

OVERVIEW

LOCATION: ROTTERDAM REGION, THE NETHERLANDS
SCOPE: INTRA-URBAN
TRANSPORT MODE: METRO
PRINCIPAL CONSTRUCTION: VIADUCT/TUNNEL
NEW LINK: YES

PRINCIPAL OBJECTIVES

LOCAL TRANSPORT LINK
 ACCESSIBILITY
 ALTERNATIVE TO CAR
 ARCHITECTURAL QUALITY

PRINCIPAL STAKEHOLDERS

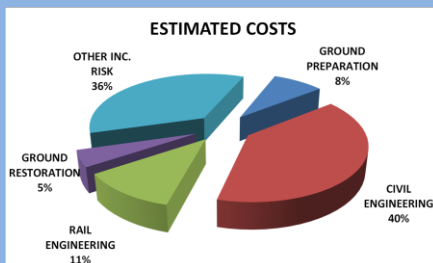
CLIENT: REGIONAL GOVT./ROTTERDAMSE ELEKTRISCHE TRAM (RET)
CONSTRUCTION: GEMEENTEWERKEN (RAIL); RIJKSWATERSTAAT (TUNNEL)
FUNDING: MINISTRY OF TRANSPORT

PLANNING AND IMPLEMENTATION

APPROX. PLANNING START DATE: 1993
CONSTRUCTION START DATE: 1997
OPERATION START DATE: 11/2002
MONTHS IN PLANNING: 53
MONTHS IN CONSTRUCTION: 60
PROJECT COMPLETED: ON SCHEDULE

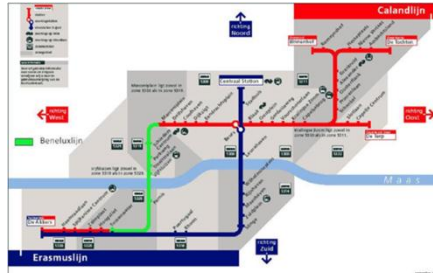
COSTS (IN 2010 USD)

PREDICTED COST: 1.27BN
ACTUAL COST: 0.97BN
PROJECT COMPLETED: 24% UNDER BUDGET
FUNDING: 100% PUBLIC



INFRASTRUCTURE QUANTITIES

LENGTH: 11.5KM
LENGTH IN VIADUCT: 6.6KM
LENGTH IN LAND TUNNEL: 3.2KM
LENGTH IN RIVER TUNNEL: 1.7KM
COST PER KM (2010 USD): 0.08BN



INTRODUCTION

Beneluxlijn is an 11.5km extension of the Rotterdam metro network, connecting the two existing metro lines and providing a transport link between Rotterdam and the bordering municipalities of Schiedam and Spijkenisse. It opened in 2002 and now forms part of the Calandlijn on the metro network. Through the related Beneluxtunnel, the project provides an additional crossing of the River Nieuwe Maas.

The line has six stations, each designed by a different architect. Schiedam Centrum station connects to the railway line, Vijfsluizen to bus and park-and-ride services, and Tussenwater to the Erasmuslijn. From Tussenwater, the two lines continue on the same route.

BACKGROUND

Plans to extend the metro network in Rotterdam were made soon after the opening of the east-west Calandlijn in 1982. At the end of the 1980s a feasibility study was conducted, assessing three proposed extension projects. This (3M) report proposed a south-eastern line in the direction of Ridderkerk, a line to the north, which has now been completed as the RandstadRail project, and the Beneluxlijn, extending the metro network to the east. The lines were perceived to be in this order of importance. However, although the Beneluxlijn was perceived as the least important, it was the first to be built.

Two contextual events influenced the development of the project. The first was the decision to build a second river crossing to relieve severe road congestion on the Beneluxtunnel connecting the area north of the river with the harbour to the south. The state government decided to build a second tunnel at the beginning of the 1990s. The municipality of Rotterdam supported the proposal, but the neighbouring municipalities of Schiedam and Vlaardingen were strongly opposed to it, fearing that it would attract extra traffic through their cities. The deadlock was resolved by the inclusion of a metro tunnel and a bicycle tunnel in addition to the road tunnel. This compromise made the provision of a metro connection through the tunnel inevitable.

The second event was the municipality’s ‘Tour de Force’ programme, which aimed at maximizing Rotterdam’s influence upon central government’s annual budgeting for major infrastructure projects, by planning projects ahead of the budgeting process.

TIMELINE

CONTEXT: 1967: FIRST BENELUXTUNNEL OPENS

CONTEXT: 1982: CALANDLIJN OPENS

CONCEPTION: 1992: 3M FEASIBILITY STUDY PROPOSES THREE EXTENSIONS TO METRO NETWORK

CONTEXT: 1993: GOVERNMENT DECIDES TO BUILD SECOND BENELUXTUNNEL

INCEPTION: 1993: DECISION MAKING PROCEDURE BEGINS FOR BENELUXLIJN

CONSTRUCTION: 1996: GROUND PREPARATION STARTS

INCEPTION: 1997: TRANSPORT MINISTRY GIVES FUNDING DEGREE OF NLG 1.4BN (EXCLUDING BENELUXTUNNEL)

CONSTRUCTION: 1997: CONSTRUCTION OF CIVIL STRUCTURES AND STATIONS BEGINS

CONSTRUCTION: 1999: GROUND RESTORATION BEGINS. ELECTRICAL WIRING AND RAILS PUT IN PLACE

DELIVERY: 2002: BENELUXLIJN AND BENELUXTUNNEL COMPLETED AND OPENED

CHARACTERISTICS

The estimated cost (in Dutch guilders, at 1998 price levels) was NLG 1.645bn (USD 1.27bn at 2010 pricesⁱ), of which 40% was for civil engineering works, 11% for rail engineering, 8% for ground preparation and 5% for restoring ground following construction. Other costs, including additional engineering features and a risk reservation, accounted for 36% of the total. The final cost was only NLG 1.25bn (USD 0.97bn at 2010 prices), 24% less than the estimate.

Two public sector organisations were responsible for construction: *Gemeentewerken* for the rail track, and *Rijkswaterstaat* for the tunnel section.

Specific measures were adopted to mitigate the impact of noise from the metro line, including the use of noise-absorbing materials on adjacent footpaths, noise-absorbing plates between the tracks and, on some sections of the route, sound screens.

TIMELINE ISSUES

The project experienced no significant delays or problems and was delivered on schedule.

FUNDING

As with most infrastructure projects in the Netherlands, the project was financed primarily (95%) by central government funding, through its Infrastructure Fund (*Meerjarenprogramma Infrastructuur en Transport (MIT)*). The Fund is financed primarily from the budget of the Ministry of Transport and Water Management and the Fund for Economic Structure Enhancement (FES), which derives from the profits from the sale of natural gas and shares owned by the state. The Infrastructure Fund had a planned budget in 2007 of about EUR 7bn.

The funding was based on a lump sum agreement in which any unspent funds could be kept by the municipality and invested in other infrastructure projects. (In this case, the unspent funds were used as a contribution to the financing of the RandstadRail). The remaining funding (5%) for the Beneluxlijn came from local public sources.

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