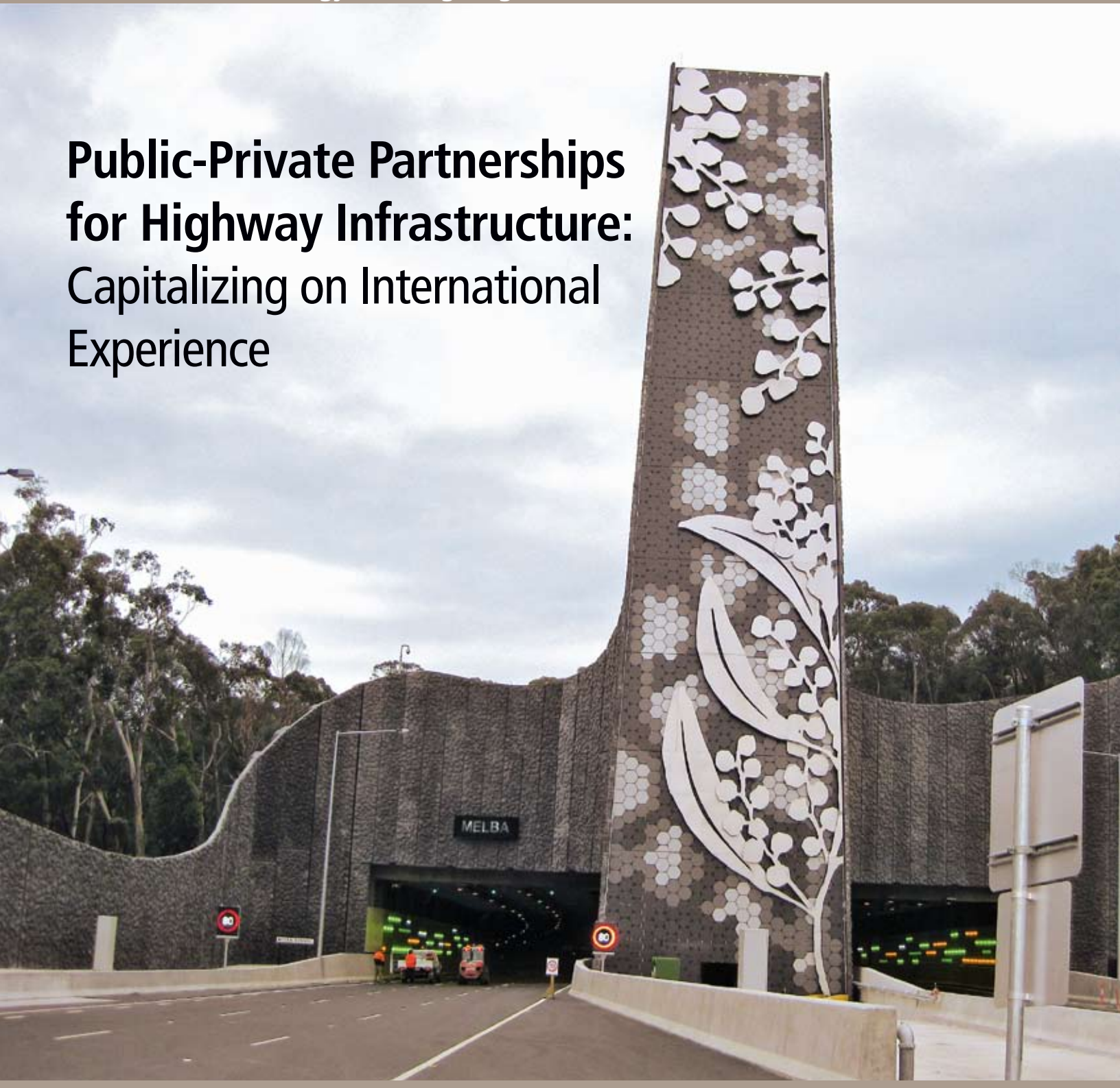
Public-Private Partnerships for Highway Infrastructure: Capitalizing on International Experience



Sponsored by:

U.S. Department of Transportation
Federal Highway Administration

In cooperation with:

American Association of State Highway and Transportation Officials
National Cooperative Highway Research Program

NOTICE

The Federal Highway Administration provides high-quality information to serve Government, industry, and the public in a manner that promotes public understanding. Standards and policies are used to ensure and maximize the quality, objectivity, utility, and integrity of its information. FHWA periodically reviews quality issues and adjusts its programs and processes to ensure continuous quality improvement.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FHWA-PL-09-010		

4. Title and Subtitle	5. Report Date
Public-Private Partnerships for Highway Infrastructure: Capitalizing on International Experience	March 2009
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Janice Weingart Brown, Robert Pieplow, Roger Driskell, Stephen Gaj, Michael J. Garvin, Dusty Holcombe, Michael Saunders, Jeff Seiders, Jr., Art Smith	

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
American Trade Initiatives P.O. Box 8228 Alexandria, VA 22306-8228	11. Contract or Grant No. DTFH61-99-C-005

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
Office of International Programs Office of Policy Federal Highway Administration U.S. Department of Transportation American Association of State Highway and Transportation Officials	14. Sponsoring Agency Code

15. Supplementary Notes

FHWA COTR: Hana Maier, Office of International Programs

16. Abstract

Public-private partnership (PPP) programs for highway infrastructure are not widely used in the United States. The Federal Highway Administration, American Association of State Highway and Transportation Officials, and National Cooperative Highway Research Program sponsored a scanning study to collect information about PPP programs for highway infrastructure in Australia, Portugal, Spain, and the United Kingdom, where PPP experience is more extensive.

The scan team learned that PPPs are an effective strategy for delivering highway projects, and they are service arrangements as much as financial ones. The team observed that potential PPP projects must be analyzed and structured thoughtfully to preserve public interests and that managing the partnership over the life of the contract is critical to providing the services expected.

Team recommendations for U.S. implementation include convening workshops, developing training guidelines, establishing an expert task group, developing a research strategy, and publishing principles and guideline documents on PPP topics.

17. Key Words	18. Distribution Statement
contract management, infrastructure, key performance indicator, performance measure, procurement, public-private partnership, value for money	No restrictions. This document is available to the public from the: Office of International Programs, FHWA-HPIP, Room 3325, U.S. Department of Transportation, Washington, DC 20590 international@fhwa.dot.gov www.international.fhwa.dot.gov

19. Security Classify. (of this report)	20. Security Classify. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	88	Free

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

Acknowledgments

Many contributed to the success of the scan on public-private partnerships for highway infrastructure. Foremost, the team would like to thank the members of the host delegations who gave of their time, experience, and knowledge so willingly. Further, their hospitality throughout the team's visits was most appreciated. While too numerous to cite here, the individuals the team met are listed in Appendix D. In addition, we would like to thank those who worked behind the scenes to provide logistical support. Special thanks also go to the interpreter who expertly translated our interactions with some of the Spanish delegation.

Public-Private Partnerships for Highway Infrastructure: Capitalizing on International Experience

Prepared by the International Scanning Study Team:

Janice Weingart Brown (cochair)
FHWA

Robert Pieplow (cochair)
California DOT

Roger Driskell
Illinois DOT

Stephen Gaj
FHWA

Michael J. Garvin (report facilitator)
Virginia Tech

Dusty Holcombe
Virginia DOT

Michael Saunders
FHWA

Jeffrey Seiders, Jr.
Texas DOT

Arthur Smith
National Council for Public-Private Partnerships

for:

Federal Highway Administration
U.S. Department of Transportation

American Association of State Highway and Transportation Officials

National Cooperative Highway Research Program

March 2009

International Technology Scanning Program

The International Technology Scanning Program, sponsored by the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the National Cooperative Highway Research Program (NCHRP), evaluates innovative foreign technologies and practices that could significantly benefit U.S. highway transportation systems. This approach allows for advanced technology to be adapted and put into practice much more efficiently without spending scarce research funds to re-create advances already developed by other countries.

FHWA and AASHTO, with recommendations from NCHRP, jointly determine priority topics for teams of U.S. experts to study. Teams in the specific areas being investigated are formed and sent to countries where significant advances and innovations have been made in technology, management practices, organizational structure, program delivery, and financing. Scan teams usually include representatives from FHWA, State departments of transportation, local governments, transportation trade and research groups, the private sector, and academia.

After a scan is completed, team members evaluate findings and develop comprehensive reports, including recommendations for further research and pilot projects to verify the value of adapting innovations for U.S. use. Scan reports, as well as the results of pilot programs and research, are circulated throughout the country to State and local transportation officials and the private sector. Since 1990, more than 75 international scans have been organized on topics such as pavements, bridge construction and maintenance, contracting, intermodal transport, organizational management, winter road maintenance, safety, intelligent transportation systems, planning, and policy.

The International Technology Scanning Program has resulted in significant improvements and savings in road program technologies and practices throughout the United States. In some cases, scan studies have facilitated joint research and technology-sharing projects with international counterparts, further conserving resources and advancing the state of the art. Scan studies have also exposed transportation professionals to remarkable advancements and inspired implementation of hundreds of innovations. The result: large savings of research dollars and time, as well as significant improvements in the Nation's transportation system.

Scan reports can be obtained through FHWA free of charge by e-mailing international@dot.gov. Scan reports are also available electronically and can be accessed on the FHWA Office of International Programs Web site at www.international.fhwa.dot.gov.

International Technology Scan Reports

Safety

Improving Safety and Mobility for Older Road Users in Australia and Japan (2008)

Safety Applications of Intelligent Transportation Systems in Europe and Japan (2006)

Traffic Incident Response Practices in Europe (2006)

Underground Transportation Systems in Europe: Safety, Operations, and Emergency Response (2006)

Roadway Human Factors and Behavioral Safety in Europe (2005)

Traffic Safety Information Systems in Europe and Australia (2004)

Signalized Intersection Safety in Europe (2003)

Managing and Organizing Comprehensive Highway Safety in Europe (2003)

European Road Lighting Technologies (2001)

Commercial Vehicle Safety, Technology, and Practice in Europe (2000)

Methods and Procedures to Reduce Motorist Delays in European Work Zones (2000)

Innovative Traffic Control Technology and Practice in Europe (1999)

Road Safety Audits—Final Report and Case Studies (1997)

Speed Management and Enforcement Technology: Europe and Australia (1996)

Safety Management Practices in Japan, Australia, and New Zealand (1995)

Pedestrian and Bicycle Safety in England, Germany, and the Netherlands (1994)

Planning and Environment

Active Travel Management: The Next Step in Congestion Management (2007)

Managing Travel Demand: Applying European Perspectives to U.S. Practice (2006)

Transportation Asset Management in Australia, Canada, England, and New Zealand (2005)

Transportation Performance Measures in Australia, Canada, Japan, and New Zealand (2004)

European Right-of-Way and Utilities Best Practices (2002)

Geometric Design Practices for European Roads (2002)

Wildlife Habitat Connectivity Across European Highways (2002)

Sustainable Transportation Practices in Europe (2001)

Recycled Materials in European Highway Environments (1999)

European Intermodal Programs: Planning, Policy, and Technology (1999)

National Travel Surveys (1994)

Policy and Information

European Practices in Transportation Workforce Development (2003)

Intelligent Transportation Systems and Winter Operations in Japan (2003)

Emerging Models for Delivering Transportation Programs and Services (1999)

National Travel Surveys (1994)

Acquiring Highway Transportation Information From Abroad (1994)

International Guide to Highway Transportation Information (1994)

International Contract Administration Techniques for Quality Enhancement (1994)

European Intermodal Programs: Planning, Policy, and Technology (1994)

Operations

Freight Mobility and Intermodal Connectivity in China (2008)

International Technology Scanning Program:
Bringing Global Innovations to U.S. Highways

Commercial Motor Vehicle Size and Weight Enforcement in Europe (2007)

Active Travel Management: The Next Step in Congestion Management (2007)

Managing Travel Demand: Applying European Perspectives to U.S. Practice (2006)

Traffic Incident Response Practices in Europe (2006)

Underground Transportation Systems in Europe: Safety, Operations, and Emergency Response (2006)

Superior Materials, Advanced Test Methods, and Specifications in Europe (2004)

Freight Transportation: The Latin American Market (2003)

Meeting 21st Century Challenges of System Performance Through Better Operations (2003)

Traveler Information Systems in Europe (2003)

Freight Transportation: The European Market (2002)

European Road Lighting Technologies (2001)

Methods and Procedures to Reduce Motorist Delays in European Work Zones (2000)

Innovative Traffic Control Technology and Practice in Europe (1999)

European Winter Service Technology (1998)

Traffic Management and Traveler Information Systems (1997)

European Traffic Monitoring (1997)

Highway/Commercial Vehicle Interaction (1996)

Winter Maintenance Technology and Practices—Learning from Abroad (1995)

Advanced Transportation Technology (1994)

Snowbreak Forest Book—Highway Snowstorm Countermeasure Manual (1990)

Infrastructure—General

Public-Private Partnerships for Highway Infrastructure: Capitalizing on International Experience (2009)

Audit Stewardship and Oversight of Large and Innovatively Funded Projects in Europe (2006)

Construction Management Practices in Canada and Europe (2005)

European Practices in Transportation Workforce Development (2003)

Contract Administration: Technology and Practice in Europe (2002)

European Road Lighting Technologies (2001)

Geometric Design Practices for European Roads (2001)

Geotechnical Engineering Practices in Canada and Europe (1999)

Geotechnology—Soil Nailing (1993)

Infrastructure—Pavements

Warm-Mix Asphalt: European Practice (2008)

Long-Life Concrete Pavements in Europe and Canada (2007)

Quiet Pavement Systems in Europe (2005)

Pavement Preservation Technology in France, South Africa, and Australia (2003)

Recycled Materials in European Highway Environments (1999)

South African Pavement and Other Highway Technologies and Practices (1997)

Highway/Commercial Vehicle Interaction (1996)

European Concrete Highways (1992)

European Asphalt Technology (1990)

Infrastructure—Bridges

Bridge Evaluation Quality Assurance in Europe (2008)

Prefabricated Bridge Elements and Systems in Japan and Europe (2005)

Bridge Preservation and Maintenance in Europe and South Africa (2005)

Performance of Concrete Segmental and Cable-Stayed Bridges in Europe (2001)

Steel Bridge Fabrication Technologies in Europe and Japan (2001)

European Practices for Bridge Scour and Stream Instability Countermeasures (1999)

Advanced Composites in Bridges in Europe and Japan (1997)

Asian Bridge Structures (1997)

Bridge Maintenance Coatings (1997)

Northumberland Strait Crossing Project (1996)

European Bridge Structures (1995)

All publications are available on the Internet at www.international.fhwa.dot.gov.

Contents

Figures

Tables

Abbreviations and Acronyms

AASHTO	American Association of State and Highway Transportation Officials
BOOT	build-own-operate-transfer
CPI	consumer price index
DBFO	design-build-finance-operate
DOT	department of transportation
DR	department's representative (United Kingdom)
EOI	expressions of interest
EP	Estradas de Portugal, S.A.
EU	European Union
FHWA	Federal Highway Administration
HM Treasury	Her Majesty's Treasury (United Kingdom)
IGT	instructions and guidance to tenderers
KPI	key performance indicator
NAO	National Audit Office (United Kingdom)
NCHRP	National Cooperative Highway Research Program
NCPPP	National Council for Public-Private Partnerships
NPV	net present value
OJEU	Official Journal of the European Union
PFI	Private Finance Initiative
PIN	prior information notice
PSC	public sector comparator
PPB	provisional preferred bidder (United Kingdom)
PPP	public-private partnership
RFP	request for proposal
RFQ	request for qualification
SEITA	Southern and Eastern Integrated Traffic Authority (Victoria, Australia)
STIP	scan technology implementation plan
VfM	value for money

Executive Summary

Comprehensive highway public-private partnership (PPP) programs are relatively new to the United States and not widely used. Limited highway funds, unmet needs for new highway capacity, interest from private investors, and other factors have led to substantial discussion of PPP projects and programs at the State and Federal levels and implementation of projects in a few leading States. In contrast, some countries have extensive and, in some cases, long-term experience with infrastructure PPPs, particularly highways. This presents a unique opportunity to capitalize on the knowledge and experience gained in the international community, where tested policies and practices are in place.

A desk study was completed to identify the countries with the most potential to provide relevant and current information on PPPs. Subsequently, a team of nine professionals representing government, private industry, and academe visited Australia, Portugal, Spain, and the United Kingdom in June 2008 to collect and evaluate information about PPP programs and projects for highway infrastructure. The team met with representatives of the public and private sectors involved in PPP arrangements. The Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) jointly sponsored this scan through the National Cooperative Highway Research Program (NCHRP).

The purpose of this scan was to (1) examine programs, policies, and practices used by other countries that actively solicit and involve the private sector in the delivery of highway infrastructure; (2) document lessons learned; and (3) make implementation recommendations that will improve U.S. policy and practice.

For the purposes of this report, a public-private partnership is defined as a contract between the public and private sectors for the delivery of a project or service in which the private partner has responsibility for acquiring the majority of the necessary financing.

Key Learning Points of the Scan

The scan team learned a significant amount about established PPP programs during its visits with the host countries. The team identified several critical points that it consistently observed across the nations. These points are the salient messages from the scan:

- PPPs are an effective strategy for delivering highway projects, and they are service arrangements as much as financial ones.
- Potential PPP projects must be analyzed, selected, structured, and procured thoughtfully to preserve public interests.
- Managing the partnership over the life of the contract is critical to providing the services expected and maintaining the public-private relationship.
- Public sector institutional capacity requires strengthening and continuous improvement for PPP program effectiveness.

Principal Findings

The team gained valuable insights about established PPP programs during its visits with the host countries. Foremost, the relative maturity of the host nation PPP programs offered a rich environment for the collection of useful and tested information on PPP policies and practices. In many cases, the team received details on second- and even third-generation PPPs. Hence, the degree of institutional learning that had occurred was clear. Further, the diversity among policies and practices observed also provided alternative perspectives of various issues.

This experience base provided the team with numerous findings. The most significant ones are highlighted below in two categories: general and project life cycle findings.

General Findings

- **Highway PPP arrangements, particularly in the most mature markets, are not exclusively financial transactions; rather, they are the selected project delivery strategy based on a value-for-money or feasibility analysis.** In the majority of the countries visited, this perspective was either firmly held or gaining traction. In nearly all cases, the government determines that a PPP arrangement is the preferred method of delivery based on a systematic analysis and selection methodology.
- **PPPs are a critically important and growing**

percentage of the national highway network. A moderate percentage of the overall highway and roadway networks are under PPP arrangements, but the PPP segments are typically critical components of the national or regional system for vehicular mobility.

- **Highway PPP arrangements do not automatically require user fees.** The scan team found that various sources of funds are used throughout the world—from exclusively real tolls to a combination of real tolls and shadow tolls to exclusively shadow tolls or direct-payment mechanisms (often principally availability based).
- **The necessary public sector mindset and skills base for successful PPP programs and projects differ substantially from those needed for conventional practices.** All of the public agencies visited emphasized the significance of these two points and indicated the importance of building public sector capacity in PPP program management.
- **A reasonable balance among technical, commercial, and legal conditions and terms in a PPP contract is integral to its success.** While all highway projects are engineering efforts, PPP projects are also long-term enterprises. A fundamental difference exists between prescribing a highway that an agency wants constructed versus granting a private entity the right to operate an enterprise within the bounds of a contract. The latter demands establishing equilibrium between business and engineering aspects of a highway project.
- **Public agencies recognize that a PPP arrangement is in fact a long-term partnership with the private sector founded on a contract.** As such, the public sector's contract management team will be the one responsible for sustaining this relationship. Doing so may require understanding the spirit as well as the letter of a contract.

Project Life Cycle Findings

- **All public agencies emphasized the importance of adequate front-end or preliminary planning for a project to fully comprehend its business case and potential life-cycle value.** This is necessary to understand what service a potential asset should provide and where value is derived. Such comprehension will undoubtedly influence the remaining decisions on project delivery, including whether the project is a PPP candidate.
- **When defining or scoping a PPP project, the primary focus should be on identifying and conveying the outputs desired without inappropriately compromising existing technical standards.** Project outputs are what customers focus on: reliable travel times, safe travel environment, comfortable ride, etc. Thinking first about what customers desire rather than developing a prescriptive definition of the asset is a major transition in practice.
- **Risk analysis and allocation are paramount to PPP project success.** Certainly, risk allocation is not a new concept, but the public agencies with significant PPP experience the scan team met with have evolved from stressing maximum risk transfer to optimal risk allocation in PPP arrangements.
- **Most countries use an independent verifier or reviewer to monitor the design and construction phases of a PPP project.** The independent verifier serves as an objective third party to administer (certify pay requests, etc.) and review (check compliance with requirements, make onsite visits, etc.) the project during design and construction.
- **All countries use key performance indicators (KPIs) or performance measures in their PPP contracts to assess service along with incentives and disincentives to motivate contractor performance.** KPIs are the means for assessing whether the PPP contractor is providing the outputs desired from the asset. Contractors are usually rewarded monetarily for exceeding performance targets or showing positive trends, and they are debited monetarily for missing performance targets or showing negative trends.
- **Effective PPP contract management is vital to maintaining the public sector's risk posture and to sustaining a good working relationship with the PPP contractor.** The public agency's contract manager must understand the line between risk liability and risk transfer when interacting with the PPP contractor on issues. Further, the contract manager must recognize that the PPP contractor is likely his or her counterpart for the better part of 30 years or more, so keeping the bigger picture in perspective is more important than a petty disagreement or discrepancy.

Additional Findings

Beyond the principal findings, the team made other important observations:

- **Public agencies in the host countries have faced or continue to face challenges similar to those in the**

United States when it comes to providing serviceable highways and roadways. Not a single public agency indicated that it had a surplus of funds available for expansion, restoration, and preservation of its highway assets.

- **Significant institutional learning, in both the public and private sectors, has occurred in the countries visited over roughly the last decade.** Most PPP programs in the countries visited began in response to fiscal crises, and the early PPP arrangements in these countries, while well intentioned, did not necessarily provide the best value for the public. Since that time, the planning, procurement, and management of PPP projects have improved substantially.
- **The maximum contract period (or concession period) for road or highway contracts observed was 50 years, and most periods ranged from 30 to 40 years.** This is a contrast to several recent lease agreements of existing assets with periods ranging from 75 to 99 years coupled with large upfront payments in the United States. None of the countries visited have implemented a model of this sort recently.
- **All public agencies indicated that PPP arrangements can allow the delivery of projects sooner than would be possible through their other delivery methods.** This is a common refrain among agencies with significant PPP experience.
- **One man's BOOT (build-own-operate-transfer) is another's DBFO (design-build-finance-operate).** The definitions, acronyms, and nomenclature used worldwide for PPPs are far from standard.
- **Innovation by the private and public sectors in PPP arrangements is evident.** In the case of the private sector, innovation is typically stimulated by competition for the award of an integrated, commercial enterprise. In the case of the public sector, innovation is typically driven by stewardship of public interests.
- **In general, the representatives of the PPP contractors the scan team met with exhibited a focus on their customers, an emphasis on life-cycle management and value, and a pride in ownership and stewardship of their assets.** The comments and answers of the private participants visited demonstrated to the team members that their business model depends on these attributes.
- **The two most commonly cited attributes of a project that potentially make it a PPP candidate were scale and complexity.** The scale attribute is necessary to offset the transaction costs of PPPs, while complexity is generally seen as the ingredient that enables or perhaps compels the private sector to find novel or unique project solutions.
- **All public agencies emphasized the need for transparency during the procurement process for PPP projects.** The typical scale and complexity of PPP highway projects generate an unusually high level of public, political, and media attention. Nearly all of the agencies visited go to substantial lengths to make project documents and records accessible. In addition, some agencies use a public auditor to monitor proceedings.
- **The commitment of the government to see PPP project procurements through to closure is essential to stability within this market.** Given the enormous transaction costs involved in PPP projects, private participants must have confidence that the public sector is committed to closing deals expeditiously with rare exceptions.
- **In many of the countries visited, the PPP project development time was remarkably efficient.** In some countries, the entire procurement process, from circulation of an environmental document to attainment of financial close, averaged 12 months.
- **Multiple public agencies claimed that PPP projects provide better price and time certainty on design and construction when compared to the conventional approach.** Several of the countries visited indicated that the scale and complexity of and competition for PPP contracts generally lead to design and construction efficiencies, which result in better pricing and scheduling by the private sector.
- **Practices for managing changes and uncertainty throughout the contract period vary and range from rebalancing actions to limited material adverse effect impacts.** Rebalancing is a significant modification process, but one that is intended to be applied symmetrically. The conditions can be modified in either the public or private sector's favor. Similarly, material adverse effect changes can be quite arduous, but in the countries where this approach is taken, the public agencies have evolved to substantially limit the triggers of such provisions.
- **Handback provisions appear to necessitate good asset management practices by the private sector, but the handback process is generally untested in the countries visited.** Typically, the handback provisions specify residual service lives for the

different elements of the facility, such as pavements, at the end of the contract's term.

Implementation Strategies

After some discussion, the team agreed that this scanning study and its implementation strategies should facilitate the pervasive use of a project development process by State and local highway agencies that selects an effective project delivery system from a range of options that includes PPPs. An effective project delivery system is defined as one that provides the greatest benefits to society and meets government objectives.

The recommendations and implementation actions that follow are geared toward this end.

Short-Term Actions

1. Convene executive workshops at which representatives from countries visited or elsewhere speak directly to public and private sector decisionmakers. Providing information to both decisionmakers (executives) and those implementing the programs (directors or staff members) will benefit State departments of transportation (DOTs).

2. Develop training guidelines for PPP program managers, procurement officers, contract managers, and financial and legal specialists that State DOTs can use to tailor development and training programs to their specific needs.

3. Encourage FHWA to convert the scan team into an expert task group to implement scan findings.

4. Encourage AASHTO to establish a group focused on PPPs, perhaps as a section of one of its subcommittees. Implementation of this recommendation will allow the discussion on the development of PPPs to stay active and involve stakeholders at all levels of AASHTO, State DOTs, and FHWA.

5. Create a set of state-of-the-practice publications that further highlight the lessons learned from the scanning study and possibly expand the scope of inquiry to include other nations not studied. Issues such as business case development and analysis, value-for-money and risk analysis, procurement processes, contract provisions, and change management are all important topics for these publications to address.

6. Develop comparative case studies of representative projects, past and current, that highlight maturing and evolving policies and practices. For instance, the Victoria government has developed two projects, CityLink and EastLink. An indepth review of the project specifics, lessons learned, procurement changes, and program evolution would meet one of the principal objectives of the scanning study.

Midterm Actions

7. Develop a strategy to facilitate research in the following areas:
   a. Investigate advantages and disadvantages of alternative organizational forms for PPP divisions.
   b. Examine methods for identifying and analyzing candidate PPP projects.
   c. Investigate the evolution and effectiveness of KPIs.
   d. Investigate the risk mitigation practices of the private sector in PPP arrangements to determine if private participants assume real levels of risk.
   e. Investigate the determinants of concession length, both domestically and abroad.
   f. Evaluate methodologies for establishing and managing toll structures.
   g. Investigate and identify appropriate metrics for assessing benefits and costs of PPP programs and projects and overall PPP program and project performance.

Long-Term Actions

8. Develop and publish principles and guideline documents that update or complement existing documents that are similar in nature, such as the following:
   a. Establishing a PPP program
   b. Identifying and evaluating candidate PPP projects
   c. Procuring PPP projects
   d. Creating PPP contracts
   e. Managing PPP contracts
   f. Measuring PPP program and project performance

CHAPTER 1 »

Introduction

Background

Comprehensive highway public-private partnership (PPP) programs are relatively new to the United States and not widely used. Limited highway funds, unmet needs for new highway capacity, interest from private investors, and other factors have led to substantial discussion of PPP projects and programs at the State and Federal levels and implementation of projects in a few leading States. In contrast, some countries have extensive and, in some cases, long-term experience with infrastructure PPPs, particularly highways. In fact, some public agencies have completed long-term concession agreements and the facilities have been returned to the public agency after many years of private operation.

Many international public agencies also have multiple PPP arrangements that have been in place for more than a decade. Furthermore, they continue to invite the private sector to compete for the opportunity to develop, finance, operate, and maintain public facilities for terms ranging from 30 to 50 years. Agencies need a fuller understanding of the factors that led to successful implementation of PPPs in other parts of the world before exploring the success factors in any individual agreement. This includes an exploration of preceding conditions and public expectations, philosophical perspectives on the role of the private sector, the original rationale for implementing PPPs, and issues that need to be confronted, including public acceptance.

With this understanding, the lessons learned in the procurement and contracting process can be put in the proper context and the issues can be better framed for application in the United States. A successful PPP will include appropriate performance measures for the maintenance and condition of physical infrastructure and the transportation of people and products through the facility, as well as management of user charges and rates, where applicable.

Equally important are effective mechanisms to update an agreement to accommodate the future demands on a facility, as well as any conditions deemed significantly different from those at the time of an agreement. Finally, what are the metrics for measuring success? Current U.S. practice and experience do not provide a wealth of knowledge in any of these areas.

Purpose and Scope

Accordingly, the purpose of this scanning study was to (1) examine programs, policies, and practices used by other countries that actively solicit and involve the private sector in the delivery of highway infrastructure; (2) document lessons learned; and (3) make implementation recommendations that will improve U.S. policy and practice. Further, this scan represented an opportunity to collect information from public agencies administering mature agreements with private contractors developing and operating public roads.

For the purposes of this report, a public-private partnership is defined as a contract between the public and private sectors for the delivery of a project in which the private partner has the responsibility for acquiring the majority of the necessary financing. This characterization of PPPs is the result of the information provided by the host nations during the scanning study. The preliminary information sent to the host nations before the trip did not define PPPs; rather, the countries visited described program aspects and project examples that prompted this definition.

The scope of the investigation involved sending a team from the United States to Australia, Portugal, Spain, and the United Kingdom to collect and evaluate information about PPP programs and projects for highway infrastructure. The team met with representatives of the public and private sectors involved in PPP arrangements, as illustrated in table 1 (see next page). Most information exchange occurred during presentations by host agencies or private sector representatives, but roundtable discussions, social events, and site visits also provided opportunities for information collection.

Within each country, PPPs play an important role in facilitating national and regional mobility. Each country

also has a relatively mature PPP program for highway and road infrastructure. While PPP strategies, policies, and practices across the countries were similar in many respects, significant differences in several areas were identified. This variety is beneficial to the scan's objectives because it provides a broader spectrum of perspectives for consideration as the PPP market in the United States continues to evolve.

At this stage, one cannot conclude whether one particular policy or practice is better than another. In fact, such conclusions may be impossible to reach, given the complex sociopolitical environment in which highway infrastructure resides. But differing approaches should give both policymakers and decisionmakers the opportunity to appraise their advantages and disadvantages and determine if implementation resolves a need and is in the public's interest.

Scan Team

The team assembled to fulfill the objectives of the PPP scan included representatives from the Federal Highway Administration (FHWA); American Association of State Highway and Transportation Officials (AASHTO);

Table 1. Scan trip details.

Location	Meetings With Organizations	Site Visits
Lisbon, Portugal	Estradas de Portugal, S.A.[5] Brisa[2]	Brisa Traffic Control Center
Madrid, Spain	Polytechnic University of Madrid[3] Communidad de Madrid[1] Madrid Calle-30[2] Madrid Centro Financiero[4] Ministerio de Fomento[1]	Calle-30 Highway M-45 M-12
London, United Kingdom	Highways Agency[1] Department of Transport[1]	None
Sydney, Australia	Roads and Traffic Authority, New South Wales[1] Treasury, New South Wales[1] Infrastructure Insight[2] Infrastructure Partnerships Australia[4] Leighton Contractors[2] Allens Arthur Robinson[2] Macquarie Capital Advisers[2] Parsons Brinckerhoff[2] Thiess[2] Transurban[2]	Cross City Tunnel Sydney Harbour Tunnel Lane Cove Tunnel M-2 Motorway
Melbourne, Australia	VicRoads, Victoria[1] Partnerships Victoria, Department of Treasury and Finance[1] East-West Transport Link[1] Southern and Eastern Integrated Transport Authority[1] Transurban[2]	CityLink Motorway EastLink Motorway
Brisbane, Australia	Main Roads, Queensland[1] Infrastructure and Planning, Queensland[1] AirportLink/Northern Busway[1]	North-South Bypass Tunnel

[1]government or public agency, [2]private company/concessionaire, [3]university, [4]professional or trade organization, [5]state-owned enterprise/concessionaire

National Council for Public-Private Partnerships (NCPPP); State departments of transportation (DOTs) in California, Illinois, Texas, and Virginia; and Virginia Polytechnic Institute and State University (Virginia Tech). This group represented a diverse set of interests and expertise in the areas of asset management, contract administration, engineering, procurement, program management, and policy. The following were members of the team:

Janice Weingart Brown
(FHWA cochair)
Division Administrator
FHWA Texas Division

Robert Pieplow
(AASHTO cochair)
Chief, Division of Engineering Services
California DOT

Roger Driskell
Deputy Director, Region 4 Engineer
Illinois DOT

Stephen Gaj
Leader, System Management and Monitoring Team
FHWA Office of Asset Management

Michael J. Garvin
(report facilitator)
Associate Professor
Virginia Tech

Dusty Holcombe
Assistant Director, Innovative Project Delivery
Virginia DOT

Michael Saunders
Program Manager, PPP Program
FHWA

Jeff Seiders, Jr.
Director, Material and Pavements Section
Texas DOT

Art Smith
Chairman
NCPPP

Planning and Approach

The proposal for a PPP scan was evaluated and selected by a group made up of FHWA representatives and National Cooperative Highway Research Program (NCHRP) Project Panel 20-36 members. After scan team members were selected, a desk study was completed to identify candidate countries for the scanning study. The desk study involved literature reviews, expert interviews, and synthesis. Based on the desk study, the team selected the most appropriate and promising countries to visit.

Subsequently, the team prepared a panel overview document, which was sent to the host countries to prepare them for the U.S. delegation. The panel overview explained the background and scope of the study, its sponsorship, team composition, topics of interest, and tentative itinerary.

Figure 1. Scan team members at the headquarters of Estradas de Portugal, S.A.

Before conducting the scanning study, the team prepared a comprehensive set of amplifying questions to further describe and refine the panel overview document. Development of the amplifying questions was an iterative process, and the questions were designed to acquire information relevant to the scan's objectives while remaining general enough to capture unanticipated data the host nations might provide. Appendix B lists the scan's amplifying questions.

Overview of the Report

The subsequent chapters cover the following:

- Chapter 2 describes basic characteristics of the PPP programs in the nations visited, including the origins, role, structure, evolution, and public acceptance of these programs. It provides a foundation for the more detailed discussions that follow.
- Chapter 3 discusses the project programming and delivery processes observed. It gives an overview of how a PPP project moves from project identification and selection to commissioning.
- Chapter 4 describes PPP project operations and contract management. In many respects, these aspects are the keys to success since these arrangements are long-term relationships between the public and private sectors.

- Chapter 5 discusses PPP program performance and key lessons learned from the perspective of the host nations.
- Chapter 6 presents the team's 26 principal findings from the scanning study.
- Chapter 7 explains the proposed implementation strategy, which is vital to ensuring that the information acquired from the scan as well as subsequent proposed efforts are transferred into U.S. highway policy and practice.

CHAPTER 2 »

Highway PPP Program Characteristics

In the countries the scan team studied, highway PPPs play a pivotal role in enabling national and regional mobility, and the team observed both similarities and differences in PPP philosophies, policies, and practices. While conclusions on the relative merits of one policy or practice over another are premature, the team obtained a rich spectrum of information for consideration.

This chapter provides a basic overview of the host nation PPP programs, including their origins, role, structure, evolution, and public acceptance. Accordingly, it provides a foundation for the more detailed discussions in subsequent chapters.

PPP Program Origins

Portugal

In 1972, the first concession for a tolled motorway was granted with the creation of the private company Brisa. Following the 1974 Carnation Revolution, however, the government took majority ownership of Brisa, effectively making it a state-owned enterprise. Until the 1990s, Brisa was the sole motorway concessionaire in Portugal. During this decade, the Portuguese government decided to privatize Brisa and increase the number of private companies participating in highway infrastructure concessions to promote competition and industry development.[(a)]

Since then, the Portuguese government has used PPPs extensively to develop and manage its National Motorway System. A key driver of the decision to implement PPP arrangements in earnest was compliance with European Union (EU) convergence criteria, which places limits on public debt and budget deficits.[1] This pressure makes the use of PPPs, in which the private partner assumes real risk, quite attractive because its associated debt is moved off the public sector's balance sheet. Other drivers cited include the following:

- Make public funds available for investment in other areas.
- Facilitate execution of the National Road Plan.
- Improve public safety.
- Increase private sector capacity and competition.

Spain

Private sector involvement in developing and managing highway infrastructure in Spain dates to 1960. At that time, the concession for the Guadarrama Tunnel was granted, based on legislation passed in 1953 allowing private entities to construct tollways for a maximum term of 75 years. New legislation was passed in 1960 to grant the public sector more flexibility in concession arrangements to improve their attractiveness to the private sector. Two concessions were quickly granted under this framework: the Cádiz Bay Bridge, toll-free since 1982, and the Cadí Tunnel, now operated by the Autonomous Community of Catalonia.[(b)] In 1964, Spain developed a plan for a National Expressway System, which projected the construction of about 3,000 kilometers (km) (1,864 miles (mi)) of expressways by 1980. Subsequently, several concessions were established to begin development of this system. To facilitate rapid construction, specific legislation was passed

[1] Convergence criteria are the criteria for European Union member states to enter the third stage of European Economic and Monetary Union (EMU) and adopt the euro. The four main criteria are based on Article 121(1) of the European Community Treaty. Member countries that adopt the euro need to meet four criteria: (1) Inflation rate: The inflation rate must be no more than 1.5 percentage points higher than the three lowest inflation member states of the EU. (2) Government finance: The ratio of the annual government deficit to gross domestic product (GDP) must not exceed 3 percent at the end of the preceding fiscal year. If not, it is at least required to reach a level close to 3 percent. Only exceptional and temporary excesses are permitted. The ratio of gross government debt to GDP must not exceed 60 percent at the end of the preceding fiscal year. Even if the target cannot be achieved because of specific conditions, the ratio must have sufficiently diminished and must be approaching the reference value at a satisfactory pace. (3) Exchange rate: Applicant countries should have joined the exchange-rate mechanism (ERM II) under the European Monetary System (EMS) for 2 consecutive years and should not have devalued their currency during the period. (4) Long-term interest rates: The nominal long-term interest rate must not be more than 2 percentage points higher than in the three lowest inflation member states.

for each concession, and in many cases, beneficial terms were granted to the private developers.[b]

In 1972, Spain recognized the need for a general legal and regulatory framework to serve as the foundation for future concession arrangements. Building on its own experience as well as that of other countries, Spain passed Law 8/1972 to provide this basis. It served this purpose until 2003, when Law 13/2003 modified the original framework to accommodate contemporary circumstances and practices such as the clarification of the allocation of concession risks. Law 30/2007 was also enacted recently to address all public sector contracts, but it has a section for contracts for public works concessions.

Similar to Portugal, the resurgence of PPP activity in Spain is driven by EU convergence criteria. The other principal driver cited was that the nation's infrastructure requirements exceed its public funding capacity. One public official's opinion on PPPs is that these arrangements are primarily tools to develop infrastructure, and the approach is no better or worse than any other.

United Kingdom

Increased private participation in infrastructure provision and management began in the United Kingdom in the 1980s. The momentum from this decade continued into the following one when in 1992 the national government began the Private Finance Initiative (PFI). Her Majesty's (HM) Treasury issued and has administered the policy since its inception. To some, the terms PFI and PPP are synonymous. PFI, however, is a specific U.K. policy to increase private participation in infrastructure financing and provision, which obviously generated various PFI programs in the United Kingdom. Total PFI activity to date approaches £60 billion. The first three highway PPPs were concession arrangements—Queen Elizabeth II Bridge, Second Severn Crossing, and M6 Toll—with real tolls used to secure the private financing. Beginning in 1996, new PPP contracts eliminated real tolls and made road use free at the point of use to drivers. Consequently, PPP contractors have secured financing for capital costs while the government has paid PPP contractor service charges from budgetary funds.

Original drivers of the PFI policy include the following:

- An infrastructure deficit, created by years of underinvestment, which exceeded available public sector funding
- Dissatisfaction with the results of conventional construction contracts (cost overruns, schedule slippage, high asset life-cycle costs)
- Desire to transfer more of the risk to the private sector
- Desire to get better value for public sector expenditures

Unlike Portugal and Spain, the United Kingdom is not part of the Eurozone, so it is not bound to meet EU convergence criteria. Thus, the pressure to move liabilities off the public sector balance sheet is a less urgent issue.

Australia

In contrast to Portugal, Spain, and the United Kingdom, where PPP policies and programs are pushed from the national level, PPP activity in Australia has occurred primarily in three states: New South Wales, Victoria, and Queensland. Each state has used highway PPP arrangements almost exclusively to address mobility issues in their respective major urban centers of Sydney, Melbourne, and Brisbane. Moreover, these states have used PPPs rather selectively to facilitate the development of major segments of highway infrastructure in these urban areas.

NEW SOUTH WALES was Australia's first mover in the highways sector in the early 1990s. At that time, its motivations for PPPs were public sector budgetary constraints and a desire for direct pricing of road use as well as the potential to implement congestion pricing.[c] In 1995 the state government enacted the General Government Debt Elimination Act and subsequently the Fiscal Responsibility Act of 2005. These acts established principles of financial management and specified that the state maintain debt levels at certain thresholds. Consequently, they created an aversion to public debt in the government.[d] Further, the general debt stabilization policy influenced financing decisions on projects such as the Cross City Tunnel, where a no-net-cost-to-government philosophy was pursued.[d] In addition, the notion of transferring significant risks to the private sector was gaining traction, as well as the belief that market risks and rewards, in particular, provided the private sector the incentive to deliver projects as soon as possible.

VICTORIA began its highway PPP program on the heels of New South Wales when it called for expressions of interest from the private sector to develop and finance a new north-south connector highway in Melbourne in

1992. Unlike New South Wales, Victoria needed special legislation to enable this PPP. In 1995, Victoria passed the Melbourne City Link Act authorizing the PPP arrangement. During this period, one of the overriding concerns was limiting public debt burdens, so PPPs were viewed as a vehicle to this end. In addition, a general belief existed that private sector involvement could drive growth and efficiency, and the PPP model provided a means to price risks allocated to the private sector.

QUEENSLAND did not develop a state-driven PPP arrangement until 2006, when it initiated the procurement process for the AirportLink and Northern Busway project. The Brisbane City Council, however, began procurement of the North-South Bypass Tunnel in 2005. Since both PPPs were initiated more than a decade after the first highway PPPs in Australia, Queensland was able to capitalize on the experience of other states to more effectively implement these arrangements.

PPP Program Administration and Management

The public entities charged with administering and managing highway PPPs are structured differently among the host nations. The organizations that manage PPP programs range from traditional highway agencies to state-owned enterprises.

Portugal

Estradas de Portugal, S.A. (EP) has responsibility for oversight and development of the national highway network. EP was formed in 2005 as a state-owned enterprise, and it holds a 75-year concession with the national government to manage and develop the national highway system. In other words, EP will execute future PPP agreements on behalf of the Portuguese government and ultimately all assets under existing PPP contracts will transfer to EP when the existing contracts expire. EP is the successor to three agencies formed in 1999: Instituto das Estradas de Portugal (IEP), Instituto para a Construção Rodoviária (ICOR), and Instituto para a Conservação e Exploração da Rede Rodoviária (ICERR) that replaced Junta Autónoma das Estradas (JAE), which existed from 1927 to 1999. Its conversion from three public agencies to a state-owned enterprise was driven largely by the need to move government debts off the national balance sheet so the Portuguese government could remain in compliance with EU budgetary standards.

Spain

The Spanish highway system is managed by the director general of roads, who reports to the secretary general for transportation in the Ministerio de Fomento (or Department of Development), so no distinct national highways agency or department exists. The director general has oversight of the national PPP program. Autonomous communities also have their own roadway agencies. The government delegate, who works on behalf of the Ministry of Public Works, plays a key role in administering and managing individual PPP contracts.

United Kingdom

The Highways Agency is a unit of the Department for Transport and manages the English strategic road network. It has sole responsibility for the national motorway PFI (or PPP) program. Similar to Spain, the department's representative plays a pivotal role in administering and managing individual PPP contracts.

Australia

The administration and management approaches adopted by the three active states differ slightly. In New South Wales, the Roads and Traffic Authority (RTA) has oversight of its highway system as well as its PPP program. In Victoria, the state has created temporary public authorities for the sole purpose of managing the procurement of its highway PPP projects. Once operational, the public authorities are disbanded and the responsibility for contract administration and management is handled by VicRoads, the state's highway agency. In Queensland, the state has followed the model in Victoria for the procurement of AirportLink, creating an independent authority for this purpose. The state's Department of Main Roads will ultimately assume responsibility for its contract management.

Role of PPPs in National Highway/ Roadway Networks and Recent Activity

Across the host nations, PPP arrangements are a small-to-modest portion of the total roadway network. In all of the host nations, however, PPPs have played a key role in the development and management of critical highway corridors.

Portugal

Portugal has about 16,500 km (10,253 mi) of total roadways, but PPP concessions are fundamental to its National Motorway System. Figure 2 illustrates the pace of

development of this system, with the majority of the activity since 2000 being done under PPP arrangements. The planned motorway system will ultimately be 3,300 km (2,050 mi). Currently, 2,660 km (1,653 mi) of the motorway system is operational, of which 2,500 km (1,553 mi) or 94 percent is under a PPP arrangement. While only 15 percent of Portugal's current total roadways are PPPs, these arrangements are certainly focused on the nation's strategic surface mobility corridors. PPP arrangements are used exclusively by the national government.

Spain

While the total roadway network covers more than 30,000 km (24,600 mi), the National Highway System is about 16,000 km (9,942 mi). Of this total, 4,300 km (2,672 mi) or 27 percent is under a PPP arrangement. An additional 1,500 km (932 mi) of network enhancements and upgrades are under construction through PPP contracts, which will increase the percentage of the National Highway System under PPPs to 33 percent. PPPs are also used by Spain's Autonomous Communities (Communidad). While the national government does not initiate these arrangements, it may lend funding and management assistance to the autonomous jurisdictions.

Since 2000, the level of investment in roads, airports, railways, and ports via concessions has risen to roughly 20 percent of total transport investment, as depicted in figure 3. The vast majority of the concessions during this period were for roads. In the future, Spain expects to continue this approach to transport financing, as shown in table 2.

United Kingdom

The National Motorway System is comprised of 7,100 km (4,412 mi). This system constitutes only 3 percent of the total roadways in the United Kingdom, but carries 33 percent of all traffic and 62 percent of freight. Compared to PPP activity in other sectors, PPP highway activity has been relatively modest. Figure 4 (see page 14) shows cumulative PPP investment since 1996 is near £4 billion.

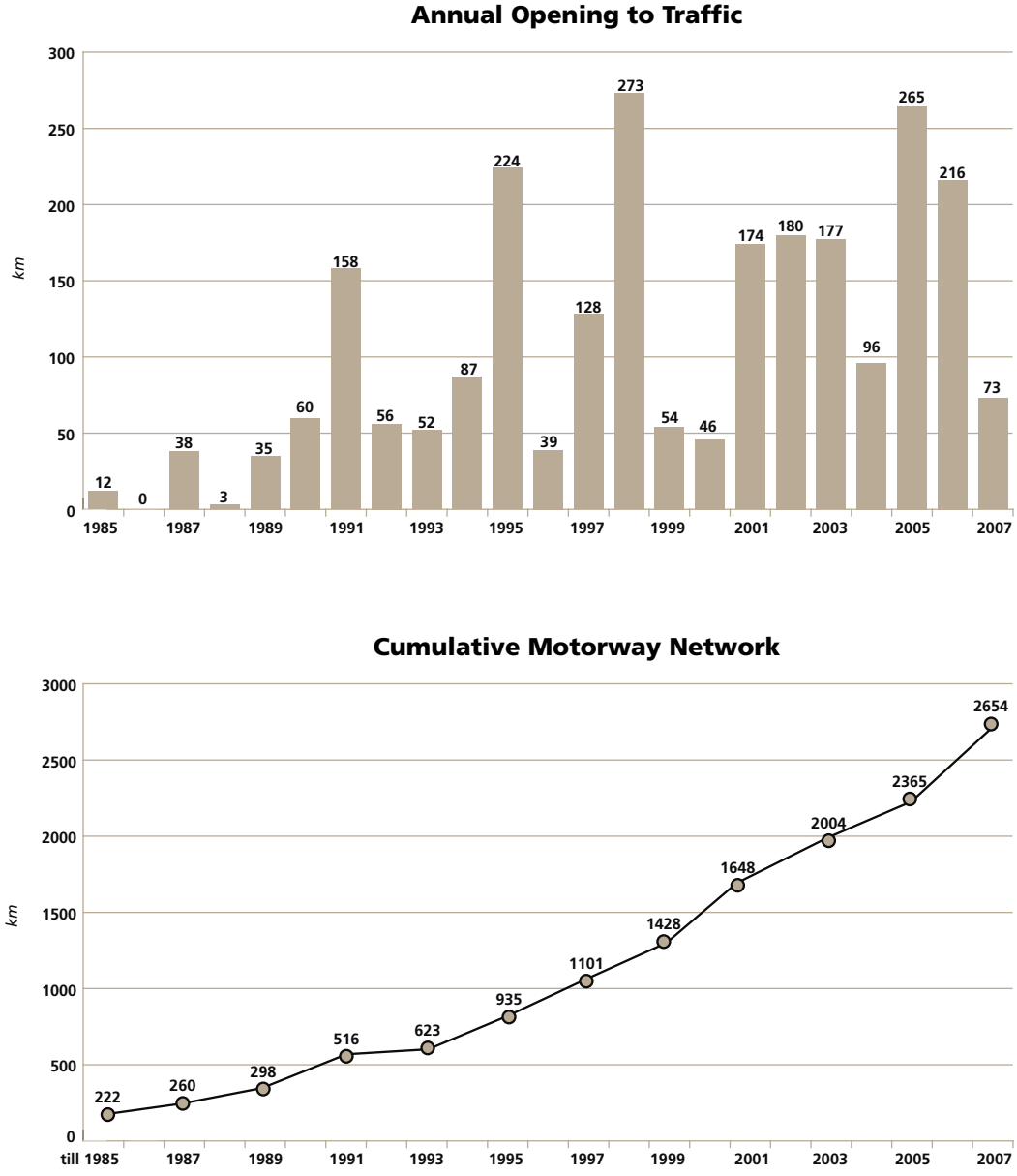


Figure 2. Construction of Portugal's National Motorway System.

Still, 10 percent of the National Motorway System is managed under PPP arrangements. The United Kingdom, however, is in the final stages of procuring its largest PPP project to date, the M25. Once closed, this will place 17 percent of the national system under PPPs. Local jurisdictions and the Department of Transport also have the authority to execute PPP arrangements, and both have exercised this authority.

Australia

Unlike the other countries visited, nearly all highway PPP activity in Australia has occurred at the state or municipal level and primarily in three states: New South Wales, Victoria, and Queensland. PPP arrangements are under consideration at the national level for development and enhancement of the interstate motorway system, but projects have yet to be solicited.

NEW SOUTH WALES has more than 20,000 km (12,427 mi) of state roadways and regional and local roads. It entered into its first arrangement via an unsolicited proposal for the Sydney Harbour Tunnel, which opened for service in August 1992.[2] Subsequently, the state has used seven additional PPP contracts to complete the orbital (perimeter or ring road) around Sydney, the most recent being three projects delivered in a 5-year period: the Cross City Tunnel, the M7 Motorway, and the Lane Cove Tunnel (see figure 5 on next page). In total, 108 km (67 mi) of state highway, or less than 1 percent of the total state network, are under PPP contracts.

VICTORIA has a network of more than 22,000 km (13,670 mi) of metropolitan and rural arterial roads, and only two highway PPP contracts. The first, a 22-km (14-mile) highway named CityLink, opened in 2000 to provide a north-south connection to Melbourne's central business district and airport. The second, a 40-km (25-mile) highway named EastLink, opened in 2008 to provide another north-south connection on the eastern fringe of Melbourne. Both are illustrated in figure 6 (see page 15). Combined, these arrangements are also less than 1 percent of the total state network.

QUEENSLAND has more than 33,500 km (20,816 mi) of state-controlled roads, but only two PPP contracts. The first, the North-South Bypass Tunnel, was an

Table 2. Future transportation investments in Spain: budgetary versus nonbudgetary.

Mode	Budgetary	Nonbudgetary	Percent of Total
Roads	75.0%	25.0%	26.8%
Railways	81.4%	18.6%	48.0%
Airports	2.2%	97.8%	6.5%
Ports	9.7%	90.3%	9.7%
Other	27.7%	72.3%	9.0%
Percentage of Total	59.5%	40.5%	100%

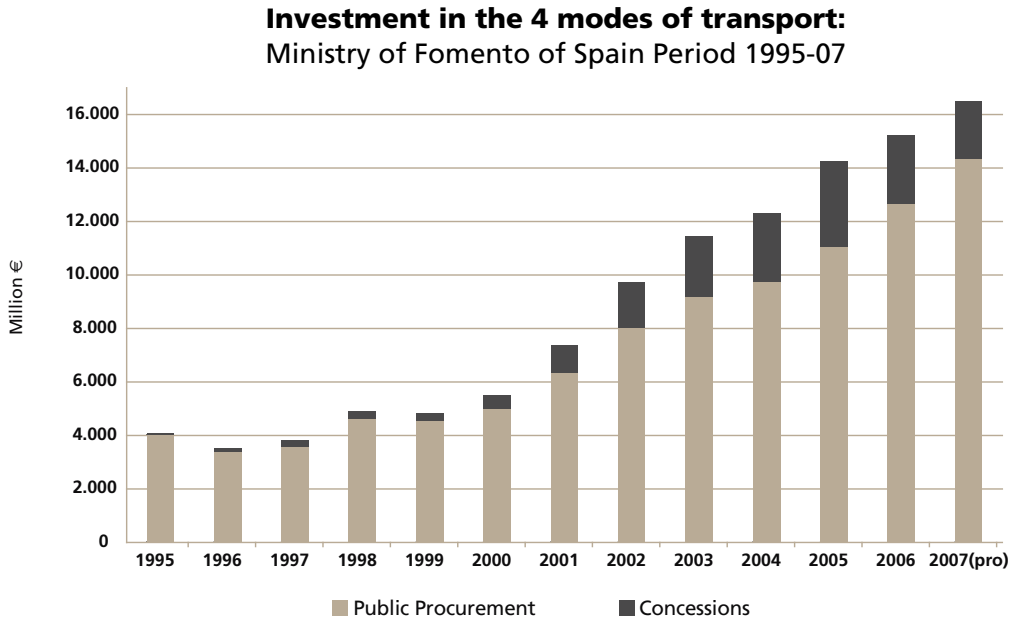


Figure 3. Spain's national investment in transport infrastructure, 1995-2007: public investments (budgetary) and concessions (nonbudgetary).

[2] No other unsolicited highway proposals have been developed in Australia.

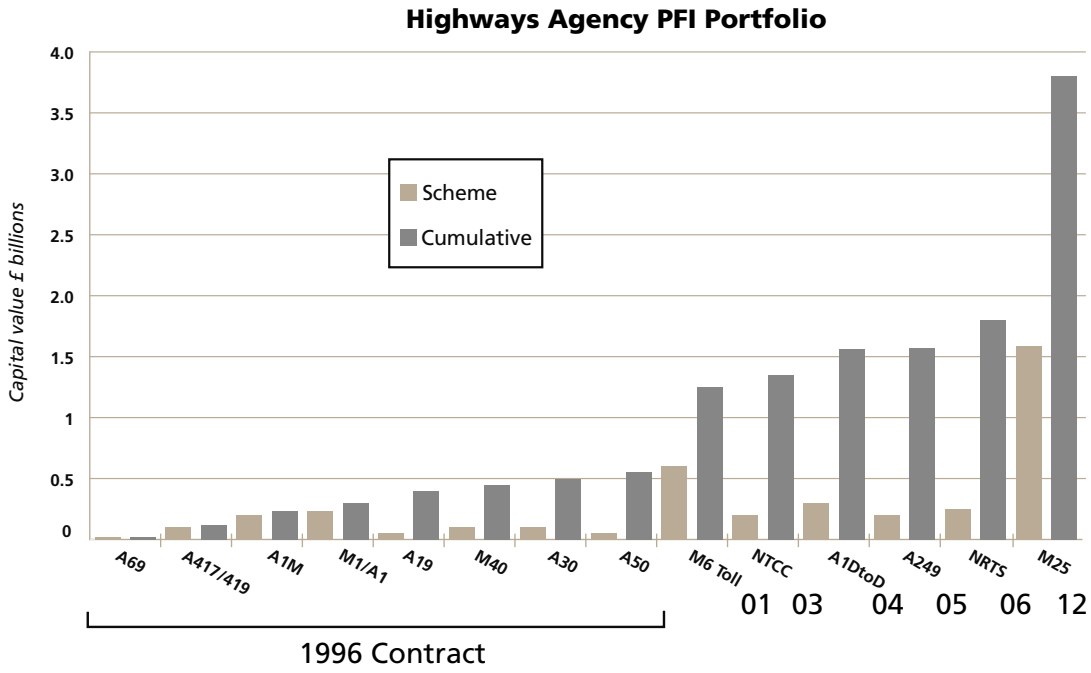


Figure 4. Highways Agency PFI portfolio, 1996 to date.

arrangement brokered by the Brisbane Municipal Council to provide another crossing of the Brisbane River. This 6.8-km (4.2-mi) tunnel is under construction. The second is a state project, AirportLink/Northern Busway (illustrated in figure 7), a multifaceted $4.6 billion connection between downtown Brisbane and the airport. The preferred bidder was selected in May 2008 and financial close was achieved in July.

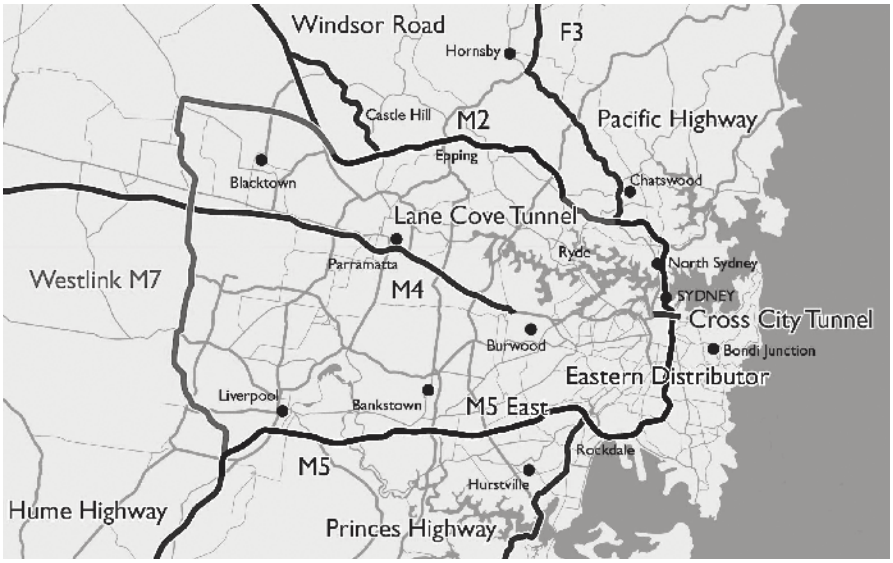


Figure 5. Sydney's orbital roadways.

PPP Program Evolution

Each of the PPP programs has evolved since it began. While institutional learning has certainly occurred by experience, it has also come via external and internal scrutiny of the programs. Hence, the program changes have not manifested themselves just through the adjustments in organizational practices that occur naturally as familiarity with conditions and circumstances increases, but also through modifications to law and policy.

For instance, Spain's Law 13/2003, passed in May 2003, was established to reinforce private financing of public facilities and to improve the legal framework by defining a new risk-sharing approach, particularly for the risks involved in estimating traffic demand.[e] This law, among other things, established the principle of recalibrating the economic terms of the PPP contract. The law "specifies which events may cause the modification of the economic terms of the contract in order to rebalance the financial terms of the concession. Consequently, the bidders

know, at the time of preparing their offers, which specific cases may lead to changes in the contract conditions initially stated."[e] This is a significant shift in how uncertainties throughout the project life cycle are managed, especially the traffic demand risk that can be challenging to forecast for a new toll road.

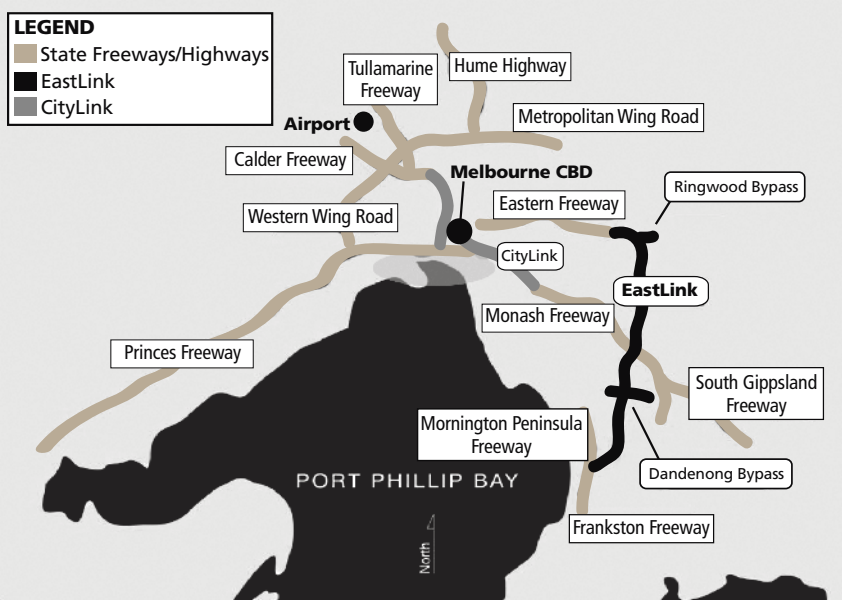


Figure 6. PPP highways in Victoria.

The United Kingdom's PFI has been the subject of tremendous scrutiny by its National Audit Office (NAO) and Parliament. The first of 50 NAO reports on PFI was issued in 1998. While this report concluded that value for money (VfM) through PFI projects was being achieved, it also found grounds for improvement in risk allocation, contract provisions, etc. With time, the United Kingdom has implemented a variety of changes designed to improve its PPP program. A standard PFI contract is now used, and approval is required if contract deviations are sought. National employment legislation exists to protect public employees if an existing asset or service is transferred by contract to a private provider or operator. In effect, they must receive a comparable opportunity and benefits with the private service provider. Finally, contract modifications over such long-term agreements are inevitable as standards and expectations change, so current and future contracts provide more flexibility to negotiate changes. The Highways Agency, in particular, has learned that it makes sense to revisit contracts more frequently to assess potential changes rather than allow changes to accumulate and attempt to negotiate a major modification.

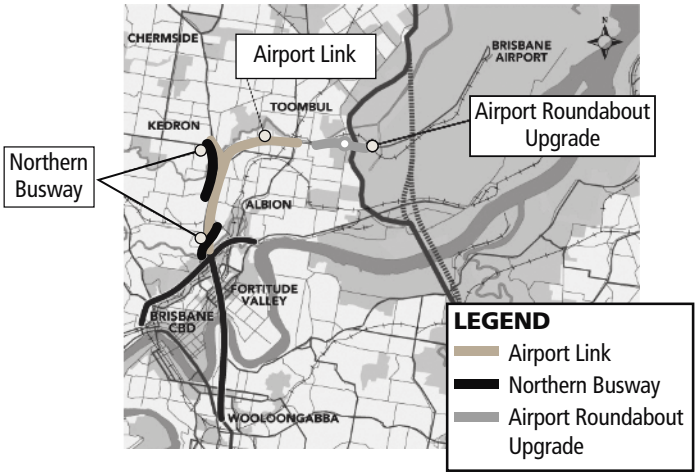


Figure 7. Queensland's AirportLink/Northern Busway PPP.

Similarly, New South Wales adopted new policies following external scrutiny. Public reaction to the opening of the Cross City Tunnel in 2005 prompted a *Review of the Future Provision of Motorways in New South Wales* by the Infrastructure Implementation Group of the Premier's Department (commonly referred to as the "Richmond Report"). The report examined seven prior PPP motorway projects in the Sydney metropolitan area. While the report concluded that the RTA had generally complied with existing policies and procedures, it made a number of recommendations. As a result, the government of New South Wales has made several changes in its PPP policies and practices—refocusing its emphasis on value for money for its roadway users, improving overall transparency by disclosing all contract documents and amendments, and abandoning the no-net-cost-to-government policy.

Earlier, Victoria built on its 1990s experience while also drawing on the knowledge of countries such as the United Kingdom when it issued its Partnerships Victoria policy in 2000. This policy represented a fundamental shift in the state's perspective and implementation of

PPPs. Foremost, the policy established a clear aim of achieving value for money in the public interest, made no presumption that the private sector was more efficient in building and operating public assets, and emphasized optimal rather than maximum risk transfer to the private sector. Since promulgating this policy, Victoria has issued a variety of publications on PPP procedures, ranging from practitioner's guides to contract management frameworks. Perhaps the strongest indicator of the maturity of its overall program is reflected in its project selection policy. Budgetary funds must be available to support any potential infrastructure project for it to be considered for inclusion in a capital program. If the potential project has the attributes necessary for a PPP, then it will be evaluated through Victoria's "Value for Money" guidelines. Only if the project demonstrates value for money as a PPP will it proceed that way. Otherwise, Victoria's provincial budgetary funds will be used to finance its conventional delivery.[3]

Similar to the United Kingdom, the Australian national government is working on a standard PPP contract by infrastructure sector, due in 2009. Some host country representatives viewed moves toward standardization in procedures and contracts as somewhat troubling. While standardization can promote stability and reduce transaction costs, too much standardization, especially in contracts, can limit flexibility, effectively reducing avenues to structure PPPs as unique service arrangements. Instead, some representatives suggested dissemination of process guidelines for project definition and selection, procurement, and award coupled with a reasonable number of standard contract provisions to promote essentially the same end: market reliability and transaction cost reduction.

Public Acceptance of PPPs

As PPP programs have evolved in the host countries, so too has public acceptance of PPPs, although some issues remain. In many respects, public perspectives of PPPs have improved over time as the nations have tightened policies and improved practices. This is not to say that resistance has dissipated entirely, but that the public has come to expect better government decisionmaking on and oversight of PPPs.

Public concern over private sector profiteering was quite pronounced in some of the host nations at the onset of PPP programs. Public apprehension over the potential for unreasonable private sector profits was a real issue. With time, adjustments in policy and practice have reduced this apprehension. The more recent adoption of value-for-money principles for PPP projects and the public sector's contractual regulation of private revenues or profits as well as sharing in the financial upside have helped minimize this concern. More specific practices are described in subsequent chapters.

Resistance to tolling exists in the host nations visited, particularly the imposition of tolls where none existed before. "Excerpt: *Private Sector Financing in Roads: Review of the Major Australian Toll Roads*" is from a 1998 report by Austroads, the association of Australian and New Zealand road transport and traffic authorities, that provides an insightful perspective on toll roads. Both opposition aspects identified suggest that public resistance to a roadway or a toll road may have more to do with the fundamental source of the opposition than with who is providing the service. Representatives in New South Wales indicated that while general resistance to tolling has subsided somewhat, a new circumstance described as "toll fatigue" has developed.[4]

Officials in the United Kingdom have observed two interesting issues related to public acceptance of PPPs. The first is confusing PPP with privatization. To some these words are interchangeable. The difference between the two, however, is more than semantic. The transfer of ownership of an asset to the private sector qualifies as privatization, in which governance is through regulatory bodies such as public utility commissions. PPPs are service arrangements between the public and private sectors that are governed by contracts and the accompanying body of contract law. The second issue is general public opposition to the overall PFI policy, but project-specific support once the public is exposed to the advantages and disadvantages

[3] It is worth noting that this was the policy described by Victorian officials; whether this policy is being followed is unknown. Still, the mere existence of such a policy suggests a radically different political view of PPPs than in the United States.

[4] A partial explanation of this fatigue might be the variable rates that residents of Sydney pay when using different sections of the Sydney Orbital. Since the Orbital was developed incrementally by different PPP contractors, the per-kilometer rates vary from segment to segment.

of a PPP approach versus an alternative strategy. In both cases, the government's transparency and accessibility on policy and project information and audits have improved public knowledge and acceptance of PPPs.

Excerpt: *Private Sector Financing in Roads: Review of the Major Australian Toll Roads*

It is the politics of toll roads, rather than their economic legitimacy, that has become the issue by which toll roads in Australia have been judged in recent times.

There are two aspects to the opposition which has arisen to these toll projects:

- road versus no road; and
- "free" versus "user pays."

In the first aspect, road versus no road, ownership is not the issue. Good planning involves:

- integrated management of the land-use and transport system;
- adapting urban regions to provide for growth and change while moving towards more sustainable, efficient and equitable cities;
- establishing a local land-use/transport system with a closer fit between housing, local employment and services;
- developing transport routes as multi-modal corridors, planning them in a regional and local context, and developing roads and their environments together; and
- effective community consultation.

Governments must be informed managers to ensure the above requirements are met, whether the private sector is involved as project proponent or not. The politics can manifest into "no road" community pressure if the planning process is not successful.

In the second aspect, free versus user pays, again ownership is not the issue. Whether the government or a private developer owns a road, recent toll projects have been private sector projects with the tolls providing the revenue stream.

Therefore the issue is that the community, if given a choice, prefers not to have to pay directly to use particular roads. Where roads are financed from general taxation, road use appears to be "free." Given that the majority of roads have no direct pricing, users exposed to toll roads may believe they are being treated inequitably compared to users of other facilities funded from general taxes.

CHAPTER 3 »

PPP Project Programming and Delivery

Each host nation follows a systematic methodology for PPP project programming and delivery. All countries decide to deliver a highway project by PPP after extensive front-end planning, although philosophical differences do exist among the nations on the justification of a PPP approach. Regardless, the programming and delivery processes used are informative, particularly because they provide contrasting perspectives to consider.

A fundamental question with any PPP arrangement is the particular funding arrangement that might prevail. Given the impact that the funding mechanisms can have on the general project programming and delivery process, these are discussed first in this chapter.

Funding Mechanisms

PPP arrangements require revenue sources or rights to support their capital, operating, financing, and transaction expenses and to provide a return on equity investments. The host countries employ a variety of mechanisms to provide such funding: real tolls, shadow tolls, and direct-payment mechanisms. Real tolls are relatively well understood; users pay a fee to use an asset. Shadow tolls and direct-payment mechanisms are less so. Often, shadow tolls are viewed as payments from a public entity to a contractor based on the volume of asset users. In Portugal and Spain, however, a shadow toll is comprised of a service payment, which is linked to traffic volume, and an availability payment, which is linked to the level of service provided. The simple notion of a direct-payment mechanism was presented in the United Kingdom as the fee the public entity pays the contractor. The payment mechanism is comprised of several components, but the availability of service is the principal one.[5] Another potential mechanism is ancillary revenues that might be derived from commercial development or land use arrangements along a roadway, such as service stations, restaurants, or utility corridors.

Portugal

Portugal uses direct real tolls and shadow tolls to provide the revenues necessary to support PPP projects. EP evaluates the economics of the proposed PPP project and recommends a tolling or funding strategy to the Portuguese government, which makes the final decision on toll structure.

In situations where traffic volumes are projected to exceed 15,000 vehicles per day, EP will generally recommend real tolls and may permit the concessionaire to employ congestion pricing schemes. If traffic volumes are projected to be below 10,000 vehicles per day, EP will usually recommend shadow tolls. In addition, the government may substitute shadow tolls for real tolls on urban commuter routes. Of the 2,500 km (1,553 mi) under PPP contracts, 1,400 km (870 mi) or 55 percent is real toll, 900 km (559 mi) or 37 percent is shadow toll, and 200 km (124 mi) or 8 percent is no toll. Toll-free PPPs result, for example, when a private partner builds a connector road that is not tolled as part of an overall highway concession agreement. Figure 8 (see next page) illustrates the past and projected mix of real and shadow tollways in Portugal's National Motorway System.

Where expected traffic volumes are modest, EP has recommended a dual approach in which real tolls are combined with shadow tolls with two components, a service payment linked to traffic volume and an availability payment linked to the level of service provided. In these cases, the initial basis for the real toll is common for all projects and has a contractual cap, while the shadow toll amount is bid variable. As traffic on these roads increases, the real toll revenues rise while the rate of shadow toll contributions by the government falls. Further, EP is considering removing shadow tolls from highways where the real tolls have become sufficient to meet project financial requirements.

[5] In early PPP arrangements in the United Kingdom, shadow tolls based only on volume of service were commonly used; the United Kingdom has evolved to use payment mechanisms based heavily on availability of service. Hence, this overall approach to payment is often referred to as "availability payment."

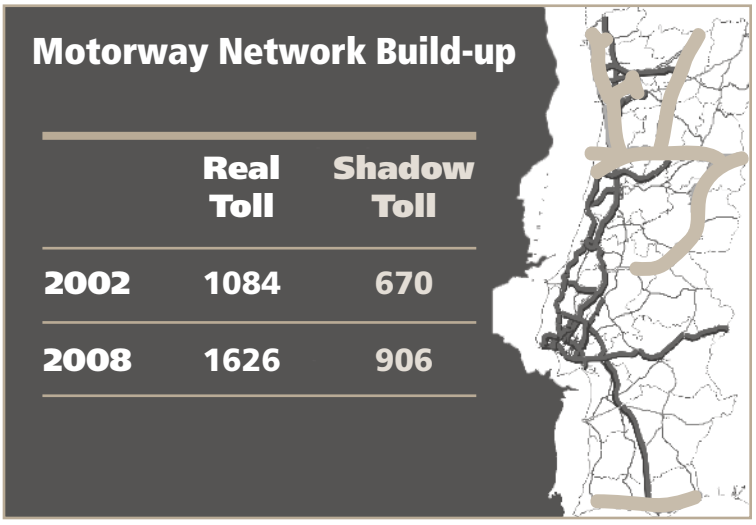


Figure 8. Portugal's National Motorway System with mix of real toll and shadow toll segments.

Spain

Similar to Portugal, Spain uses both real and shadow tolls. The government conducts a feasibility analysis to determine whether the expected traffic volume will permit the use of real tolls. If not, shadow tolls are generally used in lieu of any real toll. In the case of real toll concessions, the Spanish government has recently begun to establish the tolling rate and structure. This is a change in philosophy from earlier concessions in which tolling rates and structures, as well as the concession period, were bid parameters. The basic rationale for the change is that fixing these parameters increases competitive pressure.

Of the 4,300 km (2,672 mi) of the National Highway System under PPP contracts, 3,800 km (2,361 mi) use real tolls, while 500 km (310 mi) use shadow tolls. In the Madrid metropolitan area, shadow tolls alone are generally used for PPP projects. The shadow tolls paid during a period usually are linked to traffic volume and the level of service provided. Only one PPP project in the Madrid region relied exclusively on real tolls. Other regions in Spain rely more heavily on real tolls. Like Portugal, Spain also requires construction of toll-free connector roads as part of some of its concession agreements.

United Kingdom

With the exception of the M-6, the national motorways under PPP contracts in the United Kingdom use either shadow tolls or direct payment mechanisms exclusively. Early PPP contracts often used shadow tolls based only on traffic volumes. More recent PPP contracts have used a payment mechanism based on various factors, such as congestion, lane availability, minimum performance criteria, and safety. In some cases, the payment is associated primarily with the availability of a required level of service (i.e., an availability payment).[6] PPP contractors typically propose the amount of direct payment from the government in their price proposals during procurement. Funding challenges, however, are driving the U.K. government to consider the use of real tolls on future highway PPPs.

Australia

In the three states, real tolls are used for highway PPP projects. While governments may propose either a lump sum or an annual contribution to the contractor in their request for proposals, respondents (bidders) have typically proposed the elimination or reduction of these contributions by government in their proposals. In New South Wales, the government now typically specifies the initial toll rate and uses indexing techniques for escalation. In Victoria and Queensland, the initial toll rate is typically a bid variable, but the government sets the tolling structure over time.

Project Analysis and Selection

Determining whether a project is suited for delivery by PPP is an important, but not daunting, task. A representative for the U.K. Highways Agency indicated that a PPP arrangement is a tool that can provide value for money, but this strategy is unlikely to do so if a project is too grand, too complex, or improperly prepared. "Getting it right is not difficult or a matter of luck," the representative said, but it requires the public sector to define its requirements clearly and to prepare a project for the market. Accordingly, this section explains how the different nations go about getting it right.

A common attribute among the nations is the importance of long-term transportation and highway plans in their overall capital programming process. Each country has a general master transportation plan, and PPP candidate projects are typically identified from the requirements listed in the master plan. Another common perspective is that projects with reasonable to significant scale and

[6] The United Kingdom still tolls some bridges in its existing PPP contracts, such as the Second Severn Crossing along the M4.

complexity are often viewed as possible PPP arrangements. While scale can offset the substantial transaction costs involved in these projects, both attributes are likely to introduce meaningful risks throughout a project's life cycle. Long-term risk assumption by the private partner is seen as a driver of innovative project concepts and solutions.

Generally, Portugal and Spain use similar techniques for analyzing and selecting projects for delivery by PPP, and the United Kingdom and Australia employ comparable methods. Essentially, the principal difference between the pairs of nations is the justification rationale. In Portugal and Spain, a feasibility analysis is conducted during the project programming process. If the majority of a project's market risks can be transferred to the private sector, the project is likely to proceed as a PPP. Alternatively, the United Kingdom and Australia employ a more methodical approach in which a public sector comparator (PSC) is developed and a value-for-money (VfM) analysis is conducted. Generally, a PPP approach is taken only if VfM is expected by following the PPP strategy.

Portugal

Portugal has developed and maintains a National Road Plan, which identifies current and future highway requirements as well as their proposed execution. This plan was last updated in 2000, and it serves as the country's framework for highway development and management. Portugal is experiencing 6 percent annual traffic growth overall and 12 percent traffic growth on its motorway system.

Potential PPPs are drawn directly from the requirements in the 2000 plan. In fact, Portugal expects to use primarily PPP arrangements to complete its National Motorway System. During project programming, EP conducts a feasibility analysis to determine the financial viability of alternative funding schemes for upcoming motorway segments. In many respects, the question is what type of funding mechanism to apply to a particular segment. EP studies the circumstances, determines whether a real toll or a shadow toll is appropriate, and makes its recommendation to the Portuguese government. Once a funding decision is made, EP programs the project for execution.

Spain

Spain has a 15-year national plan from 2005 to 2020 for different transportation modes. Roughly 25 percent of the expected financing for national highways and roadways during this period will come from nonbudgetary sources—in other words, through concession arrangements.

All potential projects go through a similar programming process, which Spain describes as a "maturation phase." This phase typically lasts 30 months. During it, potential projects undergo an informative study and a project development process. During the informative study, the government completes a feasibility analysis to assess, among other things, the financial circumstances of a project. If the government can define the conditions of the project so that it is a viable candidate for private finance and the appropriate level of market risk can be transferred to the private sector, the project will likely proceed as a PPP arrangement.

Figure 9 (see next page), for instance, illustrates a preliminary economic analysis of a group of projects: intercity motorways, new radial highways, and regional development highways. The expected capital cost and daily traffic are depicted on the x and y axes, respectively. The lines radiating from the origin indicate a 7 percent internal rate of return (IRR) for contract terms of 35, 50, and 75 years. Individual projects are plotted on their projected capital cost and daily traffic. Projects in the upper left are quite viable economically, but too attractive for the private sector. Projects in the lower right are uneconomical and, therefore, are not attractive enough. To increase the risks of the three projects in the upper left, the scope of work for the projects will be increased (increasing the capital costs) to drive the projected IRR down toward 7 percent. To reduce the risks of the two projects in the lower right, public funds are introduced to drive the projected IRR up toward 7 percent.

Once the informative study is complete, the PPP versus non-PPP decision has been made and projects proceed through the development phase, during which environmental impact analyses and public information periods are completed. Finally, the scope and conditions of a project are drafted, and it is ready to enter the delivery, or execution, phase.

United Kingdom

The United Kingdom has transportation plans with a regional focus as well as a Programme of Major Schemes.[7]

[7] The Highways Agency in the United Kingdom uses the term "scheme" to refer generally to requirements or potential projects.

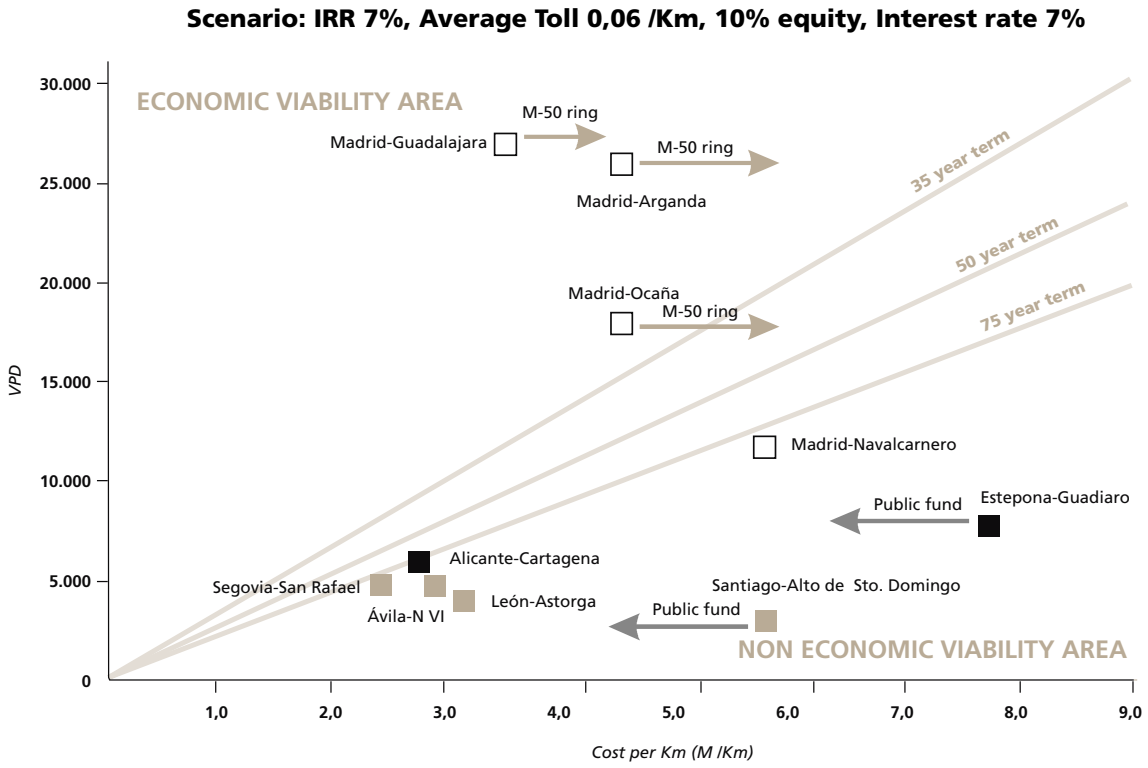


Figure 9. Example of Spain's preliminary economic viability analysis of projects.

Figure 10 shows the past and future focus of the Highways Agency's investments. The decision on the delivery approach for schemes will consider (1) individual scheme priorities, (2) current or pending program commitments, (3) capital costs, and (4) network occupancy against a hierarchy of delivery options. A private finance strategy must be considered first for any major scheme (defined as any scheme with a capital cost exceeding £7.5 million), but schemes valued at less than £100 million are likely to offer better value if delivered conventionally.

When a major scheme is identified, the project delivery strategy is determined jointly by Major Projects and the Procurement Division. In the case of a potential PPP, a VfM analysis is started by examining five areas:

- Does the project have sufficient scale to offset the transaction costs of procurement and implementation?
- Can the public sector define its needs and services?
- Does the private sector have the appropriate experience and can it deliver?
- Can whole-life (life-cycle) services be quantified?
- Are there appropriate performance measures for assessment of the private sector?

If this examination suggests that VfM is possible, then a PSC analysis is conducted. The intent of the PSC analysis is to determine if a PPP approach generates value against a public provision strategy when life-cycle costs and risks are quantified, as depicted conceptually in figure 11. In the case illustrated, the PPP approach demonstrates value for money because the base case plus risks retained by the public sector are less in the PPP approach than the public provision estimate (the PSC) of the base case plus the risks retained.[8] After completion of this analysis, either a PPP delivery is chosen or not.

[8] HM Treasury no longer requires the development of a PSC for PFI projects generally; the treasury has determined through its audits and experience that a project with the appropriate attributes most likely will pass the PSC test. The Highways Agency still makes use of the PSC as a mechanism to lend credibility to its delivery decision.

Of note is the difficulty and controversy that surround the use of VfM and PSC analyses. The challenges of implementing this methodology are captured by comments from U.K. elected officials:[f]

> Successive administrations have adopted the policy of using the PFI for those cases where the approach is expected to deliver value for money. The Prime Minister said in September 2002 that the PFI has a central role to play in modernising the infrastructure of the NHS (National Health Service)—but as an addition, not an alternative, to the public sector capital programme. Yet the PFI is too often seen as the only option. To justify the PFI option, departments have relied too heavily on public sector comparators. These have often been used incorrectly as a pass or fail test; have been given a spurious precision which is not justified by the uncertainties involved in their calculation; or have been manipulated to get the desired result.

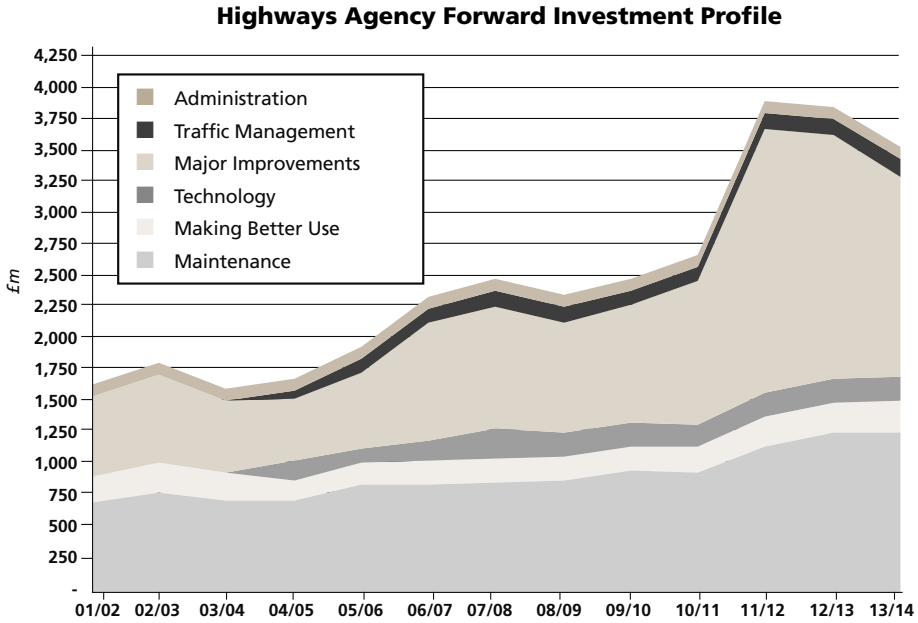


Figure 10. U.K. Highways Agency investment profile, 2001–2014.

Despite such criticism, the methodology at the very least promotes the use of a systematic and auditable process, rather than an expedient or politically motivated one, for making a project delivery decision. In addition, it encourages a thorough business case analysis for any project, particularly large-scale endeavors.

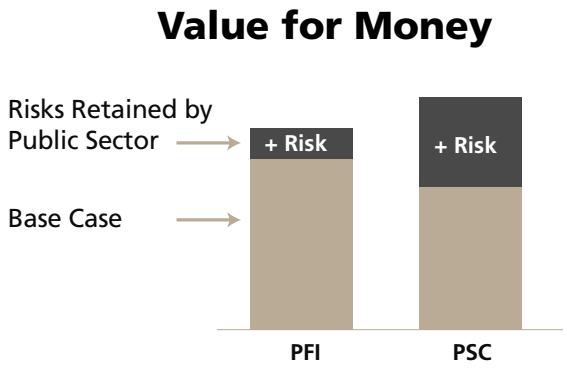


Figure 11. Illustrative PSC analysis in the United Kingdom.

Australia

In each of the three states visited, statewide or regional transportation plans have been integral to the identification of possible PPP projects. Similarly, each state uses a VfM methodology including PSCs, comparable to the United Kingdom's techniques for determining whether a PPP approach is justified.

In **NEW SOUTH WALES,** the Office of Infrastructure Management is responsible for the State Infrastructure Strategy (SIS), a rolling 10-year plan for all infrastructure systems. This plan draws heavily from the agencies' Asset Strategies and Capital Investment Strategic Plans. Other strategies at municipal or regional levels are also considered when developing and updating the SIS.

The highway PPPs in **VICTORIA** are more the result of long-term regional planning than routine statewide planning efforts. State officials had studied the need for the projects that became the CityLink and EastLink PPPs for 40 to 50 years. The state has just completed a needs assessment for an east-west limited access corridor in Melbourne.

In **QUEENSLAND**, Main Roads has in place a rolling 5-year Roads Implementation Plan. The plan outlines projects totaling $16.2 billion. The Brisbane City Council has also played an integral role in planning improvements in Queensland's largest city. It has in place a Brisbane Transport Plan Update 2006–2026, and the TransApex

Study of 2004 focused on an inner-city ring road system creating three new high-capacity river crossings. Recommendations from this study are shown in figure 12. Two of the projects the study identified are already being delivered by PPP arrangements (North-South Bypass Tunnel and AirportLink).

All three states emphasized the significance of conducting a strong business case analysis before considering PPP delivery as an option. In fact, this consistent refrain indicates the general level of maturity of PPP policies and practices in Australia, where the states have incrementally normalized themselves. New South Wales moved first and Victoria followed. Despite the friendly rivalry between the two, they have learned from each other as their programs have evolved. Recently, Queensland has gotten into the act, and it has borrowed PPP knowledge acquired by the other states and used it to its advantage, even going as far as using public personnel from other states in the procurement process.

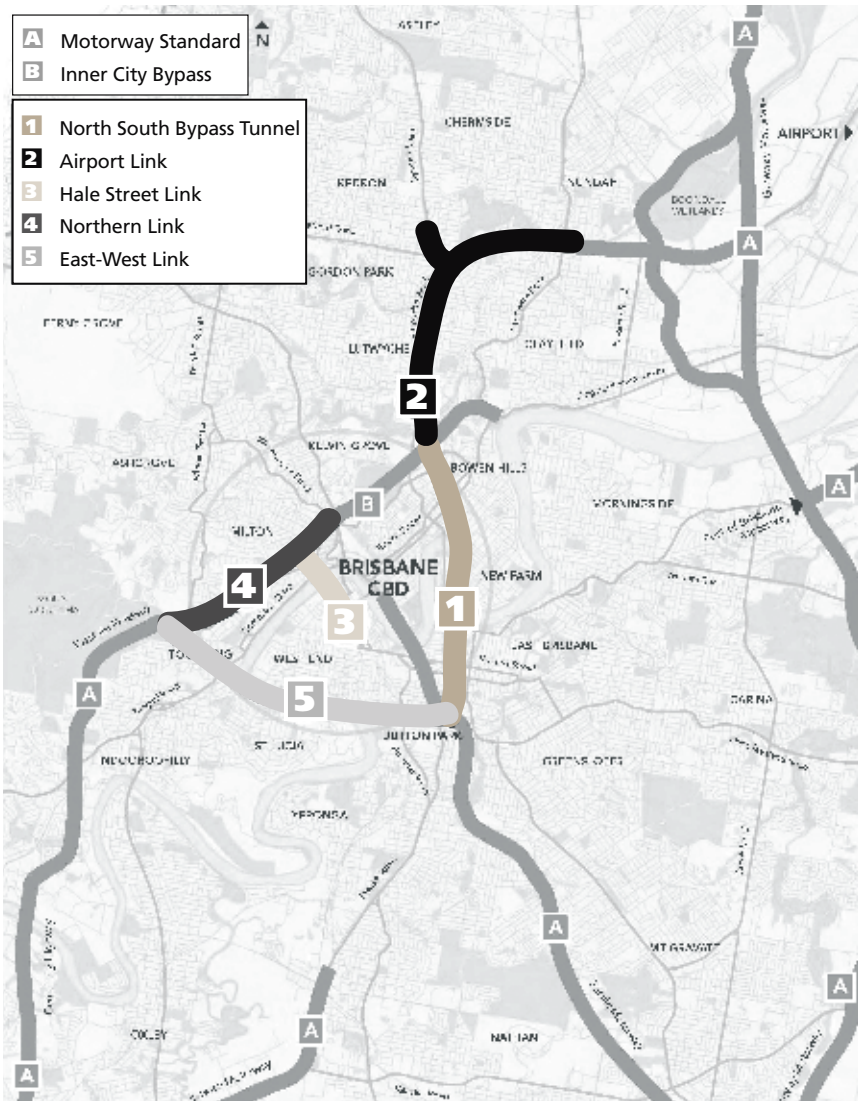


Figure 12. Project recommendations from TransApex Study in Brisbane.

In fact, the basic drivers of VfM in New South Wales and Victoria are virtually identical:

- **Improved risk management:** This involves more rigorous risk evaluation and transfer to the private sector of those risks it is best able to manage, including those associated with providing specified services, asset ownership, and whole-of-life asset management.
- **Ownership and whole-of-life costing:** Efficiency is improved as design and construction become fully integrated upfront with operations and asset management.
- **Single point of contact:** Ongoing service delivery, operational, maintenance, and refurbishment costs become a single party's responsibility for the length of the contract period.
- **Innovation:** This involves wider opportunities and incentives for innovative solutions to deliver service requirements. Opportunities may include (1) bundled services through a package deal for all noncore services, (2) upgrades of associated and complementary infrastructure, and (3) packaged information systems.
- **Asset utilization:** This includes reducing costs to government, as a sole user, through more efficient design to meet performance specifications (i.e., service delivery) and creation of complementary opportunities to generate revenue from others' use of the asset.
- **Whole-of-government outcomes:** These include nonasset- and nonprice-related value-adding outcomes of wider interest to the government, such as socioeconomic and environmental outcomes.

In practice, Queensland has followed similar logic. A quick read of these drivers suggests that many projects are not inherently amenable to these drivers, but

instead must be configured to conform to them. In this respect, the discussion in this section has come full circle, since this is exactly the point the representative of the U.K. Highways Agency made about getting it right.

Risk Allocation and Management

All public agencies visited emphasized effective risk allocation as an important aspect of a PPP project. If significant risks throughout the project's life cycle are not transferable to the private sector, then the project is likely not an appropriate candidate for delivery via PPP. This general point was made in the previous discussion about project selection and analysis, but its significance cannot be overemphasized. The basic risk allocation philosophies in each country (or state) differ, particularly on market or demand risk and its impact on the private partner's ultimate financial situation. Further, practices related to changes in conditions throughout a project's life cycle are also markedly different.

Tables 3 through 6 illustrate the general risk allocation approaches for PPP projects in each country. As they

Table 3. General risk allocation in Portugal.

Risk	Public	Private
Design		⬭
Land Acquisition		⬭
Environmental Compliance	⬭	
Construction		⬭
Operations and Maintenance		⬭
Market/Demand	⬭*	⬭**
Latent Defects		⬭
Change in Law		⬭
Force Majeure	⬭	
Competing Facilities		⬭***

*Shadow toll, **Real toll, ***Public may proceed with planned facility

Table 4. General risk allocation in Spain.

Risk	Public	Private
Design		⬭
Land Acquisition	⬭	
Environmental Compliance		⬭
Construction		⬭
Geotechnical		⬭
Utility Relocation		⬭
Operations and Maintenance		⬭
Market/Demand	⬭*	⬭**
Latent Defects		⬭
Change in Law	⬭	
Force Majeure	⬭	
Competing Facilities		⬭***

*Shadow toll, **Real toll, ***Material impacts may require compensation by public sector

Table 5. General risk allocation in the United Kingdom.

Risk	Public	Private
Design		⬭
Land Acquisition	⬭	
Environmental Compliance		⬭
Construction		⬭
Geotechnical		⬭
Utility Relocation		⬭
Operations and Maintenance		⬭
Appropriations*		⬭
Latent Defects	⬭**	
Change in Law		⬭
Force Majeure	⬭	
Competing Facilities		⬭***

*Assumes direct payment funding approach, **Depends on contract, ***Limited restrictions on public sector

Table 6. General risk allocation in Australia.

Risk	Public	Private
Design		⬭
Land Acquisition	⬭	
Environmental Compliance		⬭
Construction		⬭
Geotechnical		⬭
Utility Relocation		⬭
Operations and Maintenance		⬭
Market/Demand		⬭
Latent Defects		⬭
Change in Law	⬭	
Force Majeure	⬭	
Competing Facilities		⬭*

*Limited restrictions on public sector

indicate, the areas of greatest difference relate to the treatment of market risks and risks associated with changes in conditions over a project's life cycle, such as latent defects or a law change. Another area of interest is how the countries handle the issue of competing facilities. In general, this risk is borne by the private sector subject to certain conditions. "Example: Competing Facility Provisions" provides an example of contract provisions related to competing facilities from a recent concession deed.

The sections that follow address these issues in each country, but a more detailed discussion of changes in conditions is provided in a subsequent section.

Portugal

EP conducts a risk analysis before beginning project procurement to balance risk allocation. It evaluates the expected rate of return for the private sector. If this expected rate is too high, EP will consider adjusting the scope of work or shortening the contract term for the project. If the expected rate is too low, EP may extend the concession period or include a government subsidy. Once the project begins, EP will consider restructuring the financial conditions of the PPP agreement if the ex-ante uncertainties in the project turn out to disproportionally favor either the public or the private sector, a practice termed "rebalancing."[9]

Spain

Like Portugal, the Spanish government attempts to appropriately assign project risks when it conducts a thorough risk analysis during the informative study. If the expected rate of return for a PPP project is too high, the government will investigate means to reduce this rate, such as increasing the project's scope of work to include feeder or connector roadway segments. If the expected rate is too low, the government will consider measures to increase the rate, such as including public subsidies. Once the project begins, the Spanish government will consider rebalancing the contract if the expected economic-financial equilibrium is not maintained. In other words, if risk distribution proves detrimental to either party, a restructuring may occur.

However, Spanish law requires that two conditions be met before rebalancing is triggered. First, the change in conditions must produce a substantial material effect on the party impacted. Second, this effect must be sustained over a reasonable time period. The rationale for this rebalancing concept is twofold: (1) the public and private sectors enter into the PPP agreement for the general public good using the best information available at the time of the agreement, and (2) this practice supports win-win outcomes and promotes stability in the market.

United Kingdom

The Highways Agency has learned that a "robust, auditable allocation of risk" is preferable to maximum risk transfer. Over time, the agency has sought to create a stable environment for risk allocation and management through measures such as the creation of a standard baseline contract document and the use of project procurement techniques such as conducting risk workshops and negotiating risk adjustments before finalizing project-specific agreements. Like Portugal and Spain, the United Kingdom may shorten the term of PPP contracts when the private partner's actual revenues exceed originally projected revenues.

Australia

Similar to the United Kingdom, Australian states have learned that reasonable risk transfer is preferable to maximum risk transfer. All highway PPPs to date in the three states visited are real toll projects, and the states share the philosophy that private investors in these deals, both equity and debt holders, must bear the downside market risks. In other words, if the revenues or rates of return expected do not materialize, the private investors must endure the consequences.

The maturity of the Australian PPP market supports this philosophy. Both investors and lenders have grown comfortable with these conditions and the marketplace itself can provide remedies to financial hardships (e.g., restructuring financing arrangements).

Procurement Process

Generally, all of the host nations use a competitive procurement process for selecting PPP contractors. The principal difference among the countries is the extent of negotiation that occurs during procurement. Extensive negotiations during the procurement process increase both

[9] Portugal's risk allocation and management practices were likely borrowed from Spain, which has used these techniques for some time in its highway PPP program.

Example: Competing Facility Provisions

36. Interaction with transport network

36.1 Transport network support

(a) Principal Road Interfaces

The State must afford support to the Freeway equivalent to the support the State affords to other freeways by:

(i) managing the Principal Road Interfaces, having regard to the status of the Freeway as a freeway, to a level comparable to that afforded to other freeways;

(ii) expeditiously and diligently progressing maintenance (including incident management and obstruction removal) and repair of the Principal Road Interfaces in a manner and to a level similar to that afforded to other principal road interfaces for freeways;

(iii) if upgrading a Principal Road Interface, expeditiously and diligently progressing that upgrading, in a manner and to a level similar to that afforded to other principal road interfaces for freeways; and

(iv) procuring in a manner and to a level similar to that afforded to other freeways, that there will be no interference with the flow of traffic on the Principal Road Interfaces due to damage to, or a failure to expeditiously and diligently progress the repair of damage to, such Principal Road Interfaces (other than damage caused by a Concessionaire or any of its Associates).

(b) Exception to transport network support

The State will not be considered to have failed to provide the support required under clause 36.1(a) (Principal Road Interfaces):

(i) because of a failure to undertake new road works, unless that failure was due to discrimination against the Freeway relative to other freeways;

(ii) because of a failure to upgrade the capacity of a Principal Road Interface;

(iii) because of an act done in the course of the day to day activities of the State or its Associates in the management of the transport network, being activities which are expeditiously and diligently progressed and applied, as appropriate, throughout equivalent aspects of the transport network;

(iv) to the extent the failure is due to a Concessionaire or any of its Associates breaching a Transaction Document;

(v) because of a failure caused by an event beyond the reasonable control of the State or its Associates except to the extent that the State or its relevant Associates do not seek to overcome or mitigate the effects of that event in a manner and to a level comparable to that which would be afforded to other freeways in similar circumstances; or

(vi) because of the State or its Associates implementing transit lanes on the Eastern Freeway, Maroondah Highway or Cheltenham Road or giving public transport priority on Burwood Highway or Wellington Road.

36.2 Consequences of failure to provide State support

A failure by the State to provide the support required of it under clause 36.1 (Transport network support) will not constitute a breach of this Deed but may give rise to a Relevant Effect under clause 45 (Key Risk Management Regime).

36.3 No restriction on State

(a) No restriction on network changes

Each Concessionaire acknowledges and agrees that the Project Documents do not restrict, or require the exercise of, any right or power of the State, its Associates or any Council to develop, manage or change the metropolitan region's transport network (including road and public transport networks) other than the Freeway.

(b) Examples

Accordingly, without limiting clause 36.3(a) (No restriction on network changes), the State, its Associates and any Council will be entitled on their own account, and to authorise others to exercise, or not exercise, any right or power they would otherwise have had, to:

(i) construct new Toll Roads, freeways and other roads;

(ii) connect new or existing Toll Roads, freeways and other roads to the Freeway;

(iii) extend, alter or upgrade existing freeways and other roads;

(iv) construct new public transport routes or services;

(v) extend, alter or upgrade existing public transport routes or services;

(vi) extend, alter or upgrade existing ports or inland cargo transfer and storage facilities; or

(vii) construct new ports or inland cargo transfer and storage facilities.

Example: Competing Facility Provisions *(continued)*

36.4 Proximate State Work

(a) State's right to carry out activities

Each Concessionaire acknowledges and agrees that the State or its Associates may do any one or more of the following (each a Proximate State Work):

(i) connect any road or other means of vehicle, public transport, pedestrian or bicycle access to the Freeway;

(ii) construct, maintain or repair any road or other means of vehicle, public transport, pedestrian or bicycle access above or below the Freeway;

(iii) connect to, construct, maintain or repair Utility Infrastructure (in whole or in part) under, on or above the Project Area or the Freeway;

(iv) connect to, construct, maintain or repair any other infrastructure or improvement (in whole or in part) under, on or above the Project Area or the Freeway; and

(v) anything reserved for the State or its Associates under clause 3 (Reservations) of the Freeway Lease, and whether as a consequence of use or development of the Median or otherwise.

(b) Restrictions

The State must not (and must procure that its Associates do not), undertake any Proximate State Work to the extent that Proximate State Work is carried out in reliance on this clause 36.4 (Proximate State Work) and not in reliance on the Project Legislation, Road Management Act, any other agreements or arrangements with either or both of the Concessionaires or some other right under Law:

(i) subject to clause 36.4(i)(ii) (Tolling responsibility), unless the State agrees to fully compensate the Concessionaires for:

(A) any net adverse impacts on the Construction Activities or the Operation Activities;

(B) any adverse cost consequences (less any cost savings) for the Concessionaires; and

(C) any adverse revenue consequences for, the Concessionaires to the extent due to any adverse effect on:

(I) the free flow of traffic onto, along or from the Freeway at its designed volume and speed; or

(II) the Construction Activities or the Operation Activities,

to the extent due to the Proximate State Work, otherwise than to the extent that any such net adverse impacts or such adverse costs or revenue consequences:

(D) were not specified in the notice given by the Concessionaires under clause 36.4(c) (Advice as to impact); or

(E) arose due to a failure in whole or part by the Concessionaires to comply with clause 36.4 (Proximate State Work); or

(ii) so as to permanently prevent the Concessionaires from undertaking the Project.

(c) Advice as to impact

With respect to any Proximate State Work which the State (or its Associates) propose be undertaken, the Concessionaires must as soon as reasonably practicable, and in such detail and with such supporting evidence as the State may reasonably request, provide the State with a notice setting out:

(i) their estimate of the costs to the Concessionaires (with no allowance for profit margin to the Concessionaires, a reasonable allowance for risk to a Contractor or Relevant Entity on goods or services procured by the Contractor or Relevant Entity from a third party (which allowance is disclosed to the State in accordance with the notification requirements of this clause 36.4 (Proximate State Work)) and, in respect of goods or services provided by the Contractor or Relevant Entity itself, a reasonable allowance for profit margin), arising from the proposed Proximate State Work being carried out, including:

(A) all direct and indirect costs (including costs of augmenting the Tolling System) and the costs of repairing, reinstating or managing any damage to the Works, the Temporary Works or the Freeway to the extent caused by the Proximate State Works; and

(B) any costs savings; and

(ii) their estimate of the positive or negative revenue impact during the Concession Period of the proposed Proximate State Work being carried out and the reasons for that revenue impact;

(iii) if the request is made prior to the last Date of Close-Out:

(A) the effect (if any) of the proposed Proximate State Work on:

(I) the achievement of (as applicable) Relevant

Milestone Dates, each Planned Date for Freeway Section Completion, each Late Completion Date, Tolling Completion and Close-Out for each Section;

(II) the Design and Construction Program; and

(III) the Project Plans; and

(B) the extension of time (if any) required to the Planned Date for Freeway Section Completion or the Late Completion Date (as applicable) for each Section affected by the proposed Proximate State Works, with details of the basis for this extension (including evidence demonstrating compliance with clauses 20.4(f)(ii) and (iii) (Condition precedent));

(iv) the effects (if any) of the proposed Proximate State Work on:

(A) the workmanship or durability of any part of the Works, the Temporary Works or the Facilities (including any items of plant or equipment forming part of the Facilities) and any warranties with respect to the Works, the Temporary Works or the Facilities;

(B) the provision of the Facilities for use by the general public for the safe, efficient and continuous passage of vehicles;

(C) traffic flow on, onto and off the Freeway during the Concession Period;

(D) the Construction Activities or the Operation Activities;

(E) the ability to handover the Facilities in accordance with the terms of this Deed;

(F) the performance of any other of the Concessionaires' obligations under the Transaction Documents; and

(G) any relevant information related to carrying out the proposed Proximate State Works; and

(v) a description of any potential new Liability (or increase in any existing potential Liability) for which the Concessionaires will be at risk due to the Proximate State Work.

(d) Concessionaires' notice requirements

The Concessionaires' notice referred to in clause 36.4(c) (Advice as to impact) must be prepared:

(i) on an open book basis with respect to both the Concessionaires' internal costs and the costs of the Contractors or Relevant Entities and any subcontractor of any of them (and to this end the Concessionaires must allow the State review and audit rights sufficient to verify that the Concessionaires' notice has been prepared on an open book basis); and

(ii) in a manner so that there is no double counting.

(e) State Notice

If the State (or its Associates) propose to undertake Proximate State Work then:

(i) the State must give the Concessionaires reasonable notice that the State intends to do so; and

(ii) the Concessionaires must cooperate with the State to enable the State to undertake the Proximate State Work.

(f) Estimate of compensation/extension of time

(i) If the State gives the Concessionaires notice that it (or its Associates) intend to undertake Proximate State Work under clause 36.4(e)(i) (State Notice) then, prior to the commencement of the Proximate State Work, the parties must seek to:

(A) agree any amount of compensation and, subject to clause 36.4(f)(iv) (Estimate of compensation/extension of time), the scope of any indemnity or insurance reasonably required against any new or increased Liability identified by the Concessionaires under clause 36.4(c)(v) (Advice as to impact) which the Concessionaires are seeking to include in their notice under clause 36.4(c) (Advice as to impact); and

(B) agree the extension of time (if any) required to the relevant Planned Date for Freeway Section Completion for each Section or the relevant Late Completion Date (as the case may be).

(ii) If the State and the Concessionaires fail to agree:

(A) the amount of that compensation or the extension of time (if any) required to the relevant Planned Date for Freeway Completion or the relevant Late Completion Date (as the case may be); or

(B) subject to clause 36.4(f)(iv) (Estimate of compensation/extension of time), the scope of any indemnity or insurance reasonably required against a new or increased Liability identified by the Concessionaires under clause 36.4(c)(v) (Advice as to impact), prior to the commencement of the Proximate State Work, either the State or the Concessionaires may refer the matter directly for expert determination under clause 73 (Expert determination).

(iii) For the purposes of clauses 36.4(f)(i) and (ii) (Estimate of compensation/extension of time), the parties agree that:

Example: Competing Facility Provisions *(continued)*

(A) the State will not be required to indemnify either Concessionaire for any indirect, consequential or pure economic loss or pay any compensation for the cost of any insurance for such loss; and

(B) amounts due by FinCo or the Concessionaires to pay or repay the Project Debt on the due date for payment (without regard to any acceleration of the obligation to pay or repay) are not regarded as indirect, consequential or pure economic loss.

(iv) The requirements of clauses 20.4(f)(ii) and (iii) (Condition precedent) are conditions precedent to the Concessionaires' entitlement to an extension of time to the relevant Planned Date for Freeway Section Completion or the relevant Late Completion Date (as the case may be) pursuant to clause 36.4(f)(i)(B) (Estimate of compensation/extension of time).

(v) In determining a Dispute under clause 36.4(f)(ii) (Estimate of compensation/extension of time) the expert appointed under clause 73 (Expert determination) must (without limiting clause 36.4(f)(iv) (Estimate of compensation/extension of time)) have regard to and make a determination in a manner consistent with the matters contained in clauses 20.4(f)(iv), (v), (vi), (viii) and (ix) (Condition precedent).

(vi) The relevant Planned Date for Freeway Section Completion or the relevant Late Completion Date (as the case may be) will be extended by the time (if any) agreed under clause 36.4(f)(i) (Estimate of compensation/extension of time) or determined by the expert under clause 36.4(f)(ii) (Estimate of compensation/extension of time).

(g) Proximate State Work

If the State or its Associates decide to undertake Proximate State Works, then:

(i) the Concessionaires must:

(A) give the State and its Associates sufficient access to the Licensed Areas and the Leased Areas to enable the State to plan, design, investigate or undertake the Proximate State Works;

(B) cooperate with the State and its Associates to allow implementation of the Proximate State Works, including allowing the management of traffic on, entering or leaving the Freeway to facilitate the State and its Associates managing traffic on or in the vicinity of the Freeway; and

(C) take all reasonable steps to mitigate any Loss suffered by it or adverse impact on, or adverse cost or revenue consequences for, the Project as a result of the Proximate State Work including:

(I) mitigating the effect of any temporary lane closure which is required; and

(II) complying with its obligations under clause 36.4(i)(i) (Tolling responsibility) as soon as practicable;

(ii) the State must, and must procure that its Associates will, with the cooperation of the Concessionaires, minimise to the extent practicable any disruption to the Construction Activities or the Operation Activities.

(h) Maintenance responsibility

Upon the completion of any Proximate State Work, unless the State otherwise elects, Concessionaire's operation, maintenance and repair obligations under this Deed will apply to the Proximate State Work as if the Proximate State Work formed part of the Freeway to the extent that the Proximate State Work is located on, above or under the Licensed Area or the Leased Area, except for the Proximate State Work which the State advises Concessionaire that it is not required to maintain.

(i) Tolling responsibility

(i) Concessionaire is responsible for temporarily or permanently augmenting the Tolling System so as to avoid any untolled use of the Freeway during the carrying out of, or following completion of, Proximate State Work.

(ii) With respect to any untolled use of the Freeway arising, or augmentation of the Tolling System to be carried out, in connection with any Proximate State Work, the relevant part of the compensation to which the State is required to agree under clause 36.4(b)(i) (Restrictions) will be both:

(A) the reasonable incremental cost of augmenting the Tolling System to avoid such untolled use of the Freeway; and

(B) the revenue foregone less costs saved due to that untolled use of the Freeway to the extent only that that revenue loss was unavoidable notwithstanding that Concessionaire has fully complied with its obligations under clause 36.4(g) (Proximate State Work).

(j) Power to operate

Each Concessionaire acknowledges and agrees that the State or its Associates, as applicable, may operate

any road, or other means of vehicle, public transport, pedestrian or bicycle access, Utility Infrastructure or other infrastructure or improvement (in whole or in part) connected to, on, above or under the Freeway or the Project Area unless this Deed provides that such operation is the right or obligation of Concessionaire.

(k) Concessionaire's warranty

Each Concessionaire:

(i) warrants that the impact of any Proximate State Work (including any detrimental impact on the Concessionaires' performance of their obligations under this Deed) is limited to the impact specified in a notice given by the Concessionaires under clause 36.4(c) (Advice as to impact) and agreed or determined under clause 36.4(f) (Estimate of compensation/extension of time); and

(ii) acknowledges and agrees that the Concessionaires will be entitled to the compensation and extension of time (if any) agreed or determined under clause 36.4(f) (Estimate of compensation/extension of time) but will not be entitled to any other Claim arising out of or in respect of or in connection with the Proximate State Work, except to the extent that a Concessionaire is entitled to claim an extension of time under clause 20.4 (Delays) in respect of a Knock-on Effect.

its time and cost. An overview of the processes in each country is shown in figure 13, which arranges the four countries on a continuum ranging from a pure bid to a pure negotiation for selection of the PPP contractor. Spain is on the left and the United Kingdom is on the right, with the others in between.

Figure 13. Continuum of procurement processes of host countries.

Portugal

EP uses essentially a two-stage competitive procurement process to select its preferred bidder. For each procurement, EP typically engages roughly 20 staff members along with complementary financial and technical advisors. In the first stage, an advertisement for bids is placed in the *Official Journal of the European Union* (OJEU), generally for 2 months. Bids are then presented by interested parties and evaluated. Bids are typically evaluated on several weighted criteria:

- Technical quality
- Government's contributions to project:
  - Net present value (NPV) of government payments (shadow toll situation)
  - Subsidies requested
- Risk allocation and management plan
- Proposed date of facility opening and full operation
- Robustness of financial and legal structure

Following evaluation, two respondents are short-listed, and this process generally lasts 3 months. In the second stage, EP enters into negotiations with the two remaining teams and ultimately selects its preferred bidder (another 2 months). A contract award is then made (1 month). Financial close occurs after contract award (another 2 months). In total, the process is completed in roughly a year. EP makes all bids received in the first stage available to all respondents for 10 days, and it also makes the final two bids received after negotiations in the second stage available to all respondents for 10 days. This practice helps facilitate the transparency of the process among all respondents.

Spain

Spain uses what it calls the "open competition model" for procurement of highway PPP projects. Effectively, the government issues a call for tenders, and interested parties submit binding proposals that comply with the call's project requirements and conditions. Respondents may offer up to three alternatives. Award criteria are typically technical qualities and economic conditions of the proposals. Other variables may be included on a project-by-project basis. An award is made on the basis of the most economically advantageous tender. Typically, a staff of about 20 civil servants handles multiple procurements simultaneously.

The Spanish government views this approach as competitive and efficient, but it also recognizes the importance of clearly delineating its expectations and terms for the project in its request for tenders.[b] Financial close is not required before contract award, primarily because the Spanish markets are quite familiar with the nature of the

procurement process as well as its standard contract documentation.

Another rationale indicated for the open competition model is the transaction cost savings it affords. According to representatives in Spain, the cost of its tendering process to the private sector bidders averages €300,000 to €500,000. A study by the European Investment Bank and Polytechnic University of Madrid indicates that the total transaction costs of all respondents and the public sector as a percentage of project capital value of an open competition model versus a negotiated model is roughly 2 to 12 percent. A potential downside of this approach, however, is that it may attract too many bidders. Spain typically receives three to eight bids, but it has received as many as 20. While a reasonable number of bidders promotes fair competition, too many bidders can drive up transaction costs as well as discourage some qualified bidders from participating because the probability of success falls.

United Kingdom

The United Kingdom has generally employed a negotiated procurement process for its highway PPP projects. Depending on the scale and complexity of the project, the in-house staff and consulting advisors involved can vary significantly. Procurement of the M25 project included a significant staff of internal and external personnel. "Case Example: M25" describes this project more fully. The primary stages of the process are (1) prequalification, (2) tender, (3) negotiation, and (4) contract award. Each stage is described below.

Prequalification includes the following:

- Prior information notice (PIN) to indicate to the market that a solicitation is pending
- Advertisement in OJEU
- Issue of prequalification pack, which includes details of the project, description of submission requirements, and assessment criteria

Tender includes the following:

- Issue of tender documents, which include a model contract, instructions and guidance to tenderers (IGT), an illustrative design to demonstrate to respondents that a feasible design solution for the project exists, and draft schedules
- Dissemination of tender circulars and response to queries
- Submission of tenders
- Assessment of tenders, which leads to identification of the provisional preferred bidder (PPB) and subsequently the preferred bidder

Australia

All three states generally follow a multistage competitive procurement process. As discussed previously, both Victoria and Queensland have opted to form temporary public agencies for the sole purpose of procuring and commissioning highway PPP projects. Figure 14 illustrates the structure of the Southern and Eastern Integrated Transport Authority (SEITA), which was established to procure Victoria's EastLink. "Case Example: EastLink" (see page 35) explains certain features of the unique project.

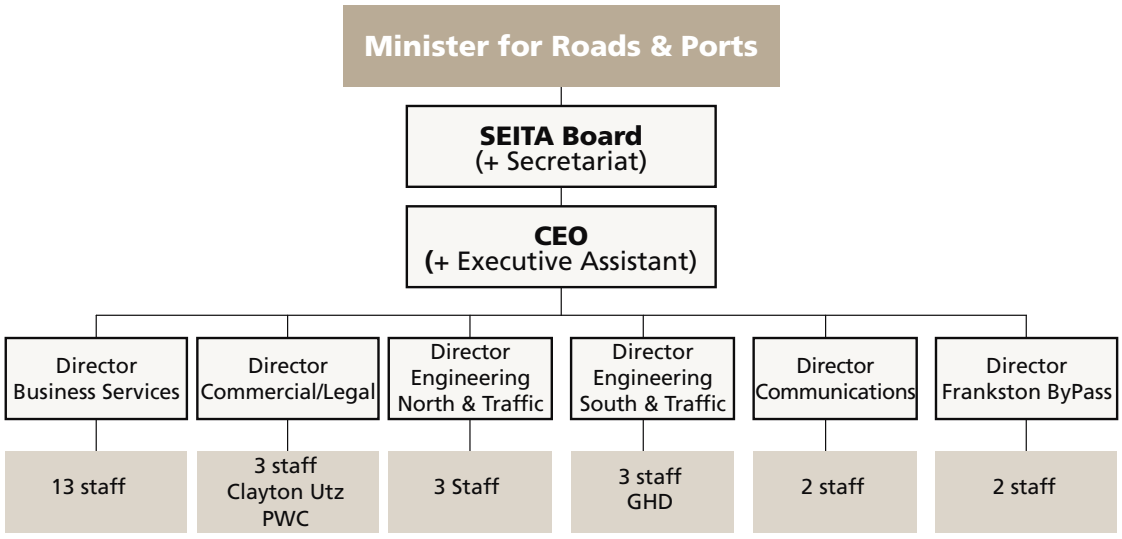


Figure 14. Structure of Victoria's SEITA.

Case Example: M25

Background and Chronology

The M25, the orbital motorway that encircles London, is one of the busiest stretches of roadway in the U.K. system. Although considered a single entity today, the M25 was constructed in a piecemeal fashion from 1975 to 1986. Since then, certain sections have been lengthened and widened. Congestion on the orbital and its contiguous roadways led to the ORBIT Multi-Modal Study to examine measures to improve overall mobility in the area. The study concluded that additional capacity was needed on the M25, as well as implementation of Integral Demand Management techniques: (1) incident management, (2) lane management, (3) access management, (4) traveler information, and (5) wide-area traffic management. Following a business case analysis, the Highways Agency decided to pursue the needed improvements via a PPP arrangement—a DBFO delivery using a direct payment mechanism for a contract period of 30 years starting in 2009.

The project road, roughly 400 km (249 mi) long, consists of the M25, the A282 Dartford Crossings, and intersecting radial trunk roads, as shown in figure 15. The project scope requires the PPP contractor to widen four sections of the M25 (roughly 100 km or 62 mi) from a dual three-lane to a dual four-lane route. The expected capital cost of the widening is £2 billion, and construction is anticipated to take 8 years. In addition, the PPP contractor will assume responsibility for operating, maintaining, and managing the road.

Milestones in the project's implementation to date are as follows:

- November 2005—OJEU notice
- November 2005 to March 2006—Prequalification
- April to October 2006—Invitation to submit outline proposals (ISOP)
- March to October 2007—Tender stage
- November 2007 to April 2008—Evaluation and negotiations[10]
- June 2008 to January 2009—Post tender and financial close

Interesting Aspects of Procurement and Delivery

For the M25, the Highways Agency's general procurement process was augmented somewhat because of the project's complexity and to minimize the transaction costs for both the public and private sectors. Before the formal tender stage, the Highways Agency issued an ISOP, which required the five prequalified teams to respond to a questionnaire on quality issues such as processes, resources, and organizational values. Following assessment, three teams were short-listed and continued to the tender stage. A conforming tender was required, while variant tenders were encouraged. A limited retender was necessary because of noncompliance by all three bidders.

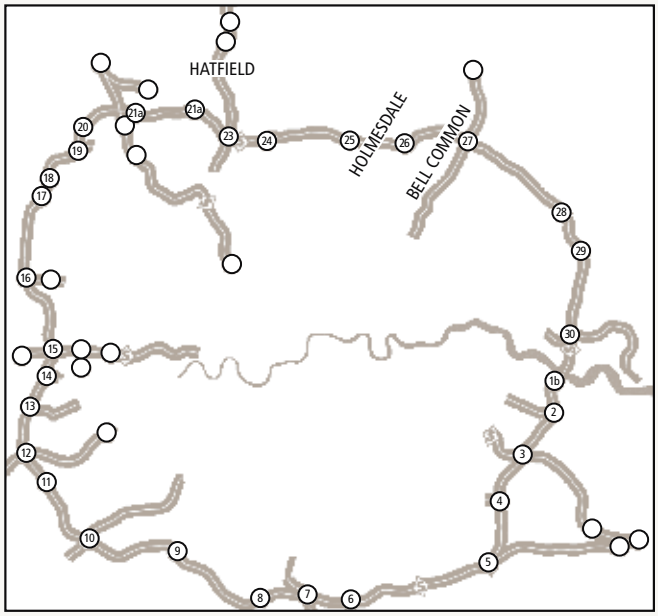


Figure 15. The M25 orbital roadway surrounding London.

Negotiation and evaluation of the tenders was quite complex because the Highways Agency essentially considered three unique tenders for the project. Accordingly, three separate negotiation and evaluation teams were assembled; their activities were coordinated by a chief procurement official and the project manager. A steering group monitored the process to ensure its integrity and fairness. Evaluation of the M25 tenders was a three-stage process: (1) quality assessment, (2) price assessment of all tenders meeting the quality threshold, and (3) price-quality tradeoff process, if necessary. The quality assessment criteria were the following:

- Delivery of service—40 percent
- Robust processes—15 percent
- Appropriate resources—15 percent

[10]A limited retender was required during the period January to February 2008.

Case Example: M25 *(continued)*

- Supportive values and behaviors—15 percent
- Pricing methodology—15 percent

For each criterion, an overall score was assigned and a minimum quality threshold was established.

The pricing assessment was based on the level of gross annual payments to the PPP contractor; adjustments to the payment amount can be made, including a risk adjustment for any contract amendments. The tender with the lowest adjusted net present value (NPV) wins, subject to the price-quality tradeoff. All tenders within 5 percent of the lowest tender were included in the tradeoff process, in which price and quality scores were weighted 85 percent and 15 percent, respectively.

Project Outcomes and Current Status

In May 2008, the Highways Agency announced that Connect Plus was its provisional preferred bidder (PPB). Connect Plus is a consortium of Atkins, Balfour Beatty, Egis Projects, and Skanska. The overall contract is expected to be worth £5 billion. Financial close was pending at time of publication.

The rationale for a separate authority is based on prior success with this structure, the singular focus of the authority, the facilitation of streamlined decisionmaking, and the ability of the authority to deal with all parties in a transparent and fair manner.

The procurement process in the three states begins with an invitation for expressions of interest (EOI). Following receipt of EOIs, a short-list is created, and then the government issues a detailed RFP.[11] The RFP typically includes the following:

- Comprehensive information about the issuing public agency, key stakeholders, project sociopolitical conditions, and project objectives
- Description of the service delivery requirements and proposed payment mechanism
- Explanation of any design requirements and a proposed completion date for construction
- Proposed contractual arrangements and risk allocation
- Description of the subsequent evaluation and selection processes in the procurement

Proposals are received from the short-listed teams, active negotiations with individual teams are conducted, final proposals are evaluated against defined criteria established generally on a project-by-project basis (such as tolling structure, concession length, design features, etc.), and a preferred bidder is selected. Subsequently, contracts are finalized and financial close is reached. The states generally request a conforming proposal (i.e., one in full accordance with the RFP), while also allowing nonconforming proposals (i.e., ones with alternatives or deviations from the RFP). This allows the private sector some latitude to bring new project ideas or concepts for consideration by the public sector.

Transparency

The transparency of a procurement process—the attributes that make it stable, reliable, and predictable to actual and potential participants and to procurement officials, legislators, and the public—is fundamental to the acquisition of public services or works. Given the characteristic scale and complexity of PPP projects, transparency is crucial because interest among citizens, elected officials, and the media is typically heightened and private participants are careful about placing their limited project proposal funds at risk in processes that are poorly structured or unlikely to reach closure. One private representative in Australia explained that its proposal costs are typically 1 percent of a PPP project's capital costs. Of these funds, 25 percent is spent on design work, 7.5 percent on traffic demand modeling, 13.5 percent on internal staff costs, 33 percent on external success fees,[12] and the balance on other costs.

The host nations are quite aware of the need for transparency and implement various practices to ensure it during project procurement. Portugal makes all proposals received available to every respondent. Spain solicits bids from its respondents with well-defined parameters and award criteria. The United Kingdom employs probity officers to monitor its sometimes-complex contract

[11] In some cases, the contract for the proposed project is included with the RFP.

[12] External success fees are monies due to external entities contingent on contract award (i.e., bonuses for success).

Case Example: EastLink

Background and Chronology

EastLink, Victoria's second fully electronic tollway, links the Eastern Freeway in Mitcham to the Frankston Freeway in southeast Melbourne. The 39-km, $2.4 billion freeway is Victoria's second highway PPP, and it opened to traffic in June 2008.

Original plans for a proposed Scoresby Freeway began in the 1960s, and the public sector reserved much of the necessary right-of-way during this period. Throughout the 1990s, environmental studies and impact assessments were completed. By 2000, the pressure to develop the roadway began to mount as several town councils along the route lobbied the state government to take action.

During 2001 and 2002, the government completed its business case analysis of the project, and the decision was made to combine the Scoresby Freeway and the Eastern Freeway Tunnels Project into the Mitcham-Frankston Freeway Project.

In 2003, the Victoria government announced that the freeway would be funded by real tolls and delivered via a PPP arrangement. The Southern and Eastern Integrated Transport Authority (SEITA) was formed to oversee the procurement and commissioning of the project. Later that year, SEITA called for expressions of interest, and the commonwealth government (national government) granted environmental approvals for the project. SEITA then issued its request for proposals (RFP) to two bidding consortia—ConnectEast and Mitcham Frankston Motorway. In April 2004, proposals were submitted and by October ConnectEast was announced as the winning bidder.

Major construction commenced in 2005, and the project was renamed EastLink. The project includes the following:

- 39 km (24 mi) of freeway-standard road
- Twin three-lane, 1.6-km (1-mi) tunnels
- 17 interchanges and 88 bridges
- Two toll-free bypass roads
- 40 km (25 mi) of shared-use recreational pathways

Interesting Aspects of Procurement and Delivery

CityLink, Victoria's first highway PPP arrangement, was procured in the mid-1990s and opened for service in 2000. Various lessons from the first procurement, as well as general experiences in the highway PPP marketplace, were incorporated into EastLink's procurement and delivery.

- **Financial considerations:** The tolling rate and structure were bid variables for the bidders to evaluate and propose for assessment by the government. Toll escalation was allowed annually, but not at a rate

Figure 16. Pedestrian bridge, sound wall, and public art on EastLink.

Case Example: EastLink *(continued)*

greater than the consumer price index. Bidders were required to share any excess revenues above that forecast with the government, and they were given the opportunity to improve the value of their offer by allowing the government to participate "in the benefits of refinancing."[g]

- **Procurement considerations:** The RFP emphasized various evaluation criteria, such as conformance with overall project, technical, and safety objectives; deviations from the established risk allocation framework in the contract document; and the quality of urban design elements. The concession period was also a bid variable to be proposed by bidders.
- **Contractual considerations:** The project was required to be open for service by November 2008. No restrictions were placed on general public transit or road network work by the state, but any state work deemed proximate (i.e., connecting to or within the vicinity of the project) could entitle the concessionaire to just compensation if net adverse impacts occur.[h]
- **Performance considerations:** An independent reviewer, complemented by a proof engineer and a construction verifier, would oversee administration of and compliance with the contract documents throughout design and construction and 2 years into operations. The proof engineer and construction verifier were introduced to provide additional technical scrutiny, particularly in the civil and tunnel works of the project. The RFP and concession deed also established KPIs in four long-term target areas: (1) customer service, (2) road maintenance, (3) landscape and environment, and (4) tolling accuracy. If performance thresholds are not met, the concessionaire may be at risk financially up to $17 million annually. Rather than pay the government, the concessionaire is required to distribute any such abatement amounts to EastLink's customer account holders in the form of toll credits.

Project Outcomes and Status

EastLink is Victoria's largest urban road project and PPP to date. The project opened 5 months ahead of schedule with no claims or significant issues for the state thus far. It also has the lowest per-kilometer toll in Australia at AU$0.11 per kilometer (2004 dollars). The project is noteworthy for its urban design features (as shown in figure 16) with attractive noise walls, pedestrian bridges, and public art. Fully electronic tolling has also produced innovation in tolling products and flexible approaches to toll collection enforcement. In addition, the project has achieved a net gain in native vegetation in the project area.

Upon opening, the project had a 4-week toll-free period. Tolling began in July 2008.

negotiations to scrutinize the fairness of such proceedings. Australia not only has closed but also has under construction and completed some of the largest highway PPP contracts in the world. These practices and outcomes, as well as others, are simple illustrations of each nation's recognition of the significance of transparency to the overall credibility of a PPP program.

Contract Periods

The contract periods for recent PPP projects in the host nations generally range from 30 to 40 years. Portugal tends to use a standard period of 30 years for its concessions. While Spain has used concessions as long as 75 years in the past, current arrangements vary from 25 to 40 years. The government sets the period based on what term makes sense economically. In the United Kingdom, the Highways Agency has set recent contracts at 30 years. In Australia, the contract period is often a bid variable. In the case of the AirportLink/Northern Busway project, the proposed and accepted term is 45 years.

Contract Documents and Technical Standards

Generally, all of the host nations use contracts with a standard structure for their PPP projects, which includes (1) the agreement, (2) a common or core set of contract provisions and requirements, (3) project-specific contract provisions and requirements, and (4) common or project-specific schedules or "sheets."

In each country, technical standards for various highway structures and components are specified by the government. Any deviations proposed by the private sector are usually assessed during the procurement stage for suitability. During the design and construction phases, the independent verifier typically provides periodic certification that design and construction are proceeding according to agreed-on standards. Early contracts, in some cases, provided too much flexibility to the private sector on technical provisions, but the nations have learned that the services they seek from PPP

arrangements should not come at the expense of sound engineering practices.

Contract Change Management

Contract modification is also an area in which learning has occurred. Early contracts did not necessarily provide the flexibility needed to update them over time as prevailing conditions changed. For instance, the U.K. Highways Agency is in the process of negotiating major changes in contracts signed in 1996. In Portugal and Spain, the principle of a sustained, material effect is generally applied to determine whether a contract change is warranted for either the public or the private sector's benefit. In the United Kingdom, the Highways Agency has recently adopted a two-tiered contract modification strategy. In the case of a major change, a contract review occurs, which may necessitate negotiation of a new contract. The M25 project is the first to include this contract review condition. Otherwise, a step-change process is included in the contract so standard modifications can be handled within the existing agreement. Step changes may result from eligible changes indentified in the contract, changes in law, modifications initiated by the private partner, or changes to accommodate project improvements or enhancements. Australia typically negotiates contract changes on an as-needed basis, but it has also established processes for handling both major and minor modifications to the contract. Originally, contracts included fairly liberal material adverse effect provisions in the event of changes in conditions; more recent contracts have tightened these provisions to a more limited set of events (see "Example: Contract Modification Provisions" below).

Example: Contract Modification Provisions

37. Modifications

37.1 Request for information by State

The State may request from each Concessionaire information as to revenue and cost impacts on, respectively, each Concessionaire's Works, Temporary Works, Facilities, Construction Activities or Operation Activities and other matters specified in the request in relation to a proposed Modification of the Works, the Temporary Works, the Facilities or the obligations in the Project Documents which relate to the Construction Activities or the Operation Activities.

37.2 Details of Modification

If the State proposes to request a Modification, it will provide the Concessionaires with details of the proposed Modification and consult with the Concessionaires concerning the proposed Modification at least 30 Business Days prior to issuing the request under clause 37.1 (Request for information by State).

37.3 Concessionaires' Modification Notice

As soon as practicable after receipt of a request from the State under clause 37.1 (Request for information by State), the Concessionaires must provide the State with a notice (Concessionaires' Modification Notice) setting out detailed particulars of:

(a) Costs

their estimate of the costs (with no allowance for profit margin to either Concessionaire, reasonable allowance for risk to a Contractor or Relevant Entity on goods or services procured by the Contractor or Relevant Entity from a third party (which is disclosed to the State in accordance with the notification requirements of this clause 37.3 (Concessionaires' Modification Notice) (and, in respect of goods or services, provided by the Contractor or Relevant Entity itself, a reasonable allowance for profit margin)), of carrying out the proposed Modification, including:

(i) all direct design, construction, commissioning, operation, maintenance or repair costs;

(ii) all indirect or consequential design, construction, commissioning, operation, maintenance or repair costs (including deferments and delay costs);

(iii) any costs savings; and

(iv) any change in the amount or timing of Taxes payable by a Concessionaire relating to the proposed Modification (including any costs relating to the proposed Modification not being an allowable deduction under the Income Tax Assessment Act 1936 (Cth)) noting that each Concessionaire must use reasonable endeavours to reduce any adverse impact and maximise the positive impact, on the timing or payment of Taxes as far as practicable, which may, for example, entail adopting an alternative structure for having the Modification implemented;

(b) Revenues

Example: Contract Modification Provisions *(continued)*

their estimate of the positive or negative revenue impact of carrying out the proposed Modification;

(c) Time impacts

if the request is made prior to the last Date of Close-Out:

(i) the effect (if any) of the proposed Modification on the:

(A) achievement of (as applicable) the Relevant Milestone Dates, each Planned Date for Freeway Section Completion, each Late Completion Date, Tolling Completion for each Section and Close-Out for each Section;

(B) Design and Construction Program; and

(C) Project Plans; and

(ii) the extension of time (if any) required to the relevant Planned Date for Freeway Section Completion or the Late Completion Date (as applicable) for each Section or the relevant Late Completion Date (as the case may be) affected by the proposed Modification, with details of the basis for this extension (including evidence demonstrating compliance with clauses 20.4(f)(ii) and 20.4(f)(iii) (Condition precedent));

(d) Facilities impacts

the effects (if any) of the proposed Modification on:

(i) the workmanship or durability of any part of the Works, Temporary Works or the Facilities (including any items of plant or equipment forming part of the Facilities and any warranties with respect to the Works, the Temporary Works or the Facilities);

(ii) the provision of the Facilities for use by the general public for the safe, efficient and continuous passage of vehicles;

(iii) traffic flow on, onto and off the Freeway during the Concession Period;

(iv) the Construction Activities or the Operation Activities;

(v) the ability to handover the Facilities in accordance with the terms of this Deed;

(vi) the performance of any other of the Concessionaires' obligations under the Transaction Documents; and

(vii) any relevant information related to carrying out the proposed Modification.

(e) Concessionaire funding

if funding is required and the Modifications were to be funded other than by the State, the amount, timing, cost, terms and other consequences of such funding;

(f) State funding

if funding is required and the Modifications were to be funded by the State, the amount, timing, cost, terms and other consequences of any such State funding;

(g) Implementation

the time within, and the manner in which, the relevant Concessionaire or Concessionaires propose to implement the Modification;

(h) Relevant effect

any effect which is both material and detrimental on:

(i) the ability of FinCo to pay or repay the Actual Debt on the due dates for payment (without regard to any acceleration of the obligations to pay or repay); or

(ii) the Equity Returns,

that will, or is likely to, result as a consequence of the proposed Modification (including supporting evidence) together with details of a commercially appropriate and reasonable method by which the relevant Concessionaire or Concessionaires propose that this material and detrimental effect will be addressed which takes into account the level of risk to the relevant Concessionaire or Concessionaires inherent in undertaking the Modification determined first, assuming the case where the Concessionaire funds the proposed Modification and secondly, assuming the case where the State funds the proposed Modification;

(i) Material enhancement

any material enhancement to:

(i) the ability of FinCo to pay or repay the Actual Debt on the due dates for payment (without regard to any acceleration of the obligations to pay or repay); or

(ii) Equity Returns,

that will, or is likely to, result as a consequence of the proposed Modification (including, in the case where the Modification involves any omission or deletion from the Construction Activities, the Works, the Temporary Works, the Operation Activities or the Facilities, any material enhancement resulting from a reduction in costs incurred or to be incurred by the Concessionaires, the ability, earlier than

anticipated, to pay, repay or provide a return of, or reduce the required amount of, Actual Debt or Equity Funding or any resulting increase in forecast revenue) together with details of a commercially appropriate and reasonable method by which the Trustee will return to the State (or, at the State's election, Concessionaire will return to users of the Freeway) the proportion of that benefit which is in excess of any part of that benefit which it is necessary for the Concessionaires to retain in order for the Concessionaires to be able to give relevant Equity Returns to the Equity Investors which takes into account the level of risk to the Concessionaires inherent in undertaking the Modification determined first, assuming the case where the Concessionaires fund the proposed Modification and secondly, assuming the case where the State funds the proposed Modification;

(j) Project Documents

the minimum changes required to the Project Documents to accommodate the proposed Modification and the associated arrangements, including as to funding, land use, the method of addressing any material and detrimental effect and the method for returning a proportion of the benefit of any material enhancement to give effect to the Modification; and

(k) Other relevant information

any other relevant information related to carrying out the proposed Modification.

37.4 Commercially appropriate and reasonable methods

The commercially reasonable and appropriate method or methods by which a material and detrimental effect will be addressed, as contemplated by clause 37.3(h) (Relevant effect) or a proportion of a benefit of any material enhancement returned as contemplated by clause 37.3(i) (Material enhancement) may involve one or more of the following:

(a) varying the Project Documents;

(b) varying the Concession Period and the term of the relevant Freeway Lease;

(c) varying the financial or other contributions or returns of the parties (or providing for new financial or other contributions or returns);

(d) requesting that the Financiers restructure the Project financing arrangements;

(e) varying the Toll Calculation Schedule; or

(f) taking any other action which is appropriate and reasonable.

Public Involvement During Commissioning

Like any project, commissioning activities are important to a successful opening. While technical conditions and issues are just as important as in other project delivery methods such as design-bid-build or design-build, PPP arrangements must focus substantial attention on the project's users—the riders of the facility. While all nations emphasized the importance of public involvement and information dissemination during the project delivery process, Australia in particular stressed the importance of public involvement as a project nears its opening. This is likely because all of its PPP arrangements employ real tolls and are basically greenfield projects, so the public needs to understand tolling products, rates, and enforcement; points of access; etc. Often, a toll-free period is used to test operating systems and familiarize the public with the facility. Without a focus on the facility's users, both the public and private sectors risk alienating their clientele and losing their patronage.

CHAPTER 4 »

PPP Project Contract Management and Operations

While PPP project identification, procurement, and delivery often receive substantial attention, the scan team quickly recognized the significance of the operating phase of any PPP arrangement. This is the period when the paying public uses the facility under private operation and determines whether it fulfills their expectations and needs. Indeed, PPPs can bring a customer focus to the facility, which in many respects differentiates it from other project delivery strategies—at least in the nations visited during the scan. When defining or scoping a PPP project, the primary focus in this seasoned international community is often on identifying and conveying the outputs desired. Project outputs are what customers focus on—reliable travel times, safe travel environment, comfortable ride, etc. Thinking first about what customers desire rather than developing a prescriptive definition of an asset is a major transition in practice. To do so requires beginning with the end in mind. In other words, defining and managing project user requirements and operational standards are integral to programming and procuring PPP projects.

This chapter examines practices for establishing performance measures that focus on desired project outcomes, managing the partnership with the private contractor during both the capital delivery and operations phases, and specifying handback provisions to make sure the facility is returned to the public sector in reasonable condition.

Performance Measures

Unquestionably, performance measures or key performance indicators (KPIs) are central to the most recent PPP projects observed in the nations the scan team visited. Each country uses KPIs to generate the outcomes it desires for its PPP projects, and they are the basis for incentives and penalties—primarily during a project's operations phase. In most cases, KPIs are used to define target performance levels, and KPI schedules specify formulas for calculating metrics or points that serve to determine whether these targets are being met.

For instance, Spain has used KPIs to manage safety, heavy vehicles, congestion, winter weather conditions, and toll collection times, as well as other elements. Table 7 provides examples of the metrics used. In some cases if the PPP contractor maintains or exceeds the level of performance specified for the majority of the contract term, the contract period is extended by a predetermined number of years. In this case, the incentive is back-loaded.

The United Kingdom has tied its KPIs for the M25 Motorway to its payment mechanism to the PPP

Table 7. Examples of KPIs in Spain.

KPI Area	Measurement
Safety	$A = N*10^8 / L*365*AADT$ Where: A = accident rate N = number of accidents with victims L = length of highway under management (km) AADT = average annual daily traffic The accident rate is compared with the previous year's rate; an increase results in a penalty, while a decrease results in a bonus of up to 5% of the annual service payment.
Heavy Vehicles	IF at least 90% of the time during the first 35 years of concession, at least 35% of total heavy vehicle traffic in the corridor uses the highway AND at least 90% of the time during the first 35 years of concession, at least 40% of total heavy vehicle traffic use is at night, THEN the concession period is extended 1 year.
Winter Weather Conditions	Road closure = €1,800/hour in fines Tire chains required = €600/hour in fines

contractor. The payment mechanism is comprised of the following potential adjustments:

- Lane availability (principal element)
- Route performance
- Condition criteria
- Safety performance
- Unplanned events
- Proactive management

Table 8 describes several of the adjustments possible.

In Victoria, the KPIs associated with the EastLink project focus on customer service, road maintenance, landscape and environment, and tolling accuracy. Failure to comply with KPIs can result in up to $17 million annually in deductions for the PPP contractor. Any deductions collected from the concessionaire will be distributed to EastLink's users rather than retained by the government, since the users are the ones not receiving the paid-for service.

Managing the Partnership

Given that the PPP contracts observed ranged from 25 to 50 years with the typical term from 30 to 40 years, the relationship between the public and private sectors is indeed a long-term one. This circumstance puts managing the partnership at the forefront. Clearly, the partnership arrangement most tangibly manifests itself in contract management practices.

These practices are split into the capital delivery and operations phases. During design and construction, all of the host nations employ an independent verifier who serves as an objective third party to administer (certify pay requests, etc.) and review (check compliance with requirements, make onsite visits, etc.) the project, as illustrated in figure 17. Payment policies for the independent verifier varied among countries. In most cases, the government and the PPP contractor share this cost. In one case, however, the PPP contractor covers this cost up to a threshold amount, above which the cost is shared. Since verifiers are often paid on a fee basis, the logic is that higher verification costs indicate inadequate performance by the contractor, so bearing this cost serves as an incentive.

While management of capital delivery is certainly important, the crux is contract management during the operations phase. This crystallized for the scan team

Table 8. Adjustments to payment mechanism to M25 PPP contractor in the United Kingdom.

KPI Area	Measurement
Lane Availability	Deductions for lanes closed Deductions based on delay cost model No deductions for: Agreed closures on sections during widening Core nighttime period Incidents and accidents
Route Performance	Monthly deduction or bonus Assessment over specified routes
Condition Criteria	Deductions for: Substandard carriageway Lanes seriously affected by snow or ice Loss of technology systems
Safety Performance	Annual deduction or bonus Comparison of M25 with national safety trends
Proactive Management	Annual bonus Assessment of commitment to agency objectives

when a department's representative (DR) in the United Kingdom briefed the team about his role and responsibilities as the Highways Agency's long-term contract manager. His knowledge and skills were clearly evident, as was his significance to maintaining the partnership with the private contractor as intended. Technically, the DR has three key roles: (1) performance monitoring, (2) financial monitoring, and (3) contract administration. On the surface, these appear similar to those of an owner's representative on a typical construction project. If one scratches below the surface, however, it becomes clear that the DR must carefully balance the relationship with the PPP contractor with the intended contract requirements, risk allocation, and service standards over a substantial time period. Moreover, the DR must do this with modest in-house support staff. The other countries visited have similar positions, such as the government delegate in Spain.

Table 9 (see page 44) summarizes basic contract management roles, responsibilities, and examples during the operations phase. Certainly, performance monitoring is a critical responsibility of the contract manager. In the United Kingdom, if the PPP contractor is not in

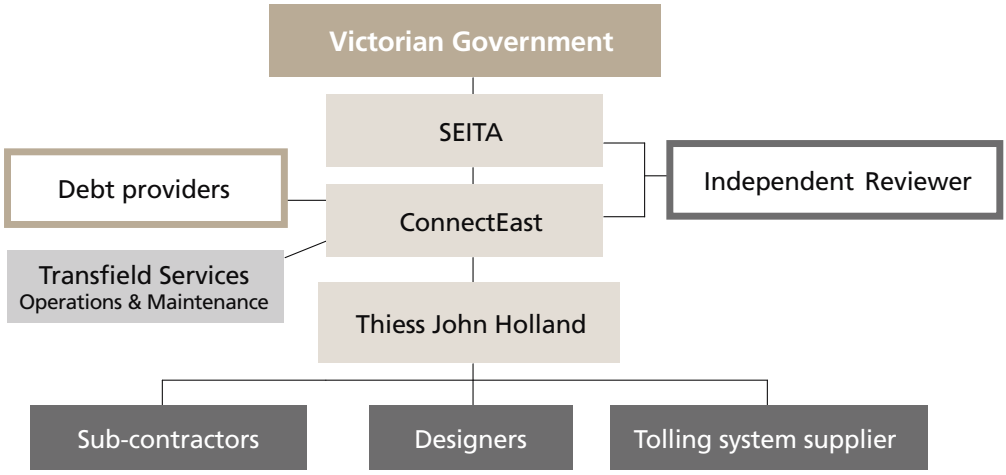


Figure 17. Typical role of independent verifier in PPP project.

compliance with performance standards, the DR may take five levels of action:

- **LEVEL 1:** *Comments and Observations*
  The DR notifies the contractor in writing that certain requirements or standards are out of compliance.
- **LEVEL 2:** *Nonconformance Report*
  The DR files an official report on contractor noncompliance with requirements or standards.
- **LEVEL 3:** *Remedial Notice*
  The DR puts the contractor on notice that if compliance with requirements or standards is not achieved within a certain timeframe, penalty points will be assessed.
- **LEVEL 4:** *Penalty Point Notice*
  The DR files a report and the contractor is assessed penalty points for noncompliance.
- **LEVEL 5:** *Warning Notice*
  The DR informs the contractor of potential significant contractual actions that may occur; this may eventually trigger the government's step-in rights.[13]

Certainly, noncompliance issues are best handled quickly and with the least amount of disruption. To date, the United Kingdom has not had to proceed to Level 5 with any PPP contractor.

Aside from these aspects of operations contract management, a key aspect is recognizing who retains what risks and making sure the contract manager's actions do not inadvertently make the public sector liable for a risk allocated to the PPP contractor. The DR in the United Kingdom provided a good example. In the contract that he manages, the private partner is responsible for roadway availability during winter weather, so essentially the contractor bears the risk of keeping the roadway clear of snow and ice. During a particularly bad storm, the contractor was unable to get its snow removal equipment up a steep grade, so a portion of roadway had to be closed until the weather cleared. The contractor was penalized for this service failure. Later, harsh weather was forecast, and the PPP contractor consulted the contract manager on how to keep the same thing from happening again. Rather than prescribing what he thought the contractor should do, the contract manager first reminded the contractor that it was its responsibility to keep the roadway clear. Through a careful dialogue the contractor came to the conclusion that it should pre-position the snow-removal equipment near the crest of the steep grade. In the course of this fairly routine interaction, the DR did not step into the contractor's shoes and potentially expose the Highways Agency to any claims for cost due to DR directives.

Handback Provisions

Generally, handback provisions specify residual service lives expected at expiration of the contract period for different structures and components of a highway or roadway. For example, the United Kingdom's standard

[13] Step-in rights grant the government the contractual remedy to take over the contract from the service provider.

Table 9. Basic contract management roles in operations period.

Role	Responsibilities	Examples
Performance Monitoring	◆ Formal audits ◆ Site inspections ◆ Spot checks	Spot checks ◆ Traffic management ◆ Pavement condition
Financial Monitoring	◆ Traffic data ◆ Deductions/bonuses ◆ Monthly payments ◆ Annual reconciliation	Annual reconciliation ◆ Maintain records incrementally ◆ Annual adjustments based on deductions or bonuses
Contract Administration	◆ Liaison ◆ Report ◆ Records and data	Liaison ◆ With PPP contractor ◆ With third parties (customers, etc.)

is that 25 percent of the asset life remains at handback. Handback processes described in project or concession deeds are not unlike the turnover practices at the end of construction. Generally, a series of joint inspections between the government and the contractor will occur to determine whether adherence to the specified level of maintenance and repair has been achieved. Provisions to remedy unsatisfactory conditions are typically detailed. For instance, the contract may require establishment of a program of actions with milestones to bring the facility up to the expected standard. "Example: Handover Provisions" shows example handover provisions in a recent concession deed.

The effectiveness of these provisions and the processes for their enforcement have yet to be tested in the countries visited, or the staff did not have direct experience with concessions that had previously expired. In New South Wales, however, the RTA is preparing for the return of the M4 Motorway in February 2010. The RTA began this process in 2007 to provide adequate time to address issues that may arise, particularly since the handover provisions of this early arrangement were not as robust as more recent provisions (see "Example: Handover Provisions"). An obvious concern is what asset management strategy the contractor will use to comply with the handback provisions. The handback provisions, however, are but one factor that influences the asset management approach. Another is the contract term. By and large, the host nations set the term so that at least one major renovation of most or all of the components will be necessary. Concerns about the contractor deferring maintenance and repair for as long as possible are mitigated somewhat by the KPIs established and by the contractor's interest in keeping customers—the roadway's users—satisfied with the service level they receive. Otherwise, the viability of the contractor's commercial enterprise could be at stake.

Example: Handover Provisions

15.13 Final Handover

(a) The Parties must, if required by STATE, carry out joint inspections of the Motorway and Third Party Works at a mutually convenient time:

(i) 3 years prior to the expiry of the Term; and

(ii) 18 months prior to the expiry of the Term.

(b) Following each inspection under clause 15.13(a), the Parties will seek to reach agreement on:

(i) the maintenance and repair works required to achieve Final Handover;

(ii) a programme for the carrying out of those works by the Company; and

(iii) an estimate of the cost of carrying out those works.

If the Parties fail to reach agreement on any of the matters referred to in this clause 15.13(b) within 20 Business Days after the date of the relevant joint inspection then STATE may refer the matters in dispute for resolution in accordance with clause 26.

(c) The:

(i) Company or the Trustee (as the case may be, having regarding to their respective obligations under the Deed) must carry out the works agreed or determined under clause 15.13(b) in accordance with the programme agreed or determined pursuant to clause 15.13(b); and

(ii) Company must either:

A. progressively deposit into an account opened by STATE in STATE's name with an authorised deposit-taking institution (within the meaning of the Banking Act 1959 (Cth)) (the "Escrow Account") 40% of all revenue collected by the Toll Collection System during the last 3 years or 18 months of the Term (as the case may be) until such time as the balance of the Escrow Account equals or exceeds 40% of the total estimated cost of the works (as agreed or determined pursuant to clause 15.13(b)); or

B. provide to STATE an unconditional undertaking which complies with the requirements of clause 13.1 for an amount equal to 40% of the estimated cost of the works (as agreed or determined pursuant to clause 1 5.13(b)), as security for the performance of such works and the Company's or Trustee's other obligations under this clause 15.13.

(d) Subject to its rights to have recourse to the monies held in the Escrow Account, STATE must pay the balance held in the Escrow Account to the Company within 20 Business Days after the Date of Final Handover.

(e) As conditions precedent to Final Handover:

(i) there must be:

A. no immediate repair work required to any part of the Motorway or the Third Party Works; and

B. otherwise no Defects in the Motorway or the Third Party Works;

(ii) the Company or the Trustee must transfer ownership to STATE or its nominee of all plant and equipment owned by them or in respect of which they have an option to acquire title and required for the O&M Work; and

(iii) the Company must supply to STATE all spare parts and special tools necessary for the continued operation, maintenance and repair of the Motorway and the Third Party Works after the expiry of the Term for a period of 12 months.

(f) During the final 3 months of the Term, the Company must train STATE (or other) personnel as nominated by STATE in all aspects of the operation, maintenance and repair of the Motorway and the Third Party Works to a level of competency that will allow those personnel to manage, operate, maintain and repair the Motorway and the Third Party Works so that the obligations specified in clause 15.1 can be fulfilled after the expiry of the Term.

(g) It is a condition precedent to Final Handover that the training referred to in clause 15.13(f) be completed to the reasonable satisfaction of STATE.

(h) For a period of 12 months after the expiry of the Term, the Company must ensure that it has competent and experienced personnel available to consult with STATE on any aspect of the operation, maintenance and repair of the Motorway and the maintenance and repair of the Third Party Works where required by STATE.

(i) Within 60 Business Days after the expiry of the Term, STATE will make determinations as to "residual design life," as defined in section 10.3 of the Scope of Works and Technical Criteria, with respect to each:

(i) Asset Element of the Motorway and the Third

Example: Handover Provisions *(continued)*

Party Works referred to in section 5.2 of the Scope of Works and Technical Criteria and, subject to clause 15.13 (i)(ii), each Asset Item forming part of that Asset Element; and

(ii) Asset Item or Asset Sub-Item of the Motorway and the Third Party Works specified in Appendix 20 to the Scope of Works and Technical Criteria, as at the expiry of the Term, using methodology for the determination which is consistent with relevant industry practice at the time which may include using:

(iii) any technology used at the time for the purpose of making such determinations; or

(iv) records kept by the Company and the Trustee during the Term as required by the Scope of Works and Technical Criteria.

(j) If STATE believes that the "residual design life" of an Asset Element, Asset Item or Asset Sub-Item or any part thereof is less than the "specified residual design life," as defined in section 10.2 of the Scope of Works and Technical Criteria for the relevant Asset Element, Asset Item or Asset Sub-Item, then STATE may give notice to this effect to the Trustee and the Company specifying:

(i) the extent to which it believes the "residual design life" is less than the "specified residual design life;" and

(ii) the cost of the measures necessary to ensure that the Asset Element, Asset Item or Asset Sub-Item or any part thereof have a "residual design life" at least equal to the "specified residual design life."

(k) The Trustee and the Company may within:

(i) a reasonable time of receipt of STATE's notice under clause 15.13j); or

(ii) in any event, 60 Business Days of receipt of STATE's notice under clause 15.13(j), carry out all necessary work to ensure that the "residual design life" of the relevant Asset Element, Asset Item or Asset Sub-Item or part thereof is equal to the "specified residual design life" for the relevant Asset Element, Asset Item or Asset Sub-Item:

(iii) within and at such time as may be required by STATE;

(iv) in accordance with the requirements of any relevant Authority;

(v) so as to minimise the impact on the use of the Motorway or the Third Party Works; and

(vi) in a manner which causes as little inconvenience as possible to:

A. users of the Motorway or the Third Party Works;

B. users of any Service or access; and

C. the adjacent community.

(l) If neither the Trustee nor the Company carry out the work referred to in clause 15.13(k) within the time specified, subject to clause 15.13(o), the Company must pay STATE (without limiting the provisions of clause 12) the cost determined by STATE under clause 15.13(i)(ii) as a debt due and payable by the Company to STATE.

(m) Compliance by the Trustee and the Company with clause 15.13(k) or by the Company with clause 15.13(1) is a condition precedent to Final Handover.

(n) In this clause 15.13, the terms "Asset Element," "Asset Item" and "Asset Sub-Item" have the same meaning as in the Scope of Works and Technical Criteria.

(o) Nothing in clause 15.13(1) will limit STATE's rights against the Company or the Trustee, whether under this Deed or otherwise according to law in respect of any Defect.

CHAPTER 5 »

PPP Program Performance and Common Lessons Learned

Overall, PPPs have served the nations the scan team studied well. They have allowed them to achieve objectives they would not have otherwise. The countries, however, have had to learn hard lessons about these arrangements and endure intense scrutiny from other executive agencies, elected officials, and the public.

This chapter summarizes the outcomes achieved generally and by each country through the use of highway PPPs, as well as common lessons learned over the past two decades during their implementation.

Outcomes

PPPs have allowed all of the host nations to deliver specific projects sooner than possible with conventional project delivery methods. Essentially, the public sector's capacity to appropriate budgetary funds lags behind the private sector's ability to access capital in the financial markets, particularly for large-scale projects. Alone, this circumstance does not justify a PPP approach, but it is a fact that public agencies use to their advantage.

Several host nations claimed that PPPs produce better price and schedule certainty for design and construction. Certainly, one of the private partner's incentives is to open a project for service as quickly as possible so it can begin collecting revenue from tolls or government payments. As an illustration, table 10 shows the schedule performance of the PPP projects in New South Wales, Australia.

Portugal

Foremost, Portugal has built its National Motorway System using PPPs. In doing so, it has kept pace with the traffic demands of its country, vastly improved highway safety and travel times, and leveraged private investment. While upgrading the quality of the motorway system probably has more to do with the improvements in safety and travel times than the implementation of performance-based PPPs, the pace of Portugal's highway development program, and thus its improved motorway quality, is directly attributable to its aggressive PPP program since 2000. Figures 18 and 19 (see next page) are telling in this regard.

Spain

Similar to Portugal, Spain has built a majority of its National Highway System through concessions and, in the near future, will have more than half of this system under active PPP concessions. Since the 1960s, Spain has pioneered the concession model for infrastructure development and has continuously sought better ways to improve the effectiveness and efficiency of its approach. Along the way, it has also built a global industry that is positioned to provide highway development, operations, and financial services anywhere in the world.

United Kingdom

PPPs, as well as increased use of the private sector in highway operations and maintenance contracts, have contributed to the Highways Agency's transition from a

Table 10. Schedule performance of highway PPPs in New South Wales.

Project	Opened	Scheduled Opening	Time Savings
M4	May 1992	Feb. 1993	9 months
M5	Aug. 1992	Feb. 1994	18 months
Sydney Harbour Tunnel	Aug. 1992	Aug. 1992	On time
M2	May 1997	Nov. 1997	6 months
Eastern Distributor	Dec. 1999	Aug. 2000	8 months
Cross-City Tunnel	Aug. 2005	Oct. 2005	2 months
Westlink M7	Dec. 2005	Aug. 2006	8 months
Lane Cove Tunnel	Mar. 2007	May 2007	2 months
Total			**53 months**

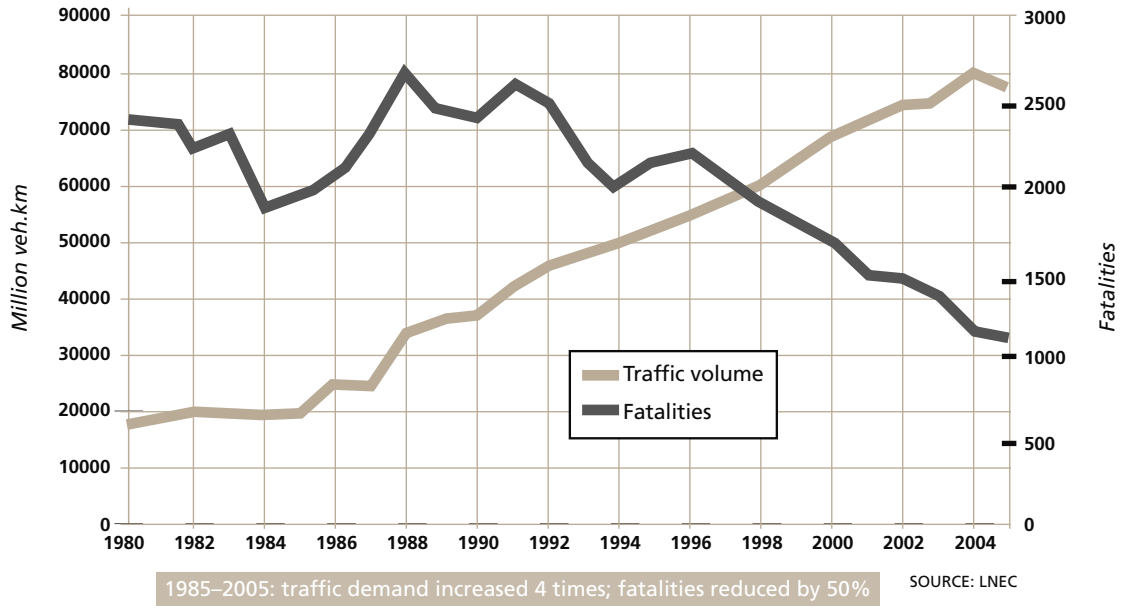


Figure 18. Traffic volume versus fatalities in Portugal.

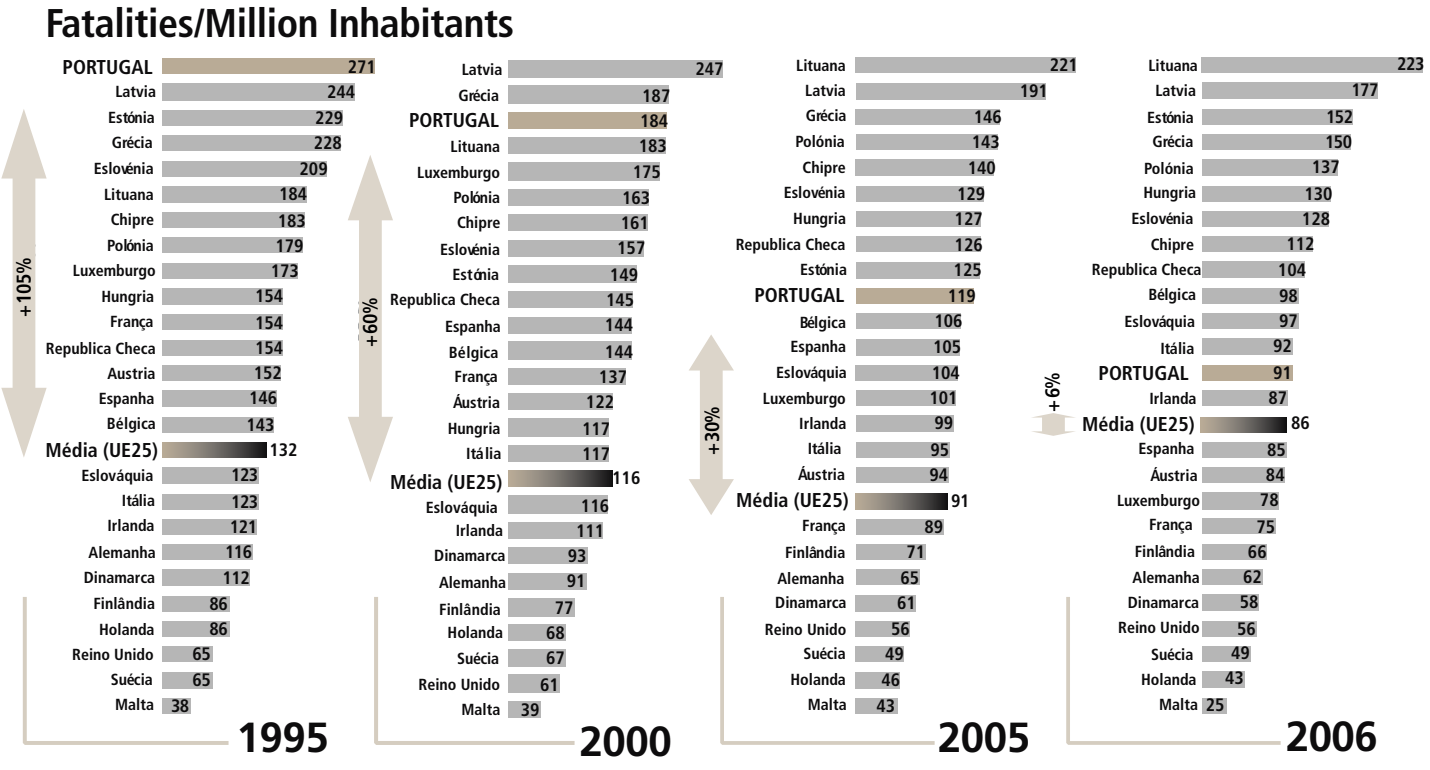


Figure 19. Road safety improvement in Portugal: 1995 to 2006.

network provider to a network operator—"steering, not rowing." This has allowed the agency to heighten its awareness of its customers and focus on its key performance measures:

- **RELIABILITY**—Implement a program of delivery actions that tackle unreliable journeys on the strategic road network.
- **DELIVERY OF MAJOR PROJECTS**—Deliver to time and budget the program of major schemes on the strategic road network.
- **ROAD SAFETY**—Deliver the Highways Agency's agreed-on proportion of the national road casualty reduction target.
- **MAINTENANCE**—Maintain the strategic road network in a safe and reliable condition and deliver value for money.
- **ENVIRONMENT**—Mitigate the potentially adverse impact of strategic roads and take opportunities to enhance the environment, taking into account value for money.
- **CUSTOMER SATISFACTION**—Deliver a high level of road user satisfaction.
- **EFFICIENCY**—Deliver the Highways Agency's contribution to the Department for Transport's efficiency target.

Australia

Australian states have used highway PPPs selectively in their urban centers to implement large-scale surface mobility improvements in a relatively short timeframe. These highways have improved both commuter and freight travel in the most densely populated cities in Australia—Sydney, Melbourne, and Brisbane. Similar to Spain, the activity in Australia has spawned an industry of highway developers, operators, and financiers. These private firms are also positioned to provide their services across the globe.

Common Lessons Learned

Preserving the Public's Interest While Attracting Private Participation

Over time, the host nations have learned that their highway PPP programs must preserve the public's interest and attract private participation. To some, these may be conflicting objectives. Balancing the two for PPP projects, however, essentially requires that the state and its citizens achieve the following:

- Receive a reasonable price
- Obtain a marginal value or benefit

Likewise, private participants require the following:

- Reasonable risk and reward profiles
- Manageable transaction costs

Previous sections of this report have highlighted various practices the nations visited use to facilitate these outcomes. For instance, public sector project and business case analysis methods help identify drivers of life-cycle value as well as appropriate risk-allocation strategies. Emphasis on project outputs enables public decisionmakers to pinpoint customer needs and target KPIs to satisfy those requirements. Competitive procurement processes (1) employ phased approaches to filter potential respondents down to a select few or (2) fix project requirements and bid parameters to improve transparency and accountability while driving down transaction costs. And the public sector's recognition that latent financial gains are possible in these sorts of arrangements precludes excessive private sector profits and promotes public confidence in government. Measures such as these prompt the private sector to focus its strengths on finding creative and effective solutions for complex projects.

Viewing Highway PPPs as Enterprises

Over time, the host nations have recognized that highway PPPs are enterprises that require a careful combination of technical, legal, and commercial conditions. This is fundamentally different from prescribing the requirements for a constructed facility, which is typically done in conventional project delivery. Instead, the public sector is granting the private sector the right to initiate and operate an enterprise within the bounds of a contract. Accordingly, a careful balance must be struck between the project's business and engineering provisions so that the private partner can succeed while also satisfying the public sector's objectives.

Building and Continuously Improving Public Sector Institutional Capacity

The host nations emphasized the importance of building and improving institutional capacity for PPP program effectiveness. From business case analysis through handback, PPPs present a variety of challenging tasks for public sector officials. As their PPP programs have matured and their staff capacity has increased, the host nations have relied less heavily on external consultants. This capacity

has not been derived simply through experience. Rather, deliberate actions such as establishment of best practices groups, development of principles and guidelines, and creation of standard procedures have all contributed to this growth.[13] Certainly, the need for complementary specialized expertise in areas such as legal and financial matters will not cease. However, the institutional infrastructure required to conceptualize, procure, deliver, and manage PPP arrangements as they themselves continue to evolve is significant. Failure to recognize this could leave a public agency overmatched by its private partner.

[13] Some of these resources are listed in Appendix E.

CHAPTER 6 »

Principal Findings

The scan team learned a significant amount about established PPP programs during its visits with the host countries. The diversity among policies and practices provided numerous valuable insights. The relative maturity of the host nation PPP programs offered a rich environment for the collection of useful and tested information on PPP policies and practices. This experience base provided the team with numerous findings, which are organized below into general, project life cycle, and additional findings.

General Findings

1. **PPPs are generally a modest but critically important percentage of the overall highway and roadway network.** As described previously, only a moderate percentage of the overall highway and roadway networks are under PPP arrangements. Typically, however, the segments that are PPPs are critical components of the national or regional system for vehicular mobility. For instance, CityLink in Melbourne, Australia, is a vital perimeter road that provides commuters and freight access into the city's central business district via a high-quality, limited-access route.

2. **Public agencies in the host countries have faced or continue to face challenges similar to those in the United States when it comes to providing serviceable highways and roadways.** Not a single public agency visited indicated that it had a surplus of funds available for expansion, restoration, and preservation of highway assets. The usual factors—escalating demands, deteriorating assets, insufficient public resources—cause the general scarcity of funds. The countries visited have used PPP arrangements to leverage private sector investment in highway assets, but they are doing so through established and credible processes.

3. **Significant institutional learning has occurred in both the public and private sectors over roughly the last decade.** Most PPP programs in the countries visited began in response to fiscal crises, and the private sector was viewed, particularly by politicians, as a potential solution. Early PPP arrangements in these countries, while well intentioned, did not necessarily provide the best value for the public. Since that time, the planning, procurement, and management of PPP projects have improved substantially. Significant institutional learning was evident in all the host nations. This circumstance is advantageous for the United States, a late mover in this market, because its institutions can adopt tested second- and even third-generation policies and practices.

4. **Highway PPP arrangements, particularly in the most mature markets, are not primarily financial transactions, but are the selected project delivery strategy based on a value-for-money or feasibility analysis.** In the majority of the countries visited, this perspective was either firmly held or gaining traction. For instance, the policy in Victoria on any potential infrastructure project is that budgetary funds must be available to support it for it to be considered for inclusion in a capital program. If the potential project has the attributes necessary for a PPP, it will be evaluated through Victoria's value-for-money guidelines. Only if the project demonstrates value for money as a PPP will it proceed that way. Otherwise, the budgetary funds will be used to finance its conventional delivery. In Spain, the philosophy is slightly different. If the public sector's feasibility analysis indicates that a PPP approach is viable, highways are typically delivered by PPPs. In either case, though, the government determines that a PPP arrangement is the preferred method of delivery based on a systematic methodology.

5. **Highway PPP arrangements do not automatically require user fees.** The scan team found that various sources of funds are used throughout the world—from exclusively real tolls to a combination of real tolls and shadow tolls to exclusively shadow tolls or direct payment mechanisms (often principally availability based). While the user-pays concept remains a solid economic argument, the reality is that

the sociopolitical environment in other countries, as in the United States, is a barrier to widespread tolling.

6. **The maximum contract period (or concession period) observed was 50 years and most periods ranged from 30 to 40 years.** This is a contrast to several recent long-term lease agreements of existing assets with periods ranging from 75 to 99 years coupled with large upfront payments in the United States. None of the countries visited have implemented a model of this sort recently. The two primary determinants described for the contract period were that (1) the timeframe should be long enough for most structures in the project to have gone through at least one major renovation, and (2) the period must be adequate to allow the PPP contractor a reasonable timeframe to collect the revenue necessary to obtain its expected return on investment.[14]

7. **All public agencies indicated that PPP arrangements allow the delivery of projects sooner than possible through conventional channels.** This is a common refrain among agencies with significant PPP experience. In some cases, this detail is used as a tool to promote the PPP approach over traditional delivery methods.

8. **One man's BOOT (build-own-operate-transfer) is another's DBFO (design-build-finance-operate).** The definitions, acronyms, and nomenclature used worldwide for PPPs are far from standard. In lieu of trying to keep all of this straight, the key variables to consider are what scope of services the private sector is being asked to provide (or alternatively how the project life cycle activities are organized and packaged) and what source of funds supports the scope of services being solicited.

9. **The necessary public sector mindset and skills base for successful PPP programs and projects differ substantially from those needed for conventional practices.** All of the public agencies visited emphasized the significance of these two points and indicated the importance of building public sector capacity in PPP program management. In Australia, Victoria and Queensland have found it beneficial to establish temporary, independent authorities to manage highway PPP procurements, while Portugal created EP specifically to administer concessions. A U.K. Highways Agency representative also commented that when the Private Finance Initiative began, the agency was not "risk averse, but rather was risk ignorant." This circumstance has remedied itself with experience and effort.

10. **Innovation by the private and public sectors in PPP arrangements is evident.** In the case of the private sector, innovation is typically stimulated by competition for the award of an integrated, commercial enterprise (i.e., the right to develop, enhance, and manage an infrastructure asset for a finite time period). The resulting innovations are generally borne out of the integration of design, construction, and operation within a single entity and during asset utilization. Often, the private sector's creativity is tapped in the nonconforming proposals allowed and encouraged during the procurement process. In the case of the public sector, innovation is typically driven by stewardship of public interests. For instance, the EastLink project in Victoria, Australia, has provisions to return to the users of the facility a share of any debits (penalties) collected from the PPP contractor for failure to meet key performance indicators.

11. **A reasonable balance among technical, commercial, and legal conditions and terms in a PPP contract is integral to its success.** While all highway projects are engineering efforts, PPP projects are also long-term enterprises. As one public official put it, once the agency's engineering staff has established the project's principal technical provisions, it's a good idea to have the agency's commercial and legal team take them for a "road test" to assess their alignment with the business dimensions of the project.

12. **In general, the representatives of the PPP contractors the scan team met with exhibited a focus on their customers, an emphasis on life-cycle management and value, and a pride in ownership and stewardship of their assets.** While the team recognizes that these individuals had an interest in behaving this way,

[14] More amenable tax treatment of PPP arrangements abroad also appears to help reduce contract periods.

their comments and answers demonstrated that their business model depends on these attributes. Moreover, if they desire to transfer this business model elsewhere, their track record will either enable or hinder this transfer.

13. **Similarly, public agencies have recognized that a PPP arrangement is in fact a long-term partnership with the private sector founded on a contract.** As such, the public sector's contract management team is responsible for sustaining this relationship. Doing so may require understanding the spirit as well as the letter of the contract.

Project Life Cycle Findings

These findings follow the chronological order of a PPP arrangement's life cycle—from preliminary project planning through project handback:

14. **All public agencies emphasized the importance of adequate front-end or preliminary planning for a project to fully comprehend its business case and potential life-cycle value.** This is necessary to understand what service a potential asset should provide and where value is derived. Such comprehension will undoubtedly influence the remaining decisions on project delivery, including whether the project is a PPP candidate.

15. **The two most commonly cited attributes of a project that make it a PPP candidate were scale and complexity.** The scale attribute is necessary to offset the transaction costs of PPPs, although variable monetary amounts (ranging from $10 million to $50 million) were suggested as the minimum scale necessary. Complexity is often coupled with scale, and this attribute is generally seen as the ingredient that enables, or perhaps compels, the private sector to find novel or unique project solutions.

16. **When defining or scoping a PPP project, the primary focus should be on identifying and conveying the outputs desired without inappropriately compromising existing technical standards.** Customers focus on project outputs—reliable travel times, safe travel environment, comfortable ride, etc. Thinking first about what customers desire rather than developing a prescriptive definition of the asset is a major transition in practice. However, an emphasis on defining and measuring outputs should not come at the expense of sound engineering. Most countries visited still rely on existing technical specifications and standards, at least to establish baseline technical requirements.

17. **Risk analysis and allocation are paramount to PPP project success.** Certainly, proper risk allocation is not a novel concept, but the public agencies visited with significant PPP experience have evolved from stressing maximum to reasonable risk transfer in PPP arrangements. Indeed, one public official described this evolution as a move away from "maximum risk transfer to optimal risk allocation."

18. **All public agencies emphasized the need for transparency during the procurement process for PPP projects.** The typical scale and complexity of PPP highway projects generate an unusually high level of public, political, and media attention. Nearly all of the agencies visited go to substantial lengths to make project documents and records accessible. More often than not, they publish all nonsensitive material on multiple government Web sites. In addition, some agencies use a public auditor to monitor proceedings. A practice such as this is particularly important in a procurement process that uses competitive negotiations. Further, most agencies stressed engaging citizens throughout the project's life cycle, from the earliest planning stages through the operating phase. Particularly, the need to inform the public about how to access and use a new facility before its opening was highlighted.

19. **The commitment of the government to see PPP project procurements through to closure is essential to stability in this market.** Given the enormous transaction costs involved in PPP projects, private participants must have confidence that the public sector is committed to closing deals expeditiously, with rare exceptions. Without this confidence, private participants will search for other places to put their business development funds at risk.

20. **In many of the countries visited, the PPP project development time was remarkably efficient.** In some countries, the entire procurement process, from circulation of an environmental document to attainment of financial close, averages 12 months. In such cases, the government has clearly done substantial

front-end planning. Regardless, this level of efficiency is enviable, especially since environmental standards and public involvement appear to be embraced.

21. **Multiple public agencies claimed that PPP projects provide better price and time certainty on design and construction when compared to the conventional approach.** Several of the countries visited indicated that the scale and complexity of and competition for PPP contracts generally lead to design and construction efficiencies, which result in better pricing and scheduling by the private sector. In addition, public and third-party studies indicated significant advantages in these two areas.

22. **Most countries use an independent verifier or reviewer to monitor the design and construction phases of a PPP project.** The independent verifier serves as an objective third party to generally administer (certify pay requests, etc.) and review (check compliance with requirements, make onsite visits, etc.) the project during design and construction. The payment schemes and contractual relationships used for the independent verifier varied. Victoria, Australia, introduced a proof engineer and a construction verifier to augment the independent verifier in its second PPP project (EastLink).

23. **All countries use key performance indicators (KPIs) or performance measures in their PPP contracts to assess service, along with incentives and disincentives to motivate contractor performance.** KPIs are the means for assessing whether the PPP contractor is providing the outputs desired from the asset. Contractors are usually monetarily rewarded for exceeding performance targets or showing positive trends, and they are monetarily debited for missing performance targets or showing negative trends. In one project, the public sector agency has decided to distribute any amounts debited from the contractor to the highway's users, since they paid for a level of service they did not receive.

24. **Practices for managing changes and uncertainty throughout the contract period range from rebalancing actions to limited material adverse effect impacts.** Rebalancing is a significant modification process, but it is intended to be applied symmetrically; the conditions can be modified in either the public or private sector's favor. Similarly, material adverse effect changes can be quite arduous, but in the countries where this approach is taken, the public agencies have evolved to substantially limit the triggers of such provisions. For instance, in lieu of granting zones with protection from competition or including no-compete provisions in contracts, the agencies have employed a range of techniques for handling this issue.

25. **Effective PPP contract management is vital to maintaining the public sector's risk posture and to sustaining a good working relationship with the PPP contractor.** The public agency's contract manager must understand the line between risk liability and risk transfer when interacting with the PPP contractor on issues. Further, the contract manager must recognize that the PPP contractor is likely his or her counterpart for the better part of 30 years, so keeping the bigger picture in perspective is more important than a petty disagreement or discrepancy.

26. **Handback provisions appear to necessitate good asset management practices by the private sector, but the handback process is generally untested in the countries visited.** Typically, the handback provisions specify residual service lives for the different elements of a facility, such as pavements, at the end of the contract's term. Undoubtedly, this is easier said than done. Many skeptics also worry that private contractors will permit the assets to gradually deteriorate and then attempt to renovate them to the minimum standard just before the end of the contract. Several comments a private operator made to the scan team might calm such concerns. First, the private contractor wants customers to use the asset, so it has an implicit incentive to maintain it. Second, and perhaps more important, delaying timely routine maintenance and performing major renovations toward the end of the contract period when traffic volume is stable and likely at its peak would disrupt this cash flow. Finally, the escalating cost of deferred maintenance is also a deterrent to poor asset management practices.

Additional Observations

27. **None of the public officials or private participants consulted had direct experience with the handback provisions or processes for a PPP contract, even**

though some countries, such as Spain, have had concessions expire.

28. **Business development costs of PPP proposals are substantial for both the public and private sectors.**

29. **Tax benefits appear to be gained more easily by PPP contractors abroad.** This is likely due to accounting practices that focus more on the risk held relative to an asset than on the control and ownership held relative to an asset.

30. **Selection criteria used for award of PPP contracts are generally similar across the countries visited.**

31. **Most countries visited still rely on existing technical specifications and standards in PPP arrangements, at least as a means to establish baseline technical requirements.**

32. **Fully electronic toll collection is common abroad, which improves throughput and efficiency.**

33. **Some countries use innovative performance measures for highway safety, which has reportedly improved crash and fatality rates.**

34. **Spain, in particular, is considering extending concession periods as an incentive or reward for PPP contractors that consistently meet or exceed required service levels.**

CHAPTER 7 »

Implementation Strategy

As the team debated its recommendations and implementation actions during the final meeting of the scanning study, an important question arose: "What's the end game here?" Put differently, what principal outcome should this scanning study and its implementation strategies facilitate? After discussion, the team agreed that the overarching outcome desired is the pervasive use of a project development process in which state and local highway agencies select an effective project delivery system from a range of options that includes PPPs. An effective project delivery system is defined as one that provides the greatest benefits to society and meets the objectives of government.

The recommendations and implementation actions that follow are geared toward this end.

Short-Term Actions

1. Convene executive workshops at which representatives from countries visited or elsewhere speak directly to public and private sector decisionmakers. Providing information to both decisionmakers (executives) and those implementing the programs (directors or staff members) will benefit State DOTs.

2. Develop training guidelines for PPP program managers, procurement officers, contract managers, and financial and legal specialists that State DOTs can use to tailor development and training programs to their own needs.

3. Encourage FHWA to convert the scan team into an expert task group to implement scan findings.

4. Encourage AASHTO to establish a group focused on PPPs, perhaps as a section of one of its subcommittees. Implementing this recommendation will allow the discussion on the development of PPPs to stay active and involve stakeholders at all levels of AASHTO, State DOTs, and FHWA.

5. Create a set of state-of-the-practice publications that further highlight the lessons learned from the scanning study and possibly expand the scope of inquiry to include other nations not studied. Issues such as business case development and analysis, value-for-money and risk analysis, procurement processes, contract provisions, change management, etc., are all important topics for these publications to address.

6. Develop comparative case studies of representative projects, past and current, that highlight maturing and evolving policies and practices. For instance, the Victoria government has developed two projects, CityLink and EastLink. An indepth review of the project specifics, lessons learned, procurement changes, and program evolution would meet one of the principal objectives of the scanning study.

Midterm Actions

7. Develop a strategy to facilitate research in the following areas:

    a. Investigate advantages and disadvantages of alternative organizational forms for PPP divisions.

    b. Examine methods for identifying and analyzing candidate PPP projects.

    c. Investigate the evolution and effectiveness of KPIs.

    d. Investigate the risk mitigation practices of the private sector in PPP arrangements to determine if private participants assume real levels of risk.

    e. Investigate the determinants of concession length both domestically and abroad.

    f. Evaluate methodologies for establishing and managing toll structures.

    g. Investigate and identify appropriate metrics for assessing the benefits and costs of PPP programs

and projects and overall PPP program and project performance.

Long-Term Actions

8. Develop and publish principles and guideline documents that update or complement existing documents that are similar in nature, such as the following:

    a. Establishing a PPP program

    b. Identifying and evaluating candidate PPP projects

    c. Procuring PPP projects

    d. Creating PPP contracts

    e. Managing PPP contracts

    f. Measuring PPP program and project performance

Endnotes

[a] MES Intervenção Operacioinal dos Transportes (1999). *Public-Private Partnerships,* MES Intervenção Operacioinal dos Transportes, Lisbon, Portugal.

[b] Spanish Institute of Foreign Trade (2006). *Industry Reports: Road Infrastructure Concessions in Spain*, Madrid.

[c] Austroads (1998). *Private Sector Financing of Roads: Review of the Major Australian Toll Roads,* Austroads Publication No. AP–131/98, Sydney.

[d] New South Wales. Parliament. Joint Select Committee on the Cross City Tunnel (2006). *Cross City Tunnel: First Report,* Parliament, Sydney.

[e] Vassallo, J.M. and Gallego, J. (2005). "Risk Sharing in the New Public Works Concession Law in Spain," *Transportation Research Record No. 1932,* Transportation Research Board of the National Academies, Washington, DC, 1–8.

[f] Committee of Public Accounts (2003). *Delivering better value for money from the Private Finance Initiative,* Twenty-Eighth Report of the 2002-03 Session, House of Commons, London.

[g] State Government of Victoria (2003). *Mitcham-Frankston Freeway Project: Request for Proposal Overview Document,* Melbourne.

[h] State Government of Victoria (2004). *Concession Deed: Mitcham-Frankston Freeway*, Melbourne.

APPENDIX A »

Scan Itinerary

Date(s)	Location	Meetings With Organizations	Site Visits
June 14–15, 2008	Travel to Portugal		
June 16	Lisbon, Portugal	Estradas de Portugal, S.A.[5] Brisa[2]	Brisa Traffic Control Center
June 17–18	Madrid, Spain	Polytechnic University of Madrid[3] Communidad de Madrid[1] Madrid Calle-30[2] Madrid Centro Financiero[4] Ministerio de Fomento[1]	Calle-30 Highway M-45 M-12
June 19–20	London, United Kingdom	Highways Agency[1] Department of Transport[1]	None
June 20–22	Travel to Australia		
June 22	Team Midscan Meeting		
June 23	Sydney, Australia	Roads and Traffic Authority, New South Wales[1] Treasury, New South Wales[1]	Cross City Tunnel Sydney Harbour Tunnel Lane Cove Tunnel M-2 Motorway
June 24	Sydney, Australia	Infrastructure Insight[2] Infrastructure Partnerships Australia[4] Leighton Contractors[2] Allens Arthur Robinson[2] Macquarie Capital Advisers[2] Parsons Brinckerhoff[2] Thiess[2] Transurban[2]	None
June 25–26	Melbourne, Australia	VicRoads, Victoria[1] Partnerships Victoria, Department of Treasury and Finance[1] East-West Transport Link[1] Southern and Eastern Integrated Transport Authority[1]	CityLink Motorway EastLink Motorway
June 27	Brisbane, Australia	Main Roads, Queensland[1] Infrastructure, Queensland[1] Infrastructure and Planning, Queensland[1] AirportLink/Northern Busway[1]	North-South Bypass Tunnel
June 28	Team Final Scan Meeting		
June 29	Travel to United States		

[1]government or public agency, [2]private company / concessionaire, [3]university, [4]professional or trade organization, [5]state-owned enterprise / concessionaire

APPENDIX B »

Amplifying Questions

Introduction

The following questions provide detail on the topics of interest outlined in the Panel Overview of December 2007. We hope these questions can serve as a framework for the discussions for our visit in June 2008. Wherever possible, we ask that you answer the questions directly or provide examples of successes and failures in the topical area. Example contracts or contract language from successful projects will also be helpful. We would also like to visit one of your projects for a portion of our discussions.

Environment for Public-Private Partnerships

General Context

1. Generally describe the key aspects of how transportation project delivery is positioned within the political, economic, and technological structure of your country. Please comment on items such as owner structure, market structure, market competition, and the roles and responsibilities of the other primary stakeholders in the transportation life cycle.

Traditional Financing

2. Please describe the traditional means of funding highway projects in your country.

    a. What are the annual funding needs for new capacity projects and network maintenance?

    b. What funding is available from traditional sources (e.g., taxes, fees), and what is the gap between funding availability and the needs for capacity building and maintenance?

Private Financing

3. Please describe the funding of highway projects in your country through public-private partnerships.

    a. What proportion of the highway network is funded through public-private partnerships?

    b. Does the public sector provide incentives in public-private partnerships (e.g., partial funding, tax benefits, subsidies, tax-exempt financing)?

    c. Are there other governmental incentives (e.g., to build in undeveloped or economically depressed areas, to support economic development)?

    d. Are other innovative public and/or private financing mechanisms available?

    e. How is the initial tolling scheme of the facility developed and how are future toll increases indexed and presented to the users?

Original Program Development

4. Please describe the issues and challenges encountered in the original development of your public-private partnership program.

    a. What were the original motivations for the use of public-private partnerships?

    b. What major issues did your country or agency need to confront to develop the program?

    c. How was the initial enabling legislation developed and who was involved (e.g., private sector, other agencies at the national, state, and local levels)?

    d. Were external societal or nontransportation-oriented goals imposed on the development of public-private partnerships (e.g., minimum wage standards, economic redevelopment, obligations treated as off-budget)?

Public and Political Perception

5. Please describe the public and political perception of the program in your country.

    a. Has there been strong public support or opposition for public-private partnerships at any particular time during the life of the program?

b. What have been the similarities and any significant differences in public expectations of the government and the private sector facilities?

c. What educational tools for ongoing programs have you found successful to inform citizens and legislators of the benefits of public-private partnerships?

Workforce Issues

6. Please describe how public-private partnerships have changed the traditional program of highway delivery and maintenance.

   a. What resources have been transferred from the public sector to the private sector?

   b. What is your organizational structure for developing and administering public-private partnerships (e.g., how many people participate, what disciplines are involved, to whom does this group report)?

Project Procurement and Contracting

Project Selection

7. Please describe the process used to identify and assess potential projects for the program.

   a. What processes do you use for valuation of potential projects?

   b. Do you use a "public sector comparator?" If so, is it required for each project? Is it revisited after the project is complete?

   c. What is the normal concession period (number of years) and how is it determined?

   d. Do you use public-private partnerships on smaller projects with local jurisdictions?

   e. How does the project selection relate to the overall transportation planning process (e.g., land use, economic development, environmental)?

Project Delivery

8. Please describe the process for delivering the project from concept through the completion of construction.

   a. What is the general length of time from project concept to completion and how does this compare with public sector-delivered projects?

   b. What phases of the project (e.g., project concept, environmental analysis, design, right-of-way acquisition, construction, finance, operation and maintenance) are normally handled by the public and private sectors?

   c. How do you handle environmental compliance for public-private partnership projects in which the public investment is limited or nonexistent? Is this an issue? Is it the same or different than projects with substantial public funding?

Risk Analysis and Risk Management

9. Please describe the primary elements of risk associated with a public-private partnership.

   a. Please describe the most significant risk elements of your contracts (e.g., actual traffic volume, environmental compliance, hazardous materials, changes in law, force majeure) and how they are either mitigated or managed.

   b. How are risk allocation and the transference of risk between parties determined?

Project Procurement

10. Please describe the procedures of a competitive solicitation, evaluation, and selection of a developer or private partner.

    a. How do various solicitation procedures and contract provisions successfully attract investors?

    b. How much of the project scope do you define and how much innovation do you allow the private sector to initiate during procurement?

    c. What are your criteria and weighting factors for procurements and how are they determined?

d. What agency resources are needed to adequately evaluate public-private partnerships?

e. Do you engage planning and financial partners for groups of projects (e.g., corridors or ring roads) rather than single projects?

Project Agreement/Contract

11. Please describe the significant contract terms and conditions and whether they are dictated in the solicitation or negotiated among the parties.

    a. What policies and procedures have you developed to reduce the negotiation process?

    b. What is the process for contract modifications and how do they vary between projects?

    c. Do you use performance or prescriptive specifications for pavements and structures?

Project Operation, Maintenance, and Closeout

12. Please describe the performance standards you measure and monitor.

    a. What performance standards do you include in your procurement documents?

    b. What is the organizational structure for project monitoring (e.g., independent engineers)?

    c. Are performance points used to track the progress of the concessionaire? If so, how does the system work?

    d. What are the usual remedies for poor service? Have you defaulted a concessionaire for poor service?

    e. What are your dispute resolution or arbitration procedures?

13. Please describe your handback requirements at the end of the concession.

    a. What are the evaluation and rehabilitation requirements at the time of handback?

Overall Program Performance

14. Please describe how your project delivery process evolved over time.

    a. How has your public-private partnership program become integrated into your overall transportation planning process?

    b. Have you conducted comprehensive studies that compare the performance of your traditional projects versus your public-private partnership projects?

    c. What have you changed in your processes, procedures, and requirements and why?

Benefits, Challenges, and Lessons Learned

15. Please provide any general lessons learned and tips for success as public-private partnerships begin to grow in the United States.

    a. What is your definition of a successful concession during the term and after the term?

APPENDIX C»

Scan Team Members

Contact Information

JANICE WEINGART BROWN
(FHWA Cochair)
Division Administrator
Federal Highway Administration
Texas Division
300 East 8th St., Suite 826
Austin, TX 78701
Telephone: (512) 536-5901
Fax: (512) 536-5990
E-mail: janice.brown@dot.gov

ROBERT PIEPLOW
(AASHTO Cochair)
Chief, Division of Engineering Services
California Department of Transportation
1801 30th St., MS 9-5/6JA
PO Box 168041
Sacramento, CA 95816-8041
Telephone: (916) 227-8800
Fax: (916) 227-8251
E-mail: bob_pieplow@dot.ca.gov

DR. MICHAEL J. GARVIN
(Report Facilitator)
Associate Professor
Myers-Lawson School of Construction
Virginia Tech
310A Bishop-Favrao Hall
Blacksburg, VA 24061-0188
Telephone: (540) 808-9177
Alternate Administrative Office: (540) 231-3804
Fax: (540) 231-7339
E-mail: garvin@vt.edu

ROGER L. DRISKELL
Bureau Chief, Engineer of Construction
Illinois Department of Transportation
2300 South Dirksen Parkway, Room 322
Springfield, IL 62764
Telephone: (217) 782-6667
Fax: (217) 524-4922
E-mail: roger.driskell@illinois.gov

STEPHEN J. GAJ
Team Leader, System Management & Monitoring Team
Federal Highway Administration
Office of Asset Management, HIAM-10, Room E75-330
1200 New Jersey Ave., SE
Washington, DC 20590
Telephone: (202) 366-1336
Fax: (202) 366-9981
E-mail: stephen.gaj@dot.gov

DUSTY L. HOLCOMBE
Assistant Director, Innovative Project Delivery
Virginia Department of Transportation
1401 East Broad St.
Richmond, VA 23219
Telephone: (804) 786-3173
Fax: (804) 786-7221
E-mail: dusty.holcombe@vdot.virginia.gov

MICHAEL T. SAUNDERS
Program Manager for Public-Private Partnerships
Federal Highway Administration
HOA-3, Room E84-306
1200 New Jersey Ave., SE
Washington, DC 20590
Telephone: (202) 366-4816
Fax: (202) 266-7499
E-mail: michael.saunders@dot.gov

J. JEFFREY SEIDERS, JR.
Director, Materials and Pavements Section
Construction Division
Texas Department of Transportation
125 East 11th St.
Austin, TX 78701-2483
Telephone: (512) 506-5808
Fax: (512) 506-5812
E-mail: jseider@dot.state.tx.us

ARTHUR L. SMITH
Chairman, National Council for Public-Private Partnerships
President, Management Analysis Incorporated
2070 Chain Bridge Road, Suite 505
Vienna, VA 22182
Telephone: (703) 506-0505, ext. 205
E-mail: asmith@mainet.com

Biographic Information (at Time of Scanning Study)

JANICE (JAN) WEINGART BROWN (FHWA cochair) is the division administrator for the Texas Division of the Federal Highway Administration (FHWA). As a key member of the agency's leadership team, Brown provides executive management expertise in the oversight and stewardship of the federally funded highway program in Texas. She directs operations of the Texas Division, which provides technical and program assistance to Texas for improvements to the State's transportation network, including the border connections that support increased international movement of freight between the United States and Mexico. She provides assistance in the use of public-private partnerships to help fund needed transportation improvements. Before becoming Texas Division administrator, Brown served for 11 years as FHWA's Montana Division administrator. Before that, she served as assistant division administrator in the Nevada Division and district engineer in Washington State. Brown earned a bachelor's degree in civil engineering from the University of Connecticut and a master's degree in transportation policy, operations, and logistics from George Mason University in Virginia. She is a licensed professional engineer in Washington State.

ROBERT (BOB) PIEPLOW (AASHTO cochair) is an engineering manager for the California Department of Transportation (Caltrans) in Sacramento, CA. Pieplow is the division chief for the Division of Engineering Services (DES). DES is a division of 2,000 employees and performs a variety of engineering services, including geotechnical investigations, structures design, earthquake engineering, materials engineering and testing, and construction management, and advertises and awards more than $2.5 billion in construction contracts each year. Before his current assignment, Pieplow served as the chief of the Division of Construction for Caltrans, overseeing the policy and direction of a construction program with 600 active construction contracts valued at more than $10.5 billion. Projects included the east span replacement of the San Francisco-Oakland Bay Bridge, which features a signature self-anchored suspension span. During his tenure in construction, he led the development and implementation of several innovative construction contract provisions, including A+B bidding, flexible beginning of work, time-related overhead bid item, and alternative dispute resolution processes. In addition, Pieplow worked with the insurance and construction industries to reduce insurance and bonding barriers for small businesses and implement an owner-controlled insurance program (OCIP). Pieplow is a graduate of California Polytechnic State University, San Luis Obispo. He is a licensed professional engineer in California.

DR. MICHAEL J. GARVIN (report facilitator) is an associate professor in the Myers-Lawson School of Construction at Virginia Polytechnic Institute and State University (Virginia Tech). His research and education pursuits are geared toward improving how institutional owners—such as departments of transportation, universities, and Federal agencies—program, finance, and deliver projects. His current research projects are developing decision support systems for portfolio-level investment decisions, improving risk mitigation strategies for infrastructure projects in which private finance is at risk, and identifying best practices for public-private partnership (PPP) arrangements through case-based research. Garvin is a 2004 recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE), which is the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers. He also recently completed service on the National Research Council's Committee for Core Competencies for Federal Facilities Asset Management, is a member of the American Society of Civil Engineers' (ASCE) Construction Research Council and Infrastructure Systems Committee, is on the editorial board of the journal *Public Works Management & Policy,* and is a specialty editor for the case studies division of the ASCE *Journal of Construction Engineering and Management.* He has authored or coauthored more than 30 journal articles, conference papers, and book chapters. His professional experience includes military service as an officer in the U.S. Army Corps of Engineers (1989 to 1993), practice as a consulting civil engineer (1995 to 1998), and faculty positions at both Columbia University (2001 to 2005) and Virginia Tech (2005 to present). He received a bachelor's degree in civil engineering from the United States Military Academy in 1989, a master's degree in civil engineering from the Massachusetts Institute of Technology (MIT) in 1995, and a Ph.D. in construction engineering and management from MIT in 2001.

ROGER L. DRISKELL is the engineer of construction for the Illinois Department of Transportation (IDOT) in

Springfield, IL. Driskell oversees the development of construction policies, engineering and documentation reviews, prequalification of contractors, contractor pay estimates, and construction change authorizations for the department's nearly $2 billion annual construction program. In addition, he has been IDOT's lead in review and investigation of alternative contracting methods, including public-private partnerships and design-build. Driskell has been with IDOT 23 years, working primarily in construction as a resident engineer and supervising field engineer and in design as a squad leader, project engineer, and policy engineer responsible for the department's design manual, specifications, and standards. Driskell graduated from Southern Illinois University at Edwardsville with a bachelor's degree in engineering. He is a licensed professional engineer in Illinois and serves on the American Association of State Highway and Transportation Officials' Subcommittee on Construction, chairing the Environmental and Human Resources Section.

STEPHEN J. GAJ is leader of the System Management and Monitoring Team of the FHWA Office of Asset Management in Washington, DC. He is responsible for promoting asset management, a strategic approach to managing transportation infrastructure, which includes better decisionmaking based on quality information. Asset management encourages the integration of traditional engineering applications and management systems and the use of economic analysis tools to monitor and analyze the performance of highway assets. This work includes refining and advancing the application of pavement, bridge, roadway safety hardware, and other management systems. Gaj has been with FHWA since 1981. He previously worked in FHWA's Office of International Programs, Construction and Maintenance Division, and Maryland and Michigan Divisions, as well as on several assignments in FHWA's Highway Engineer Training Program. He has a bachelor's degree in civil engineering from the University of Massachusetts–Dartmouth and a master's degree in civil engineering from Clemson University.

DUSTY L. HOLCOMBE is assistant director of the Innovative Project Delivery Division for the Virginia Department of Transportation (VDOT) in Richmond, VA. Holcombe administers VDOT's Public-Private Transportation Program, which is responsible for the procurement, negotiation, and execution of public-private partnership agreements for transportation facilities. His duties involve developing policies, contractual documents, and procedures that create a competitive procurement environment and allow for the execution of agreements with the private sector. Before joining VDOT, Holcombe worked in the private sector for Sverdrup Civil, an international professional engineering firm. Holcombe is a graduate of the Virginia Polytechnic Institute and State University and holds a master's degree in urban and environmental planning from the University of Virginia. He is a member of the American Society of Highway Engineers and has spoken at several public-private partnership seminars and conferences.

MICHAEL T. SAUNDERS is FHWA's program manager for public-private partnerships (PPP). As such, he provides technical assistance on the Federal requirements associated with PPPs and coordinates the review of PPPs for FHWA. Saunders has worked in transportation for more than 25 years. His positions include assignments with FHWA in transportation planning and project development, as a program administrator with the Organization for Economic Cooperation and Development, as deputy commissioner of the Connecticut Department of Transportation, and as manager of the Federal Railroad Administration's Northeast Corridor Program Office. He is a graduate of Trinity College and has master's degrees in urban and environmental planning from the University of Virginia and in civil engineering from Michigan State University.

J. JEFFREY SEIDERS is the director of the Materials and Pavements Section of the Construction Division for the Texas Department of Transportation (TxDOT) in Austin, TX. Seiders oversees and manages departmental material specifications (including structural steel and precast/prestressed products) and test procedures (including quality assurance programs and testing activities for construction and maintenance). Seiders received a bachelor's degree in architectural engineering from the University of Texas at Austin in 1980. He joined the engineering staff of Trinity Engineering Testing Corp., where his responsibilities included construction materials testing, structural investigations, and project oversight for foundation construction. In 1984, he joined Porter-Donoghue Consulting Engineering (PDCE), where he performed the structural design and construction administration for several projects ranging from low- to medium-rise buildings. In 1987, he began

his career with the TxDOT Materials and Tests Division. His responsibilities progressed from staff engineering functions to Structural Section manager. Seiders has served as a leader for several departmental task forces and committees and is a registered professional engineer in Texas.

ARTHUR (ART) L. SMITH is chair of the U.S. National Council for Public-Private Partnerships. He is also U.S. representative to and vice chair of the United Nations Economic Commission for Europe's (UNECE) Team of Specialists on Public-Private Partnerships. Smith serves as a consultant and lecturer on PPPs for organizations such as the United Nations Development Program, UNECE, Asian Development Bank, International Law Institute, and national governments. He was a primary author of the UNECE publication *Governance in Public-Private Partnerships for Infrastructure.* Smith provided analysis in support of the Czech government's voucher privatization program and managed a project funded by the United States Agency for International Development to identify the costs of potable water in Albania. He has PPP experience on five continents and is the author of more than 30 articles on public-private partnerships, published in six languages. Smith has served with the consulting firm of Management Analysis, Inc., since 1977 and has been president since 1995. Smith holds a bachelor's degree and a master's degree in technology management from the University of Maryland.

APPENDIX D »

Host Country Contacts

Portugal

Estradas de Portugal, S.A.

CARLA BARRADAS
Manager, International Relations Bureau
Estradas de Portugal
Praca Da Portagem
2809-013 Almada, Portugal
Telephone: +351 212 879 281
E-mail: carla.barradas@estradasdeportugal.pt

TIAGO CORTEZ
Director, Business and Development
Estradas de Portugal
Praca Da Portagem
2809-013 Almada, Portugal
Telephone: +351 212 879 475
E-mail: tiago.cortez@estradasdeportugal.pt

RUI MANTEIGAS
Director
Estradas de Portugal
Praca Da Portagem
2809-013 Almada, Portugal
Telephone: +351 212 879 935
E-mail: rui.manteigas@estradasdeportugal.pt

JOSÉ DIOGO MADEIRA
Member, Administration Board
Estradas de Portugal
Praca Da Portagem
2809-013 Almada, Portugal
Telephone: +351 212 879 015
E-mail: jose.madeira@estradasdeportugal.pt

Brisa

LUÍS DELGADO
International Development Manager
Brisa
Quinto de Torre da Aguilha
Edificio Brisa
2785-599 São Domingos de Rana, Portugal
Telephone: +351 21 444 85 97
E-mail: luis.delgado@brisa.pt

MANUEL EDUARDO LAMEGO
Head of Business Development
Brisa
Quinto de Torre da Aguilha
Edificio Brisa
2785-599 São Domingos de Rana, Portugal
Telephone: +351 21 444 86 67
E-mail: manuel.lamego@brisa.pt

Spain

Universidad Politécnica de Madrid

DR. ANTONIO M. LOPEZ CORRAL
Professor, Polytechnic University of Madrid
Escuela de Ingenieros de Caminos
Calle Profesor Aranguren
Ciudad Universitaria
28040 Madrid, Spain
Telephone: 91 336 6849
E-mail: alopezcorral@telefonica.net

DR. SAMUEL CARPINTERO LÓPEZ
Polytechnic University of Madrid
Escuela de Ingenieros de Caminos
Calle Profesor Aranguren
Ciudad Universitaria
28040 Madrid, Spain
Telephone: 636 467 749
E-mail: scarlop@ciccp.es

DR. ANTONIO SÁNCHEZ SOLIÑO
Polytechnic University of Madrid
Escuela de Ingenieros de Caminos
Calle Profesor Aranguren
Ciudad Universitaria
28040 Madrid, Spain
Telephone: 91 401 96 92
E-mail: asanoli@ciccp.es

Comunidad de Madrid

JOSÉ ANTONIO LLANOS BLASCO
Comunidad de Madrid
Orense 60
28020 Madrid, Spain
Telephone: 915 802 911/791
E-mail: jantonio.llanos@madrid.org

Madrid Calle-30

JOSÉ DEL PINO ÁLVAREZ
Madrid Calle
C/Mendez Alvaro, 95
Centro de Control de Tuneles M-30
28053 Madrid, Spain
Telephone: 914 886 843
E-mail: delpinoaj@mc30.es

JESÚS JIMÉNEZ ALEN
Madrid Calle
C/Mendez Alvaro, 95
Centro de Control de Tuneles M-30
28053 Madrid, Spain
Telephone: 914 583 020
E-mail: jimenezaj@mc30.es

JOSÉ IGNACIO ITURBE LÓPEZ
Madrid Calle
C/Mendez Alvaro, 95
Centro de Control de Tuneles M-30
28053 Madrid, Spain
Telephone: 915 391 236
E-mail: iturbeijl@mc30.es

Ministerio de Fomento

GERARDO L. GAVILANES GINERÉS
Director of the Division for Economic Consultancy
Ministerio de Fomento
Paseo de la Castellana, 67
28071 Madrid, Spain
Telephone: +34 91 597 81 87
E-mail: ggavilanes@mfom.es

JESUS FERNÁNDEZ SILVA
Ministerio de Fomento
Paseo de la Castellana, 67
28071 Madrid, Spain
Telephone: +34 91 597 51 01
E-mail: jsilva@mfom.es

ICEX

JAVIER GARCÍA
Department of Technology and Projects
Spanish Institute for Foreign Trade
Paseo de la Castellana 14-18
28046 Madrid, Spain
Telephone: +34 91 349 63 90
E-mail: j.garcia@icex.es

Madrid Centro Financiero

ISABEL MARTIN CASTLLÁ
Managing Director
Madrid Centro Financiero
Telephone: +34 91 399 75 81
E-mail: isabel.martin@imade.es

United Kingdom

Highways Agency (or Representative)

RICHARD ABADIE
Global Head of PPP Advisory
PriceWaterhouseCoopers
1 Embankment Place
London WC2N 6RH,
United Kingdom
Telephone: +44 (0)20 7213 3225
E-mail: richard.abadie@uk.pwc.com

SIMON AMOR
Traffic Operations
Highways Agency
Woodlands, Manton Lane
Manton Industrial Estate
Bedford MK41 7LW, United Kingdom
Telephone: 01234 796158
E-mail: simon.amor@highways.gsi.gov.uk

MICHAEL CHARLES
Network Operations
Manton Lane, Manton Industrial Estate
Bedford MK41 7LW, United Kingdom
Telephone: 01234 796528
E-mail: michael.charles@highways.gsi.gov.uk

GINNY CLARKE
Chief Highway Engineer
Safety, Standards & Research Directorate
Highways Agency
5th Floor, 123 Buckingham Palace Road
London SW1W 9HA,
United Kingdom
Telephone: 020 7153 4779
E-mail: ginny.clarke@highways.gsi.gov.uk

ELLEN GATES
Partner
Denton Wilde Sapte
One Fleet Place
London EC4M 7WS,
United Kingdom
Telephone: +44 (0)20 7242 1212
E-mail: ellen.gates@dentonwildesapte.com

JIM HUGHES
Group Financial Controller
Highways Agency
Telephone: +44 (0)207 153 4703
E-mail: jim.hughes@highways.gsi.gov.uk

KEN PETCH
Senior Manager
Highways Agency
5 Broadway, Broad Street
Birmingham B15 1BL,
United Kingdom
Telephone: 0121 678 8451
E-mail: ken.petch@highways.gsi.gov.uk

DAVE SLEDGE
Departments Representative
Highways Agency
E-mail: dave.sledge@highways.gsi.gov.uk

CATHERINE STEELE
Team Leader, PFI Policy
Highways Agency
Woodlands
Manton Lane, Manton Industrial Estate
Bedford MK41 7LW, United Kingdom
Telephone: 01234 795160
E-mail: catherine.steele@highways.gsi.gov.uk

MIKE WHERRETT
Network Performance Manager
Traffic Operations East & East Midlands Division
Highways Agency
Woodlands
Manton Lane, Manton Industrial Estate
Bedford MK41 7LW, United Kingdom
Telephone: 01234 796219
E-mail: mike.wherett@highways.gsi.gov.uk

TONY WITTERING
Group Manager, Procurement
Woodlands
Manton Lane, Manton Industrial Estate
Bedford MK41 7LW, United Kingdom
Telephone: 01234 796017
E-mail: tony.wittering@highways.gsi.gov.uk

Department of Transport

COLIN GOODWILLIE
Corporate Finance Adviser
Corporate Finance Directorate
Department for Transport
Great Minster House, 76 Marsham St.
London SW1P 4DR, United Kingdom
Telephone: 020 7944 8018
E-mail: colin.goodwillie@dft.gsi.gov.uk

NICK JOYCE
Project and Infrastructure Finance
Corporate Finance Directorate
Department for Transport
Great Minster House, 76 Marsham St.
London SW1P 4DR, United Kingdom
Telephone: 020 7944 4190
E-mail: nick.joyce@dft.gsi.gov.uk

New South Wales, Australia

Roads and Traffic Authority

MARK ANDREW
Project Services Manager, Highway Procurement
Roads and Traffic Authority
Level 4, Tower A, Centennial Plaza
260 Elizabeth St.
Surry Hills, New South Wales 2010, Australia
Telephone: 02 9218 6225
E-mail: mark_andrew@rta.nsw.gov.au

PAUL GOLDSMITH
General Manager, Motorway Projects
Roads and Traffic Authority
Level 1, Tower A, Centennial Plaza
260 Elizabeth St.
Surry Hills, New South Wales 2010, Australia
Telephone: 02 9218 6579
E-mail: paul_goldsmith@rta.nsw.gov.au

BRIAN WATTERS
Director, Major Infrastructure
Roads and Traffic Authority
Level 6, Tower A, Centennial Plaza
260 Elizabeth St.
Surry Hills, New South Wales 2010, Australia
Telephone: 02 9218 3553
E-mail: brian_watters@rta.nsw.gov.au

Department of Treasury

DANNY GRAHAM
Director, Privately Financed Projects Branch
New South Wales Treasury
Level 26, Governor Macquarie Tower
1 Farrer Place
Sydney, New South Wales 20000, Australia
Telephone: 02 9228 3213
E-mail: danny.grahm@mail.treasury.new.gov.au

Private Industry

WENDY ADAM
Project Manager
Parsons Brinckerhoff
Level 27, Ernst & Young Centre
680 George St.
Sydney, New South Wales 2001, Australia
Telephone: +61 2 9275 5121
E-mail: wadam@pb.com.au

STEPHEN ALLEN
Executive Director
Macquarie Capital Advisers
No. 1 Martin Place
Sydney, New South Wales 2000, Australia
Telephone: +61 2 8232 4025
E-mail: stephen.allen@macquarie.com

ROBERT BARTLETT
Commercial Affairs Manager, CityLink
Transurban
Level 3, 505 Little Collins St.
Melbourne, Victoria 3000, Australia
Telephone: +61 (0)3 8656 8693
E-mail: rbartlett@transurban.com

BRENDAN DONOHUE
General Manager, NSW/ACT
Thiess
Level 5, 26 College St.
Sydney, New South Wales 2000, Australia
Telephone: (02) 9332 9444
E-mail: bdonohue@thiess.com.au

PETER HICKS
General Manager, Infrastructure Investment
Leighton Contractors
Level 8, Tower 1, 495 Victoria Ave.
Chatswood, New South Wales 2067, Australia
Telephone: +61 2 8668 6622
E-mail: peter.hicks@leicon.com.au

GARRY HUMPHREY
Director
Infrastructure Insight
PO Box 1121
Epping, New South Wales 1710, Australia
Mobile: 0412 206 306
E-mail: garry.humphrey@infrastructureinsight.com.au

DR. GUL IZMIR
Strategic Consulting
Parsons Brinckerhoff
Level 27, Ernst & Young Centre
680 George St.
Sydney, New South Wales 2001, Australia
Telephone: +61 2 9272 5330
E-mail: gizmur@pb.com.au

BRENDAN LYON
National Manager, Public Affairs
Infrastructure Partnerships Australia
8th Floor, 8-10 Loftus St.
Sydney, New South Wales 2000, Australia
Telephone: +81 2 9240 2084
E-mail: brendan.lyon@infrastructure.org.au

JOHN MUNRO
Tunnels System Executive
Parsons Brinckerhoff
Level 27, Ernst & Young Centre
680 George St.
Sydney, New South Wales 2000, Australia
Telephone: +61 2 9272 5438
E-mail: jmunro@pb.com.au

LEIGHTON O'BRIEN
Partner
Allens Arthur Robinson
Telephone: 61 2 9230 4205
E-mail: leighton.obrien@aar.com.au

BRETT SKINNER
General Manager, Australian Market
Transurban
Level 37 Gateway, 1 Macquarie Place.
Sydney, New South Wales 2000, Australia
Telephone: +61 (0)2 9254 4949
E-mail: bskinner@pb.transurban.com

Victoria, Australia

VicRoads

PETER BETTESS
Manager, CityLink
VicRoads
60 Denmark Street
Kew, Victoria 3101, Australia
Telephone: +61 3 9655 8769
E-mail: peter.bettess@roads.vic.gov.au

Department of Treasury and Finance

DAVID ASTERAKI
Director, Commercial Division
Department of Treasury and Finance
Level 5, 1 Treasury Place
Melbourne, Victoria 30002, Australia
Telephone: (03) 9651 0755
E-mail: david.asteraki@dtf.vic.gov.au

RICHARD FOSTER
Executive Manager, Commercial Division
Department of Treasury and Finance
Level 5, 1 Treasury Place
Melbourne, Victoria 30002, Australia
Telephone: (03) 9651 2221
E-mail: richard.foster@dtf.vic.gov.au

East-West Transport Link

JOHN MATTHEWS
East-West Transport Link
Level 49, 80 Collins St.
Melbourne, Victoria 3000, Australia
Telephone: (03) 9095 4418
E-mail: john.matthews@doi.vic.gov.au

Southern and Eastern Integrated Transport Authority

BRAD AKERS
Director, Commercial & Legal
SEITA
Building 1, Level 1, Brandon Business Park
540 Springvale Rd.
Glen Waverley, Victoria 3150, Australia
Telephone: +61 3 8562 6829
E-mail: brad.akers@doi.vic.gov.au

MICHAEL DE VRIES
Manager, Legal Services
SEITA
Building 1, Level 1, Brandon Business Park
540 Springvale Rd.
Glen Waverley, Victoria 3150, Australia
Telephone: +61 3 8562 6814
E-mail: michael.devries@doi.vic.gov.au

KEN MATHERS
Chief Executive Officer
SEITA
Building 1, Level 1, Brandon Business Park
540 Springvale Rd.
Glen Waverley, Victoria 3150, Australia
Telephone: +61 3 8562 6828
E-mail: ken.mathers@doi.vic.gov.au

IAN MCLENNAN
Assistant Director, Commercial
SEITA
Building 1, Level 1, Brandon Business Park
540 Springvale Rd.
Glen Waverley, Victoria 3150, Australia
Telephone: +61 3 8562 6830
E-mail: ian.mclennan@doi.vic.gov.au

Queensland, Australia

Department of Main Roads

TOM BASKERVILLE
Executive Director (Policy & Strategic Advice)
Queensland Government
Department of Main Roads
Floor 4, 85 George Street
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3306 7077
E-mail: mr.ed.stratpol@mainroads.qld.gov.au

RAYMOND MATTA
Acting Manager (Trade & Industry Relations)
Queensland Government
Department of Main Roads
Floor 3, 85 George Street
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3306 7288
E-mail: ray.z.matta@mainroads.qld.gov.au

RUSSELL MURRAY
Manager (Financial & Commercial)
Queensland Government
Department of Main Roads
Floor 3, 260 Queen St.
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3997 8364
E-mail: russel.r.murray@mainroads.qld.gov.au

FRANK VARDANEGA
General Manager, Capability, Strategy & Finance
Queensland Government
Department of Main Roads
Floor 10, 85 George Street
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3306 7373
E-mail: mr.gm.csf@mainroads.qld.gov.au

KATHY VU
Advisor (Trade & Industry Relations)
Queensland Government
Department of Main Roads
Floor 3, 85 George Street
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3306 7290
E-mail: kathy.k.vu@mainroads.qld.gov.au

Queensland Government (or Representatives)

LLOYD ARNOTT
Group Advisory Leader
Connell Wagner
Level 1, 433 Boundary St.
Spring Hill, Queensland 4004, Australia
Telephone: +61 7 3155 8386
E-mail: arnottl@conwag.com

NEAL JOHNSTON
Executive Director, Transaction Advisory Services
Ernst & Young
Ernst & Young Centre
680 George St.
Sydney, New South Wales 2000, Australia
Telephone: +61 2 9248 4247
E-mail: neal.johnston@au.ey.com

DAVID LESTER
Partner
Clayton Utz
Level 28, Riparian Plaza
71 Eagle St.
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3292 7000
E-mail: dlester@claytonutz.com

PETER PAPANTONIOU
Director, Commercial and Legal
Airport Link/Northern Busway
Telephone: 07 3237 7416
E-mail: peter.papantoniou@cni.gld.gov.au

STEVE RICHARDS
Executive Director, Infrastructure, Evaluation & Procurement
Queensland Government
Department of Infrastructure and Planning
Level 5, Executive Building, 100 George St.
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3033 0658
E-mail: steve.richards@infrastructure.qld.gov.au

JOHN SEED
Principal, Advisory Services
Connell Wagner
118 Military Rd.
Neutral Bay, New South Wales 2089, Australia
Telephone: +61 2 9465 5406
E-mail: seedj@conwag.com

CRAIG STEVENS
Director, Infrastructure Evaluation & Procurement
Queensland Government
Department of Infrastructure
Level 5, Executive Building, 100 George St.
Brisbane, Queensland 4000, Australia
Telephone: +61 7 3033 0658
E-mail: craig.stevens@infrastructure.qld.gov.au

MARK WILDE
Head of Government Services, Queensland
Ernst & Young
Waterfront Place
Level 5, 1 Eagle St.
Brisbane, Queensland 4000, Australia
Telephone: +61 73011 3398
E-mail: mark.wilde@au.ey.com

Southbank Institute of Technology

CRAIG SHERRIN
Institute Director
Southbank Institute of Technology
Block C, Level 7, 66 Ernest St.
South Brisbane, Queensland 4101, Australia
Telephone: +61 7 3244 5500
E-mail: sbit.director@deta.qld.gov.au

NORM JAGGER
Project Director
Southbank Institute of Technology
Locked Mail Bag 14
South Brisbane, Queensland 4101, Australia
Telephone: +61 7 3244 5506
E-mail: norm.jagger@deta.qld.gov.au

APPENDIX E »

Web Sites of Interest

(This list includes only Web sites in English.)

Australia

http://www.infrastructure.gov.au/department/infrastructureaustralia/
An organization in the federal government created to assess and coordinate Australia's national infrastructure needs.

http://www.infrastructure.org.au/
An industry group promoting the use of PPPs in Australia.

New South Wales

http://sydneymotorways.com/about.html
Site provides information about each toll road in Sydney, including toll rates.

http://www.treasury.nsw.gov.au/wwg
Site includes state government guidelines and contract summaries for PPP projects under the NSW Projects tab.

http://www.parliament.nsw.gov.au/crosscitytunnel
Site provides documentation from the Parliamentary inquiry into the Cross City Tunnel (and the Lane Cove Tunnel), including reports of findings and government responses.

Victoria

http://www.partnerships.vic.gov.au/domino/web_notes/PartVic/PVWeb.nsf
Home page for Partnerships Victoria; the Policy & Guidelines link includes several documents such as an overview of Victoria's PPP policy and its PPP contract management policy, a practitioners guide and a contract management guide, and technical notes about the use of public sector comparators.

http://www.vicroads.vic.gov.au/Home/RoadsAndProjects/RoadNetwork/
VicRoads site provides an overview of Victoria's road network, including information about funding and managerial responsibility.

United Kingdom

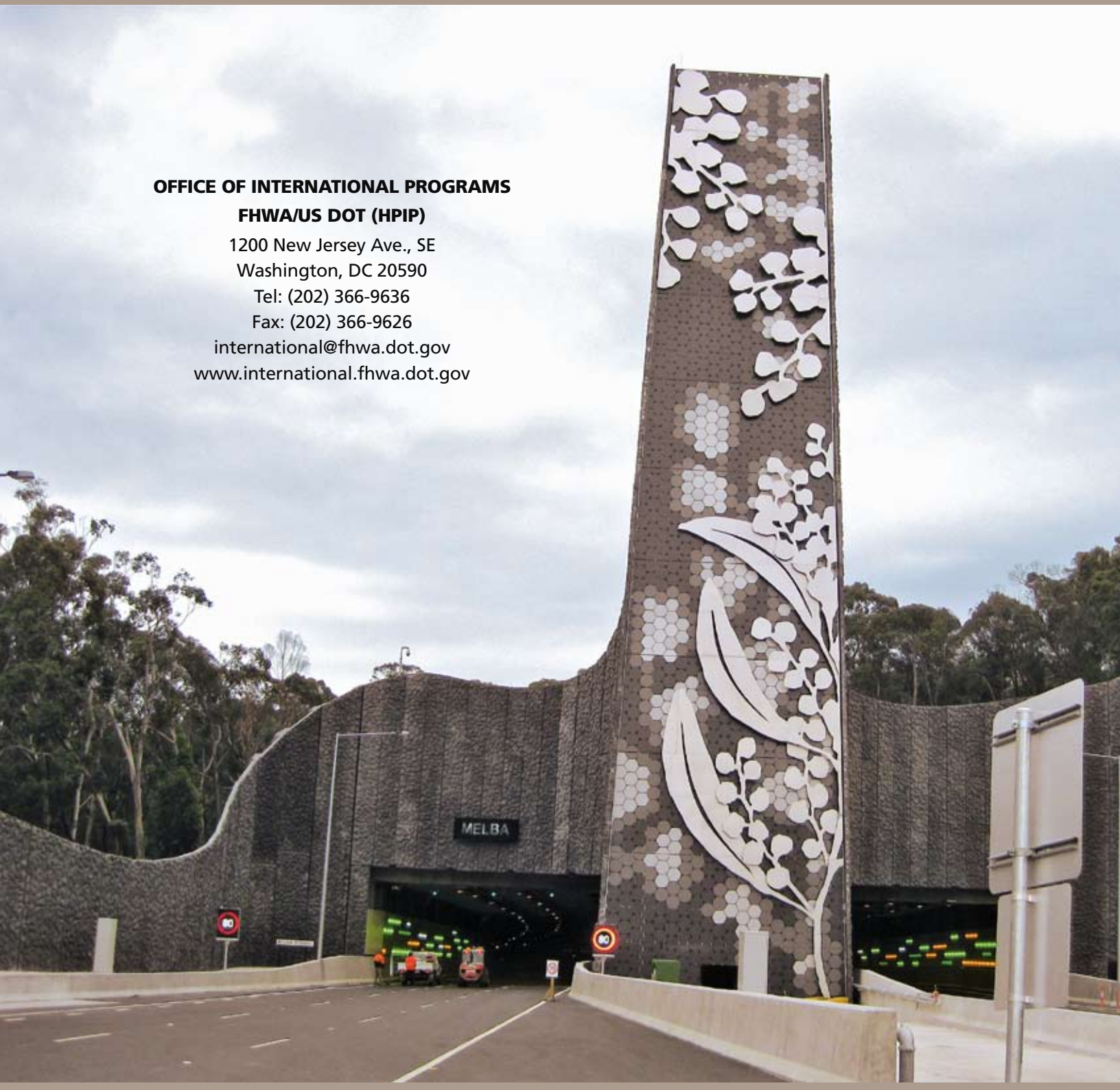
http://hm-treasury.gov.uk/ppp_index.htm
HM Treasury site provides information about PPPs and PFI, including policy documents and project information.

http://www.nao.org.uk/practice_areas/private_finance/index.htm
Site provides information about National Audit Office's inquiries into PFI policies and projects.

http://hm-treasury.gov.uk/ppp_standardised_contracts.htm
HM Treasury site provides information about the standardization of PFI contracts.

http://www.highways.gov.uk/business/14156.aspx
Highways Agency site provides links to the agency's *Network Management Manual* and *Routine and Winter Service Code,* as well as model contract documents.

OFFICE OF INTERNATIONAL PROGRAMS
FHWA/US DOT (HPIP)
1200 New Jersey Ave., SE
Washington, DC 20590
Tel: (202) 366-9636
Fax: (202) 366-9626
international@fhwa.dot.gov
www.international.fhwa.dot.gov



Publication No. FHWA-PL-09-010 **HPIP/03-09(3.5)EW**