

TRANSPORT FOR LONDON

FINANCE AND POLICY COMMITTEE

SUBJECT: CAPITAL DELIVERY IN LONDON UNDERGROUND

DATE: 23 NOVEMBER 2011

1 INTRODUCTION

- 1.1 This paper advises the Committee of London Underground's (LU's) plans and progress in enhancing its project and programme capability to deliver the line upgrades. Some of the plans are currently being progressed only in LU, but have the potential to be applied across the whole of TfL's investment programme, a task made easier by the imminent creation of a pan-TfL Programme Management Office (PMO).
- 1.2 There has been significant change to the delivery of capital investment at LU over the past four years as a result of the integration of Metronet and the bringing in-house of the delivery portfolio. Combined with an increase in the value of the Investment Programme, LU's capital investment programme is now one of the largest in Europe. This paper reviews the change programme, demonstrates significant progress to date but recognises that the examples of best practice noted in the paper are yet to be applied consistently across the whole LU portfolio.. This change programme is based on the 'New LU/C Change' programme initiated on the Sub Surface Railway (SSR) Upgrade Programme.
- 1.3 The Committee is asked to note the paper.
- 1.4 This paper is the proposed response to part of the London Assembly report and is being considered in closed session to allow Members' comments to be incorporated prior to its publication.

2 BACKGROUND

- 2.1 London Underground's Capital Investment Programme will invest £10bn over the next seven years, spending on average £1.4bn/year, representing 85 per cent of the whole TfL Investment programme (see figure 3) .
- 2.2 Only six years ago (2005), LU had no direct accountability for any significant capital investment, all such work being delivered by the PPP Infracos, Tube Lines and Metronet. Progressively since 2005, and significantly in 2008 (following the administration and transfer of Metronet to TfL), the LU Capital Investment Programme has grown. During this period of growth, LU's programme/project management resources, tools and processes have also had to grow (see figure 1).

- 2.3 A number of change initiatives have been instigated to enhance LU programme delivery; these have been informed by both internal and external review. These changes, informally known as “C Change”, are formally grouped under the Programme Management Capability Improvement Programme (PMCIP). The PMCIP forms one of 21 programmes within the Rail and Underground Investment Plan, and is governed by a Director level board. This paper schedules the key initiatives, provides a status report on progress to date, and impact on performance.

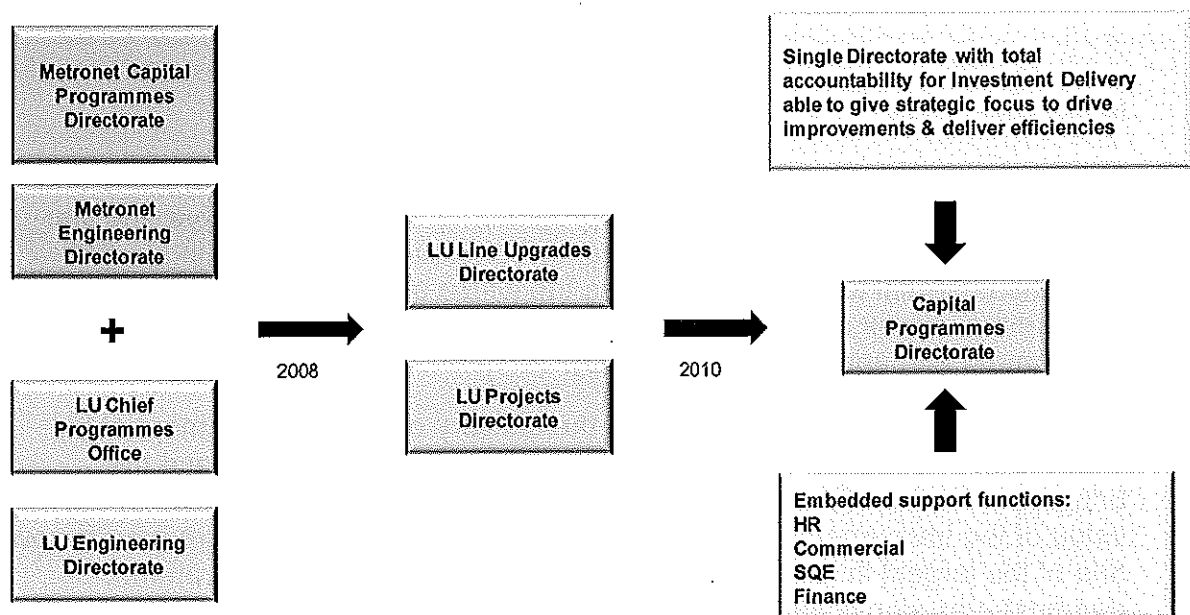


Figure 1: Background to the LU Investment Programme Organisation

- 2.4 As an integral part of LU, the Capital Programmes Directorate (CPD) has an excellent working relationship with the rest of the business, particularly with the Strategy team, the Sponsor of change, and the Operator and Maintainer, who receive the new or changed assets into operational use. This excellent relationship was acknowledged by the Nichols Group as world-leading in its recent report on the delivery of investment within LU.

3 SCALE OF INVESTMENT

- 3.1 The LU Capital Programme covers a wide range of programmes, including stations, track, rolling stock, signals, power and cooling. The largest of the programmes is the Sub Surface Railway Upgrade Programme (SUP), delivering one of the largest and most complex railway upgrades in Europe. Figure 2 provides an overview of the Investment Programme.

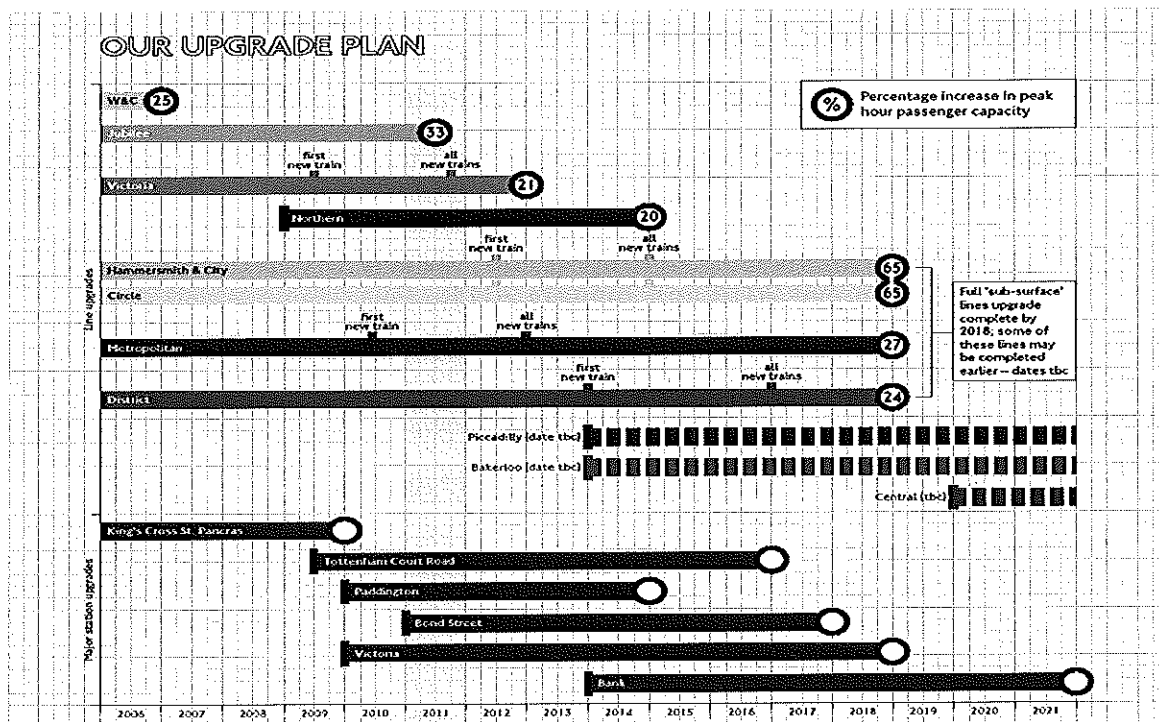
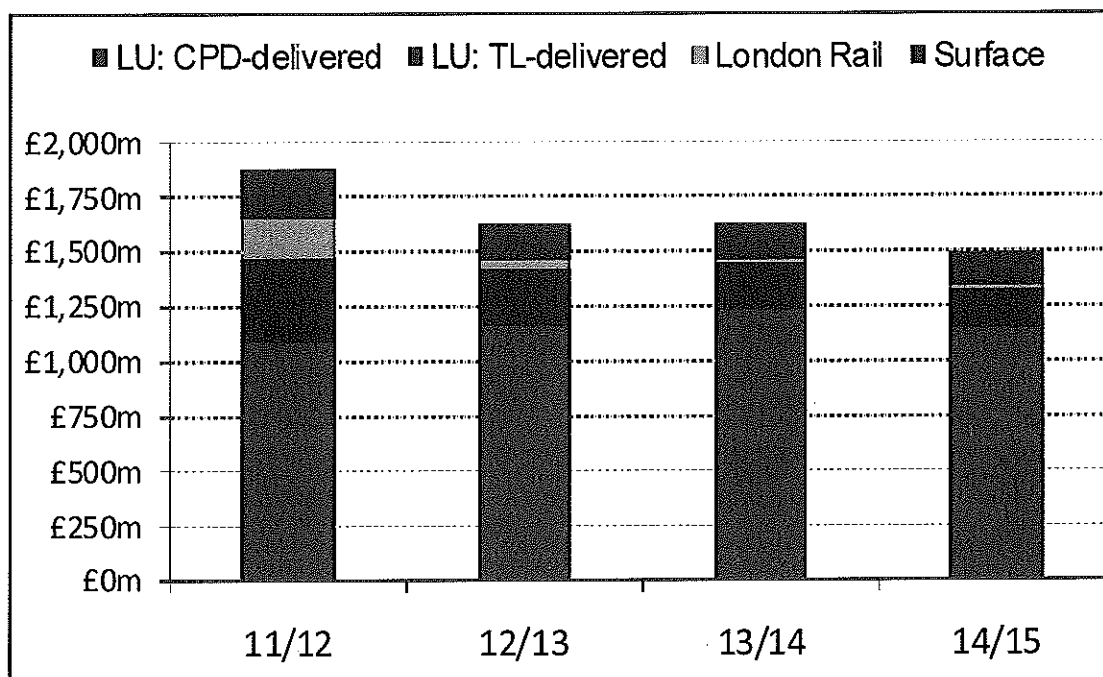


Figure 2: overview of Investment Programme



CPD = Capital Programme Directorate; TL = Tubelines

Figure 3: overview of Investment Programme spend profile

4 CHANGE PROGRAMME ACTIVITY

4.1 The following sources have been used to inform and establish the PMCIP:

- (a) the "New LU" initiative started following the integration of the LU and former Metronet capital programmes;
- (b) the Independent Investment Programme Advisory Group (IIPAG) quarterly reports September 2010 and January 2011;
- (c) the IIPAG annual report July 2011;
- (d) various individual and systemic IIPAG reviews;
- (e) a review undertaken in August 2011 by Nichols; and
- (f) observations and analysis from the external accreditation of LU's project management systems undertaken by Outperform and the APM Group, which led to the level 3 accreditation against the Office of Government Commerce (OGC) P3M3 maturity model.

Previous papers have been provided to the Committee setting out the specific actions being undertaken to address the issues raised by IIPAG.

Overview

4.2 The PMCIP comprises six themes:

- (a) People and Knowledge Sharing;
- (b) Risk and Value;
- (c) Governance and Organisation;
- (d) Developing Process and Systems;
- (e) Engineering; and
- (f) Identity and Branding.

Each of these is addressed below.

People and Knowledge Sharing

- 4.3 **Capability:** A single pan-TfL PMO will be established in January 2012 to provide oversight and support of the delivery of projects across TfL. A single project management methodology and system is under development and will be delivered in 2012.
- 4.4 LU has launched an Accredited Project Professional (APP) scheme for project staff (June 2011) and Health, Safety and Environment (HSE) training. The scheme sets minimum professional and competency standards, which are used to develop staff, and are reviewed by line managers, as a minimum, twice a year. This builds upon the existing competency management systems developed under TfL's Pyramid tool and provides a standard for all project

management development within the CPD.

- 4.5 **Knowledge Sharing:** Knowledge sharing events have been established, promoting cross-TfL sharing of knowledge and lessons learnt. Speakers from across TfL and external cross industry speakers such as Chief Executives from leading construction companies contribute to this activity. The most recent event was attended by 25 senior executives from within the rail and construction industry as well as a similar number of TfL employees.
- 4.6 LU CPD recognises that individuals learn lessons and carry knowledge with them. The organisation is increasing the "functional transfer" of staff between programmes in order to increase performance by directly applying hard-gained lessons and experience from one project to another.
- 4.7 A signed undertaking has been established with Network Rail to share information to mutual advantage. This will complement the knowledge sharing work that has been undertaken through the Communities of Metros (CoMET) benchmarking group.
- 4.8 Good progress has been made in sharing best practice with other members of CoMET especially Madrid, Paris and New York, including the agreement to share knowledge and personnel.
- 4.9 **Recruitment and Management of Resources:** A number of recruitment, reward and retention processes that were seen as limiting the programme managers' ability adequately to resource their projects have been highlighted. All of the proposals recommended by Nichols have now been implemented. A separate paper to the Committee (Resourcing the Sub-Surface Railway Upgrade, November 2011) provides a more detailed status report.
- 4.10 **Behaviours:** Nichols recommended a behavioural change programme, a strong stance on poor behaviours using the performance and development process, and consistent messages from leadership and intolerance of inappropriate behaviours.
- 4.11 The PMCIP C-Change will seek to improve the behaviours within the CPD. This will build upon the work initially commenced on the ATC programme through the 'New LU' initiative which sought to prepare the organisation for closer, more collaborative, working with its contractors. This work has been given greater urgency through the views expressed within the Nichols' review.

Risk and Value

- 4.12 A systemic review has been undertaken with the IIPAG to examine the adequacy of risk management and the approach to risk provision and contingency. A revised control and calculation approach as approved by the Committee has been established, including removal of contingency from project forecasts and recalculating based on the risk registers. Functional lead for risk has been strengthened, led by the appointment of an industry renowned expert on risk into the PMO. Training and embedment of best practice continues.

4.13 While benchmarking has been conducted for maintenance activities over the previous six years, under the guidance of the PPP Arbiter, limited work has been done on capital projects, notably on escalator replacement. The work of TfL's benchmarking team is now giving greater focus on capital investment. A number of studies have commenced, including a comparison between LU and Tube Lines track renewal unit costs and the size and cost of project management. In addition, standard units of measure are being defined for repeatable work items (e.g. cost per metre of Ballasted Track Renewal) and historic and forecast data is being gathered in order to compare these to external benchmarks (e.g. Network Rail, Tube Lines). The first phase of work has identified 12 unit rates across Track, Civils, Rolling Stock, Signals and Power upgrades and Stations Capacity. Further work in the coming year will expand the coverage. The benchmarking of capital programmes is being carried out as part of the wider benchmarking programme directed by IIPAG and the outcome of the work will be included in the next Annual Benchmarking Report to the Board, which is planned for March 2012. Figure 4 shows the current capital works benchmarking studies.

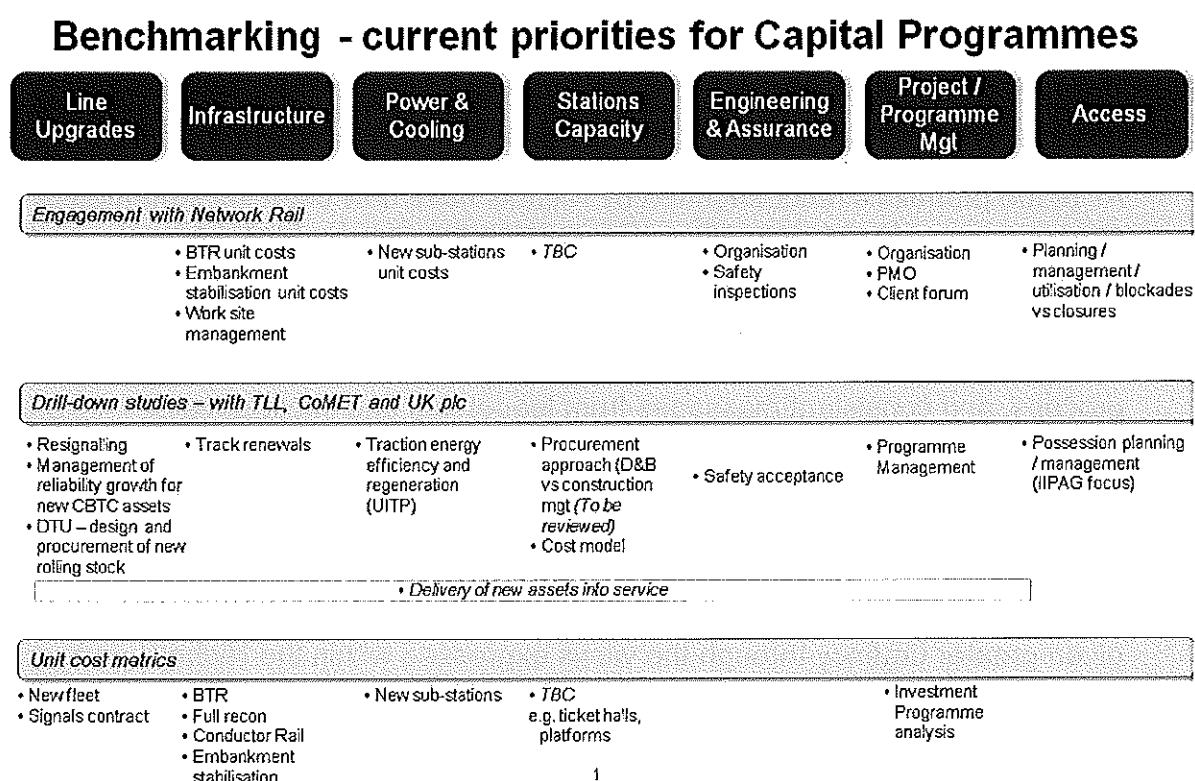


Figure 4: capital works benchmarking activity

4.14 Extensive sharing of best practice and costs have commenced with several organisations from the rail and infrastructure industries.

4.15 Efficiency targets have been set for the capital programmes (£1.3bn over the Plan years to 2017/18). LU is expecting to meet this target, having achieved efficiency savings of £195m since 2009.

- 4.16 Notable achievements include: reduction in escalator replacement costs by 50 per cent, industry beating costs for recently awarded Sub-Surface Rail upgrade programme (SSR) signalling contract, station capacity projects on average 10 per cent less per cubic metre than internationally benchmarked stations (source Infrastructure UK (IUK)).
- 4.17 LU has strengthened its project focus on project Value Management. An interim functional Head of Value has been appointed to raise awareness, competency and use of Management of Value techniques. Initial processes, competency requirements and training plans are in development and consultation with IPAG, which will be applicable across TfL.
- 4.18 LEAN methodology and processes have been piloted within the Stations Programme, and have achieved £13m savings in the last 12 months. It is proposed to extend the use of LEAN throughout the LU Investment Programme, and establish a functional lead within the new PMO.
- 4.19 The success of LU CPD is beginning to be recognised. CPD has demonstrated the efficiency of delivery through its ability competitively to win work on the Crossrail project. The Level 3 external accreditation of CPD's project management systems means it is one of only two organisations in the country on the Independent Assessor's (Outperform) database to achieve this benchmark.
- 4.20 In summary, LU continues to raise the commercial awareness of its project teams, through the appointment of key risk and value specialists, who provide functional leads, embedding best practice and promoting value -adding practices and culture. These roles will be strengthened through further appointments and adoption of value adding techniques (e.g. LEAN) in the formation of the new TfL PMO in January 2012. In addition, comparison and challenge through benchmarking is giving greater visibility of opportunities to improve efficiency.

Governance and Organisation

- 4.21 **Maturity:** Independent reviews of LU's capital programme delivery organisation were commissioned in 2007, 2009 and 2011. The reviews measured LU's maturity against the Government standard (P3M3). Each review highlighted improvement actions, which have been implemented or are in progress. Figure 5 shows the growth in maturity, resulting in LU achieving level 3, LU being only one of two companies to have achieved this level.

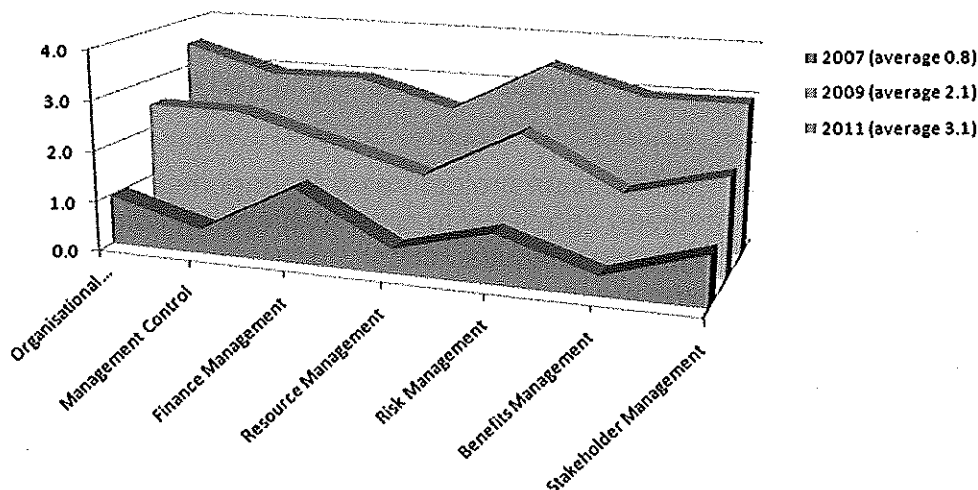


Figure 5; P3M3 maturity scores for LU project management

- 4.22 Embedment of Support Functions:** Nichols recommended the embedment and co-location of support services into programme teams; the appointment of a single functional lead reporting to the Capital Programme Director; defined and agreed service provision; delivery objectives of support staff set by the Project Manager (PM); support resource requirements set by the PM and not headcount constrained.
- 4.23** All these principles have been agreed by the support directors and single functional leads are in place. Headcount constraints have been removed. Service provisions and objectives are being drafted to be incorporated in mid-year target setting.
- 4.24 Appropriate Levels of Delegation:** Nichols recommended appropriate levels of delegation to allow freedom to deliver within a “defined envelope”.
- 4.25** Some levels of delegation have been raised to appropriate thresholds. Remaining areas to be finalised are: contingency draw down, and agreement of appropriate commercial and procurement authorities. Work has commenced to review the investment authorisation process to increase the level of delegation, while maintaining the appropriate level of management oversight.

Developing Process and Systems

- 4.26** A common methodology (Project Management Framework PMF)) was introduced across LU in July 2009. This was the first stage in applying common processes to project management in the post PPP London Underground. Following embedment and further improvement in 2010, PMF is now fully established across all LU projects.
- 4.27** Special Interest Groups are established to promote best practice in engineering, governance, planning, sponsorship and controls.
- 4.28** An estimating database (RIB) has been created along with a standard cost breakdown structure enabling easier cost comparison and estimate preparation. An initial library of 120 historical projects was included, and all

future estimates, contract and final costs will be loaded. There are currently 200 projects in the database.

- 4.29 A project is funded and in progress to design and implement an integrated project management control system across TfL. The system will bring together planning, risk, cost management, benefits management, issues management, resources management, change control, lessons learnt and reporting. The benefits of the system will progressively roll out during late 2012.
- 4.30 Improved management of NEC contracts is supported by the introduction of a contract management system (ASITE).

Engineering

- 4.31 LU has established an Engineering Improvement Project that builds upon the work undertaken in the previous Engineering Directorate and embedded on the SSR programme, in areas such as the consolidation and simplification of Standards. LU is developing an Engineering Management Framework to embed these improvements as a part of our wider Project Management Framework.

Identity and Brand

- 4.32 LU recognises the need to build the trust of its stakeholders in its ability to deliver, which Nichols identified as a key requirement for a successful outcome in the next Comprehensive Spending Review. A key part of this is the need to build confidence through the effective communication of achievements.
- 4.33 A strategy is being created jointly with TfL Communications to identify who the key stakeholders are and how they should be approached. This is due to be completed early in 2012.

Role of the Sponsor

- 4.34 One of the fundamental principles agreed when Metronet was integrated back into LU was the separation of "sponsor" and "delivery". This has worked well, with the sponsor owning the business case, setting priorities between maintenance and renewals, and setting the long term asset strategy for the business. However, further development of this role and wider application across TfL has been recommended by IIPAG.
- 4.35 A separate paper to the Committee, led by the sponsor, will address progress on this subject.

5 PERFORMANCE

5.1 The Change Programme is “work in progress”, yet there have been significant delivery successes to date as shown in figure 6.

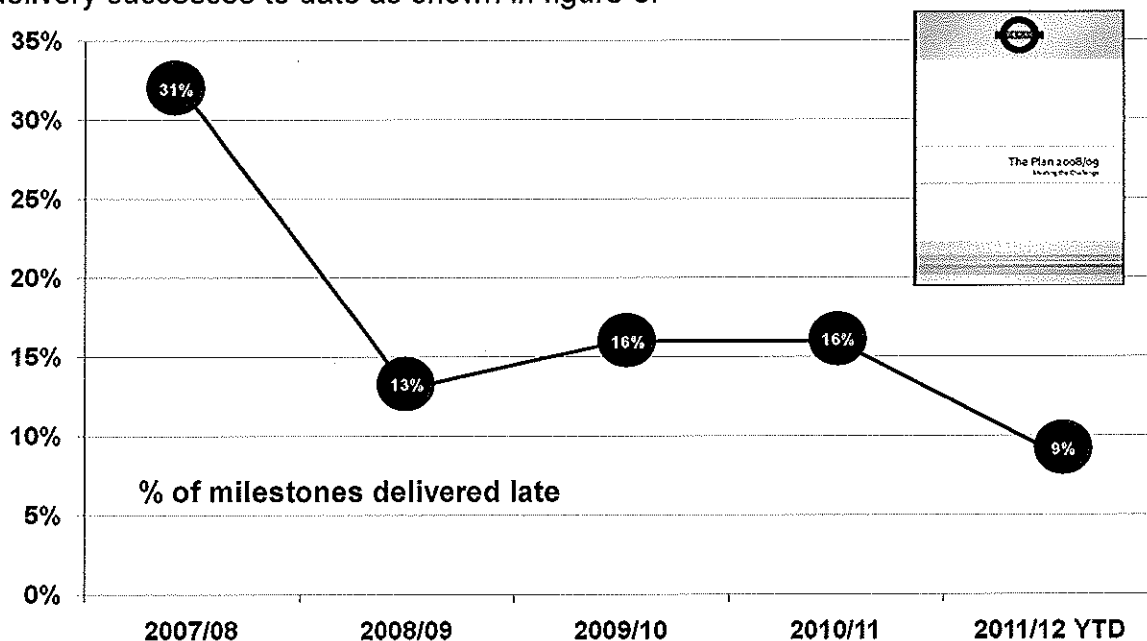


Figure 6: improved delivery certainty

The following are some examples:

5.2 Victoria Line Upgrade:

- (a) all necessary infrastructure works in place ahead of new train introduction;
- (b) entire fleet from 1967 replaced;
- (c) first fully Rail Vehicle Access Requirements compliant line on LU;
- (d) £23m of efficiencies; and
- (e) delivering a year early.

5.3 Track Renewal Programme:

- (a) unit rates for track best in class after retendering track contract (based on improvement and efficiency plans); and
- (b) Bayswater blockade (first ever four-week LU shutdown) completed on time, to cost, to scope and without impacting the next day's service. However, the recent performance of the track contract is a cause for concern and an improvement programme is being developed.

5.4 Major Stations Programme:

- (a) Victoria Station Upgrade contract let at world-class rates;
- (b) Crossrail stations work (Whitechapel, Tottenham Court Road, Bond Street) contracted and all on time and budget; and
- (c) Stratford and Green Park developments for the 2012 Games delivered on time and below budget.

5.5 Stations Asset Renewal Programme:

- (a) 28 stations modernised (including King's Cross, Oxford Circus, Mile End, Warren Street, Aldgate East, Brixton and Holborn);
- (b) 13 escalators replaced (including eight at Bank and three at Oxford Circus);
- (c) 41 escalators refurbished and returned to service (including 11 at Piccadilly Circus and 10 at Bank);
- (d) Victoria station escalator refurbishments 1, 2 and 3 delivered in record time; and
- (e) Four lifts refurbished.

5.6 Sub-Surface Rail Upgrade programme:

- (a) re-specified ATC contract: best-in-class ATC system, minimal closures for signalling and world-class unit rates;
- (b) successfully operating 17 S8 trains on the Metropolitan line;
- (c) necessitated extensive immunisation work;
- (d) extensive re-modelling of Baker Street, Aldgate and Hammersmith station layouts;
- (e) delivered Service Control Centre at 50 per cent cost estimated by Metronet;
- (f) Hammersmith Control Centre delivered at 60 per cent of original estimate, on schedule and to specification, through use of techniques imported from the automotive industry;
- (g) poorly defined Metronet depot strategy replaced with a clear, considered decision about Hammersmith, Neasden, Ealing Common and Upminster properly accounting for operational and maintenance requirements; and
- (h) Neasden depot - high risk resignalling completed on schedule and civils programme back on track.

5.7 Power and Cooling:

- (a) all ventilation shaft upgrades delivered to time and cost;

- (b) Power and Cooling now sponsored together with line upgrades for an integrated programme; and
- (c) best system solutions chosen for SSR, mid-tunnel ventilation and future upgrades (Deep Tube Programme).

6 SUMMARY

- 6.1 There has been significant change over the past four years as a result of the integration of Metronet and the bringing in house of the Delivery Portfolio, combined with an increase in the value of the Investment Programme, to what is now one of the largest in Europe. This has culminated in the creation of a single delivery organisation able to focus on the strategic improvement of delivery performance.
- 6.2 Very considerable delivery successes have been achieved. However, major challenges remain, most notably performance of the track contract and reliability of new assets. The engagement with IIPAG, on all the challenges CPD faces, has overall been very constructive and value adding. The need for ongoing improvement is fully accepted and indeed championed at every level in CPD.
- 6.3 LU has created a single change programme (PMCIP, formally known as C Change) to enhance the capability of London Underground's delivery organisation. Independent assessment has shown significant progress in the maturity of the organisation (P3M3) and improvements to delivery and cost performance. Work will continue on the change programme, and a further status paper will be submitted to the Committee in May 2012.

7 RECOMMENDATION

- 7.1 The Committee is asked to NOTE this report.

8 CONTACT

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