

# A Swedish Model for PPP in Infrastructure Investment

## Summary

Summary of a report drawn up by a joint working group from Banverket, VTI,  
and the SRA

## 0. Summary

### 0.1 The commission

Banverket, the Swedish Road Administration (SRA) and the Swedish Road and Transport Research Institute (VTI) have been instructed by the Government to study the legal, financial, and technical prerequisites for Public Private Partnership (PPP) in the road and rail sectors. This commission included presenting a proposal for a Swedish PPP model.

The model should be designed to increase socio-economic efficiency, strengthen competition on the contractors market in Sweden, and achieve an optimal risk distribution between the public and private sectors. The task specifically included the following parts:

- to identify possible needs for new or amended legislation.
- to analyse and compared PPP with other forms of contracting and assess whether external financing can offer efficiency gains that outweigh the higher capital costs.
- to analyse how the distribution of appropriation items 36:2 Road management and state subsidies and 36:4 Track Provision and Sectoral Duties in the sub-item investments in national plans, operation and maintenance, as well as interest and repayment of loans are affected by PPP, and suggest changes if these are deemed necessary.
- to analyse the consequences of the proposed model on appropriations, expenditure ceilings, surplus targets, loan frameworks, and authorisation for ordering, as well as submitting proposals for measures to ensure that budget restrictions remain unchanged.
- to analyse which changes the model could entail for physical planning in accordance with the Road Act and the Railway Construction Act.
- to present proposals on what changes to the procurement process that PPP could mean, such as with respect to the state procurement organisation.
- to make use of international experiences in the analysis.
- to consult with the Swedish Financial Management Authority (ESV).

The task also required the SRA and Banverket to identify and report construction projects that are most suitable for PPP in proposals in the revised national road management plan and national rail provision plan that were to be presented to the Government by 18 June 2008 and in approved county plans for regional transport infrastructure.

### 0.2 Background

The SRA and Banverket set aside significant funds each year to finance the construction of new roads and railways, to upgrade and repair existing roads and railways, and to operate and maintain these.

There are fundamentally two, in some cases three, ways to cover these transport infrastructure costs:

1) tax payers, i.e. appropriations in the Government budget, 2) people that use the facilities, and 3) in some cases land owners that can exploit higher land values as a result of access to better infrastructure.

Most road and rail investments in Sweden are financed using appropriations from the Government budget. Some larger projects are also financed using loans from the National Debt Office. Most costs for these projects are also eventually paid using appropriations.

Charging road users and train operators specific fees is another way to finance transport infrastructure. This exists, at least for roads, to a small extent in Sweden to date. However, all railway companies pay a special train path reservation fee. Passenger transport also pays a special fee which contributes to covering fixed infrastructure costs.

In some situations a new road or rail track could be so beneficial to certain users that these can consider paying in order to ensure the investment is made. These could be forest roads and industrial railway tracks. But, this could also be investments in the public road or rail network that are part financed by stakeholders.

Annual appropriations for infrastructure investments do not fully cover established volumes in long-term planning. Partly as a result of this, the Government is interested in broadening the funding basis for infrastructure investments. PPP could be one fast and effective way to implement this.

### 0.3 Developing forms of contracting

#### 0.3.1 Contract forms in the construction industry

There are basically two contract forms: construction, and design and build contracts. There are in addition several types of design and build contracts. Those most commonly used in construction projects in Sweden is illustrated below. Currently, most are construction contracts, but a move towards performance and life-cycle thinking is taking place. The SRA currently uses all forms of contracting, with the exception of PPP. For railways, PPP has been used for the Arlandabanan.

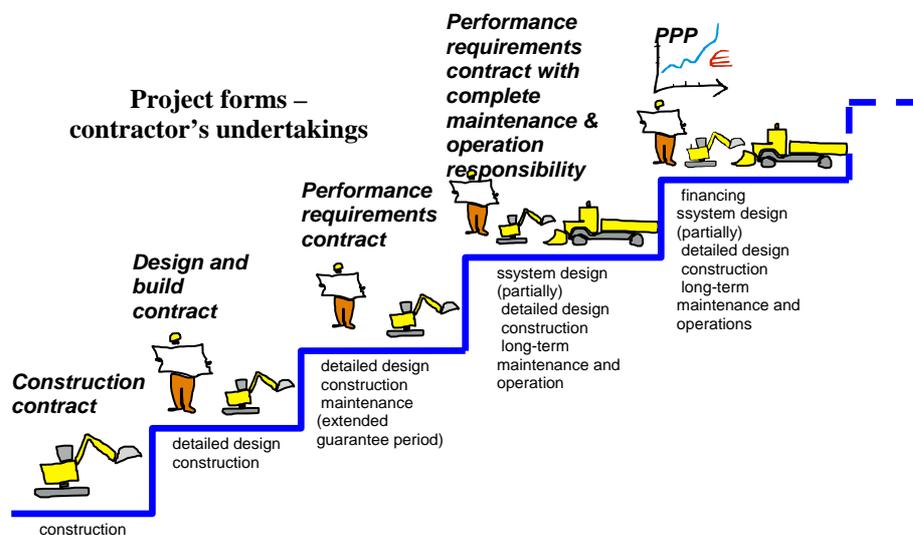


Figure 0.1 PPP – the next logical step in life-cycling thinking.

### **Construction contracts**

The client is responsible for detailed design and engages a contractor for construction work. The contractor can in turn engage subcontractors.

### **Design and build contracts**

The client is responsible for a programme document and engages a contractor that is responsible for both detailed design and construction. Pure design and build contracts are not especially common in the road and rail sectors. The contractors' design obligations are often limited, expressed as "controlled design and build" and "construction contracts with design responsibility".

### **Performance requirements contract**

Largely as "pure" as a design and build contract but with a longer maintenance obligation after opening to traffic, often as an extended guarantee period, which can be seen as a step towards life-cycle thinking.

### **Performance requirements contract with complete maintenance and operation responsibility**

A performance requirements contract where the contractor undertakes the entire process from design (also some system design) and construction to maintenance and operations. This undertaking includes all technical areas. The undertaking for operations and maintenance is for a longer period than a normal performance requirements contract and is not an extended guarantee but a separate undertaking. Contractors provide a type of "service", i.e. to design, build, and then provide infrastructure for an agreed time. Part of the payment is made during the operational period and the size of the payment is dependent on the quality of the "service" provided. If contracted performance requirements are not met, i.e. if the facility does not provide the correct level of accessibility, then deductions are made from payments. A performance requirements contract with complete maintenance and operation responsibility is currently taking place in the Norrortsleden project.

A performance requirements contract with complete maintenance and operation responsibility could be said to have most of the qualities associated with PPP projects but excludes private finance.

### 0.3.2 What is PPP?

PPP is a long-term contract between the public sector (possibly together with other stakeholders) and a private player, which could be a company or a consortium, to provide a public service. The service could be to provide a road or railway, a hospital etc.

The private company is responsible for financing and building the necessary infrastructure and then providing the necessary services for the agreed period, often 20-30 years. The facility is then returned to public ownership.

Payment could be made in several different ways to the project company. One variation is that payments are made at an agreed amount per year during the period of the contract, a payment that is linked to the service supplied and its quality. Another variation is that payment is made as a shadow toll, which means payment is entirely or partly dependent on the number of vehicles that use the road or railway. A third variation is that payment is based on some form of user fee.

Most PPP contacts are currently designed on the accessibility principle, i.e. that payment is mainly based on how accessible the facility is. Historically, developments can be described using the illustration below. Applications where project companies have an income risk by collecting user fees or have payments linked to shadow tolls are less common. The reasons are partly that contractors have problems dealing with these risks, and partly that this type of construction can result in unintentional allocation of traffic flows within or between modes of transport.

One of the main objectives of PPP is to achieve a reasonable risk allocation between the public sector and the project company. Risks should be borne by the party that is in the best position to manage them. Developments have shifted towards a more balanced risk allocation between public and private.

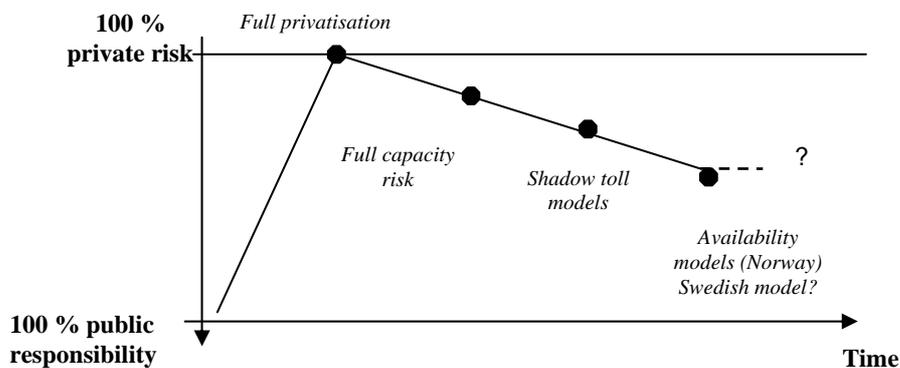


Figure 0.2 Payment principles in relation to risk exposure.

Finally, it should be said that Sweden has already taken several steps towards PPP through performance requirements contracts, and performance requirements contract with complete maintenance and operation responsibility that have been tested in real projects. PPP can be seen as a logical step towards exposing traditional contracting forms to direct competition to increase socio-economic efficiency.

### 0.3.3 Advantages and disadvantages

The following matrix is an attempt to compare advantages and disadvantages of some forms of contract. The matrix does not claim to be complete or exact. The comparison is for major projects and construction contracts are used as a reference.

	weight	CC	DB	PR	PRC	PPP
Risk for changes and additional work	average	0	+	+	++	++
Incentives for swift opening to traffic	high	0	0	0	0	++
Contributes to technology developments	average	0	0	+	++	++
Transaction costs	average	0	0	0	-	-
Capital costs	average	0	0	0	0	-
Contract flexibility	average	0	0	0	-	-
Life-cycle thinking	high	0	0	0	+	++

CC=Construction contract, DB=Design and build contract, PR= Performance requirements contract, PRC=Performance requirements contract with complete maintenance and operation responsibility

The report concludes that PPP – under the correct conditions – can be an effective contract form for road and rail investments.

## 0.4 International experiences

PPP has been implemented in a large number of countries around the world and exists in several different forms. It is particularly interesting to study experiences from completed and ongoing PPP projects in Finland and Norway, two countries in the common Nordic civil works market with conditions similar to Sweden. It should be noted that there are to date few evaluations of PPP projects.

A summary of some international experiences:

- PPP projects should be of an adequate size. The projects should also be viewed as a project portfolio that is realised over time so that the market can see that there is a long-term perspective. An emphasis should be placed on information and marketing.
- The projects must be able to function independently from an operations and maintenance perspective and again be sufficiently large. PPP offers opportunities to test new ideas in operation and maintenance.
- Experiences from Norway and Finland have shown that the procurement should approved final design plans / those that have gained legal force. It is particularly important to allow sufficient time for preparations ahead of the procurement process.
- Projects that are chosen as PPP projects should have as large a degree of freedom and as few restrictions as possible to enable creative solutions from the project company.
- Private financing increases discipline. PPP projects in general contribute to substantially lower costs for changes and additional work (at the same time as PPP results in a higher tender price).
- Experiences show that PPP projects are to a greater extent completed on time, or even ahead of schedule compared with traditional contracts.
- There is a move towards accessibility-based payments.

- In general quality for PPP projects is relatively good. One important reason for this is believed to be the life-cycle cost perspective that has stimulated good initial building quality in order to keep operation and maintenance costs to a minimum. Contract periods should therefore not be too short.
- PPP projects probably result in ripple effects and stimulate development in other forms of contract.
- PPP offers good conditions for healthy cooperation with few conflicts.
- Experiences show several cases where renegotiations were common. Clear contracts are therefore desirable.
- The number of tenderers has been lower for PPP projects than for traditional contract forms. However, it cannot be proven that competition has been poor. Often 3-4 tenderers is enough to ensure good competition.
- PPP with an annual fixed payment where the state charges user fees as part of financing to project companies, i.e. road pricing, has been successfully used in Norway. However, experiences of user fees as part of payments to project companies are mixed.

These international experiences have been taken into account when shaping a Swedish PPP model.

## 0.5 Socio-economic efficiency

### 0.5.1 Transport policy perspectives

One of the goals of PPP is to contribute to an increase in socio-economic efficiency. Transport policy goals and other transport policy principles should be used as a basis for the design of a payment model for PPP projects. For railways, this also means taking into account market access regulations and principles for capacity division and fee settlements for main railway lines in accordance with the Railway Act and railway regulations. The long-term character of PPP contracts means particular care must be taken to avoid the risk of blocking future policy decisions, such as a desire for infrastructure changes motivated by transport policy decisions or changed conditions for their use.

### 0.5.2 Summary analysis of probable effects

There are driving forces in PPP that can lead to an increase in socio-economic efficiency. These include a strong incentive to keep to an agreed timetable and price, competition from international players, more efficient risk allocation, strong third-party control of projects, as well as incentives for new technical solutions. PPP also offers advantages in the form of faster implementation of socio-economically profitable projects, opportunities for new, creative forms of collaboration including co-financing, benchmarking between new and traditional contract forms etc. At the same time, it should be noted that the size of private loan financing and risk premium charged to public funds is set by the market. No clear conclusions can be made, but correctly managed and for the right project, PPP could contribute to increased socio-economic efficiency.

One requirement to allow society to share in this increased efficiency is healthy competition. One can assume that the PPP form of contract itself will not have a

significant impact on competition. If PPP results in the merger of a growing number of minor projects, in order to become large enough, then this will result in fewer Swedish tenderers. On the other hand, larger projects can attract foreign competition, which is suggested in experiences from Norway. Broad marketing of projects and a long-term PPP strategy from the state are then important.

## 0.6 A Swedish PPP model

A PPP project is normally characterised by three principles: performance requirements, long operation and maintenance commitments, and private financing. The SRA has extensive experience of the performance requirements contract with complete maintenance and operation responsibility which involves extensive and systematic performance requirements and operation and maintenance commitments over many years. Banverket's experiences are mainly based on operation and maintenance contracts.

The difference compared with a performance requirements contract with complete maintenance and operation responsibility is primarily in financing. PPP should be seen as a logical step in developments where several steps have already been taken in Sweden. In Norway and Finland, which are part of our common Nordic civil works market, several PPP projects have been procured, built and become operational. That an additional form of contract becomes available for public procurements in Sweden improves opportunities for each project to be completed in an optimal way.

The Norwegian model, in combination with practical experiences from the Norrortsleden project, have been used as a prototype for the Swedish model. Norwegian PPP projects have been implemented on the common Nordic civil works market and experiences from these are therefore particularly relevant.

The SRA, Banverket, and VTI propose that the PPP model to be used in Sweden requires project companies to provide an accessible infrastructure. Market risk and contact with infrastructure users should normally be managed by the SRA and Banverket respectively. This means Banverket is responsible for distributing train positions and other capacity distribution on the railway network. Banverket should also be responsible for charging track fees. In a similar way, the SRA should be responsible for charging special fees irrespective of whether these are for traffic control or have a financing function.

The reason for this recommendation is the risk for suboptimisation in relation to capacity distribution and use of routes if these are divided into a large number of road or rail managers. The criteria for dividing capacity and fees should follow similar principles and be easy to adapt to new transport policy conditions or changes in demand behaviour if the routes are to be used efficiently.

Banverket's responsibility also includes parts that on the road network would be municipally owned. It is also responsible for marshalling yards and terminal infrastructure. Banverket sees the latter area above all as suitable for PPP projects where the project company is responsible for the income risk towards clients.

The report authors believe the leading principles for a Swedish PPP model should be:

- provision of a service
- complete maintenance and operation responsibility and life-cycle perspective

- final design and railway plans as a suitable basis for procurement
- performance requirements for creativity and efficiency
- financing and payment forms for best socio-economic benefits
- cost-efficient risk allocation
- close collaboration to maximise the opportunities in the model
- efficient procurement
- monitoring and evaluation

It should be possible to immediately procure PPP projects. However, there could be a potential for further efficiency gains through an extended analysis of contractual forms, risk allocation, and the division of responsibility in project and railway plans. This should be possible for road projects without delaying the process.

### **Provision of a service**

The project company provides a service in the form of an accessible facility. The SRA and Banverket are however in principle responsible for the entire traffic risk.

### **Complete maintenance and operation responsibility and life-cycle perspective**

Complete maintenance and operation responsibility including design, construction and long operation and maintenance commitments is necessary to offer project companies an opportunity to design a technical solution for a service from a life-cycle perspective. The project's total cost, i.e. the total of capital and transaction costs, design, construction, and operations and maintenance costs, will then be as low as possible, which is important from a socio-economic perspective.

### **Final design and railway plans**

In principle the procurement should take place at as early a stage in the planning process as possible to maximise creative solutions. The report authors propose however that procurement should normally be based on approved final design and railway plans and not earlier. The reason for this is that

- permits and planning processes include substantial uncertainties in terms of cost and time, and an efficient risk allocation would be difficult to achieve
- risk increments and transaction costs could become unnecessarily high
- optimal competition can only be achieved if the client can guarantee that the project will be carried out.

### **Performance requirements for creativity and efficiency**

The client should define requirements in as much detail as possible for the facility and its operation and maintenance in terms of performance. Project companies can then form their service as freely as possible without unnecessary restrictions, which normally encourages cost-efficiency and a low total cost (life-cycle cost) for the project.

Requirements should be roughly divided into:

– **Performance requirements**

Performance requirements concern both the facility and its operation. Performance requirements should be clearly defined with understandable measurement methods and acceptance criteria. Achievement of these is used as a basis for payments. Performance requirements should as far as possible reflect transport policy goals but be transformed to an operative level.

– **Requirements for the facility**

These requirements often result from agreements at an early stage with municipalities, land owners, and other stakeholders and concern limitations to the degree of freedom for the project company. These mainly concern measures that impact a third party. Requirements could also be because SRA/Banverket have stipulated that the project must be completed in accordance with its own regulations.

– **Requirements for residual value**

Requirements for residual value guarantee the lifespan and show the status the client expects the facility to have when it is transferred to the client at the end of the contract period.

### **Financing and payment forms for best socio-economic benefits**

In PPP projects design and construction is usually financed by the project company raising a loan. Loan repayments begin when the facility opens and continue during the operational period using funds paid by the state as payment for the service. This has two important consequences:

- + incentives for an early traffic opening are strong, with the resulting socio-economic benefits
- interest costs are higher compared with state financing.

It would be possible to combine state and private financing. Each project should be carried out to offer the greatest possible socio-economic benefit and the most suitable combination can be decided from case to case. The Swedish PPP model should be so flexible that it can respond to different combinations of state and private financing.

The model should also be so flexible so that it can handle user fees in order to achieve a broader financing base. Constructions with user fees should be designed carefully to stop any undesired impact on traffic control.

In cases where the state is responsible for final financing then payments to the project company should be made as a fixed annual payment. In cases where users are responsible for all or part of the final financing through user fees then the Norwegian model where user fees are paid to the state can serve as a model. In the railway sector established forms of train path reservation and other user fees should be applied when society offers infrastructure improvements.

The SRA has tested a payment principle for the Norrortsleden project and if modified this could be used for PPP projects. This offered a fixed annual payment if the contract requirements were met. The principle has been that it should be cheaper for contractors

to build correctly from the outset rather than taking remedial measures after the facility is open to traffic.

Leading principles for payment models:

- The largest part of payments to project companies is based on accessibility.
- Payments are made as a fixed annual sum. Deductions are made to project companies for insufficient accessibility or failure to meet performance requirements.
- First payments are made when the facility is opened to traffic.
- Incentive structures that reward added value and offer project companies an opportunity for an “upside”, such as environmental or road safety considerations.
- Public authorities normally assume the traffic risk.
- User fees should in suitable cases be paid to the state and not be part of payments to the project company.
- The life-cycle perspective should be profitable.
- Accessibility is assessed differently depending on traffic intensity.
- Equity is repaid last, when all of the other loans have been repaid.

### **Cost-efficient risk allocation**

Risk allocation in a PPP contract should be designed to offer the best cost efficiency by allocating risk to the party that is best suited to managing it. The client is generally better suited to handle risks associated with land acquisition and permits. Examples of commitments and associated risks that normally should be handled by the client include:

- Land acquisition
- Permits
- Archaeology
- Ground pollution
- Exercise of public authority and road/rail management responsibility
- Interface towards central technical systems
- Impact outside administrative areas
- Traffic development
- Amendments to acts, ordinances, regulations, rules and standards etc.

Other risks should in general be borne by the project company.

### **Close collaboration to maximise the model’s possibilities**

The report authors believe that all forms of contract for project implementation benefit when client and contractor cooperate and work together towards common goals. This is a prerequisite for a PPP project. Both client and project company have everything to gain from mutual cooperation, decision paths that are simple and clear and through

information and knowledge being transferred quickly and easily between project participants.

### **Efficient procurement**

One disadvantage with PPP projects that have been completed abroad is that costs for the actual procurement procedure including costs for legal and financial advice have been high. The procurement process has also included several stages and has taken a long time to complete. The report authors believe that Sweden, as in Norway, should use a much simpler procedure that is based on our tradition of standardised contracts and procurement processes. A Swedish PPP model should therefore be designed so that the tender procedure is more efficient than in the UK for example.

The contract format should be simple and clear. Norway has successfully used a special contract format for PPP projects. These experiences suggest that a special contract format for PPP projects should be drawn up, but that this should include characteristics that are similar to standard design and build contracts.

Experiences show that procurement should take place as a negotiated procedure. A limited number of tenderers should be allowed to prequalify.

Contracts should be prepared to facilitate handling changes and additional work and possible renegotiations. One such measure would be to include a list of possible changes and additional works in the enquiry documents to which the tenderer assigns a price.

### **Monitoring and evaluation**

PPP projects should be systematically evaluated as this is a new form of implementation. Own calculations and monitoring should take place as usual. The report authors propose that a central expertise centre for PPP issues is set up to closely monitor and evaluate projects.

### **Criteria for choosing projects**

For criteria for project choice, see also 0.8. The most important instrument for Parliament and the Government to control infrastructure expansion is the long-term planning process. It is therefore natural that projects chosen as PPP ventures should be taken from the Government's approved long-term plans. The motivation to attempt to finance unprofitable projects "on the side" is weakened if the Government commits itself to requirements that a socio-economic evaluation of the project has been carried out and that it is socio-economically profitable. There should however be no obstacles to two or more projects forming a joint PPP project if the client believes that this could be beneficial.

### **Procurement organisation**

International experiences show that the state must have a strong and highly competent client organisation if PPP projects are to be efficient and successful. When procuring PPP projects it is important to ensure that the experience and knowledge at the SRA and Banverket is fully utilised. The SRA's counterpart is responsible for the procurement of

PPP projects in Norway and Finland. VTI believes a central unit should take advantage of experience and efficiently coordinate PPP projects.

### **Stage before PPP procurement**

PPP can be supplemented with other forms of collaborative and financial discussions. These should take place at a stage before direct PPP procurement.

Banverket or the SRA, local authorities and possibly private parties should at this stage sign agreements about

- the function that is to be achieved
- discussion about how these functions can be fulfilled in the most efficient way
- the form for collaboration between client stakeholders
- the distribution of financing responsibility for investments and principles for distributing responsibility for the final financing and additional requests that may be expressed during project implementation or at a later date.
- the procurement form for construction, maintenance and operations of railways; is PPP to be used for the entire planned function or are sections to be procured and operated in some other way?

The SRA and Banverket should sign contracts at an early stage with any traffic parties or other road or rail managers about the special conditions that these can obtain in connection with capacity allocation etc if they contribute to financing with investment subsidies or special fees for using the road or railway.

## **0.7 Consequences**

### **0.7.1 Legal consequences for road investments**

The chosen model involves no major changes to physical planning. The model recommends that final design plans should be used as a basis for PPP implementation, which will include some restrictions and limitations on the freedom of action by the project company. If the project company requires more freedom to develop creative solutions outside the final design plan then Section 26 item 8 in the Road Ordinance would need to be changed or removed. The disadvantages of this are however expected to outweigh the advantages. It can also be noted that final design plans are often drawn up in more detail than legally required, and that there is therefore a potential to create more space for creative solutions compared with the current framework for existing legislation.

As far as the SRA is concerned there is a need to procure PPP projects through negotiation. It believes complicated infrastructure projects could motivate this procedure. Negotiated procurements have been used in the Norwegian model.

### **0.7.2 Legal consequences for railway investments**

Banverket believes it is possible to run most forms of PPP projects without changing existing legislation for railway construction. However, a review of legislation covering planning process management could be necessary for both PPP and other projects to

increase efficiency in these. At the same time there is a need to develop working forms to increase collaboration between different stakeholders, including contractors.

Procurement should not offer any problems. Banverket is part of the utilities sector and can therefore freely use negotiated procurement, the form of procurement that it, along with the SRA, sees as the most appropriate form for PPP ventures. The lengthy contract terms that are usual in PPP contracts could result in some legal procurement problems, e.g. relating to a possible change in partner or renegotiating certain contract conditions.

Railway legislation is equally applicable to the state/Banverket, local authorities or private infrastructure managers. With regard to traffic rights, it should however be noted that each infrastructure manager is responsible for dealing with this issue outside of stipulated EC regulations. For PPP projects that are part of the national railway network, including important terminals and other nodes in the system, contracts should be signed to ensure the same traffic rights rules as for the Banverket network.

As both ownership and administration are important for applicable rules, with rights and obligations that also concern third parties, then the division of responsibility between parties in a PPP project should be carefully considered to ensure public access to the railway network, which is probably best achieved through state ownership and administration following construction.

### 0.7.3 Economic consequences

If the project company is entirely responsible for financing investment costs (i.e. uses its own capital and loans on the capital market) then state budgets are not affected until the facility is opened. The budget balance is charged during the contract period with periodic payments to the project company.

The economic and state-finance impact of PPP contracts is primarily periodisation effects. A transfer from financing of infrastructure investments via the main regulations for loan financing in budget law (loans from the National Debt Office or PPP) means increased appropriations scope today at the price of a reduction in appropriations scope tomorrow.

PPP means increased scope below the cost ceiling at the time of investment compared with appropriations financing.

If the project company is entirely responsible for financing investment costs (i.e. uses loans on the capital market) then state budgets are not impacted until the facility is opened. The budget balance is charged during the contract period with periodic payments to the project company.

It is important to highlight the limitations that approving a PPP project has on future policy discretion for the Government and Parliament. These effects must be clarified for each project, in terms of both liquidity and result. The burden effects for future operational or investment appropriations (depending on how the state rent/repayment is managed in the state budget) should be included as basic input for decision making.

The SRA and Banverket must have authorisation from government bodies in order to assume the responsibilities associated with a PPP contract. This authorisation can be formed in different ways depending on how the government bodies wish to steer PPP projects. The Government can either turn to Parliament for an authorisation that can be decided in terms of value for each individual PPP project. Alternatively a special

framework for ordering authorisation can be allocated in a similar way to when investments are implemented in a traditional way using appropriations. The estimated effect on the future appropriations burden should be included in basic data used for decision making and reported in current planning and monitoring documents (budget proposals, annual reports etc.). In appropriation accounts PPP contracts should preferably be reported under a special appropriations item within appropriations for rail and road management respectively. Alternatively, a division must be made between existing items for operations and maintenance and interest and repayments of loans.

#### 0.7.4 Technical consequences

PPP is expected in the long term to lead to an increase in technical and method developments that will benefit the entire industry. New opportunities are offered to develop higher quality operation and maintenance methods. One should be careful to ensure that contractual incentives actually steer towards the correct quality. Developments should be monitored and performance and residual value requirements developed.

### 0.8 Suitable investment projects

There are arguments both in favour and against setting absolute limits for how large PPP projects should be. Relatively high transaction costs suggest that projects should be large, even if opportunities to keep these costs to a minimum are better in Nordic countries than in many other countries. Large projects offer a potential for large and long contracts and can therefore attract tenderers from other countries. At the same time, large projects can make it difficult for more than a few Swedish companies to participate in procurement.

It is also important to remember that there could be significant learning costs both for clients and contractors. These should reduce over time. When fixed costs for signing contracts are reduced then it could be possible to use the model for smaller projects.

Suggested projects from the SRA and Banverket respectively. VTI has not submitted comments on the projects, neither from the perspective of socio-economic profitability nor their suitability as PPP projects.

#### 0.8.1 Proposals for road construction projects suitable for PPP

A number of road construction projects are listed below that are deemed suitable for procurements and operation in accordance with the Swedish PPP model reported in 0.6. The suggestions have been proposed by the SRA and Banverket respectively.

#### **Criteria**

In order to objectively pinpoint projects that are best suited to PPP, the following criteria have been chosen:

Investment volume:	SEK 1-3 billion
– Planning stage:	Final design plans (legally approved)
– Profitability:	Profitable project (NPV at least 0.5)

- Competition: The project should attract both national and international interest
- Holistic approach: Due regard for life-cycle costs
- Duration of the contract: about 25 years should be permitted, i.e. no reconstruction in the near future
- Final financing: Co-financing or alternatively user fees to finance all or part of the investment.

### Suitable projects for PPP

A short list and a long list have been drawn up.

The short list includes projects that are well in line with established criteria for suitable PPP projects. We believe these projects can be procured and construction started in the near future:

Road	Stretch	Length (km)	NPV	Investment volume (SEK million)	Possible project start	Possibility for co-financing/fees
NH 50	Mjölby–Motala	28	1.4	1 330	Late 2009	Bridge can be financed using fees. Possible co-financing.
E 22	Hurva–Kristianstad	41 (57)	0.7	1 100/1 360	2010	Regional co-financing discussions
E 4	Sundsvall Syd	22	0.9	2 500	2010	Co-financing discussions/fees should be studied
Lv 259	Södertörnsleden	9	0.7	1 300	2009	Co-financing should be studied

The long list comprises, in addition to the above projects, projects that could be procured and operated as PPP, but which do not fulfil all of the criteria equally well.

The following projects are included:

Road	Stretch	Length (km)	NPV	Invest. volume (SEK million)	Possible project start	Possible co-financing/fees
E 22	Kristianstad–Karlshamn	53	0.5	1 430	2010	Regional co-financing discussions
E 22	Karlshamn–Jämjö	69 (74)	0	1 840	2012	Regional co-financing discussions
E 22	Söderköping	17	0.7–1.9	700	2010	Expl. opportunities, co-financing discussions
E 6/45	New link over the Göta älv river (Gothenburg)	1,5	2.2	2 500	2010	Co-financing should be studied
E 20	Alingsås–Vårgårda	25	0.5	1 550	2011	Major interest, co-financing should be studied
E 4	Hjulsta–Häggvik	7	0.2	4 500	2010	Major interest, congestion tax, national interest
E 4	Södertälje–Hallunda	15	No data	3 300	2013	Co-financing should be studied
E 12	Umeå package	28	0–2.1	1 100	2009	Regional co-financing discussions