

Section 1



London Underground

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Note: The Nominee companies BCV and SSL are now under direct control of TfL and as such PPP contracts and their performance regime remain in place. In addition, all of the projects described in this document are subject to an ‘efficiencies programme’ which is targeted at driving up the value for money we achieve. As a result, we expect in many areas to deliver the scope with lower expenditure than quoted. This is described further in the TfL Business Plan

Mode:	London Underground
Project location:	Various
Estimated cost £m:	226
Next TfL gateway	P - Programme

Improving accessibility

Step-free access from street to platform benefits mobility impaired passengers and visually impaired passengers. Passengers travelling with young children and larger pieces of luggage will also benefit from improved accessibility.

Milestones

2010	High Barnet, Southfields and King's Cross delivery into service
2010	Hainault and Kingsbury delivery into service
2011	Green Park, Blackfriars, Farringdon delivery into service
2015	Paddington (Hammersmith & City), Bank (Waterloo & City) delivery into service
2017	Tottenham Court Road and Bond Street delivery into service
2018	Victoria delivery into service

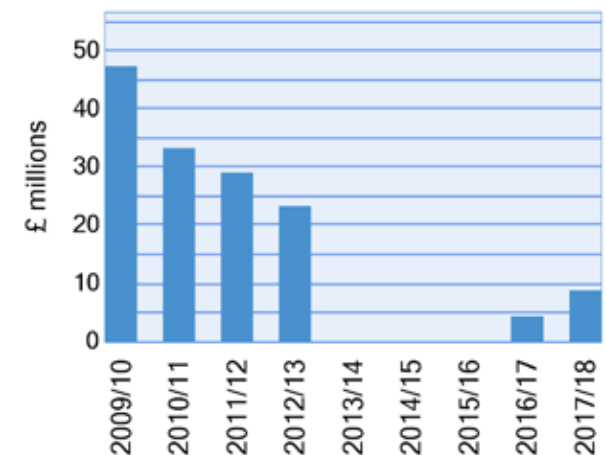
Purpose

LU is committed to making the Underground more accessible. This is achieved through a variety of projects, including those to deliver step-free access between platforms and street level. Some of these projects have been completed as part of the PPP contracts; all further projects will be delivered directly by LU or as part of third party developments.

Outputs

This portfolio delivers step-free access schemes to a number of stations such as Hainault, Green Park and Southfields by 2011, plus step-free facilities as part of station upgrades at Paddington (Hammersmith & City), Tottenham Court Road, Bond Street and Victoria. Schemes will start at Vauxhall, Finsbury Park and Highbury & Islington which are covered elsewhere in the IP. Over 25 per cent of stations will be step-free by 2016/17. In the later plan years a programme of works will be developed to expand the step-free network, targeted at locations that deliver the greatest accessibility benefit.

Spending to 2017/18



Mode:	London Underground
Project location:	Sub-surface network
Estimated cost £m:	140
Next TfL gateway	E - Project close

Purpose

The provision of additional capacity on the sub-surface network will deliver substantial time savings and reduce overcrowding. It will also support the increased passenger numbers expected to result from the high speed service at King's Cross and the ongoing residential and commercial developments in the Paddington area.

Outputs

Additional train capacity (above that already to be provided through PPP upgrades). The initial phase of the project is focused on the central area of the sub-surface network. To enable the additional trains to run, 12 stations will need platforms lengthened. The new trains will operate on the Circle, Hammersmith & City lines and the Wimbledon to Edgware branch of the District line.

Improving transport capacity

The initial phase should see increased train capacity on crowded sections of the sub surface network (estimated at 16 per cent per train). Time savings of more than 40 million customer hours over the life of the assets.

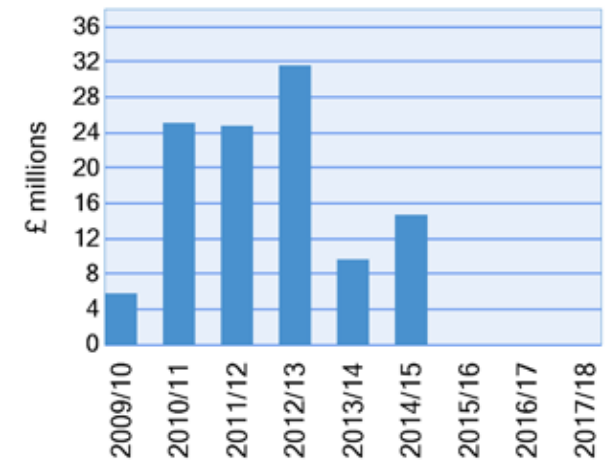
Improving journey experience

Enable a greater proportion of customers to travel seated and reduce overall crowding.

Milestones

2015	Track and stabling work complete
2015	Completion of train capacity increases

Spending to 2017/18



Mode:	London Underground
Project location:	Various
Estimated cost £m:	6
Next TfL gateway	E - Project close

Improving journey experience

Provision of electronic displays will improve visibility, accuracy and timeliness of customer information giving station staff more time to assist customers with other needs.

Milestones

2009	Commence installation of ESUBs
2010	Network installation of ESUBs complete

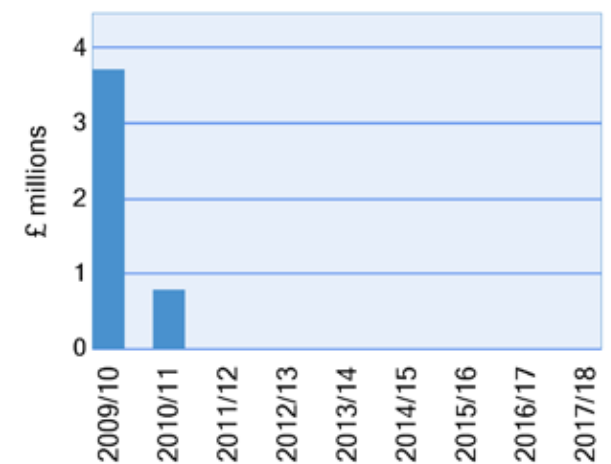
Purpose

Provision of train and destination information is a key customer priority. It is the only direct interface between signalling control and the travelling public hence provision of real-time information on current services can facilitate the reduction of passenger delays. Local station staff often have the most appreciation of customers needs. As such this project aims to utilise this knowledge by providing tailored information solutions at specific locations.

Outputs

This project provides customer information solutions for specific locations, including replacing whiteboard service information with electronic service update boards (ESUBs) and live outputs from TrackerNet.

Spending to 2017/18



Mode:	London Underground
Project location:	King's Cross St. Pancras station
Estimated cost £m:	870
Next TfL gateway	E - Project close

Purpose

King's Cross is one of the most congested interchanges on the LU network. The project seeks to mitigate this congestion which will be worsened by the introduction of high speed rail services out of King's Cross. Local development plans will also exacerbate congestion. Providing secondary means of escape is the final outstanding recommendation of the Fennell Report into the King's Cross fire.

Outputs

The project has already provided an expanded Tube ticket hall and a new Western ticket hall, integrated with the St. Pancras International station. A new Northern ticket hall will open in late 2009, improving the quality and capacity of interchange with both St. Pancras and King's Cross National Rail stations, by providing direct escalator and lift links to each of the Piccadilly, Northern and Victoria line platforms. The new Western concourse to King's Cross National Rail station, directly above LU's Northern ticket hall, will open by 2012.

Improving transport capacity

The station will be able to cater for an increase in passengers from the 65,000 currently using the station during morning peak to a forecast 92,000 by 2011.

Improving accessibility

Step-free access from street to all platforms will benefit mobility and visually impaired passengers and those travelling with young children and heavy loads.

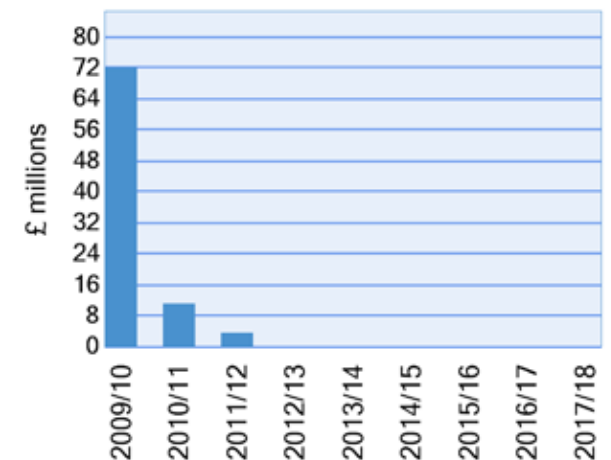
Improving transport connectivity

The project will deliver improved interchange opportunities and contribute to the re-development of the King's Cross area.

Milestones

2006	Opening of Western ticket hall
2009	Northern ticket hall opens
2010	Completion of LU Station Upgrade

Spending to 2017/18



Mode:	London Underground
Project location:	Victoria station
Estimated cost £m:	741
Next TfL gateway	E - Project close

Purpose

Victoria station is the most congested on the LU network. For many years 'station control' has been used to manage access and congestion. This is most acute during the morning peak, when passengers interchange from National Rail. Future planned development schemes affecting the Victoria area, as well as the Victoria line upgrade, will increase the numbers using the station.

Outputs

A new Northern ticket hall beneath Bressenden Place, above the north end of the Victoria line, complete with emergency services access. Increased capacity of existing (Southern) ticket hall. Nine new escalators to serve the Victoria line platforms from both ends. Improved capacity of interchange between the Victoria, District and Circle lines. Step-free access from street level and the National Rail station to Victoria and District line platforms.

Improving transport capacity

Future-proof the station for predicted demand, address and mitigate the congestion-based causes of 'station control'. Reduce journey times through the station.

Improving accessibility

Victoria is on LU's key network of stations to be made accessible. The new scheme will particularly benefit those with restricted mobility.

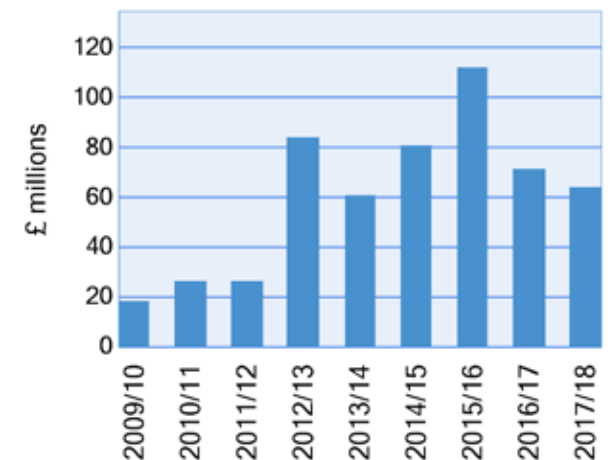
Reducing CO2 emissions

Improved attractiveness of public transport will result in fewer car-based journeys, thereby reducing pollution.

Milestones

2008	Invitation to tender for main works contract
2010	Upgrade of existing ticket office complete
2010	Station water management package complete
2010	Utility diversions complete
2011	Start construction of main works
2016	Northern ticket hall delivery into service
2018	Delivery into service of remaining works

Spending to 2017/18



Mode:	London Underground
Project location:	Bakerloo, Central, Victoria and Waterloo & City lines
Estimated cost £m:	379
Next TfL gateway	P - Programme

Purpose

A well-maintained track (which includes ballast, sleepers, drainage, etc) is essential to deliver a safe and reliable service.

Outputs

This portfolio covers upgrade and renewal of the track and track bed on the BCV lines. Track kilometre lengths:
 Bakerloo, 24km
 Central, 154km
 Victoria, 47km
 Waterloo & City, 5km
 Works involve renewal of track and track bed, including sleepers, ballast, drains, etc.

Improving transport capacity

Reliability improvements through improved asset availability and fewer speed restrictions relating to condition of track.

Improving journey experience

Improved ride quality. Improved track condition leads to reduced ambient noise.

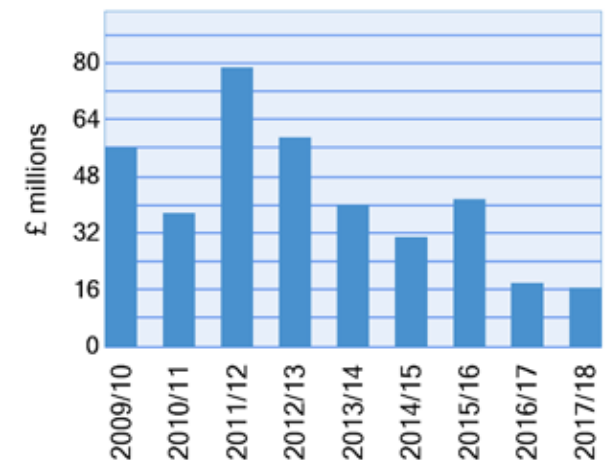
State of good repair

Replacement of track components with new items as required.

Milestones

2010	Replace 59km track (cumulative)
2014	Replace 69km track (cumulative)
2018	Replace 72km track (cumulative)

Spending to 2017/18



Mode:	London Underground
Project location:	Jubilee, Northern and Piccadilly lines
Estimated cost £m:	399
Next TfL gateway	P - Programme

Purpose

A well-maintained track (which includes ballast, sleepers, drainage, etc) is essential to deliver a safe and reliable service. Note that all cost figures included here are indicative only of the level of investment the infrastructure company will be making.

Outputs

This portfolio covers upgrade and renewal of the track and track bed on the JNP lines. Track kilometre lengths (excluding depots):
 Jubilee, 77km
 Northern, 121km
 Piccadilly, 109km
 Other, 18km
 Works involve renewal of track and track bed, including sleepers, ballast, drains, etc.

Improving transport capacity

Reliability improvements through improved asset availability and fewer speed restrictions relating to condition of track.

Improving journey experience

Improved ride quality. Improved track condition leads to reduced ambient noise.

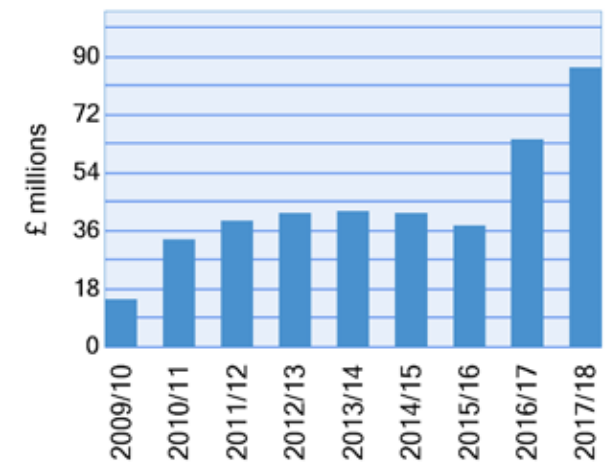
State of good repair

Replacement of track components with new items as required.

Milestones

2009	Replace 59km of track (cumulative)
2010	Conductor rail replaced 6km
2010	Rail grinding programme commenced
2010	Replaced seven points and crossings

Spending to 2017/18



Mode:	London Underground
Project location:	Metropolitan, H&C, Circle and District lines
Estimated cost £m:	571
Next TfL gateway	P - Programme

Purpose

A well-maintained track (which includes ballast, sleepers, drainage, etc) is essential to deliver a safe and reliable service. This portfolio covers upgrade and renewal of the track and track bed on the sub-surface railway (SSR).

Outputs

The SSR network incorporates around 300km of track, mainly open section and cut and cover. The track asset includes some of the oldest track formations on the Underground, which are in urgent need of enhanced renewal. Works involve renewal of track and track bed, including sleepers, ballast, drains, etc.

Improving transport capacity

Reliability improvements through improved asset availability and fewer speed restrictions relating to condition of track.

Improving journey experience

Improved ride quality. Improved track condition leads to reduced ambient noise.

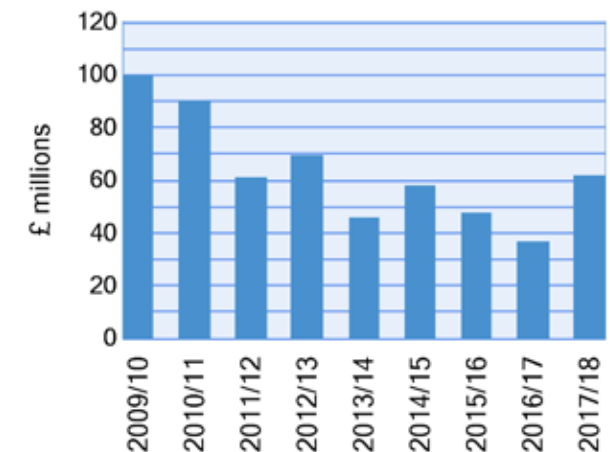
State of good repair

Replacement of track components with new items as required.

Milestones

2010	Replace 104km track (cumulative)
2014	Replace 148km track (cumulative)
2018	Replace 209km track (cumulative)

Spending to 2017/18



Mode:	London Underground
Project location:	Bakerloo, Central, Victoria and Waterloo & City lines
Estimated cost £m:	409
Next TfL gateway	P - Programme

Purpose

The assessment of civil engineering assets will establish their condition and allow appropriate intervention to bring them up to the required standard. The assets will be improved to meet the required benchmarks. That, in turn, will improve service reliability by reducing the possibility of flooding and the removal of speed and weight restrictions caused by these assets.

Outputs

Renewal of assets within an estate of:
 Bridges and structures (266 bridges, including 36 overline, 79 underline; 35 covered ways and other 2,754 structures)
 Pumps and drainage (including 150km of drainage, 2,906 catchpits and 245 pumps)
 Earth structures (57km of embankments and cuttings)
 Deep Tube (139km of tunnels)

Improving transport capacity

Minimisation of performance losses due to flooding, speed restrictions, weight restrictions and fault rectification.

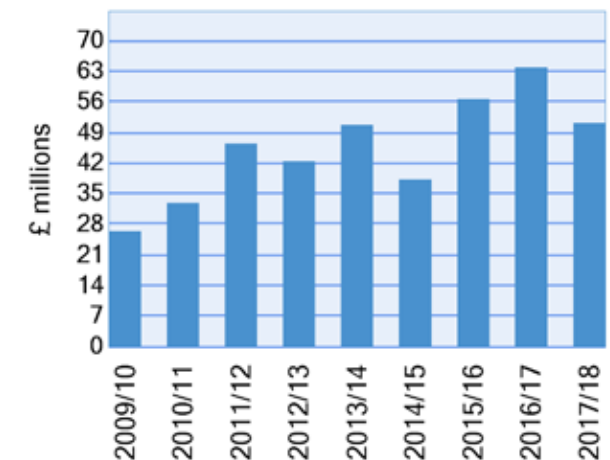
State of good repair

Works to be managed to minimise impact on lineside biodiversity. More effective drainage systems.

Milestones

2011	Complete all deep Tube tunnel assessments
2012	Complete assessments on all remaining grey assets
2018	Complete 176 projects (68 track drainage, 60 earth structures and 48 bridges and structures)
2022	Bring all civils assets to 'steady-state' condition

Spending to 2017/18



Mode:	London Underground
Project location:	Jubilee, Northern and Piccadilly lines
Estimated cost £m:	143
Next TfL gateway	P - Programme

Purpose

The priority for the next few years is to survey the asset condition of all structures and civil assets by 2010. Achieving and maintaining a state of good repair for the civil infrastructure is important in maintaining overall reliability. In particular, as the investment backlog is overcome, there should be reductions in delays (such as those caused by track flooding) and increases in permissible speeds on certain structures. Note that all cost figures included here are indicative only of the level of investment the infrastructure company will be making.

Outputs

Renewal of assets within an estate of:
 Bridges and structures (a total of 2,030, including bridges and parapets, viaducts, girdering and arches)
 Pumps and drainage (a total of 82km of track drainage)
 Earth structures (78km of embankments and cuttings)
 Deep Tube (180km of deep Tube tunnels)

Improving transport capacity

Minimisation of performance losses due to flooding, speed restrictions, weight restrictions and fault rectification.

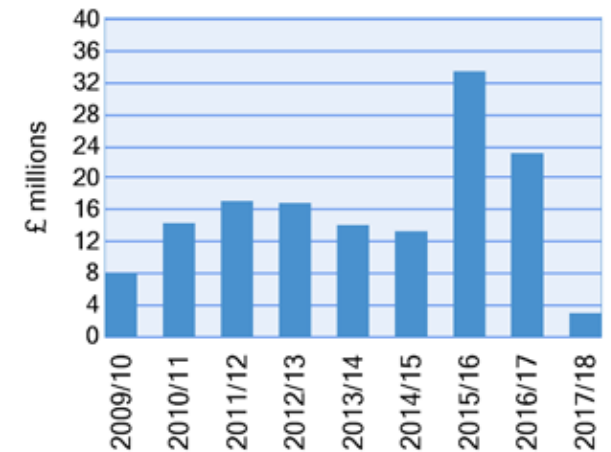
State of good repair

Works to be managed to minimise impact on lineside biodiversity. More effective drainage systems.

Milestones

2010	Deep tunnel assessments completed on 18km of track
2010	Assess all grey assets and ensure their safety level
2022	Bring all civil assets to 'steady state' condition (even distribution of asset state A-C)
2033	Keep all assets at 'steady state' condition to contract end

Spending to 2017/18



Mode:	London Underground
Project location:	Metropolitan, H&C, Circle and District lines
Estimated cost £m:	216
Next TfL gateway	P - Programme

Purpose

Assessment of all civil assets will establish their condition and allow appropriate intervention to bring the assets to the required standard. That, in turn, will improve service reliability by reducing the possibility of flooding and the removal of speed and weight restrictions caused by these assets.

Outputs

Renewal of assets within an estate of:
 Bridges and structures (633 bridges, including 149 overline, 261 underline, 66 covered ways, 4,556 other structures)
 Pumps and drainage (including 136km of drainage, 4,678 catchpits and 130 pumps)
 Earth structures (99km of embankments and cuttings)
 Deep Tube (7km of tunnels)

Improving transport capacity

Capacity will be increased through the introduction of the new trains which have greater capacity. Additionally, the reliability of the new trains following initial 'burn-in' will result in a reduction in lost customer hours of 50% compared with current levels.

Improving accessibility

New fleets design includes audio-visual information systems, multi-purpose areas (tilt-up seats), wheel chair access, internal colour contrast, in-car CCTV and through gangways.

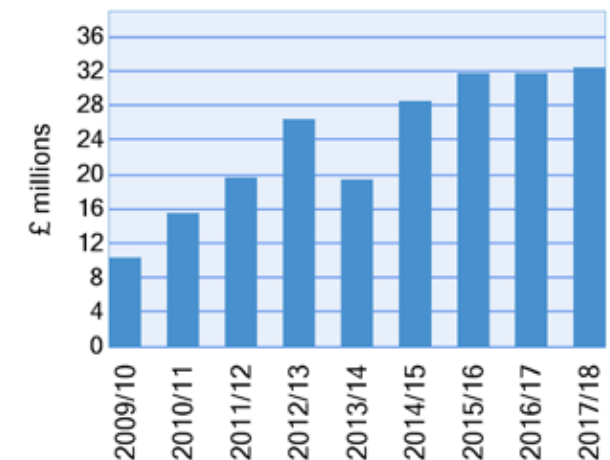
Improving journey experience

The new fleets will incorporate modern facilities and lighting and will feel more spacious due to the through gangways.

Milestones

- 2010 Assess all grey assets and ensure their safety level
- 2010 Complete all deep Tube tunnel assessments
- 2012 Complete assessments on all remaining grey assets
- 2018 Complete 381 projects (135 track drainage, 121 earth structures and 125 bridges and structures)
- 2031 Bring all civil assets to 'steady-state' condition

Spending to 2017/18



Mode:	London Underground
Project location:	Bakerloo, Central, Victoria and Waterloo & City lines
Estimated cost £m:	615
Next TfL gateway	E - Project close

Purpose

The priority for rolling stock investment is to deliver projects that sustain or improve fleet safety and performance. For BCV fleets this includes targeted improvements to ensure continued safety and reliability until their planned disposal dates. For the Victoria line, a new fleet of trains will be introduced from late 2009 which have improved capacity, journey times and passenger environment. For the Bakerloo Line, a new fleet of trains will be introduced from 2018. Work on the existing Central line trains will address water ingress and defective seat bases.

Outputs

This portfolio covers investment in rolling stock that runs on; Bakerloo line (36 trains of 72 stock), Central line (85 trains of 92 stock), Waterloo & City lines (5 trains of 92 stock) and Victoria line (43 trains). The 67 stock on the Victoria line will be replaced by 47 new trains in late 2009. The new trains have a range of enhancements including improved passenger information, security and accessibility. The Bakerloo line fleet will be replaced by new trains that deliver a major step change in Tube train design. The new design will enable integrated fleet procurement across the Central line.

Improving transport capacity

Capacity will be increased through the introduction of the new trains on the Victoria line which have greater capacity. New trains in conjunction with the new signalling system will improve journey time. Improved long-term reliability of the new trains will result reduced lost customer hours of 33 per cent compared with current levels.

Improving journey experience

The new fleets will incorporate modern facilities and lighting and will feel newer and cleaner.

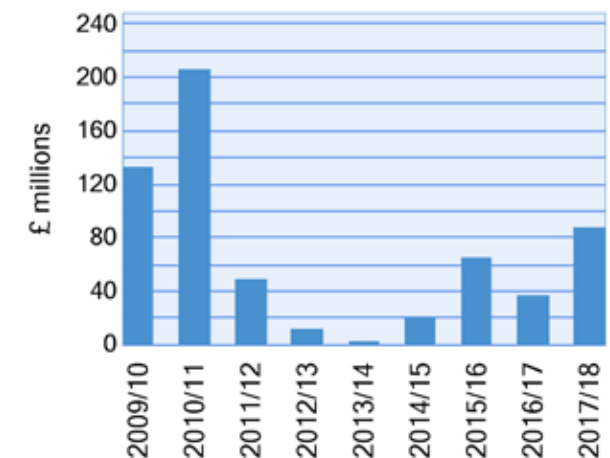
Improving accessibility

New fleets design includes audio-visual information systems, multi-purpose areas (tilt-up seats), wheel chair access, internal colour contrast and in-car CCTV.

Milestones

2009	First 09 Tube stock in passenger service on Victoria line
2011	Completion of delivery of all Victoria line 09 Tube stock
2016	Prototype of new Bakerloo line train
2018	Commence delivery of new Bakerloo line fleet
2020	Complete delivery of new Bakerloo line fleet

Spending to 2017/18



Mode:	London Underground
Project location:	Jubilee, Northern and Piccadilly lines
Estimated cost £m:	730
Next TfL gateway	D - Contract award

Purpose

The priority for rolling stock investment is to deliver projects that sustain or improve fleet safety and performance. In the longer term the capital programme provides for refurbishment of newer trains and replacement of older ones as well as augmentation of the fleet on certain lines. Note that all the cost figures included here are indicative only of the level of investment that the infrastructure company will be making.

Outputs

The JNP rolling stock portfolio includes LU's two newest fleets: the 1995 Northern line fleet and the 1996 Jubilee line fleet. The new Piccadilly line fleet will include specified enhancements (provision of improved information, security and accessibility features). Current rolling stock consists of:
 Jubilee line: 63 seven-car trains, average age nine years
 Northern line: 106 six-car trains, average age 11 years
 Piccadilly line: 86.5 six-car trains, average age 34 years (half-life refurbishment completed in the late 1990s)

Improving transport capacity

The Jubilee line trains were converted from six to seven cars in December 2006, providing a 17 per cent increase in train capacity.

State of good repair

Improve reliability of the Piccadilly line fleet.

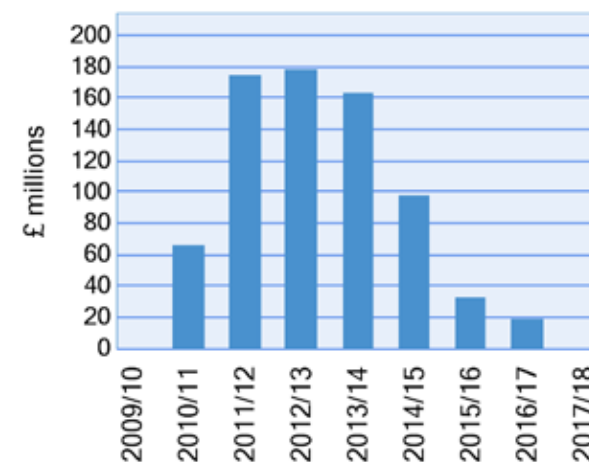
Improving accessibility

Automated audio information has been delivered on all JNP trains.

Milestones

2010	Jubilee line fleet equipped for automatic train operation
2010	Piccadilly line new fleet - contract award
2012	Northern line fleet equipped for automatic train operation
2014	Piccadilly line 93 new trains delivered

Spending to 2017/18



Mode:	London Underground
Project location:	Metropolitan, H&C, Circle and District lines
Estimated cost £m:	1,692
Next TfL gateway	E - Project close

Purpose

The priority for the rolling stock investment is to deliver projects that sustain or improve fleet safety and performance. For existing Sub-Surface Railway (SSR) fleets this includes targeted improvements to ensure continued safety and reliability until their planned disposal dates. For all SSR lines a new fleet of trains (called S-stock) will be introduced from 2010 to deliver improved capacity, reduced journey times and passenger environment.

Outputs

This portfolio covers investment in rolling stock that currently runs on Metropolitan line (56.5 trains of A-stock), Circle and Hammersmith & City lines (46 trains of C-stock) and District lines (75 trains of D-stock). These trains will be replaced by 191 trains of S-stock from 2010. The new trains will include a range of enhancements including air conditioning, improved passenger information, through-gangways and security and accessibility features.

Improving transport capacity

Capacity will be increased through the introduction of the new trains. The improved reliability of the new trains will result in reduced lost customer hours of 50 per cent compared with current levels.

Improving accessibility

The new design includes audio-visual information systems, multi-purpose areas (tilt-up seats), wheel chair access, internal colour contrast, in-car CCTV and through gangways.

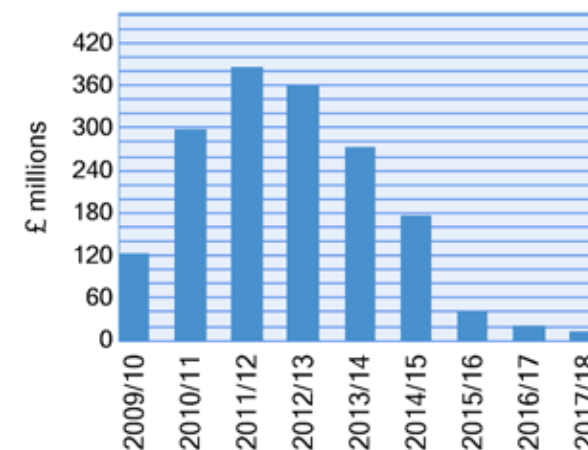
Improving journey experience

The new fleets will incorporate modern facilities and lighting and will feel more spacious due to the through gangways.

Milestones

2010	First S-Stock in passenger service on Metropolitan line
2011	First S-Stock in passenger service on Circle and Hammersmith & City lines
2013	First S-Stock in passenger service on District line
2015	Complete delivery of all S-Stock

Spending to 2017/18



Mode:	London Underground
Project location:	Bakerloo, Central, Victoria and Waterloo & City lines
Next TfL gateway	P - Programme

State of good repair

New assets will be designed to enable the efficient and effective maintenance of the new trains. Short-term works are designed to clear a backlog of works on the base infrastructure of the depots.

Milestones

2009	Complete Northumberland Park depot redevelopment
2013	Commence detailed design of Stonebridge Park depot redevelopment
2015	Commence Stonebridge Park depot redevelopment

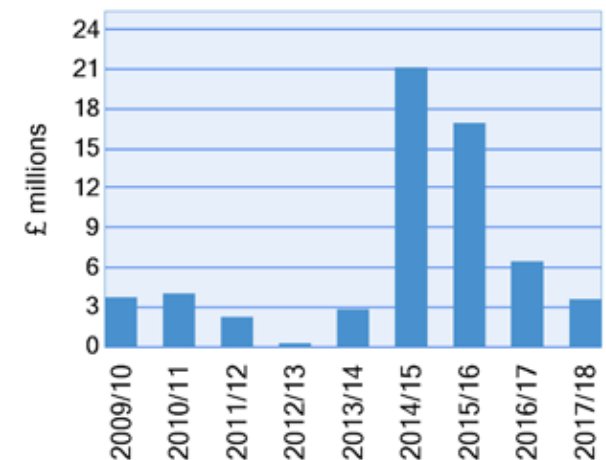
Purpose

The train fleet for Bakerloo, Central and Victoria lines consists of 166.5 trains increasing to 170.5 trains following the introduction of the new Victoria line fleet. The trains are maintained at five major depots; Ruislip, Hainault, Waterloo & City, Stonebridge Park and Northumberland Park. Depots are essential for carrying out routine and casualty maintenance on the trains. As part of the upgrades on the Victoria and Bakerloo lines the depots will be redeveloped to enable efficient and effective maintenance of the new fleets.

Outputs

This portfolio covers investment in rolling stock depots on the deep Tube lines. Works cover five depots and also a number of sidings. Short-term works include drainage improvements, replacement of life-expired track, security enhancements and asset stabilisation activities. Northumberland Park depot has already been redeveloped as part of the Victoria line upgrade. Long-term works at Stonebridge Park depot are linked to the introduction of new Tube stock on the Bakerloo line between 2018 and 2020 and will include the provision of improved maintenance facilities compatible with new trains.

Spending to 2017/18



Mode:	London Underground
Project location:	Jubilee, Northern and Piccadilly lines
Next TfL gateway	P - Programme

Improving transport capacity

Approximate 10 per cent reduction in lost customer hours due to depot assets improvement expected by 2010.

Milestones

- 2005 Northfields depot (Piccadilly line) - installation of new wheel lathe
- 2007 Depot electrical installations safety improvement project - all Tube Lines-managed depots (achieved)

Purpose

Depots are essential for carrying out maintenance and regular overhauls on spare trains during the day, while at night the next day's fleet is readied for service. Note that all cost figures included here are indicative only of the level of investment the infrastructure company will be making.

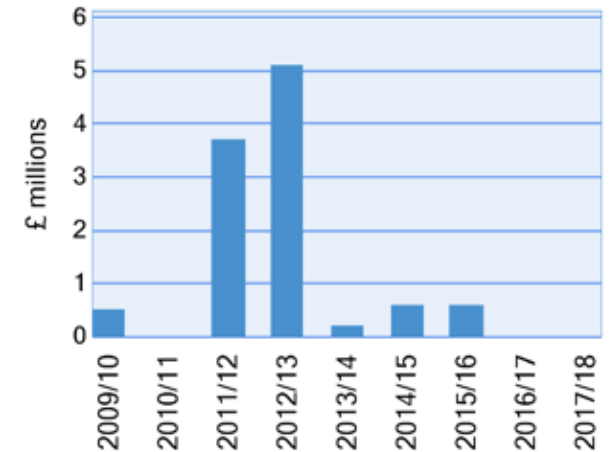
State of good repair

Depot asset condition contributes to overall reliability by enabling maintenance of rolling stock and improving operating performance (trains entering and leaving depots for customer service).

Outputs

This portfolio covers investment in rolling stock depots (including all fixed assets within the depots) on the JNP lines. The asset condition assessment has shown that 19 per cent of depot assets require special measures to keep them in service or are due for replacement. Works include drainage improvements, power operated points (replacing hand operated points) and replacement of life-expired track in the depots.

Spending to 2017/18



Mode:	London Underground
Project location:	Metropolitan, H&C, Circle and District lines
Next TfL gateway	Multiple

State of good repair

New assets will be designed to enable the efficient and effective maintenance of the new trains. Short-term works are designed to clear a backlog on the base infrastructure of the depots.

Milestones

2011	Complete Neasden depot redevelopment
2013	Complete Ealing Common depot redevelopment
2015	Complete Upminster depot redevelopment

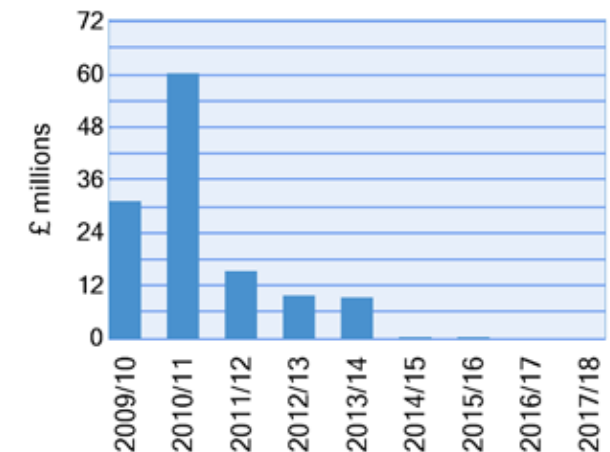
Purpose

LU's Sub-Surface Railway fleet (177.5 trains rising to 191 trains at completion of the delivery of the new trains) are maintained at four major depots: Neasden, Ealing Common, Upminster and Hammersmith. These depots are essential for carrying out routine and casualty maintenance on the trains. As part of the line upgrades the depots need to be redeveloped so that maintenance of the new fleet can be delivered effectively and efficiently.

Outputs

This portfolio covers investment in rolling stock depots on the sub-surface lines. This covers four depots and also a number of sidings. Short-term works include drainage improvements, replacement of life-expired track, security enhancements and asset stabilisation activities. Long-term works are linked to the introduction of new S-stock trains and include the provision of improved maintenance facilities adapted to the design of the new trains.

Spending to 2017/18



Mode:	London Underground
Project location:	Bakerloo, Central, Victoria and Waterloo & City lines
Next TfL gateway	D - Contract award

State of good repair

Many signals and C&I assets can be safely maintained well beyond their design life, but obsolescence of some of the equipment calls for anticipation of problems and selective renewal or re-engineering. Wiring and cabling degrades progressively with time and piecemeal renewal is expensive and often impractical.

Milestones

2010	Trialling Victoria line service control centre signalling in traffic hours
2011	Demonstrate operation of the Victoria line signal control centre
2011	Trialling Victoria line service control centre line control in traffic hours
2012	Full DTG signalling and new Victoria line service control centre
2012	Control Victoria line from the new service control centre
2013	Demonstration of Victoria line upgrade

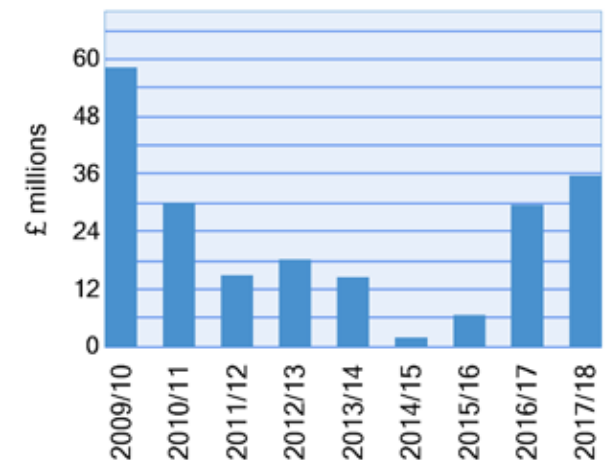
Purpose

Signalling and part of the customer information (C&I) systems enable the provision of a safe and efficient service. Information systems provide the visible service to the traveller. Most signals and C&I assets will be replaced on the Victoria line making a major contribution to the capability targets. The Central line automatic train operation system is due for refurbishments works on computing and electronic components to ensure reliability. Design work for the new signalling of the Bakerloo line will commence in 2014/15.

Outputs

Design and implementation of the signalling and C&I system upgrades to contribute to a step change improvement in capability, availability and operating costs. Allows existing signals and C&I assets to be managed in a way that delivers BCV availability targets at optimal whole life cost. The approach uses risk-based maintenance regimes and selective renewal, refurbishment and re-engineering, based on the condition of the assets and their risk exposure.

Spending to 2017/18



Mode:	London Underground
Project location:	Jubilee, Northern and Piccadilly lines
Next TfL gateway	P - Programme

Purpose

A safe, high-capacity signalling system is essential for providing a good metro service. A number of lines have systems approaching the end of their useful life, renewals to enhance service reliability are planned as part of the line upgrades programme. Note that all cost figures included here are indicative only of the level of investment the infrastructure company will be making.

Outputs

This portfolio covers renewal of the signalling and control equipment used on the JNP lines. The following asset condition benchmarks are used:

- A: Will last at least 10 years
- B: Overhaul in 6-10 years
- C: Overhaul in 1-5 years
- D: Requires immediate replacement
- E: Fails to meet requirements and needs mitigation measures
- Grey: Asset condition requires assessment

Improving transport capacity

Journey time capability target improved by seven minutes over the Jubilee and Northern lines by 31 December 2012.

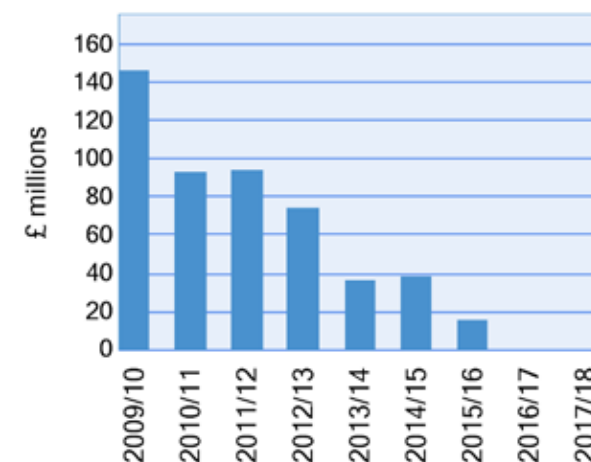
State of good repair

Contributes to achieving improvement in reliability of 12 per cent under performance regime by 2012.

Milestones

- 2008 Delivery of 59 Jubilee line trains complete with upgraded signalling equipment
- 2010 New Northern line control centre
- 2010 Jubilee line signalling upgrade (as part of line upgrades) using transmission-based train control system
- 2012 Northern line signalling upgraded (as part of line upgrades) using transmission-based train control system

Spending to 2017/18



Mode:	London Underground
Project location:	Metropolitan, H&C, Circle and District lines
Next TfL gateway	D - Contract award

State of good repair

Many signals and C&I assets can be safely maintained well beyond their design life, but obsolescence of some of the equipment calls for anticipation of problems and selective renewal or re-engineering. Wiring and cabling degrades progressively with time and piecemeal renewal is expensive and often impractical.

Milestones

2010	Signalling contract award
2011	Service control centre building handed over to automatic train control contractor
2012	All Metropolitan line signalling equipment rooms handed over to automatic train control contractor
2013	All Circle line and Hammersmith & City line signalling equipment rooms handed over to automatic train control contractor
2014	All District line signalling equipment rooms handed over to automatic train control contractor
2018	Complete re-signalling works

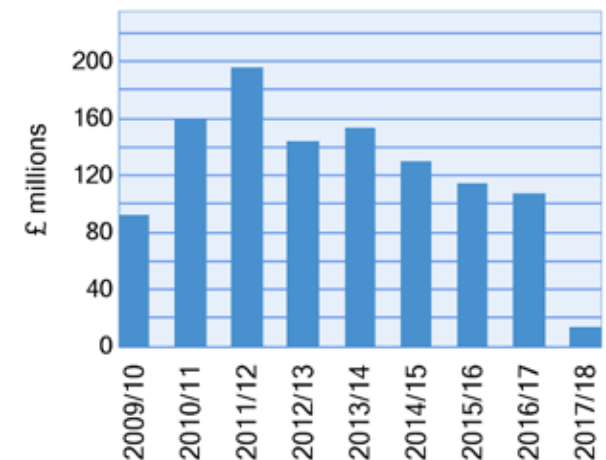
Purpose

Signalling and part of the customer information systems (C&I) enable the provisions of a safe and efficient service. Information systems provide visible information to the customer. Most signalling and C&I assets will be replaced of the SSR network as part of the upgrade programme. As the signalling system will not be replaced before the new trains are delivered, works have commenced on the existing systems to accommodate the new trains. The new signalling will be completed in 2018.

Outputs

Design and implement the signalling and C&I system upgrades to contribute to a step change improvement in capability, availability and operating cost. The existing signals and C&I assets will be managed in a way that delivers SSR availability targets at optimal whole life cost, using risk-based maintenance regimes. Selective renewal, refurbishment and re-engineering will be based on the condition of the assets and their risk exposure.

Spending to 2017/18



Mode:	London Underground
Project location:	Bakerloo, Central, Victoria and Waterloo & City lines
Next TfL gateway	Multiple

Purpose

To provide increased capacity to meet growing customer demand over the next 20 years. The line upgrades are expected to deliver an approximate 30 per cent increase in capacity by 2020, enabling modal shift to public transport.

Outputs

An upgrade project to provide the capability for reduced journey times, enabling increased capacity. This is achieved by coordinated renewal and replacement of assets, typically signals and rolling stock, delivering a step-change in performance. Lines affected are Central, Waterloo & City, Victoria and Bakerloo. Details of works on specific assets are captured under the relevant asset portfolios.

Improving transport capacity

Reduced average journey times: Bakerloo 17 per cent, Central five per cent, Victoria 13 per cent and Waterloo & City 12 per cent. Increased capacity (service volumes) approximately: Bakerloo 57 per cent and Victoria 21 per cent (increase in peak capacity into central London).

Improving journey experience

New trains are designed to provide a better environment and accessibility for all passenger groups, as well as an overall increase in capacity.

Milestones

2006	Victoria - interim line upgrade complete
2006	Central line upgrade complete
2007	Waterloo & City line upgrade complete
2011	Last 67 train stock removed from Victoria line
2012	Full achievement of Victoria line upgrade journey time capability
2013	Victoria - full line upgrade complete
2020	Bakerloo line upgrade complete

Cost data for line upgrade activities is included under the relevant asset portfolios

Mode:	London Underground
Project location:	Jubilee, Northern and Piccadilly lines
Next TfL gateway	Multiple

Purpose

To provide increased capacity to meet growing customer demand over the next 20 years. The line upgrades are expected to deliver an approximately 30 per cent increase in capacity enabling modal shift in favour of public transport. Note that all cost figures included here are indicative only of the level of investment the infrastructure company will be making.

Outputs

The infrastructure company is required to provide the capability for reduced journey times, enabling increased capacity achieved by renewal and replacement of signals and rolling stock. Note: LU has expressed grave doubts about the prospects for Tube Lines meeting the planned completion date of the Jubilee line on 31/12/2009, this seems certain to be delayed into 2010. Following an independent review of Tube Lines programme, LU will work with Tube Lines to confirm a revised delivery date.

Improving transport capacity

Reduced average journey times: Jubilee 26 per cent, Northern 21 per cent and Piccadilly 10 per cent. Increased capacity (service volumes) approximately: Jubilee 33 per cent, Northern 20 per cent and Piccadilly 24 per cent (increase in peak capacity into central London)

Improving journey experience

The Jubilee and Northern lines are not receiving new train fleets as part of the upgrade. The Piccadilly line will have a new fleet of trains improving the overall customer experience through new design.

Reducing CO2 emissions

The new Piccadilly line trains will be designed to use energy more effectively reducing emissions.

Milestones

2008	Jubilee line dual fitted area available for LU use
2010	Jubilee line upgrade completed
2012	Northern line upgrade completed
2014	Piccadilly line upgrade completed

Cost data for line upgrade activities is included under the relevant asset portfolios

Mode:	London Underground
Project location:	Metropolitan, H&C, Circle and District lines
Next TfL gateway	Multiple

Purpose

To provide increased capacity to meet growing customer demand over the next 20 years. The line upgrades are expected to deliver an approximate 30 per cent increase in capacity enabling modal shift in favour of public transport.

Outputs

The line upgrade project provides:

Modern equivalent replacement of assets which have reached the end of their economic life.
 Increased train capacity due to modern signalling technology and improved train performance.
 Accessibility and ambience improvements through optimised train design.

Improving transport capacity

Resignalling to improve reliability and capacity to as much as 32 trains per hour. Increased capacity: Circle and Hammersmith & City 65 per cent, District 24 per cent and Metropolitan 27 per cent (increase in peak capacity into central London).

Improving journey experience

The upgrade projects will deliver new trains with modern facilities improving the overall journey for the customer. The trains will provide lower saloon temperature, through gangways between cars and improved ambience.

Improving accessibility

New fleet design includes audio-visual information systems, multi-purpose areas (eg tip up seats) giving greater wheelchair access, colour-contrasted grab rails and in-car CCTV.

State of good repair

The SSR trains and signalling have reached the end of their economic life and require replacement to safeguard future efficient operation. The new assets will provide the SSR network with modern railway technology and improved long-term reliability.

Milestones

2009	Extended Circle line timetable delivered
2011	Service control centre building handed over to Automatic Train Control (ATC) contractor
2012	All Metropolitan line signal equipment rooms (SERs) handed over to ATC contractor
2013	All Circle and Hammersmith & City line SERs handed over to ATC contractor
2014	All District line SERs handed over to ATC contractor
2018	Complete re-signalling works

Cost data for line upgrade activities is included under the relevant asset portfolios

Mode:	London Underground
Project location:	Bakerloo, Central and Victoria lines
Estimated cost £m:	1,033
Next TfL gateway	Multiple

State of good repair

Targeted replacement of key systems to keep the station base facilities in good working order. This will ensure that stations remain open to the public and safe to operate.

Milestones

2005	Roding Valley
2006	Queensway, Lancaster Gate, Leyton, Chigwell, West Ruislip
2007	Woodford, Debden, East Acton, Bond Street
2007	Epping, Elephant & Castle, Fairlop, Snaresbrook, Northolt, South Ruislip, South Woodford, Theydon Bois, Piccadilly Circus
2008	Bethnal Green, Loughton, Maida Vale, Holborn, Regents Park, Ruislip Gardens
2009	Shepherd's Bush, St. Paul's, Oxford Circus, Hainault, Perivale, White City, Walthamstow Central
2010	Notting Hill Gate & Marble Arch complete
2010	Ex-Silverlink stations complete
2010	Mile End, Warren Street, Brixton, Wanstead

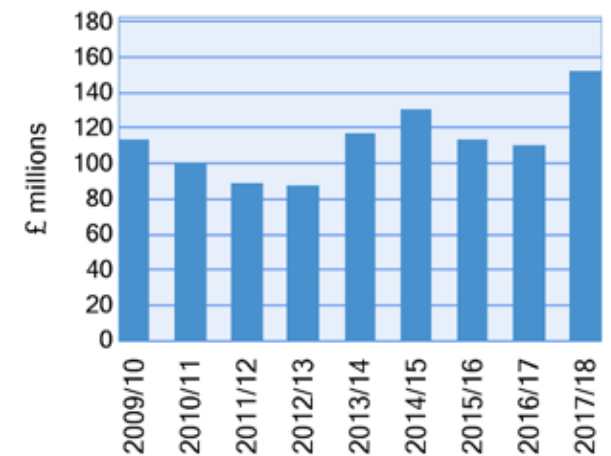
Purpose

To improve and maintain the asset condition at stations. Packages of work to replace or enhance particular assets, eg public address systems, will be undertaken, taking into account that only a limited number of station enhancements planned under the PPP were completed. In general, a principle of asset stabilisation will be adopted and key assets will be maintained at least at their existing level.

Outputs

A programme of targeted works to particular assets reflecting their current condition is being developed on stations that have not been refurbished in the first period of the PPP contracts.

Spending to 2017/18



Mode:	London Underground
Project location:	Jubilee, Northern and Piccadilly lines
Estimated cost £m:	384
Next TfL gateway	Multiple

Purpose

To maintain current station asset condition and ambience scores following enhancements undertaken in the first period of the PPP contracts. Note that all cost figures included here are indicative only of the level of investment the infrastructure company will be making.

Outputs

The station programme has been changed to reflect current funding, and the enhancements delivered in the first period of the PPP contract. The aim is to maintain core systems in good working order replacing equipment where necessary but not undertaking the levels of refurbishment seen in the first period of the PPP contract.

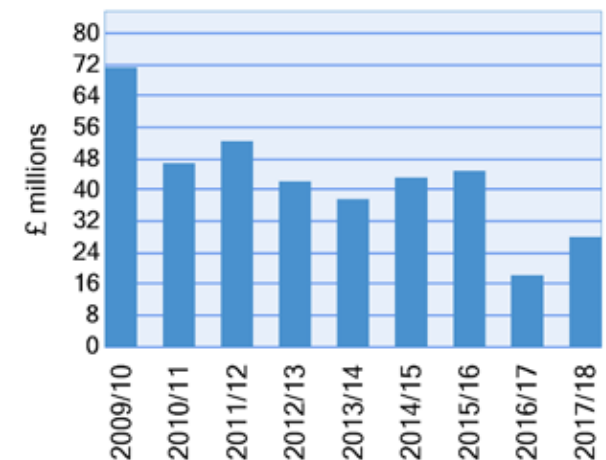
State of good repair

Maintain electrical and mechanical systems, such as those concerned with fire detection.

Milestones

- 2009 Queensbury, Hounslow West, Russell Square, Osterley, Green Park, Stanmore, Covent Garden, Clapham Common, London Bridge, Bermondsey, Canning Town, Oval, Waterloo, Balham, Tooting Broadway, Hyde Park Corner
- 2010 Wood Green, Goodge Street, Edgware, High Barnet, Hatton Cross, Kingsbury, Westminster, Southwark, Canada Water, Canary Wharf, North Greenwich, Clapham North, Archway, Clapham North, Clapham South, Tooting Bec
- 2011 Colliers Wood, South Wimbledon, Hounslow East, Heathrow 123

Spending to 2017/18



Mode:	London Underground
Project location:	District, Circle, H&C and Metropolitan lines
Estimated cost £m:	1,603
Next TfL gateway	Multiple

State of good repair

Targeted replacement of key systems to keep the station base facilities in good working order. This will ensure that stations remain open to the public and safe to operate.

Milestones

2005	North Harrow, Bow Road
2006	Northwick Park, Dagenham Heathway, Turnham Green, Plaistow, Shepherd's Bush Market, Bayswater, Ruislip Manor, Eastcote, Ruislip, Dagenham East, Becontree, Putney Bridge
2007	Stamford Brook, Northwood Hills, Pinner, Watford, Ravenscourt Park
2008	Preston Road, Elm Park, Northwood, Gloucester Road, Great Portland Street, Upminster Bridge, Bromley-by-Bow, Tower Hill, Chiswick Park
2009	Uxbridge, Earl's Court
2010	Aldgate East, Aldgate

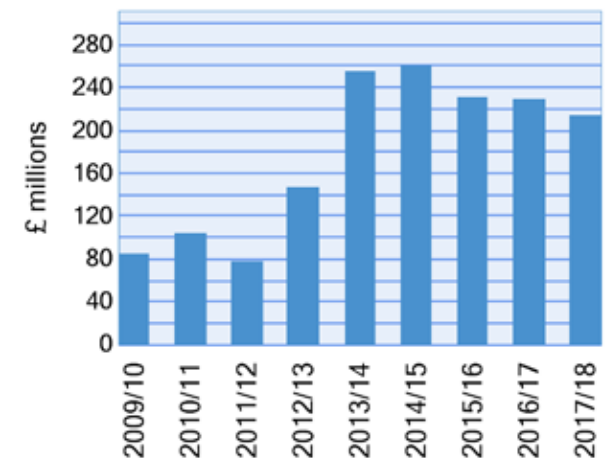
Purpose

To improve and maintain the asset condition at stations. Packages of work to replace or enhance particular assets, eg public address systems, will be undertaken, taking into account that only a limited number of the station enhancements planned under the PPP were completed. In general, a principle of asset stabilisation will be adopted and key assets will be maintained at least at their existing level.

Outputs

A programme of targeted works to particular assets reflecting current condition is being developed on particular station assets that have not been refurbished in the first period of the PPP contract.

Spending to 2017/18



Mode:	London Underground
Project location:	Green Park station
Estimated cost £m:	97
Next TfL gateway	E - Project close

Purpose

LU is committed to making the Underground system more accessible to all customers. An important part of this is a programme to make a key network of stations step-free between street and platform levels. Green Park is identified as a priority station for providing step-free access; it is at the heart of the West End and provides a key interchange between the Jubilee, Piccadilly and Victoria lines. Completion in time for the 2012 Games is planned.

Outputs

Step-free access by lift between street level ticket hall and all platforms at Green Park station.

Improving journey experience

A landscaped direct entrance into the station from the park will be provided. Other environmental improvements around Piccadilly (south side) and park entrances to the station are in the process of being agreed with London Borough of Westminster and the Royal Parks.

Improving accessibility

Step-free access from street to platform benefits mobility impaired passengers. Visually impaired passengers may find lifts easier to use than escalators or stairs.

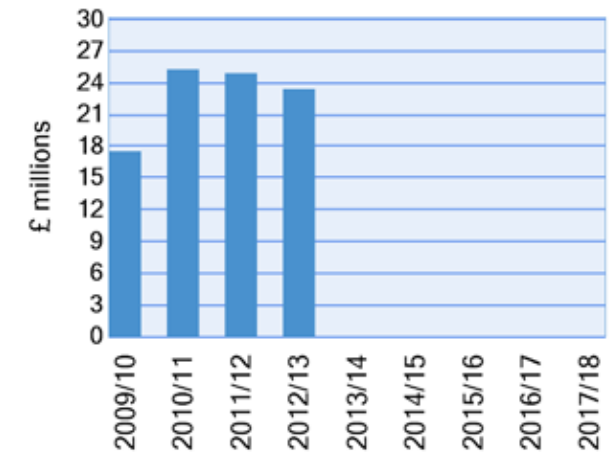
2012 ongoing benefits

Green Park will continue to be a major interchange point on the system after the Olympic Games.

Milestones

2009	Completion of design
2011	Delivery into service
2012	Completion of landscaping works

Spending to 2017/18



Mode:	London Underground
Project location:	Various
Estimated cost £m:	178
Next TfL gateway	E - Project close

Purpose

Connect delivers major safety and customer benefits by providing a more resilient and more comprehensive radio system that is less prone to failure and which enables information to be more easily disseminated to staff.

Outputs

LU-managed Connect communications have a new transmission and radio system, including extensive new cabling, 290 cell sites with two to three base stations, 1,400 new train mobiles, 7,500 new telephone links and 180 CCTV links. It has also delivered an integrated radio service throughout the Underground network and serves as a prerequisite for providing emergency services below ground.

Improving transport capacity

The Connect PFI will provide an upgraded, integrated radio service throughout the LU network, including the provision of voice, data and video services. The new system will also offer greater flexibility and availability for Underground communication.

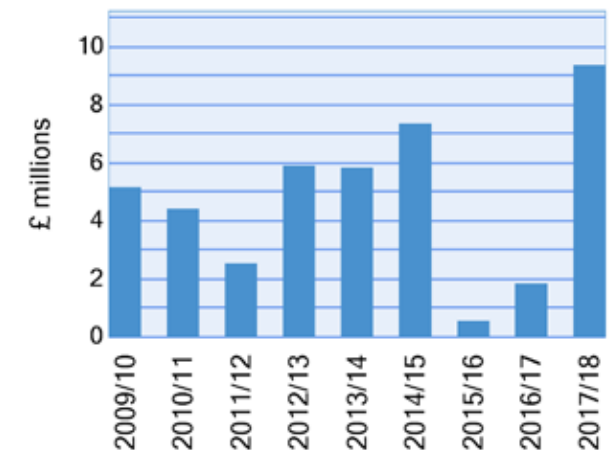
Improving traffic and transport safety

The delivery of improved CCTV will improve customer safety and security.

Milestones

2009	Tube Lines video cut-over - installation complete 21-40 (of 80 stations)
2009	BCV/SSL video cut-over - installation complete 26-51 (of 100 stations)
2009	Tube Lines video cut-over - installation complete 1-20 (of 80 stations)
2009	Airwave - CDS for additional coverage 46 stations complete
2009	Resilience second stage (equipment and process) implemented
2009	Video cut-over, first batch
2010	Voice and data cut-over to the new Tetra system
2010	Video cut-over complete

Spending to 2017/18



Mode:	London Underground
Project location:	Bank station
Estimated cost £m:	690
Next TfL gateway	B - Option selection

Purpose

Bank station serves the commercial hub of the City and is a major interchange. The station suffers from significant congestion and works seek to mitigate overcrowding on the Northern and Waterloo & City lines.

Outputs

Increased capacity with ability to handle forecast demand. New entrance/exit for Waterloo & City line in Walbrook Square, with step-free access (stage one). Additional platform stairs and concourse capacity for Northern line platforms (stage two). Lifts to other platforms to make Bank station step-free (stage three).

Improving transport capacity

Reduced congestion and queuing. Reduced risk of unplanned station closures.

Improving accessibility

Step-free access will benefit mobility-impaired passengers. Visually impaired passengers will also find lifts beneficial.

Improving journey experience

Ambience improvements through new signage, information and decoration will be achieved.

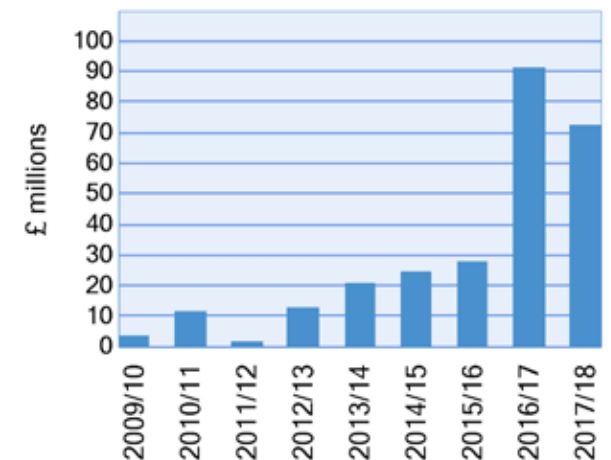
Improving traffic and transport safety

Enhances fire and evacuation protection. Also improves perception of security.

Milestones

2011	Waterloo & City line entrance: complete design of station box fit-out
2014	Northern line: detailed design
2015	Northern line: Transport & Works Act application
2016	Waterloo & City line entrance: delivery into service
2016	Northern line: start on site
2021	Northern line: completion

Spending to 2017/18



Mode:	London Underground
Project location:	Bond Street station
Estimated cost £m:	306
Next TfL gateway	D - Contract award

Purpose

Congestion problems are already significant in the ticket hall and lower-level circulating areas. The upward trend of passenger growth is set to continue. Bond Street is a key interchange with Crossrail, and additional capacity is needed to coincide with Crossrail opening.

Outputs

A new modern ticket hall in Oxford Street/Marylebone Lane. Additional escalators to Jubilee line platforms. Step-free access from street to platforms.

Improving transport capacity

Reduced congestion and queuing through increased station capacity. Reduced risk of unplanned station closures.

Improving accessibility

Step-free access from street to platform benefits mobility-impaired passengers. Visually impaired passengers may find lifts easier to use than escalators or stairs.

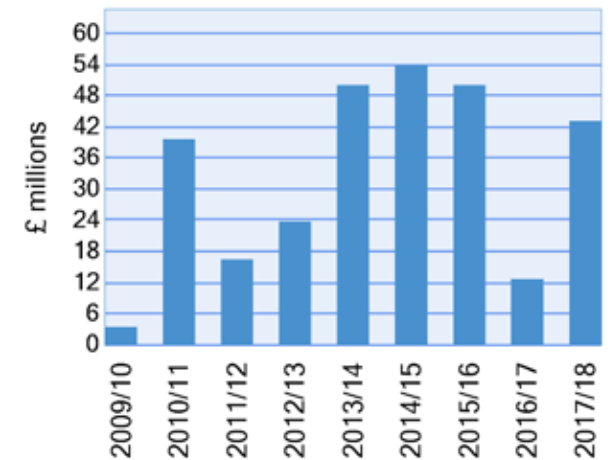
Improving journey experience

Journey time reductions and improved station ambience.

Milestones

2008	Crossrail Bill enactment (achieved)
2009	Scheme design complete
2010	Design/manage/construct D - contract award
2011	Detailed design complete
2011	Start on site - main works
2017	Completion

Spending to 2017/18



Mode:	London Underground
Project location:	Various
Estimated cost £m:	17
Next TfL gateway	E - Project close

Purpose

Wide-aisle gates provide an accessible entrance and exit to the LU system for those with children or luggage and mobility impaired passengers.

Outputs

The purchase and installation of new wide-aisle gates for use at stations across the network.

Improving accessibility

Clear commitment to accessibility of benefit to all customers, but particularly mobility-impaired passengers.

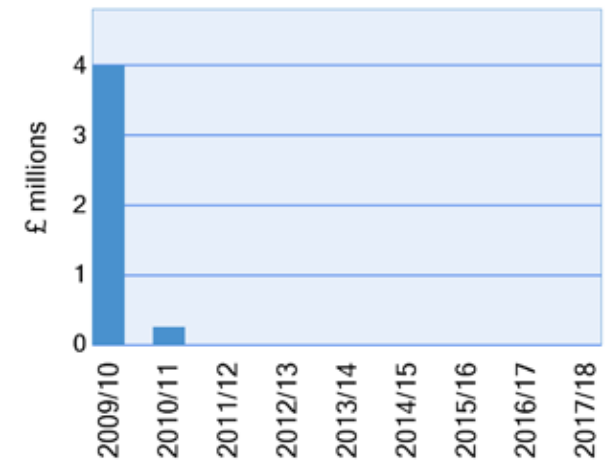
Improving transport capacity

Decreased journey time for many customers.

Milestones

2009	Installations commence
2010	Installations complete

Spending to 2017/18



Mode:	London Underground
Project location:	Various
Estimated cost £m:	21
Next TfL gateway	E - Project close

Purpose

Provision of real-time customer information allows staff to help customers make informed decisions about journeys based on service frequency, and to make alternative route decisions.

Outputs

TrackerNet is a system that improves customer information by providing real-time train service information direct to station control rooms via LU-networked PCs. This project provides coverage for line upgrades, including signal upgrades to the Jubilee, Northern and sub-surface lines, and integration with other systems where appropriate.

Improving accessibility

TrackerNet aids staff in assisting mobility-impaired passengers by allowing the destination station to track the progress of the train they are travelling on and ensure that they are met on arrival.

Improving journey experience

Improved quality of information provided via PA announcements. Better staff knowledge of current service levels across the network.

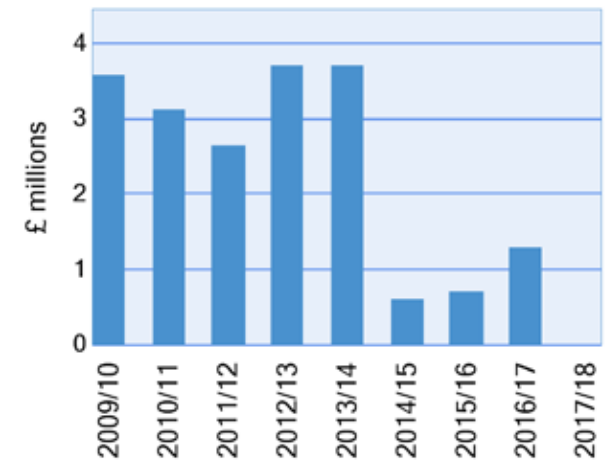
Improving transport connectivity

Improved staff helpfulness resulting from better real-time information. Also, improved customer visual real-time information.

Milestones

2010	TrackerNet coverage upgraded for the Jubilee line
2010	TrackerNet coverage upgraded for the Victoria line
2015	TrackerNet coverage upgraded for the sub-surface lines and the Piccadilly line
2020	TrackerNet coverage upgraded for the Bakerloo line

Spending to 2017/18



Mode:	London Underground
Project location:	Stratford station
Estimated cost £m:	58
Next TfL gateway	E - Project close

Purpose

The Stratford area will see a huge increase in passenger numbers over the next eight years because of continued development, including the new Stratford City shopping centre. Also, the station will be the primary access point to the 2012 Games, generating demand far in excess of normal traffic.

Outputs

Deliverables include: new westbound Central line platform; step-free access to all platforms; new mezzanine gateline to link to a new 'town centre link bridge' which will connect the current town centre with the Stratford City development; and a new Northern ticket hall connecting directly to the development and providing easy access to the Olympic Park. All of these will also generate a new, improved signage scheme for the station.

Improving transport capacity

Increased capacity in the station, reduced journey times to the Olympic Park.

Improving transport connectivity

Better wayfinding, improved access to the Stratford City development (complete with retail, leisure and housing).

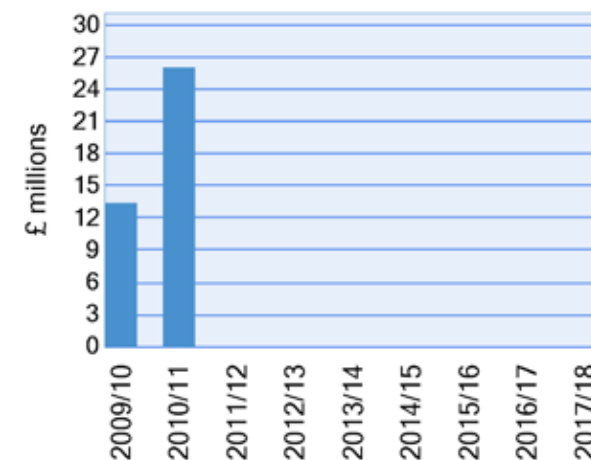
Improving accessibility

Significant improvements through improved step-free access to all platforms and increased capacity lifts.

Milestones

2010	Mezzanine gateline into service
2010	Central line platform into service

Spending to 2017/18



Mode:	London Underground
Project location:	Various
Estimated cost £m:	825
Next TfL gateway	P - Programme

Purpose

The Cooling the Tube programme has been established to implement solutions that will tackle heat on the LU network, both now and in the future. Higher heat levels are due to service increases (including planned line upgrades) and the consequent increases in energy consumption, which generates heat as a by-product. The problem is compounded by heat absorbed into the earth and clay surrounding the tunnel walls.

Outputs

Temperatures will be controlled by a combination of engineering solutions, including greatly upgraded ventilation of tunnels. While the main works take place, a series of summer campaigns will provide simple, quick measures to relieve stuffy conditions on busy stations.

Improving journey experience

Reduction in temperature in stations, tunnels and trains. Improved mystery shopper survey and customer priority survey scores.

Improving accessibility

At times, deep sections of the network can be very hot. Reducing temperatures will have a positive impact on the public and staff, especially pregnant women, infants and older people.

Improving traffic and transport safety

Reduction in the number of safety incidents.

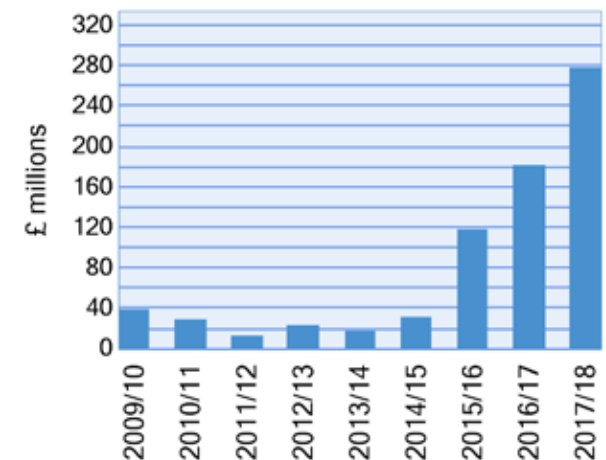
Improving transport capacity

Enabling line upgrade service improvements on Victoria and Piccadilly lines.

Milestones

2008	Victoria line mid-tunnel vents - start on site
2008	Quick wins: summer 2008 campaign rollout
2008	Euston ticket hall chiller
2009	Quick wins: summer 2009 campaign rollout
2009	Victoria line - first four mid-tunnel ventilation shaft upgrades
2009	Evaporative cooling trial complete
2012	Victoria line mid-tunnel vents: all sites commissioned

Spending to 2017/18



Mode:	London Underground
Project location:	Paddington station - Hammersmith & City line
Estimated cost £m:	69
Next TfL gateway	B - Option selection

Purpose

An increase in demand for the Hammersmith & City line at Paddington arising from local area commercial development, and a sub-surface lines upgrade will result in significant congestion within the current station. This would mean more closures to ensure congestion is safely managed. The site is constrained by the mainline station and adjoining properties. The LU station upgrade is being developed as an integrated project jointly with Crossrail and Network Rail.

Outputs

A new ticket hall (in conjunction with a relocated Crossrail-funded taxi facility and a commercial development). A significant increase in passenger concourse space. Provision of step-free access from street to platform (Hammersmith & City line). Improved station ambience, with new signage, information and decoration.

Improving transport capacity

Reduced congestion and queuing through increased station capacity. Reduced risk of unplanned station closures.

Improving journey experience

Ambience improvements will include new signage, information and decoration. As part of the integrated project, there will be a transformation of the derelict space between the station and the canal, with a transport interchange and commercial development.

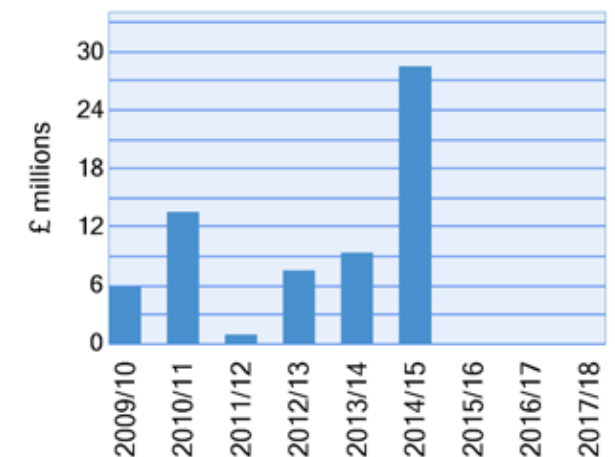
Improving accessibility

Step-free access benefits mobility-impaired passengers. Visually impaired passengers may find lifts easier to use than escalators or stairs. Improved station access from the development area around Paddington Basin.

Milestones

2008	Completion of feasibility/scheme selection
2009	Commence enabling works
2010	Completion of design
2011	Completion of structural box, taxi facility commissioned, station fit-out commences
2015	Completion

Spending to 2017/18



Mode:	London Underground
Project location:	Tottenham Court Road station
Estimated cost £m:	532
Next TfL gateway	D - Contract award

Purpose

Tottenham Court Road station is under-sized and heavily congested, with inadequate vertical capacity to platforms, on-street entrances and ticket hall. The opportunity is being taken to integrate the station upgrade with the eastern entrance to the Crossrail station.

Outputs

Congestion relief and step-free access. A new ticket hall, with new Northern line escalators. Improved access to street level, with provision of a new public square in St. Giles Circus. Integration with Crossrail. Step-free access to platform level.

Improving transport capacity

Reduced congestion and queuing through increased station capacity.

Improving journey experience

New public space in front of Centrepont and a commercial development over the station at the Charing Cross Road/Oxford Street corner.

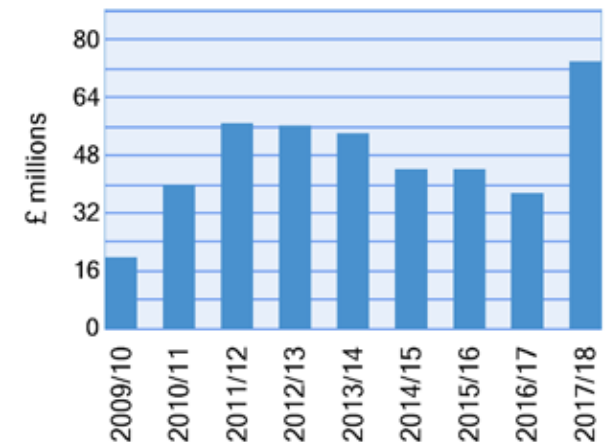
Improving accessibility

Step-free access from street to platform benefits mobility impaired passengers. Visually impaired passengers may find lifts easier to use than escalators or stairs.

Milestones

2008	Crossrail Bill enactment
2008	Compulsory purchase notices issued
2009	Award main construction contract
2009	Site clearance, continued utility diversions
2010	Start on site - main construction
2015	Opening of new ticket hall
2017	Completion of delivery stage

Spending to 2017/18



Mode:	London Underground
Project location:	Vauxhall station
Estimated cost £m:	30
Next TfL gateway	B - Option selection

Improving transport capacity

Reduced congestion. Full street-to-platform accessibility.

Milestones

2007	Scheme design complete (achieved)
2009	Detailed design complete
2016	Start on site
2021	Completion of delivery stage

Purpose

LU is committed to making the Underground system more accessible to all customers. An important part of this is a programme to make a key network of stations step-free between street and platform. Vauxhall is an Area of Opportunity within the Mayor’s London Plan, and the station is experiencing above average demand growth. The station ticket hall already experiences significant congestion, which is forecast to worsen markedly and could lead to unplanned closures.

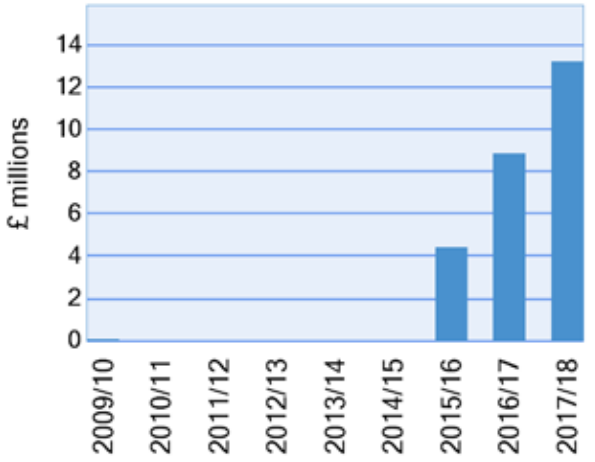
Improving accessibility

Step-free access from street to platform benefits mobility impaired passengers. Visually impaired passengers may find lifts easier to use than escalators or stairs.

Outputs

The provision of street to platform step-free access and a congestion relief scheme that will address the wider capacity issues, preventing knock-on overcrowding at Waterloo station. This project includes the provision of step-free facilities and an enlarged ticket hall.

Spending to 2017/18



Mode:	London Underground
Project location:	Southfields station
Estimated cost £m:	14
Next TfL gateway	E - Project close

Improving accessibility

Step-free access from street to platform benefits mobility impaired passengers. Visually impaired passengers may find lifts easier to use than escalators or stairs.

Milestones

2009	Completion of design
2010	Delivery into service
2010	Completion of construction

Purpose

LU is committed to making the Underground system more accessible to all customers. An important part of this commitment is its programme to make a key network of stations step-free between street and platform levels. Southfields is identified as a priority station for providing step-free access because of its proximity to a key 2012 Games venue.

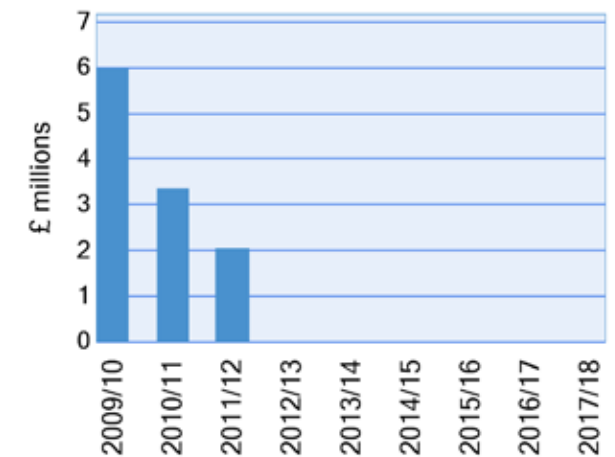
2012 ongoing benefits

This will provide permanent step free access at a key station on the network.

Outputs

Provision of step-free access from street to LU platforms.

Spending to 2017/18



Mode:	London Underground
Project location:	Various
Estimated cost £m:	11
Next TfL gateway	E - Project close

Purpose

This project is intended to mitigate the increase in power consumption that will occur as a result of the significantly enhanced service following the Victoria line upgrade.

Outputs

Implementing 4,500-amp operation, instead of the present 3,500-amp operation. Other minor works include additional track feeders and low-loss composite conductor rail installation.

Improving transport capacity

Allows forecast upgrade performance to achieve significant energy consumption improvements. Due to tunnel cooling constraints, forecast line upgrade performance cannot be achieved without this project.

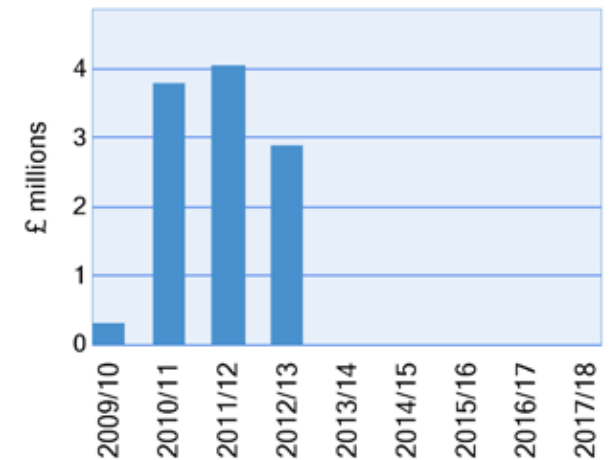
Reducing CO2 emissions

Ability to use coasting facility. Reduced power consumption.

Milestones

2010	Composite conductor rail works completed
2011	Electrical trackside equipment works completed

Spending to 2017/18



Mode:	London Underground
Project location:	Various
Estimated cost £m:	8
Next TfL gateway	E - Project close

Purpose

The Piccadilly line service control projects provide improved and more interactive control system capabilities. These will enable service control teams to better plan, monitor and fine tune the train service to mitigate the effect of potential deteriorations, thereby helping to maintain levels of service and provide significant benefits to customers.

Outputs

Replacement of mechanical programme rolls with electronic timetables at nine locations. New 'train following' system for Piccadilly line service control at Earl's Court. Variable regulation time system providing trackside regulation indicators at nine stations and centralised system control at Earl's Court.

Improving transport capacity

Improved reliability of programme machines and increased flexibility for future changes. Improved service control on the Piccadilly line ahead of the line upgrade. Improved regulation of trains reducing excess journey time.

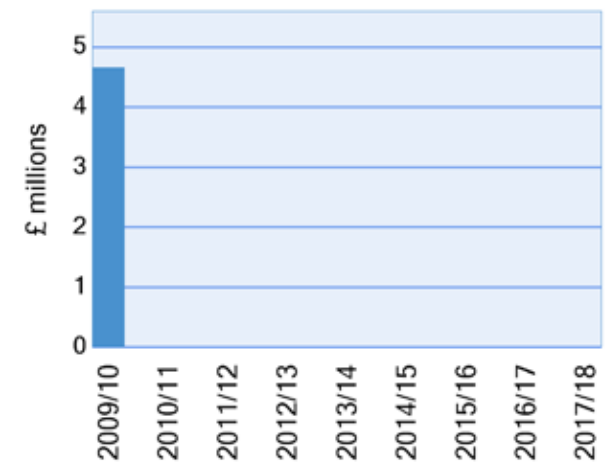
Improving journey experience

Enable more effective decisions and intervention actions to be made. This will provide a more reliable level of service.

Milestones

2008	Variable regulation time system: design compliance submission
2009	CTFS: mechanical programme machine installation completion
2009	CTFS: centralised 'train following' system design completion
2009	Variable regulation time system: implementation go/no-go
2010	CTFS: full centralised 'train following' system commissioned

Spending to 2017/18



Mode:	London Underground
Project location:	Various locations network-wide
Estimated cost £m:	95
Next TfL gateway	P - Programme

Purpose

Additional operational accommodation capacity (for stations, trains and service control staff) is required to support existing planned timetable enhancements. Improved facilities will boost staff morale and bring about improvements in attendance and customer service. Meeting LU's goal of being an equal opportunities employer requires providing appropriate staff facilities. Improvements in staff morale also benefit LU by reducing the costs (both financial and in customer service terms) associated with staff turnover and absence.

Outputs

Provision of improved facilities for staff including improved capacity, condition and ambience of operational accommodation. Improved working environment that will allow greater operational effectiveness.

Improving transport capacity

Providing appropriate staff accommodation is a key enabler to the line upgrades.

Cost and efficiency savings

Reduced costs (in both financial and customer service terms) associated with staff turnover and absence.

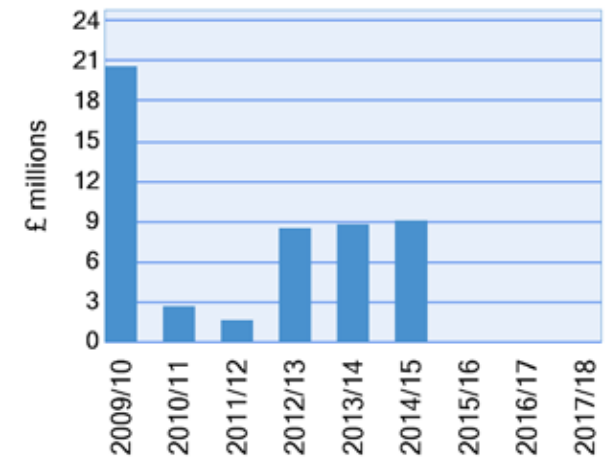
Improving accessibility

Improvement of the facilities available to female staff, eg separate locker areas.

Milestones

- 2009 BCV Leytonstone Train Crew/Group Station Manager Accommodation - delivery into service
- 2009 JNP Train Crew Accommodation High Barnet - delivery into service
- 2009 BCV Train Crew Accommodation Brixton - delivery into service
- 2009 SSL Train Crew Accommodation Harrow on the Hill - delivery into service
- 2010 BCV Train Crew Accommodation Edgware Road and Hammersmith - delivery into service
- 2015 JNP Train Crew Accommodation Cockfosters/Northfields - delivery into service

Spending to 2017/18



Mode:	London Underground
Project location:	Various, principally Farringdon and Blackfriars
Estimated cost £m:	37
Next TfL gateway	P - Programme

Purpose

The Thameslink programme seeks to significantly increase north-south capacity across London, providing increased accessibility to the heart of the city from destinations north and south of the Capital. The project will relieve congestion on the Victoria, Piccadilly and Northern lines. LU is an important part of this work, with new interchanges being provided at Farringdon and Blackfriars stations.

Outputs

Approval between LU and Network Rail on all elements of work where the two railways interface. Two new ticket halls, step-free access and increased capacity at Farringdon station. Blackfriars station rebuilt with new facilities, step-free access throughout and enhanced capacity. Successful scheme developed at London Bridge that integrates with LU. Successful completion of Thameslink programme and associated capacity benefits.

Improving accessibility

Substantial benefits to all passengers. Mobility-impaired passengers benefit further from two additional LU step-free stations, and all passengers benefit from increased provision of safety, security and ambience improvement works.

Improving journey experience

Modern facilities present a world-class service to passengers, and provide enhanced safety, security and customer information.

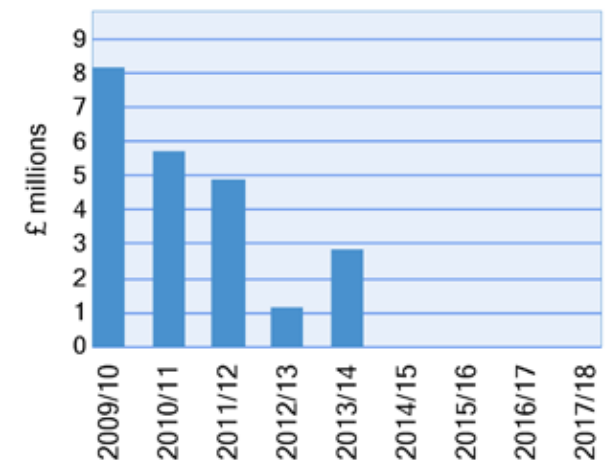
Improving transport connectivity

Improved interchange at several LU stations.

Milestones

2009	Thameslink services to Moorgate and Barbican stations cease
2011	Blackfriars works complete
2011	Farringdon works complete
2015	London Bridge works complete

Spending to 2017/18



Mode:	London Underground
Project location:	Various (north, central and south London)
Estimated cost £m:	312
Next TfL gateway	Multiple

Purpose

By 2026 expected strong growth in population and employment will result in congestion on north to south routes at levels very similar to today. By strategically rescheduling peak Northern line service patterns, additional capacity equivalent to a new north-to-south line across London can be provided, while at the same time delivering a more energy efficient and reliable railway.

Outputs

A more frequent Northern line service will be delivered, utilising up to 19 additional trains alongside the existing fleet. A number of extra stabling spaces will be required as well as changes to the power supply, signalling system and tunnel cooling programme. Thirty-two trains per hour will run in the peak between the Morden and Bank branches, with all other peak service frequencies rising to around 28 trains per hour.

Improving transport capacity

Upgrade 2 will deliver a simpler service pattern on the Northern line. This will also allow more trains to be run, and up to 32 trains per hour to operate on the central London branches. This scheme will provide roughly 20 per cent extra capacity and overcrowding relief on busy sections, in addition to the Northern line upgrade phase 1.

Improving journey experience

Congestion relief will also be felt on other lines across the network as customers transfer to the more capacious Northern line. Journey times will reduce and the customer experience onboard trains will be improved by more space being available.

Improving transport connectivity

The Northern line serves a number of areas classified by the Government as being deprived and so the provision of extra capacity along these key corridors could assist jobseekers, disabled people and single-parent families.

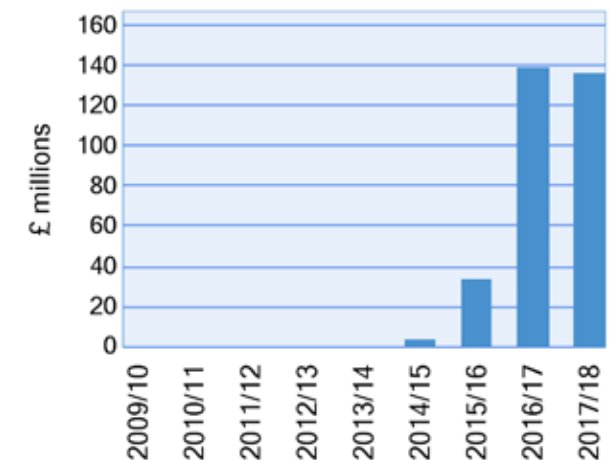
Improving accessibility

The new trains will, like the existing 1995 stock, be fully accessible.

Milestones

2008	Insertion of project into restated contract terms
2010	Completion of periodic review
2011	LU to exercise specified right
2012	Completion of (prerequisite) Upgrade 1
2016	Commencement of delivery of new train fleet
2017	Completion of delivery of new train fleet
2018	Northern line upgrade completion

Spending to 2017/18



Mode:	London Underground
Project location:	Metropolitan and Piccadilly line
Estimated cost £m:	9
Next TfL gateway	B - Option selection

Improving transport capacity

Improvement in reversing for Piccadilly line trains from four trains an hour to eight. Provision of reversing for new Metropolitan trains. Improving train throughput resulting from stabling facilities.

Milestones

2009	Completion of feasibility
2013	Completion of construction and system integration
2013	Service entry

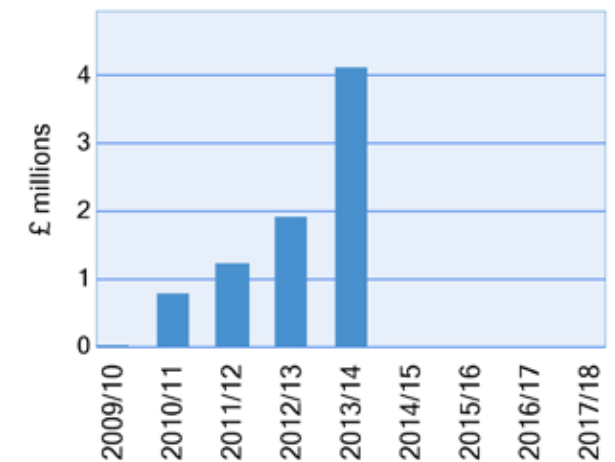
Purpose

The reversing capacity of the site is restricted at present with only a single siding available. The inter-operability workstream is considering the option of curtailing all Piccadilly line services at Rayners Lane. This would require additional reversing capacity in addition to the changes required to facilitate a service enhancement on the existing patterns. Enhancements to automatic train operation are being considered, which is likely to increase the capacity for any reversing facility.

Outputs

Replace single siding with a double siding for the Piccadilly and Metropolitan lines, increasing the current line speed for siding entry and accommodating S8 stock. Platform modification. Ground and embankment infrastructure modification to trackside, including the removal of a disused bridge west of Rayners Lane station. Relocation of current services in terms of communications, power, signalling, water, etc, both north and south of the station.

Spending to 2017/18



Mode:	London Underground
Project location:	
Estimated cost £m:	1,421
Next TfL gateway	P - Programme

Purpose

In order to extract maximum benefit from the line upgrades, the LU power system requires reinforcement. The reduced journey time associated with line upgrades relies on a combination of faster, larger and more frequent trains. Without upgraded power supplies, this will not be realised.

Outputs

Additional power capacity in support of the line upgrades.

Improving transport capacity

Contributes to improved reliability. Underpins works to provide increases in capacity, which enables modal shift to public transport.

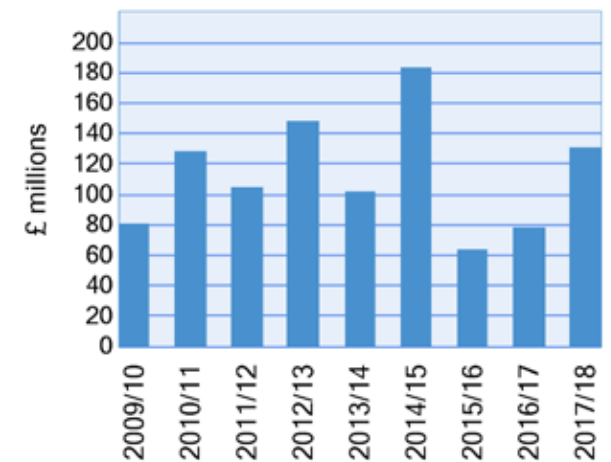
Improving journey experience

Enables the reduced journey times associated with line upgrades to be achieved.

Milestones

2009	Power upgrade complete (Victoria line)
2009	Power upgrade complete (Jubilee line)
2009	Civil works complete (Victoria line)
2009	Award of contract detailed design and build (Metropolitan line)
2014	Award contract, detailed design and build (Piccadilly line)
2018	Power upgrade complete (Metropolitan line)
2018	Power upgrade complete (Piccadilly line)

Spending to 2017/18



Mode:	London Underground
Project location:	Finsbury Park station
Estimated cost £m:	41
Next TfL gateway	B - Option selection

Improving transport capacity

Reduced congestion and queuing through increased station capacity. Reduced risk of unplanned station closures.

Milestones

2008	Planning permission granted
2009	Detailed design complete
2016	Start on site
2021	Completion of delivery

Purpose

Finsbury Park station is located close to a major road junction, serving a busy shopping area and providing interchange with numerous bus routes, as well as National Rail services. The station suffers from congestion and the absence of ticket gates increases the risk of revenue loss. The project will now be taken forward in two stages for funding reasons.

Improving journey experience

Ambience improvements from new signage, information and decoration.

Outputs

Increased staircase capacity to relieve congestion (Stage 1), integrated with station modernisation. Provision of step-free access from street to platforms (Stage 2). Provision of ticket gating throughout to improve revenue control (Stage 2).

Spending to 2017/18

