

MEGAPROJECT Case Study

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Basic Project Information

Project Title	Norra Länken ("the Northern Link")
Location	Stockholm, Sweden. In the northern part of the city centre.
Purpose	The purpose of the project is to create a new link for the E20 motorway from the E4 motorway "Essingeleden" in the north west to Värtan in the north east. This will improve the accessibility for Lidingö and open up for new urban developments in "Norra Djurgårdsstaden". Norra Länken is also a prerequisite for the development of Hagastaden in the north western areas. When finished, it will relieve the traffic load in the city centre [ME].
Scope	The project includes the original plan of "Norra länken" with a connection only between Norrtull-Värtan/Frescati and also an extension of the project to include the overdecking for Hagastaden. The project consists of rock and concrete tunnels and traffic facilities in connection to the tunnels.
Total Project Value	Norrtull – Värtan/Frescati: 10.5 billion SEK (~€ 1,2 billion) Hagastaden: 5.6 billion SEK (~ € 640 million)
Project Status (i.e.. initiation, planning, construction, operation, dismantling)	Construction
Contractual Framework (e.g. fixed price, cost-plus etc.)	In total around 40 contracts. Rock tunneling work have been mostly unit price contracts (UPC) with fixed prices. The other contracts have been of DB character with UPC parts. Around 20 % of the total contract value is represented by incentive programmes.
Relevant Physical Dimensions (e.g. height, width,	The total length of the main tunnels will be 5 km of which 1 km was constructed twenty years ago. In total there will be 11 km of road tunnels, of which 9 km is rock tunnels and 2 km is concrete tunnels.

MEGAPROJECT Internal Stakeholder Identification

(Stakeholders with a direct legally sanctioned relationship with the project)

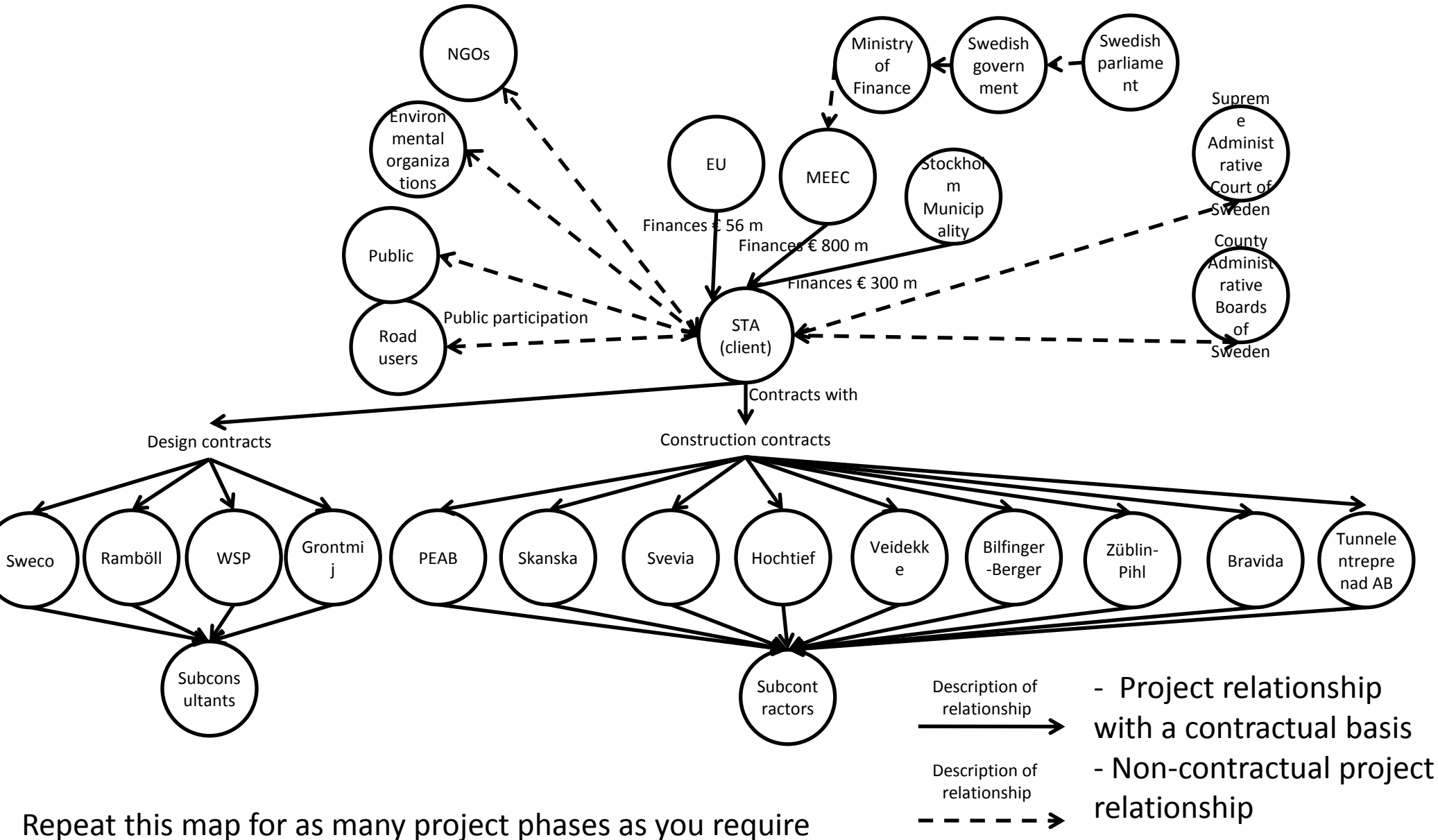
		Stakeholder Category	Case-Study	Comments (e.g. maturity, previous experiences of stakeholders, skills, influence on project)	
Internal	Supply-Side	Client	Swedish Transport Administration (STA)		
		Financiers	Norrtull – Värtan/Frescati 75 %: the Swedish government via the STA. 25 %: Stockholm Municipality. EU funding TEN-T subsidy: ~€ 56 million [TENTNL]	Hagastaden: 80 %: Stockholm Municipality. 20 %: STA	
		Sponsors	EU: TEN-T subsidy, initial estimation~€56 million [TEN-T]		
		Client’s Customers	The public and the road users (however, no fees to use the tunnels)		
		Client’s Owners	Swedish Government, Ministry of Enterprise, Energy and Communications		
		Demand Side)	Principal Contractor	Design: Sweco, Grontmij, WSP, Ramböll	
	First Tier Contractors		Build: Svevia, Hochtief, Bilfinger Berger, Skanska, Züblin-Pihl, PEAB, Veidekke, Oden and Bravida, Tunnelentreprenader AB		Tunneling, installations, safety etc.
	Second Tier Consultants		Considering the number of first tier contractors, probably plenty		

MEGAPROJECT External Stakeholder Identification

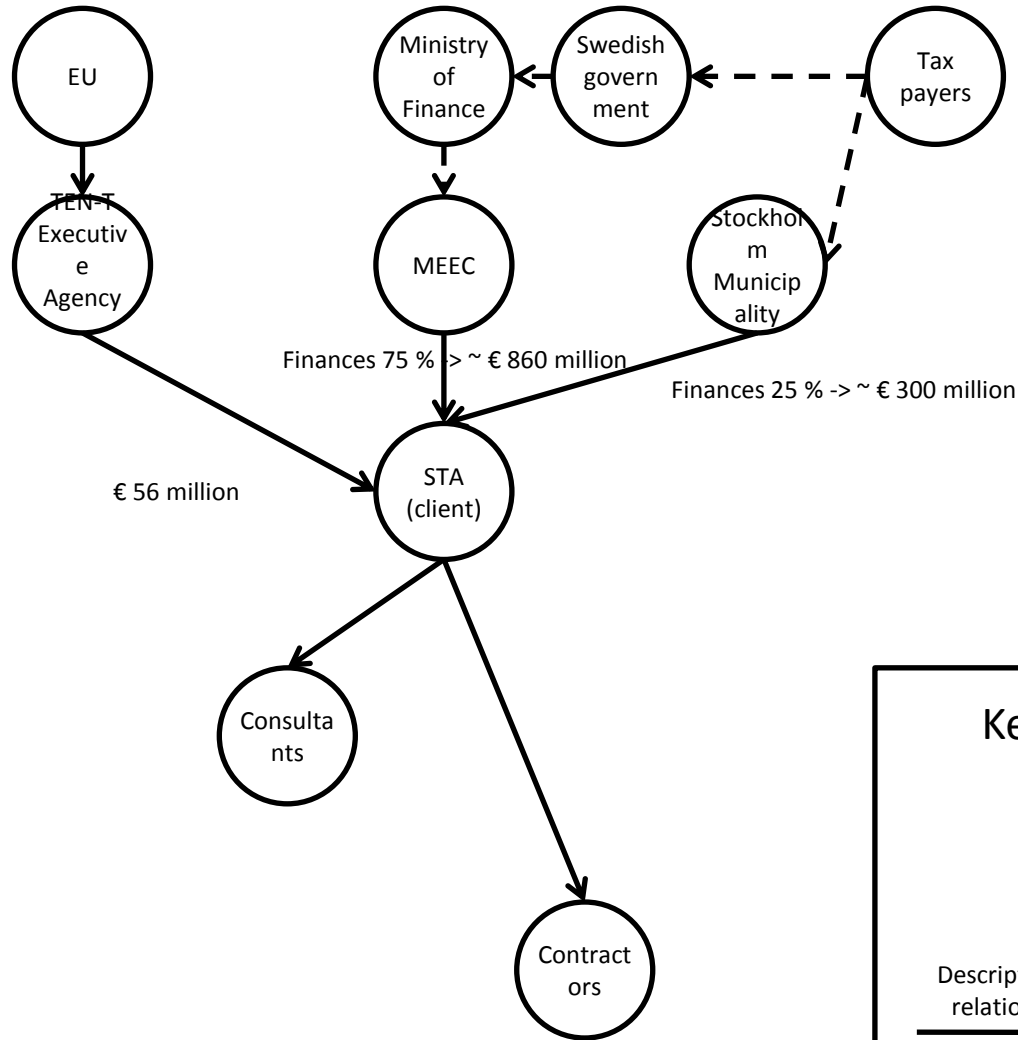
(Stakeholders with a direct interest in the project but with no legal contract)

		Stakeholder Category	Case-Study		Comments (e.g. maturity, previous experiences of stakeholders, skills, influence on project)	
External	Public	Regulatory Agencies	<ul style="list-style-type: none"> Supreme Administrative Court of Sweden County Administrative Boards of Sweden 			
		Local Government	Stockholm Municipality and Solna Municipality			
		National Government	Swedish Government			
		Other internal supply-side categories (please specify)	Category	Case-study		
	Private	Local residents	In Albano, Roslagstull, Vasastan, Östermalm, Gärdet, Hjorthagen			
		Local Landowners				
		Environmentalists	<ul style="list-style-type: none"> “Förbundet för Ekoparken” is an association for the protection of the national city park Naturskyddsföreningen Kungliga Djurgårdsförvaltningen 			
		Conservationists	-			
		Archaeologists	No special archaeological considerations			
		Other External Private stakeholders (please specify)	Category	Casestudy		

MEGAPROJECT Stakeholder Relationship Maps/Overview



MEGAPROJECT Stakeholder Relationship Maps/Financing



Key:

- Project Actor

Description of relationship →

- Project relationship with a contractual basis

Description of relationship - - - - - ➔

- Non-contractual project relationship

Repeat this map for as many project phases as you require

MEGAPROJECT External Stakeholder Attitude Analysis

External Stakeholder	External Stakeholder's Attitude to this Project	External Stakeholder's Influence on project	Impact of Project on External Stakeholder	Phase of Project of Greatest Interest (initiation, planning, construction, operation, dismantling)
European Union	<p>The European Union is interested to establish a trans-European transport network to increase competitiveness and employment within Europe [EUTENT]. "Norra länken" is anticipated to improve intermodal link between sea and land transport [TENTNL].</p> <p>Attitude: +</p>	<p>EU will contributed with an estimated €56 million or around 5 % of total, projected, cost [TENTNL].</p> <p>Influence: +</p>	<p>When finished, the E20 motorway will improve the accessibility in and out of the Värtan harbour for the ferry line to/from Tallinn.</p> <p>Impact: (+)</p>	<p>Initiation, planning, construction</p>
Stockholm Chamber of Commerce	<p>Has interest in its member companies interest and regional growth. Positive to improved infrastructure to increase economic growth.</p> <p>Attitude: ++</p>	<p>The Camber had an important role in the ring road package, "Dennispaketet" [SChamber] [Glemdal]</p> <p>Influence: +</p>	<p>The tunnel will improve the road system and is expected to increase commerce for the member companies</p> <p>Impact: ++</p>	<p>Initiation</p>

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"Förbundet för Ekoparken" (The Association for Ekoparken)	Concerned of the urban national park, Nationalstadsparken. Attitude: --	Appealed against construction in 1997 and 2002. Won in court 1997 which halted the construction ten years and changed construction method. Influence: --	Impact: -	Initiation, planning, construction
Environmental Activists. Consist of several subgroups, including for example "Socialekologisk aktion"[Glemdal]	Opposed the whole ring road project, including "Norra länken". Attitude: --	Several actions, covered in national media, on contractors during preparation works before the appeal in 1997 [Glemdal]. However, probability mixed receptions among the public. Influence: 0	-	Initiation, planning

MEGAPROJECT External Stakeholder Attitude Analysis

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Residents near Valhallavägen	The tunnel will decrease the traffic and consequently lower pollution on Valhallavägen. Attitude: ++	Influence: 0/+	Less pollution, decrease in noise and risk for dangerous goods accidents will increase property values. Impact: ++	Initiation
Residents near Hjorthagen (Djurgården-Lilla Värtans Miljöskyddsförening)	Concerned about the environmental impact in the area (noise, particles) and generally of the National City Park Attitude: --	Influence: 0/-	The EIA projected increased noise and pollutants to residents adjacent to the Värtan connection	Initiation, planning
Motormännen (association for automobile drivers)	Positive to the construction of a ring road for Stockholm. Attitude: +	Limited Influence: (0)	When finished the tunnel will improve the network for the road users Impact: +	Initiation

MEGAPROJECT Project Management

Project Organisation

Client Project Team Size & Structure	In 2012 on average 56 full time employees Belong to "Stora projekt" (big projects) division Project leaders, constructions leaders, support
Contractor Project Team Size and Structure	Around 1100 people at maximum in 2010 [IJE] Around 800 people in 2012 [STAA]
Sub-Contractor Project Team Involvement	N/A

Project Tools and Techniques

Please √ if present, x if absent , leave blank if unknown

Life-Cycle Costing Approaches No [IJE] Project Management Software Yes [IJE] Lessons Learnt Transfers Yes [IJE]

Stakeholder Involvement Yes[VV05] Relationship Management Tools Yes [IJE] Team Building Tools No [IJE]

Building Information Modelling (BIM) No [IJE] Project Knowledge Management Tools Yes [IJE] Competency framework Yes [IJE]

Other Tools and Techniques or More Information

- In some of the design procurements , requirement of all drawings should be presented in 3D based on experiences from the "Södra länken" project [3DP].
- Structured meetings every second month to control current achievements concerning time, costs and specifications

Project Processes

Risk Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> Yes, the software Exonaut Risk is used [IJE]
HR Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> Yes, documentation of competency and plans for replacements [IJE]
Procurement Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> Yes, the software Chaos desktop [IJE]
Integration Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> Yes, current project status presentations and project specifications [IJE]
Scope Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> No information
Time Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> Yes, time planning software
Cost Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> Yes, Agresso invoice system [IJE]
Quality management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> All contracts include quality controls and project specifications concerning quality. Employees of STA have participated during contractors quality assessments [IJE]
Communications Management Processes	Present (<i>describe below</i>) <input type="checkbox"/> Not Present <input type="checkbox"/> No Information <input type="checkbox"/> Yes, a communication plan in order to manage the public and media was established. Meetings a couple of times of year with groups concerned of the national park to discuss how to minimize intrusions etc. [IJE]

MEGAPROJECT Project Performance

Aspects of Performance Concerned with Doing the Project Right

	Original Targets and changes to targets	Actual Achievements Against Targets
Performance relating to time	If only the project in its current form is considered, the tunnels between Norrtull and Värtan should be open for traffic in 2015 [STAFQAQ]. Norrtull to Tomtebodan is planned for 2015 and 2017. Railway tunnel for Värtabanen in 2019 [STATN]. Procurements of all contracts have been planned in[VV05] .	In current form, no major construction delays have been reported. Some delays have been reported in the early stages. However, in 2010 was the project on, or ahead of schedule [IN10] . A breakthrough of finishing a continuous tunnel was accomplished in November 2011 [IN]. Procurement plans and written contracts have been followed mostly[STAE].
Performance relating to cost	Below are some of the cost estimations from different stages in the planning process. However, it should be noted that during the time specifications have been changed. <ul style="list-style-type: none"> • 1991 – Idea study 4 billion SEK [PLU] • 2002 – Pre-study 7 billion SEK [PLU] • 2004 –Investigation 6,5 billion SEK [PLU] • 2007 – Detailed design 11 billion SEK [PLU] • 2009 – Construction 10,5 billion SEK [PLU] • “Norra stationsområdet “ added in 2010: +5,6 billion SEK [STATN] 	Until today limited overruns reported based on the 2009 cost estimation. The failed construction near the Bellevue park before the plans were changed after the legislature change, have been estimated to cost > 300 million SEK [Source needed]. Shortage of labour and construction material led to 15 % more expensive contracts in the early contracts. However, this lead to necessary savings for later procurements.
Performance related to achieving specification	Overdecking of the E4 motorway for the development of “Norra stationsområdet” was added in 2010. Included was also widening of roads to add extra capacity and a tunnel for Värtabanen.	Construction restarted in August 2006. Some changes in insulation method in order to save money. [SOURCE].

Aspects of Performance Concerned with Doing the Right Project

Stakeholder or Stakeholder Grouping	Original Aims of Project Involvement and Changes to these Aims	Achievement of these Aims
"Förbundet för Ekoparken"	Desired to prevent intrusions in the "Royal National City Park" during the construction.	The halting of the project in 1997 resulted in a new plan with less intrusions in the park. STA has constant meetings with the association.
Environmentalists	Opposes the construction of the ring road around Stockholm city centre.	"Södra länken" is completed. The construction of "Norra Länken" has begun and "Förbifart Stockholm" is under planning.

MEGAPROJECT Project Environment

Legal and Regulatory Environment

Legal and Regulatory Project Environment (regionally, nationally and Europe wide)	
Specific Legal and Regulatory events impacting on the project	2009 - Change in the Environmental Code regarding temporary works in National Parks

Political Environment

Political Project Environment	<ul style="list-style-type: none">• 94-2006 Social democratic led government• 2006- Center-right government
Specific Political Events impacting on the project	<ul style="list-style-type: none">• Several environmental organisation actions to stop the project during planning• "Förnyelse i anläggningsbranschen" – Programme to promote innovations in the infrastructure facility sectors. Especially the programme concerning rock works [IJE].

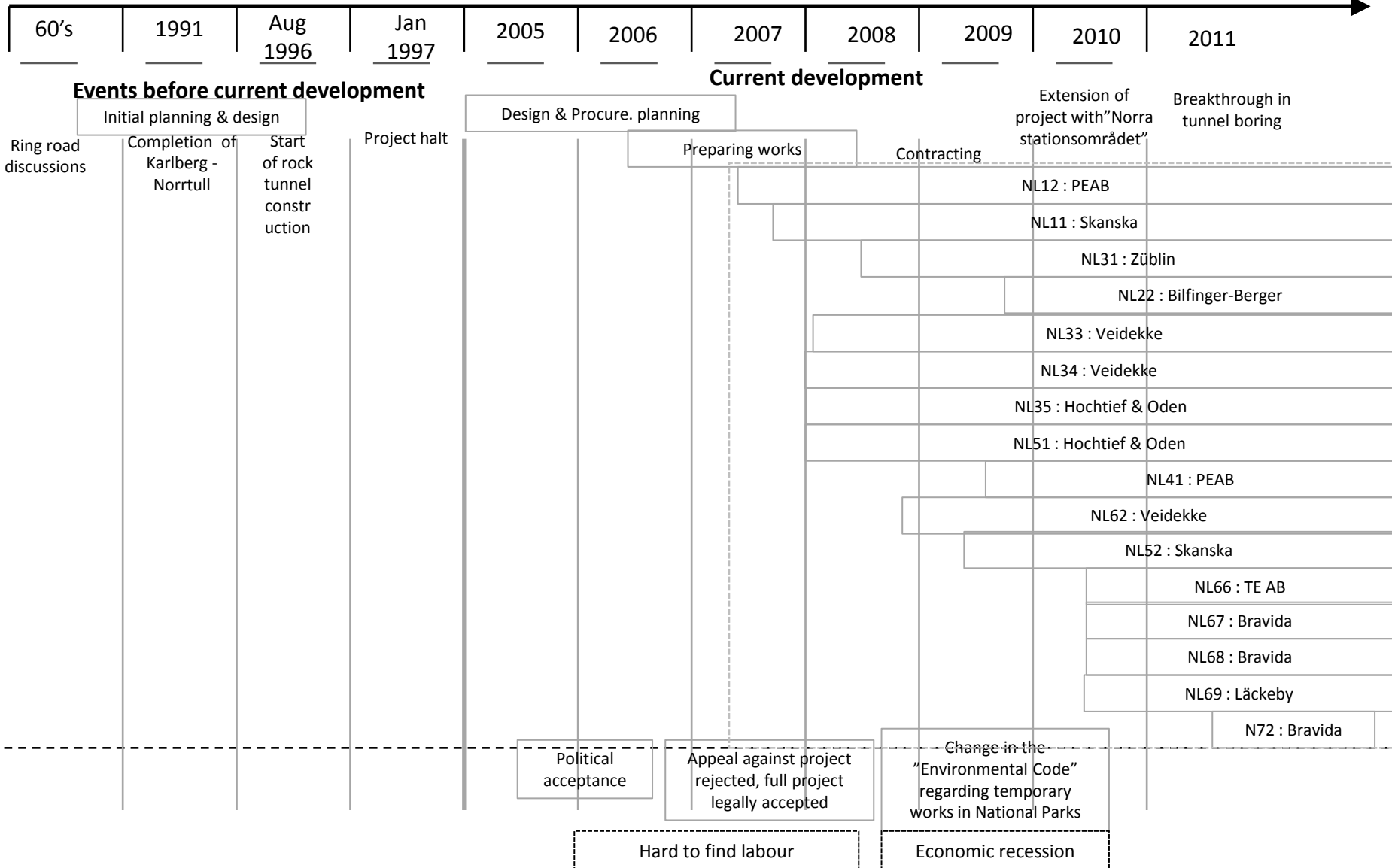
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Economic Environment

Economic Project Environment	2007 -2008 – Economic boom 2008 - 2009 - Sweden affected by the global recession 2009 – present – Economic recovery in Sweden
Specific Economic Events impacting on the project	<ul style="list-style-type: none">• During the economic boom have contractors reported difficulties in finding labour. This resulted in higher than expected bid prices [BIFörs]. During the recession have the contract bids been lower [IJE]. However, this have instead led to higher costs for extra works (ÄTA)

MEGAPROJECT Project Key Events and Activities Timeline

TIME →



Events in project

Events in environment

MEGAPROJECT Project Key Events and Activities Timeline

TIME



Events in project

Planned opening of Norrtull – Värtan/Frescati

Planned pening of Hagastaden's tunnels

Planned opening of the railway tunnels for Värtabanan

Construction of Hagastaden begins

Events in environment

Planned construction start of Förbifart Stockholm

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