

# Executive summary

## Introduction

In March 2011, the ORR asked the Independent Reporter (Part C) (Nichols consortium) (the Reporter) to undertake a review under Part C Reporter Mandate CN013 'Quality Review of Edinburgh Waverley Steps and Bletchley Remodelling Projects.

The mandate required the Reporter to review the Edinburgh Waverley Steps Project to check whether it has been designed, specified, and installed to the appropriate quality and therefore delivering minimum whole life costs. The definition of whole life costs for this quality review are the total costs of acquisition (including consultancy, design and construction and equipment), and the costs of operating and maintaining the assets over its whole life through to its disposal<sup>1</sup>.

## Background

In November and December 2009, two quality reviews were undertaken by Halcrow Group Limited and Nichols Reporters on the North London Line (CH02) and Glasgow-Kilmarnock Line (CN03) respectively. The methodology adopted for the quality review of the Edinburgh Waverley Steps Project is consistent with and builds on these quality reviews. We have also built on the findings and recommendations from the previous quality reviews.

The objectives of the Edinburgh Waverley Steps Project are to improve quality of access and interchanges for all users of the Waverley Steps and to provide a Disability Discrimination Act (DDA) compliant route between Edinburgh Waverley Station and Princes Street.

The Edinburgh Waverley Steps Project was originally part of Edinburgh Waverley Infrastructure Enhancement (Phase 1) Project, which was funded by Transport Scotland. Under this project, the proposal was developed to improve access to Edinburgh Waverley Station by installing escalators and lifts, which were to be contained within the area of the existing Waverley Steps. In February 2008, the main works within the wider infrastructure project were completed at GRIP Stage 7.

In November 2009, Investment Panel gave authority to progress the Edinburgh Waverley Steps Project to GRIP Stages 6 to 8 with an increase in Anticipated Final Cost (AFC) of £4.186m, as well as transfer funding to Network Rail's Regulatory Asset Base (RAB). The Edinburgh Waverley Steps Project has required statutory approval through the Transport and Work (Scotland) Act (TAWS). This has resulted in significant re-design of the proposal to

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<sup>1</sup> OGC definition

address stakeholder objections post GRIP Stage 5. The TAWS Order came into effect in June 2010.

## Objectives of review

The objectives of the quality review are to:

- understand the scope, objectives and current position of the Edinburgh Waverley Steps Project
- understand the relevant project quality assurance processes that are deployed on the project
- understand the key project roles that are responsible for delivering the end-product quality, and to assess their effectiveness
- review one specific asset category in terms of providing expert engineering view of whether the project is demonstrating best practice in the design and delivery of the asset work-scope; lifts and escalators were selected for detailed review.

The mandate required a professional opinion as to whether the processes in place together with the asset category that has been reviewed in more detail represents a minimum life cycle cost approach and to highlight any examples of a minimum first cost approach.

## Approach

We applied the following tests in our assessment of whether the project has been designed, specified, and installed to the appropriate quality and therefore delivering minimum whole life cycle costs:

- the degree of compliance with Network Rail's GRIP<sup>2</sup> standard is an indicator of good practice and efficient delivery
- the project's approach to the principles of quality management impacts on how efficiently the project is being delivered, with quality defined under the following categories of quality planning, quality assurance, quality control and continuous improvement
- a minimum whole life cost approach is to deliver the specified project quality whilst minimising the total costs of acquisition (including consultancy, design and construction and equipment), and the costs of operating and maintaining the assets over its whole life through to its disposal
- sufficient rigour and control is applied to the installation and construction of the assets.

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<sup>2</sup> Governance to Railway Investment Projects – NR/L1/IN1/PMP/GRIP/ Level 1 and 2, mandatory 3 March 2011

In undertaking the review, we conducted interviews with the Network Rail project staff and reviewed key project documents.

## Key findings

- Network Rail has revised its asset management policies and strategies in response to the recommendations from the quality reviews of the Glasgow-Kilmarnock Line and North London Line. However, there is little evidence that the recommendations from the quality reviews have been fully addressed. The updated Asset Management Strategy<sup>3</sup> confirms that Network Rail may not be able to demonstrate that its decisions are optimised to deliver the minimum whole life cost and that its existing policies are based to a significant extent on traditional practices and engineering. Furthermore, there is no evidence that the project teams have the necessary templates to apply a consistent approach to assessing whole life costs.
- The Edinburgh Waverley Steps Project was at GRIP Stage 5 in November 2009 and too advanced in the design process to benefit from any of the changes in asset management policy, guidance and GRIP refresh.
- The Edinburgh Waverley Steps Project was originally part a wider infrastructure project, the Edinburgh Waverley Infrastructure Enhancement (Phase 1), which was funded by Transport Scotland was at GRIP Stage 6 to 8 in November 2005. The project experienced significant delays due to stakeholder objections and in processing the TAWS order. The TAWS order came into effect in June 2010. The Edinburgh Waverley Steps Project is currently at GRIP Stage 6 with the contract awarded for the design and build of the works. The project is scheduled for Practical Completion in July 2012.
- The Edinburgh Waverley Steps Project was found to have a low compliance with Network Rail's quality assurance processes. The evidence for this included:
  - the resolution of statutory planning approvals that should have been completed at GRIP Stages 3 and 4 continued into GRIP Stage 5; this resulted in significant re-design, time delay and additional cost
  - the Project Management Plan (PMP) has not been kept up to date
  - some of the key GRIP Stage 5 product documents were not available for review
  - there is no evidence of a site quality plan that identified key interface responsibilities between the contractors, station operations and the project team.
- There is no evidence of the scheme design options considered before GRIP Stage 5. Therefore, the process adopted for achieving the minimum whole life cost could not be verified.

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<sup>3</sup> Network Rail Asset Management Strategy, February 2011.

- The processing of the TAWS Order and addressing objector concerns has strongly influenced the design of the Edinburgh Waverley Steps scheme.
- The engineering design for lifts and escalators is being delivered in accordance with traditional practices and engineering and is in keeping with the Network Rail's special technical requirements for lifts and escalators. However, Network Rail's specification for lifts and escalators is more onerous and robust than those applied in other commercial environments. The specification prioritises improved safety, availability and reliability to meet the high volumes of public usage, long life requirements and limited opportunities for routine maintenance and repair. However, there is no evidence that this delivers minimum whole life cost.
- The asset management of Network Rail's lift and escalators is influenced by the requirement to manage the entire stock of circa 1,000 lifts and escalators units. This requirement determines the choice of proprietary products with respect to maintenance, repairs and the availability of spares parts.
- The high profile site location and environs have been principal factors in determining the design and the requirements for high quality architectural finishes and detailing, and therefore affecting whole life costs.

## Examples of good practice

There are a number of examples of good practice, which positively affect the whole life cycle costs of the assets. The examples identified in the report include:

### Overall solution

- The design process gave consideration to life cycle costs in future inspections and maintenance. A maintenance strategy was produced, which identified a six-monthly cleaning cycle and the design included designated roof access points for such operations.
- Stainless steel cladding was rejected in favour of "Trespa" cladding because of the potential risk of train brake dust reacting with the stainless steel, which could cause problems with maintenance and appearance of the assets. The proprietary cladding solution satisfied the durability requirements, facilitated a significant capital cost saving and reduced maintenance requirements compared to stainless steel.
- The design of a drainage scheme maintained flow rates within those of existing levels within the station. This avoided the need for introducing attenuation measures, which had the potential for increasing maintenance operational requirements and costs.

- Network Rail engaged the Edinburgh Waverley Station Manager to review the proposed engineering solution and assess its acceptability in terms of the maintenance and operational aspects.
- A peer review of the proposed scheme was carried out by an independent Network Rail team.

### **Lifts and escalators**

- Network Rail's specification of a hydraulic lift-type allows the plant room to be located below the lift shaft. This ensures ease and speed of access for maintenance and keeps it clear from passenger routes. This minimises the impact and disruption from planned and unplanned maintenance.
- Network Rail's strategy for 'breakdown avoidance' in its lifts and escalators specifications includes elements of good practice, that is, it gives consideration to the operation and maintenance of the asset after commissioning.
- The specification of 'anti-vandal' measures demonstrates good practice, in particular, sealed 'easy clean' lifts floors and locating lift plant away from passenger areas.
- The lifts and escalators are designed to meet pedestrian flow demand.
- The 'power save' controls for lifts and escalators stops the plant when it is not in use to reduce operating costs.

### **Conclusions**

Network Rail has revised its asset management policies and strategies in response to the recommendations from the quality reviews of the Glasgow-Kilmarnock Line and North London Line. However, there is little evidence that the recommendations from the quality reviews have been fully addressed. Moreover, the updated Asset Management Strategy confirms that Network Rail may not be able to demonstrate that its decisions are optimised to deliver the minimum whole life cost and existing policies are based to a significant extent on traditional practices and engineering. The Edinburgh Waverley Steps Project was at GRIP Stage 5 in November 2009 and too advanced in the design process to take into account any of the changes in asset management policy.

The Edinburgh Waverley Steps Project was initially part of the wider infrastructure project - Edinburgh Waverley Infrastructure Enhancement (Phase 1), which was funded by Transport Scotland. Since November 2009, the project was transferred to the RAB and is being delivered as a standalone project. In the period between the February 2008 and June 2010, the project has focused on developing a scheme that satisfied objector and stakeholder requirements and to obtain the necessary TAWS Order to allow the scheme to proceed.

The Edinburgh Waverley Steps Project was found to have a low compliance with Network Rail's quality assurance processes. In particular, the resolution of statutory planning approval continued into GRIP Stage 5 resulting in re-design, delays and increased costs. The PMP has not been kept up to date and a number of the key GRIP Stage 5 products were not available for review. Furthermore, there is no evidence of a site quality plan to monitor and control the site works, which have started.

Network Rail's specifications for lifts and escalators prioritises improved safety, availability and reliability to meet the high volumes of public usage, long life requirements and limited opportunities for routine maintenance and repair. However, there is no evidence that this is a minimum whole life cost approach.

### The Reporter's opinion

Network Rail has made good progress since the project received the TAWS Order in June 2010. In particular, the project has:

- an established a project team, which is delivering well with reported 'green' status for all of its key reporting milestones in the P13 2011 PDG Report
- adopted some examples of good practice in the project design and delivery, which positively impact on whole life cycle costs
- awarded contract for the build to Morgan Sindall in December 2010 scheduled for practical completion in July 2012.

In overall terms, there is low compliance with Network Rail's project quality processes and there is no evidence that the specification for lifts and escalators on the Edinburgh Waverley Steps Project represents a minimum whole life cost solution.

### Recommendations

- Network Rail to develop a whole life cost methodology, including a standard template for estimating whole life costs; this is a recommendation from the North London Line Quality Review (2009).
- The Edinburgh Waverley Steps Project team to produce an updated PMP; this forms a key component of the project audit trail; brings greater clarity to the project team roles and documents the responsibilities of key team members for project quality through a Responsibility, Accountability, Control and Inform (RACI) matrix; and describes the key arrangements for asset handback.
- The Edinburgh Waverley Steps Project team to establish and implement robust site quality control arrangements to ensure that the design on site is delivered as specified.



- The Edinburgh Waverley Steps Project team to identify and share the key lessons learned from the project, including the optimum GRIP Stage for processing and resolving objections to avoid re-design at the later GRIP stages.
- Network Rail to verify whether the current lifts and escalator specifications represent the minimum whole-life cost approach and to identify where it can encourage more supplier innovation and competition.