OVERVIEW

LOCATION: BERLIN, GERMANY
SCOPE: INTRA-URBAN
TRANSPORT MODE: ROAD/RAIL
PRINCIPAL CONSTRUCTION: TUNNEL
NEW LINK: YES

PRINCIPAL OBJECTIVES

LOCAL/REGIONAL TRANSPORT LINK
INCREASED CAPACITY
TRAVEL TIME SAVINGS
RAILWAY MODERNISATION
CITY CENTRE REDEVELOPMENT
PART OF EU TEN-T NETWORK

PRINCIPAL STAKEHOLDERS

CLIENT/FUNDERS: NATIONAL GOVT/CITY GOVT/ DEUTSCHE BAHN AG
'PLANNING TEAM': EMCH + BERGER INGENIEURE UND PLANER, SCHÜßLER-PLAN INGENIEURBERATUNG, DE-CONSULT

PLANNING AND IMPLEMENTATION

PLANNING START DATE: 07/1992
CONSTRUCTION START DATE: 12/1995
OPERATION START DATE: 05/2006
MONTHS IN PLANNING: 41
MONTHS IN CONSTRUCTION: 125
PROJECT COMPLETED: 48 MONTHS BEHIND SCHEDULE

COSTS (IN 2010 USD)

PREDICTED COST: 9.73BN (RAIL)
ACTUAL COST: 9.04BN (RAIL)

PROJECT COMPLETED:
7% UNDER BUDGET
FUNDING: 100% PUBLIC

INFRASTRUCTURE QUANTITIES:

LENGTH: 6.4KM (TOTAL)
LENGTH: 2.9KM (ROAD)
LENGTH: 3.5KM (RAIL)
COST PER KM (2010 USD): 2.58BN (RAIL)

PATRONAGE

FORECAST TRAFFIC:
251 TRAINS PER DAY (1992 FOR 2010)
60,000 VPD (1994) – 50,000 VPD (2006)
ACTUAL TRAFFIC:
288 TRAINS PER DAY (2007)
44,000 VPD (2007)

INTRODUCTION

The Tiergarten Tunnel provides a road and rail link through central Berlin. The road is part of a federal long distance road and the rail link is part of the EU TEN-T Network, connecting long distance lines via the new *Hauptbahnhof* (Central Station).

The project originally included a city railway line (still in planning) and the U55 metro line (which opened in 2009). It was conceived in response to the reunification of Germany and the choice of Berlin as capital city, and is associated with subsequent redevelopment of city centre sites around the *Hauptbahnhof* and Potsdamer Platz.

BACKGROUND

The main objective of the project was to improve the city's transport infrastructure to cope with expected increases in traffic volumes, and to integrate the railway into the national and European network. For the city government, it also provided an opportunity to reduce traffic and improve the urban environment in the city centre. Deutsche Bahn aimed to improve journey times and reliability.

Reflecting Berlin's new status as the German capital, the city government and Deutsche Reisebahn (the East German rail provider, later absorbed into Deutsche Bahn AG (DB AG)) were asked by the transport ministry to submit a joint plan for transport facilities in the central area. A team representing all three bodies was set up to develop the plan. The plan is based around a 'mushroom railway' concept in which services converge at the *Hauptbahnhof.*

The federal railway authority, *Eisenbahn-Bundesamt* (EBA), was made responsible for planning approval for the entire project, a controversial decision intended to ensure the different elements were integrated. However, the city rail and metro lines were subsequently postponed due to funding constraints.

Public consultation was a feature of both early land use plans and the formal planning approval procedure. However, the project was subject to substantial public opposition: an alliance of 50 protest groups, concerned about the general approach to transport planning and adverse environmental impacts, appealed to the Federal Administrative Court. Its appeal was dismissed for formal reasons.

TIMELINE

CONTEXT: 1990: REUNIFICATION OF GERMANY

CONTEXT: 1991: BERLIN *HAUPTBAHNHOF* INCLUDED IN LIST OF GERMAN UNITY TRANSPORT PROJECTS

CONTEXT: 1991: BERLIN BECOMES CAPITAL CITY

CONCEPTION: 1992 (JUL): FEDERAL TRANSPORT INFRASTRUCTURE PLAN: GOVERNMENT ASKS CITY GOVERNMENT AND DEUTSCHE REISEBAHN TO SUBMIT JOINT TRANSPORT PLAN

CONTROVERSY: 1992: CONSULTATION ON LAND USE PLAN: 1,300 OBJECTIONS TO ROAD TUNNEL

INCEPTION: 1993: JOINT PLANNING TEAM SET UP

DELAY: 1993: FUNDING SHORTAGE: CITY GOVERNMENT POSTPONES CITY RAILWAY LINE

CONTROVERSY: 1993: ALLIANCE OF PROTEST GROUPS, ANTI-TUNNEL GMBH, FORMED: 19,000 OBJECTIONS TO TRAFFIC PLANS

INCEPTION: 1994: EBA SET UP, MADE RESPONSIBLE FOR PLAN APPROVALS

CONTROVERSY: 1994: ANTI-TUNNEL GMBH ISSUE STATEMENT

INCEPTION: 1995: PLAN APPROVAL DECISION

CONSTRUCTION: 1995 (DEC): CONSTRUCTION STARTS (ROAD AND RAIL TUNNELS)

CONTROVERSY: 1996: ANTI-TUNNEL GMBH LEGAL ACTION DISMISSED

CONSTRUCTION: 1996: SECTION OF RIVERBED DIVERTED

DELAY: 1997: SECTION OF TUNNEL FLOODS

INCEPTION: 1997: FEDERAL GOVERNMENT & DB AG AGREE FUNDING FOR RAIL TUNNEL

INCEPTION: 1998: EU PROVIDES EUR 0.075BN FOR RAIL TUNNEL

CONSTRUCTION: 2000: CONSTRUCTION STARTS (RAILWAY FLYOVER)

DELIVERY: 2002: FORECAST OPENING (ROAD AND RAIL TUNNELS)

INCEPTION: 2005: CITY GOVERNMENT AGREES TO FUND CITY RAIL LINE

DELIVERY: 2006 (MAY): ROAD AND RAIL TUNNELS OPENED

DELIVERY: 2009: FIRST SECTION OF U55 METRO LINE OPENS

CHARACTERISTICS

The cost of the *Knoten Berlin* section ('transport node Berlin') was estimated at EUR 5.113bn in 1991 (USD 9.73bn at 2010 prices)[i]. The final cost of the *Knoten Berlin* was EUR 6.33bn in 2006 (slightly lower when adjusted for inflation, USD 9.04bn at 2009 prices).

This figure is believed to represent the majority of the costs, but excludes the road tunnel, for which estimated costs are not available (the final cost was EUR 0.39bn in 2006). It includes the north-south railway connection (a final cost of EUR 3.1bn in 2006, against an estimate of EUR 2bn in 1995).

Although the inter-agency planning team was responsible for co-ordinating the project as a whole, the city government oversaw the construction of the road tunnel and DB AG the rail connection and stations. There was no main contractor, with separate contracts let for specific parts of the project. In total, 43 contractors worked on the rail project, 27 on the road. The road and rail tunnels were both built in five sections.

TIMELINE ISSUES

The relatively short inception phase reflects the mood of political and economic optimism surrounding Berlin and its potential development at the time. However, funding constraints delayed progress on the city rail and metro lines for many years.

The project was technically very complex, involving a range of tunnelling methods, some used under urban conditions for the first time. Diversion of the Spree River bed and groundwater monitoring was required because of high groundwater levels, and one section of tunnel flooded, causing further delays.

FUNDING

Federal government funding for a rail connection was committed in the 1992 Federal Transport Infrastructure Plan and guaranteed by a law obliging the government to finance the expansion of the rail network. In 1997, the federal government agreed to provide EUR 1.7bn and DB AG provided EUR 0.5bn from its own resources. In 1998, the EU agreed a grant of EUR 0.075bn for the rail tunnel.

The financing of the road tunnel, city rail and metro links was shared by the federal and city governments.

[i] Costs have been converted to USD at 2010 prices, using historic inflation rates and current exchange rates, to allow comparison between projects.