NATIONAL
INFRASTRUCTURE
COMMISSION

International Infrastructure Governance Report

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Contents

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1. Introduction

This report sets out the findings from an analysis of infrastructure decision making and consenting in a range of countries that have relevance to the British context. It focuses on the perspective of the promoter, drawing on real experiences.

The research focuses on six countries, listed below.

- France
- Denmark
- Netherlands
- Australia
- Japan
- South Korea

A case study project in each country has been identified and the report describes how these projects have informed the research findings.

The report and its findings are based upon a limited sample of case studies and therefore offer a snap-shot of governance related to particular types of infrastructure in particular countries. The conclusions seek to draw out themes and issues that have relevance to the UK consenting process and may be of interest to policy makers.

1.1 The National Infrastructure Commission (NIC)

The NIC is an executive agency of the Treasury, and aims to secure sustainable economic growth across the UK. Established in October 2015 the Commission assesses the UK's future needs for nationally significant infrastructure. Each parliament the NIC will produce a National Infrastructure Assessment (NIA). This sets out what infrastructure is needed covering a variety of sectors including transport, water and energy.

The information produced in this study will inform the NIC's consideration of the structural complexities of infrastructure delivery in the UK.

1.2 Structure of this report

The Report starts with scene setting, drawing on decision making regimes in the UK. It seeks to understand some of the perceptions about the time taken to make decisions about infrastructure and its delivery.

The methodology for the study is set out in Appendix A. The experience of promoters and developers of projects is of particular relevance. The methodology explains how the research is based on the views of promoters and developers in regard to the consenting and decision making processes in each country. It also describes the rationale for choosing the countries that are the focus of the study.

The next section features the six country case studies, with an overview of the infrastructure consenting process and a description of the case study project. A summary is provided of best practice and successes as well as the key delays, uncertainty and constraints to delivery, drawn from the case study findings. The six countries and projects selected are described overleaf.

France	Northern European with similar levels of expectation regarding environmental standards and public engagement	**Nuclear Plant at Flamanville:** Provides an insight into a non-linear scheme, the weight of health and safety considerations, the role of the National Commission for Public Debate and the influence of the political landscape and policy regarding nuclear
Denmark		**Fehmarn Belt Road /Rail Tunnel**: Large and complex project with elements of linear (access Roads/Railway infrastructure and associated development) and site specific infrastructure (Tunnel). Focus on Danish transport infrastructure consenting and the ability to compare and contrast with German consenting processes and timescales at the other end of the tunnel.
Netherlands		**A16 Motorway**: Most significant new motorway to be built in the Netherlands since the 1970s. High level of controversy and in a densely populated and urbanised environment.
Australia	Similar legal system, parliamentary and planning regimes (common law). State and Federal levels of Governance.	**Airport Link Project in Brisbane, Queensland:** A State of Queensland project, changes to the project post consent, consolidated consenting process ("coordinated project process"), environmental impact statement process and post construction objections.
South Korea	Countries with high levels of growth and population densities. Focus on productivity.	**Jemulpo Tunnel, Seoul: A 7.53 km-long tunnel.** Private sector led with significant environmental / air quality impacts in a congested and dense urban environment.
Japan		**Shin-Hakodate-Hokuto to Sapporo Shinkansen:** 360 km High speed rail line constructed in a densely populated and environmentally constrained country – phased consenting and construction process and part of the larger Hokkaido Shinkansen high speed rail line. Has parallels with HS2.

Finally, the report concludes with a factual comparison of consenting timescales between different countries, focusing on specific aspects of the governance models investigated. The conclusion provides a summary of the key themes that have emerged from the case study research and sets out the principal benefits and drawbacks of the consenting process of relevance to the UK.

2. The UK context

There is a general perception in the UK that infrastructure delivery is faster and more efficient elsewhere. Examples of lengthy delays and barriers to progress on major infrastructure projects such as Heathrow Terminal 5, Sizewell B and the Newbury Bypass have helped fuel this way of thinking.

Successive Governments have grappled with the policy and structural difficulties that have hindered infrastructure delivery in the UK. In recent times a number of substantive reports have been published that have shaped the government response to these difficulties:

- The Eddington Transport Study (Department for Transport / Her Majesty's Treasury 2004)
- The Barker Review of land use planning (Department for Communities and Local Government 2006)
- The Energy Review (Department for Trade and Industry 2006).

Collectively, these studies contributed to the establishment of a new nationally significant infrastructure regime in England and Wales.

2.1 Consenting Processes in the UK

The British planning system, as it relates to infrastructure, is a combination of various different processes which are largely defined by what level of Government sets the policy and makes the decisions. (See Appendix B for diagrams outlining the various stages in the British consenting processes).

Planning Permission under the Town and Country Planning (TCPA) Act 1990

The TCPA provides the definition of development used in England and Wales. It is the primary legislation that establishes the application process and framework for decision making by local government officials and elected members. There is also provision for the Secretary of State to "call-in" applications for planning permission that are of more than local significance such as large housing and retail developments. The Secretary of State is also given powers to make decisions on appeals made by applicants against a local authority's refusal to grant planning permission, or an application that a local authority has failed to determine in the specified timeframe.

Transport and Works Act Orders (TWAO)

These are statutory instruments that are "made" by the relevant Secretary of State in England or the Welsh Government, usually after a public inquiry process. Private companies or public authorities can apply. TWAOs are typically granted for railway, tramway or harbour infrastructure, with a particular focus on light rail systems in urban areas.

Development Consent Orders under the Planning Act 2008

The Act defines certain types of nationally significant infrastructure projects (NSIPs) for Energy, Transport, Water, Waste Water, Waste, and Business or Commercial developments. The Act applies in England, to an increasingly limited extent in Wales and in very limited circumstance in Scotland. A statutory timetable for decision making by the Secretary of State is set out in the Act and secondary legislation. Pre application consultation is an important and a statutory part of this "frontloaded" process. Government departments prepare sector based National Policy Statements that have primacy in the planning process.

Hybrid Bill

Hybrid bills are relatively rare and combine characteristics of both private and public bills. They are scrutinised through a parliamentary process by a select committee of MPs. A public bill, the most common type of government bill, is legislation that affects everyone equally. A private bill amends the law in such a way that it affects some individuals more than others. A hybrid bill is unique in that it does both. Hybrid bills often concern projects of national significance, examples being the Channel Tunnel Rail Link (HS1), High Speed 2 (HS2) and Cross rail (Elizabeth Line). Hybrid bills can take approximately 18 – 24 months to complete the parliamentary process.

3. International Findings

3.1 France

3.1.1 The French Infrastructure Consenting Process

Major infrastructure projects are usually defined as a project of 'public interest' due to their likely impacts and their scale. Project thresholds are set by the Conseil D'Etat. These projects are consented by national government with a public inquiry process. Some major infrastructure projects such as the Charles de Gaulle Express are subject to a preliminary public inquiry before being declared of public interest. Once a project is declared as having a public interest, the public body promoting the project can start opening a competition (call for tenders) for the realisation of the project.

Whilst there is no national spatial plan, similar to the Dutch system, there has been a move towards consolidating plans for different sectors and systems at a national level. For example, the Schéma national d' infrastructures de transport (SNIT) aims to consolidate in one document strategic transport policy.

In terms of the legislative framework, infrastructure projects are principally guided by the national town planning regulations contained in the Code de l'urbanisme and the environmental code (Code de l'environnement). Since the launch of an environmental reform process in 2007, France has been committed to responding to climate change and has passed several laws to further regulate effects on the environment.

In France, a focus is placed on the early feasibility stages of major infrastructure projects prior to the formal consenting process. This includes a national consultation exercise, led by the French Commission of Public Debate (Commission Nationale du Débat Public).

The French Commission of Public Debate (CNDP) is responsible for informing the public and ensuring their views are taken into account throughout the decision making process for a major project. It is an independent, state financed body, made up of 25 members.

All projects over a certain size threshold are required to be put to the CNDP for consideration. The CNDP can then accept or decline to set up a process to consider the project. If accepted it can set up its own commission to manage the process, or ask the developer to manage a public debate, with the CNDP taking an oversight role.

The debate process provides a wide scale consultation with the public at an early pre-application stage, for a period of four months. It involves public meetings, online information and written publicity. At the end of this period the CNDP publishes feedback on the project, capturing key messages from the debate. The developer must respond within three months, explaining how it will proceed. Whilst the CNDP's report holds no legal status, the CNDP has significant influence and can undertake a monitoring approach to help ensure commitments are followed through the consenting process.

3.1.2 Flamanville Nuclear Power Project

Flamanville 3 is the construction of a third nuclear power unit - a European Pressurised Reactor (EPR) on the site of the existing Flamanville Nuclear Power Plant. It is located in Normandy, on the English Channel coastline. The existing plant includes two pressurised water reactors, which came into service in 1986. Flamanville 3 is under construction and estimated to be operational by late 2018.

Overview

Developer: EDF

Decision making body:
French Government

Capital cost:
Estimated in excess of £6.5 billion (2015)

Status:
Due for completion in 2018

Figure 1: Construction of Unit 3 at Flamanville Nuclear Power Plant

Timeline

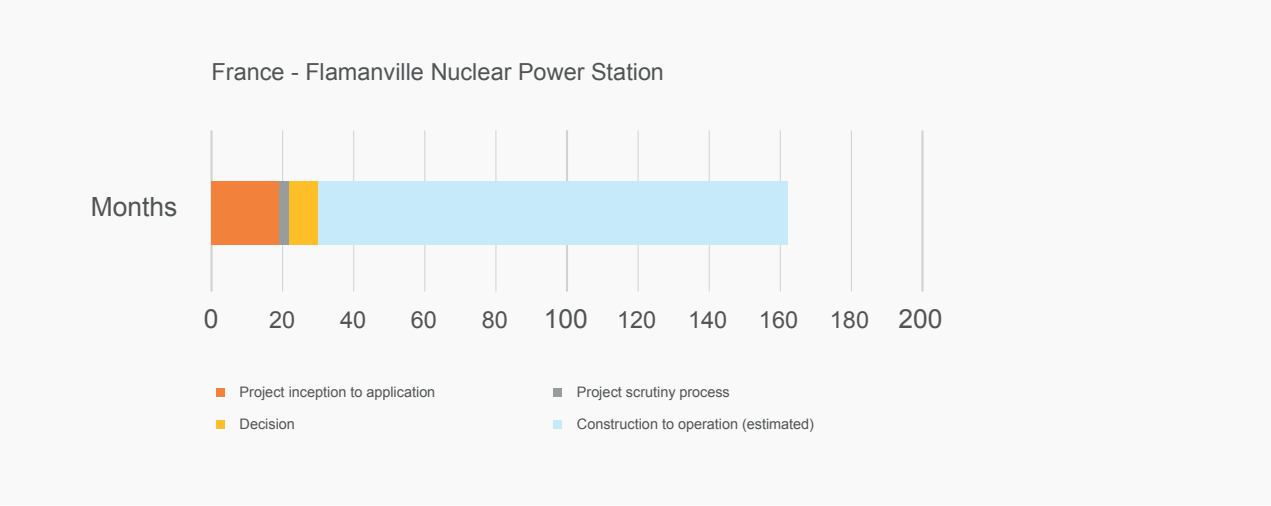


Figure 2: Project timeline chart

Project inception to application	October 2004 to May 2006	In October 2004 EDF Board of Directors decided to build a third nuclear reactor at Flamanville – Flamanville 3. Prior to this EDF undertook various technical reviews with the Autorité de sûreté nucléaire (ASN: French nuclear safety authority). EDF appealed to the CNDP in November 2004 and the CNDP decides a public debate is necessary (December 2004) and to delegate organisation of the public debate to a specific commission. In March 2005 a commission in charge of public debate is constituted. The public debate was held from October 2005 to February 2006. In February 2006 the outcomes of the debate were published, including requests to EDF. In May 2006 EDF submitted its authorisation decree application.
Project scrutiny process	May 2006 to August 2006	The application is received and a public inquiry is held. The Préfet de la Manche wrote to the Chief Minister stating that following the submission of a request by EDF for authorisation, a public inquiry has been ordered. The public inquiry process included a public consultation period from 10 July 2006 to 15th August 2006.
Decision	August 2006 to April 2007	The French Government issued an authorisation decree to build a nuclear installation comprising an EPR-type pressurised water reactor on the Flamanville site in April 2007.
Construction	September 2007	Commencement of construction works. Following the commencement of construction ongoing exchanges of information, review and requests were made by the ASN (and the technical supporter Institut de Radioprotection et de Sûreté Nucléaire (IRSN)) before certain elements of construction could be completed.
Operation	Estimated late 2018	The project has been delayed by a number of years due to safety concerns. It remains on schedule to commence operations by late 2018, subject to regulatory approval.

3.1.3 Best practice and successes

1. **National public consultation at the outset of a project.** In the case of Flamanville 3, the public debate involved 2900 participants and meetings held in 21 cities. The feedback from the debate influenced the planning and design of the project, two examples of this have been identified. The feedback included a request for an independent study on health and safety, with a particular focus around the risks associated with a plane crash into the nuclear reactor. An independent study was undertaken and the design was revised to include a reinforced concrete core, engineered to withstand an impact from a plane. Secondly, concerns were raised during the debate regarding confidential information that is not available for public inspection. In response, EDF signed an agreement with recognised experts, to allow access to specific information and give the public confidence that confidential aspects of the proposals had been independently verified.

   EDF recognise the positive contribution the debate made to the project design process, noting that it resulted in constructive ideas to upgrade the project and improve its acceptability to the public. The debate effectively frontloaded the project scrutiny process and identified issues at a stage where there was opportunity to influence EDF's proposals. It would seem that this reduced time spent on the subsequent public inquiry and decision making stages.

2. **Effective approach to the prioritisation of nuclear projects.** There has been an ambitious state led nuclear power strategy in France, which has reflected the political will to achieve a substantial level of energy independence in a country poorly endowed in fossil fuels. The energy independence agenda assigned priority to nuclear power, and this was most evident in the Energy Policy Framework Law in 2005. The Law established that nuclear power will continue to provide an important share of the electricity mix, and paved a way forward in recognition of the decommissioning phase of numerous nuclear reactors by 2020. It set out that a new generation reactor must be available by 2015 and included policy to sustain research and development on future nuclear systems. The contribution of nuclear power to the French energy mix was further reinforced with key primary legislation including: law on nuclear transparency and security and the establishment of the independent safety authority (ASN) in 2006. Legislation also came into force in 2006 on concerning the sustainable management of radioactive material and water, which included provision for a national plan on radioactive material and radioactive waste management.

   A political commitment to nuclear power generation, formalised by primary legislation established the need for the Flamanville 3 project. This restricted the ability to contest the principle of the project, and arguably placed a focus on the quality of the planning and design process through the consenting procedures.

   France continues to use legislation to steer the country's energy production strategy. More recently, the Energy Transition for Green Growth Act 2015 provides a legal framework with the aim of tacking climate change and reinforcing energy independence and security. It included the aim of reducing the nuclear share in the electricity mix down to 50% by 2025.

3. **A collaborative approach is taken between the Nuclear Safety Authority (ASN) and the consenting body.** The ASN is an independent administrative authority set up by law. It is tasked on behalf of the State with regulating nuclear safety and radiation protection and also engages with the public. The ASN is actively engaged in the decision making process on applications for nuclear installations and collaborates with national ministers, acting as expert advisor.

   French legislation requires that consent for any nuclear installation shall be in the form of an authorisation decree, and that this cannot be issued until the ASN has been consulted and advised on technical requirements to be included in the decree.

   In February 2007, the ASN Board of Commissioners concluded that the ASN services identified no technical argument against the delivery of an authorisation decree for the Flamanville 3 project. Following which the decree was signed by the Prime Minister in April 2007, which permitted EDF to commence construction. In parallel the ASN has continually reviewed the detailed design and measures planned by EDF, and makes authorisation decisions in accordance with the conditions of the decree.

   The collaboration between the ASN, as the technical advisor on nuclear installation and the consenting body marks a contrast to the segregation of technical and planning matters in nuclear development in the UK. The public inquiry and subsequent decree procedure was notably short in comparison to nuclear power developments in the UK. The role of the ASN provides confidence in regard to technical and safety issues, which in the case of nuclear power are often difficult to distil from 'planning matters' from the perspective of stakeholders engaged in the decision making process.

3.1.4 Delays, uncertainty and constraints to delivery

The complexity of the construction process was unforeseen at the consenting stage. The EPR reactor design has proved costly and complex to build. This has also proved to be the case in Finland and China where the EPR design is also being constructed. Large nuclear power stations will always be subject to high levels of complex governance due to the nature of the technology and the public's concerns about safety in light of accidents in Chernobyl and Fukishima. In France, despite a high level of scrutiny by experts in a country which is well versed in delivering nuclear projects, the 3rd generation of nuclear power stations has proved very difficult to deliver on time and on budget. Despite extensive research and development and theoretical design simulations, delivery and deployment have been delayed.

In terms of governance, this perhaps suggests that projects that are conceived around a very specific technology that is untried and untested need to be consented in a more flexible way. A more flexible approach would allow revisions to design parameters to suit construction realities in a controlled but more expeditious way. This concept has application across other types of development. For example, maglev trains and driverless cars, where the need to put theories into practice requires a more forgiving governance culture.

3.2 Netherlands

3.2.1 The Dutch Infrastructure Consenting Process

In the Netherlands, large infrastructure decisions are concentrated at central government level. The need for devolved forms of regional government and decision making is arguably limited given the size of the country and the relative close proximity of the population to national decision makers.

The Dutch have a strong tradition of national spatial planning. This is principally a consequence of the need to exert control over scarce land resources and the vulnerability of having 26% of the total land area below sea level, containing 21% of the population. The need to balance economic, social and environmental demands is acute. A national spatial plan is reviewed and published at regular intervals.

The spatial planning process at the national and local level works to identify future growth potential and constraints on national and local networks that a national infrastructure fund can then provide financing for.

The Infrastructure Fund Act 1993 created the “Infrastructure Fund” and sets down its purpose and scope. The “Infrastructure Fund” works in parallel with the “Delta Fund” which has a specific remit to finance flood defence infrastructure. The money for the “Infrastructure Fund” comes from general taxation and the net proceeds from toll roads.

Since the economic crisis in 2007/08 the Dutch Government has focused its efforts on streamlining the governance of major infrastructure projects through a number of Acts. Most recently, an Environmental Planning Bill was published by the Dutch Government in 2016 and is intended to eliminate contradictory, vague and superfluous regulations pertaining to the physical living environment. It will also consolidate multiple regulations into a single Act. When this process is complete in 2018 it will replace 26 Acts and 60 general administrative regulations and has been described as, “a single Act in order to obtain a single permit”.

3.2.2 A16 Motorway Rotterdam

This 11km stretch of new 2x3 lane road will extend the existing A16 motorway in arc around the north of Rotterdam to the junction with the A13 motorway, the main route between Rotterdam and The Hague. In effect it provides the missing motorway link between the A13 (north towards the Hague) and the A16 / A20 junction, which provides access respectively to the Belgian border and the west coast. It is the first significant new stretch of motorway to be built in the Netherlands since the 1970s. The project includes four new junctions, a tunnel under a park / recreation area an aqueduct and a bridge crossing over an existing mainline railway. The project is intended to relieve congestion on the existing motorway network, which has pushed traffic onto surrounding lower capacity routes and streets. It will also provide better access to Rotterdam Hague Airport and stimulate economic development. Although it has been consented at the national level it was the subject of appeals to the Dutch Legal Council. If the national consent is confirmed, following adjudication on the appeals, it will be subject to local permitting/detailed design processes.

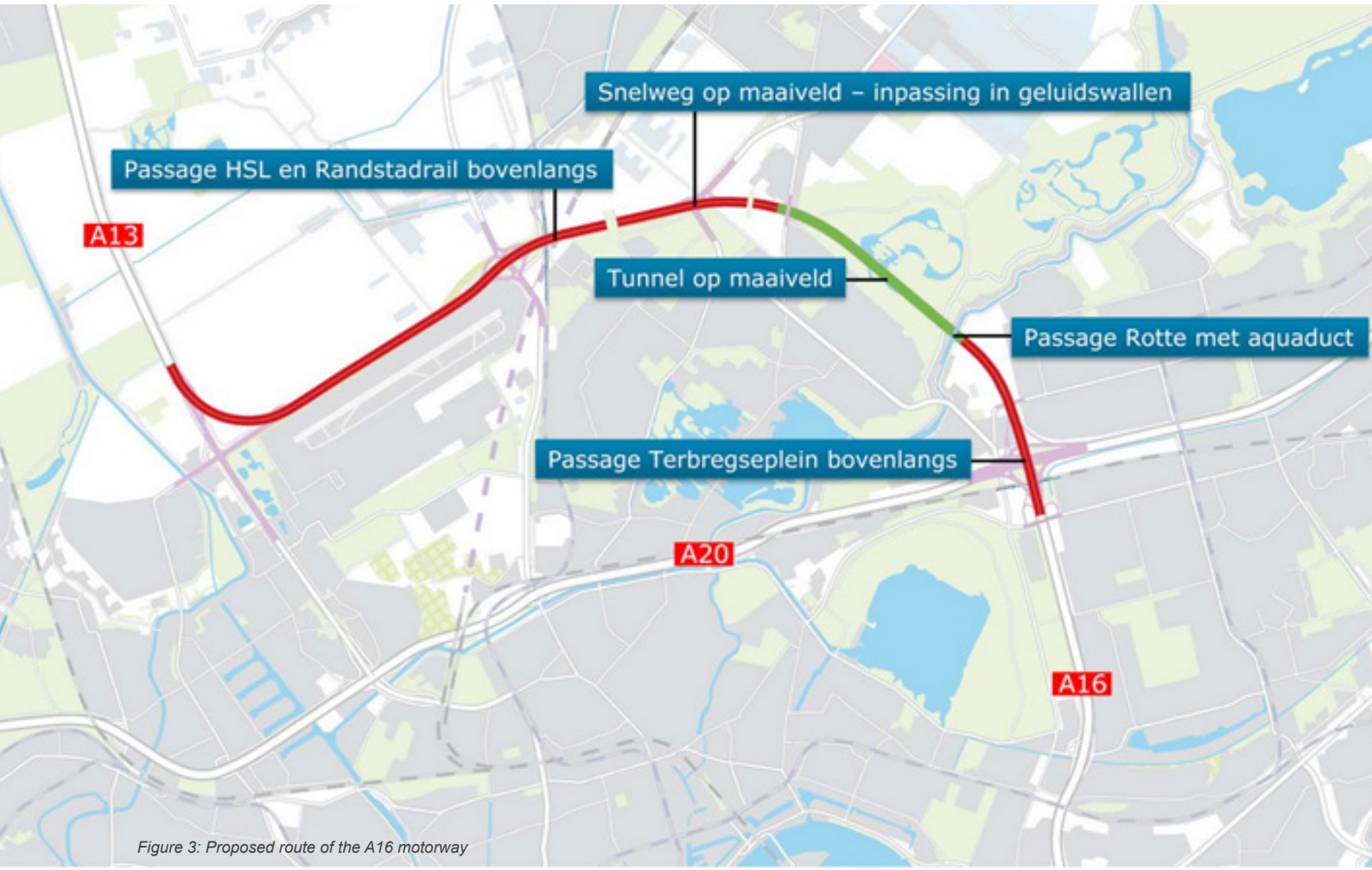


Figure 3: Proposed route of the A16 motorway

Overview

Developer: Rijkswaterstaat (Dutch Road Authority)

Decision making body: Dutch Ministry of Infrastructure and Environment for the route; Municipality of Rotterdam and Lansingerland for the local construction permits; Water Authority Zuid Nederland for the permits on the Water ecosystem in this area.

Capital cost: Approximately £144 million (2015)

Status: 2017 project granted national development consent, subject to the adjudication of appeals by the Dutch Legal Council.

Figure 4: CGI of the A16 motorway

Timeline

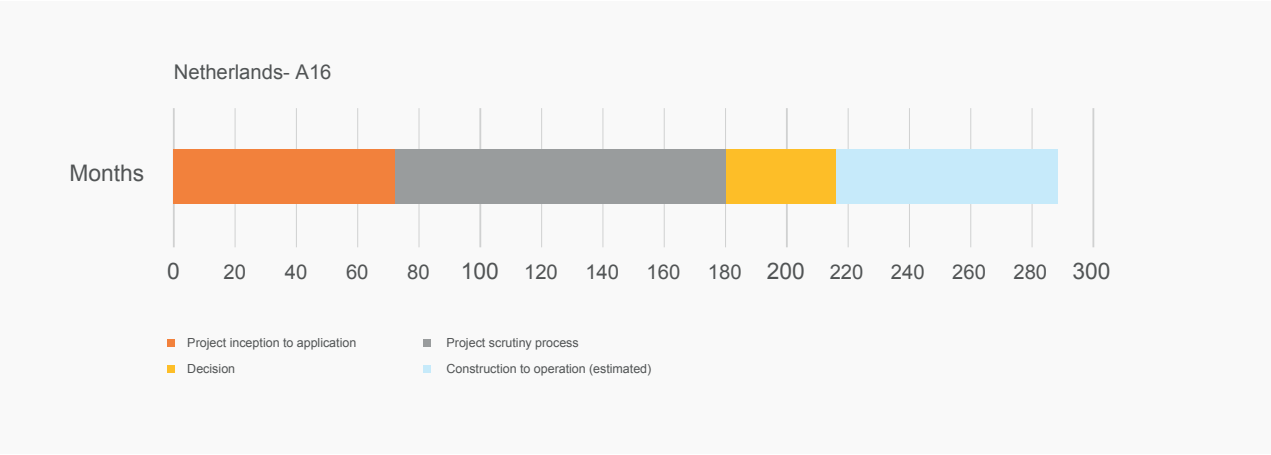


Figure 5: Project timeline chart

Project inception to application	1999 to 2005	The A13/A16 project was first proposed in 1999 by a regional grouping of provincial and local and authorities centred on the City of Rotterdam and its suburbs. This was called the Bestuurlijk Platform Zuidvleugel (BPZ) - Administrative Platform South Wing Region. National Government had an important role on the Board of this non statutory organisation. The culmination of the project inception phase was the publication of the Start Notice in November 2005. This defined the problem and established what the "project" was seeking to achieve. It also included preliminary environmental information and parameters for the further assessment work and consultation. The Start Notice was subject to consultation with the public and statutory bodies.
Project scrutiny process	2006 to 2015	2006 – Six route options published in a "Trajectory Memo". 2008 – Ministerial decision to narrow down the route options for environmental assessment (EIA) 2009 – Route Trajectory Study and EIA published and consulted on for 6 weeks by way of written comments and public hearings. 2011 – In principle agreement reached between central government and local authorities for the chosen route. 2013 – Ministerial advice issued on the preferred option and confirmation of central government support for the project.
Decision	2015 to 2018	2015 – Preliminary design consultation 2016 – Ministerial route decision made by the Minister of Infrastructure and Environment (August); 6 week period to appeal against the decision to the Council of State. 250 appeals were lodged with the Dutch Legal Council 2017 – Appeals to be decided and Ministerial decision to be confirmed, or not, by the Dutch Legal Council.
Construction to Operation	2018 to 2024	2018 - Construction tender (Design, Build, Finance and Maintain) to be awarded. Pre-commencement permitting by the Municipality of Rotterdam at least 6 weeks in advance of construction.

3.2.3 Best practice and successes

1. **Independent consultation experts.** During the 2nd stage of consultation, which included the trajectory study and Environmental Impact Assessment (EIA), independent "surroundings managers" were deployed to oversee the consultation. They acted as an impartial sounding board for the affected communities and operated within the remit of the consenting/EIA process. This encouraged the consultees to focus their input on the matters at hand, facilitating quality responses that the developer was able to respond to more effectively. Their role was to ensure a fair process rather than to act as an advocate for one side or the other. The surroundings managers' role was not to create an "equality of arms" in this consultation space, however their existence arguably provided greater clarity to consultees that their views were of value and that local perspectives were being captured. While the use of independent surroundings managers didn't necessarily diffuse or reduce the level of opposition, it appears that the more structured approach allowed the feedback to be captured more effectively. It also helped in reducing the time taken to resolve community issues during subsequent stages.

2. **Inclusive approach to EIA consultation.** The Trajectory Study and EIA were both the subject of a public consultation in 2009. This followed a process of narrowing down route options for the EIA. The EIA and Trajectory Study therefore afforded the public with an opportunity to opine on the EIA methodology, rationalised against the route options. The study also informed the final "in principle" route decision taken in 2011 by the local authorities and central government. It is arguable that this more inclusive and iterative approach to the preparation and findings of the EIA contributed to building a consensus around the environmental impacts. It also allowed decision makers to understand "real world" concerns and sense-check them against the technical information presented in the EIA and Trajectory Study.

3.2.4 Delays, uncertainty and constraints to delivery

1. **Ambiguous consultation outcomes.** During the first phase of consultation on the Start Memo (2005) before the surroundings managers were appointed, the developer commented that this consultation stage was not very effective at capturing agreements with community groups. This resulted in poor project co-ordination and the need to revisit matters raised by consultees at subsequent stages. It's notable that 10 years elapsed between the Start Memo consultation in 2005 and the Preliminary Design Consultation in 2015

2. **Uncertain detailed design permitting, post consent.** The winning construction contractor, to be appointed in 2018, will have a duty to obtain detailed design permits in advance of starting construction estimated to be in the first quarter of 2018. This process essentially checks that the design drawings that the construction contractor will work from, comply with the functional requirements of the Dutch Road Authority and agreements reached with key stakeholders such as the Municipality of Rotterdam. The contractor is obliged to apply for all the construction permits, to guide the process and have the detailed design plans checked and approved by the Municipality, 6 weeks prior to construction. There is scope for local interests to exert themselves at this stage and the Municipality can hold up construction if the detailed design drawings are interpreted to be non-compliant. This leads to a relatively high degree of uncertainty for communities affected and the developer at the final stage. Earlier construction contractor involvement could present opportunities to clear the way for construction as soon as possible after the final decision is confirmed by the Minister.

3.3 Denmark

3.3.1 The Danish Infrastructure Consenting Process

Following far reaching administrative reforms in 2007, a new Planning Act came into force which established land use planning competencies at local and national level. This removed most planning and environmental planning responsibilities from the regional/county level.

'National directives are prepared and adopted by the Ministry of the Environment which set out legal provisions on specific issues of national interest'[1]. This includes major infrastructure projects, such as wind turbines, electricity pylons and gas pipelines.

In Denmark, projects of national significance are usually assessed and consented by way of an Act of Parliament. The special purpose Act regulates the entire project and draws on other relevant legislation where necessary. This is very similar to the Hybrid Bill process in the UK, which is a parliamentary-led process[2].

1 Galland et al. (2015). Denmark. In J. Ryser, & T. Francine, International Manual of Planning Practice (6th Edition).
2 Omega Centre. (2015). Sweden: The Oresund Link. London: Bartlett School of Planning.

3.3.2 The Fehmarn Belt Fixed Link

The Fehmarn Belt Fixed Link, which is estimated to open in 2028, is a 18km tunnel that will provide a four lane motorway and twin track electric rail link between Denmark and Germany. The project is the largest infrastructure development in Northern Europe and will provide a more direct road/rail link between mainland Europe and Scandinavia, for example, cutting rail journey times between Hamburg and Scandinavia from 4 hours 45 minutes to 3 hours and 15 minutes, reducing the journey by 160 km. The tunnel will be constructed in 89 modular sections that will be manufactured in a new production facility on the Danish side. The Danish Government is responsible for financing and consenting the access infrastructure on the Danish side, and the Tunnel. The German Government is responsible for financing the access infrastructure on the German side and the State (Lander) Government of Schleswig Holstein is responsible for the consenting process for the German access infrastructure. The Danish will host the toll infrastructure and use the proceeds to pay down the debt on the tunnel construction. The project is a key part of the Scandinavian-Mediterranean Corridor in the EU TEN-T programme and is eligible for funding through the Connecting Europe Facility (CEF).

Figure 6: CGI of the entrance to the Fehmarn Belt Fixed Link

Overview

Developer
Femern A/S (commissioned to plan and design the link Danish road / rail access infrastructure, and German rail access infrastructure) and LBV Lubeck, the Schleswig-Holstein Road Directorate in Lubeck (to apply for the German access road infrastructure)

Decision making body
Denmark – The Danish Parliament; Germany – The State Company for Road Construction and Transport of Schleswig-Holstein

Capital cost
Approx £6.3 billion (2015)

Status
Scheduled to open in late 2028 – subject to the completion of the German consenting process

Figure 7: Location and map of the Fehmarn Belt Fixed Link[3]

3 Infrastructure Intelligence. (2016, November 9). Building big, done right, can change society. Retrieved from Infrastructure Intelligence: http://www.infrastructure-intelligence.com/article/nov-2016/building-big-done-right-can-change-society

Timeline

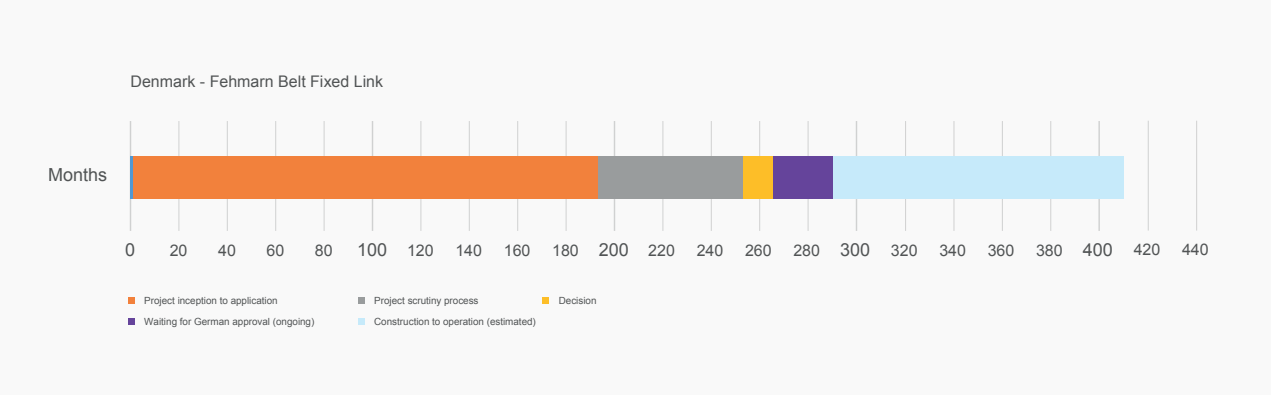


Figure 8: Project timeline chart

Project inception to application	1992 to 2008	1992 – Both the Danish and German Transport Ministers agree feasibility studies on a fixed link. These take place between 1995-1999 1999 – Feasibility study into options is presented 2004 – Danish and German Transport Ministers sign a joint declaration, strengthening their commitment to the fixed link 2008 – Denmark & Germany agree a treaty on the preferred solution – a bridge 2008 – EU Commission allocates DKK 1.5 billion to the project for the period 2007- 2013
Project scrutiny process	2009 to 2014	2009 – Danish Transport Minister puts forward draft planning legislation, which is adopted by Danish Parliament. 2009 – Government of Denmark commissions Femern A/S to plan and design the project 2010 – Preferred design solution changed from a bridge to a tunnel following technical advice 2011 – Danish Government ratifies the choice of a tunnel subject to national consenting procedures. 2013 – The Danish EIA is published and consulted on. 2013 – Start of the bidding process for the construction contractors (4 works packages) 2013 – Femern A/S and LBV Lubeck submit planning application to Schleswig-Holstein 2014 – German approval authority commences public consultation on planning application. November 2014 – In Denmark EIA addendum (design change) and draft Construction Act published for public consultation.
Decision	2015 to ongoing	April 2015 – The Construction Act becomes law in Denmark. February 2016 – Update to planning applications submitted to Schleswig-Holstein. May 2016 – Femern A/S signs contracts with the winning construction contractors. Construction cannot commence until the German Authorities have granted planning permission. Autumn 2016 - German Federal Government undertakes a review of the overall economics of the project. 2017 – Waiting for permit to be granted by the State Government of Schleswig-Holstein.
Construction	2018 to 2028	Start date to be confirmed (developer's estimate provided)

3.3.3 Best practice and successes

1. **Defining a clear national interest.** The Danish Government exerted direct control over the project using its state apparatus in assessing and consenting the project. In contrast there was much less national control and buy-in to the project in Germany where the governance of the consenting process was devolved to State (Lander) Government of Schleswig-Holstein. Furthermore, the German Government intervened at a relatively late stage to reassess the economic viability of the project, perhaps due to concerns about the costs of the project and the level of local opposition. This intervention appears to have delayed the German consenting process.

2. **Responding efficiently to design changes.** In Denmark changes to the design of the project were addressed more directly through the parliamentary process, compared to the approach taken in Germany. In Denmark, an addendum to the EIA provided the principal means to instigate and consult on the proposed design change, which was presented at the same time as the draft Construction Act in November 2014. In effect the design change was absorbed into the ongoing parliamentary process and the draft Act accommodated the proposed change. The time taken between the change and the adoption of the Construction Act by the Danish Parliament was approximately 6 months. In contrast, in Germany the promoter was required to prepare and resubmit an amended application, with an environmental assessment, to Schleswig-Holstein. The revised application was submitted to Schleswig-Holstein in February 2016. This triggered a further round of consultation and a regulatory approval process, which was not yet complete at the time of writing. There is also no statutory decision making timescale or any clear indication of when Schleswig Holstein will make the decision.

3. **More inclusive EIA process.** In Denmark, the EIA has a more central role in the overall consenting process, providing a framework (of environmental controls and measures) that the promoter will need to respond to in preparing the final design that forms the basis of The Construction Act. The EIA was officially adopted by the Danish Government along with an Implementation Report, prior to the publication and consultation on the draft Act in November 2014. In the UK the output of the EIA process – the Environmental Statement - is scrutinised as part of the whole project and there is no equivalent formal public consultation and adoption stage for the EIA, in advance of the project scrutiny process. There is also no equivalent to the Implementation Report in the UK. As a consequence it is for those considering the project documentation as a whole to make the links between the mitigation proposed and the identified environmental effects. As in Denmark, if the British public had the opportunity to comment on the EIA before it was formally “adopted” as the basis for decision making, then that may limit opportunities for legally challenging the EIA methodology and findings.

4. **Coordinated approach to land assembly and project consenting timescales.** Compulsory purchase powers were included in the Construction Act, creating greater certainty for those affected and those responsible for implementing the consent. This is also a key strength of the DCO process in the UK and allows the rights of property owners to be balanced against the national / public interest in a coherent way. Combining the consent for the compulsory purchase of land with the project also allows the decision maker to understand the impact of the whole project on the individuals and organisations affected.

3.3.4 Delays, uncertainty and constraints to delivery

1. **Lack of alignment between the Danish and German project governance.** The unique circumstances and international context make it difficult to draw any firm conclusions on this issue. However, the respective consenting dynamics between the German "application process" and the Danish "parliamentary process" allow us to compare the ease and speed of decision making. It also allows for comparison on the levels of empowerment enjoyed at the national level (Danish Government) and the local / state level (Schleswig-Holstein). There are obvious parallels between the comparable UK infrastructure consenting routes.

2. **Lack of public involvement in strategic decision making.** Focusing on Danish governance, the project inception phase took 16 years. During this time feasibility studies were undertaken and the design solution, a bridge, was selected. This was changed to a tunnel following the technical design stage by the Danish promoter in 2010. This change occurred after the legislation had been introduced in the Danish Parliament in 2009. It's not clear whether this was a controversial decision and whether alternatives were tested against public opinion. However, it would seem the selection of the road / rail tunnel was a predominantly technical exercise focused on deliverability and cost. Public participation and buy-in for the selected route and tunnel design did not seem to feature during the project inception stage. The process of consensus building was therefore limited to public officials and those involved in the technical design process.

3. **Local governance in Germany reduced the impact of a national needs case.** The need for the project and choice of route for the German access infrastructure was taken at the national level during the prolonged inception phase, as was the case in Denmark. In Germany the governance of the project was then handed down to the State (Lander) authorities in Schleswig-Holstein, divorcing national "strategic" decision making from the consenting process.

   The level of local opposition to the project in Germany was much more pronounced. Most of the German objections to the project were focused on the impact on local employment associated with the ferry service and on environmental grounds, such as noise from increased rail freight traffic. Doubts were also cast on the economic viability of the fixed link, from a local perspective. The link between the national interest and the tangible benefits to the host communities in Germany seem to have been more opaque than in Denmark and the need for the project does not seem to be as strongly supported by the German Government.

   Perhaps the main lesson to learn from this is the perceptions that develop from imposing strategic decisions on a lower tier authority to implement. This dynamic seems to encourage local decision makers to exert their authority through the consenting process. This resentment and opposition ultimately seems to feed back to the national government, eroding the foundations of earlier strategic decisions made in the national interest. State and regional authorities may not be sufficiently resourced to handle large and complex "national" projects. In contrast, clear national governance allowed the Danish Government to move decisively, based around an in-principle design/route choice that the public seemed to have largely accepted was in the national interest.

3.4 Australia

3.4.1 The Australian Infrastructure Consenting Process

Infrastructure projects are consented at the Commonwealth (national projects) or State level (major projects). Infrastructure that requires consent by the Commonwealth are defined by their national significance under the Environmental Protection and Biodiversity Conservation Act 1999. Infrastructure is also considered a national project if it is proposed on Commonwealth land and/or if the Commonwealth is the applicant.

State and territory governments have primary responsibility for assessing major project applications. The consenting process varies between Australian states with 31 key processes identified[4] . In the case of Queensland, under the State Development and Public Works Organisation Act 1971, Queensland's Coordinator-General may declare a project a 'coordinated project' based on its complexity and significance, as was the case for the Airport Link development, discussed in the following case study.

Across all States the consenting process places a focus on the identification of the appropriate Development Assessment and Approval Process (DAA), usually with the relevant department producing a report to guide the applicant. This provides information on the overall DAA framework, the specific pathway that applies and the scope and information requirements of the application. At the national level and across the majority of states, the pre-application and decision making stages are focussed around the environmental assessment process.

The degree of consolidation of consents and licences varies across States and few have integrated assessment and consenting processes. Often an Environmental Statement is approved whilst a separate planning application is required for development consent. Queensland is an exception to this with a 'coordinated process'. There are also other consents and licences relevant to certain infrastructure types, for example development assessment processes set out in the Airport Act 1996 includes provision for the preparation of a Major Development Plan, consistent with a pre-existing Master Plan.

4 Australian Government Productivity Commission (2016): Major Project Assessment Processes

3.4.2 Brisbane Airport Link

A road network that includes underground toll road and elevated structures. It connects Brisbane's northern and east/west arterial roads, to the Inner City Bypass and North - South Bypass Tunnel at Bowen Hills as part of highway improvements to Brisbane Airport.

The development includes:

- two separate parallel north-south tunnels in each direction between Bowen Hills and Kedron;
- two separate east-west tunnels in each direction between Kedron and Clayfield;
- tunnel portals at Bowen Hills, Kedron and Clayfield, with transition sections to the surface road network;
- elevated structures across Enoggera Creek, linking the mainline tunnels in Windsor with the Inner City Bypass and the surface road network in Bowen Hills; and
- elevated structures across Kedron Brook, linking Lutwyche Road, Kedron Park Road and the mainline tunnels from the south with Gympie Road and Stafford Road to the north.

Overview

Developer:
The State of Queensland. The State contracted BrisConnections to finance, design, construct, commission, operate and maintain Airport Link for 45 years. State-owned City North Infrastructure Pty Ltd provides management services related to the agreement between the State and BrisConnections.

Decision making body:
Office of the Coordinator-General (State of Queensland Government)

Capital cost:
Approx £2 billion (2005)

Status:
Complete, project operational

Figure 9: Brisbane Airport Link

Timeline

Figure 10: Project timeline chart

Project inception to application	October 2005 to October 2006	The project was declared a "coordinated project" by the Coordinator - General, gazetted on 31 October 2005. Coordinated projects are required to undertake an environmental impact assessment and produce an Environment Impact Statement (EIS) as per the State Development and Public Works Organisation Act 1971.
Project scrutiny process	October 2006 to December 2006	The EIS was made publically available for 8 weeks from 11 October 2006 to 8 December 2006, 297 consultation responses were received. A Supplementary Report was prepared by the Proponent (applicant) to address concerns raised during the consultation. The Supplementary Report was submitted to the office of the Coordinator General on 12 April 2007
Decision	May 2007	The Consenting Authority was the Office of the Coordinator-General (State Government), consent was issued on 23 May 2007.
Construction	November 2008 to July 2012	Construction commenced in November 2008 and during the construction process applications were made for design changes.
Opening/ operational date	July 2012	Opened for traffic on 24 July 2012

3.4.3 Best practice and successes

1. **The Airport Link project was defined as a "Coordinated Project" and therefore subject to a streamlined consenting process led by the Coordinator General.** The Coordinator General's report provides the overarching consent that permits the development under the Sustainable Planning Act 2009 and means the development is exempt from requirements for other consents and permits. The Airport Link project required just four other consents relating to cultural heritage, connection to a state road, interference with a railway and road closures. As such, the consenting process was effectively consolidated and this contributed to the expedient delivery of the project.

2. **Decision making and consultation is channelled through the environmental impact assessment process.** This approach places a focus on project impacts and mitigation, and restricts opportunity to discuss wider contextual issues that may potentially delay the consenting process. Public consultation was held on the draft terms of reference of the EIS and the draft EIS itself. The Coordinator-General leads these stages of consultation and evaluated the feedback received. This concluded with a request for additional information to respond to the consultation feedback. A Supplementary EIS was submitted to the Coordinator-General in April 2007, and the Coordinator-General's report and consent for the project was subsequently issued in May 2007.

3. **The environmental assessment process is required to include a social impact assessment.** The focus on social impacts and mitigation is highly relevant to local communities, and often more accessible than technical assessments such as those typical of noise and air quality impacts. In the State of Queensland, the social impact assessment, which is presented as part of the EIS is required to cover community and stakeholder engagement, workforce management, housing and accommodation, local business and industry and health and well-being. It includes assessment and conclusions on issues such as amenity, quality of life and community values, topics which are not commonly covered in an Environmental Statement prepared in the UK, yet may make the project more acceptable to local people. For example, in the case of the Airport Link this included restoring parks in the local area to maintain parkland amenity and protect cultural and community values identified in the consultation process.

3.4.4 Delays, uncertainty and constraints to delivery

1. **The decision making process needs to involve appropriate technical expertise to ensure that mitigation measures are effectively adopted and monitored during the construction of a project.** In 2010, the Ombudsman's office commenced an investigation into the administrative actions of the Coordinator-General, in regard to the issue of noise from night time surface work on the Airport Link Project. The investigation identified inadequacies with the regulatory framework that the consent provided in regard to the mitigation and monitoring of noise impacts. The conditions allowed for surface work to be undertaken 24 hours a day, 7 days a week, subject to noise not being "excessive". However, "excessive" noise was not defined and appropriate monitoring processes were not in place. One of the recommendations of the investigation was that "the agencies assess their capacity, in terms of human and technical resources, to effectively discharge their regulatory responsibilities for significant projects, such as the Airport Link project.[5]"

2. **The design was considered too detailed by the successful construction contractors**. This restricted potential innovation and savings (cost and programme). It also included elements that did not have regard to actual buildability. This resulted in the need for post consent changes. The appointed contractor sought permission for these project changes.

   In Queensland legislation[6] allows for the applicant to seek permission to make a change to the previously granted project. BrisConnections utilised this legislation and sought permission to make three batches of project changes to the consented Airport Link design. These changes were subject to supplementary environmental assessment and consultation processes. This included major design changes, for example the first batch included:

   - altering the infrastructure of the surface road networks to achieve more efficient traffic flows;
   - realigning the mainline tunnel to better enable connections to the north-west;
   - relocation of the tunnel control centre;
   - expansion and additional construction worker sites; and
   - alternative spoil placement sites.

   The public consultation process received 1,970 responses. The Coordinator-General was satisfied with the information submitted with regard to the supplementary environmental assessment and consultation undertaken. The changes were approved.

   The project change process was undertaken within a relatively short time period, the first batch was applied for and approved within two months. The contractor viewed the change mechanism as an extremely beneficial process, which did not restrict the construction programme and that enabled an improved design. The improvements were in relation to construction efficiency, reduction of some impacts and cost. However, there was a view from members of the community that the change process enabled significant changes, which brought into question the original consenting process. A "public backlash" to the process was observed and it was recognised that in some Australian states the level of post consent design change would have required a fresh application and a new consent.

5 Queensland Ombudsman, 2011. The Airport Link Project Report: An investigation into complaints about night-time surface work.

6 Queensland State Development and Public Works Organisation Act 1971 under Division 3A, Subdivision 1: 'Assessment of changes to project of conditions of project on proponent's application'

3.5 Japan

3.5.1 The Japanese High Speed Rail Consenting Process

A new national high speed rail (HSR) network of 2700km, was originally identified in a new National Comprehensive Development Plan for Japan produced in 1969. The National Shinkansen Railway Development Act then followed, in the early 1970s, together with other secondary legislation to provide the legal framework for the HSR network.

As construction of the HSR routes proceeded, the high costs of delivering the project, against the backdrop of economic conditions, resulted in a suspension of works in the mid-1980s and the privatisation of the rail industry.

Under the legal framework of the original Railway Development Act 1970 and subsequent revisions, the Shinkansen project has been consented and delivered in phases. These stages follow highly prescribed procedures set out in the Act, which follows three key steps:

1. The Ministry for Land, Infrastructure, Transport and Tourism (MLITT) decides the basic plan for constructing a phase of the project in accordance with the National Shinkansen Railway Law, considering factors such as demand and priorities under planning policy.

2. The MLITT orders the Japan Railway Construction, Transport and Technology Agency (JRTT) and other designated judicial persons to conduct the necessary surveys of the construction of the project, to designate the construction projects as specified in the Basic Plan and to implement the project.

3. The JRTT and other designated persons prepare Work Execution Projects based on the construction projects.

The decision making process is generally characterised by a gradual process of building consensus through recurring discussions between government (national and local) and industry stakeholders. The Japanese National Rail (JNR) agencies are important stakeholders in the process. To build a new Shinkansen line or extend an existing one, the government (MLITT) needs to cooperate with the JNR company, which will partly fund and ultimately manage, maintain, and operate the line.

It is understood that the consenting and delivery process has operated effectively to date, with no major issues of delay or uncertainty associated with consenting and execution of phases of the project. The principal issue that has delayed the construction of phases of the project relates to funding. Lessons were learnt from the significant delay to the project during the early eighties with a pay-as you-go rule introduced as part of the reforms in the late eighties. These reforms avoided reliance on government loans and introduced a major role for the privatised Japan National Rail (JNR) companies in helping to finance the project.

3.5.2 National Shinkansen Railway Project (Shin-Aomori to Sapporo)

The project is a 360 km phase of the Hokkaido Shinkansen high speed network running from Shin Aomori station to Sapporo. This is being constructed in two stages, with the first stage between Shin-Aomori and Shin-Hakodate completed in 2015 and the second stage between Shin-Hakodate to Sapporo estimated to be completed in 2031.

The National Shinkansen Railway Construction Law was produced in 1970 as the legislative means by which the entire national Shinkansen railway network would be delivered.

Overview

Developer
Japan Railway Construction, Transport and Technology Agency (JRTT)

Decision making body
Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

Capital cost
Approx £7.7 Billion (2015)

Status
First phase completed and second phase under construction

Figure 11 The Hokkaido Shinkansen

Timeline

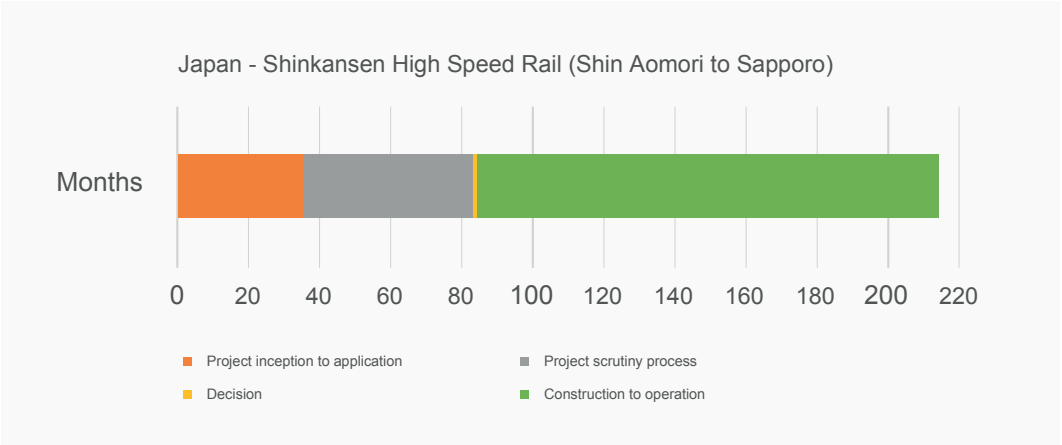


Figure 12: Project timeline chart

Project inception to application	January 1998 to December 2000	***The National Shinkansen Railway Development Act 1970 – identifies the entire route and provides the primary legislation for its delivery on a phased basis*** Inception has been taken as the Government announcement of the route between Shin Aomori and Sapporo. Work commences on the preparation of the Construction Implementation Plan and Environmental Impact Assessment (EIA).
Project scrutiny process	December 2000 to December 2004	The Scrutiny Process is undertaken by the Government and Ruling parties and ends at the point that agreement is reached between these parties. This includes public consultation on the findings of the EIA.
Decision	April 2005 to April 2005	This is the final decision, made at the point of final approval of the Construction Implementation Plan (CIP), including the findings of the EIA.
Construction (Stage 1)	May 2005 to March 2016	Construction completed and line opens for the first section of the route.

3.5.3 Best practice and successes

1. **A clear legislative framework to allow for effective delivery of phases of the route.** The National Shinkansen Railway Construction Law was enacted in 1970 as the legislative means by which this national Shinkansen railway network would be delivered. This has stood the test of time and provides the primary legislation that establishes the need for the nationally important project. It describes the consenting process and the details regarding the design and construction of a route that a promoter will need to consider for an application.

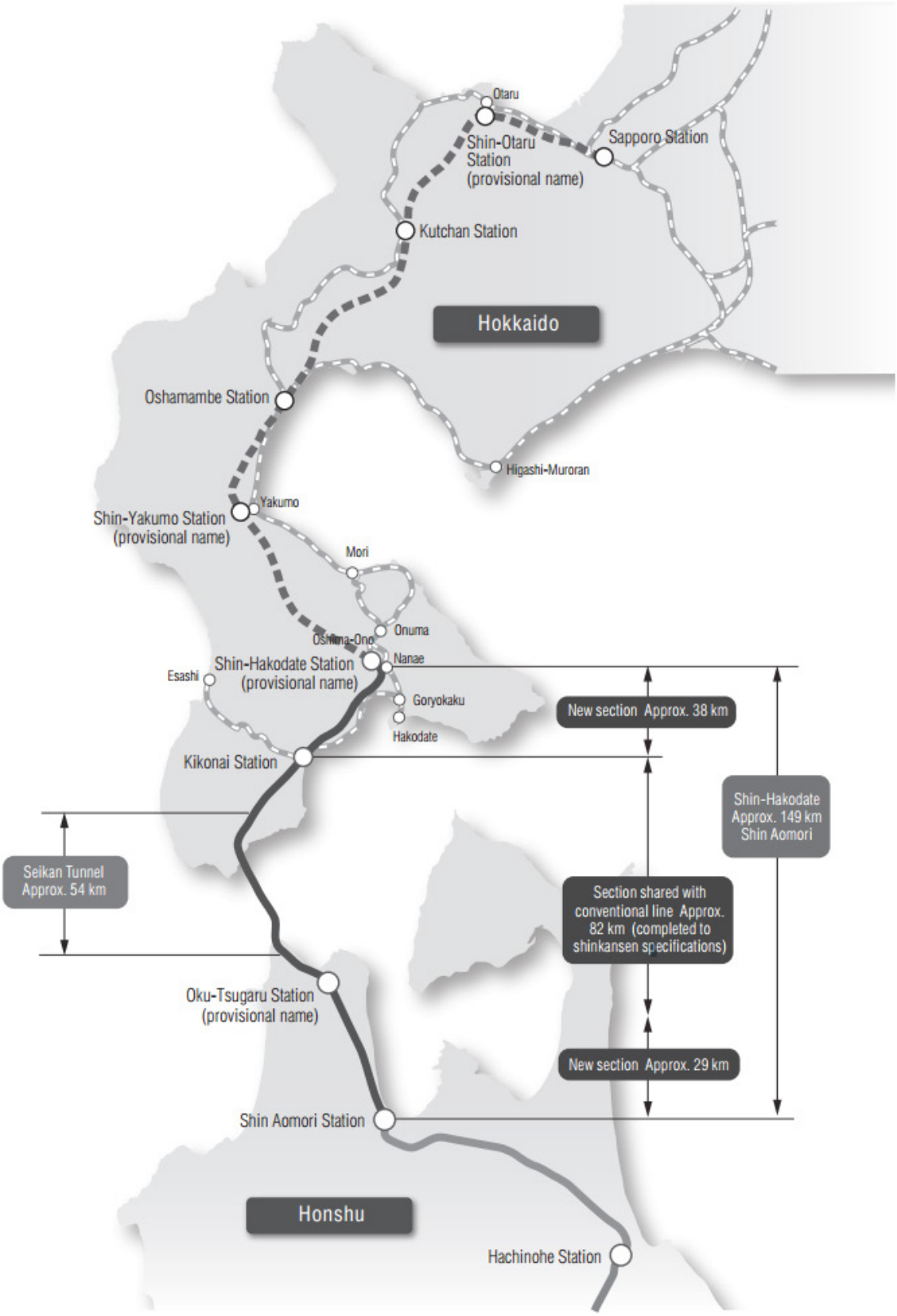
2. **Detailed construction plans for the project are considered in detail as part of the consenting process.** The key consent that needs to be approved by the Minister of Land, Infrastructure, Transport and Tourism (MLITT) is a detailed Construction Implementation Plan (CIP). The construction and delivery considerations are front loaded. These issues do not appear to have contributed to any delay to the commencement of construction once the final consent was issued. Construction commenced in May 2005 shortly after the CIP was approved.

3. **Environmental assessment undertaken early in the process.** The EIA commenced in 1998, shortly after the route was announced, through sending the method statements to relevant government officials. Public consultation on the environmental assessment findings was undertaken in 2002. It is only after the EIA has been completed and consulted upon that an application is formally made for the construction of the project (through the CIP submission). The EIA is an integral part of the consenting process and this does not appear to have led to any delays in issuing decisions.

3.5.4 Delays, uncertainty and constraints to delivery

1. **The promoter of the Shinkansen route (JRTT) has informed us that there were no delays uncertainty or constraints to the delivery of the consents for the project.** The consents were issued in a timely way, informed by the detailed CIP and the findings of the EIA to allow construction to commence as scheduled.

Figure 13: The Hokkaido Shinkansen Route Map[7]



7. Yorita, J. (2011). Expansion of High Speed Rail Services: Current Status of Hokkadio Sinkansen. Japan Railway & Transport Review No. 57, 16-27.

3.6 South Korea

3.6.1 South Korean PPP Infrastructure Consenting Process

In South Korea many infrastructure projects are now promoted by a public private partnership (PPP) organisation (a Special Purpose Company (SPC) set up specifically to deliver an infrastructure project). The PPP organisation is responsible for obtaining all the necessary authorisations and consents that are required prior to construction.

Central government takes a financial and risk sharing role in the authorisation and ultimately the delivery of PPP projects, to help facilitate and stimulate investment. This includes central government support for land acquisition and compensation to land owners; financial support, covering all land acquisition costs and some of the construction costs if necessary; credit guarantees and tax benefits.

The PPP Act and the Enforcement Decree are the principal components of the legal framework for PPPs. In combination they define eligible infrastructure types, procurement types, procurement processes, the roles of the public and private parties, and provide policy support. The PPP Act is a special act that exempts PPP projects from strict government regulation and allows a special purpose company (SPC) to play the role of a responsible authority.

PPP projects are categorised into “solicited” and “unsolicited” projects, depending on who initiates the project. For solicited projects the responsible authority, the central or local government, identifies a potential PPP project and solicits proposals from the private sector. In the case of an unsolicited project, the private sector identifies a potential PPP project and requests designation of the PPP project from the responsible authority. The case study project (the Seoul Jemulpo Tunnel) is an unsolicited project where the private sector identified the project in order to address issues of traffic congestion within the centre of Seoul.

The process of identifying and designating a PPP Project can often be a long process over several years. This is because to reach agreement between the private and public sector parties on the financing and delivery of the project a lengthy process of design and value engineering is required.

Delays can occur in the consenting stages, in relation to the environmental impact assessment process and the associated consultation on the findings of the EIA, conducted in parallel with the PPP financing, design and engineering processes. Delays and uncertainties can also result from the land acquisition process where, if agreement cannot be reached on the acquisition of land, there are several stages of appeal/ legal review by means of a local land acquisition committee, a central government committee and finally through the national courts.

3.6.2 Seoul Jemulpo Tunnel

This is a Public Private Partnership (PPP) Project implemented by PPI law but following the South Korean construction presidential decree process. The project is a 7.53 km-long road tunnel below Jemulpo Road, which leads from Shinwoel Interchange in Seoul. Some 60,000 cars traveling among Seoul, Incheon and Gyeonggi areas are projected to use the tunnel.

Overview

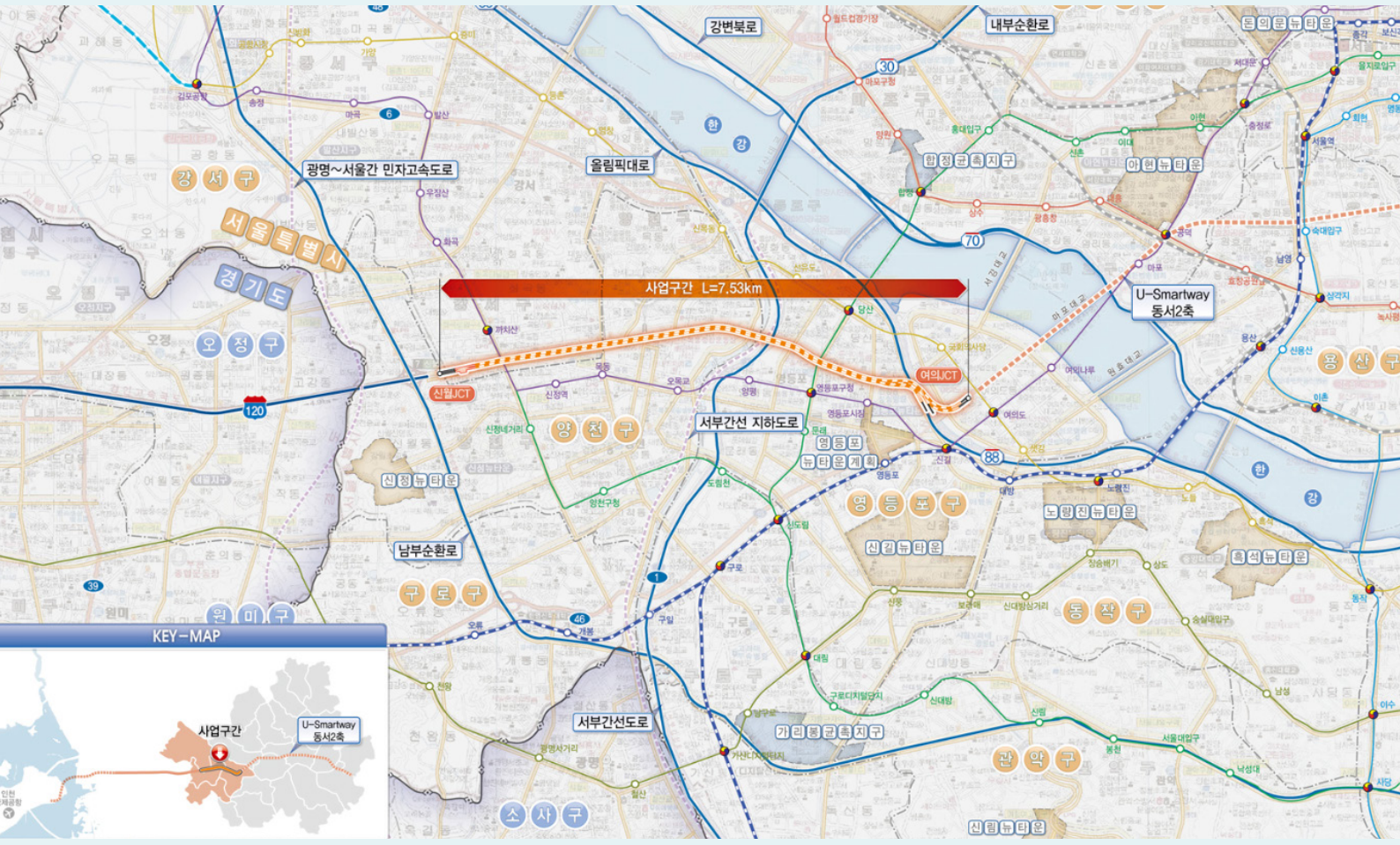
Developer
Seoul Tunnel Co, Ltd
(led by Daelim Industrial Co. Ltd)

Decision making body:
Planning: Road Planning Div. Seoul Metropolitan Government
Construction: Infrastructure Headquarters, Seoul Metropolitan Government
Environmental Impact: Ministry of the Environment

Capital cost:
Approx £260 million (2015)

Status:
Under Construction

Figure 14: Route and length of tunnel within the existing road network



Timeline

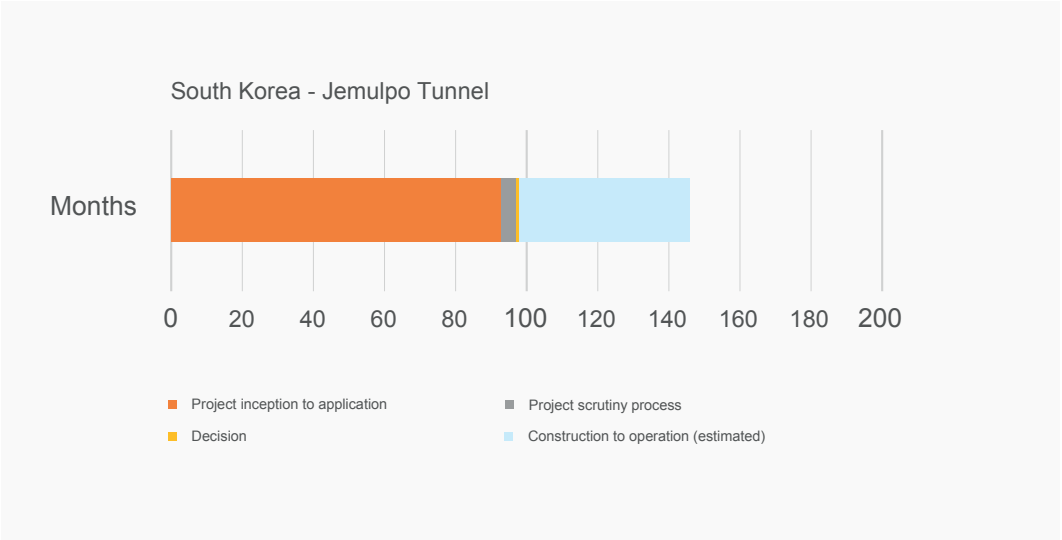


Figure 15: Project timeline chart

Project inception to application	July 2007 to April 2015	Project inception is the point the promoter comes forward with the proposal for an unsolicited PPP project. The Detailed Engineering and Design Plan for Implementation (DEDPI) - which includes the findings from the EIA - is the main application submitted for approval. The consultation on the EIA is within this phase.
Project scrutiny process	April 2015 to August 2015	The scrutiny at a central level is undertaken by the Ministry of Environment in relation to the EIA. This ends at the point that the EIA and Transport Assessments are approved - although scrutiny continues at a local level - with the Seoul Metropolitan Government (SMG) -on the DEDPI
Decision	April 2015 to September 2015	Submission of the DEDPI application to SMG Approval by SMG of the DEDPI
Construction	October 2016 to October 2020	Estimated construction timescale.

3.6.3 Best practice and successes

As the Jemuplo Tunnel is a PPP project the process for authorising the project and selecting a Special Purpose Company (SPC) is set out within legislation. This PPP legal framework has been applied to deliver a large number of South Korean infrastructure projects, of varying types and scale. One of the most common PPP delivery methods is the Build Transfer and Operate (BTO) method, which was the method of delivery for the Seoul Jemulpo Tunnel project. The principal benefits of the PPP consenting process, which featured in the case study project, are listed below:

1. **Creativity and flexibility for the private or public sector to initiate projects.** The PPP process allowed the private sector to come forward with the initiative to address problems and constraints. In the case of the Jemulpo Tunnel it was an unsolicited project that did not need to be justified within a plan or strategy.

2. **A less stringent and onerous consenting regime which provides a clear procurement and authorising process for the private sector.** The PPP Act and the Enforcement Decree are the principal components of the legal framework for South Korean PPPs. In the case of the Jemulpo Tunnel project there was a clear understanding of the roles and responsibilities of the government and the private sector in the consenting and procurement process as well as the levels of risk and financial exposure for each party.

3. **Issues of delivery and constructability are frontloaded and are an important part of the consenting process.** Although it is a relatively lengthy process to select a preferred SPC to take forward a PPP project, the time taken allows for a full and detailed consideration of project viability, value engineering and constructability/ delivery. For the Jemulpo Tunnel these delivery and constructability considerations were addressed upfront, with the private and public sectors working collaboratively, in parallel with jointly undertaking the EIA, design and public consultation activities. This resulted in a more deliverable project, less likely to be subject to cancellation and greater certainty of delivery at the post consenting stage. This is demonstrated by the early commencement of construction of the Seoul Jemulpo Tunnel project, only a month following the final planning decision.

3.6.4 Delays, uncertainty and constraints to delivery

One of the drawbacks of front loading the delivery and constructability of the project is that it can often result in a considerably lengthy process to select a preferred promoter (SPC) for the project. For the Jemulpo Tunnel project the PPP project was proposed in July 2007 and the preferred bidder was finally selected in May 2014 (almost seven years). The initial stage of value for money evaluation, including consultations with organisations, took over four years to complete.

Other issues of delay have similarities with some of the European case studies:

- Significant delay due to the environmental impact assessment process (took over two years from commencement of the EIA to approval).
- Protester activities associated with the location of air shafts and exits of tunnels. The main consultation activities were undertaken as part of the EIA and contributed to the length of the EIA process.

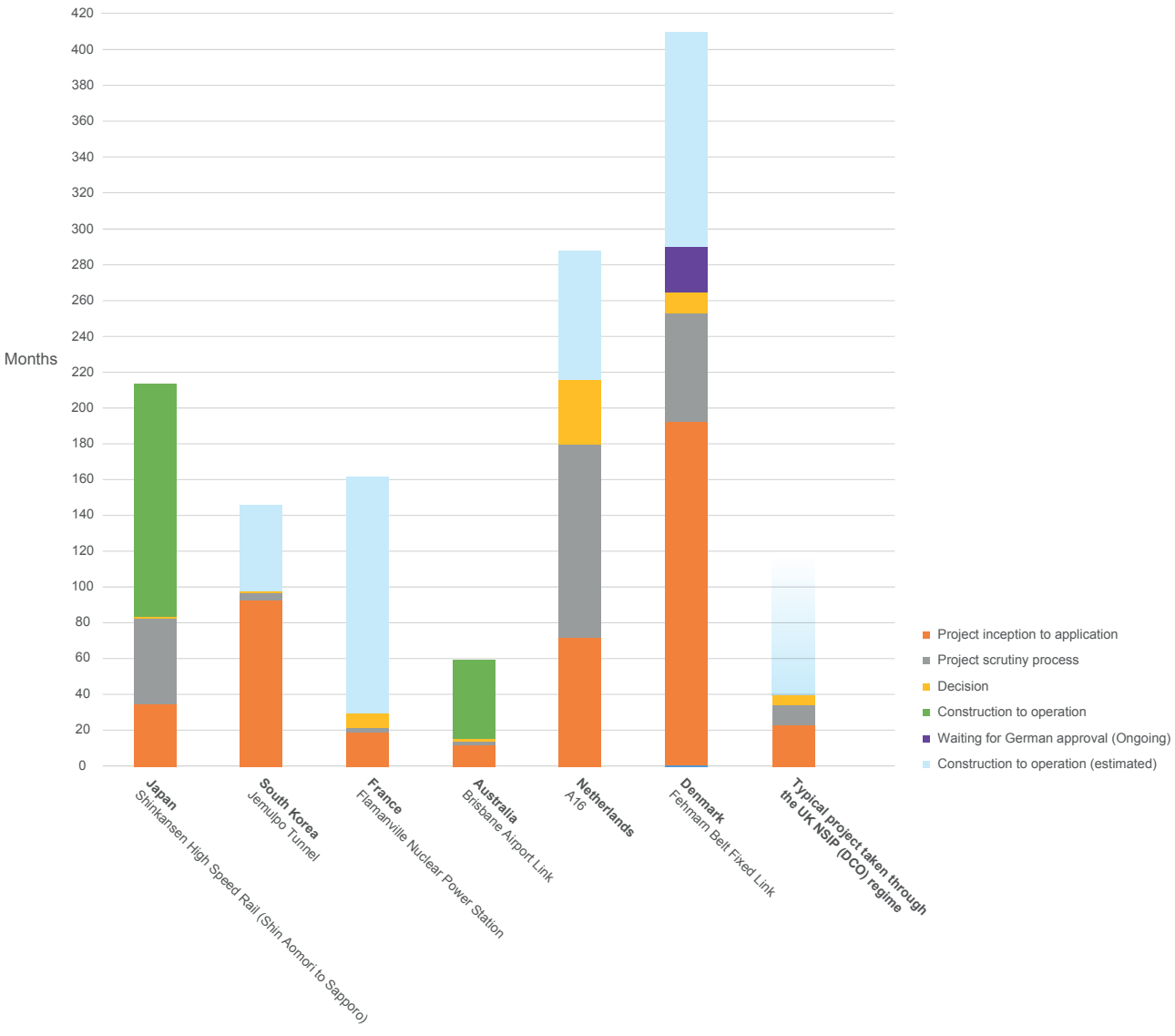
4. International Timeline Comparisons

4.1 Comparing Timelines

The research findings are presented around four stages of infrastructure delivery to provide an insight into each stage and to allow for comparative analysis of the delivery process.

1. **Project inception to application: T**he decision to proceed with the consenting process and the preparation of an application for related consent.
2. **Project scrutiny process:** The process led by the decision makers such as an inquiry, examination and written process.
3. **Decision:** The decision for consent for the development to proceed by the public authority, government official or government minister.
4. **Construction to Operation:** The commencement and duration of the construction of the infrastructure project to its operation.

Figure 16: Comparison of project timescales



4.2 Project Inception to Application

The timescales, for this stage varied considerably between the case study projects. There was only one project where this stage was observed to be significantly shorter than the typical time taken for a major infrastructure project taken through UK NSIP regime (typically around 24 months). This project was the **Brisbane Airport Link, Australia**, which took around 12 months from inception to application. The Airport Link was declared to be a "coordinated project" by the Coordinator General. The pre-application stage for a "coordinated project" is structured around the process for preparing the Environmental Impact Statement (EIS) and the promoter's consultation on the EIS. The requirements are well understood and clear which reflects the focus on early clarification of the development assessment and approval process. This sets a clear pathway for a relatively short timescale to prepare an application, with a full EIS.

For two projects the pre-application stage was of a similar timescale to the time taken in the UK under the NSIP regime. For example the **Flamanville Nuclear project, France**, took approximately 20 months.

The other three case study projects took considerably longer than 24 months, due to a combination of factors. For example the **A16 project in the Netherlands** took approximately five years. This was due to the complex and controversial nature of the project and the complications of joint working between neighbouring local authorities. **The Fehmarn Belt Fixed Link, Denmark and Germany**, took approximately 16 years, with the scale of the project, its international context and technical challenges resulting in a relatively long period of design development.

As a general observation, where the formal environmental assessment process was used as the basis for the pre-application consultation and evidence gathering / design stage, this provided a more structured and navigable process. The public and stakeholders seemed able to respond in a more focused and constructive way to this and the EIA process acted as a fulcrum around which these interactions could take place. However, from most of the case studies presented, there did not seem to be any discernible benefits to the overall governance timescales, rather, this was a structural strength for the pre application stage.

4.3 Project Scrutiny

There were three projects where this stage was observed to be significantly shorter than the typical time taken for a major infrastructure project taken through UK NSIP regime (typically around 12 months). For example the **Flamanville Nuclear project in France** took approximately four months. For this project an inquiry was convened in a relatively short time, two months from the receipt of the application, with the public inquiry lasting for only one month. The relatively short scrutiny stage could be due to the Public Debate, earlier in the process, with issues considered in the debate being resolved earlier and not taking up inquiry time.

For the **Jemulpo Tunnel, South Korea** the scrutiny stage also took approximately four months. For PPP projects, in South Korea, there is no requirement for a project to be scrutinised through an examination or inquiry process, as required for most UK infrastructure projects. The consideration of the final EIA, approved by Ministry of the Environment, represents the scrutiny stage for a PPP project, and was undertaken effectively and relatively quickly.

The other three case study projects took considerably longer than one year, due to a combination of factors. For example the **Fehmarn Belt Fixed Link, Denmark**, took approximately four years and is not yet complete in Germany. In Denmark a special purpose Act was required, which then proceeded through the parliamentary drafting and committee processes. The scrutiny stage was broadly comparable to the hybrid bill process in the UK, which is a more relevant comparator than the Development Consent Order (DCO) process. For example, the HS2 London to West Midlands Bill took approximately three years to complete the parliamentary process. The EIA work and associated consultation activity, undertaken as part of the Scrutiny Stage, also contributed to its length.

For the **A16 project**, the Netherlands, this stage took approximately nine years. The scrutiny process involved several parallel processes, which contributed to its length, including the EIA which was progressed in an iterative way alongside the consideration of alternative designs.

For the **Shinkansen High Speed Rail Shin Aomori to Sapporo, Japan**, the scrutiny stage could not be easily distinguished from the decision stage. The Government (the Ministry of Land, Infrastructure, Transport and Tourism) oversaw the scrutiny of the Construction Implementation Plan (CIP) and the same Ministry made the final decision on the CIP. In combination the scrutiny and decision stage took approximately four years. The time taken is a reflection of the project's national importance, scale and complexity and should be compared with the parliamentary timescales associated with a hybrid bill.

4.4 Decision

There were two projects where this stage was observed to be shorter than the typical time taken for a major infrastructure project taken through UK NSIP regime (typically around 3 months). For example the **Brisbane Airport Link project, Australia**, took approximately 1.5 months for a decision to be made. All of the information and conclusions could be easily be drawn from the Scrutiny Stage to allow for the Coordinator-General to effectively and expediently prepare an Evaluation Report.

Four case study projects took longer than three months, due to a combination of factors. For example in France, the **Flamanville Nuclear project** took approximately nine months. The decision making process was relatively long, principally due to the need to undertake and draw conclusions from a number of meetings between the Advisory Committee for Nuclear Reactors (GPR), the nuclear safety regulations and the Minister. In **the Netherlands, the A16 project** took 3 years. For this project, despite ten years of scrutiny and consultation, it appears that little consensus was reached with communities and individuals. The decision making process, including a number of appeals, is still underway, with no statutory deadline for the appeal process to be completed.

4.5 Construction to Operation

For a number of the projects the construction has not yet commenced or has not been completed, in which case an estimated time for construction has been used. The construction timescales vary from 3 years in Australia for the Brisbane Airport Link to eleven years in Japan for the first phase of the Shin Amori to Sapporo high speed link. The timescales for construction appear to relate to the nature and complexity of the project, rather than to any issues or delays associated with the earlier consenting process.

Detailed design permitting is a feature of the **A16 project in the Netherlands**. This will be undertaken by the contractor. This ensures the construction contractor has a vested interest in understanding and complying with the requirements of the consent. It also presents challenges in that the permit decision maker is the municipality, who was not the final decision maker for the main project /route consent.

In **Australia, the Brisbane Airport Link Project** progressed through earlier stages relatively quickly; however, during the construction stage a number of complaints about night time working were escalated to the Government Ombudsman. The Ombudsman's Report was critical of the way in which the consent had been drafted in terms of the mitigation and monitoring of construction noise. However these complaints do not seem to have delayed the construction of the project to any degree.

Post consent design changes were a feature of the Australian case study. These did not delay the construction programme overall and the design change application process seemed to be relatively efficient and straight-forward for the contractor to navigate. However, this outcome seemed to have left the public disillusioned with the project and the process. The materiality of the changes proposed appeared to be significant and it is likely that in the UK they would have been subject to more formal scrutiny by the Secretary of State through the DCO post consent change process.

5. Conclusions

It is clear that the consenting process for major infrastructure, in all six case studies, requires considerable time and resource, for both promoters of projects and decision makers. There are often multiple legislative requirements and sometimes multiple and overlapping consenting processes at national, regional and sometimes a local level. The time taken from project inception to securing final consents to allow construction to commence was found to vary considerably. Compared to the UK, there were time savings for some stages of the process, but the time taken for other stages could often be longer, with very little time saved and sometimes a considerably longer process, overall.

The sample size for the research was small and therefore it is difficult to draw definitive conclusions. There are nevertheless a number of themes that have emerged as well as findings on the benefits and drawbacks of different approach to infrastructure governance:

Frontloading consultation on a project, to reduce the time taken for scrutiny during the decision making process.

For a number of case studies it was found that government officials (at a local, regional and national level) devoted time and resource to reaching agreement on issues at an early (pre-application) stage. In the case of France, this is governed by an independent organisation, the Commission nationale du debat public (CNDP). This engagement in infrastructure proposals, early in the consenting process, appeared to reduce time at the scrutiny and decision making stage.

The duration of the decision making stage in France, with reference to the Flamanville 3 project, is comparatively shorter than in other countries. This may reflect the wide scale public debate that took place during the pre-application stage of the project.

Early pre-application consultation with the public takes place under the NSIP regime in the UK as a requirement of the Planning Act 2008 and is led by the promoter. The key difference with the French system is the role of an independent organisation (CNDP) to administer this process and provide formal recommendations to the applicant.

The research identified the following benefits and drawbacks of a “national debate” approach, which is unique to the French system.

Benefits

- The history of the creation of the CNDP assists in understanding the potential benefits the approach brings to consenting national infrastructure projects. The CNDP was born out of the need to address the impact of significant opposition to proposed infrastructure schemes in the 1980s and 1990s. Principally rail lines, the Ligne de Grande Vitesse (LGV) Mediterranee down the Rhone Valley. As Marshall notes this “being the final straw which stimulated the invention of a new early public discussion procedure.” It is local opposition to schemes, which led to the need for early debating opportunities. The benefit is therefore that the CNDP in the French context provides a much needed remedy to help overcome the difficulties caused by mobilised campaigns and opposition to infrastructure consenting. The objective being to build trust between the public, promoters and government by acting as an impartial sounding board with significant powers of intervention.
- The original intention of the public debates was that they would not provide an opportunity to discuss the principle of the development. However, it became apparent that there was an expectation that the public debate would provide the channel through which consultees and campaign groups could voice fundamental concerns on the very principle of a development. The law was amended in 2002 to allow for the CNDP to facilitate debates that included a full discussion of the principles of the development. This is a bold step in the French approach to infrastructure planning, which allows for flexibility in the prioritisation of infrastructure projects, but ultimately responds to the demands of consultees. As such, it provides an opportunity for consultation at the earliest stage in a project before its key principles and characteristics are fixed. The CNDP proves to be a powerful institute in the process of major infrastructure planning, which provides confidence to the public. The CNDP cite that “following the public debate, it is on average two thirds of the projects that are either abandoned or completely redesigned or modified[8].

8. Tim Marshall (2016): Learning from France: using public deliberation to tackle infrastructure planning issues, International Planning Studies, page 4.

- It has been observed that the role of the CNDP has changed the behaviour of developers in their approach to pre-application consultation. Marshall[9] cites data provided by the CNDP: "Broadly, the data show that of the 61 projects 2002–2012, 17 maintained the project roughly as proposed, 38 made modifications to the project (including 25 who chose a new option which appeared during the public debate) and 6 abandoned the project completely." The data indicates that the outcomes of the debate have significantly influenced the design of major infrastructure proposals. The UK NSIP system requires developers to "have regard[10]" to pre-application consultation feedback. It would be an interesting exercise to compare the extent to which this "regard" has resulted in changes to the scheme design, in comparison to the outcomes of public debate regulated by the CNDP.

Drawbacks

- The public debate approach led by the CNDP in France, undoubtedly provides a powerful and bold approach to early consultation that may reduce the level of objection at a later public inquiry stage. However, whilst the consultation stage is perceived as early from the perspective of a single project, it is, however, a late stage when considered against the wider process of establishing infrastructure need, undertaking strategic option assessments and making investment decisions. It therefore presents a challenging approach to strategic infrastructure needs planning. In the UK the debate concerning the principle of the development is usually fixed by policy (i.e. National Policy Statements) ahead of the consenting stage, removing the risk of such uncertainty.
- The CNDP is now an established institution that has grown in resource, experience and competency, testament to the ongoing commitment of the State and developers in supporting such a force in infrastructure planning. An institute of this nature requires significant time, resource and reform to planning procedure. This resource is required from government (at varies levels), the public and infrastructure providers. The national debate requires a cost of approximately £1million from developers per project[11]. Arguably, infrastructure providers in the UK could be spending equivalent amounts for statutory and non-statutory pre-application consultation activities under the NSIP regime. However, there is flexibility and discretion for the developer to decide their own consultation strategy and how costly this is, rather than a more prescribed approach from a special commission set up by the CNDP. Furthermore, costs are felt throughout the organisations involved in national debates. Local authorities, other non-government organisations and infrastructure providers often have established teams set up purely to resource the work generated by public debates.
- The national debate concludes with a report from the CNDP elected commission, which the developer must respond to. The response must include how the developer will continue dialogue with the CNDP. These reports are provided to the public inquiry at the decision making stage. However, there remains criticism that the commitments made through the debating process are not always manifest in the legal documentation that provides the consent for the infrastructure project; therefore, the commitments made often lack legal status.

The role of national legislation to establish the principle of a project and provide a framework for securing consents for individual projects or phases of projects

In the UK the national policy position and need for nationally important infrastructure projects is often set out within National Policy Statements (NPSs). NPSs rarely identify the locations for individual projects and/or prioritise projects, with the exception of the Nuclear NPS. For some forms of infrastructure, for example new and emerging technologies and new sources of energy, there is no national policy or legislative framework for their promotion.

9. Tim Marshall (2016): Learning from France: using public deliberation to tackle infrastructure planning issues, International Planning Studies, page 7.
10. Section 49 of the Planning Act 2008 (as amended).
11. Tim Marshall (2016): Learning from France: using public deliberation to tackle infrastructure planning issues, International Planning Studies

The role of national governments and the legislative means at a government's disposal to prioritise infrastructure projects and direct the consenting process varies considerably. In Japan, the 1970 legislation for the Shinkansen High Speed Rail project has stood the test of time. The relatively expedient timescales in Japan for delivery of phases of the Shinkansen project are closely linked to the role the original 1970 legislation played in establishing a clear consenting framework and national imperative for the project.

The Fehmarn Belt Fixed Link Project demonstrated the difference between a national government led approach (Danish parliamentary process) to consenting and a devolved approach (Schleswig-Holstein application process in Germany). This case study revealed that in a small country such as Denmark local concerns can be dealt with at a national level, if the scrutiny process is open and transparent enough. It also demonstrated that the public can rationalise the national interest arguments far more readily if a national authority is taking responsibility for the governance of a project. The picture in a larger, federated country is more complex. German Lander enjoy significant levels of autonomy and can make their own laws. It remains to be seen whether the delays to the consenting process in Schleswig-Holstein are structural or as a result of a less flexible application process.

In France the government has successfully embedded the need for nuclear power in a framework of primary legislation and policy. To an extent this is comparable to NPSs in the UK, however in France primary legislation is used to strategically steer the prioritisation of infrastructure types and in particular the energy supply agenda.

Strategic spatial plans also have an important part to play in some of the case study countries in prioritising particular projects. For example the Japanese HSR project concept originated from the first "Comprehensive National Development Plan", delivered in 1962; the Fehmarn Belt Link is part of the European TENs network, and the A30 project in the Netherlands originated from a national spatial plan.

The research identified the following benefits and drawbacks of legislation or spatially specific policy to prioritise and establish an imperative for infrastructure:

Benefits:

- National legislation/policy can help to prioritise and establish a national imperative for the delivery of different types of infrastructure, and in some circumstances specific projects. The need for and importance of projects identified in a national spatial plan or Acts should not therefore require debate and consultation as part of the scrutiny and decision making stages.
- A strategic spatial plan could establish the broad location of infrastructure and describe the relationship with other land use and economic considerations at a national level. These strategic matters should not be issues that will then need to be considered as part of the scrutiny and decision making stages.
- It can allow for a bespoke and possibly a more streamlined consenting process, through describing the project specific matters that will need to be considered by the promoter of a project during the consenting process. The focus would therefore be on local impacts and mitigation.

Drawbacks:

- It could, if too specific or too spatially defined, limit flexibility or act as a disincentive for a promoter to bring forward projects that do not accord with the description or spatial definition of projects as set out in national spatial plan or Acts.
- It takes time, resource, specialist expertise and wide ranging consultation to ensure that any national plan or legislation is fit for purpose. It will be important that the plan/legislation identifies the right type and locations of projects and that any recommendations are evidence based. If insufficient resource is provided and it is not well evidence based then the plan/legislation is more open to challenge and will carry less weight in the decision making process.

- A national approach to the identification of projects and their location may limit the scope for local authorities and regional/ local bodies to make their own plans for such projects. A clear distinction will need to be made between those projects that are in the national interest and those that have a more local or regional purpose.

Using the findings from the environmental impact assessment (EIA) process including consultation on the environmental statement (ES), as a formal (statutory), part of the consenting process

In the UK the level of information that technical consultants are consulted on for the purposes of environmental assessment can vary considerably. Preliminary Environmental Information Reports (PEIR) for pre-application consultation (as part of the NSIP regime) vary in their detail and completeness in regard to the EIA process. This flexibility brings known benefits to the promoter in regard to the complexity and timing of the assessment work during the pre-application stage. However, it may restrict the opportunity to frontload the consideration of impacts and agree mitigation, which often comes to the fore at the subsequent decision making stages.

In the UK, the EIA is part of a much wider consenting process and is seen as a means of providing information to inform an emerging design and the examination of an application. In many of the case study countries the EIA process seemed to be far more central to the consenting process. This placed a greater focus on the EIA, potentially reducing the opportunity for wider issues and discourses that are not evidenced based, to creep into the scrutiny/decision making process that may lengthen these stages.

In a number of the case studies the EIA determined the critical path for the consenting process and sometimes the central point of reference for obtaining consents. This is most apparent in the example of the consenting process for 'Coordinated Projects' in the State of Queensland, Australia. Through this process stakeholder and public consultation is held on the terms of reference to the ES, the draft ES and the final report. This brings with it a focus on impacts and mitigation from the outset.

The use of information within the ES, that is more relevant to stakeholders and local communities, assists in engaging consultees and their understanding of a project. In Australia major projects are required to include a social impact assessment, which often reports on impacts and mitigation that are more relevant to local communities. In the Danish case study an Implementation Plan was prepared that supplemented the EIA and gave decision makers and the public a clear understanding of how the project would be implemented in lieu of the assessed impacts. In both of these countries and also the Netherlands, the EIA appears to have been consulted on and adopted prior to its use by the respective decision makers, having regard to the consultation responses.

Although not part of the EIA process in the Netherlands, for the A16 project the use of interdependent consultation facilitators provided an impartial sounding board for the affected communities. This encouraged the consultees to focus their input on the matters at hand, facilitating quality responses that the developer was able to respond to more effectively. Their role was to ensure a fair process rather than to act as an advocate for one side or the other.

The research identified the following potential benefits and drawbacks of structuring environmental assessment to allow public scrutiny and encourage acceptance of the methodology and findings.

Benefits

- Greater public involvement would encourage more informed and evidence based discourse during the pre-application consultation and scrutiny stages. This may increase understanding about the project and its likely impacts on local communities that could reduce misconceptions and anxiety. The use of a draft implementation plan or report during the consultation could facilitate greater understanding of the links between the assessed impacts and the mitigation proposals more clearly.

- A more formal process of consultation and engagement with the public and technical bodies could provide greater structure and purpose to the pre application stage. Where appropriate, this may allow for greater public involvement in the consideration of high level alternatives and options ahead of defining the project in more detail.
- The way in which environmental assessments are undertaken can be a source of contention that leads to legal challenge after the decision is made. For example, this may include the location and timing of surveys that were undertaken. The ability of the public, as well as technical consultees, to comment on the methodology in advance could reduce the risk of legal challenge later.
- Formal adoption of the environmental assessment report methodology could also reduce scope for legal challenge later. An independent assessor or an appropriate authority could ratify the environmental report before it is adopted for decision making purposes.

Drawbacks

- A more structured approach to environmental assessment could limit flexibility for promoters. Their ability to respond iteratively to design changes would be curtailed.
- It may be unrealistic to limit consultation on the environmental report to the methodology. This could result in a duplication of the scrutiny stage into the merits of the proposal. Limiting consultation to the methodology used in the environmental assessment could confuse and frustrate consultees.
- The complexity and technical detail in the draft environmental assessment and / or implementation report may be inappropriate for a lay person and could lead to a greater risk of misunderstanding and anxiety if consulted upon at an early stage. Promoters may need to spend time producing non-technical summaries of the environmental assessment to consult on at the pre application stage. Promoters may also hold back on proposing mitigation measures in order to manage expectations.

Front loading issues of funding, constructability and delivery with early construction contractor or delivery partner involvement

Contractor/ delivery partner involvement at early (pre-application) stages is not a common feature of the consenting process in the UK. Even with private sector promoters there are several examples in the UK where construction of major infrastructure projects have been delayed due to post decision issues around funding or the need to make significant post decision changes (for example Hinkley Point C and Thames Tideway Tunnel). Earlier involvement of a contractor/ delivery partner may have reduced the risk of such delays and created efficiencies in the consenting process.

Up front consideration of project delivery, constructability and financing was a feature of many of the case study projects. For these projects there were benefits and ultimately time saving (at latter stages of delivery) in embedding practical knowledge of construction and funding into the formative design stages. This potentially was one of the reasons why construction could commence early, shortly following a decision, for a number of the case study projects (France, Japan, and South Korea).

In some of the case study projects the levels of private sector involvement brought a cost discipline to the projects. This commercial imperative was most prominent in the South Korean Jemulpo Tunnel project, where matters of constructability, value engineering and financing were front loaded. This project demonstrated that the private and public sectors can work collaboratively on these types of project delivery matter in parallel with the environmental impact assessment, design and public consultation activities.

This South Korean project along with the Flamanville, and the Brisbane case studies all highlight the potential benefits to governance through the early involvement of the construction contractor / delivery partner in the design and scrutiny processes. In the UK such an approach could be even more beneficial for new and untried technologies and infrastructure, minimising the prospect and/or extent of any post consent changes and delay during the construction stage of a project.

The research identified the following benefits and drawbacks of front loading funding, constructability and delivery:

Benefits:

- Deploying the practical knowledge of a construction contractor or delivery partner at an early stage provides the examining body and/or the decision makers with a more rounded picture of how the project could be delivered. This can be used to inform the decision; the approach to be taken to conditioning the project and the requirements (and viability) of mitigation measures.
- It can minimise the need for post consent design changes in response to value engineering undertaken once a delivery partner or contractor is on board. This save times and cost in making changes and also avoids the potential requirement to prepare and submit a new application to allow for a material change.

Drawbacks:

- Time and resource is required to undertake a detailed evaluation of project constructability and funding. Any time savings downstream, post consent, maybe lost though longer timescales at the pre-application stage, as evident from the South Korean project.
- A promoter of a project is unlikely to want to be tied too early to a developer partner or to specific sources of funding. The promoter is likely to prefer a choice of contractors or developer partners post consent, to allow for the identification of a partner/contractor that provides the best fit and value for a project.

Appendices

Appendix A: Research Methodology

The focus of the research is on national infrastructure and the key decisions that are taken which provide developers (public and private) with the certainty and confidence to be able commit money and resources to deliver the project.

Defining "decision making"

The study focuses on "planning" as the means by which inputs from different professionals and disciplines are co-ordinated and collected for the benefit of decision makers. However, the decision making process is not limited to planning.

The right to develop land in the UK and most countries is nationalised and in the UK this manifests itself in consents such as planning permission, Acts of Parliament, and as statutory instruments in the form of Development Consent Orders and Transport and Works Act Orders.

Decision making powers are ultimately vested with local elected politicians, and elected UK Ministers of State at Westminster. Whether decisions are taken at the local or national level, ultimately they are political decisions. This study focuses on these political (or Governance) processes within each of the case study countries and compares and contrasts with the processes in the UK.

Research questions

The research is focused on the following research questions:

- Who are the decision makers?
- What processes do projects go through?
- What timetables are prescribed and what programmes are normally achieved for significant infrastructure projects from inception to delivery?
- How is public consultation undertaken and is it actively encouraged?
- What scope is there for objectors to seek changes and/or influence the process?
- What scope is there for objectors to appeal against or re-open decisions?
- Does the country have any particularly interesting or innovative frameworks or institutions for deciding which infrastructure projects to go ahead with?

International case study projects

The report explores infrastructure consenting processes across six countries with a project case study for each to bring alive infrastructure delivery in practice, within a range of consenting frameworks. The table at section 1.2 of this Report sets out the countries and projects for the research.

Research methods

Information has been gathered from a range of secondary and primary sources including: academic papers, websites, application reports, questionnaires and interviews as set out below.

Figure 17: Research Methods

Stages of infrastructure delivery

The research findings are presented around four stages of infrastructure delivery to provide an insight into each stage and to allow for comparative analysis of the delivery process, these are:

- **Project inception to application:** the decision to proceed with the consenting process and the preparation of an application for related consent
- **Project scrutiny process:** the process led by the decision makers such as an inquiry, examination and written process
- **Decision:** the decision for consent for the development to proceed by the public authority, government official or government minister
- **Construction to Operation:** the commencement and duration of the construction of the infrastructure project to its operation

The report seeks to present a factual picture of consenting regimes in each country with real projects to bring processes alive. The consistent stages allow for meaningful comparisons across disparate consenting regimes including successes, delays, uncertainty and constraints to delivery.

Appendix B: British Context Diagrams

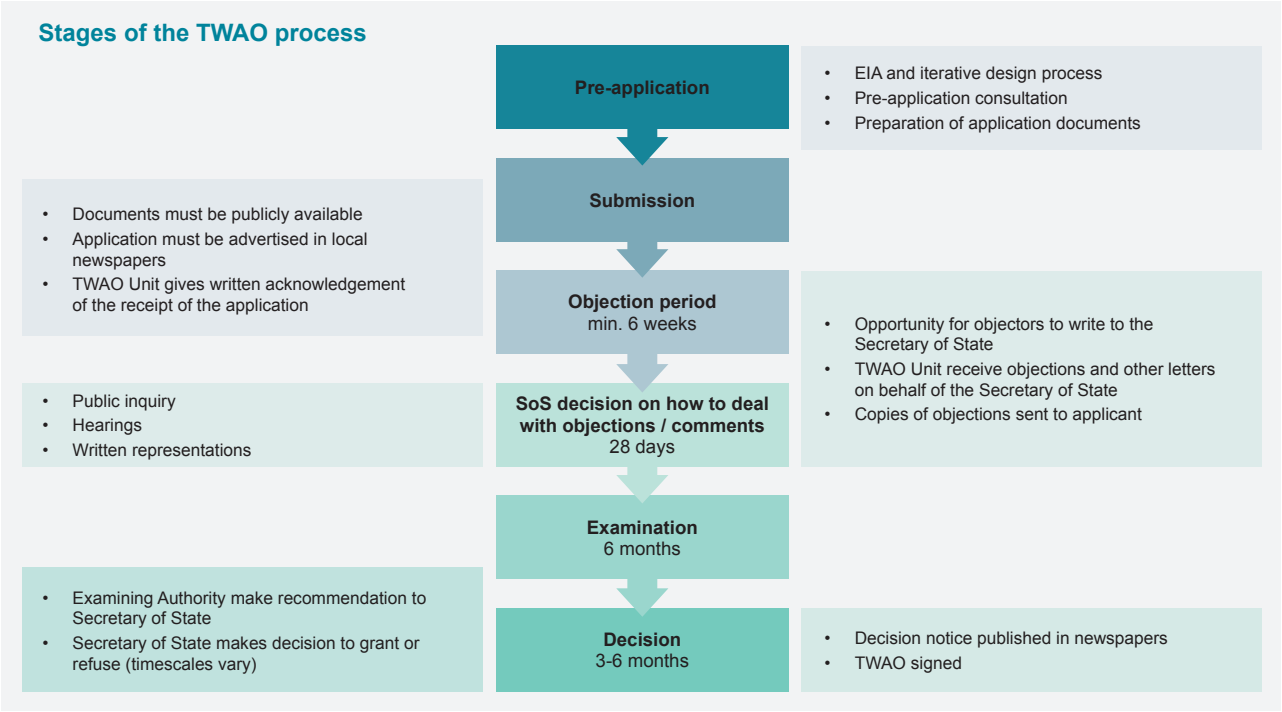


Figure 19: Stages of a Transport and Works Act Order

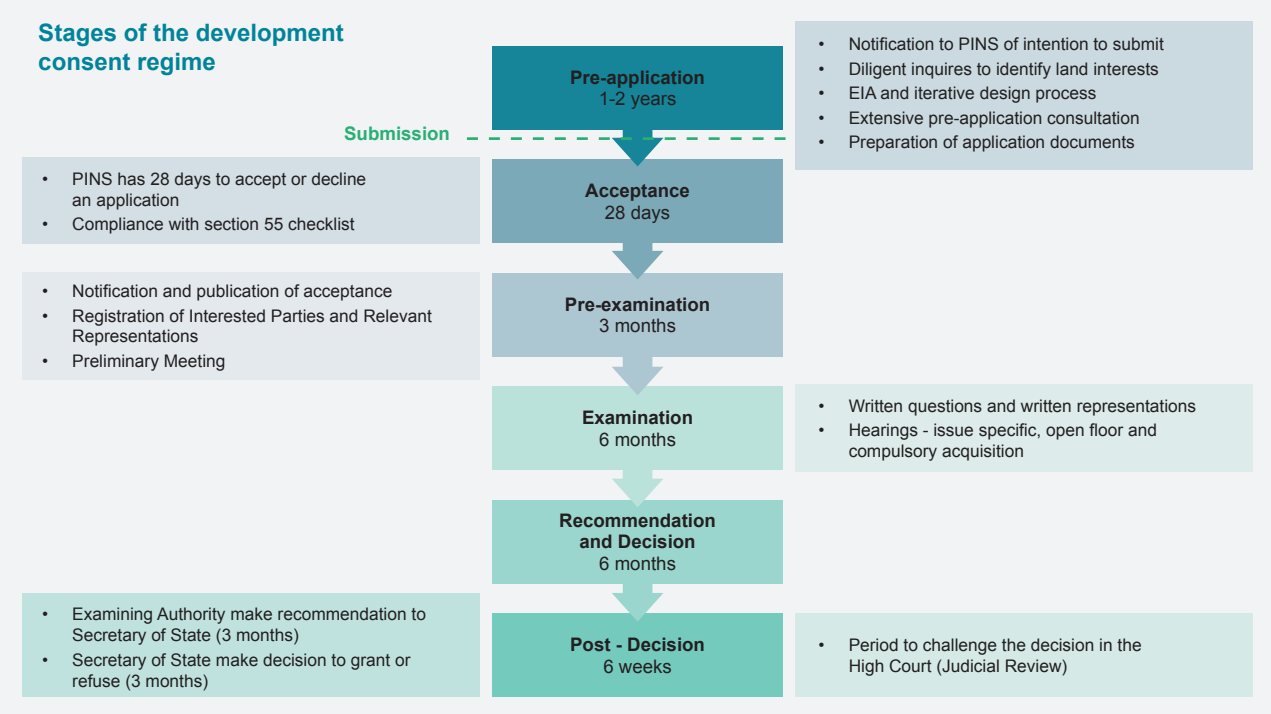


Figure 19: Stages of Development Consent Regime

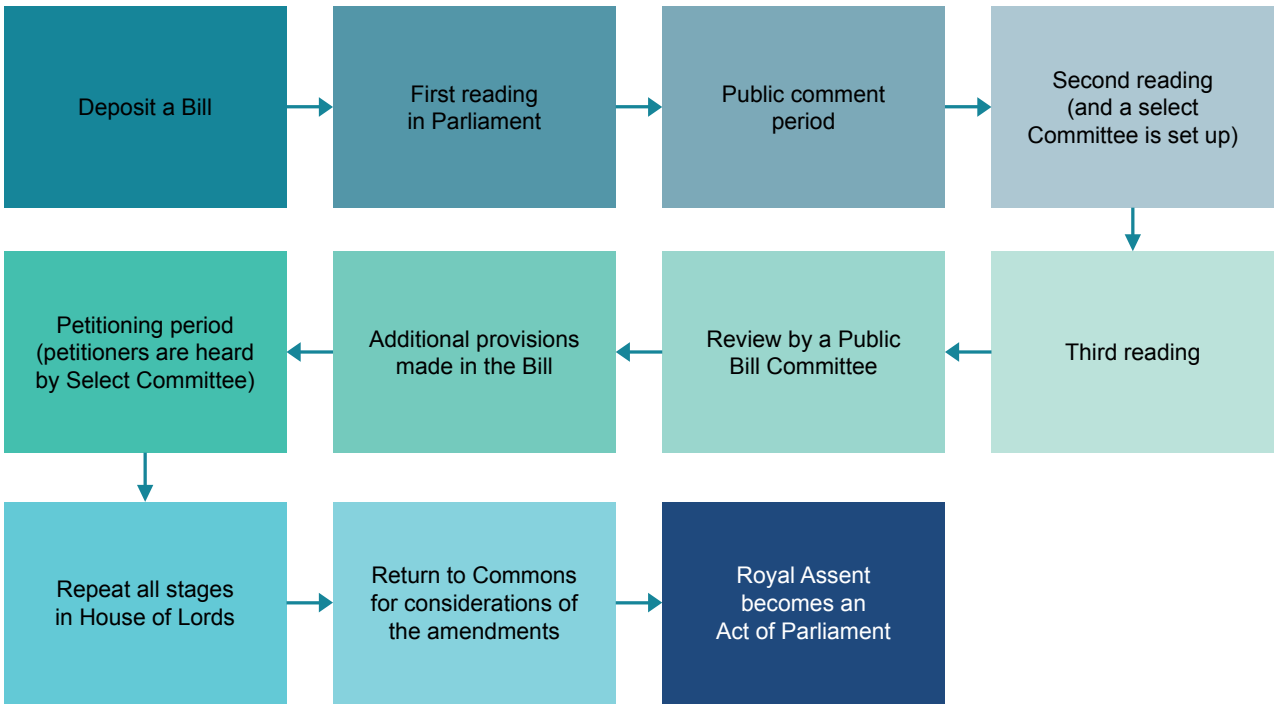


Figure 20: Stages of the Hybrid Bill process

Glossary

NIC – National Infrastructure Commission: an executive agency of the Treasury, providing the government with independent, expert advice on major long-term infrastructure challenges.

NIA – National Infrastructure Assessment: Assesses what infrastructure is needed and how best it can support growth.

TCPA – Town and Country Planning (TCPA) Act 1990: The primary legislation that establishes the application proves in the UK and how decisions are made by local authorities.

TWAO – Transport and Works Act Orders (TWAO): A statutory instrument made under the Transport and Works Act 1992.

DCO – Development Consent Order: usually a statutory instrument that sets down the powers (including compulsory acquisition of land and interests) and mitigation measures required to implement a nationally significant infrastructure project.

Planning Act 2008 – An Act of Parliament that was intended to improve and make more efficient, the process for consenting major new infrastructure projects.

NSIP – Nationally Significant Infrastructure Project: A large scale project which falls into five general categories (energy, transport, water, waste water and water).

NPS – National Policy Statements: produced by Government, they include the objectives for the development of nationally significant infrastructure in a particular sector.

NPPF – National Planning Policy Framework: Introduced in 2012, a key part of the government's reforms to make the planning system less complex and more accessible.

Hybrid Bill – bills that combine characteristics of both private and public bills.

European Pressurised Reactor (EPR) – a new type of Nuclear reactor, which its key strengths are safety and operational performance.

EDF - Électricité de France: A French electric utility company, previously the world's largest producer of electricity.

IRSN – French public expert in nuclear and radiological risk.

CNDP – Commission nationale du debat public: Informs the public in France, and ensures that throughout the decision process, their views are considered.

ASN – The French Nuclear Safety Authority: Regulates nuclear safety and radiation protection in France.

EIA – Environmental Impact Assessment: process of evaluating the likely significant environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

Shinkansen – Network of high-speed railway lines in Japan.

JRTT – Japan Railway Construction, Transport and Technology Agency.

MLIT – Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

PPP – Public Private Partnership: a long term contract between a private party and a government entity.

SPC – Special Purpose Company: a type of corporation that can be formed under Japanese Law.

BTO – Build Transfer and Operate.

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