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Canal Seine Nord Europe

**Seine-Nord Europe Canal:
central segment of the Seine-Scheldt waterway link**

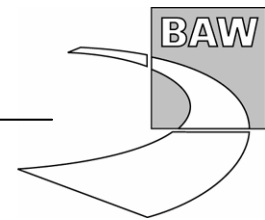
The Seine-Scheldt waterway is a priority project in the Trans-European Transport Networks and by 2015 will provide a high-capacity link from the Seine basin to those of the Scheldt, Rhine and Danube. This waterway link, which is crucially important for the development of the European high-capacity waterway network, will encourage the development of inland waterway navigation not only towards northern Europe but also to central and eastern Europe and the Black Sea.

The Seine-Nord Europe Canal, situated entirely within France, runs for 106 km between Compiègne and the Cambrai region. It lies at the heart of the Seine-Scheldt waterway project and represents its central segment.



Figure no. 1 - General map of the Seine-Scheldt network (overall project)

The Seine-Scheldt waterway link is a comprehensive project that aims to develop a competitive waterway transport system and at the same time promote regional development and sustainable economic expansion. Its ambition is to improve the structure of the northern European waterway network in order to meet the growing requirements of modern logistics in a more effective manner. Through the construction of an efficient network of multimodal ports, the first aim of the Seine-Scheldt waterway is to respond to the intensification and



greater efficiency of commercial exchanges between Europe and the rest of the world (25% of international exchanges) and within Europe (28% of international exchanges). In this way, it will help to promote the growth and redistribution of logistics activity in Europe through the adoption of a multimodal approach that combines all concentrated-volume transport modes (sea, waterway and rail) and road transport for more local services. The development of waterway infrastructure will lead to long- and medium-distance transport flows being transferred from the roads to the waterways and this in turn will help to avoid saturation on the major road axes in northern Europe. At the same time, this redistribution of transport modes will stimulate economic and industrial growth in the regions crossed and served.

The creation of the Seine-Scheldt link involves work in both France and Belgium:

- **in France:** the construction of the Seine-Nord Europe Canal between Compiègne (on the River Oise, near Paris) and Aubencheul-au-Bac (west of Cambrai) to provide a link between the River Seine and the Dunkirk-Scheldt canal, and the development of extensions running north (development of the Dunkirk-Scheldt and Deûle canals, development of the River Lys, reopening of the Condé-Pommeroeul canal) and south (the Oise from Compiègne to Conflans-Sainte-Honorine);
- **in Belgium,** developments in Flanders (Lys and lower Scheldt) and Wallonia (Scheldt and Walloon backbone).

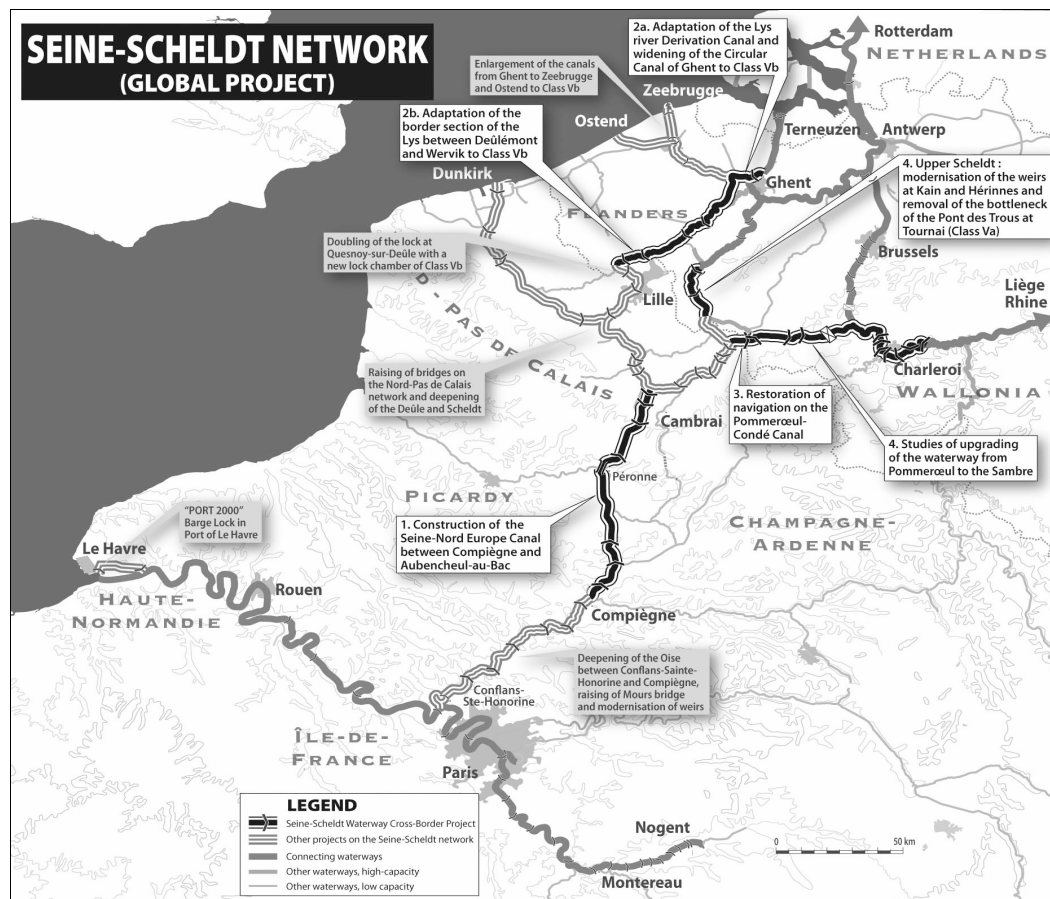


Figure no. 2 - The Seine-Scheldts network (global project)

1. The Seine-Nord Europe Canal: a comprehensive transport system

The Seine-Nord Europe Canal is the central segment of the Seine-Scheldt waterway link. It will eventually connect the Oise (at Compiègne) to the Dunkirk-Scheldt canal (at Aubencheul-au-Bac, near Cambrai). Its principal goal is to remove the waterway bottleneck in France, by creating a new high-capacity section connecting the Seine network to that of northern Europe. This canal will stimulate the transport of goods by waterway and enable around 15 million tonnes of freight to be transferred to the waterway right from the early years of operation of the Seine-Nord Europe Canal.

The Seine-Nord Europe Canal is designed not just as an infrastructure but as a comprehensive transport system and a regional development project.

With a total land take of 2450 ha, the 106 km long, 54 m wide and 4.5 m deep canal will run from Compiègne to Aubencheul-au-Bac. It will comprise 7 locks, 59 road and railway bridges, 3 aqueducts and 2 storage reservoirs. It is also planned to build 7 transshipment quays, 5 boat harbours and 4 multimodal platforms.

The construction of these 4 multimodal platforms, covering a total area of 360 ha, is intended to provide multimodal transport services (regular river shuttles running to and from seaports, rail shuttles) and attractive areas for setting up value-creating industries or logistics activities.

The sites for the platforms were chosen in light of the complementary transport modes offered by existing infrastructure (rail at Nesle, road and motorway at Cambrai-Marquion, Péronne-Haute Picardie and Noyonnais) or infrastructure still to be developed, thus enabling the port platforms to act as hubs serving extensive regions. Eventually these logistics platforms will represent new sources of growth, economic development and job creation.

They are also intended to accommodate logistical distribution centres and will thus help to concentrate waterway transport flows by developing waterway-railway-road intermodality.

Example of a multimodal platform: Cambrai-Marquion

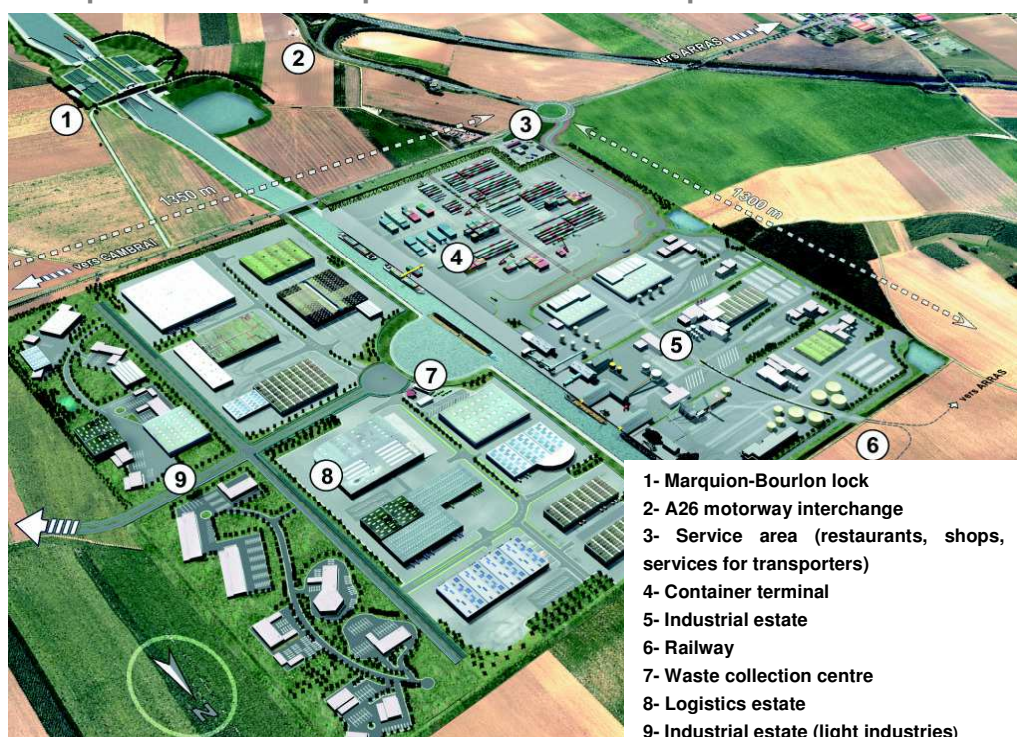
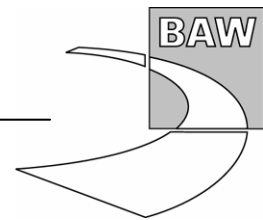


Figure no. 3 – Development planned at Cambrai-Marquion



Waterway transport forecast in 2020

- Capacity: 15 Mt
- Containers: 30 000 TEU

Port area: 156 ha

- Comprising a logistics area (30 ha), business park (18 ha) and industrial and logistics estate (52 ha) linked to the waterway
- A 20 ha container terminal

Intermodal services:

- A 1000 m quay
- Rail services

1400 jobs in 2020

2. A crucial project for logistics operations in northern Europe

At present 70% of intercontinental container goods exchanges involving the four French regions concerned by the Seine-Scheldt link (Nord Pas-de-Calais, Picardie, Ile-de-France and Haute-Normandie) transit through the ports of the Benelux countries, to be transformed in logistical distribution centres that are mostly concentrated in the Netherlands (900) and Flanders (400), while there are only about a hundred in France.

The density of logistics activities around the Benelux ports can be explained by and is based on a dense transport infrastructure network - waterways in particular – which structures their hinterland. The major waterway corridors (notably the Rhine and the Albert Canal) are lined with inland multimodal platforms which act as advanced bases for the ports of Antwerp or Rotterdam. Lacking any comparable concentrated-volume axis, the link with France is still dominated by road transport.

Situated on the most heavily used corridor in France in terms of goods transport and on the Lille-Paris-Lyons-Marseilles backbone, the Seine-Nord Europe Canal is a major investment that should profoundly modify the organisation of logistics chains in north-west Europe and reinforce France's strategic position with regard to this type of activity.

One of the major challenges facing the Seine-Nord Europe Canal is – in parallel with the development of infrastructure – to link up the north European transport system via the development along the future canal and along the entire Seine-Scheldt waterway of platforms that will act as genuine economic hubs, offering land for creating industrial and logistics activities and areas for developing port and multimodal services benefiting large regions.

It is by developing these multimodal economic hubs that it will be possible to attain the necessary concentration of flows for waterway and rail transport to be incorporated in logistics chains.

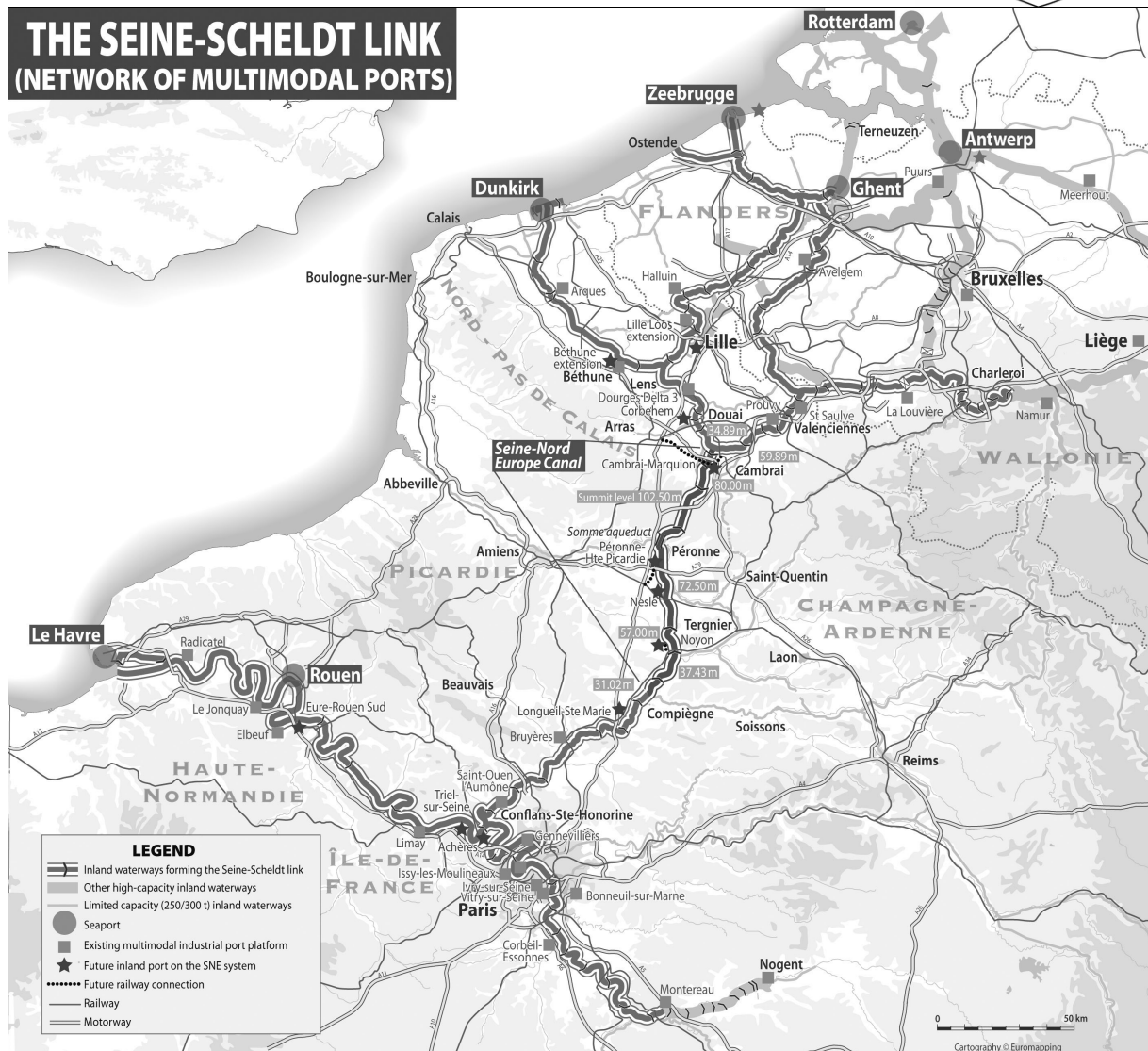


Figure No. 4 - The Seine-Scheldt link (network of multimodal ports)

3. Seine-Scheldt: a European project

The Seine-Scheldt European waterway link is a cross-border project that has been taken forward since November 2005 in the framework of permanent cooperation between the authorities in France, Flanders and Wallonia. In April 2004 it was already ranked 30th in the list of priority trans-European transport network projects and in July 2007 a joint grant application was filed by France, Flanders and Wallonia, with the support of the Netherlands. In November 2007, the European Commission agreed to the full grant of €420.32 million for the 2007-2013 period, of which €350 million was for the section in France (including €333 million for the construction of the Seine-Nord Europe Canal and its ancillary facilities, for which total investment will amount to €4 billion), thus placing the project in 5th position in terms of agreed funding.

This proposed budget was unanimously accepted by the 27 Member States. Whereas Europe's contribution to the waterways has been limited to 1.2% of the total budget for trans-European transport networks over the past 20 years, it has risen to 11.5% for this period

(Seine-Scheldt and Rhine-Main-Danube projects), thus signifying the interest of the public authorities in Europe for this sustainable transport mode.

Following the signing of an interministerial declaration between France, Wallonia, Flanders and the Netherlands on July 20th last year with a view to harmonising tariffs along the entire link (from Conflans Sainte-Honorine in France to Ghent in Belgium), it was decided to set up an intergovernmental commission and a European economic interest group to facilitate the implementation of the Seine-Scheldt European waterway link and manage and administer the "added toll" levied to cover maintenance, regeneration and part of the funding for the infrastructure.

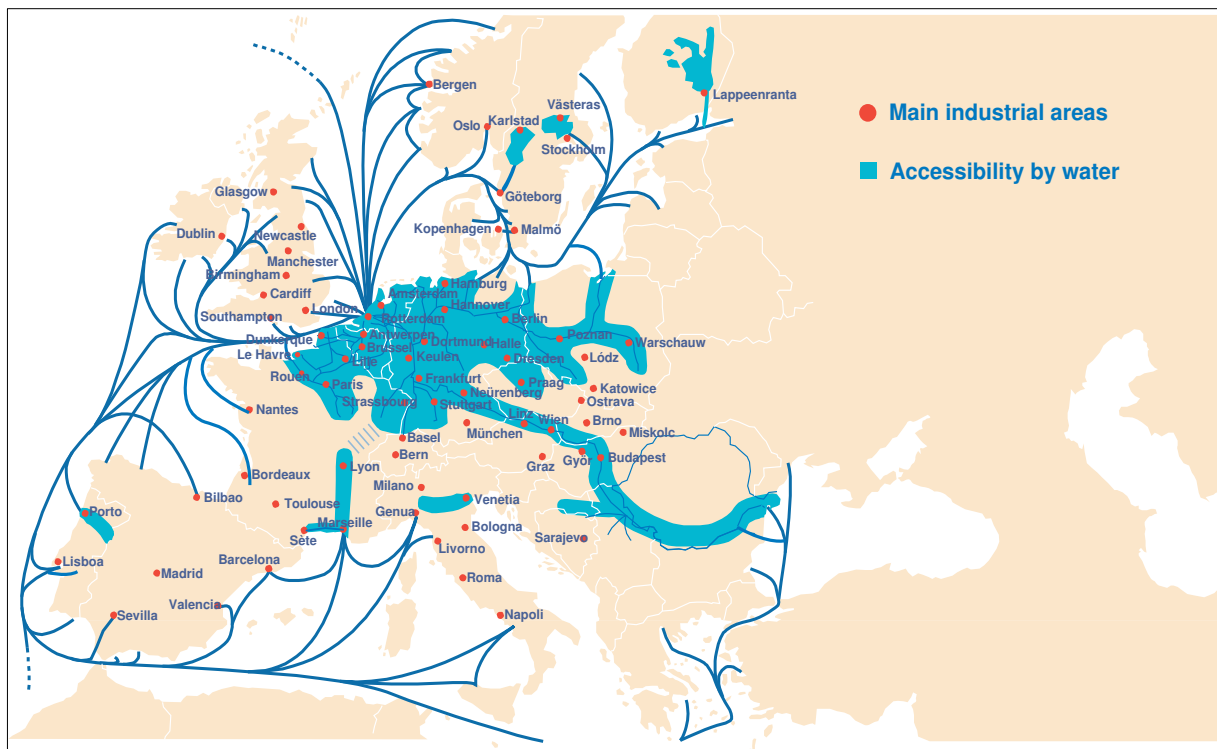


Figure no. 5 - Map of European waterway network

4. A competitive link

Waterway transport is a way of making the regions and their businesses more competitive by increasing the maximum barge tonnage and consequently reducing transport costs to a significant degree. On leaving a seaport, a load of 2000 TEU containers will require 7 barges, or 30-40 complete trains or 1500 lorries.

The Seine-Nord Europe Canal will therefore offer companies that use the waterway, and especially those that at present send their goods via other means, new logistical solutions drawing on the inherent advantages of waterway transport, namely reliability and safety, and of course connections with the 20 000 km of high-capacity waterways in the European network along with the major advantage of high-capacity networks, competitive prices. The figure below compares the average direct costs (blue) and external costs (green) of transporting one tonne over a distance of 350 km by the different modes of transport (including the initial and final legs by road in the case of waterway and rail transport, whenever necessary).

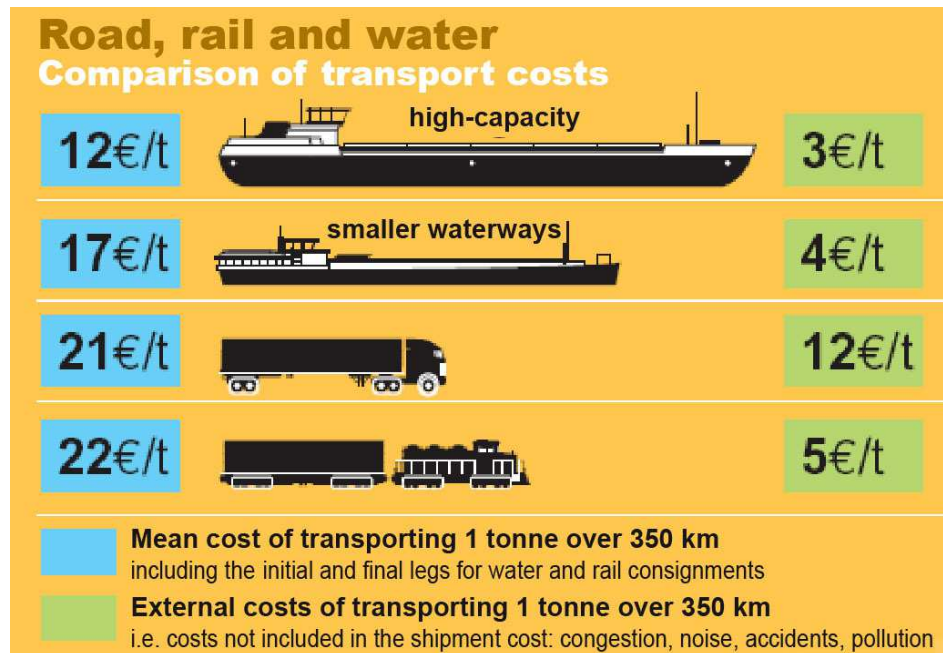
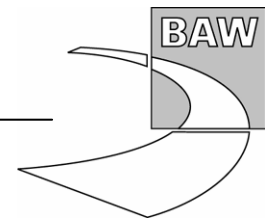


Figure no. 6 - Road, rail, navigation: comparative costs

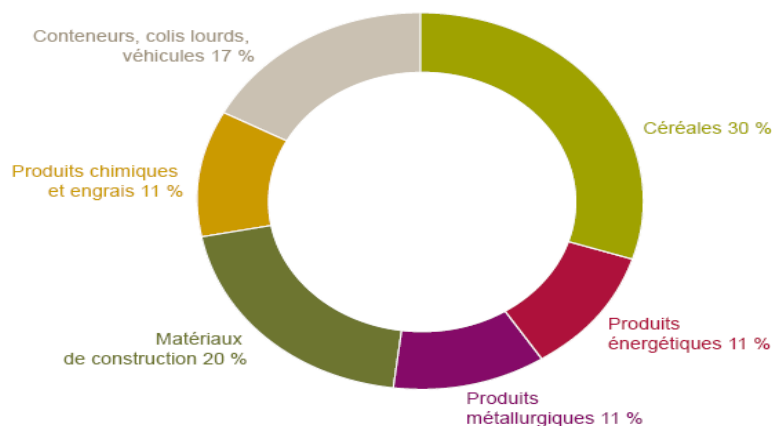
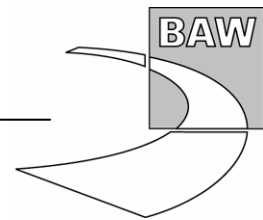


Figure no. 7 - Types of goods transported on the Seine-Nord Europe Canal: 2020 forecasts (tonne-km)

5. Seine-Nord Europe Canal: a flagship project for Europe's sustainable development policy

The Seine-Nord Europe Canal is one of the flagship projects of the Grenelle Environment Forum, the multi-party debate organised by the French Government with the aim of incorporating sustainable development issues as widely as possible in the country's policies. The construction of the canal was included in the draft law on the environment to be put before parliament by the summer of 2008.

In environmental terms, the Seine-Nord Europe Canal, and more generally the Seine-Scheldt link, will make a decisive contribution to sustainable development objectives. By encouraging



the transfer of a certain proportion of road traffic to the waterway, this high-capacity network will help to reduce greenhouse gas emissions.

Pertinent environmental criteria will be taken into account in choosing sites for the multimodal platforms and with regard to overall project integration, and this work will be carried out in constant liaison with the localities concerned.

The Seine-Nord Europe Canal project was designed with a concern for environmental protection: this will be a major priority along the entire canal alignment. The most sensitive sites have been identified and influenced the design of the project.

The canal will also provide solutions to certain hydraulic problems, including both water supply and flood management, by significantly reducing the destructive effects of floods on rivers such as the Oise and Somme. Lastly, the waterway will help to develop tourism in the regions it crosses and promote their natural and even cultural heritage. In this way, it has a multifunctional character that makes it the infrastructure of sustainable development par excellence.

6. The advantages of a public-private partnership arrangement

The law drafted after the Grenelle Environment Forum validates France's decision to implement the Seine-Nord Europe Canal in the context of a partnership agreement.

The choice of a public-private partnership (PPP) will help to optimise the project, optimise the cost of the project and shorten completion times. Furthermore, the creation of private partner consortiums will draw together a wide range of highly specialised skills that are specifically suited to the various project functions at European level, covering everything from construction to all the services offered to the market and regions by the time the canal is opened, thanks to the multi-use functions of the waterway.

This arrangement also makes it easier to manage complex projects in a more comprehensive manner by including the infrastructure and ancillary activities in a single contract. It creates a strong impetus by mobilising all the stakeholders concerned and contributes to regional development.

According to the MAPPP (Mission d'Appui à la réalisation de contrats de Partenariats Publics Privés), public funding requirements for the Seine-Nord Europe Canal would be reduced by between 6% and 40% thanks to a PPP, depending on the assumptions made. In addition, through the competitive dialogue procedure, the project could be enriched by the development of ancillary economic activities proposed by the private partner in the framework of the project.

Competitive dialogue indeed offers private operators and the public authorities the possibility of optimising the project progressively in order to choose the most appropriate solution while minimising risks. These discussions and exchanges of ideas often open perspectives for implementing innovative new solutions. If the French Government confirms that the Seine-Nord Europe Canal is to be built in the context of a PPP contract, calls for tender could be issued in the autumn of 2008 and the competitive dialogue started in early 2009.

A European partnership

Although it is situated entirely within the territory of France, the Seine-Nord Europe Canal is a European project requiring a European partnership for the design, construction, operation, regeneration and implementation of the platforms and ancillary activities. This complex, comprehensive project calls for the wide range of skills and variety of expertise of private partners from the different European countries. This cooperation and exchange between European private partners is crucially important for the success of the project.

7. The main characteristics of the canal : canal longitudinal profile and canal alignment.

7.1 Canal longitudinal profile

The canal will extend over the 106 km separating Compiègne from the Dunkirk-Scheldt Canal via a series of 8 reaches, separated by 7 locks. The shortest reach is 6.7 km long (between Marquion and Oisy-le-Verger), and the longest about 40 km (between Campagne and Moislains). The summit level culminates at 102.50 m NGF (between Moislains and Havrincourt).

The highest lock is 30 m and the lowest 6.4 m. The Seine-Nord Europe Canal joins the Oise and Sensée rivers directly by crossing the Somme via an aqueduct about 1300 m in length. Two other aqueducts are planned to cross the A 26 and A 29 motorways.

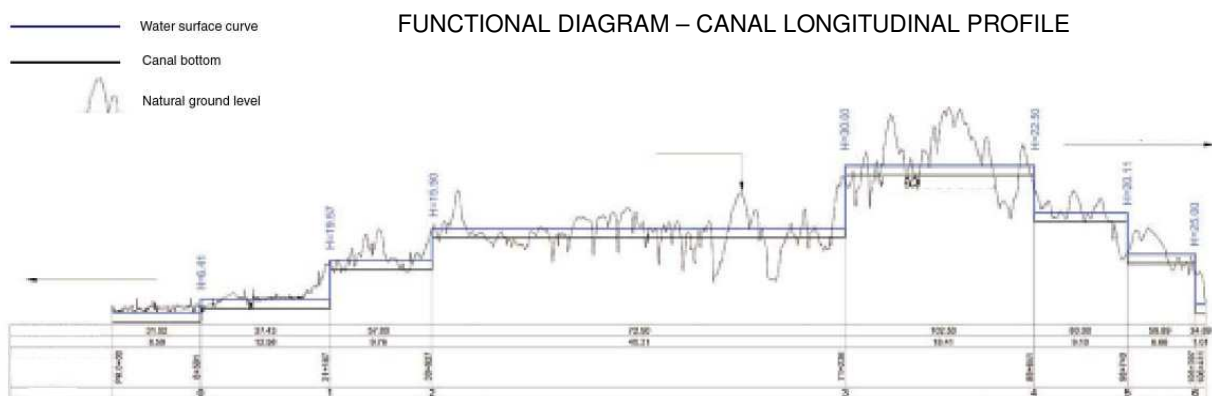
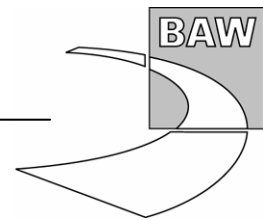


FIGURE N° 1 – CANAL LONGITUDINAL PROFILE

The design based on the preliminary studies showed a considerable surplus of excavated material amounting to about 50 Mm³, located essentially along the longest reach between Campagne and Moislains and on the summit reach between Moislains and Havrincourt. The first stage of the preliminary design involved optimising the future canal alignment with a view to improving the volume of earthworks.

In comparison with the initial alignment, the 40 km reach was raised by 2.50 m and the summit reach by 7.50 m, which meant that the surplus quantity of excavated materials could be halved.

The overall earthworks balance following the preliminary design studies was as follows:



- Excavation: 55 million cubic metres;
- Fill: 25 million cubic metres;
- Dumped surplus material: 30 million cubic metres.

A solution whereby the canal would cross the Artois hills through a tunnel or cut-and-cover sections was also contemplated. However, this option was abandoned owing to the serious hazards involved with this type of structure and the constraints it would pose for navigation: alternating transit, speed limited to 5 km/h, safety requirements for push-tows transporting hazardous substances.

Elevation setting of reaches in the Oise valley: from Venette to Noyon (kilometre point 21.1)

Reach no. 1 is at the elevation of the canalised Oise. Reach no. 2 is at that of the Oise Lateral Canal, to which it is connected.

Elevation setting of reach no. 3: from Noyon (KP 21.1) to Campagne (KP 30.9)

The choice of level for reach no. 3 was determined in light of the existence of structures requiring a level close to natural ground level (two turning basins, a wave attenuation basin and a multimodal platform) and the need to balance the quantities of earthworks (a slight surplus of excavated material remains, but this can be reused).

Elevation setting of reach no. 4: from Campagne (KP 30.9) to Moislains (KP 71.1)

The equilibrium level of excavation and fill was achieved with a water level between 72 and 74 m. Given that the maximum possible increase in height of the railway line between Amiens and Chauny-Tergnier was limited to 10.20 m owing to the connection level at Nesle station, the water level adopted at the preliminary design stage was 72.50 m. There is still a slight margin for optimisation depending on the design of the rerouted railway line.

Elevation setting of reach no. 5: from Moislains (KP 71.1) to Havrincourt (KP 89.4)

By raising the summit reach it is possible to reduce the surplus volume of excavated material. Out of principle, lock height was limited to 30 m in order to keep to the emptying times and flow speed limits in the filling and emptying pipes prescribed in the technical reference document. The reach level was set after an economic analysis taking into account the volume of excavation and the height (or number) of locks. The reach was set at elevation of 102.5 m.

Elevation setting of reach no. 6: from Havrincourt (KP 89.4) to Marquion/Bourlon (KP 98.5)

The level of reach no. 6 was set in such a way as to have a clearance of 4.80 m above the A26 motorway without modifying the motorway's longitudinal profile.

Elevation setting of reach no. 7: from Marquion/Bourlon (KP 98.5) to Oisy-le-Verger (KP 105.1)

The main constraint in setting the elevation of reach no. 7 is the local minor road 939. This heavily used road is situated at an elevation of 71.38, which means that the water level must be at 59.89 m. Here again, there is a margin for optimisation depending on how this road is rerouted.

7.2 Reference path

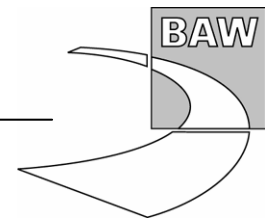
The reference path is the result of the studies, discussions and consultations conducted during the preliminary design stages. This is not the final alignment of the canal. The strip of

land proposed for the public enquiry, or "DUP corridor", is 500 m wide on average and will contain the final canal alignment. It corresponds to possible variations that may be made in the alignment by the time the works are carried out, as a result of greater accuracy in defining the project.

The reference alignment of the Seine-Nord Europe Canal is described below, reach by reach, in three sectors.



FIGURE N° 2 - REFERENCE ALIGNMENT OF THE SEINE-NORD EUROPE CANAL



7.2.1 Compiègne – Noyon sector: reaches nos. 1 and 2

Reach no. 1: from Venette to Montmacq (KP 8.5)

This first reach is about 12.2 km long and runs from Venette dam, including 8.6 km from north of Compiègne, which is the southern limit of the project, along the Oise. From the confluence with the Aisne, the alignment of the Seine-Nord Europe Canal first follows the course of the Oise, subject to a few works (on the right bank at Clairoux, and left bank at Choisy-au-Bac and Janville in order to maintain the 1000 m radius of curvature required for high-capacity navigation and to stay well away from the houses at Longueil-Annel).

After KP 5 and as far as Montmacq lock (KP 8.5), the project involves building a new canal parallel to the Oise and the existing lateral canal. A quay will be built between Thourotte and Montmacq.

This reach is at the same altitude as the Oise (31.02 m) and ends at Montmacq lock (KP 8.5), which has a lift of 6.41 m, i.e. the equivalent of Janville and Belle-Rive locks on the Oise Lateral Canal.

Reach no. 2: from Montmacq (KP 8.5) to Noyon (KP 21.1)

From Montmacq lock, the Seine-Nord Europe Canal is built on fill as far as Ribécourt; at Ribécourt, it connects with the existing Oise Lateral Canal (which will be redeveloped and widened), and continues to Passel. Finally, from Passel to Noyon lock, the new canal once again moves away from the existing canal and runs parallel to it over a distance of 2 km.

This reach is 12.56 km long. Constructing it on fill helps to preserve the hydrological balance of a Natura 2000 ecologically sensitive zone, the Sainte-Croix meander. The Oise, which has been intercepted along this stretch, will be rebuilt on the eastern side of the new canal while on the western side the space left between the old meander of the Oise and the new canal will be maintained as an ecological and flood-spreading zone.

After Ribécourt, the project connects with the existing Oise Lateral Canal, which will be widened and developed for high-capacity navigation as far as Passel. Two quays will be built to serve companies in the Ribécourt-Dreslincourt industrial estate. Widening work will be limited to the western side, with the centre line of the canal shifted by 19 m in order to preserve natural areas and the high-water bed of the Oise on the eastern side.

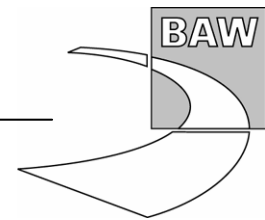
This reach is at an elevation of 37.43 m. It ends at Noyon lock (situated at KP 21.1), which has a lift of 19.57 m.

7.2.2 Somme-Oise sector: reaches nos. 3 and 4

Reach no. 3: from Noyon (KP 21.1) to Campagne (KP 30.9)

After Noyon, the reference alignment of the Seine-Nord Europe Canal runs to Porquéricourt, and then begins a wide curve northwards, moving away from Sermaize and Béhancourt, running to the east of Catigny and ending at Campagne lock, at the eastern edge of Le Quesnoy wood.

This reach is 9.76 km long. At Catigny, the new canal is built on land used by the existing Canal du Nord, which will be shifted by a few hundred metres.



A business park and port area will be sited in the communes of Beaurains-lès-Noyon, Vauchelles and Porquéricourt, as well as a quay to serve the existing Noyon silo.

This reach is at an elevation of 57 m and will end at Campagne lock (KP 30.9), which has a lift of 15.50 m.

Reach no. 4: from Campagne (KP 30.9) to Moislains (KP 71.1)

The alignment of the Seine-Nord Europe Canal runs to the west of the Canal du Nord and Somme valley. It crosses the river to the north of Péronne, and then continues east of the Canal du Nord, near Moislains.

This 40.25 km reach is the longest on the Seine-Nord Europe Canal. The rougher terrain means that fill embankments will be required to a height of slightly over 20 m or excavations reaching a depth of more than 15 m. The Somme and its valley will be crossed between Biaches and Cléry-sur-Somme by means of an exceptional civil engineering structure, an aqueduct about 1.3 km long, with the water level being 26.5 m above the river. A storage reservoir for supplying the canal during dry-weather flows will be created in the Louette valley to the south-east of Allaines. The Seine-Nord Europe Canal crosses the Canal du Nord at the boundary of the communes of Allaines and Moislains. Boats will be able to pass from one canal to the other via a connecting lock.

This reach features three stop-off places for pleasure boats at Ercheu, Saint-Christ-Briost and Biaches at the southern end of the aqueduct. A regional passenger terminal for tourists will be built near Péronne, between Cléry-sur-Somme and Allaines.

Two multimodal platforms will also be built: Nesle in the communes of Nesle, Mesnil-Sainte-Nicaise and Rouy-le-Grand, and Péronne Haute-Picardie in the communes of Éterpigny and Barleux. In addition, quays will be developed to serve the silos at Languevoisin and Cléry-sur-Somme.

This reach is at an altitude of 72.5 m and ends at Moislains lock (KP 71.1), which has a lift of 30 m.

7.2.3 Nord-Pas-de-Calais sector: reaches nos. 5, 6, 7 and 8

Reach no. 5 : from Moislains (KP 71.1) to Havrincourt (KP 89.4)

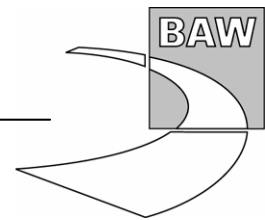
The route of the Seine-Nord Europe Canal passes to the east of the Canal du Nord, crosses the A2 motorway near Ruyaulcourt and then runs alongside it for about 5 km before once again running parallel to the Canal du Nord as far as Havrincourt.

This reach is 18.15 km long. It is the highest of all, with the water surface at an elevation of 102.50 m. After consultation, it was clear that routing the Seine-Nord Europe Canal alongside the motorway would avoid having to break up farmland any further. Further on, at Havrincourt wood, the Canal du Nord will be realigned locally towards the west.

The changes in relief mean that it will be mainly a question of excavating up to 30 m (in the Neuville-Bourjonval sector), and some embankments to over 20 m.

A second storage reservoir (to supply the canal with water) is planned near Étricourt-Manancourt, in the Tarteron valley. This will supplement the reservoir in the Louette valley (see reach no. 4).

A cereal wharf is planned to serve Moislains silo.



Moorings for pleasure boats are to be built between Hermies and Havrincourt.

This reach is at an elevation of 102.5 m and ends at Havrincourt lock (KP 89.4), which has a lift of 22.5 m.

Reach no. 6: from Havrincourt (KP 89.4) to Marquion-Bourlon (KP 98.5)

The alignment of the Seine-Nord Europe Canal moves away from the Canal du Nord, running northwards, crosses the A26 motorway via an aqueduct (KP 97.1) and reaches Marquion-Bourlon lock.

This reach is 9.10 km long. The changes in relief will require excavating to a depth of 10 m and embanking up to 20 m over the last two kilometres.

A wharf for loading farm produce is planned at Graincourt-lès-Havrincourt.

This reach is at an elevation of 80 m and ends at Marquion/Bourlon lock (KP 98.5), which has a lift of 20.11 m.

Reach no. 7: from Marquion / Bourlon (KP 98.5) to Oisy-le-Verger (KP 105.1)

The alignment of the Seine-Nord Europe Canal begins to the west of the A26 interchange, after crossing the RD 930, and passes between air base 103 and the village of Sauchy-Lestrée, before ending to the north-east of Oisy-le-Verger.

This reach is 6.60 km long. It is the last before the connecting reach with the Sensée Canal. It crosses the communes of Marquion, Sauchy-Lestrée and Oisy-le-Verger.

A multimodal platform will be built at Marquion/Sauchy-Lestrée.

This reach is at an elevation of 59.89 m and ends at Oisy-le-Verger lock (KP 105.1), which has a lift of 25 m.

Reach no. 8: from Oisy-le-Verger (KP 105.1) to the Sensée Canal (KP 106.1)

This is the shortest reach (1.04 km) and the last on the Seine-Nord Europe Canal. It connects with the Sensée Canal.

This last reach, only 1 km long, concerns the communes of Oisy-le-Verger and Aubencheul-au-Bac. It is at an altitude of 34.89 m.