CASE STUDY

DOCKLANDS LIGHT RAILWAY

Docklands Light Railway (DLR) is an automated light metro system, opened in 1987, which serves the Docklands and surrounding areas of east London. Substantial growth in and the regeneration of the Docklands area, now a major financial centre and home to the 2012 London Olympics, has led to continued expansion of the network and of the capacity of the train services. Over 110 million trips were made on DLR in 2014.

Early involvement in materials and engineering (1990s)

RSK has had involvement with Docklands Light Railway since the first stage extensions including platform lengthening on the original Tower Gateway to Island Gardens route and Bank extension in the early 1990s through the provision of construction quality assurance services to London Docklands Development Corporation and its consulting engineers, Maunsell.

Our team
• provided specialist materials engineering advice
• undertook structural investigations in support of the detailed design work
• provided vendor inspection at a series of off-site fabrication plants
• ran the project’s programme of materials sampling and testing from our on-site, UKAS-accredited materials testing laboratory.

In 1997/8, RSK provided specialist materials and construction technology advice for the concrete tunnel lining system to the tunnelling contractor on the Lewisham extension.

Environmental assessment (late 1990s to early 2000s)

In 1999–2004, RSK undertook several ecological studies on the DLR including
• extended phase 1 habitat surveys
• animal walkover surveys at proposed construction compounds and station platform extension sites
• surveys associated with developments at the Beckton depot
• bat surveys of an existing viaduct.

RSK undertook ecological baseline surveys for the environmental impact assessment of the Canning Town to Woolwich North King George V station via London City Airport line and Woolwich rail crossing extension to Woolwich Arsenal. We subsequently compiled the ecology chapter for the environmental statement. A number of staff now employed by RSK have previously worked on DLR, with involvement in an environmental appraisal of options to upgrade 13 stations, and the archaeological evaluation of the impact of the Island Gardens to Lewisham extension.

Utilities appraisal and ground investigation (mid to late 2000s)

In 2008, Transport for London commissioned RSK to undertake a drainage and utilities appraisal for the proposed redevelopment of three separate sites associated with the DLR station at Woolwich Arsenal. The sites comprised two over-station developments and surplus land over the tunnel entrance. The desk study appraisal involved the gathering and collation of services records and associated consultation with the drainage authority, statutory undertakers and other relevant bodies to ascertain the existing location and capacity of utilities and scope for additional connections.

In 2010, Structural Soils (an RSK company) undertook ground investigations at Beckton, Pudding Lane and Royal Albert stations as part of the three-car station upgrade programme.

Project study: three-car upgrade at stations between Custom House and Beckton (2008–2011)

DLR sought to increase the capacity of its network by converting from a two- to a three-car operation. This required substantial civil, mechanical and electrical works to many of the stations to accommodate the 50% increase in train length. RSK provided CDMC support to DLR for this £20-million project, which included the extension of DLR stations between Custom House and Beckton, and adaptation of power, signalling and communication systems. RSK’s role ensured that all hazards were identified at design stage and either mitigated or specifically controlled in the tender.
Safety, health and environmental (SHE) support (late 2000s to date)

Between 2008 and 2012, RSK provided high-level SHE support to DLR’s head of safety and security, with services covering:

- Construction (Design and Management) Regulations (CDM) compliance advice with procedural developments/revolutions
- Provision of a project safety manager
- Training support and course development for project teams
- Management systems advice and development of construction procedures
- Behavioural inspections and compliance monitoring/auditing
- Ensuring contractor competency and safe methods of works on projects including extension of the DLR network (including Stratford Olympic extension and North London line conversion, Woolwich Arsenal under-Thames connections and three-car cross-network enhancements)
- Development of SHE data collection and reporting including key performance indicators (our health and safety incident reporting templates are still used by DLR)
- Provision of CDM coordinators (CDMC) and technical professionals
- Reviews and performance audits of principal contractors engaged in projects totalling in excess of £800 million.

<table>
<thead>
<tr>
<th>Lines</th>
<th>Capacity</th>
<th>Construction</th>
<th>Opened</th>
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</thead>
<tbody>
<tr>
<td>Canning Town–London City Airport–King George V</td>
<td>Two car</td>
<td>2004–2005</td>
<td>2005</td>
</tr>
<tr>
<td>Existing network lines</td>
<td>Three-car upgrade</td>
<td>2007–2011</td>
<td>2011</td>
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Summary of the development of DLR

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