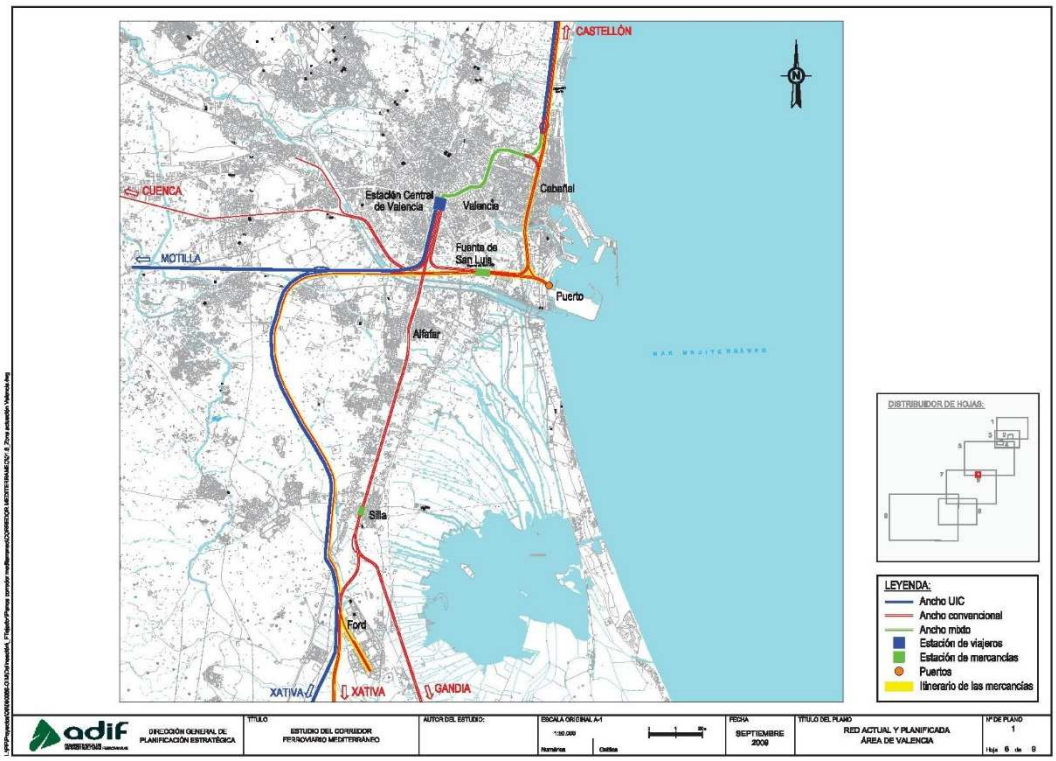
FERRMED	Mediterranean Corridor Sections: Torino - Lyon - Marseille - Barcelona - Valencia - Almería & Barcelona - Lleida - Zaragoza	PUERTO DE TARRAGONA - PROPUESTA PARA EL NUEVO ACCESO NORTE PORT OF TARRAGONA - PROPOSAL FOR THE NEW NORTHERN ACCESS PORT DE TARRAGONE - PROPOSITION POUR LE NOUVEAU ACCÈS NORD

8.3.9. SOUTHERN ACCESS - PORT OF TARRAGONA



	Mediterranean Corridor Sections: Torino - Lyon - Marseille - Barcelona - Valencia - Almería & Barcelona - Lleida - Zaragoza	PUERTO DE TARRAGONA - PROPUESTA PARA EL NUEVO ACCESO SUR PORT OF TARRAGONA - PROPOSAL FOR THE NEW SOUTHERN ACCESS PORT DE TARRAGONE - PROPOSITION POUR LE NOUVEAU ACCÈS SUD

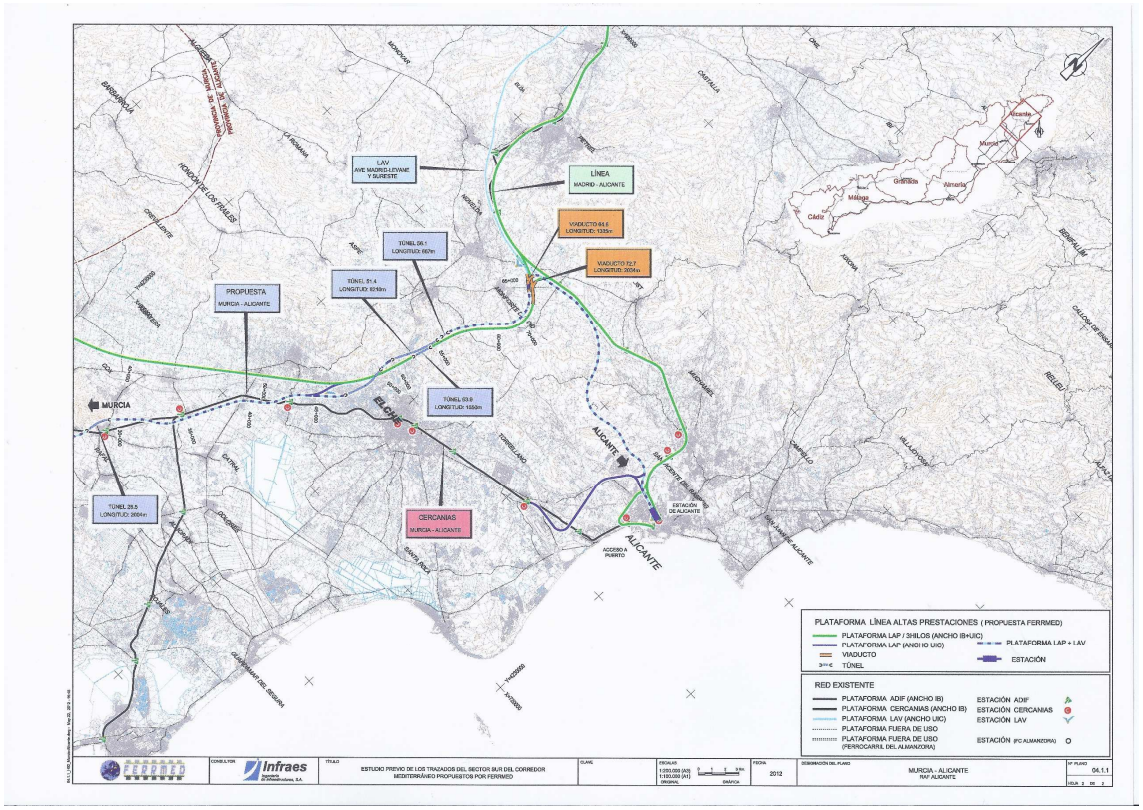
8.4. SCHEMA OF VALENCIA AREA



8.5. SCHEMA OF ALICANTE – MURCIA – ALMERÍA AREA

8.5.1 GENERAL OUTLINE

8.5.2 ALICANTE ZONE



8.5.3 MURCIA ZONE