Jernbaneverket Norwegian High Speed Railway project

Contract 6, Subject 3: Funding and operation of the infrastructure

Final

18 February 2011

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Private and confidential

18 February 2011

Warwick Lowe
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Dear Warwick,

Jernbaneverket Norwegian High Speed Railway project – Contract 6, Subject 3: Funding and operation of the infrastructure

In accordance with our contract, we have prepared this report. As requested, the report includes:

- A qualitative evaluation of the funding options available to the Norwegian HSR project from examination of HSR projects in other countries and of other infrastructure projects in Norway;
- Detail regarding the development of our high level financial model that enables the quantitative assessment of the commercial and contractual structures, to be assessed in Phase 3.

Our report is prepared solely for the use of our client and may not have considered issues relevant to any third parties who may be recipients of this report, if this report is made public. Any such third parties which choose to make use of our report do so entirely at their own risk and we shall have no responsibility whatsoever in relation to any such use. Furthermore, the report was concluded on 18 February 2011, any material events that have occurred since this date therefore will not be reflected in the report.

Our work in connection with this assignment is of a different nature to that of an audit. Our report to you is based on publicly available information and on discussions with you and your other advisors. We have not sought to verify the accuracy of the data or the information and explanations provided. Our work has been limited in scope and time and a more detailed review may reveal additional considerations that this review has not.

Please do not hesitate to contact myself, Gianluca Favaloro or John Haworth if you have any questions.

Yours sincerely

Manish Gupta
Partner
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Contents

Executive summary

1. Background

Norway's low population density has resulted in a relatively low level of public transport compared with other European countries. In addition to the low population density, the geography is dominated by mountains and water, making road and rail infrastructure hard to install and maintain. Aviation is therefore a common mode of transport on longer distances although road transport remains Norway's dominant mode of transport.

WS Atkins International Ltd (Atkins) has been tasked by the Norwegian National Rail Administration (Jernbaneverket) with undertaking an assessment of the Financial and Economic implications of a High Speed Rail (HSR) network in Norway. This report, *Funding and Operation of the Infrastructure,* has been prepared for Atkins, and provides an overview of the funding options available to the project.

2. Financing the Norwegian HSR project

In evaluating a HSR investment it is imperative that the project has due regard for the long-term operational priorities and complexities associated with what will ultimately become a perpetual operational asset, rather than allowing short term funding or affordability considerations to drive the contractual and financial delivery structure.

For the same reasons, financing priorities should not drive the delivery structure choice. Financing issues are important and the ability to finance the project in a sustainable manner is a crucial consideration in determining the most appropriate delivery structure. However, the financial structure should only be considered once the operational and construction characteristics are properly understood from the Commercial and Contract Strategies Contract. This long term operational based approach is a key foundation of our analysis. The selection of an optimal delivery, funding and contractual structure for the Norwegian HSR project will be an iterative process and consideration of all these elements will be required in Phase 3 to arrive at the appropriate structure.

Given its scale, the Norwegian HSR represents a funding challenge for both the public and the private sector. It is widely accepted that rail projects are typically not commercially viable without Government support. In some cases, rail revenues may be sufficient to cover the cost of operating the service, however, they are rarely sufficient to service the capital cost required to construct the asset. This factor remains true for HSR services and the majority of projects examined in section 3.2 benefitted from significant Government support. Therefore, it is likely that a large proportion of the capital cost and potentially the operating budget required for the Norwegian HSR will need to be funded directly or indirectly by the Government.

It may be possible to spread this Government support over both the construction and operating periods of the asset, but in the first instance, it is necessary for Government to acknowledge that railway projects are not self-funding. All European HSR projects currently under construction are underpinned by significant direct or indirect Government support.

2.1 Key lessons from international HSR projects and Norwegian infrastructure projects

We have examined other HSR projects internationally and the recent infrastructure projects that have closed in Norway. We take the following key lessons from these projects:

1. Direct or indirect Government support is crucial to HSR projects;

2. Despite the market turmoil, capital markets are likely to represent a significant source of funding in the medium term;

3. Other sources of financing are likely to be available to deliver the Project, (including commercial bank loans, construction finance and infrastructure funds);

4. Historically commercial debt funding has made up a significant proportion of the financing and refinancing of Norwegian infrastructure projects;

5. Procurement of infrastructure and operations has been delivered through both traditional and PPP mechanisms; and

6. There are a number of sources of international and EC grant or debt funding which should be examined for financing the Norwegian HSR project.

2.2 Funding sources

Designing and delivering a viable funding package for the Norwegian HSR project will be challenging. There are many difficult issues to resolve including a potentially significant funding gap.

A successful funding package must fit with project needs, requirements and also the objective of the funders including the Government, other local public sector funders and financial institutions such as the European Investment Bank (EIB) and the Nordic Investment Bank (NIB). These call for detailed analysis to align financing with the HSR programme characteristics.

Our preliminary assessment of the market indicates that the following funding sources should be considered for the Norwegian HSR project.

a. **Direct or indirect government funding**

It is widely accepted that rail projects are typically not commercially viable without Government support. In all HSR projects, Government support in various forms has been critical to the construction of the infrastructure and successful delivery of the project. Funding sources include:

- Direct Government funding
- European Investment Bank
- Nordic Investment Bank
- Trans-European Transport Network (TEN-T) funding
- Northern Periphery Programme 2007-2013
- Marco Polo II
- Regional funding contributions

b. **Commercial funding**

The capital markets are an obvious source of financing for infrastructure assets with stable index linked cash flows closely matching the long term liabilities of pension funds, it should therefore be possible to attract significant core funding from the private sector. It is, however, hard to ascertain the exact level of market appetite for the Norwegian HSR at this early stage of the project since the proposed project delivery structure and timing as well as revenues and costs are still uncertain. However, it is not unreasonable to assume, based upon evidence across other HSR projects, that the Private sector will be interested in this type of project.

Banks which have been involved in financing recent infrastructure and refinancing projects in Norway include:

► Societe Generale	► Nordea	► BBVA
► RBS	► Depfa	► DnB NOR Bank
► BNP	► SEB Merchant Bank	► Fortis
► Credit Agricole	► ING	

2.3 Types of funding

There are distinct advantages and disadvantages of funding an infrastructure project through funding sources such as grants, debt, sub-debt and equity. The key features are:

- Grant funding – there is no requirement to repay the funds making this the cheapest form of funding; however there is often an onerous administrative burden associated with obtaining and adhering to grant criteria.
- Debt funding – significant funds could potentially be raised via debt funding; however, stringent covenants often restrict efficient use of cash in operations.
- Sub-debt – sub-debt provides an additional source of funding providing flexibility and greater security to lenders of senior commercial debt; however, the cost of sub-debt is often higher.
- Equity – equity has no legal requirement to return capital or dividends to shareholders and has the benefit of committing suppliers to the project; however, more equity investors leads to greater scrutiny and a more complex contractual structure.

The type of funding available for the Norwegian HSR will be assessed and recommendations made in Phase 3 of the project when the revenue and costs are forecast for the routes using the Phase 3 corridor studies. An assessment of the funding available will require a greater defined contractual and delivery structure.

3. Delivering the Norwegian HSR project

The contractual structure selected for delivery of the project affects the level of participation of, and risk transfer to, the private sector. Chapter 4 describes the following example structures, illustrating how they could be financed and the advantages and disadvantages associated with adopting each of the options listed below:

1. Traditional Design, Construction and Maintenance
2. Traditional Design, Build, Finance, Maintain + Operation
3. Design, Build Transfer
4. Design then construct - Traditional public sector procurement
5. A combination of Design & Build (D&B) for the civil works and Design, Build, Finance & Maintain (DBFM) for the rail systems

6. Availability based PPP

7. Demand based PPP

PwC have evaluated the characteristics of these in detail as part of the Commercial and Contract Strategies contract and further assessment and prioritisation will be completed by us in Phase 3. In assessing these structures, we will need to consider the following key questions:

- What is the Government's willingness and ability to lend to the project?
- What is the Government's appetite to risk?
- What is the nature of the proposed design?
- What is the availability of operators in the market for each structure?
- What is the current position of the debt market?

4. Financial modelling

We have built a high level financial model to provide an assessment of the financial implications of a range of commercial and contractual structures (and associated funding methods). The principal objectives that we have aimed to address in building the model are:

- Create a flexible and robust tool for effective decision-making
- Assess the commitment required from the Government (both in NPV terms and profiled over the life of the project) based on:
  - Various contracting and commercial structures
  - Revenue and cost forecasts
  - Funding methods for each cost item
  - Profitability of the InfraCo and Franchise/OpCo
  - Risk distribution between contractual parties
- Summarise the sources and uses of funds for the project, displaying the quantum of funding gap, if present, under each scenario.
- Create a cashflow for the two key contractual parties to the project (InfraCo and Franchise/OpCo) in both real terms (2006 prices) and in nominal terms.

Scenarios will be assessed through the model in Phase 3 of the project when the revenue and costs associated are forecast for the routes using the Phase 3 corridor studies. Within Phase 2 we have provided a qualitative assessment of the options we believe to be available to Jernbaneverket (JBV) in financing and structuring the project. A more detailed quantitative and qualitative assessment of the options will be undertaken in the next Phase. During Phase 2 we have, however, run a scenario in the model using fictitious figures (produced by Atkins and Faithful + Gould) in order to test the model functionalities, see Appendix C for detail of our output.

5. Conclusions

Based on the preliminary analysis completed in this report, we conclude that:

- There are a number of options that could be adopted to finance the Norwegian HSR project. Our work to-date has examined the financing options available and highlights the advantages and disadvantages of each, but further work will be required once there is greater clarity on the quantum of funds required.

- A funding package should not drive the choice of contracting and commercial structure; rather, it should be an iterative process to determine the appropriate funding package, ensuring that the contracting structure delivers the construction and operational requirements which is then tested from a financial perspective.

- Whichever structure is used, experience from international HSR projects clearly indicates the importance of robust cross-party Government support to cover high construction costs; projects examined also indicate a good availability of funds from capital markets and other sources.

- A number of grants are available to finance large infrastructure projects such as this (e.g. Government capital grants, local authority grants in Norway, EU grants); where possible, we recommend that grant funding should be a significant proportion of the funding package (as capital is not required to be repaid), with the remaining funds obtained from commercial debt, sub-debt and equity. Each source of funding has its own characteristics and the funding package should be built to reflect the contracting structure and desired risk profile for the project.

- The impact of the credit crisis in obtaining funding for large infrastructure projects is the reduced liquidity in the market and the increased cost of financing. There are signs of the economy improving and of an increased availability of funds in the market. The prevailing market conditions at the time of obtaining funding for the Norwegian HSR will largely dictate the interest in the project and availability of funds.

- The exact approach to the delivery of the construction and operational phases of the project, including whether they are bundled or separated, will have a major impact on the risk transfer characteristics of the scheme. No structures restrict the availability of funding options for the project but typically some structures favour specific funding packages. For example, the structures where more risk and control is transferred to the private sector (e.g. PPP) are likely to favour privately sourced funding; conversely, if the public sector retains risk and control grant funding would be more applicable.

- Several models have been adopted to fund HSR projects. However, since every project has different project specifications, risk profiles, Government involvement and objectives, the contracting structure and funding package for the Norwegian HSR should be bespoke to the project.

- The advantages and disadvantages of funding sources and contractual structures can only be contextualised in Phase 3 of the project when the revenue and costs are forecast. At that stage, we will be able to draw conclusions of which structures appear most suited to the project and recommend which funding package is likely to deliver a satisfactory outcome.

1. Introduction

1.1 Background

JBV has been mandated by the Norwegian Ministry of Transport and Communications to assess the issue of High Speed Rail (HSR) lines in Norway. There is a National Transport Plan covering the period from 2010-2019 which includes relatively minor enhancements to the railway network. The ministry wishes to understand if going beyond this and implementing a step change in rail service provision in the form of higher speed concepts could "contribute to obtaining socio-economically efficient and sustainable solutions for a future transport system with increased transport capacity, improved passability and accessibility".

Previous studies have been carried out looking into HSR in Norway and there are various conflicting views. The aim of this study is to provide a transparent, robust and evidence based assessment of the costs and benefits of HSR to support investment decisions.

The study has been divided into three phases.

- In Phase 1, which was completed in July 2010, the knowledge base that already existed in Norway was collated, including outputs from previous studies. This included the studies that already were conducted for the National Rail Administration and the Ministry of Transport and Communication, but also publicly available studies conducted by various stakeholders, such as Norsk bane AS, Høyhastighetsringen AS and Coinco North.

- The objective of Phase 2 is to identify a common basis to be used to assess a range of possible interventions on the main rail corridors in Norway, including links to Sweden. The work in Phase 2 will use and enhance existing information, models and data. New tools will be created where existing tools are not suitable for assessing high speed rail.

- In Phase 3 the tools and guiding principles established in Phase 2 will be used to test scenarios and options on the different corridors. This will provide assessments of options and enable recommendations for development and investment strategies in each corridor.

This report is a component of the Phase 2 work.

The principles established in Phase 2 are to be used to test four scenarios:

- Scenario A – reference case. This is a continuation of the current railway policy and planned improvements, with relatively minor works undertaken shown in the National Transport Plan from 2010-2019. This forms the 'do minimum' scenario to which the other scenarios will be compared;

- Scenario B – upgrade. A more offensive development of the current infrastructure, looking beyond the 'InterCity' area;

- Scenario C – major upgrades achieving high-speed concepts. This is to be based on an aggressive upgrade of the existing network to provide a step change in journey times; and

- Scenario D – new HSR. This involves the implementation of newly built, separate HSR lines.

The improvements are being considered on six corridors:

- Oslo – Bergen;
- Oslo – Trondheim;
- Oslo – Kristiansand and Stavanger;
- Bergen – Stavanger;
- Oslo – Stockholm (to Skotterud in Norway); and
- Oslo – Gothenburg (to Halden in Norway).

The scenarios will be considered in relation to the long distance travel market, for example for journeys over 100km in distance. Other studies, such as the InterCity Study will look at initiatives for shorter distance travel at a more regional level. Various route alignments, stop patterns, station designs, speed standards and fares will be tested. It will be necessary to assess conditions related to income and costs, environmental concerns, energy consumption, maintenance under winter conditions and the procurement and operational organisation of the services and infrastructure.

1.2 Overall context of the Financial and Economic contract

To achieve Phase 2 of the study, JBV has commissioned 6 Contracts:

- Technical and Safety Analysis;
- Rail Planning and Development;
- Environmental Analysis;
- Commercial and Contract Strategies;
- Market Analysis; and
- Financial and Economic Analysis

Atkins is assisting JBV in two of the contracts: Market Analysis and Financial and Economic Analysis. This report is part of the Financial and Economic Analysis Contract.

The Financial and Economic Analysis Contract consists of five Subjects:

- Subject 1 Impact on Road and Aviation Sectors;
- Subject 2 Cost Estimation;
- Subject 3 Funding and Operating Structure Analysis;
- Subject 4 Financial and Economic Analysis; and
- Subject 5 Uncertainty Analysis

The purpose of the Financial and Economic Analysis Contract is to establish an assessment framework to use to evaluate potential HSR options against the objectives stated in the Ministry's mandate. Outputs of the assessment framework will show the financial impact and affordability of the interventions, including an evaluation of alternative financing options. Socio-economic impacts of the improvements will also be demonstrated and together with forecast generated revenue will be considered in relation to the expected costs. The uncertainty around the results will be assessed. Together the outputs will provide a basis for HSR investment decisions in Norway.

This report provides the outputs for Subject 3.

1.3 Purpose of Subject 3 (Funding and operation of the infrastructure) report

The purpose of Subject 3 *Funding and operation of the infrastructure* report, is to understand and assess the various funding options and commercial structures available to JBV and the associated financial implications.

The commercial structures available to the HSR investment are being assessed in the Commercial and Contract Strategies contract. Within this contract (Financial and Economic Analysis Contract, subject 3 – funding and operating structure analysis) a high level financial model has been created to assess the implication of these structures in terms of financial requirement from JBV. The specific structures will define whether the public or private sector holds responsibility for each infrastructure element and the distribution of risk.

This report provides the results of our qualitative assessment of the funding options and contractual structures available to the Norwegian HSR project, with associated advantages and disadvantages of each.

1.4 Organisation of the report

The *Funding and operation of the infrastructure* report contains the following chapters:

- Chapter 1 is an introduction detailing the project background, overall context of Contract 6, purpose of this report and the scope of our work;
- Chapter 2 details the methodology and assumptions used in completing our work. Detailed assumptions for the financial model and results from our test run of the model are shown in Appendix C;
- Chapter 3 provides an assessment of the funding sources and options available to JBV in financing the Norwegian HSR project;
- Chapter 4 examines the different commercial and contracting structures used in the market, highlighting the risks and benefits of each;
- Chapter 5 provides a high level summary of the objectives and operation of our financial model;
- Chapter 6 concludes the findings of our report, suggesting recommendations and proposed next steps for the project.

1.5 Scope of work

Ernst & Young has been appointed by Atkins to assist in evaluating the funding and delivery options associated with the project. This includes, but is not limited to, input on the following:

- Qualitative evaluation of the funding options available to the Norwegian HSR project from examination of HSR projects in other countries and of other infrastructure projects in Norway;
- Development of a financial model that enables the detailed quantitative assessment of the short-listed options. This model will then be used in testing during Phase 3 of the study.;

PriceWaterhouseCoopers (PwC) has been assessing the commercial and contracting options for the project (Commercial and Contract Strategies contract). Ernst & Young has met and been in discussion with PwC regarding its likely output to ensure that its contracting strategies will be consistent with the high level financial model created in this contract.

We understand that the commercial and contracting options will not be finalised by PwC in Phase 2. They have however, provided guidance on the functionalities that will be required in the financial model in order to assess the organisational, commercial and contractual structures. We will present and analyse these structures in Phase 3, this analysis does not form part of our work in Phase 2. However, we anticipate the following factors are relevant:

- Revenue risk
- Approach to risk transfer
- Separation of building, maintenance and operation
- Funding sources
- Market appetite
- Use and treatment of Track Access Charges

2. Methodology

2.1 Approach

We have completed a qualitative and quantitative assessment of the funding sources available to the Norwegian HSR project. Chapter 3 highlights the possible funding sources (public vs private) and types of funding (grant, debt, sub-debt and equity). Illustrated below is our approach and the assumptions underpinning this analysis.

2.1.1 Qualitative assessment of funding options

We have completed a high level assessment of the funding options available to the Norwegian HSR project. This has included a review of:

- Funding sources used in HSR projects globally and in Norwegian infrastructure projects;
- Multilateral and Government support that could be available to support Norwegian infrastructure projects;
- Commercial banks active in the Norwegian infrastructure market which could be suitable to approach if private financing is required;
- An assessment of funding types in relation to the Norwegian HSR project; and
- A high level review of some commercial and contracting structures (this should be largely covered in the Commercial and Contract Strategies contract) seen in the international HSR market, and a review of the possible financing options and risks for each.

The qualitative assessment has been completed based on publicly available information, our rail and transport experience, and understanding and presence in the market. At this early stage of the project however, we do not claim to have completed an exhaustive analysis of funding options because project revenues and costs are not yet known and the market has not been contacted. The next step (once the project is further developed) would be to test the market and to obtain a more detailed understanding of actual funding that could be made available for the project.

2.1.2 Quantitative assessment of funding options

Financial Model requirements

The second part of our scope has been to build a high level financial model capable of assessing standalone project cash flows, with various forms of debt, equity and Government support (direct and indirect) with the main output being a high level assessment of the financial impact to Government. This high level model will be standalone, but will rely upon capital cost, operating cost and revenue data supplied by Atkins and Faithful+Gould (F+G) as part of their work on the Market Analysis and Financial and Economic Contracts.

The financial model has been constructed so to allow various commercial and contracting structures (to be provided by PwC) to illustrate the potential Government commitment and profile under each scenario.

The precise mix between grants and payment streams, and between the different types of public and private funding, will vary for each scenario considered. In this phase of the project we have constructed the model and have run a test scenario to demonstrate model functionality, with fictitious cost and revenue profiles provided by Atkins and its other advisors. Using the financial model, in the next phase of the project, we will be able to identify the

feasible funding plans and identify the contribution from various funding sources for each project financing option.

Financial Model Outputs

The financial model enables the analysis of the overall cost to Government (in net present value terms and the profile of this cost) of the different project scheme options and the associated financing options.

The outputs from the financial model will include:

- NPV and profile of the Government funding contribution;
- NPV of cost to Government;
- NPV of construction costs;
- NPV of whole life costs;
- Affordability parameters and funding gap; and
- Detailed cost/revenue breakdown (as required).

The model has been developed such that the outputs (detailed cost/revenue breakdown as required) can be presented in real and nominal terms, and the model allows various scenarios to be run with associated sensitivity analysis.

Model Functionality

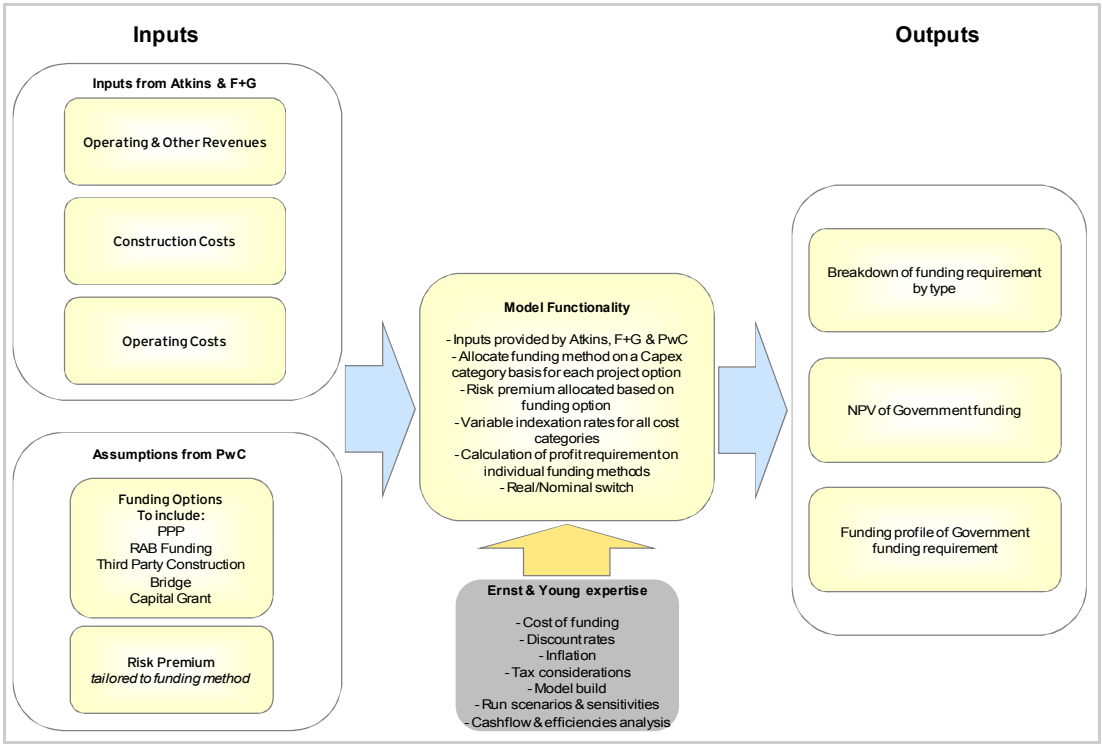
PwC has indicated that each option is defined by the sources of funding (for example, capital grant, commercial debt, availability payments, revenue subsidy), profile of funding and risk allocation (and, hence, there may be some iteration of the qualitative assessment of the project scheme scenarios).

In developing the financial model, Ernst & Young has met with Atkins and F+G's teams responsible for providing revenue and cost inputs for the financial model. The revenues and costs (the inputs) may vary according to the different commercial and contracting structures. Ernst & Young has built the model in order to assess the financial implication of the commercial and contracting structures presented by PwC. The Ernst & Young model has the functionality to assess the scenarios discussed in Chapter 4 (which will be run in Phase 3), with additional flexibility for these scenarios to be changed.

Figure 1 provides a high level overview of the model structure with associated inputs and outputs.

Figure 1: Structure of Ernst & Young high level financial model

Source: Ernst & Young analysis



2.2 Assumptions

We have created our model based on inputs and assumptions from Atkins, F+G and PwC. The source of each of the key elements is given in the table below.

Table 1: Inputs used in Ernst & Young modelling

	Atkins	Faithful+Gould	PwC
Commercial/contracting structure			✓
Revenue	✓		
Capex		✓	
Opex		✓	
Inflation		✓	
Assessment period	✓		

Detailed modelling assumptions are listed in Appendix C for the “dummy” scenario run through to test the model.

3. Financing the Norwegian HSR project

Sections 3.2 and 3.3 examine the lessons learned from international HSR projects and infrastructure projects in Norway, section 3.4 looks at the various funding sources and types of funding available for the Norwegian HSR project and the advantages and disadvantages of each.

3.1 Overview

In evaluating a HSR investment it is imperative that the project has due regard for the long-term operational priorities and complexities associated with what will ultimately become a perpetual operational asset, rather than allowing short term funding or affordability considerations to drive the structure.

For the same reasons, financing priorities should not drive the delivery structure choice. Financing issues are important and the ability to finance the project in a sustainable manner is a crucial consideration in determining the most appropriate delivery structure. However, the financial structure should only be considered once the operational and construction characteristics are properly understood from the Commercial and Contract Strategies contract. This long term operational based approach is a key foundation of our analysis.

Given its scale, the Norwegian HSR represents a funding challenge for both the public and the private sector. It is widely accepted that rail projects are typically not commercially viable without Government support. In some cases, rail revenues may be sufficient to cover the cost of operating the service, however, they are rarely sufficient to service the capital cost required to construct the asset. This factor remains true for HSR services, and the majority of projects examined in section 3.2 have benefitted from significant Government support. Therefore, it is likely that a large proportion of the capital cost and potentially the operating budget required for the Norwegian HSR will need to be funded directly or indirectly by the Government.

It may be possible to spread this Government support over both the construction and operating periods of the asset, but in the first instance, it is necessary for Government to acknowledge that railway projects are not self-funding. All European HSR projects currently under construction are underpinned by significant direct or indirect Government support.

3.2 International HSR comparisons

To assess the financing that could be available for the Norwegian HSR project, we have examined 11 international HSR projects and how each was financed. The projects assessed include:

- HS1, UK
- HS2, UK
- Crossrail, UK
- TGV, France
- HSL Zuid, Holland
- TAV, Italy
- RAVE, Portugal
- ICE, Germany
- AVE, Spain
- Shinkansen HSL Network, Japan
- Taiwan North-South HSR, Taiwan

The full assessment can be read in Appendix A, the key lessons learned from the international comparisons are detailed below:

1. **Direct or indirect Government support is crucial to HSR projects**

   - International experience shows that attracting substantial private sector financing to HSR projects can be challenging partly owing to the scale of the investment required and partly due to a perception among financiers that the complex, safety critical and multi-stakeholders environment of rail projects make them a riskier investment than other simpler infrastructure projects such as highways. Direct or indirect Government support is often required to attract this source of financing.

   - Government support to HSR projects has been provided either directly through grants or indirectly through minimum revenue guarantees or a revenue stream either guaranteed or paid directly by Government. For example:

     - The Dutch Government paid for the funding and construction of the civil works of the Dutch HSR.

     - The UK Government credit enhanced the CTRL project (Channel Tunnel Rail Link – now HS1) through a structure designed to create an unconditional and irrevocable stream of payments of Track Access Charges due from Eurostar. They are payable irrespective of usage, availability and / or performance.

     - The Taiwanese HSR, which was originally tendered as a Build-Operate-Transfer where the private sector would build and finance it without Government assistance, eventually received wide ranging Government support when the Project Company could not meet their financial obligations.

   - It is important that JBV and the other public sector promoters approach the funding on a commercial basis and recognise explicitly the different characteristics and uses of each tranche of funding. In other major projects there has been a tendency for public sector funding to be treated as a homogenous source of funds. This lack of definition has had an impact on the subsequent ability to manage risk and cost over-runs.

   - It is imperative to have cross-party support for the project to limit political risk in the event of a change in Government during the approval or construction phase.

2. **Despite the market turmoil, capital markets are likely to represent a significant source of funding in the medium term**

   - It should be possible to attract significant core funding from the private sector which could be structured as debt which is serviced from farebox revenue or revenue support from JBV.

   - The capital markets still represent an obvious source of financing infrastructure assets with their stable index linked cash flows which match the long term liabilities of pension funds.

   - The international review shows that credit enhancements are often required to access the capital markets:

     - Italian HSR bond issues and CTRL notes issues have benefited from credit enhancements provided by the Italian and UK Governments. Recent bond issues for railway projects have been made by the Chinese Ministry of Railways (US$6bn in Dec 2007).

     - Securitisations of revenues or track access charges could also represent a source of funding in the medium term.

- The challenge for the Norwegian HSR project is to structure the project in a way which delivers the discipline and diligence which the capital markets require.

3. **Other sources of financing are likely to be available to deliver the Project**

- Traditional sources of financing should be available to finance the project including commercial bank loans, construction finance and infrastructure funds.

- Similarly there are a range of alternative funding sources that could be available to finance the project, such as private placements, Regulatory Asset Base (RAB) financing, property, and carbon pricing. These funding sources are discussed further in section 3.4.

- The EIB is extremely active in providing debt finance for HSR projects both on a commercial basis or under a so called “Structured Finance Facility”, where the EIB guarantees a portion of the bank debt until the project achieves steady state operation.

3.3 Norwegian infrastructure projects

In order to understand the financing that could be available in Norway to fund the development of the Norwegian HSR project, we have assessed recent infrastructure projects completed in Norway and their respective funding sources. The projects assessed include:

- DONG Energy Trym gas field platform project
- Hog-Jaeren 74MW wind farm project
- Persbraten and Hoybraten PFI Schools project
- E18 Grimstad-Kristiansand Toll Road PPP project

The assessment of these projects and financing available in Norway, can be read in Appendix B, the key features are detailed below:

- Infrastructure projects in Norway have been financed through a combination of public and private sources with a number of key private banks participating in the Norwegian infrastructure market and three multilaterals supporting projects – discussed further in section 3.4.

- Direct or indirect funding from the Norwegian Government and European Commission has assisted the development of projects. For instance direct Government funding has been provided to Statkraft for its renewable development programme, and Norwegian grant funding has been provided for the Hog-Jaeren wind farm project.

- Procurement of infrastructure and operations has been through traditional means and through PPP mechanisms; most recent PPP/PFI scheme is the E18 Grimstad-Kristiansand Toll Road PPP project under a DBFO structure (64% financed through a combination of EIB and NIB).

- Commercial debt funding has comprised a significant part of the financing and refinancing of Norwegian infrastructure projects; there appear to be a number of banks active in the market, although there is limited evidence to show which banks would be available to fund infrastructure projects in Norway post the “credit crunch” due to liquidity constraints and aversion to risk.

3.4 Sources of financing

Designing and delivering a viable funding package for the Norwegian HSR project will be challenging. There are many difficult issues to resolve including a potentially significant funding gap, achieving competitive terms, committing to long term Government support, ensuring the project is sufficiently developed to encourage market interest and potentially obtaining a complicated funding package with a number of parties.

A successful funding package must fit with project needs and requirements. It must also meet the objective of the funders including the Government, other local public sector funders and financial institutions such as the EIB and the NIB. These call for detailed analysis to align financing with the HSR programme characteristics.

The Norwegian HSR project will be financed through a combination of public and private funding sources, both of which are critical to the success of the project delivery; these are assessed in this section.

3.4.1 Public vs private sector funding

A project that is entirely funded, delivered and operated by the state is likely to cost the Government the most and the state will be in the fullest control throughout the entire process taking considerable responsibility and risk (e.g. design risk not being retained). This approach is costly as it requires the public sector to develop substantial technical capability. Despite this, traditionally, much of the world's infrastructure has been delivered this way – the use of private financing in large infrastructure projects is a relatively new concept which has not been widely used across the globe.

Increasingly, Governments around the world are looking at more innovative ways to deliver major investments, both to reduce the costs and risks to the public sector, as well as encouraging private sector innovation. In extreme contrast to the state-only model, a project can be funded, delivered and operated almost exclusively by the private sector under Government agreement. This model involves the least amount of state investment, control and substantial risks will be transferred to the private sector.

However, given the nature of large infrastructure projects with large initial investment and potentially slow revenue build-up, and given the nature of private enterprises operating at high discount rates, often a model that is in between the above two extremes is used to deliver a balance between requirements on the state (e.g. capital investment), and the state's own requirements (e.g. scheme objectives, such as economic and social development, regional development and regeneration).

Direct or indirect Government funding

Multilateral and Government support has been provided to recent infrastructure projects in Norway through the EIB, the NIB and Enova. Appendix B shows a brief overview of each and their applicability to the HSR project. The key features of these and other Government funding options are explained below.

1. ***Direct Government funding***

   - Funding could come directly from the Norwegian Government, in the form of interest bearing debt funding, or Grant or equity funding; funding could be injected into the Special Purpose Vehicle (SPV) Infrastructure Company (InfraCo), or, in the case of a Design, Build and Operate (DBO) contract, directly to the operator. Alternatively, government funding could come in the form of providing guarantees on farebox revenue in a DBO structure.

   - Direct borrowing from the Government is likely to result in a lower financing cost as the Government can obtain funding at a lower rate.

2. ***European Investment Bank***

- The EIB provides funding to infrastructure projects both to EU Member States and those outside the EU, funding up to 50% of the total project cost should the project meet certain objectives. Figures indicate that lending to non-Member States is limited but we believe an application to EIB funding could be received favourably to part fund the Norwegian HSR project.

- EIB offers corporate loans, guarantees, venture capital and microfinance.

- The Norwegian HSR project appears to meet the eligibility criteria for an Individual Loan through the "Improvement of EU transport infrastructure".

- Once the decision has been made to progress with a HSR network in Norway and the project is at the stage of requiring financing commitment, in order to apply for EIB funding, the project team will be required to provide the EIB's Operations Directorate with a detailed description of the capital investment together with the prospective financing arrangements and a comprehensive business plan.

3. ***Nordic Investment Bank***

- The NIB is an international financial institution and finances projects that strengthen competitiveness and enhance the environment, lending to both its member countries as well as emerging markets.

- NIB offers corporate loans (main part of lending activity), loan programmes, project and structured finance (non/limited-recourse financing, mezzanine, PPP and guarantees), sovereign loans, loans to municipalities or guarantees.

- The project is within one of NIB's preferred sectors and appears to meet its eligibility criteria through reduction of reliance on air traffic, increasing traffic safety and providing environmental benefits. It therefore seems likely that NIB would consider an application to provide financing towards the Norwegian HSR favourably.

- Once the decision has been made to progress with a HSR network in Norway and the project is at the stage of requiring financing commitment, in order to apply for NIB funding, the project team will be required to complete a loan proposal directed to the NIB Lending Department (no specified formal requirements).

There are substantial funds available from other EU sources for European HSR projects, which may be applicable for the Norwegian HSR. These come in the following forms:

4. ***Trans-European Transport Network (TEN-T) funding***

- TEN-T is a planned set road, rail, air and water transport network designed to serve the entire continent of Europe. Norway's "Northern Axis" is part of this planned network connecting Norway and the northern EU with Russia and beyond.

- EU grant funding is available for TEN-T projects for the period 2007-2013 (application and allocation of funds to be complete by 2013), giving priority to cross-border projects and environmentally friendly modes such as rail. We believe that the Norwegian HSR project should be applicable for TEN-T grant funding, although it should be noted that the calls for funding applications are open only at certain times each year.

5. ***Northern Periphery Programme 2007-2013***

- The Northern Periphery Programme 2007-2013 aims to help "peripheral and remote communities" on the northern margins of Europe (including Norway) to develop their economic, social and environmental potential. Circa €5 billion of grant funding is available for projects in Norway, 48% of which has already been allocated. We believe that an application for funding could be positively received (application and allocation of funds to be complete by 2013).

6. ***Marco Polo II***

- The objective of the Marco Polo fund is to achieve a shift in international freight traffic from the road to sea, rail and inland waterways; with a view to reduce congestion, improve the environmental performance of the transport system and to enhance intermodal transport, thereby contributing to a more efficient and sustainable transport system.

- Should the Norwegian HSR project include a significant portion of freight transport, the project could apply for Marco Polo grant funding.

7. ***Regional funding contributions***

- HSR services can bring many benefits to the regions which they serve, especially in areas around stations. As such regional contributions can comprise a significant proportion of funding. However regional buy-in and funding is dependent on political support at the local level for the rail line, and the local benefits it is expected to deliver.

- Once the route has been decided, funding could be sought from local/regional funding sources.

It is widely accepted that rail projects are typically not commercially viable without Government support. In all HSR projects, Government support has been critical to the construction of the infrastructure and successful delivery of the project. For example, the Spanish and French Governments have provided more than 80% of the total funding on several existing HSR lines with the balance covered by EU grants from TEN-T funding, Cohesion funds (not applicable to Norway) and European Regional Development Funds (ERDF).

Recent French HSR lines have also secured regional funding in return for the significant benefits that these lines bring to them. TGV Est, East Rhine-Rhone and Britanny-Loire HSR lines have all benefited from local funding covering between 25% and 35% of total funding requirements.

It is therefore likely that a large proportion of the capital cost and potentially the operating budget required for the Norwegian HSR will need to be funded directly or indirectly by the Norwegian Government. This is a critical issue for the Government to consider and the quantum and timing is heavily influenced by a number of factors including the payment mechanism, approach to risk, and delivery structure adopted. Different approaches to each of these issues will influence Government support.

Commercial funding

The capital markets still represent an obvious source of financing for infrastructure assets with stable index linked cash flows closely matching the long term liabilities of pension funds, it should therefore be possible to attract significant core funding from the private sector. It is however, hard to ascertain a market appetite for the Norwegian HSR at this early stage of the project.

The amount of commercial funding required will depend on the involvement and commitment of the Norwegian Government and the European Commission to the project. If there is a high level of Government support to fund the project from sources specified above, a lower amount will be required from commercial banks.

There are however, certain risks that the capital markets are unlikely to finance, including for example revenue risk for a full HSR scheme. In this case, Government would need to provide guarantees to the operator, eliminating or capping revenue risk. To ensure optimal private sector participation in the project, a well developed project plan and scope of work will be required when approaching the market.

The banks which have been involved in financing recent infrastructure and refinancing projects in Norway include:

► Societe Generale	► Nordea	► BBVA
► RBS	► Depfa	► DnB NOR Bank
► BNP	► SEB Merchant Bank	► Fortis
► Credit Agricole	► ING	

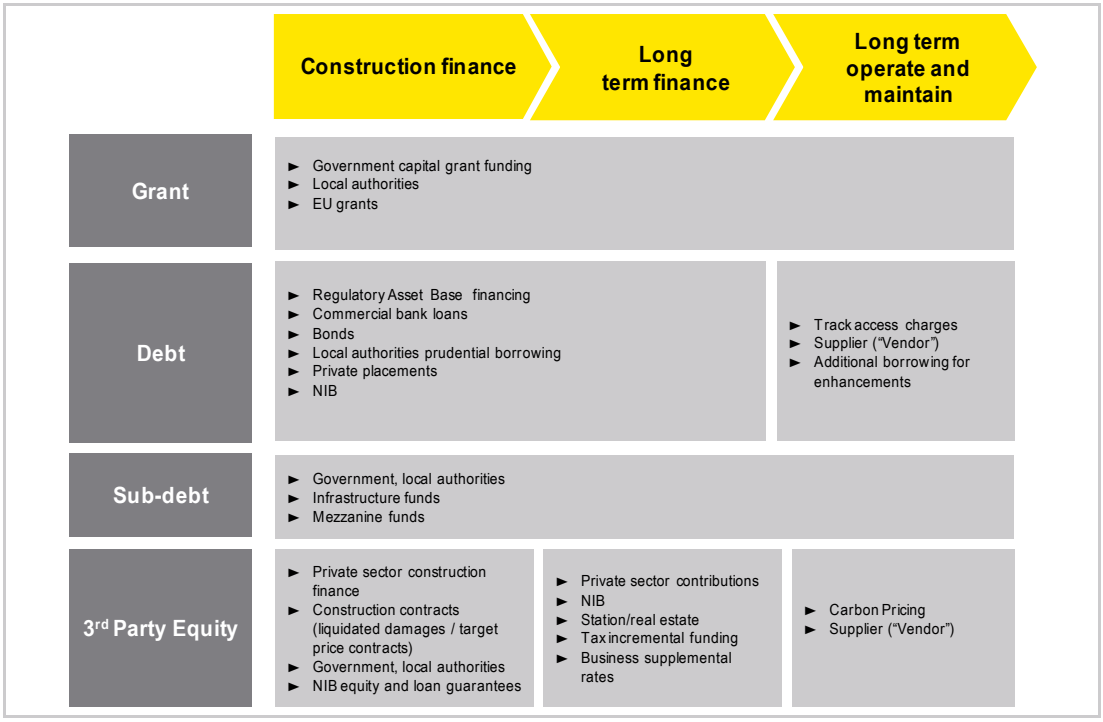
At this early stage of the project (no selection of rail scheme, lack of clarity on asset size, contracting structure and total cost), we have not tested the market to establish if these or any other banks would be interested in supporting the Norwegian HSR project. We would recommend that once the project structure and timing become clearer a formal market testing is carried out to assess the likely interest of commercial lending institutions in the project.

3.4.2 Types of financing

Figure 2 below shows broad categories of funding sources that could be used to finance the Norwegian HSR project through its lifecycle.Discussed below are the key characteristics with related advantages and disadvantages to JBV.

Figure 2: Funding sources available to the Norwegian HSR project

Source: Ernst & Young analysis



Grant funding

Grant funding is a key source of funding for HSR projects and is critical to the successful delivery of the project, due to high construction costs and limited returns over the life of the asset.

Grant funding should be a key component of the funding package for the Norwegian HSR project. Grant funding should be sought from Government, local authorities and from European sources.

Advantages	Disadvantages
✓ No requirement to pay the funds back (from operators perspective)	× Onerous administrative burden, with stringent eligibility criteria and regular progress updates required
✓ Cheapest form of financing	× Lack of commitment/buy-in from suppliers (no cash invested in the project)
✓ Less constraining than debt in the long term	× Could lead to inefficient construction/cost at the outset

Debt funding

Commercial bank loans have been used extensively on HSR projects. For example, CTRL, the Dutch HSR and the French TGV have all used commercial bank funding alone or in combination with bond funding.

The level of debt funding required will be dependent on the level of grants which the Norwegian HSR project can obtain. Debt funding can take the form of commercial bank

loans, RAB financing (would need Norwegian Government buy-in), bonds, EIB/NIB funding or private placements.

Advantages	Disadvantages
✓ Often able to raise significant funds through debt if appropriate risk allocation and capital structure is developed	× Capital and interest is required to be repaid
✓ No dilution of control of the asset	× Debt instruments often contain restrictions on the company's activities
✓ Less onerous administrative burden than grants	× Banking covenants often restrict efficient use of cash in operations
✓ Tax efficient for borrower (possibly reduced cost for JBV)	× Exposed to market risk (ie rising interest rates)

Sub-debt funding

Sub-debt funding is available from a variety of sources which could be applicable to the Norwegian HSR project, largely mezzanine debt (lower ranking debt with equity rights) and infrastructure funds.

The dramatic growth of infrastructure funds (both private and publicly traded) is focusing a very large supply of investor capital (mainly but not exclusively equity) on public works projects, large and small, transport or otherwise. There is a strong attraction towards European infrastructure assets due to the growing use of PPPs and the generally favourable regulatory systems for utilities and transportation infrastructure.

Advantages	Disadvantages
✓ Extra source of funding	× More expensive (higher margins) than senior debt
✓ Positively viewed by senior lender - strengthens capital structure	× Sub-debt lenders often require a seat on the board
✓ More flexible funding option	× Only a small proportion of total debt
✓ Further protects senior commercial debt, lenders, potentially reducing the cost	

3rd party equity funding

Although equity funding is more challenging to obtain for rail projects due to the level of risk and limited returns available, third party equity funding could be available as part of the funding package for the Norwegian HSR project. Equity could be available from Governments, multilaterals, construction finance or real estate (stations).

Although the UK experience of floating Railtrack on the stock market has not been successful, a number of examples (Canadian National Railway, and China Railways) exist where stock markets have been used or are planned to be used to finance infrastructure.

Construction finance could also fund construction of some components of the project and be re-financed on completion. This is relatively under-utilised in major infrastructure projects but

could tap into the market for construction company credit and performance risk. This form of funding would straddle the core and equity tranches.

Advantages	Disadvantages
✓ Equity is not required to be repaid	× Greater scrutiny
✓ No requirement to pay dividends	× Loss of control/ownership
✓ Obtain buy-in and commitment from suppliers	× A high number of equity investors could result in a more complex contractual structure

4. Delivering the Norwegian HSR project

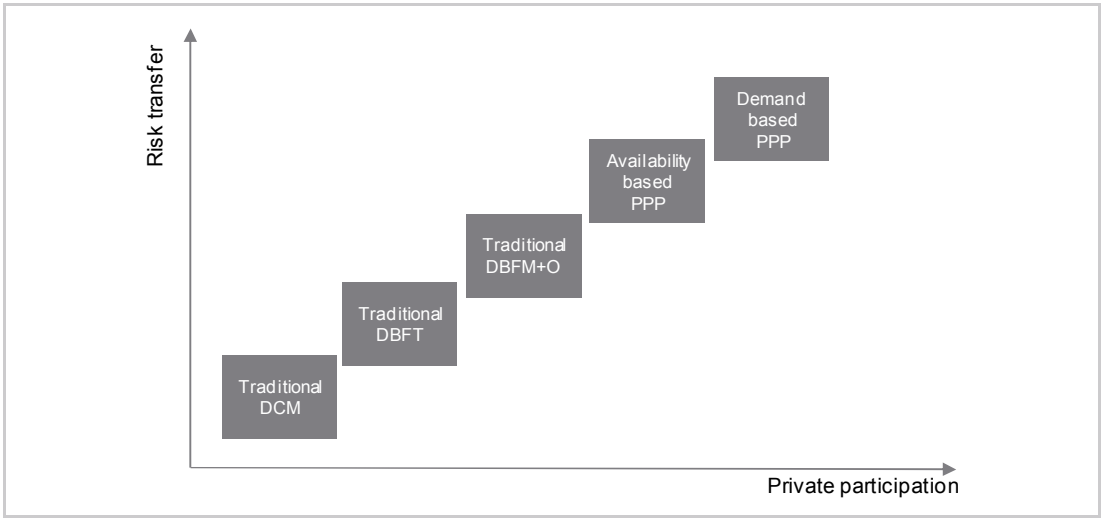
4.1 Commercial structures

There is a range of models for funding, delivering and operating infrastructure, with varying levels of participation from local Government and the private sector.

The Commercial and Contract Strategies contract, awarded to PwC, examines the organizational structures, procurement options, commercial strategies and contractual strategies that could be used in the Norwegian HSR project. PwC's work in Phase 2 comprises the detailed assessment of these critical elements but does not provide concluding recommendations for a commercial structure for the Norwegian HSR project, we will complete this in Phase 3. We have examined the differences in financing profiles between contractual options based on our experience of international HSR and other projects.

The contractual structure selected for delivery of the project affects the level of private sector participation and risk transfer to the private sector. Figure 3 below illustrates this based on five scenarios.

Figure 3: Possible contracting and commercial structures that have been seen previously in HSR projects
Source: Ernst & Young analysis



The examined case studies of HSR and other modes illustrate how different contracts have been adopted across countries and projects. The range of project structures that could be available to the Norwegian HSR and the differences in finances are set out below. Note that these commercial and contracting structures are ones that we have seen in the HSR market but might not correlate with those proposed by PwC in the Commercial and Contract Strategies contract. The purpose of the list below is to examine the difference in financing under each scenario.

1. **Traditional Design, Construction and Maintenance (DCM)**
   Example: London Underground PPP

Key characteristics
▶ Typically involves engaging a contracted entity to design, construct and maintain the project.
▶ A separate operator would operate the services.
▶ Construction costs could be funded via Government grant or through availability based PPP (i.e. the contractor raises the finance and repays over the life of the contract).
▶ Maintenance is usually for a fixed term after construction and paid for through availability payments funded through subsidy from Government or from track access charges from train operating companies.
Advantages / disadvantages
✓ Transfer construction risk and long term operational performance to a third party.
✓ Encourage whole life cost management and a high degree of integration.
✓ Provides strong incentives for completion on time through early capturing of revenue streams.
✓ In theory, the principal only pays when the service is delivered to the specified standard.
✓ Can be off balance sheet.
× The larger the project the less appropriate it becomes for the private sector to hold construction and commercial risk due to the greater project impact in the event of private sector participant failure.
× PPPs have a poor record of delivering value for money for major rail projects due to lack of effective risk transfer to the private sector.
× It may be better (i.e. more aligned to different companies' expertise) for separate bodies to undertake construction and maintenance.
× There is little flexibility for changing the scope of construction and maintenance once a contract is signed.
× There will be increased interface risk with other users of the network if the chosen structure has a number of interfaces with the existing network.

2. **Traditional Design, Build, Finance, Maintain (DBFM) + Operation**
Examples: DLR (UK) & Portuguese HSR (Portugal)

Key characteristics
► Typically involves engaging a contracted entity to design, construct, maintain and operate the project.
► Construction costs could be funded via Government grant or through availability based PPP (i.e. contractor raises the finance and repays over the life of the contract).
► Maintenance and operations are usually for a fixed term after construction and paid for through availability payments funded through subsidy from Government or from revenues.
Advantages / disadvantages
✓ Transfer construction risk and long term operational performance to a third party.
✓ Encourage whole life cost management and a high degree of integration.
✓ Provides strong incentives for completion on time through early capturing of revenue streams.
✓ In theory, the principal only pays when the service is delivered to the specified standard.
✓ Can be off balance sheet.
✓ Achieves long-term buy in (harder to walk away from the project) as the Operator has significant cash invested in the project).
✓ Very simple contracting structure from the public sector's perspective, being only one contract.
× The larger the project, the less appropriate it becomes for the private sector to hold construction and commercial risk due to the greater project impact in the event of private sector participant failure.
× PPPs have a poor record of delivering value for money for major rail projects due to lack of effective risk transfer to the private sector.
× It may be better (i.e. more aligned to different companies' expertise) for separate bodies to undertake construction, maintenance and operations.
× There is little flexibility for changing the scope of construction and operations once a contract is signed.
× There will be increased interface risk with other users of the network if the chosen structure has a number of interfaces with the existing network.
× Operators are unlikely to have expertise in construction and maintenance. A complex Joint Venture structure with a number of parties may be required, increasing risk.

3. **Design, Build, Transfer**
Example: HS1 (UK)

Key characteristics
▶ This model would require a contractor to fully design and construct the project (or elements of it). ▶ This could be funded by Government grant, or by sale (or long-term lease) once the asset is constructed. ▶ Payment is generally made on a fixed lump sum basis but incentives such as milestone payments or gain/ pain share associated to a target cost can be built into the contract. ▶ The D&B contractor is separate from the future operator and maintainer (which may be 2 contractors). ▶ An InfraCo is contracted to maintain the asset and paid through either track access charges or an availability based payment mechanism, or a combination of the two. ▶ The public sector takes responsibility to specify the services and allocate capacity. ▶ The public sector retains responsibility for managing the interfaces between D&B and O&M (Operation & Maintenance) contracts.
Advantages / disadvantages
✓ Provides a simple model where operation and maintenance interfaces can be adequately managed by the public sector. ✓ The transfer of construction, commissioning and interface risk in large rail projects is expensive and often illusory; this model recognises this and may represent better value for money. ✓ Well understood model widely adopted nationally and internationally. ✓ Allows potential future sale of the project following construction and achievement of steady state operation. ✓ Does not require the public sector to develop substantial technical capability, although programme management is still fundamental. ✓ The public sector could bear construction, commissioning and interface risk and then sell the asset once these risks are nil, or much reduced, therefore obtaining better value for money. × Whole life cost: There is little incentive for the designer to minimise future O&M costs. × Requires a significant cash injection at transfer (or sale/lease of asset). × Allocation of technical risk is unclear: the design and contractor will blame each other for design errors or omissions. × Latent defect risk will be harder to manage once the designer and constructor are no longer involved. The Maintainer may require warranties and indemnities against certain risks relating to construction of the assets.

4. **Design then construct: Traditional public sector procurement**
Examples: Italian TAV (Italy) & Spanish AVE (Spain)

Key characteristics
▶ This model would require firstly a designer to produce a design and then a contractor to build.
▶ This could be funded by Government grant, or by sale (or long-term lease) once the asset is constructed.
▶ Payment is generally made on a fixed lump sum basis but incentives such as milestone payments or gain/ pain share associated to a target cost can be built into the contract.
▶ The designer and constructor are separate from the future operator and maintainer (which may be 2 contractors).
▶ An InfraCo is contracted to maintain the asset and paid through either track access charges or an availability based payment mechanism, or a combination of the two.
▶ The public sector takes design risk.
▶ The public sector takes responsibility to specify the services and allocate capacity.
▶ The public sector retains responsibility for managing the interfaces between the contractors.
Advantages / disadvantages
✓ The public sector retains significant control over design, build, maintenance and operations.
✓ The transfer of construction, commissioning and interface risk in large rail projects is expensive and often illusory; this model recognises this and may represent better value for money.
✓ Allows potential future sale of the project following construction and achievement of steady state operation.
✓ Target cost contracting has been successfully used on the HS1 project in the UK.
✓ Does not require the public sector to develop substantial technical capability, although programme management is still fundamental.
✓ The public sector could bear construction, commissioning and interface risk and then sell the asset once these risks are nil, or much reduced, therefore obtaining better value for money.
× Whole life cost: There is little incentive for the designer or constructor to minimise future O&M costs.
× The public sector will need to retain design risk.
× Requires the public sector to develop substantial technical capability.
× Requires a significant cash injection at transfer (or sale/lease of asset).
× There is a risk of the designer, constructor, maintainer and operator all requiring indemnities against other parties' work. As a result, the public sector would need to retain significant risks.

5. **A combination of D&B for the civil works and DBFM for the rail systems**
   Example: Dutch HSR (Netherlands)

This would be similar to the advantages and disadvantages set out above, but it allows:

Advantages / disadvantages
✓ Flexibility to match different elements of construction to the most appropriate delivery method, if the project proceeds with a number of different types of build (e.g. elements of high speed, elements of existing track upgrade).
× Much more complex design and operating structure, and increased interface risks.

6. **Availability based PPP**
   Example: HSL Zuid (Holland)

This is the same as for option 1 (Traditional DCM) but the recovery is based on Track Access Charges.

7. **Demand based PPP**
   Example: Channel Tunnel Rail Link (UK)

This is the same as for option 1 (Traditional DCM) but the recovery is based on passenger revenues.

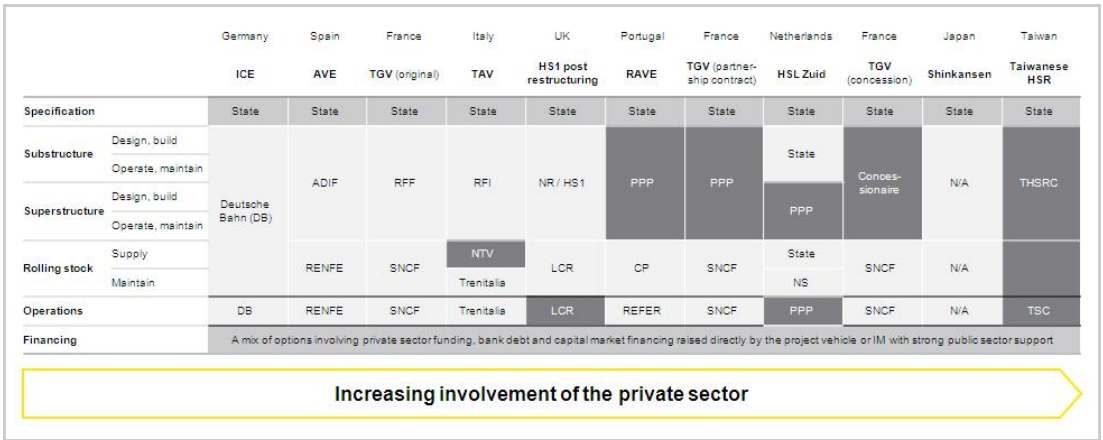
International experience shows that unbundling elements of the HSR system (i.e. splitting up the design, build and operation of the substructure, superstructure and rolling

stock) can help access additional funding and investors, resulting in better risk allocation and potentially better financing terms. However, unbundling will increase interface and integration risk which needs to be actively monitored and managed. However, unbundling requires a lot more input from the project organisation to manage interface risks.

Figure 4 gives a broad overview of the role played by the public and the private sector in the projects that we have examined.

Figure 4: Public sector involvement in other HSR projects

Source: Ernst & Young analysis



4.2 Context and evaluation of options

The financing solution should only be selected once the contractual and commercial structures are fully assessed and a shortlist of structures is generated based on the characteristics and objectives of the project. We will therefore select the optimal financing solution at the next phase of the project and do not seek to provide recommendations at this stage.

As mentioned previously, Government support is critical to the success of the project with a large proportion of successful international HSR projects being fully state funded. The source and amount of funding available from the capital markets will be an output from the model when we have the full capex, opex and revenue data; at this stage the availability of funds in the market conditions and market appetite will determine the private sector financing involvement.

5. Financial modelling

We have built a financial model to assess the financial consequence of a range of commercial and contracting structures (and associated funding methods). The principal objectives to which we have built the model are:

- Create a flexible and robust tool for effective decision-making
- Model the commitment required from the Government (both in NPV terms and profiled over the life of the project) based on:
  - Various contracting and commercial structures
  - Revenue and cost forecasts
  - Funding methods for each cost item
  - Profitability of the InfraCo and Franchise/OpCo
  - Risk distribution between contractual parties
- Summarise the sources and uses of funding for the project, displaying the quantum of a funding gap, if present, under each scenario
- Create a cashflow for the two key contractual parties to the project (InfraCo and Franchise/OpCo) in both real terms (2006 prices) and in nominal terms for inclusion into the Atkins economic model.

Scenarios will be run through the model in the next phase (Phase 3) of the project. Phase 2 has provided a qualitative assessment of the options (in the Commercial and Contract Strategies contract and our work in the Financial and Economic Analysis Contract) and we have built a financial model for assessment of the options in Phase 3. We have however, run a scenario in the model using fictitious figures (produced by Atkins and F+G) in order to test the model. See Appendix C for detail of our output.

6. Conclusions

Based on the preliminary analysis completed in this report, we conclude that:

- There are a number of options that could be adopted to finance the Norwegian HSR project. Our work to-date has examined the financing options available and highlights the advantages and disadvantages of each, but further work will be required once there is greater clarity on the quantum of funds required.

- A funding package should not drive the choice of contracting and commercial structure; rather, it should be an iterative process to determine the appropriate funding package, ensuring that the contracting structure delivers the construction and operational requirements which is then tested from a financial perspective.

- Whichever structure is used, experience from international HSR projects clearly indicates the importance of robust cross-party Government support to cover high construction costs; projects examined also indicate a good availability of funds from capital markets and other sources.

- A number of grants are available to finance large infrastructure projects such as this (e.g. Government capital grants, local authority grants in Norway, EU grants); where possible, we recommend that grant funding should be a significant proportion of the funding package (as capital is not required to be repaid), with the remaining funds obtained from commercial debt, sub-debt and equity. Each source of funding has its own characteristics and the funding package should be built to reflect the contracting structure and desired risk profile for the project.

- The impact of the credit crisis in obtaining funding for large infrastructure projects is the reduced liquidity in the market and the increased cost of financing. There are signs of the economy improving and of an increased availability of funds in the market. The prevailing market conditions at the time of obtaining funding for the Norwegian HSR will largely dictate the interest in the project and availability of funds.

- The exact approach to the delivery of the construction and operational phases of the project, including whether they are bundled or separated, will have a major impact on the risk transfer characteristics of the scheme. No structures restrict the availability of funding options for the project but typically some structures favour specific funding packages. For example, the structures where more risk and control is transferred to the private sector (e.g. PPP) are likely to favour privately sourced funding; conversely, if the public sector retains risk and control grant funding would be more applicable.

- Several models have been adopted to fund HSR projects. However, since every project has different project specifications, risk profiles, Government involvement and objectives, the contracting structure and funding package for the Norwegian HSR should be bespoke to the project.

- The advantages and disadvantages of funding sources and contractual structures can only be contextualised in Phase 3 of the project when the revenue and costs are forecast. At that stage, we will be able to draw conclusions of which structures appear most suited to the project and recommend which funding package is likely to deliver a satisfactory outcome.

The next steps required to progress our assessment of the funding structure are:

- Complete a risk assessment and allocation process to indicate the optimal commercial and contracting structures.
- Assess the commercial and contracting structures from the Commercial and Contract Strategies contract to assess and model the implication on the inputs and financing of the project.
- Review potential funding sources – discussions with potential lenders may be useful.
- Identify the range of key inputs and run sensitivity analyses.
- Combine our qualitative and quantitative assessment in providing recommendations on the most suitable contracting structure, illustrating the financial impact to the Norwegian Government.
- Liaise with legal advisors to further develop the proposed solutions and ensure compliance with Norwegian law.

Appendix A International HSR comparisons

HS1, UK

High Speed 1 (HS1), formally known as the Channel Tunnel Rail Link (CTRL), is a 108 km high-speed railway line running from London through Kent to the British end of the Channel Tunnel first awarded in 1996.

In October 2010, the UK Government named a consortium of Borealis Infrastructure and Ontario Teachers' Pension Plan as the successful bidder in the sale of the HS1 concession, value of £2.1bn, to operate the line for the next 30 years.

Financing

- Originally planned to be wholly privately financed but this was abandoned in 1997 after Eurostar forecast revenues were found to be overly optimistic.
- Two phased financing:
  - Phase 1 financing to fund first two years of the project using bank loans secured against Eurostar UK and equity provided by shareholders.
  - Second financing phase to fund remainder of the project, through direct grants payable by UK Government and debt from commercial bonds and bank debt (secured against LCR's revenue, guaranteed by the government).
- DfT guaranteed further debt to reduce cost of financing.
- DfT agreed further lending (up to a specific limit) if HS1 ran out of cash.
- In 2004 raised loan notes for section 1 of construction, securitised on guaranteed track access charges.

Lessons for Norway HSR

- The HS1 example highlights the importance of Government involvement in financing and risk transfer in an HSR project.
- The HS1 project also highlights the benefits of splitting the project into various phases to obtain the optimal financing for each phase.

HS2, UK

In January 2009, the Government created a new company, High Speed Two Limited (HS2), to consider and provide advice on options for an entirely new HSR line between London and the West Midlands by the end of 2009.

Financing

- Initially the aspiration was for the line from London to Birmingham to be delivered and financed via a PPP, however, having looked at the size and complexity of the project this idea was not deemed appropriate for the following reasons:
  - The size of the project was too large for a single contractor to deliver, therefore a level of unbundling was required.

- The size of the funding required was deemed too large for a single PPP to be financeable.
- The construction period was too lengthy to obtain finance without significant Government guarantees.
- With the level of Government guarantees required to obtain finance, the Government was transferring little of the construction risks, therefore, an alternative delivery structure was considered that maximised the objectives of the line.

- Government funded solution was preferred for the construction with the completed asset to be transferred to a single maintenance contractor.

Lessons for Norway HSR

- Full risk transfer is expensive and often illusory since the Government will in most cases end up bearing catastrophic risks or taking the role of operator of last resort.
- This example shows that developing a HSR network requires a strong, long term vision with sustained political support across all parties, and that direct and indirect Government support is crucial to HSR projects.
- Traditional PPP approaches are not easily applicable to major railway projects — bespoke structures are needed.

Crossrail, UK

The Crossrail Project (Crossrail) project will cover a 118km route and will link East and West London (from Heathrow airport to Essex). It will include the building of a tunnel in Central London to link two existing rail networks and the development of a network of interchanges with nine Underground Stations and National Rail stations, and the procurement of new trains. Crossrail is projecting 200m passenger journeys per year.

Crossrail Limited (CRL) is responsible for the overall management and delivery of the infrastructure. The Sponsors (Department for Transport (DfT) and Transport for London (TfL)), however, have specific responsibility with respect to financing for the rolling stock and depot infrastructure which is not included in the approved Crossrail funding package of £15.9bn.

Financing

- A mixture of Government and private financing to include the following:
  - Public: DfT grant, TfL contribution, GLA (London Mayor) national non domestic rates (tax), sales of surplus state land, savings realised by London Underground.
  - Private: Network Rail (the owner and operator of UK rail infrastructure) as well as contributions from the City of London, BAA (airport owner and operator) and developers and London real estate corporations (Canary Wharf Group) that will benefit from the service.
- Rolling stock and depot financing are expected to be via an off balance-sheet structure (PPP structure).

Lessons for Norway HSR

- The Crossrail project highlights the importance of strong and solid Government support in addition to a central project team in order to:

- Secure financing and ensure buy-in from key stakeholders.
- Establish the framework upon which value for money will be maximised and incentives will be offered to deliver cost and programme parameters at each stage of the procurement and construction process.

- In addition managing effectively the interfaces of all contracting parties is crucial. Failure to adequately manage interfaces could lead to risk being transferred back to the Sponsors. The appropriate risk sharing structures and value for money arrangements should be reflected in all the project documentation.

- This example shows the successful separation of commercial structure and funding sources – construction of the infrastructure is funded through grants, debt and equity from a variety of sources, however, the rolling stock and depot financing is by way of a PPP off balance-sheet structure.

TGV, France

The first line of the TGV network was first opened in 1981 between Paris and Lyon and the network now extends throughout the country, with eight new lines either under construction or in the pipeline, including extensions within France and to surrounding countries.

Financing

- The initial TGV projects were developed and funded by SNCF on a corporate basis and guaranteed by the State. More recent TGV projects have been developed and funded by RFF in the international markets guaranteed by the Government (up to the amount RFF can repay from the access fee).

- Development of TGV lines has also used grant funding from local sources (specific requirements associated in terms of regeneration and growth).

- East European HSL phase 1 and East Rhine-Rhone line both funded by the French Government, regional funding, RFF, SNCF and the EIB.

- Brittany-Loire Valley line funded by French Government, regional funding and RFF.

Lessons for Norway HSR

- The TGV example illustrates the importance of Government and regional funding - local funding has been significant in several TGV lines, comprising approximately 25-35% of total funding, however the number of stakeholders involved requires that negotiations be carefully managed to avoid delays.

HSL Zuid, Holland

Hogesnelheidslijn Zuid (or High-Speed Line South), is a 100 km line under construction between the Netherlands and Belgium. Originally scheduled to be in service by 2007, the first public operations began in September 2009. Services are running between Amsterdam and Rotterdam but it is expecting to expand to The Hague, Breda, Antwerp and Brussels with operations commencing in December 2010.

Financing

- The Government provided financing for the HSL substructure and PPP infrastructure payments (PPP contract between Ministry of Transport and Fluor-led consortium, Infraspeed, responsible for design, construct, finance & maintain).

- Project financing of PPP included international commercial banks (term loan, sub-debt and working capital facility) and funding from EIB.

Lessons for Norway HSR

- This HSL example illustrates the successful use of combined public and private funding and the use of a PPP contract in delivery of the project.

- The Dutch Government have retained considerable risks relating to financing of the sub-surface works in the project but transferred other risks through use of a PPP contract. The procurement of the Norway HSR will need to consider the retention or transfer of key risks so that overall best value for money is achieved.

TAV, Italy

The project involved the design, construction and operation of principal lines of a HSR connecting the north and south of Italy through the cities of Turin, Milan, Bologna, Florence, Rome and Naples, totalling more than 900km. The project started in 1991 and further lines have opened through to the most recent Bologna–Florence line in late 2009.

Financing

- 60% funded through interest free loans from the Italian state-owned company Ferrovie dello Stato, 40% funded through capital market issues underwritten by explicit Government guarantees.

- Project costs financed by state funding, state guaranteed debt, loan notes (with indirect recourse to Italian Government) and EU funding (projects are trans-European).

- All tranches of debt were rated Aa2, which is the sovereign rating of the Republic of Italy. The bonds carry a zero risk rating and were marketed to the traditional buyers of sovereign bonds.

Lessons for Norway HSR

- Private financing was well received, but it was fully backed by the state indicating that much depends on the willingness of the state to offer support.

- EU funding was also made available as part of the project was trans-European; it will be key to assess whether EU funding will be applicable to financing the Norway HSR project.

RAVE, Portugal

The Government of Portugal plans to build a high-speed rail line from Lisbon to Madrid linking to Spain's Southwest Corridor. In May 2010 the 40 year contract was signed to build, finance and maintain the first section of the high speed line from Poceirão to the Spanish border, Caia.

Financing

- There are three lines currently being funded (out of five planned) utilising operational cashflows, EU funding and funding from the Portuguese state.
- Each line has been split into sections and funded independently.
- Financing and construction of the second phase of the Lisbon-Madrid line was delayed pending the outcome of the country's elections, but the Socialist Party fully supported the project and construction is now progressing.

Lessons for Norway HSR

- The project is planned to be built using a phased approach with operating revenues contributing a significant portion of funding (42% on the Lisbon-Madrid line and 52% on the Lisbon-Porto line).
- The project has faced delays owing to elections, highlighting that political buy in and cross party support is essential.

ICE, Germany

ICE (Intercity Express) is the German network of high speed trains. The first ICE trains came into service in 1989, and were running a regular service by 1991. The network now extends throughout the country and connects most major cities, and also cities in neighbouring countries.

Financing

- 90% of rail network is owned and managed by Deutsche Bahn, state owned national rail company.
- To avoid additional costs the Deutsche Bahn strategy has been to create separate priority networks for both fast and slow trains, and investment has been made according to the designated status of each line, which essentially means that ICE trains will run on their special lines and freight will run on the original slow lines.

Lessons for Norway HSR

- The ICE project has been part of the German transport programme for many years hence its continued and strong support by the Government.
- The ICE example illustrates a successful HSR network with full Government support and funding. The challenge of mixed use lines resulted in segregation of fast and slow usage to reduce costs.

AVE, Spain

The first AVE line was inaugurated in 1992 between Madrid and Seville and paved the way for the expansion of the network around the country. The entry into service in 2010 of 513km of HSR between Madrid and Levante will make Spain one of the countries with the most HSR in service in the world (marginally below Japan).

Financing

- The Spanish Government is highly committed to long term plans for the network and estimates that the cost will be met from allocating 1.5% of GDP to national infrastructure until 2020.

- The lines constructed have received a high percentage of EU funding which comes from various sources:

  - EU Trans-European Transport Network funding obtained for cross-border projects and environmentally friendly modes such as rail.

  - EU cohesion funds obtained to reduce economic and social disparities and to stabilise economies.

  - EU European Regional Development Funds obtained to help stimulate economic development and regeneration in the least prosperous regions of the EU.

  - EIB grant funding.

- Cross-borders projects received a larger percentage of total investment.

Lessons for Norway HSR

- The Spanish Government appears to have a high level of cross party support for the AVE project allocating significant budgetary funds to ensure the success of the project.

- AVE has benefited from significant EU funding, especially on its cross border lines. Furthermore, as AVE links regions which are relatively economically deprived, it has benefited from special EU regional development funds.

- As a non-member state, we assume Norway will be unable to obtain funding from EU sources but it is key to understand how/if other European/local funding will be applicable.

Shinkansen HSL Network, Japan

The world's first HSR entered into service in Japan in 1964. The Japanese Shinkansen network has been developed since the introduction of the first service with performance levels that are seen as a benchmark for railway performance in terms of reliability and punctuality. Now there is nearly 2,500km of high speed line in service, more than any other country in the world.

Financing

- Historically construction fully financed by the Japanese Government by way of state loans or local Government funding.

- Local communities served by a new HSL are expected to contribute a proportion of matching funding.

- Following privatisation in 1987 the state has progressively scaled back its funding contribution with the introduction of more private funding in successive projects.

Lessons for Norway HSR

- Local communities served by a new HSL are expected to contribute a proportion of matched funding.

- A combination of Government and private funding appears to have been successful in recently opened lines.

Taiwan North-South HSR, Taiwan

The Taiwan HSR began service in January 2007, based on Japan's Shinkansen system, linking Taipei to Kaohsiung at a total length of 345km. There are two line extensions and four stations in construction for a phased commencement of operations in 2011-2015.

Funding sources

- The project was initially planned to be entirely privately funded through the sale of preferred shares to institutional investors but due to cost overruns this was not possible.
- The Taiwanese Government provided a guaranteed debt facility for the first part of the project and later stepped in buying securities.
- Overall, public financing will account for approximately 21% of the total cost including land acquisition, planning, design, supervision and civil work for under-structures in Taipei sections.
- Private investment accounts for 79% of the total cost and includes civil works, stations, track work, electrical and mechanical system, maintenance bases, and financial cost.
- The higher than normal use of equity reflects the high risk profile that debt providers attached to this project.

Lessons for Norway HSR

- The project was originally tendered as a BOT where the private sector would build and finance it without any Government support. The lenders, however, demanded and eventually received wide ranging Government support.
- Again, the importance of Government support is emphasised in this example. If Government funding is not used in the initial funding plan it is key to ensure governmental support to step in at the event of project or funding issues.

Appendix B Recent Norwegian infrastructure projects

There have been a four new infrastructure construction projects closed in Norway in the past five years:

- *DONG Energy Trym gas field platform project* – Gas from Norway's Trym field will be pumped onshore through a Danish platform in a project signed with DONG Energy to develop the gas field.

- *Hog-Jaeren 74MW wind farm project* – construction of a wind farm being built southwest of Stavanger in a joint venture between Tokyo Electric Power Co and Toyota Tsusho sponsored by Eurus.

- *Persbraten and Hoybraten PFI Schools project* – Norway's first schools PPP project involving a mixture of new build and redevelopment work on two of Oslo secondary schools with work completed in 2007.

- *E18 Grimstad-Kristiansand Toll Road PPP project* – construction of a 38km road with bridge and tunnel sections in south Norway from Grimstad to Kristiansand. The project was planned to be the third and the biggest of the three pilot road projects of Norway under the PPP scheme.

Over 10 refinancing or expansion projects in the oil and gas sector have also been completed in Norway. Funding of these projects has come from both public and private sources with a number of key private banks participating in the Norwegian infrastructure market and three multilaterals supporting projects.

The banks which have been involved in financing recent infrastructure and refinancing projects in Norway include Societe Generale, Nordea, BBVA, RBS, Depfa, DnB NOR Bank, BNP, SEB Merchant Bank, Fortis, Credit Agricole and ING.

The three multilaterals that have supported the above projects are detailed below with a brief overview and applicability to the Norwegian HSR project.

1. **European Investment Bank**

Overview

The EIB is the European Union's financing institution, its role is to provide long-term finance in support of investment projects. Its shareholders are the 27 Member States of the Union, which have jointly subscribed its capital and the EIB's Board of Governors is composed of the Finance Ministers of the Member States.

The EIB funds its operations by borrowing on the capital markets rather than drawing on the EU budget and providing financing to infrastructure projects at a lower rate possible than would be achievable through commercial funding.

Applicability to Norwegian HSR project

The EIB provides funding to infrastructure projects both to EU Member States and those outside the EU, funding up to 50% of the total project cost should the project meet certain objectives. The EIB has funded two infrastructure projects in Norway in recent years, €150 million to the Trym gas field development in 2010 and c.€190 million to the E18 toll road in 2006.

In 2009, 89% of EIB funding was committed to projects within the EU but the EIB have indicated that they will lend to non-Member States for projects delivering development and economic benefit. We therefore suggest that the Norwegian HSR project should make an application to the EIB for funding the project, although we are unclear of its likely success.

2. **Nordic Investment Bank**

Overview

NIB is an international financial institution owned by Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden, financing projects that strengthen competitiveness and enhance the environment. NIB lends to both its member countries as well as emerging markets in Africa, the Middle East, Asia, Europe and Latin America.

NIB acquires the funds for its lending by borrowing on the international capital markets and, similar to the EIB, offers long-term loans and guarantees on competitive market terms to projects. NIB's bonds currently hold the highest possible credit rating illustrating their perceived low risk.

Applicability to Norwegian HSR project

NIB provides long-term financing to projects that "strengthen competitiveness and enhance the environment". NIB funds projects across all sectors prioritising energy, transport and environmental improvements. NIB has recently supported the construction of the E18 toll road in 2006 (c.€90 million).

The Norwegian HSR project is within NIB's preferred sector and it appears that it will "strengthen competitiveness and/or enhance the environment" through reduction of reliance on air traffic in Norway, reducing greenhouse gases and exhaust emissions, as well as increasing traffic safety and providing environmental benefits. It therefore seems likely that NIB would consider an application to provide financing towards the Norwegian HSR favourably.

3. **Enova**

Overview

Enova is a public enterprise owned by the Royal Norwegian Ministry of Petroleum and Energy with a key objective to contribute to environmentally sound and rational use and production of energy. Enova provided c.€60 million (NOK 511m) grant funding for construction of the Hog-Jaeren wind farm project in 2010.

Applicability to Norwegian HSR project

The Norwegian HSR project is unlikely to be applicable for funding from Enova, although one of their stated objectives is "to limit energy use considerably more than if developments were allowed to continue unchecked". JBV could argue that the HSR project will reduce overall energy usage in comparison to short-haul air travel and hence apply for Enova funding; however, at this stage this seems unlikely and would require further investigation at the next phase of the project.

Appendix C Financial modelling test run

The model has been built to provide a high level preliminary analysis of funding structures and financing options using capex, opex and revenue assumptions. We have run a scenario to test the functionality of the model and show the outputs that it will give in testing in Phase 3. The test is a fictitious test and is not based on realistic numbers at this stage. They are simply to provide an indication of the outputs that will be provided rather than any conclusive results at this stage. The detailed assumptions used and key results for this "dummy" test are detailed below.

Assumptions

Provider	Subject	Assumption
PwC	Contracting structure	"Base case" – Design, construct & maintain
	Any Track Access Charge (TAC)	No TAC
	Funding source	All capex items fully grant funded
Atkins	Scheme for testing	HSR scheme (option D) from Oslo to Bergen and Stavanger
	Revenue	Profile provided from demand/revenue model
	Revenue inflation (above CPI)	Currently assumed to be zero (i.e. inflation in line with CPI)
	Length of assessment period	40 year operations
	Operations start date	01/01/2020
F+G	Costs (capex & opex)	Profile provided from cost model. In Phase 3 this will also include a QRA allowance and residual value
	Opex inflation (above CPI)	Currently assumed to be zero (i.e. inflation in line with CPI)
	Construction start date	01/01/2013
EY	Split of maintenance cost (maintenance vs renewals)	50% maintenance, 50% renewals
	Amount of "other" revenue	Other revenue (incl. car park, retail, etc) 6.1% of total revenue
	InfraCo profit margin	5%
	Franchise/OpCo profit margin	5%
	Inflation (2006-2010 actuals)	Norwegian CPI & construction costs: 2006-2010 actuals, obtained from JBV (from Ministry of Transport and Communication)
	Inflation (forecast)	Forecast Norwegian CPI & construction costs: CPI - 2.2% (average of 2006-2010) Construction costs – 4.1% (average 2006-2010)
	Capex inflation	Based on historic actual Construction Cost inflation; forecast based on 2006-10 average Construction Cost inflation
	Discount rate	3.5% real / 7.7% nominal

The model has been constructed so to allow flexibility of the above assumptions (including assessment period length, time period, all revenue and costs, etc). These assumptions will be re-stated and tested in Phase 3 of the project.

Infrastructure costs

a) Infrastructure capital costs

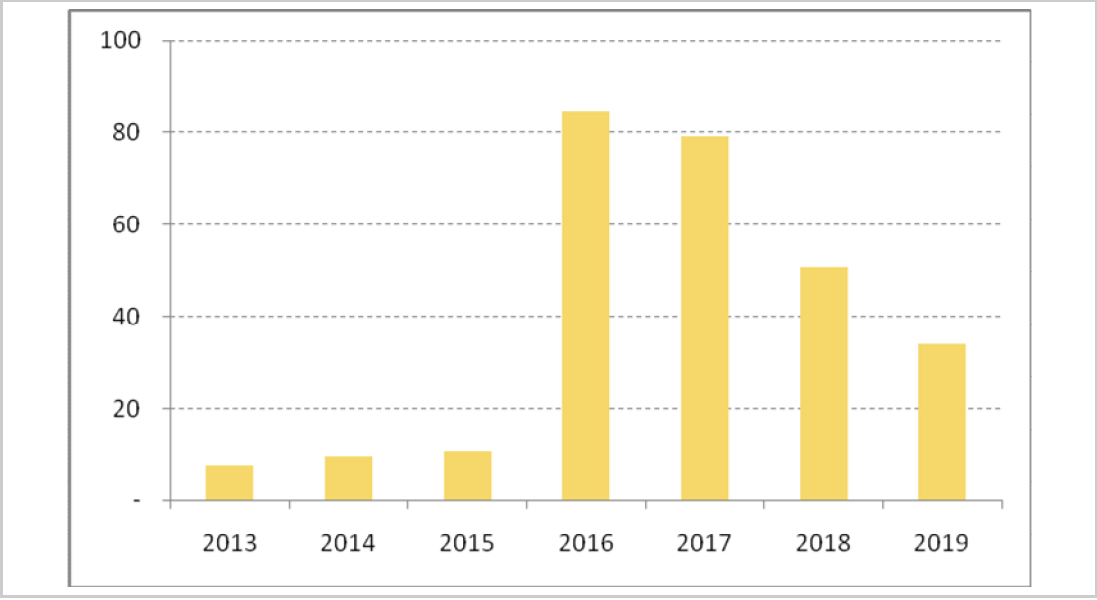
The table below presents a summary of the capital costs (fictitious numbers to demonstrate functionality).

Capital Item (NOKm real, 2006 prices)	Capital Cost (from F+G)
Planning and associated costs	7,699
Output Definition	1,350
Pre-Feasibility	2,700
Option Selection	5,399
Single Option Development	10,798
Detailed Design	48,592
Construction, Testing & Commission	159,275
Scheme Handback	32,794
Project Closeout	1,350
Rolling Stock	6,793
Total	**276,750**

This capital cost spend profile over the construction period is highlighted in Figure 5 below:

Figure 5: Capital cost spend profile

Source: F+G forecast data, Ernst & Young analysis



The profile above includes the capital cost of the rolling stock at NOK6.8bn. Should a traditional approach to the procurement of rolling stock be used and a lease agreed, the construction profile excluding the rolling stock capital cost would change, with substantial ongoing annual lease payments required over 40 years instead. However, we have assumed that for the “base case” Rolling Stock is funded via Government Grant.

b) Infrastructure operating costs and renewals

In addition to the capital costs presented above, there will be a requirement to fund the maintenance costs and renewals of the infrastructure once operational. We present below the annual maintenance costs and renewals for the infrastructure.

	Annual cost (NOKm real, 2006 prices)
Maintenance	1,083
Renewals	1,083

F+G has calculated the maintenance costs on an annualised basis, but have not separately identified each individual cost item or renewal. We have therefore assumed an equal split of maintenance and renewals; we anticipate a greater level of detail in the Phase 3 analysis.

Infrastructure revenues

It is envisaged that the InfraCo will receive revenue sufficient to cover its operating costs. The income level for the InfraCo will need to be a function of the passenger revenues generated, the level of maintenance and renewals costs, and the potential Government subsidy.

Infrastructure track access charges are likely to be generated from passenger revenues. The nature of the mechanism for setting and calculating track access charges has not been developed in Phase 2 and will depend, in part, on the approach to regulation, risk transfer and the payment mechanism developed.

In the current example, it has been assumed that there are no track access charges, thereby having no direct income to the InfraCo other than the subsidy support from the Government. In scenarios to be run in Phase 3, TACs are likely to be in excess of the operating costs, therefore allowing a return to the Government and a profit margin to be retained by the InfraCo (assumed at c.5%).

By estimating the InfraCo operating costs it is possible to estimate the minimum level of track access charges necessary to make the entity financially robust. In addition, it is also possible to estimate the maximum level that track access charges could be set at whilst still allowing passenger services to remain commercially viable, this will be done in Phase 3.

Franchise financials

The table below shows the Operating Profit estimate for the train operations based upon the fictitious revenue estimates provided by Atkins and the opex estimates provided by F+G.

NOKm real, 2006 prices	2020	2021	2022	2024	2025	2026
Net revenue	964	1,042	1,122	1,205	1,290	1,308
Lifecycle operating costs	(897)	(897)	(897)	(897)	(897)	(897)
Profit	**67**	**145**	**226**	**308**	**394**	**412**
Government subsidy/ (premium)	(19)	(93)	(170)	(248)	(329)	(346)
Retained profit	**48**	**52**	**56**	**60**	**65**	**65**
As % of revenue	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*

The franchise figures above exclude rolling stock and track access charges at this stage and highlight that, based on the franchise cost and revenue estimates franchise operations will make an operating profit of NOK48m in the first year of operations (2020) increasing to circa NOK103m by the end of the operations period (2059); this is based on the assumption that the franchise will retain a profit margin of 5%. Analysis of this data can determine the level of TAC that can be supported in the structure; this work will be completed in Phase 3 under each proposed scenario.

InfraCo financials

Should the InfraCo receive TACs from the Franchise, we could model the profitability of the InfraCo returning a subsidy to the Government (this will be done in Phase 3); however, in this scenario, the Government supports the InfraCo with an annual premium equal to the operating costs.

NOKm real, 2006 prices	2020	2021	2022	2024	2025	2026
Net revenue	-	-	-	-	-	-
Maintenance	(1,083)	(1,083)	(1,083)	(1,083)	(1,083)	(1,083)
Renewals	(1,083)	(1,083)	(1,083)	(1,083)	(1,083)	(1,083)
Cashflow	**(2,165)**	**(2,165)**	**(2,165)**	**(2,165)**	**(2,165)**	**(2,165)**
Government subsidy/ (premium)	2,165	2,165	2,165	2,165	2,165	2,165
Retained profit	**-**	**-**	**-**	**-**	**-**	**-**

Government support

In summary, under the assumptions adopted for this “dummy” analysis, the level of TACs will determine how much income the Government receives from the franchise operator and from the InfraCo: the lower the track access charges, the higher the premium that the franchise operator generates compared to the InfraCo and vice versa. Therefore, in this scenario, the Government receives an income from the franchise operator but not from the InfraCo.

The table below summarises the income and subsidy payments to/from the Government from the two sources. Figure 6 illustrates the net government position over the life of the project, reducing to NOK1.1bn in 2059.

NOKm real, 2006 prices	2020	2021	2022	2024	2025	2026
Income from Franchise	19	93	170	248	329	346
Income from InfraCo	-	-	-	-	-	-
Subsidy to Franchise	-	-	-	-	-	-
Subsidy to InfraCo	(2,165)	(2,165)	(2,165)	(2,165)	(2,165)	(2,165)
Net government position	**(2,146)**	**(2,072)**	**(1,996)**	**(1,917)**	**(1,836)**	**(1,817)**

Figure 6: Net government position

Source: Ernst & Young analysis

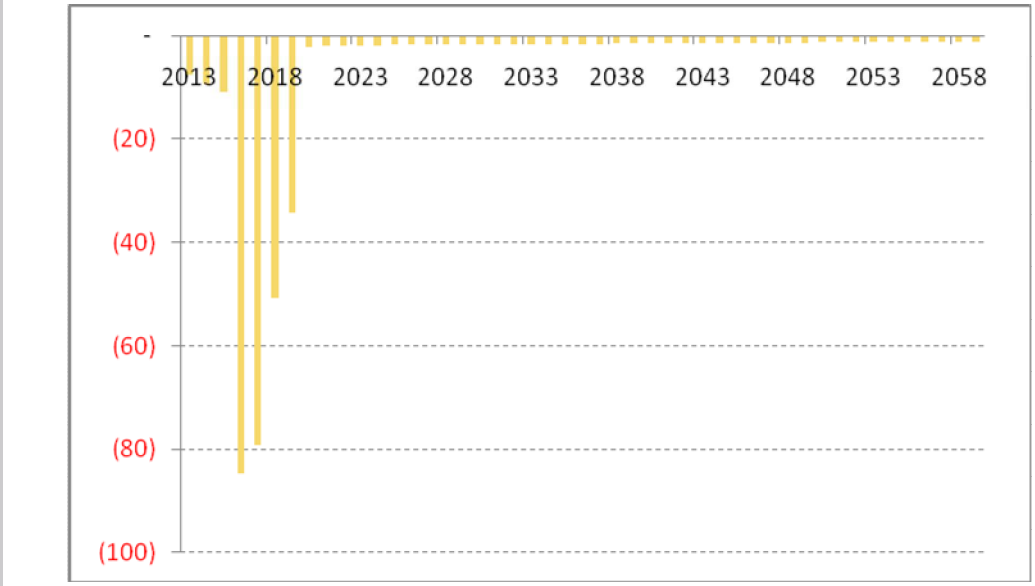


Figure 6 illustrates that the net government position remains negative throughout the project due to the high grant funded capex costs and ongoing subsidy payment to the InfraCo (due to the lack of TAC).

NPV of Government support

The table below provides a summary of the net present value to Government discounted at 3.5% real.

	Total	NPV
Income from Franchise	24,776	8,994
Income from InfraCo	-	-
Subsidy to Franchise	-	-
Subsidy to InfraCo	(86,613)	(37,598)
Support for Capital Cost	(276,750)	(242,821)
Net government position	**(338,588)**	**(271,425)**

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