

Board

Date: 17 March 2016

Item: Surface Transport: Asset Capital Renewal Programme

This paper will be considered in public

## 1 Summary

Surface Transport: Asset Capital Renewal Programme				
Existing Financial Authority	Estimated Final Cost (EFC)	Existing Project Authority	Additional Authority Requested	Total Authority
£101.4m	£90.5m	£0m	£90.5m	£90.5m

**Authority Approval:** The Board is asked to approve:

- for the year 2015/16, additional Project Authority of £16.0m, comprising £10.9m re-profiled from 2016/17 to deliver priority works, £2.63m for works at Blackfriars Road (funded by the London Borough of Southwark) and a number of smaller contributions (totalling £2.47m) from other projects, taking the total Project Authority for 2015/16 to £108.8m; and
- for the year 2016/17, project authority of £90.5m in financial year 2016/17. This programme is included in the approved Business Plan.

**Outputs and Schedule:** The purpose of the Asset Capital Renewal Programme (ACRP) is to deliver safe, reliable and cared for assets that are designed to meet the needs of London today and in the future. The detailed deliverables for financial year 2016/17 are provided in Appendix 3.

- 1.1 This authority submission covers all business-as-usual asset capital renewal programmes delivered by the Surface Transport Asset Management Directorate (AMD) A list of the programmes covered by this authority is set out in Appendix 1.
- 1.2 A detailed breakdown of the programme cost and funding is provided in section 6 below, including third party costs or funding.
- 1.3 On 2 March 2016, the Finance and Policy Committee endorsed the recommendations in this paper.

## 2 Recommendations

2.1 The Board is asked to note the paper and:

- (a) approve, for the year 2015/16, additional Project Authority of £16.0m for the Surface Transport Asset Capital Renewal Programme, comprising £10.9m re-profiled from 2016/17 to deliver priority works, £2.63m for works at Blackfriars Road (funded by the London Borough of Southwark) and a number of smaller contributions (totalling £2.47m) from other projects, taking the total Project Authority for 2015/16 to £108.8m; and

**(b) approve Project Authority of £90.5m for the year 2016/17 to deliver the Surface Transport Asset Capital Renewal Programme described in this paper.**

### **3 Background**

#### **Scope**

- 3.1 The Assets Capital Programme (ACRP) is a business-as-usual rolling programme of planned works that maintain, renew and develop Surface Transport's assets. The ACRP comprises 20 sub-asset programmes that include carriageway, footway, bridges, river piers, tunnels, lighting, traffic signals, CCTV, bus shelters and bus stations. Details of the asset sub-programmes are set out in Appendix 1.
- 3.2 Asset investment programmes are assessed and prioritised using a consistent approach, which provides an equitable allocation of funds between assets. Importantly, this enables sub-programme budgets to be flexed and adjusted in-year (within the overall programme authority) to deal with emerging risks, pressures and opportunities. For example, this approach enabled an additional £10.9m to be brought forward in Q3 from 2016/17 to 2015/16 with full confidence that priority works would be delivered and good value obtained.
- 3.3 Works on the ACRP are co-ordinated across asset types and with other programmes to minimise network disruption.

#### **Asset management**

- 3.4 The asset management practices applied by Surface Transport are well defined and have been steadily developed and refined over the last 10 years. Many of the practices are recognised as industry leading, not only in the highways sector but across rail, utilities and other transport providers. An overview of asset management in Surface Transport is provided in the supporting Business Case.

#### **Strategy and objectives**

- 3.5 The ACRP supports and aligns with relevant legislation, goals and outcomes. A description of how legislation and Mayoral and TfL objectives are supported by the TLRN Asset Renewals and Modernisations Programme is set out in Appendix 2.
- 3.6 The ACRP contributes to Surface Transport's 10 Outcomes as follows:

## **Outcomes with Major Contribution from ACRP**

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Quality bus network



Reliable roads



More and safer cycling



More and safer walking



Reduced casualties



Harnessing rivers' potential

## **Outcomes with Minor Contribution from ACRP**

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Safer and more efficient deliveries



Quality door-to-door transport



Reduced crime



Improving the environment

- 3.7 The ACRP is a major contributor to the Surface Outcomes by providing assets that are fit for today and designed with the future in mind.

### **Funding and Authority Strategy**

- 3.8 This is an annual submission to gain approval and authority to deliver the programme for the coming financial year. The programme is fully budgeted in the TfL Business Plan.

### **Life cycle stage, delivery status and progress**

- 3.9 This is a rolling programme comprised of over 1000 discrete works in any year that range in value from £10,000 to circa £1 million. The forward view of two to five years of works, depending on asset type, is maintained and regularly reviewed and updated through a defined Value Management process, which is described in section 4
- 3.10 The Integrated Assurance Review (IAR) was conducted in December 2015. The IAR recommendations and management response are set out in paragraph 7.

### **Delivery of 2015/16 programme**

- 3.11 This section summarises the delivery and current status of the 2015/16 ACRP. Appendix 3 provides a detailed breakdown of 2015/16 original and revised budgets and outputs against the current forecast. The overall programme remains on target, with a forecast of delivering the original budget and the additional £10.9m bring forward. 2015/16 headlines are:

- (a) Carriageway – re-profiling of the budget has enabled outputs to be increased from 475,000m<sup>2</sup> to 535,000m<sup>2</sup> and this is on target to deliver.
- (b) LED street lights – on target to deliver 6,600 energy efficient luminaires and bring forward has enable column replacements to be increased from 550 to 700.
- (c) Structures and tunnels – on target to deliver the originally defined schemes plus additional priority schemes that are utilising bring forward, these include fire protection and heat detection in Blackwall Southbound, and refurbishment of subways at The Burroughs and Bullsmoor.
- (d) Traffic Signals – a slight shortfall is currently forecast in the number of junction/crossing modernisations commissioned in 2015/16, 200 against a target of 210. Priority has been given to SCOOT, Cycle-Super Highways and Bus Priority signals in 2015/16 and this has placed pressure on resources and the business-as-usual modernisation programme. There remains some opportunities to achieve the 2015/16 target and these are being pursued.
- (e) Bus Shelters – on target to deliver 370 bus shelter replacements.

3.12 As at Period 9 (which closed on 12 December 2015), £75.8m of the £108.8m budget had been invested – this equates to 70 per cent of the programme. This leaves £33.0m to deliver in the last four periods of 2015/16, an average of £8.25m per period if the latest forecast is to be achieved. The year-to-date expenditure and outputs by asset type are set out in Appendix 3. Delivery confidence is high as road space bookings are in place, contractors' programmes approved and year-to-date progress demonstrates the capability to deliver successfully.

3.13 A summary of the ACRP outcomes and benefits for 2015/16, described using Key Performance Indicators (KPIs), is shown in Table 1 below. The table also includes the 2016/17 targets. Performance measures that support the KPIs are set out in the Asset Management Plans.

**Table 1: AMD KPI targets**

Key Performance Indicator	2015/16 Target	2015/16 Actual (Q2)	2016/17 Target
State of Good Repair of carriageway	91	91	91
Customer Satisfaction with carriageway condition	73	72	73
State of Good Repair of footway	93	93	93
Customer Satisfaction with footway condition	70	67	70
Availability of Traffic Signals	99.1	98.5	99.1
Customer satisfaction with Traffic Signal condition	74	77	78
Bus shelter condition (overall) – mystery traveller	94	94	95
Bus stations – mystery traveller	87	87	88

3.14 The majority of the 2015/16 targets have been achieved. Two targets that have not been fully achieved are Traffic Signal availability and customer satisfaction with footways. Traffic signal availability has dipped slightly following mobilisation of the new contracts in mid-2015. Improvement plans are in place to achieve the target by the end of March 2016. The State of Good Repair (SOGR) for footways is within the acceptable range (90 to 95 per cent) that was set through customer consultation; however this is not reflected in the customer satisfaction scores. Anecdotal evidence is that satisfaction with TLRN footways may be skewed by customers' experience with their end to end journey, i.e. the majority of journeys take place on a range of networks, both local and strategic.

## 4 Proposal

### Recommended Option

4.1 The recommended option is to invest the budgeted £90.5m in the ACRP in financial year 2016/17 to deliver the outcomes and benefits described above. The 2016/17 budget has been reduced from £101.4m to £90.5m because £10.9m was brought forward to 2015/16. This option will achieve Mayoral and TfL outcomes through the allocations shown in Table 2 and the outputs shown in Table 3.

**Table 2: Recommended allocation of Business Plan budget (£k)**

Programme	Investment requirement	Change from business plan
Carriageways	17,337	-1,000
Drainage	2,171	+906
Footways	3,586	-1,779
Street furniture	382	-
Landscape	260	-
Street lighting	7,481	+3,872
Structures	15,673	+1,997
Tunnels	6,417	-2,553
Borough traffic signals	8,257	16,819
TfL traffic signals	7,562	
Traffic infrastructure minor works	1,000	
Closed circuit television cameras	465	-622
Bus garages	195	-207
Variable message signs	442	-300
Pumping stations	1,811	+2,592 <sup>1</sup>
Road restraint barriers	3,623	+24
Bus stations and stands	5,072	-3,825
Bus stops and shelters	6,875	-91
River piers	700	-797
Asset Management Information Systems*	1,171	+1,101
<b>Total</b>	<b>90,478</b>	<b>0</b>

\*Note: upgrades and improvements to the AMD Asset Management Information Systems (AMIS)

<sup>1</sup> The pumping stations change is larger than the investment because the budget brought forward from 2016/17 into 2015/16 resulted in a theoretical negative business plan budget in 2016/17.

are included in the Asset Capital Renewal Programme. The international standard on asset management (ISO 55000) states that data and systems should be managed using the same principles and approach as other assets. As such, capital upgrades/renewals of AMIS form part of the ACRP and are directly assessed and prioritised against other asset needs.

- 4.2 The preferred option includes a number of adjustments between sub-programmes compared to the current Business Plan allocations. The adjustments are based on an assessment of risks (Value Management process) and as assessment of delivery opportunities and pressures in 2016/17. Appendix 3 provides a comparison of the 2015/16 and 2016/17 allocations and outputs.

**Table 3: Target 2016/17 outputs**

Asset	Output type/ measure	Output
Carriageways	Carriageway resurfaced (m <sup>2</sup> )	400,000m <sup>2</sup>
Drainage	Drainage network area treated (m <sup>2</sup> )	435,000m <sup>2</sup>
	Gullies refurbished (no.)	2,200
	Pipes refurbished (m)	4,850m
Footways	Footway renewed (m <sup>2</sup> )	48,500m <sup>2</sup>
Street furniture	PGR reviewed (m)	16,000m
	PGR removed (m)	10,000m
Landscape	Trees planted (no.)	300
Street lighting	Columns replaced (no.)	1,100
	Luminaires replaced (no.)	4,500
	Lighting network area treated (m <sup>2</sup> )	510,000m <sup>2</sup>
Structures	Works complete	20
	Network area treated (m <sup>2</sup> )	10,000m <sup>2</sup>
Tunnels	Reports (no.)	9
	Works complete (no.)	17
Borough traffic signals	Detailed designs (no.)	100
	Junctions (no.)	70
	Pedestrian crossings (no.)	30
TfL traffic signals	Detailed designs (no.)	100
	Junctions (no.)	70
	Pedestrian crossings (no.)	30
Traffic infrastructure minor works	Junctions (no.)	30
	Pedestrian crossings (no.)	60
Closed circuit television cameras	Asset feasibility report (no.)	225
Bus garages	Garages refurbished (no.)	2
Variable message signs	Asset feasibility report (no.)	98
Pump stations	Reports (no.)	2
	Works complete (no.)	8
Road restraint barriers	VRS treated (m)	15,100m
	VRS network area treated (m <sup>2</sup> )	270,000m <sup>2</sup>
Bus stations and stands	Stations / Stands refurbished (no.)	10
	Minor works (no.)	9
	Staff Facilities Refurbished (no.)	5
Bus stops and shelters	Shelters replaced (no.)	620

## **Impact on operations**

- 4.3 The main operational impact is network disruption caused by the works. Road space access will be sought through the established processes. The programme is comparable in size to previous years, therefore the operational impact will be similar.
- 4.4 Delivery takes full account of lane rental, with many works delivered at night and/or off-peak. Also, innovative techniques, including quick setting materials, and new technology that requires less maintenance, such as energy efficient lighting and traffic signals, are being used to minimise network disruption.

## **Impact on Equality**

- 4.5 This programme makes a positive contribution to meeting the requirements of the Equality Act 2010 through the provision of accessible bus stops, tactile paving, dropped kerbs and, audible and countdown facilities at traffic signals. Any specific equality impacts will be considered on a project by project basis as the programme is delivered.

## **Benefits and Value**

- 4.6 The approach described in the Business Case Development Manual (BCDM) is used to evaluate a benefit:cost ratio for the ACRP. Although the BCDM does not provide figures and metrics for the full range of assets and services covered by the ACRP, the BCDM does provide the basis of the approach which is supplemented by asset management techniques, for example:
- (a) Asset Investment Planning – computerised models are used to analyse how the assets will behave over the next 20 to 30 years, or up to 60 years for some civils assets. This includes deterioration modelling, analysis of alternative intervention strategies and an assessment of the costs, risks and benefits of providing different levels of service; and
  - (b) Value Management – this assesses risks/benefits and prioritises works across all the asset types. A core requirement of the programme is to maintain the assets and manage risks; therefore risk mitigation/reduction is a measure of benefit. Benefits are also achieved by developing the assets, for example, improving customer satisfaction and generating revenue.
- 4.7 In both the above techniques, the common metric used to compare and assess needs and priorities across the ACRP is monetised benefit/risk – risk reductions are taken as benefits. The supporting business case describes the value management process and explains how risks/benefits are monetised to enable the calculation of a benefit:cost ratio as per the BCDM.
- 4.8 Monetising all risks is challenging and the approach on some assets types is more mature than others – it is recognised that further work is required to refine the monetisation of risks/benefits associated with bus, traffic and drainage infrastructure and this is actively being addressed.

4.9 The benefit:cost ratio of the programme is 5.12:1, and is calculated as follows:

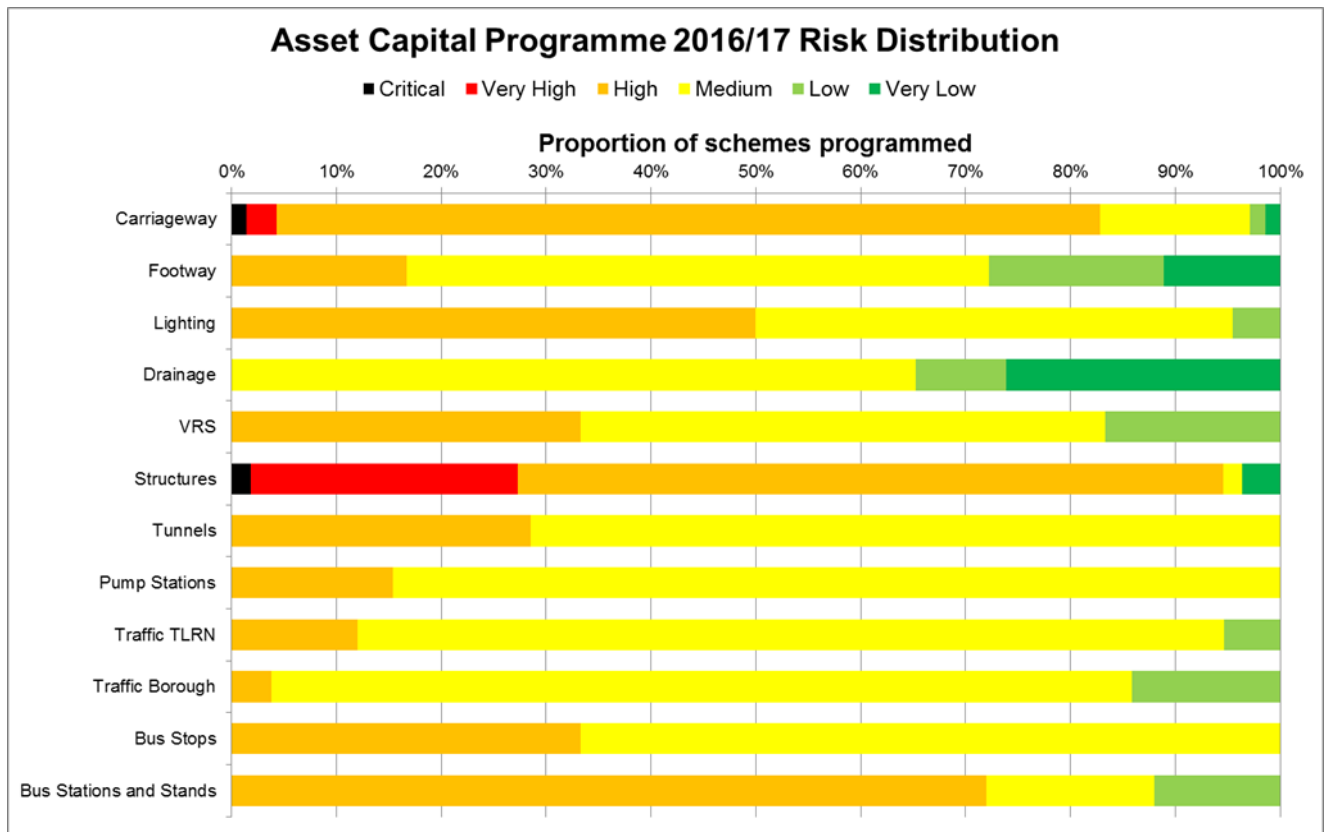
Recommended 2016/17 investment	=	£90.5m
<u>Quantified risk reduction</u>	=	<u>£463.7m</u>
Benefit:Cost Ratio (463.7m:90.5m)	=	5.12

4.10 The risk based Value Management approach was commended by the IAR and the Independent Investment Programme Advisory Group. In particular, the ability to prioritise robustly and fairly across a diverse base of assets was cited as an example of industry best practice. The approach is being promoted more widely across TfL and has been shared with a number of national and international transport and utility organisations.

4.11 The prioritisation/risk categories are shown in Appendix 4. The schemes in each sub-programme that fall into each risk category are shown in Figure 1 below. This risk profile across assets is used to inform the budget allocations shown in Table 2. The budget has been increased for structures to address higher risks and against lighting to continue the implementation of energy efficient LEDs. Conversely, the allocation to footways has been reduced based on its lower risk profile. The footway reduction will be monitored closely because, as shown in Table 1, the current customer satisfaction score is below target. However there is anecdotal evidence to suggest this score is skewed by the customers' experience on their end-to-end journey which covers both local and strategic roads.

4.12 A new strategy adopted for drainage has led to an increase in the budget in this area. In order to reduce whole life costs and the risk of flooding from deteriorating/failed assets, drainage will be assessed and repaired as necessary as part of all carriageway and footway resurfacing schemes. Although this has increased the drainage budget in the short term it will reduce whole life costs by addressing the damage that failed drainage assets cause to carriageways and footways.





**Figure 1: Priority profile of Assets Capital Programmes**

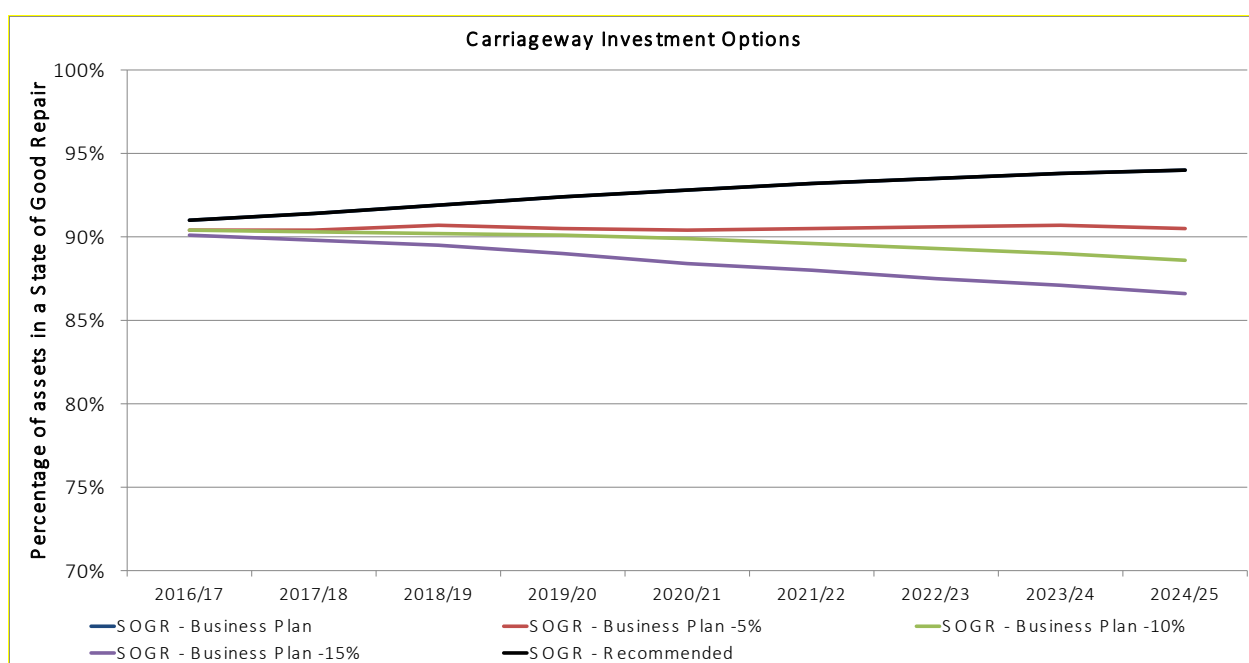
4.13 A summary of the economic appraisal and benefits for the preferred option is tabulated below:

**Table 4: Economic appraisal of ACRP**

Economic Appraisal	
Estimated Final Cost, £k (at outturn prices)	(90,478)
Net Present Values, £k	(90,478)
Discounted NPV EFC	(90,478)
Other CAPEX	0
Other costs	0
OPEX (+ or -)	0
Third Party	0
Revenue	0
Other Income	0
Net Financial Effect	(90,478)
Payback Period	-
Passenger Benefits	463,657
Impacts during Implementation	-
Total Benefit, £k	463,657
Benefit : Cost Ratio	5.12

## Options Analysis

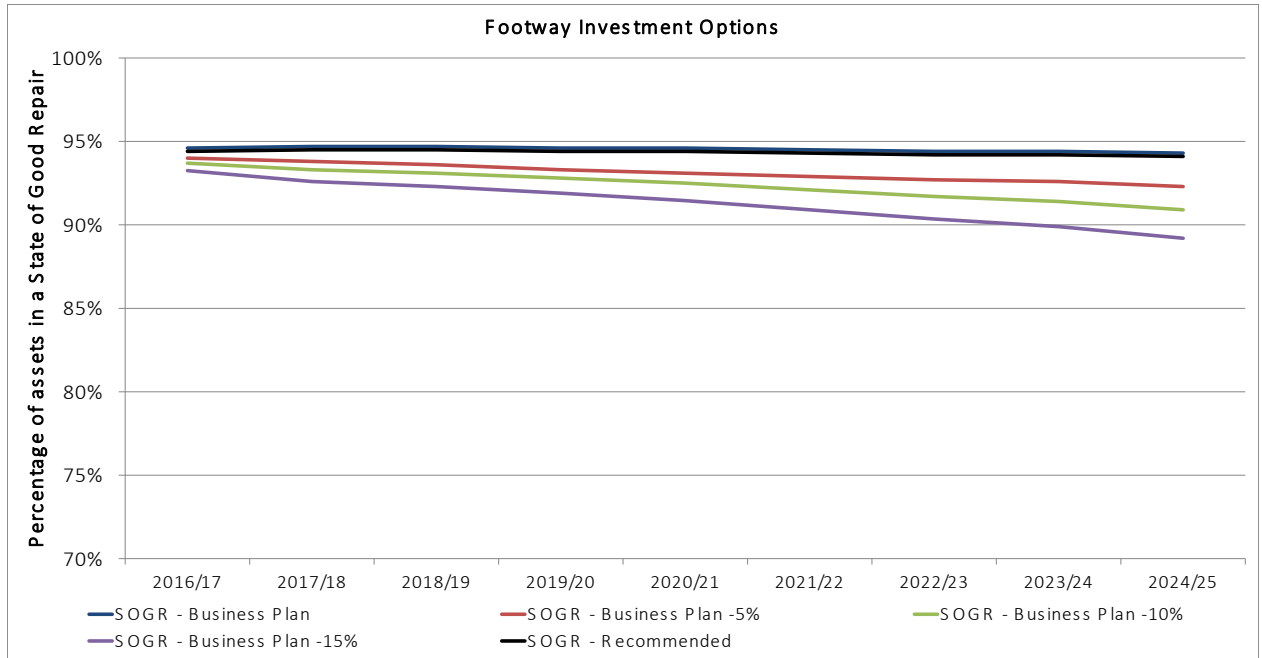
- 4.14 Good quality asset inventory and condition data is vital for assessing asset risks, investment priorities and asset degradation. A full range of risk based asset inspections are used to collect condition information which is held in Asset Management information Systems (AMIS). The supporting Business Case and Asset Management Plans provide details on the asset and condition inspection regimes.
- 4.15 A range of alternative options were assessed for the portfolio. Option analysis is used to assess the impact that different investment levels (increases and decreases), alternative strategies (such as preventatives vs. reactive), and different service levels may have on risks, costs and customer satisfaction. For example, the following graphs show the impact that 5, 10 and 15 per cent budget reductions would have on the SOGR of carriageway, footway and structures.



**Figure 2: Impact of different investment levels on carriageway SOGR**

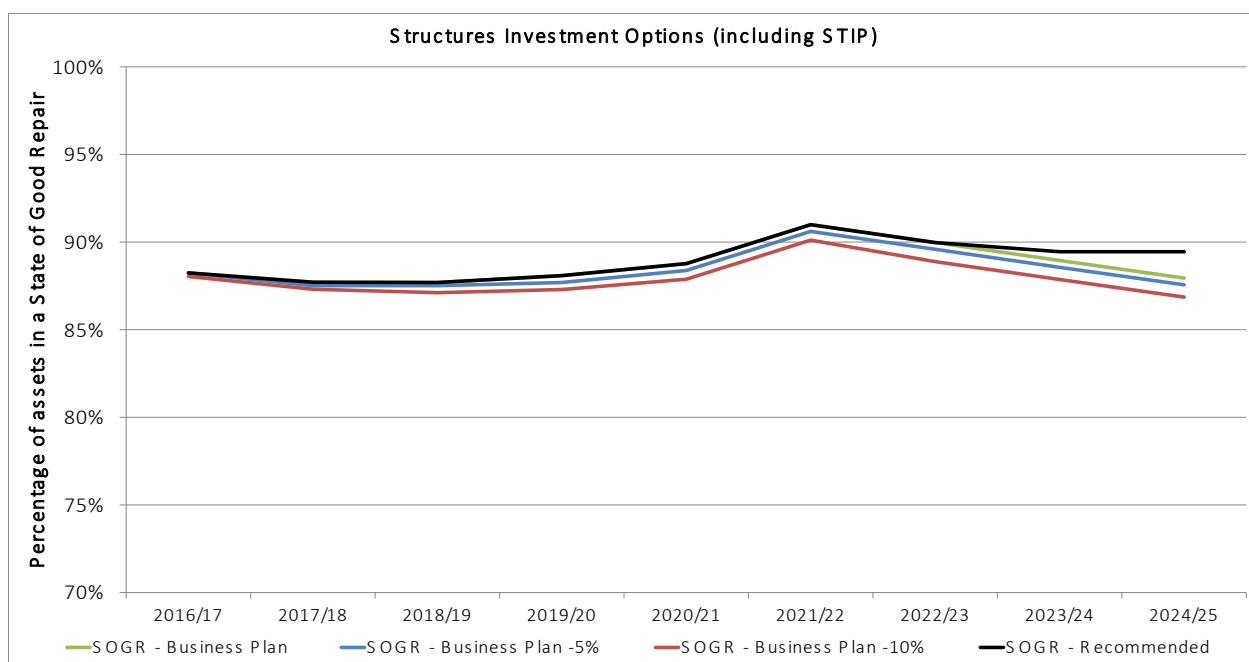
- 4.16 Figure 2 shows that the current Business Plan investment is projected to deliver a gradual improvement over the next 10 years and achieve the target SOGR of 94 per cent in 2024/25. The acceptable range for carriageway SOGR, based on customer consultation and whole life cost analysis, is 90 to 95 per cent. In 2011, TfL set itself a target of 94 per cent to reflect the higher standard required to support an increase in cycling in London.
- 4.17 Investment modelling indicates that a reduction in budget of 5 per cent would enable the current SOGR, 91 per cent, to be maintained over the business plan period. A 10 per cent reduction would result in a gradual decline in SOGR with a projected SOGR of 89 per cent by the end of 2024/25. A 15 per cent reduction would lead to a SOGR of 86 per cent by 2024/25. These are both below serviceable levels.
- 4.18 The analysis presented above assumes operational expenditure (e.g. pothole repairs) would remain at current levels. A decrease in operational expenditure would increase the rate of SOGR deterioration.

4.19 The above analysis excludes the impact of severe weather events, for example extreme rainfall, snow and/or ice. The timing of and impact that these events have is uncertain and experience has shown they are best dealt with as and when they happen. This allows the impact to be more accurately assessed and the established asset management practices are then used to assess needs and allocate resources accordingly.



**Figure 3: Impact of different investment levels on footway SOGR**

4.20 The SOGR of footway is currently between 93 and 94 per cent. This will be maintained under the recommended option. The acceptable range for footway SOGR, based on customer consultation and whole life cost analysis, is 92 to 96 per cent. A 5 per cent reduction in budget would see a slight decline in SOGR to 92 per cent by 2024/25. With reductions of 10 and 15 per cent the SOGR is predicted to reduce to 91 and 89 per cent respectively.



**Figure 4: Impact of different investment levels on structures SOGR**

- 4.21 The SOGR of structures gradually improves, under all reduction scenarios, until 2021/22 due to the Structures and Tunnels Investment Programme (STIP) - circa £600m of additional investment above the ACRP. The minimum SOGR target for structures is 90 per cent based on optimum whole life costs. All options achieve this by 2021/22 and the asset condition then declines based on the current business plan budget.
- 4.22 From 2021 onwards, the analysis indicates that the steady state budget for the asset capital renewal programme will need to increase from circa £100m per annum to £125m per annum to prevent a subsequent decline in the SOGR of structures. This will negate the need for future spikes in investment, like STIP, and deliver whole life cost savings of circa 10 to 20 per cent compared to a 'peak' and 'trough' approach to asset investment.
- 4.23 The option analyses, and the more detailed scheme specific value management process, have been used to inform the 2016/17 budget allocations presented in this paper. These asset management practices have been recognised as good practice by external reviewers and have been specifically developed to support the optimum allocation of resources between asset types for the programme. The proposed allocations address risks and benefits on a priority basis and support delivery of the asset strategies defined in the Business Case and Asset Management Plans.
- 4.24 The recommended option is to deliver the Business Plan budget for 2016/17 as shown in Table 2. This will achieves Mayoral and TfL outcomes and also enable allocations to be flexed between assets to manage emerging risks and opportunities in-year.

## Delivery of Recommended Option

- 4.25 The Pathway Project Execution Plan sets out the governance, roles and responsibilities, stakeholders, and the approach for delivering the programme. The programme will be delivered through established contracts – including London Highways Alliance Contract (LoHAC), Traffic Control Maintenance and Related Services and Bus Shelter contracts. These contracts are managed by AMD.
- 4.26 More complex projects within the portfolio that merit a dedicated Project Manager are delivered through the Surface Transport Projects and Programmes Directorate.
- 4.27 The end-to-end delivery processes, from work identification to scheme completion, are being assessed using Lean/Six Sigma techniques to identify and embed improvements.

## Impact or dependency on other programmes

- 4.28 This programme is not dependent on other programmes to realise the benefits. There is, however, a close relationship between this programme and other delivery programmes across Surface Transport, for example the Split Cycle Offset Optimisation Technique (SCOOT) programme and Cycle Superhighways. To ensure best use is made of network space and works are co-ordinated effectively and efficiently, the 2 to 5 year ACRP is shared with key stakeholders through Surface Transport's common geographic mapping system. Where possible, the timing of works on the ACRP is adjusted to align with other programmes and vice versa.

## Key milestones

- 4.29 To deliver the outcomes shown in Table 1 (Section 3) and the outputs shown in Table 3 (Section 4) by 31 March 2017.

## Top Five risks

- 4.30 The top five risks to the delivery of the 2016/17 ACRP are shown below. These have been identified and assessed by the Senior Management Team in AMD.

**Table 5: Top risks for ACRP**

<b>Risk No</b>	<b>Risk Description</b>	<b>Mitigation Actions</b>
1	Road space availability	Early sharing of the programme - the draft programme for 2016/17 was shared in November 2014, and timely submission of road-space requests.
2	Supply chain resources to deliver increased investment pan-Surface	Surface Transport is working closely with the contractors to profile works and balance workloads – encouraging contractors to learn from each other and share resources when necessary.
3	Supply chain performance and	The highways infrastructure market has picked up considerably since the LoHAC contracts

Risk No	Risk Description	Mitigation Actions
	sustainability	were let and there is a risk that the supply chain may, e.g. focus their best teams on other clients. Mitigation - close commercial engagement and management.
4	Unforeseen events	Severe weather events (rain, ice and snow) have a considerable impact on asset condition and performance. The impact of these events on the assets is immediate and necessitates programmes to be amended. Robust programme review, prioritisation and change control processes are in place to manage these effects should they occur.
5	Sustained investment	A robust case has been made for the long-term investment needed to maintain and improve asset condition and the associated customer satisfaction. External budget pressures and internal completion may place the Business Plan profile at risk.

4.31 A risk allowance is not made for the ACRP as it is an annualised programme. The ACRP is comprised of over 1000 schemes that typically range in value from £10,000 to £1m. Experience has shown that the risks across the programme balance out over the year or that any significant risk occurrences can be managed within the programme budget.

### Resources

4.32 The programme is managed by AMD within Surface Transport. The roles and responsibilities in AMD are:

- (a) asset investment - produces the prioritised programme of work and responsible for change control;
- (b) sponsors (Highways, Tunnels & Structures, Traffic Infrastructure and Bus Infrastructure) – accountable programme sponsors and responsible for technical advice and monitoring in-year delivery;
- (c) contract management team or Projects and Programmes Directorate (the latter as required by project complexity and cost) – responsible for managing the contracts and suppliers and ensuring the programme is delivered to time, cost and quality; and
- (d) contractors (e.g LoHAC, Siemens, TelentTrueform, JC Decaux etc.) – responsible for delivering the agreed programme.

4.33 The necessary resources are in place, both internally and in the supply chain, to deliver these programmes.

## 5 Financial Implications

- 5.1 The ACRP is fully budgeted in the TfL Business Plan and has Financial Authority. Table 6 provides details of medium term planned investment in the above programmes over the business plan period.

**Table 6: Business Plan Investment (per Q3 and SAP Version 206) (£m)**

Year	Investment (£m)
Actuals 2011/12	81.9
Actuals 2012/13	72.4
Actuals 2013/14	85.7
Actuals 2014/15	97.0
Forecast 2015/16	108.8
<b>Proposed Project Authority 2016/17</b>	<b>90.5</b>
2017/18	101.7
2018/19	103.0
2019/20	102.2
2020/21	107.5
2021/22	110.8
2022/23	112.0
2023/24	110.7

- 5.2 The programme costs are based on agreed contract rates and a detailed analysis of completed works. A summary of the costs and funding are shown below.

**Table 7: Cost breakdown of ACRP (£m)**

Costs and Funding (£ m's)	2013/14	2014/15	2015/16 (forecast)	2016/17	2017/18 - 2024/25	Total
<b>Cost (Out-turn)</b>	<b>85.7</b>	<b>97.0</b>	<b>108.8</b>	<b>90.5</b>	<b>1,019.0</b>	<b>1,398.3</b>
Internal staff costs				4.3		
Feasibility and Design				8.6		
Implementation				77.6		
Other costs						
Risk						
Estimated Final Cost				90.5		
<b>Investment Funding</b>						
Budget/Plan	79.9	88.1	92.1	89.7	854.8	1,204.6
Third Party Funding	5.4	5.3	0.8	0.8	7.7	20.0
Plan Surplus/(Shortfall)					(156.5)	(156.5)
Current Authority				0		
This Authority Request				90.5		
Future Requests					1,019.0	1,019.0

- 5.3 The programme seeks annual authority approval and undergoes an annual IAR.

## **6 Assurance**

- 6.1 The TfL PMO appointed an External Expert (EE) to undertake an IAR of the ACRP. The review took place in December 2015. There were no critical findings.

## **7 Views of the Finance and Policy Committee**

- 7.1 On 2 March 2016, the Finance and Policy Committee considered a similar paper and endorsed the recommendations in this paper.
- 7.2 Members suggested that it would be useful for the renewals budget to be clearly identifiable from the rest of the capital budget in future papers. This would give a clear indication of how much investment was needed on an ongoing basis to maintain the existing network of assets. This paper just dealt with the renewals budget.
- 7.3 Members also suggested the need to drive innovation, for example, in bringing together contractors, manufacturers and suppliers to promote engineering innovation and to address issues such as the noise and disruption caused by major works. Members supported TfL exploring all options for the effective use of regulation and enforcement for the benefit of customers. This could include a concerted effort to lobby government for changes in legislation where the current level of fines had shown to be an insufficient deterrent for repeat offenders.

### **List of appendices to this paper:**

Appendix 1: Asset sub-programmes  
Appendix 2: Alignment to legislation and Mayoral and TfL objectives  
Appendix 3: Comparison of 2015/16 and 2016/17 allocations and outputs  
Appendix 4: Risk categories used to prioritise works

### **List of background papers**

[Business Case: Surface Transport Asset Capital Programme](#)

Annual Independent Assurance Review (IAR) Report  
Management Response for Surface Asset Capital Renewal Programme  
Independent Investment Programme Advisory Group (IIPAG) Report

Contact Officer: Dana Skelley, Asset Management Director, Surface Transport  
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**Asset sub-programmes**

SAP Profit centre	SAP Profit centre name	Asset group and activities
ST-PJ61C	Cap Renew – Carriage	Carriageways - resurfacing
ST-PJ188C	Cap Renew – Drainage	Drainage – renewal and refurbishment
ST-PJ186C	Cap Renew – Footway	Footways - relaying
ST-PJ189C	Cap Renew – Furnitur	Street Furniture – renewing, removal and provision of new furniture
ST-PJ190C	Cap Renew – Landscape	Green Estate – removal, re-planting and provision of new trees
ST-PJ187C	Cap Renew – Lighting	Lighting – renewal/replacement of columns and lanterns, including energy efficient LEDs
ST-PJ63C	Cap Renew - Structure	Structures – repair and refurbishment of bridges, footbridges, retaining walls and other structures on the TLRN
ST-PJ64C	Cap Renew - Tunnels	Tunnels – repair and refurbishment of Mechanical and Electrical (M&E) and structural components on TLRN tunnels and provision of measures to comply with tunnel safety standards
BR-PJ12C	Boro Traffic Sig Mods	Traffic Signals – modernisation (renewal) of traffic signals on borough roads
ST-PJ127C	TLRN Traffic Sig Mod	Traffic Signals – modernisation (renewal) of traffic signals on TfL roads
ST-PJ337C	TI Minor Projects	Traffic Signals – emergency renewals, including Pedestrian Countdown at Traffic Signals – PC@TS
ST-PJ86C	Enhance Camer/Signa	CCTV – modernisation/renewal
ST-PJ26C	Garages Ann Prg	Bus Garages – repairs and refurbishments
ST-PJ85C	Message Signing	VMS / OVD – renewal and replacement
ST-PJ412C	Pump Stations	Pump Stations – refurbishment and renewal
ST-PJ353C	Restraint Barriers	Vehicle Restraint Systems – removal, renewal and provision
ST-PJ27C	Stns & Stnds Ann Prg	Bus Stations and Stands – repairs, refurbishment and redevelopment
ST-PJ46C	Stps & Shltrs Ann Pg	Bus Stops and Shelters - removal, renewal and provision at new sites
ST-PJ509C	River Piers	River piers – repair and refurbishment of piers
ST-PJ510C	Asset Management Information Systems	Upgrades and improvements to the AMD computerised asset management system

## Alignment to legislation and Mayoral and TfL objectives

Source	Duty, Goals & Outcomes	How this is supported by the TLRN Asset Renewals and Modernisations Programme
The Highways Act 1980	Maintain the public highway	This programme directly supports this duty through the timely and appropriate repair and renewal of assets.
Traffic Management Act 2004	To manage the road network with a view to securing and facilitating the expeditious movement of people and goods	This includes the provision and maintenance of the assets that support and enable the movement of people and goods, in particular the traffic signals for all of London.
Mayor's Transport Strategy	Bring our assets up to, and maintain them in, a State of Good Repair	Asset renewal and modernisation is essential for achieving and maintaining the State of Good Repair, which cannot be achieved through routine and reactive maintenance alone.
TfL Business Plan	Maintain underlying infrastructure so that it is fit for purpose	The primary role of the programme is to maintain Surface Transport infrastructure (including roads, footways, bridges, tunnels, traffic signals and bus infrastructure) to the appropriate levels of service in terms of safety, reliability, accessibility and sustainability.
The Transport for London Story	Customer	Minimising traffic disruption and maintaining and developing Surface Transport assets to make a positive contribution to customer satisfaction. Making the right asset development choices, rather than always replacing like-for-like, provides opportunities to address specific customer concerns and to provide new and innovative features to improve customer satisfaction.
	Delivery	Efficient and effective delivery of the right investment in the right assets to provide safe, reliable, clean, sustainable and accessible transport.
	Value for Money	Well targeted renewals, modernisations and asset developments that take a whole life view, reduce network disruption by minimising reactive maintenance and provide opportunities to generate commercial income. Co-ordination of programmes between different asset types delivers maximum benefits from network occupation.
Surface Transport Outcomes	Maintaining and enhancing a reliable, accessible and high quality bus network and ensuring efficient coach service in London	Maintaining assets in a State of Good Repair (SOGR), and developing and improving infrastructure contributes to the quality of bus users experience
	Ensuring reliable operation of London's road network for all users, while reducing congestion	Maintaining the Surface Transport assets in a SOGR (condition and performance) enables reliability by minimising/mitigating asset failures, e.g. traffic signal outages, bridge expansion joints, tunnel equipment, drainage systems and carriageway cracking and potholes.

Source	Duty, Goals & Outcomes	How this is supported by the TLRN Asset Renewals and Modernisations Programme
	Supporting an increase in walking by creating safe, attractive and accessible streets and public spaces	Maintaining and developing footway assets and road crossings in a good condition, removing unnecessary assets and enforcing against obstructions enhances the walking experience and ensures all walkers, especially vulnerable users, can easily and safely use the footway network.
	Enabling more people to cycle, more safely, more often	Carriageway defects and potholes impact on the safety and satisfaction of cyclists and the appeal of cycling on London's roads.
	Supporting more sustainable patterns of freight delivery and servicing	Timely asset renewals and developments are able to reduce the number of operational maintenance activities required which may impact on freight deliveries.
	Continuing the downward trend in casualties on London's roads and public transport networks	Developing and maintaining our assets helps ensure they stay safe and serviceable at all times, minimising any accidents and subsequent injuries and casualties caused by poor asset condition and asset failures.
	Continuing to deliver environmental improvements	Green estate activities (e.g. replacing trees), energy efficient traffic signals and lighting (on the roads and in tunnels), and recycling/reuse of road materials all contribute to the environment and reduction of CO2 emissions.
	Continuing the downward trend in crime, antisocial behaviour and fear of crime on London's transport networks	Maintaining the condition, cleanliness and quality of bus stations and shelters, providing well lit and attractive locations.  Providing well lit streets through good design and maintenance of our street lighting.
	Harnessing the potential of London's rivers and waterways to carry people and goods	Developing and maintaining our river piers helps ensure they stay safe and serviceable at all times, helping to improve their image and increase patronage.

## Programme financial and output overview

**Table 2.1: Comparison of 2015/16 original authority (Approval Paper) and latest forecast**

SAP Profit centre	SAP Profit centre name	Original allocation (A)	P9 Forecast (B)	Change between A and B (%)	Commentary
ST-PJ61C	Cap Renew - Carriage	19.3	24.7	28%	Increase is a proportion of the £10.9m bring forward from 2016/17. Additional resurfacing to be delivered - 60,000m <sup>2</sup> . Budget includes an allocation of £1m for Minor Capital Interventions (MCI) to address winter damage - this is based on prior years experience and levels of year-end capitalisation. A process has been set up to manage MCI.
ST-PJ188C	Cap Renew - Drainage	2.2	3.1	40%	Minor variance
ST-PJ186C	Cap Renew - Footway	4.5	8.4	87%	£2.63m from London Borough of Southwark and other developers for Blackfriars Road
ST-PJ189C	Cap Renew - Furniture	0.4	0.2	-44%	No variance
ST-PJ190C	Cap Renew - Landscape	0.2	0.2	23%	No variance
ST-PJ187C	Cap Renew - Lighting	5.8	7.0	21%	Increase is a proportion of the £10.9m bring forward from 2016/17. Additional 150 columns to be delivered (at circa £750k). Remaining £1,759k budget adjustment reflects the estimate for delivering the 2015/16 CMS/LED installation target (6600 units) and is based on higher specification LEDs that originally estimated because these LEDs provide greater energy efficiencies and better whole life cost savings.
ST-PJ63C	Cap Renew - Structure	12.2	18.8	54%	Increase is a proportion of the £10.9m bring forward from 2016/17. Two additional schemes, totalling £920k, brought forward from 2016/17: - The Burroughs East and West Subways (£520k) - Bulls moor lane subway (£400k) The remaining bring forward (£775k) reflects updated

SAP Profit centre	SAP Profit centre name	Original allocation (A)	P9 Forecast (B)	Change between A and B (%)	Commentary
					estimates for 2015/16 schemes - circa 5% increase on original estimates.
ST-PJ64C	Cap Renew - Tunnels	3.8	5.9	55%	Increase is a proportion of the £10.9m bring forward from 2016/17. Additional schemes, totalling £1,740k, brought forward from 2016/17, including: - Blackwall Tunnel Southbound - mid river sump protection, fire protection and heat detection (£850k) - Blackwall Tunnel Southbound - sub-tunnel lighting renewal (£540k) The remaining bring forward (£330k) reflects updated estimates for 2015/16 schemes - circa 9% increase on original estimates.
BR-PJ12C	Boro Traffic Sig Mods	12.7	17.4	-9%	Reduction in investment due to amended mix of deliverables (e.g. junctions and pedestrians crossings) and fewer overall deliberates, 199 against a target of 210 sites commissioned.
ST-PJ127C	TLRN Traffic Sig Mod	6.4			
ST-PJ337C	TI Minor Cap Works	1.0	0.5	-50%	Reduced need for minor interventions
ST-PJ86C	Enhance Camer/Signa	1.0	0.7	-30%	Reduced outputs
ST-PJ26C	Garages Ann Prg	0.9	0.2	-75%	Planned works to roof on Edgware Road to be delivered in 2016/17 as agreement with lease holders not finalised in time for 2015/16 delivery.
ST-PJ85C	Message Signing	0.8	0.8	0%	-
ST-PJ412C	Pump Stations	1.5	2.2	48%	Two additional schemes have been brought forward from 2015/16 (totalling around £300k). The remaining bring forward (circa £400k) is to cover updated scheme estimates. This work will complete the backlog of pumping station refurbishments and includes the larger and more complex sites.
ST-PJ353C	Restraint Barriers	3.6	4.2	17%	Additional scheme added to programme to utilise proportion of bring forward from 2016/17
ST-PJ27C	S tns & S tnds Ann Prg	4.3	4.2	-3%	Minor variance

SAP Profit centre	SAP Profit centre name	Original allocation (A)	P9 Forecast (B)	Change between A and B (%)	Commentary
ST-PJ46C	Stps & Shltrs Ann Pg	4.1	3.8	-7%	Minor variance
ST-PJ310C	Asset Mgmt System	0.1	0.1	9%	Minor variance
ST-PJ205C	Bridges Safety Impro	2.9	0.9	-71%	Works/budget transferred to Capital Renewals – Structures budget due to similarities and cross/overs. This WBS code to be discontinued from 2016/17.
ST-PJ001C	Tunnels Safety	3.0	2.9	-2%	Minor variance
ST-PJ330C	LTRACS	2.1	1.9	-12%	Minor variance
Total		92.8	108.0	14%	<p>£10.9m bring forward from 2016/17. Actual 2015/16 budget is £108.8m which is original £92.8m budget plus:</p> <ul style="list-style-type: none"> <li>• carry over from 2014/15 of £0.7m for accessible crossings,</li> <li>• £10.9m bring forward</li> <li>• £0.4m transfer from PPD for lighting (leftovers from the Energy Efficient Lighting project)</li> <li>• £0.8m from Buses for the red to white flags</li> <li>• £0.5m for the new salt store, £0.4m Bus Infrastructure Confirm costs transferred from PC 03 in AMD</li> <li>• £(0.4m) transferred back to 2014/15 for overpends in that year</li> <li>• £2.63m from London Borough of Southwark and other developers for Blackfriars Road</li> </ul>

**Table 2.2: Comparison of 2015/16 (with bring forward) and 2016/17 allocations**

SAP Profit centre	SAP Profit centre name	2015/16 Actual YTD	2015/16 SAP Forecast (209)	2015/16 P9 Forecast (A)	2016/17 Budget (B)	Change between A and B (%)	Commentary
ST-PJ61C	Cap Renew - Carriage	18.68	22.59	24.68	17.34	-30%	Due to bring forward from 2016/17 to 2015/16 and £2.63m in footways for Blackfriars Road
ST-PJ188C	Cap Renew - Drainage	2.01	2.17	3.07	2.17	-29%	
ST-PJ186C	Cap Renew – Footway	6.01	4.26	8.40	3.59	-57%	
ST-PJ189C	Cap Renew - Furniture	0.12	0.37	0.23	0.38	69%	Additional needs identified
ST-PJ190C	Cap Renew - Landscape	0.17	0.25	0.25	0.26	6%	Minor variance
ST-PJ187C	Cap Renew - Lighting	4.55	6.99	7.00	7.48	7%	Minor variance
ST-PJ63C	Cap Renew - Structure	14.56	17.92	18.83	15.67	-17%	Due to bring forward from 2016/17 to 2015/16
ST-PJ64C	Cap Renew - Tunnels	4.59	5.20	5.87	6.42	9%	Minor variance
BR -PJ12C	Boro Traffic Sig Mods	5.81	10.71	17.40	15.82	-9%	Minor variance
ST-PJ127C	TLRN Traffic Sig Mod	4.02	9.21				
ST-PJ337C	TI Minor Cap Works	0.60	1.12	0.50	1.00	100%	Based on assessment of typical annual requirements
ST-PJ86C	Enhance Camer/Signa	0.69	0.78	0.70	0.47	-34%	Reduction in renewals required for 2016/17
ST-PJ26C	Garages Ann Prg	0.01	0.87	0.22	0.20	-12%	Minor variance
ST-PJ85C	Message Signing	0.21	0.73	0.80	0.44	-45%	Reduction in renewals required for 2016/17
ST-PJ412C	Pump Stations	0.63	2.86	2.22	1.81	-18%	Backlog of refurbishments starting to reduce
ST-PJ353C	Restraint Barriers	2.03	3.70	4.20	3.62	-14%	Due to bring forward from 2016/17 to 2015/16
ST-PJ27C	S tns & S tnds Ann Prg	2.47	4.14	4.17	5.07	22%	Additional prioritised works for 2016/17
ST-PJ46C	S tps & S hltrs Ann Prg	4.06	6.04	3.83	6.88	80%	Reflects the additional

SAP Profit centre	SAP Profit centre name	2015/16 Actual YTD	2015/16 SAP Forecast (209)	2015/16 P9 Forecast (A)	2016/17 Budget (B)	Change between A and B (%)	Commentary
							stops/shelters (5,000) that TfL maintain under the new contract structures
ST-PJ509C	River Piers	N/A	N/A	N/A	0.70	N/A	New Profit Centre for 2016/17 for transfer of asset ownership into AMD.
ST-PJ310C	Asset Mgmt System	0.08	0.11	0.11	N/A	N/A	Merged into ST-PJ510C.
ST-PJ205C	Bridges Safety Impro	0.59	1.05	0.85	N/A	N/A	Merged into ST-PJ63C.
ST-PJ001C	Tunnels Safety	2.37	3.00	2.95	N/A	N/A	Merged into ST-PJ64C.
ST-PJ330C	LTRACS	1.51	2.10	1.86	N/A	N/A	Merged into ST-PJ64C.
ST-PJ510C	Asset Management Information Systems	N/A	N/A	N/A	1.17	N/A	New Profit Centre for consolidation of information systems capital investment.
Total		75.77	106.17	108.03	90.48	-14%	



**Table 2.3: Comparison of 2015/16 (with bring forward) and 2016/17 outputs**

Note: The Year-To-Date (YTD) and Forecast figures below were taken from the programme database on Monday 11<sup>th</sup> January 2016. The programme database is live and the forecast includes a number of schemes that, while currently shown in Q4 of 2015/16, will be amended in the coming weeks for delivery in Q1 and Q2 of 2016/17, for example, the footway forecast includes a number of schemes that will be re-programmed to 2016/17.

SAP Profit centre	SAP Profit centre name	Output type	2015/16 Target	2015/16 YTD 11/01/16	2015/16 Forecast 11/01/16	2016/17 Output
ST-PJ61C	Cap Renew - Carriage	Carriageway resurfaced (m2)	535,000	395,809	577,923	400,000
ST-PJ188C	Cap Renew - Drainage	Gullies refurbished (no.)	2,000	234	2,000	2,200
ST-PJ188C	Cap Renew - Drainage	Pipes refurbished (m)	5,000	520	5,000	4,850
ST-PJ186C	Cap Renew - Footway	Footway renewed (m2)	55,000	33,993	74,776	48,500
ST-PJ189C	Cap Renew - Furniture	PGR reviewed (m)	17,000	1,347	11,691	16,000
ST-PJ189C	Cap Renew - Furniture	PGR removed (m)	10,000	709	11,131	10,000
ST-PJ190C	Cap Renew - Landscape	Trees planted (no.)	968	-	968	300
ST-PJ187C	Cap Renew - Lighting	Columns replaced (no.)	700	214	683	1,100
ST-PJ187C	Cap Renew - Lighting	Luminaires replaced (no.)	6,600	4,279	6,374	4,500
ST-PJ63C	Cap Renew - Structure	Preliminary reports completed (no.)	65	40	90	N/A
ST-PJ63C	Cap Renew - Structure	Works complete	17	23	32	20
ST-PJ63C	Cap Renew - Structure	Network area treated (m2)	17,250	12,279	17,905	10,000
ST-PJ64C	Cap Renew - Tunnels	Reports (no.)	N/A	N/A	N/A	9
ST-PJ64C	Cap Renew - Tunnels	Works complete (no.)	12	6	12	17
BR-PJ12C	Boro Traffic Sig Mods	Detailed designs (no.)	68	57	68	100
BR-PJ12C	Boro Traffic Sig Mods	Junctions (no.)	80	49	79	70
BR-PJ12C	Boro Traffic Sig Mods	Pedestrian crossings (no.)	40	32	40	30
ST-PJ127C	TLRN Traffic Sig Mod	Detailed designs (no.)	72	32	72	100
ST-PJ127C	TLRN Traffic Sig Mod	Junctions (no.)	80	32	55	70

SAP Profit centre	SAP Profit centre name	Output type	2015/16 Target	2015/16 YTD 11/01/16	2015/16 Forecast 11/01/16	2016/17 Output
ST-PJ127C	TLRN Traffic Sig Mod	Pedestrian crossings (no.)	10	15	25	30
ST-PJ337C	TI Minor Cap Works	Junctions (no.)	80	30	23	30
ST-PJ337C	TI Minor Cap Works	Pedestrian crossings (no.)	50	19	20	60
ST-PJ86C	Enhance Camer/Signa	Asset feasibility report (no.)	N/A	N/A	N/A	225
ST-PJ26C	Garages Ann Prg	Garages refurbished (no.)	N/A	N/A	N/A	2
ST-PJ85C	Message Signing	Preliminary reports completed (no.)	4	0	4	N/A
ST-PJ85C	Message Signing	OVD works complete (no.)	2	0	4	N/A
ST-PJ85C	Message Signing	VMS works complete (no.)	7	3	6	N/A
ST-PJ85C	Message Signing	Asset feasibility report (no.)	N/A	N/A	N/A	98
ST-PJ412C	Pump Stations	Reports (no.)	12	14	19	2
ST-PJ412C	Pump Stations	Works complete (no.)	20	8	21	8
ST-PJ353C	Restraint Barriers	VRS treated (m)	17,000	5,602	13,366	15,100
ST-PJ27C	Stns & Stnds Ann Prg	Stations / Stands refurbished (no.)	14	6	14	10
ST-PJ27C	Stns & Stnds Ann Prg	Minor works (no.)	-	-	-	9
ST-PJ27C	Stns & Stnds Ann Prg	Completed Lighting Improvement Schemes	3	6	3	-
ST-PJ27C	Stns & Stnds Ann Prg	Staff Facilities Refurbished (no.)	5	1	5	5
ST-PJ46C	Stps & Shltrs Ann Pg	Shelters replaced (no.)	370	288	370	620
ST-PJ205C	Bridges Safety Impro	Works complete	15	11	18	N/A
ST-PJ205C	Bridges Safety Impro	Length of parapet treated (m)	2,500	1,799	1,943	N/A
ST-PJ001C	Tunnels Safety	Reports (no.)	10	1	10	N/A
ST-PJ001C	Tunnels Safety	Works complete (no.)	5	10	13	N/A
ST-PJ330C	LTRACS	Works complete (no.)	10	9	17	N/A

Risk categories and matrix

Risk Category (£k)	Description <sup>1</sup>	Risk Acceptable
≥ 5,000	Critical – the asset represents an unacceptable risk to network safety and/or reliability and TfL’s reputation, action must be taken to reduce the level of risk	
≥ 1,000 & < 5,000	Very High – network safety and/or reliability are at or below broadly acceptable levels, and action must be taken to improve safety and reliability	
≥ 50 & < 1,000	High – action must be taken to maintain network safety, reliability and/or State of Good Repair at or above acceptable levels, interventions may be further justified on the basis of reduced whole life costs	
≥ 5 & < 50	Medium – action should be taken to deliver preferred levels of network safety, reliability and State of Good Repair, to fully achieve Surface Transport and TfL outcomes, and to reduce whole life costs	
< 5	Low – action may be appropriate on the basis of whole life cost savings and reducing future disruption.	

Notes:

1. The acceptability of risk is used to prioritise activities
2. Unacceptable region – risks cannot be justified except in the most extraordinary circumstances
3. ALARP region – acceptable only if risk reduction is impractical or if its cost is disproportionate to the improvement gained – the degree of acceptability depends on the level of disproportionality between risk reduction (or benefit gained) and cost

Broadly acceptable region – risk reduction unlikely to justify intervention, however, whole life cost savings may justify intervention