Programmes and Investment Committee

Date: 21 February 2018



Item: Technology and Data Programme 2018/19 and 2019/20

This paper will be considered in public

1 Summary

Technology an	d Data (T&D) Inv	vestment Progra	mme 2018/19 ar	d 2019/20
Existing	Estimated	Total		
Financial	Final Cost for	Programme	Authority	Programme
Authority for	uthority for 2018/19 and		Requested for	and Project
2018/19 and	2019/20	Authority for	2018/19 and	Authority for
2019/20		2018/19 and	2019/20	2018/19 and
		2019/20		2019/20
£ 167.7m	£ 167.7m	£ 60m	£ 107.7m	£ 167.7m

- 1.1 This submission presents the strategic case for the overall Technology and Data (T&D) Investment Programme (the Programme). This authority covers financial years 2018/19 and 2019/20. The Programme will return annually to the Committee to renew and validate a rolling two year approval. This enables approvals to be aligned to financial years, which complements the nature of this Programme.
- 1.2 This paper describes the range of activities undertaken by TfL's T&D team but the authority sought relates only to those matters for which Programme and Project Authority is required by T&D. The authority request does not include matters where T&D is closely involved in delivery but authorities are secured separately by Surface Transport or London Underground (LU) or matters funded by third parties and which have been specifically authorised (such as Emergency Services Network).

2 Recommendation

- 2.1 The Committee is asked to note the paper and:
 - (a) approve additional Programme and Project Authority of £107.7m for delivery of the Technology and Data funded Investment Programme (£53.7m in 2018/19 and £54.0m in 2019/20 described in this paper); and
 - (b) note that Procurement Authority for the various initiatives in the Technology and Data Investment Programme described in this paper will be sought at officer level in accordance with Standing Orders.

3 Background

3.1 The T&D directorate was launched in July 2017, bringing together teams from across TfL – including IM, Online, Customer Experience and the Technical Services Group – to form a new single function under the Chief Technology Officer and Director of Customer Experience, Shashi Verma.

- 3.2 A new target operating model was embedded after the implementation of the Transformation Programme to deliver a streamlined directorate with clear accountabilities and decision making responsibilities.
- 3.3 We have re-organised ourselves around a number of core portfolios and product families and this is reflected in our Programme to ensure complete transparency and clarity regarding where the funding is going to be invested. The portfolio/product families are described in more detail in Appendix 1.
- 3.4 Technology and data underpin everything TfL does and our activities span across the organisation. We provide technical specialist skills, cyber security and data analysis, as required by the business. On a day-to-day basis, we support over 2,000 applications and systems, over 30,000 active users and 11,000 servers on our estate. We also collect and process vast amounts of data daily, including 2m journeys made using contactless payment, 4.5m iBus geo-located events and 500,000 rows of train diagnostic data on the Central line alone.
- 3.5 We also have a track record of delivering significant benefits for TfL and its customers. For example:
 - (a) we continue to innovate and improve ticketing to provide customers with an integrated and seamless experience. The TfL Oyster app, which was launched in September 2017, removes a pain point for customers by allowing them to check their Oyster balance and make purchases from anywhere. To date, more than 500,000 customers have downloaded the app and it was the number one app on the UK Apple App Store on 1 November 2017;
 - (b) we provide personalised customer service to millions of customers every day on our transport network and in our Contact Centres. For the fifth year running, our core Contact Centre based in North Greenwich ranked in the UK's Top 50 contact centres for telephony, email and social media channels, competing against over 300 companies from a variety of sectors; and
 - (c) we have generated secondary revenue for TfL by striking a deal with Cubic Transportation Systems in July 2016, where we agreed to licence our worldclass contactless ticketing system for up to £15m (as was approved by the Finance and Policy Committee in July 2016). By bridging the gap between public transport ticketing and banking industry standards, we helped create a new market for our product. Cubic has since been successful in selling new fare collection systems that re-use our intellectual property to Miami, New York and Boston and is exploring many more opportunities.
- 3.6 In addition to T&D-funded initiatives, we support every other directorate in TfL in delivering their own projects where they carry a technology or data component. For example, we are supporting London Underground (LU) to assess options and plan for the replacement or implementation of two safety-critical Underground communications networks:
 - Connect, a digital radio system used by all front-line staff that helps minimise disruptions on the network and assist emergency services during incidents; and

- (b) the Emergency Services Network (ESN), which is owned and funded by the Home Office and will form part of a UK-wide network used by emergency services once operational.
- 3.7 Other examples include work with Surface Transport on:
 - (a) Cycle Hire, where T&D is managing and delivering a replacement payment system to process all customer payments; and
 - (b) Ultra Low Emission Zone, where T&D is assuring the technical proposal from the supplier (Capita) and assisting the Programme team with web and mobile integration.

4 Strategic Case

- 4.1 The draft Mayor's Transport Strategy was published for public consultation in June 2017. It sets out the Mayor's ambitions to improve transport in London over the next 25 years by delivering:
 - (a) Healthy Streets and Healthy People;
 - (b) a good public transport experience; and
 - (c) new homes and jobs.
- 4.2 To ensure the successful delivery of the Mayor's Transport Strategy outcomes, TfL has set six strategic priorities:
 - (1) To put customers and users at the core of all our decision making;
 - (2) To drive improvement in reliability and safety across our network;
 - (3) To accelerate the growth and increase the capacity of our network;
 - (4) To invest in our people and lead them to be the best they can be every day;
 - (5) To cost less and to generate more income; and
 - (6) To exploit technology to produce better and faster results
- 4.3 T&D provides the core infrastructure, services and enabling technologies that allow TfL to deliver its six priorities. The Programme is cognisant of this and of TfL's duty to deliver the Mayor's Transport Strategy outcomes.
- 4.4 For example, the funding set out in the Programme will allow us to improve the ways we host, transfer and analyse data across the organisation. Doing so will ensure that business-led initiatives that support the Mayor's Transport Strategy outcomes, such as the Surface Intelligent Transport System (SITS) programme, can be delivered efficiently and sustainably going forward.
- 4.5 We will also invest in our assets, such as desktops, laptops and remote login facilities to enable the pan-TfL Smart Working initiative. This ensures staff have the right tools to do their jobs and the flexibility to work from any location, as best suited to their work.
- 4.6 Finally, we will maintain and enhance applications and systems which are critical to the day-to-day operations of TfL. This includes, for example, SAP, the core Enterprise Resource Planning (ERP) tool used to manage HR, Finance and other back-office processes.

- 4.7 Broadly speaking, the funding requested in this paper falls within two categories:(A) refresh of technology assets and core infrastructure, and (B) technology transformation programmes.
- 4.8 In order to assess and prioritise all of the initiatives that were included in the Programme, we adopted a consistent approach to ensure that all investment identified helps deliver the six priorities. This can be summarised as:
 - (a) analyse the existing landscape to identify areas of potential improvement and opportunities to drive down cost and better exploit technology;
 - (b) set a strategy that seeks to address inefficiencies by removing duplications, consolidating and streamlining processes and services where possible;
 - (c) review service levels to ensure they are fit for purpose, with our customers and users at the heart of all our decision making; and
 - (d) apply best practice to deliver and realise benefits.
- 4.9 Every initiative included in the Programme has been assessed rigorously on its criticality, benefits and impacts on the business, to ensure that we only invest in what is essential for TfL and its customers.
- 4.10 As the landscape of technology evolves in future, T&D may be required to make additional investments to meet the changing needs of our business. Any additional Programme and Project Authority and Procurement Authority will be sought in accordance with TfL's Standing Orders, including through requests to this Committee.

4.11 Table 1 sets out how the Programme funding is split across the largest portfolios over the life of the Business Plan 2017/18.

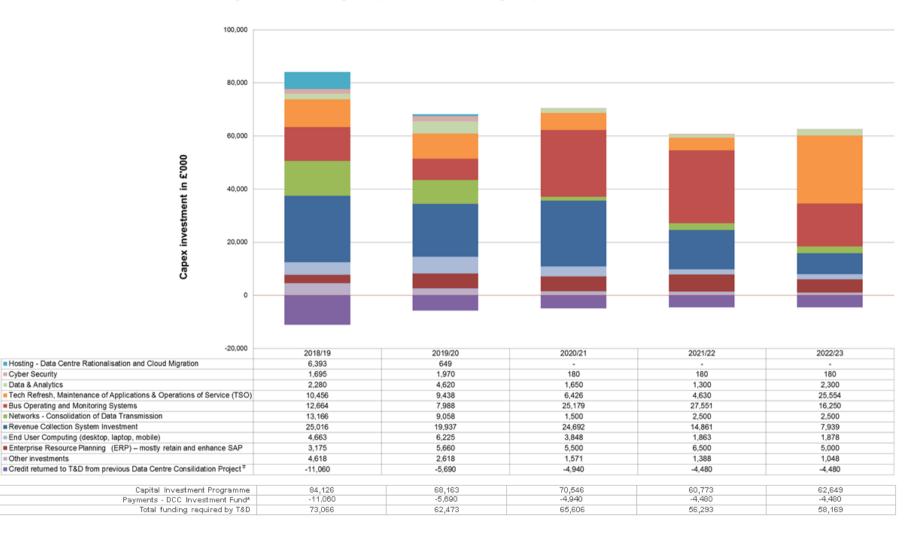


Table 1. T&D Investment Programme by portfolio in Business Plan 2017/18

*Note: this item captures the credit returned to TfL from Cubic as a result of savings from the consolidation of data centres for ticketing systems. This fund can only be used to fund Cubic-facing projects.

(A) Investment in Technology Assets and Core Infrastructure

- 4.12 Maintaining the service levels, tools and technologies TfL needs every day is a significant endeavour and this is reflected in the Programme, where the majority of the investment is for asset, infrastructure and technology refresh.
- 4.13 Assets typically have to be refreshed every five years. This is because of deterioration and the fact that older models become increasingly unlikely to meet required changes in compliance and business needs over time. While some assets can continue to perform beyond their standard lifecycle, supporting costs often rise and quickly become unsustainable.
- 4.14 Our Programme will, among others items, fund the refresh of: revenue collection assets (e.g. ticket gates and readers), data centre servers, network assets and end-user computing assets (e.g. desktops, phones, etc.)
- 4.15 Many of these assets will continue to be managed and maintained as part of T&D's business-as-usual activities to ensure they are performing at the required levels of service as per TfL scorecard. Below are the target service performance levels we are responsible for:

Services Measure in TfL Scorecard	Target Level of Service
Oyster Reader availability, measured by	
% of time that LU and Rail ticket system is available	98.20%
% of time that bus ticket system validation is available	99.00%
Customer Call Centre effectiveness, measured by	
% of calls answered before abandoned	85.00%
% of correspondence closed within Service Level Agreement	80.00%
(three days or 10 days if investigation required)	
TfL website availability, measured by	
% of time that TfL website is available, including access to	99.95%
revenue collection systems (excluding planned outages)	
Internal IT systems availability, measured by	
% of time that internal systems are available	99.60%

- 4.16 This refresh investment is essential to maintain service levels. It will also help mitigate operational risks.
- 4.17 Obsolescent devices and platforms carry risks of malware infiltrating our system, defects within applications not being fixed by the supplier and difficulties sourcing cost-effective compatible hardware. All of these can be mitigated by adequately investing in asset refresh and keep obsolescence levels as low as is practicable.
- 4.18 Given the current financial climate, the Programme's asset refresh profile has been prioritised against risks and impacts of not investing at this time. Going forward we will continue to explore ways to reduce asset refresh costs. For example, we have consolidated our ticketing data centres to reduce the costs of hosting and asset refresh. We are also proposing to transform the End User Computing (EUC) hardware refresh programmes from the expensive waterfall approach (every five to six years) to a continual delivery model to reduce overhead costs.

Bus Technology Programme

- 4.19 The London bus network supports over 6.5m passenger journeys every day with 19,500 bus stops and over 9,000 vehicles; one of the largest metropolitan bus networks in the world. TfL is responsible for the service planning, real time information, ticketing service and performance management of the bus network through performance-based contracts worth £2bn p.a. The operation and resources (buses, drivers and facilities) for the bus network are delivered by the Bus Operating Companies (BOCs).
- 4.20 The Bus Technology Programme is primarily an asset refresh and enhancement programme which ensures that the systems underpinning these TfL functions, many of which are currently aging or life expired, are not fit for purpose and unable to meet business needs. In doing so, the programme delivers against the following Mayor's Transport Strategy outcomes:
 - A Good Public Transport Experience (Reliable and Quality Service) the continuity in service and performance management functionality delivered by the programme protects against degradation in bus speeds and journey time reliability. The programme will also ensure TfL is able to continue providing accurate, real-time information, and improve customer information during disruption and delays.
 - Healthy Streets and Healthy People (Safety) the programme will deliver a critical communications network able to meet the capacity demands of the bus fleet, enabling effective management of safety critical situations. In additional, it will deliver safety enhancing technology, such as Intelligent Speed Adaptation.
- 4.21 The programme will also help minimise TfL's costs by ensuring continuity in the systems enabling assessment of the BOCs performance, and consequently calculating contractual payments. Without these systems, TfL would need to pay BOCs the maximum contractual values or reintroduce costly manual performance surveys, either of which would lead to significantly increased costs.

(B) Investment in Technology Transformation

- 4.22 Another significant proportion of our investment will be focused on the change programmes or technology transformation that support TfL, especially initiatives to better exploit technology and data to deliver benefits for the business.
- 4.23 Due to the ongoing Transformation taking place across TfL and T&D's own work to embed the new structure, the change programme initiatives identified in our Programme are currently at different levels of maturity.
- 4.24 Portfolios such as Hosting, Networks, Payment, Cyber Security, Surface Buses, Contact Centre Operation (CCO) and Technical Service Operation (TSO) have clear strategies in place with well defined plans to deliver the committed benefits and savings.

- 4.25 Some projects within these portfolios have already obtained relevant Project Authority and have therefore been excluded from this authority request. Please refer to Section 5.3 and Appendix 2 for further details.
- 4.26 For the remaining portfolios including Data and Analytics, EUC, ERP, Asset Management and Content & Collaboration – there are still opportunities to be explored to deliver further improvements. We will continue to seek engagement with and input from the business to finalise the strategies for these portfolios. However, in the meantime, we have established interim solutions to progress with any immediate improvements identified.

5 Proposal

- 5.1 This section sets out the Programme and Project Authority sought in this submission for 2018/19 and 2019/20, split by portfolio.
- 5.2 This authority covers financial years 2018/19 and 2019/20. T&D will provide quarterly updates on the Programme and will return annually to the Programmes and Investment Committee to renew and validate a rolling two year approval. This enables approvals to be aligned to financial years, which complements the nature of this Programme.

Portfolio	Activity and Key Deliverables in 2018/19 and 2019/20		Authority Em)	This Au	This Authority Request (£m)				
		Financial Authority for 2018/19 - 2022/23 (£m)	Authority Project for Authority 2018/19 - for 2018/19 2022/23 - 2022/23		2019/20	Total			
Payments – Revenue Collection Asset Investment	Service Delivery Assurance – this is spend TfL has already committed to under the Revenue Collection Contract for our supplier, Cubic, to assure the performance of ticketing assets, and to maintain and upgrade these assets in line with their contractual obligations. <i>(Full authority obtained)</i>	53.0	53.0	0	0	0			
Payments – Enhancements to Oyster and	Complete the delivery of the Mayoral commitments on Oyster capping and Bus Hopper, enhancements to deliver previously committed savings and provide fare collection solutions for the Crossrail extension to Reading.	39.4	12.6	1.2	5.4	6.6			
the Revenue Collection	More specifically:								
System	 Complete the Future Ticketing Programme Phase 4 (FTP4) – enhancement to Oyster ticketing and Ticketing App (Full authority obtained) 								
	• Complete the development of a New Reader (The Hermes Reader) for operational use (Full authority obtained)								
	Implementation of new Fares Model for the Elizabeth Line								
	Automation of Oyster route charges to generate fares for Crossrail								
	 Initiate 1G Oyster Migration by introducing on-system changes to remove 1st generation cards from circulation 								
	Start Designing the new Revenue Inspection Device (RID)								

5.3 **Table 2. Programme and Authority Overview by Portfolio** (a more detailed breakdown is set out in Appendix 2).

Payments – Credit returned to TfL	This is credit returned to TfL from Cubic as a result of savings made from consolidating Cubic's and TfL's data centres for ticketing systems. This fund can only be applied to variations placed with Cubic under the Revenue Collection Contract.	-30.1	N/A	N/A	N/A	N/A
Enterprise Resource Programme (ERP) – mostly retain and enhance SAP	 Retain SAP ERP as-is and deliver the following improvements: ERP Finance Master Data – standardise the financial accounts structure in ERP to enable consistent reporting of financial information Occupational Health Process – improve process flow, reduce dependency on numerous workarounds and reduce costs Financial Services Centre (FSC) Transformation Programme – a series of minor technology solutions to improve FSC processes Legacy Portal Migration – retire the legacy portal so that users have one place to review and approve all ERP interactions. Initiate the development of Change & Release Management tool to control and 	25.8	0	3.2	5.7	8.8
	 Initiate the development of Change & Release Management tool to control and automate the release of SAP configuration. Initiate the development of ERP Data Scrambling (TDMS) tool to encrypt, randomise and scramble ERP data Initiate ERP Cloud Hosting migration and start the preparation for Managed Services retender & SAP S4 upgrade (Cloud SaaS) 					

Surface Buses – Bus Operating and	Deliver a number of key procurements to replace and upgrade current bus technology systems:	89.6	13.2	1.0	6.9	7.9
Operating and Monitoring Systems	• Surface Narrow Band Radio Replacement – a safety critical project to replace the Bus radio system. The current system and assets have come to their end of life and the contract has been extended through derogation. (Full authority will be obtained before PIC meeting)					
	• Initiate iBus2 – to replace our bus tracking, performance management and real time bus passenger information system, the contract for which cannot be extended past 2022. (Part authority obtained)					
	• Future Bus Systems – Current bus routes and schedules systems are life expired and already extended by Single Source Justification (SSJ). Loss of these systems would result in a) the inability to manage bus operator performance and b) out-of-date network information and therefore passenger information. This would lead to increased costs due to higher contract payments to operators and significantly degraded customer information. (<i>Full authority obtained for Phase 1</i>)					
Networks – Consolidation of Data	Deliver the new mobile and data network contracts and invest in consolidating our multiple networks leading to costs savings, improved security and stable performance. Key deliveries include:	28.7	0.3	12.8	9.1	21.9
Transmission	Access and Wide Area Networks (WAN) contract transition and transformation					
	Mobile Network procurement and transition.					
	• Network tech refresh – refresh the DC(a) network equipment (Part authority obtained)					
	 Data Centre Networks (DCN) – procurement of a third-party service for operational and ongoing duties of managing the DCN 					
	This portfolio will generate savings of £32m over the business plan					
Hosting – Data Centre	Reduce TfL's footprint at our Data Centre leading to savings and establish a Cloud presence through a phased migration of services (to be exploited tactically over time).	7.0	7.0	0.0	0.0	0.0
Rationalisation and Cloud	Key activities include:					
Migration	 Decommissioning of retired services – decommission servers (c.1,000) that were identified as part of the Rapid Discovery Assessment completed by Cloudreach 					
	 Data Centre Footprint Reduction Phase 2 & 3 – the migration of remaining services in scope (Storage and Migration) 					
	Complete Early migrations for Cloud Hosting for selected services					
	(Full authority obtained for all above)					

End User Computing (EUC) Products – desktop, laptop, mobile,	Transform EUC by moving away from expensive waterfall programmes every 5-6 years to upgrade our desktop software and hardware to a continuous refresh/ update model. This will lower our overall total cost of ownership, negate the need for future large Capex change programmes and support the pan-TfL Smart Working Programme. Invest in Office 365 (Cloud based product) and Windows 10 upgrade that delivers savings and a compliance requirement. More specifically:	18.5	0	4.7	6.2	10.9
other	 Design and build modern desktop platform compatible with TfL's core applications, migrate Windows 7 and thin client users to a new modern desktop 					
	 Office 365 deployment – deploy Office 2016 to desktops, migrate workloads for email, email archive, skype for business and home drives to Office365's cloud tenancy. Includes support for business change and user migration 					
	Mobile Management in-housing migration – deployment and migration of a new mobile device management capability					
	 Continuous Desktop hardware refresh – purchase and deploy new end-point devices to users 					
	 Pull printing expansion – expand the use of the managed print service contract to provide printers in additional locations 					
	 Investment to support Back Office Telephony business case to rationalise the back- office telephony solution. 					
	 Enable Skype For Business Online across all sites (only for internal consumption for video links and voice (ON NET) and not for external video conferencing) 					
Contact Centre Operation (CCO)	Review and improve the Lost Property Service. Re-tender and transition of the telephony self-serve contracts and Concessions contracts.	2.5	0	1.9	0.6	2.5
Cyber Security	Improve and deliver the cyber security capabilities required to lower the strategic cyber risk to our target levels (by 2020/21) while achieving savings. The majority of the investment is for procuring replacement or new tools to meet the latest business requirements, such as Digital Forensics tool, Data Loss Prevention tool, and network security monitoring & modelling tool, etc.	4.2	0	1.7	2.0	3.7
Tech Refresh – Investment in our Data Centre Servers	Technology Infrastructure Refresh: Replacement of a fifth of all HP physical servers (Compute) every year for five years.	33.1	0	1.9	2.0	4.0

Technical Service Operation (TSO)	Continue to ensure the day to day provision of IT services that deliver the required business outcomes cost effectively by:	23.4	0.8	7.9	7.2	15.1
Operation (TSO) – Maintenance of	Improving service resiliency across shared platforms					
Applications &	Consolidation of outsourced IT services through Sourcing strategy					
Operations of Service	Operating System & Database Upgrades – tech refresh					
	 Completing Data Centre Rationalisation for remaining sites – migrate and/or decommission services from legacy data centres to target hosting solution where there is deemed to be operational risk or service no longer required. 					
	Migration and integration of JNP infrastructure and support					
	 Cloud/Hosting Target Operating Model – develop new operating model to support a hybrid operating model (on premise and cloud/hosted) 					
	Review and deploy Licence Management strategy					
	Infrastructure Monitoring Migration (Infrastructure & Service Operations). (Full authority obtained)					
	IT Service Management tool to log, create, manage and escalate IT related incidents					
Data & Analytics	Continue to exploit and integrate our data to enable faster and better decision-making across the business by:	12.2	0	2.3	4.6	6.9
	• Enhancing TfL self-service reporting capability. This directly impacts on financial and performance reporting across TfL (e.g. London Underground business objective reports)					
	 Digital Marketing cloud – service to send emails to customers and for any enhancements in personalisation and alerting 					
	 Future enhancements to the Origin Destination Interchange Tool (ODX, infers Bus Journeys on our Network) to help better plan our bus network. This has already been baked into Surface's Transformation plan for buses, including savings for on-street surveys etc. 					
	Provision for General Data Protection Regulation (GDPR)					
	 Investment in Data Science – generating more efficiency in working, and improving our ability to run reports 					

Asset	Develop a business case in order to deliver wider benefit pan-TfL.	0.05	0	0.05	0	0.05
Management Products	<u>Note</u> : T&D will not be investing in any asset management system transformation or upgrades. Any transformational change to the asset management systems will have to be driven and funded by LU and Surface Transport.					

Content & Collaboration Products	Consolidate and upgrade pan-TfL document management and collaborations systems to improve end user performance, reduce technical failures and provide better access to information.	3.0	0.2.	1.0	1.0	2.0
	Key deliveries include:					
	Legacy SharePoint consolidation					
	Essential upgrade to Livelink, the document collaboration tool for London Underground					
	Develop a strategy to clear the 'digital landfill' to improve efficiency and document management maturity					
Access & Networks Management Products	Refresh of Computerised Track Access Control (CTAC) application. It is a safety-related, business critical application, which we are contractually committed with the supplier to provide them with safe and secure access to London Underground track for essentially maintenance. (Full authority obtained)	0.5	0.5	0	0	0
Small Works		5.1	0	1.0	1.0	2.0
Unallocated		7.4	0	13.2	2.2	15.4
	Total	323.0	87.6	53.7	54.0	107.7

6 Authorities sought

6.1 Financial Implications: a summary of the T&D Business Plan and Investment Programme from 2018/19 to 2022/23 is shown in Table 3.

Table 3. Summary of the T&D Investment Programme Costs and Funding

	Portfolio			Bu	siness Plan Ye	ar		
	Rounded to £m		2018/19	2019/20	2020/21	2021/22	2022/23	Total
Cost	Investment Programme Total	(A)	84.1	68.2	70.5	60.8	62.6	346.3
	Financial Authority from Adjusted Business Plan	(B)	86.3	64.7	68.9	68.6	34.6	323.0
Funding	Other funding - Credit from Cubic	(C)	11.1	5.7	4.9	4.5	4.5	30.7
	Actual funding required from T&D	(D) = (A - C)	73.1	62.5	65.6	56.3	58.2	315.6
	1							
Variance	Unallocated	(V) = (B - D)	13.2	2.2	3.3	12.3	23.6	7.4
	Ι							
	Existing Project Authority	(E)	43.6	16.4	12.2	7.6	7.9	87.6
	Unallocated	(V)	13.2	2.2	3.3	12.3	- 23.6	7.4
Authority								
	This Project Authority request	= (A - E) + (V)	53.7	54.0	-	-	-	107.7
	Future Project Authority request	= (A - E) + (V)	-	-	61.7	65.5	31.1	158.3

- 6.2 The T&D funded Investment Programme includes an unallocated contingency of £13.2m in 2018/19 and £2.2m in 2019/20. This contingency will be utilised to fund:
 - (a) new risks and/or additional scope items, not allowed for in the individual programme estimates, that materialise in-year and require the overall programme to be adjusted accordingly; and
 - (b) the ability to flex planned delivery to accommodate movements in the programmes.

The use of this contingency will be managed by T&D in accordance with Standing Orders.

- 6.3 This submission seeks Programme and Project Authority for a total of £107.7m for delivery of the T&D funded Investment Programme (£53.7m in 2018/19 and £54m in 2019/20).
- 6.4 The Procurement Authority for the various initiatives in the Programme will be sought at officer level and in accordance with Standing Orders.

7 Assurance

- 7.1 TfL Project Assurance conducted an Integrated Assurance Review (IAR) on the T&D Programme in January 2018.
- 7.2 The objective of the IAR was to assess the Programme's readiness to deliver its outcomes. The IAR followed nine lines of inquiry to answer the challenge of "Is the Programme sufficiently well managed for the Programme and Investment Committee to award authority?"
- 7.3 There were no critical issues identified through the IAR. All recommendations have been accepted.

List of appendices to this paper:

Appendix 1 High level summary for each portfolio and product familiesAppendix 2 Detailed breakdown of Authority Request

List of background papers:

IIPAG and Project Assurance Reports Management response to IIPAG and Project Assurance Reports

Contact Officer:	Shashi Verma, Chief Technology Officer
Number:	020 3054 4001
Email:	ShashiVerma@tfl.gov.uk

As noted in the Background, our Programme is aligned to the T&D portfolios and product families' structure. Below is a high level summary of what they are and what they seek to deliver:

I. Payments – Investment in Revenue Collection Systems:

We will deliver a secure and compliant ticketing system, deliver a better customer proposition and reduce revenue collection costs. We will continue to maintain and upgrade revenue collection assets to assure their service performance.

II. Enterprise Resource Planning (ERP):

ERP incorporates the processes we use to conduct our 'back office' activities. We will invest to retain and re-platform the existing system (mostly SAP) in order to support the ongoing improvement of our HR, Finance and Supply Chain business processes.

III. Surface Buses – Bus Operating and Monitoring Systems:

Surface Buses investment includes the delivery of a radio network scaled to allow effective communication in critical scenarios thus improving the safety of our network; and a suite of Bus Technology Programmes to upgrade the aging technology estate to ensure the performance of the bus network is maintained and the quality of customer information improves.

<u>Note</u>: Due to the ongoing Surface Transport Transformation, the Buses Technology budget currently sits within T&D but its governance is controlled by the Public Transport Portfolio Board and its delegated Technology Board, both of which are part of Surface Transport.

T&D has included the request for Project Authority for the Buses Technology budget in this paper. However, in practice, any spend will be authorised by the Public Transport Portfolio Board and sent to the T&D Board for ratification.

IV. Networks:

A data network governs how we transfer data. We will invest to establish a unified, interconnected data network shared by our entire organisation, by minimising the duplication of network footprints and cost-effectively consolidating services to reduce costs.

V. Hosting - Data Centre Rationalisation and Cloud Migration:

Hosting is how we organise, process, store and disseminate large amounts of data. We aim to provide a flexible, scalable and agile hosting model that allows us to adapt to changing business needs. Savings are realised from reduced data centre lease costs and lower infrastructure refresh costs.

VI. End User Computing (EUC):

EUC includes desktops, laptops, mobiles, telephony, etc. We need to move away from expensive waterfall programmes every 5-6 years to upgrade our desktop software and hardware to a continuous refresh/ update model. This will lower our overall TCO for EUC, negate the need for future large Capex programmes of change and supports the pan-TfL Smart Working Programme.

VII. Contact Centre Operation (CCO):

CCO operate a number of established customer service businesses through a number of channels including telephony, email, social media and face-to-face. We will invest with the aim to reduce the ongoing cost of operation while maintaining the current service level.

VIII. Cyber Security:

We aim to lower the strategic cyber risk to our target levels (by 2020/21), and therefore invest to increase our ability to prevent, identify and respond to threats across our network, devices and users by putting in place more advanced monitoring covering a higher proportion of our network.

IX. Tech Refresh and Technical Service Operation (TSO):

TSO ensure the day to day provision of suitable IT services, including operational-critical applications and investment to refresh our Data Centre Servers. Embed proactive performance management to maximise service continuity and availability, and reduce costs by tighter financial controls, contract optimisation and removing service duplication.

X. Data & Analytics:

We collect, manage and deploy data in order to drive evidence-based decision making. We will continue to exploit transport data that drives operational performance, supports future planning, and provides our customers with data services and information while complying with data regulations.

XI. Asset Management Products:

We will develop a business case to identify how best to provide the appropriate asset management tools to drive efficiencies, safety and statutory obligations, and reduce the number and cost of asset management solutions across TfL.

XII. Content & Collaboration Products:

We will invest to consolidate and upgrade pan-TfL document management and collaboration systems, such as SharePoint and Livelink to ensure business continuity. We will develop a strategy to clear the 'digital landfill' to improve efficiency and document management maturity.

XIII. Access & Networks Management Products:

We will invest to maintain and upgrade business and safety critical applications such as Computerised Track Access Control to ensure safe and secure access to LU track for essentially maintenance.

Technology & Data - Existing authority

				Draft Bu	udget W1	1 Figures	6 = (A)		Prof	ile of "\	Valid" r	emainii	ng auth	ority = (B)	Profile of Additional authority required = (A) - (B)					(B)
Category	Portfolio/ Product Families		2018/19	2019/20	2020/21	2021/22	2022/23	Business Plan total	2018/19	2019/20	2020/21	2021/22	2022/23	Total 'Valid' remaining authority 2018/19 - 2022/23	2018/19	2019/20	2020/21	2021/22	2022/23	Total 2018/19 - 2022/23
						•			£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	
Portfolio	Payments - CUBIC Service Delivery Assurance	Payments - Revenue Collection Asset Investment	13606	12151	11762	7561	7939	53,019	13.606	12,151	11.762	7 561	7,939	53.019	0	0		0	0	
Portiolio	Payments - CODIC Service Delivery Assurance	Enhancements to Oyster and the	13000	12131	11702	7301	1939	53,019	13,606	12,151	11,702	7,001	7,939	55,019			0	0	0	0
Portfolio	Payments	Revenue Collection System	11410	7786	12930	7300	0	39,426	10,249	2,346	0	0	0	12,595	1,161	5,440	12,930	7,300	0	26,831
		Enterprise Resource Programme (ERP) – mostly retain and																		
Portfolio	ERP	enhance SAP Surface Buses - Bus	3175	5660	5500	6500	5000	25,835	0	0	0	0	0	0	3,175	5,660	5,500	6,500	5,000	25,835
Portfolio	Surface Buses	Operating and Monitoring Systems	12664	7987.5	25179	27551	16250	89,632	11,664	1,083	444	0	0	13,191	1,000	6,905	24,735	27,551	16,250	76,441
		Networks - Consolidation of Data																		
Portfolio	Networks	Transmission Hosting - Data Centre	13166	9058	1500	2500	2500	28,724	333	0	0	0	0	333	12,833	9,058	1,500	2,500	2,500	28,391
Portfolio	Infrastructure & Hosting	Rationalisation and Cloud Migration	6393.1	649	0	0	0	7,042	6,393	609	0	0	0	7,002	0	40	0	0	0	40
		End User Computing (EUC) Products - desktop, laptop, mobile,																		
Portfolio	EUC	other Contact Centre	4663	6225	3848	1863	1878	18,477	0	0	0	0	0	0	4,663	6,225	3,848	1,863	1,878	18,477
Portfolio	ссо	Operation (CCO)	1858.5	617	47	0	0	2,523	0	0	0	0	0	0	1,859	617	47	0	0	2,523
Portfolio	CSIRT	Cyber Security Tech Refresh -	1695	1970	180	180	180	4,205	0	0	0	0	0	0	1,695	1,970	180	180	180	4,205
Portfolio	Tech Refresh	Investment in our Data Centre Servers	1949	2008	3926	2130	23054	33,067	0	0	0	0	0	0	1,949	2,008	3,926	2,130	23,054	33,067
		Technical Service Operation (TSO) - Maintenance of Applications &																		
Portfolio	Infrastructure & Operations (TSO) Data & Analytics	Operations of Service Data & Analytics	8507 2280	7430 4620	2500 1650	2500 1300	2500 2300		618	200	0	0	0	818	7,889	7,230 4.620	2,500 1.650	2,500	2,500	22,619 12,150
		Asset Management		4020	0601	1300	2300		0	0	0	0					1,650	1,300	2,300	
Product Family	Asset Management	Products Content & Collaboration	50	0	0	0	0	50	0	0	0	0	0	0	50	0	0	0	0	50
Product Family	Content & Collaboration	Products Access & Networks	1200	1000	500	340	0	3,040	200	0	0	0	0	200	1,000	1,000	500	340	0	2,840
Product Family	Access & Networks Management	Management Products	531	0	0	0	0	531	531	0	0	0	0	531	0	0	0	0	0	0
	Small Works	Small Works	978	1001	1024	1048	1048	5,099	0	0	0	0	0	0	978	1,001	1,024	1,048	1,048	5,099
				-																
	Capital Investment Programme	e Sub-total	84,126	68,163	70,546	60,773	62,649	346,256	43,594	16,389	12,206	7,561	7,939	87,689	40,532	51,774	58,340	53,212	54,710	258,568
Portfolio	Payments - DCC Investment Fund	Payments - Credit returned to TfL	-11060	-5690	-4940	-4480	-4480	-30,650	-11,060	-5,690	-4,940	-4,480	-4,480	-30,650	0	0	0	0	0	0
	Total funding required by T&D	D Total	73,066	62,473	65,606	56,293	58,169	315,606												
	Unallocated	Unallocated (Capex	13,196	2,182	3,338	12,285	- 23,580	7,421		-	-	-	-		13,196	2,182	3,338	12,285	- 23,580	7,421
								Column #1						Column #2	Column #3	Column #4				

PIC submission: Table 5.1 - Overview by Portfolio

			This	Authority Reque	st (£m)
Portfolio/ Product Families	Total Cost for FY18/19 - 22/23 (£m)	Remaining existing Programme and Project Authority for FY18/19 - 22/23 (£m)	2018/19	2019/20	Total
Corresponding Column	Column #1	Column #2	Column #3	Column #4	Column #5
Payments - Revenue Collection Asset Investment	53.0	53.0	0.0	0.0	0.0
Payments - Enhancements to Oyster and the Revenue Collection System	39.4	12.6	1.2	5.4	6.6
Enterprise Resource Programme (ERP) – mostly retain and enhance SAP	25.8	0.0	3.2	5.7	8.8
Surface Buses - Bus Operating and Monitoring Systems	89.6	13.2	1.0	6.9	7.9
Networks - Consolidation of Data Transmission	28.7	0.3	12.8	9.1	21.9
Hosting - Data Centre Rationalisation and Cloud Migration	7.0	7.0	0.0	0.0	0.0
End User Computing (EUC) Products - desktop, laptop, mobile, other	18.5	0.0	4.7	6.2	10.9
Contact Centre Operation (CCO)	2.5	0.0	1.9	0.6	2.5
Cyber Security	4.2	0.0	1.7	2.0	3.7
Tech Refresh - Investment in our Data Centre Servers	33.1	0.0	1.9	2.0	4.0
Technical Service Operation (TSO) - Maintenance of Applications & Operations of Service	23.4	0.8	7.9	7.2	15.1
Data & Analytics	12.2	0.0	2.3	4.6	6.9
Asset Management Products	0.05	0.0	0.05	0.00	0.05
Content & Collaboration Products	3.0	0.2	1.0	1.0	2.0
Access & Networks Management Products	0.5		0.0	0.0	0.0
Small Works	5.1	0.0	1.0	1.0	2.0
Subtotal - allocated budget	346.3	87.7	40.5	51.8	92.3
Payments - Credit returned to TfL	-30.7	N/A	N/A	N/A	N/A
Unallocated budget	7.4	0.0	13.2	2.2	15.4
TOTAL	323.0	87.7	53.7	54.0	107.7

Key Assumptions:

1.) Figures used in calculations are based on Draft Budget figures (W11) as on 25/01/201/8.

2.) Network Access and Wan: obtained full procurement authority for its complete delivery costs in December 2017, however, as Project Authority was not expelitily granted, we have included it in this PIC authority request.

3.) Buses Radio Replacement authority request excluded in the PIC annual submission as the timing didn't work with needing to sign the contract in early February, therefore it is going through the same authority route as FBS under the old standing orders, i.e. it will go to Vernon for sign off via Shashi (it will also be reviewed at the new Tech & Data board for visibility, although that board doesn't yet have the delegated authority).

4.) Payments CUBIC Service Delivery Assurance: as is committed spend under ther Revenue Collection Contract, therefore assume no additional authority request needed in the annual submission.

5.) Payments DCC Investment Fund: This is credit we get back from CUBIC, it is not applicable for project authority. This credit has not been used in the calculations to offset the amount of total project authority required.

6.) For projects/programmes where the remaining project authority is greater than latest forecast of remaining spend (e.g. underspend due to re-priorisation or unused risk allowance), the 'extra' amount of project authority has not been used to offset the authority required for other projects.

7.) For projects/programmes where the remaining project authority is less than latest forecast of remaining spend, the additional project authority has been included in this PIC submission.

8.) Buses FBS - Phase 1 already have project authority, will need to seek authority for Phase 2 and 3.

9.) Project authority for Unallocated Budget is included in the total authority request for PIC.

10.) Where there is any potential ambiguity, e.g. for BAU Capex investment such as Tech refresh and Small Works, we are asking for project authority just in case if a project is later required to be set up.

Total 2018/19 - 2019/20
£'000
6,601
8,835
7,905
21,891
40
10,888
2,476 3,665
3,003
3,957
15,119
<u>6,900</u> 50
2,000
-
1,979
92,306
0
15,378
Column #5

107,684 Check Total

	A	В	С	JК	L P	Q	R S	тт	JV	W X	Y	Z AA	AB	AC AD	AE	AF AG	AH	AI AJ	AK AL	AM	AN	AO	AP	AQ
1			Forecast (W11) & as per 17/18 Business Plan			• •	. <u>.</u> .	Foreca	ast in Jan 2018			oject with adj merge					ining authority					nority Required		
2	New ID	Portfolio/Product family	Programme/Project Name	Total Opex / Capex	Finance Business Partner/ Source	Notes/ Assumption	SAP Authority Existing Authority	Beller Merer	7/18 Remaining Authority	2018/19	2019/20			Chekc		019/20 2020/21			2018/19	2019/20	2020/21	2021/22	2022/23	Total
3	Original	Tech Refresh	Tech Refresh - Tech Ref Hardware (including FTP, RCC & Cycle Hire) - 2022/23	12,060 Capex	Li Ma	No Project authority submission	0 0	0	0 0	0	0	0	0 12060	ok	0	0	o o	0	0	0 0	0	0	12060	12060
		Tech Refresh	Tech Refresh - Infrastructure Refresh - Compute	10,349																				
4	Original			Capex	Kaye Haywood	No Project authority submission	0 0	0	0 0	1949	2008	2068 2	130 2194	ok	0	0	0 0	0	0 194	9 2008	2068	2130	2194	10349
		Tech Refresh	Tech Refresh - Infrastructure Refresh- Storage Backup & SAN	10,658																				
5	Original			Capex	Kaye Haywood	No Project authority submission	0 0	0	0 0	0	0	1858	0 8800	ok	0	0	0 0	0	0	0 0	1858	0	8800	10658
	Original	FUC	Singe for Business (actually eachier act)	150																				
6	Original	EUC	Skype for Business (network enablement)	Capex	Kave Havwood	No Project authority submission	0 0	0	0 0	150	0	0	0 0	ok	0	0	0	0	0 15	0 0	0	0	0	150
		Infrastructure & Operations (TSO)	F5 BIG-IP Management Pack	25																				
7	Original Original	Infrastructure &	IT Sourcing Straetgy (Infrastructure &	Capex	Kaye Haywood	No Project authority submission No Project authority submission - Gate 0	0 0	0	0 0	25	0	0	0 0	ok	0	0	0 0	0	0 2	5 0	0	0	0	25
8	-	Operations (TSO) Infrastructure &	Operations (TSO)) Operating System & Database Upgrades	12,500 Opex	Kaye Haywood	approved	0 0	0	0 0	650	700	0	0 0	ok	0	0	0 0	0	0 65		0	0	0	1350
9	Original	Operations (TSO)		Capex	Li Ma	No Project authority submission	0 0	0	0 0	2500	2500	2500 2	500 2500	ok	0	0	0 0	0	0 250	0 2500	2500	2500	2500	12500
		Infractsucture S				Current scope for CX01TEC.023 (G1406I Data Centre Consolidation) is expected to complete in 2017/18 with EFC to date of £2627k - PY																		
		Infrastructure & Operations (TSO)	Datacentre Rationalisation - Remaining Sites	1,400		In 2017/18 with EFC to date of £2627k - PY £2386k and FY 2018 £237k. Approved funding for this scope is £2600k.																		
10	Original			Capex	Maggie Hii	MH: Additional scope to current inflight project required more authority.	2602 2602	2386	237 -21	700	700	0	0 0	ok	-21	0	0 0	0 -2	1 72	1 700	0	0	0	1421
11	Original	Infrastructure & Operations (TSO)	JNP Integration	2,200 Capex		No Project authority submission - Gate 0	0 0	0	0 0	1500	700	0	0 0	ok	0	0	0 0	0	0 150		0	0	0	2200
12	Original	Infrastructure & Operations (TSO)	Service Resiliency Improvements	2,120 Capex		No Project authority submission - Gate 0	0 0		0 0	1120	1000	0	0 0	ok	0	0	0 0	0	0 112		0	0	ů.	2120
13	Original	Infrastructure & Operations (TSO)	Cloud/Hosting Target Operating Model	580 Capex	Li Ma	No Project authority submission	0 0		0 0	580	0	0	0 0	ok	0	0	0 0	0	0 58		0	0	Ő	580
14	Original	Infrastructure & Operations (TSO)	Licence Management	830 Capex		No Project authority submission - Gate 0	0 0		0 0	200	630	0	0 0	ok	0	0	0 0	0	0 20	<u> </u>	0	0	Ő	830
		Infrastructure &	Oracle: Commercial Approach	193																500	Ů	0	5	
15	Original	Operations (TSO)		Opex	Kaye Haywood	No Project authority submission - Gate 0	0 0	0	0 0	193	0	0	0 0	ok	0	0	0 0	0	0 19	3 0	0	0	0	193
16	Original	Infrastructure & Operations (TSO)	Remote Access Consolidation & Migration of Load Balancers Remote Access Consolidation & Migration of	30 Capex	Kaye Haywood	WBS: CX01TEC.024	920 920	683	198 39	39	0	0	0 0	ok	39	0	0 0	0 3	9	0 0	0	0	0	0
17	Adjust - Inflig	Operations (TSO)	Load Balancers	9 Capex	Kaye Haywood	WBS: CX01TEC.024	merged merged	merged merge	d merged	merged n	merged me	rged merged	merged	ok <u>n</u>	merged mer	ged merged	merged m	erged	0 merged	merged	merged	merged	merged	0
18	Original	Infrastructure & Operations (TSO)	Infrastructure Monitoring Migration (Infrastructure & Service Operations)	Capex	Kaye Haywood	WBS: CX01TEC.036	900 900	15	85 800	600	200	0	0 0	ok	600	200	0 0	0 80	0	0 0	0	0	0	0
		Infrastructure & Operations (TSO)	IT Service Management (ITSM) Toolset	1,400	Kave Havwood/	No Project authority submission for delivery (There is Gate 0 approved for spend in 17/18																		
19	Original			Capex	Maggie Hii	only.)	0 0	0	0 0	400	1000	0	0 0	ok	0	0	0 0	0	0 40	0 1000	0	0	0	1400
					During	Procurement in progress, in process to go for project authority for its complete delivery costs																		
	Original	Surface Buses	Radio Replacement	9,284	Alexander Thomas	on ahead of Feb PIC.	W11, but will obtain full																	
20				Capex		MH - updated with latest Forecast phasing - CT PJ006C		34.8	1603 8638.5	8606	30.5	0	0 0	ok	8606	30.5	0 0	0 8636.	5	0 0	0	0	0	0
21	Adjust - Inflight	Surface Buses	Radio Replacement	- 4 Capex	Finance - Maggie Hii		merged merged	merged merge				rged merged	merged			ged merged	merged m	erged	0 merged	merged	merged	merged	merged	0
22	Adjust - C/Fwd Inflight	Surface Buses	Radio Replacement	- 644 Capex	Finance - Maggie Hii		merged merged	merged merge				rged merged	merged			ged merged		erged	0 merged	merged	merged	merged	merged	0
					Alexander	Has some Project Authority, see email from AT 30/11/17	SAP to be																	
23	Original	Surface Buses	iBus2 (back office)	36,704 Capex	Thomas Finance - Maggie	MH - updated with latest Forecast phasing - CT PJ004C	555 640	431.7	208.3 0	750	3,576	23,963 27	289 15,979	ok	0	0		0	0 75	0 3576	23963	27289	15979	71557
23	Original	Surface Buses	iBus 2(kits+garages)	26,225 Capex	Alexander Thomas	No Project authority submission	0 0	0 0	0 0) merged n		rged merged	289 15,979 merged		merged mer	ged merged	merged m	arged	0 merged	merged	merged	merged	merged	71557
25	Original	Surface Buses	iBus2 (Ticketing)	8,000 Capex	Alexander Thomas	No Project authority submission		0	0 0			rged merged	merged		merged mer			erged	0 merged	merged	merged	merged	merged	0
26	Adjust - Inflight	Surface Buses	iBus 2	451 Capex	Finance - Maggie Hii		merged merged	merged merge	d merged			rged merged	merged		merged mer			erged	0 merged	merged	merged	merged	merged	0
20	Adjust - C/Fwd Inflight	Surface Buses	iBus 2	177 Capex	Finance - Maggie Hii		merged merged	merged merge				rged merged	merged			ged merged		erged	0 merged	merged	merged	merged	merged	0
				Jupon			inorgou					and another												, ,
	Original	Surface Buses	FBS (Future Bus Systems)	6,645	Alexander	AT - Has Project Authority for Phase 1, but need authority for Phase 2, and 3)	SAP to be																	
					Thomas Finance - Maggie	MH - updated with latest Forecast phasing - CT PJ005C; includes carry forward from 2017/18			500			1005				1055				-				
28	Adjust -	Surface Buses	FBS (Future Bus Systems)	- 453	Hii Finance - Maggie		1250 5823		523 4559		4187	1006	0 0	ok n	3058	1052 44	4 0	0 455		5 3135	562	0	0	3762
29	Adjust - C/Fwd Inflight	Surface Buses	FBS (Future Bus Systems)	2,124	Hii Finance - Maggie		merged	merged merge				rged merged	merged		merged mer			erged	0 merged	merged	merged	merged	merged	0
30				Capex	Hii Alexander Thomas	No Project authority submission	Need to seek annual authority	merged merge	d merged	merged n	merged me	rged merged	merged	ok <u>n</u>	merged mer	ged merged	merged m	erged	0 merged	merged	merged	merged	merged	0
31	Original	Surface Buses	BPS (Bus Systems Result)	1,122 Capex		MH - updated with latest Forecast phasing - CT PJ002C	1292 1292	0	522 770	185	194	210	262 271	ok	0	0	0 0	0	0 18	5 194	210	262	271	1122
	Original	Surface Buses	iBus PVR & Garage Results		Conc. The	This is an annualised programme and is only															210	202	211	.122
32				Capex	Sang Thoong	budgeted in 2017/18 No project authority - But this is BAU Capex	N/A 495	0	495 0		0	0	0	ok	0	0	0	0		0	0	0	U	0
	Original	Payments - CUBIC Service Delivery	Payments - CUBIC Service Delivery Assurance	53019		relating to asset improvement, not project per se. This is already committed in the RCC																		
33		Assurance		Capex	Li Ma/ Aman Miah	contract. Project - FP-PJ42C	N/A 53019		53019	13606	12151	11762 7	561 7939	ok	13606	12151 1176	2 7561	7939 5301	9	0 0	0	0	0	0
34	Original	Payments - DCC Investment Fund	Payments - DCC Investment Fund	-30650 Capex	Li Ma/ Aman Miah		N/A N/A	N/A N/A	N/A	-11060	-5690		480 -4480	ok	-11060	-5690 -494		-4480 -3065		0 0	0	0	0	0
	Original	Data & Analytics	Data & Analytics - TfL self-service reporting capability	930																				
35				Capex	Li Ma/ Aman Miah	No Project authority submission for delivery	0 0	0	0 0	280	300	350	0 0	ok	0	0	0 0	0	0 28	0 300	350	0	0	930
36	Original	Data & Analytics	Data & Analytics - GDPR	3,250 Capex	Kaye Haywood/ Maggie Hii	(There is Gate 0 approved for spend in 17/18 only.)	o o	0	0 0	1250	2000	0	0 0	ok	0	0	0 0	0	0 125	0 2000	0	0	0	3250
	Original	Data & Analytics	Data & Analytics - Digital Marketing Cloud	700	Kaye Haywood/	No Project authority submission for delivery (There is Gate 0 approved for spend in 17/18																		
37	Original	Data & Analytics	Data & Analytics - Technical refresh	Capex	Maggie Hii	only.)	0 0	0	0 0	400	300	0	0 0	ok	0	0	0 0	0	0 40		0	0	0	700
38	Original	Data & Analytics	Data & Analytics - Technical refresh Data & Analytics - Funding used to further enhance the existing project to provide wider	2,100 Capex	Li Ma	No Project authority submission	0 0	0	0 0	0	720	0	0 1000	ok	0	0	0 0	0	0	0 720	0	0	1000	1720
39	Original	Data & Analytics	Analytics - Data Science	2,100 Capex	Li Ma	No Project authority submission	0 0	0	0 0	100	500	500	500 500	ok	0	0	0 0	0	0 10	0 500	500	500	500	2100
40			2.14 000000	Capex	Li Ma	No Project authority submission	I 0 0	0	0 0	100	500	500	500 500	ok	0	0	0 0	0	0 10	0 500	500	500	500	2100

	A	В	С	J	K L	L P	Q	R	S	T	U V	W	ХҮ	Z	AA	AB A	AC AD	AE	AF AG	AH	AI AJ	AK	AL A	M AN	AO	AP AQ
1			Forecast (W11) & as per 17/18 Business Plan								cast in Jan 2018		Pro	ofile by project wit					"Valid" remain lue is equal to zero, we n	ing authority					uthority Required	
2		Portfolio/Product familv	Programme/Project Name Data & Analytics - ODX Future	Total	Opex / Capex	Finance Business Partner/ Source	Notes/ Assumption	SAP Authority	Existing Authority	Prior Year 20 Spend	17/18 Remaining Authority	3	2018/19 2019/2	20 2020/21	2021/22	2022/23	Chekc	2018/19	2019/20 2020/21	2021/22 202	2/23 Tota	20	18/19 201	/20 2020/21	2021/22 20	22/23 Total
41	Original	Data & Analytics	Enhancements	1,350	Capex	Li Ma	No Project authority submission	C	0	0	0	0	150	300 300	300	300	ok	0	0 0	0	0	0	150	300 3	0 300	300 1350
42	Original	CC0	CCO - Eckoh Self Serve Contract re-tender CCO - Eckoh IVR Contract re-tender	179	Opex	Li Ma	No Project authority submission	C	0	0	0	0	88.5	90 0	0	0	ok	0	0 0	0	0	0	88.5	90	0 0	0 178.5
43	Original	CC0	CCO -Batch 1 and 3 re-tender (potential 2	180	Opex	Li Ma	No Project authority submission	C	0	0	0	0	90	90 0	0	0	ok	0	0 0	0	0	0	90	90	0 0	0 180
44	Original	000	contracts that add up to the 60%) CCO -Batch 2 re-tender	18	Opex	Li Ma	No Project authority submission	C	0	0	0	0	0	9 9	0	0	ok	0	0 0	0	0	0	0	9	9 0	0 18
45	Original	000	CCO -Batch 4 re-tender	20	Opex	Li Ma	No Project authority submission	C	0	0	0	0	0	0 18	0	0	ok	0	0 0	0	0	0	0	0	8 0	0 18
46	Original	ссо	CCO -Mystery Shopping re-tender	-	Opex	Li Ma	No Project authority submission	C	0 0	0	0	0	0	0 20	0	0	ok	0	0 0	0	0	0	0	0 :	0 0	0 20
47	Original		CCO -CCO Chat	-	Opex	Li Ma	No Project authority submission	ŭ	0	0	0	0	0	0 0	0	0	ok	0	0 0	0	0	0	0	0	0 0	0 0
48	Original	ссо	CCO - SAP CRM Replacement CCO CRM Efficiencies		Capex Opex	Li Ma	No Project authority submission No Project authority submission		0 0	0	0	0	0	0 0	0	0	ok ok	0	0 0	0	0	0	0	0	0 0	0 0
50	Original	ссо	CCO - Lost Property Service Review	1,390		Li Ma	No Project authority submission	0	0	0	0	0	962	428 0	0	0	ok	0	0 0	0	0	0	962	428	0 0	0 1390
51	Original	ссо	CCO - Contact Centre Services Framework - Outsourcing Batch 5 & 6	7	Opex	Li Ma	No Project authority submission	C	0	0	0	0	7	0 0	0	0	ok	0	0 0	0	0	0	7	0	0 0	0 7
52	Original	ссо	CCO - Concessions Contract Re-Tender	711		Rags		C	0 0	0	0	0	711	0 0	0	0	ok	0	0 0	0	0	0	711	0	0 0	0 711
	Original	Networks	Networks - Access Networks & WAN Managed Service - Transition and	29,500		Adam Hills	MH - updated with latest Forecast phasing - CS-																			
53			Transformation		Capex	Maggie Hii	PJ118C	C	3150.2	0	3150.2	0	11759	8500 1000	2500	2500	ok	0	0 0	0	0	0	11759	8500 10	0 2500	2500 26259
	Adjust - C/Fwd Infligh	Networks	Networks - Access Networks & WAN Managed Service - Transition and Transformation	- 3,241		Adam Hills	MH - updated with latest Forecast phasing - CS- PJ118C																			
54					Capex	Maggie Hii		merged	l merged	merged	merged mer	ged	merged me	erged merged	merged	merged	ok	merged r	merged merged	merged merge	d	0 mergeo	merged	merged	merged merged	0
	Original	Networks	Networks - Equinix Cloud-IX Replacement	10																						
						Kaye Heywood /																				
55					Opex	Adam Hills	No Project authority submission	C	0	0	0	0	10	0 0	0	0	ok	0	0 0	0	0	0	10	0	0 0	0 10
							Email from Daran on 29/11/17, no project authority for this at the moment – we have submitted a																			
	Original	Networks	DC(a) Network Tech Refresh	333		Daran Rowland (replaced with	funding request through the Gate0 process that is being reviewed on 30/11/17 MH: Gate 0 approved for 567k in Dec 17																			
56					Capex	Rajesh) Maggie Hii		SAP to be updated		0	80	187	820	0 0	0	0	ok	333	0 0	0	0	333	487	0	0 0	0 487
	Adjust - C/Fwd New	Networks	DC(a) Network Tech Refresh	487	,	Daran Rowland (replaced with	for this at the moment – we have submitted a funding request through the Gate0 process that is being reviewed on 30/11/17																			
57	Grewa New				Capex	Rajesh) Maggie Hii	MH: Gate 0 approved for 567k in Dec 17	SAP to be updated		merged merg	ed merged		merged merged	merged	merged	merged	ok	merged r	merged merged	merged merge	d	0 mergeo	merged	merged	merged merged	0
	Original	Networks	Networks - DCN Management Sourcing	260																						
58			· · · · · · · · · · · · · · · · · · ·		Opex	Adam Hills	No Project authority submission	C	0	0	0	0	260	0 0	0	0	ok	0	0 0	0	0	0	260	0	0 0	0 260
	Original	Networks	Networks - Mobile Sourcing Project	1,375																						
59	Original	CSIRT	CSIRT - Digital Forensics Tool (Encase)	340	Opex	Adam Hills	No Project authority submission	C	0	0	0	0	317	558 500	0	0	ok	0	0 0	0	0	0	317	558 50	0 0	0 1375
60	Original	CSIRT	CSIRT - Risk & Threat Modelling Tool	123	Capex	Li Ma	No Project authority submission	0	0	0	0	0	340	0 0	0	0	ok	0	0 0	0	0	0	340	0	0 0	0 340
61	Original	CSIRT	CSIRT - Key / Certificates Management	137	Capex	Li Ma	No Project authority submission		0	0	0	0	123	0 0	0	0	ok	0	0 0	0	0	0	123	0	0 0	0 123
62	Original	CSIRT	CSIRT - Enterprise Encryption (SafeNet)	90	Capex	Li Ma	No Project authority submission	0	0	0	0	0	13/	0 0	0	0	ok _	0	0 0	0	0	0	137	0	0	0 137
63	Original	CSIRT	CSIRT - Firewall Monitoring & Analysis	150	Capex	LiMa	No Project authority submission	0	0	0	0	0	90	0 0	0	0	ok ok	0	0 0	0	0	0	150	0	0	90
65	Original	CSIRT	CSIRT - Network Security Monitoring & Modelling	1,510	Capex Capex	Li Ma	No Project authority submission No Project authority submission				0	0	35	1475 0		0	ok ok	0	0 0	0	0	0	35	1475	0 0	0 150
66	Original	CSIRT	CSIRT - Threat Intelligence (Cyjax)	60		Li Ma	No Project authority submission				0	ŏ	60	0 0		0	ok	0	0 0	0	0	0	60	0	0 0	0 60
67	Original	CSIRT	CSIRT - Awareness	15	Capex	Li Ma	No Project authority submission		0	0	0	ŏ	15	0 0	0	0	ok	0	0 0	0	0	0	15	0	0 0	0 15
68	Original	CSIRT	CSIRT - Vulnerability Manager (Qualys)	34	Capex	Li Ma	No Project authority submission		0	o	0	0	34	0 0	0	0	ok	0	0 0	0	0	0	34	0	0 0	0 34
69	Original	CSIRT	CSIRT - Data Loss Prevention	365		Li Ma	No Project authority submission	0	0	0	0	0	50	315 0	0	0	ok	0	0 0	0	0	0	50	315	0 0	0 365
70	Original	CSIRT	CSIRT - Pen Testing	30	Capex	Li Ma	No Project authority submission	0	0	0	0	0	30	0 0	0	0	ok	0	0 0	0	0	0	30	0	0 0	0 30
71	Original	CSIRT	CSIRT - London Underground Security Monitoring (Starting w/Victoria Line	-	Сарех	Li Ma	No Project authority submission	C	0	0	0	0	0	0 0	0	0	ok	0	0 0	0	0	0	0	0	0 0	0 0
72	Original	CSIRT	CSIRT - London UnderGround Security Monitoring (other lines)	400		Li Ma	No Project authority submission	C	0	0	0	0	80	80 80	80	80	ok	0	0 0	0	0	0	80	80	80 80	80 400
73	Original	CSIRT	CSIRT - End Point Security of Critical OT Asset Base	184	Capex	Li Ma	No Project authority submission	C	0	0	0	0	184	0 0	0	0	ok	0	0 0	0	0	0	184	0	0 0	0 184
74	Original	CSIRT	CSIRT - Removal Media Protection - Operational Control Rooms (SheepDip)	40	Capex	Li Ma	No Project authority submission	C	0	0	0	0	40	0 0	0	0	ok	0	0 0	0	0	0	40	0	0 0	0 40
75	Original	CSIRT	CSIRT - Network Information Systems EU Directive	105	Opex	Li Ma	No Project authority submission	C	0	0	0	0	105	0 0	0	0	ok	0	0 0	0	0	0	105	0	0 0	0 105
76	Original	CSIRT	CSIRT - National Rail / Light Rail Security Programme DfT Regulation	72	Opex	Li Ma	No Project authority submission	C	0	0	0	0	72	0 0	0	0	ok	0	0 0	0	0	0	72	0	0 0	0 72
77	Original	CSIRT	CSRIT - Incidence Response Tooling	-	Capex	Li Ma	No Project authority submission	C	0	0	0	0	0	0 0	0	0	ok	0	0 0	0	0	0	0	0	0 0	0 0
78	Original	CSIRT	CSRIT - Security Web Gateway (Forcepoint)	-	Capex	Li Ma	No Project authority submission	C	0	0	0	0	0	0 0	0	0	ok	0	0 0	0	0	0	0	0	0 0	0 0
79	Original	CSIRT	CSRIT - Malware Protection	-	Capex	Li Ma	No Project authority submission	C	0	0	0	0	0	o 0	0	0	ok	0	0 0	0	0	0	0	0	0 0	0 0
80	Original	CSIRT	CSIRT - Incident Response Services	50	Capex	Li Ma	No Project authority submission	C	0	0	0	0	50	0 0	0	0	ok	0	0 0	0	0	0	50	0	0 0	0 50
	Original	CSIRT	CSRIT - SIEM Tool (SPLUNK!)																							
81					Capex	Li Ma	No Project authority submission	0	0	0	0	0	0	0 0	0	0	ok	0	0 0	0	0	0	0	0	0 0	0 0
	Original	CSIRT	CSRIT _ Web Application Security Monitoring (CloudFlare)	-			No. Devices and the standard state		_																	
82					Capex	Li Ma	No Project authority submission	C	0	0	0	0	0	0 0	0	0	ok	0	0 0	0	0	0	0	0	0 0	0 0
	Original	CSIRT	CSRIT _ Ironbridge Cyber Resillience	500																						
				500																						
83					Capex	Li Ma	No Project authority submission	C	0	0	0	0	100	100 100	100	100	ok	0	0 0	0	0	0	100	100 10	0 100	100 500

	A	В	С	J K	L P	Q	R	S	Т	U	V	W D	X Y	Z	AA	AB	AC AD	AE		G AH		AJ A	K AL	AM	AN	AO	AP	AQ
1	Draft Budge		Forecast (W11) & as per 17/18 Business Plan							Forecast in J			Prof	ile by project wit	h adj merged		_	(if va	"Valid" n Ilue is equal to zero	emaining autho , we need to as		ity)			Additional Au	thority Required		
2	New ID	Portfolio/Product familv	Programme/Project Name	Total Opex Cape	Finance Busines Partner/ Source	s Notes/ Assumption	SAP Authority	Existing Authority	Prior Year Spend	2017/18	Remaining Authority	201	8/19 2019/2	0 2020/21	2021/22	2022/23	Chekc	2018/19	2019/20 2020	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
	Original	Pan T&D Compliance - Commercial	Other initiatives - CICT (Contracts Re- tendering)	-																								
84				Opex	Li Ma	N/A		0		0 0	0		0	0 0		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0
85	Original	Payments	FTP Phase 3	90 Capex	Rags	Assume overspent covered by FTP4, see line	260	2600	0 2588.0	0 520	-508		90	0 0) ok	90	0	0	0 0	90		0	0	0 0	0	0
	Original	Payments	FTP Phase 4: Contactless on Ticketing App	250	- Hugo	This includes FTP4 Programme Project	4170		2000.0	020	000														<u> </u>	0 0		
86	Original	Demonstra		Capex	Rags	Authority, spend to date and spend to go		41700	1818	0 10400	13120		250	0 0		0 0) ok	250	0	0	0 0	250		0	0	0 0	0	0
87	Original	Payments	FTP Phase 4: Weekly Capping (back office)	1,400 Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		700	700 0	(0 0) ok	700	700	0	0 0	1400		0	0	0 0	0	0
88	Original	Payments	FTP Phase 4: Weekly Capping on the Card	1,069 Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		1069	0 0		0 0) ok	1069	0	0	0 0	1069		0	0	0 0	0	0
89	Original	Payments	FTP Phase 4: Prestige over Ethernet	265 Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		265	0 0		0 0) ok	265	0	0	0 0	265		0	0	0 0	0	0
90	Original	Payments	FTP Phase 4: Concessions on the App	1,500 Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		750	750 0		0 0) ok	750	750	0	0 0	1500		0	0	0 0	0	0
91	Original	Payments	FTP Phase 4: CPC Capacity Improvements	500 Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		250	250 0		0 0) ok	250	250	0	0 0	500		0	0	0 0	0	0
92	Original	Payments	FTP Phase 4: Apple Pay etc on App	- Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		0	0 0		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0
93	Original	Payments	FTP Phase 4: App enhancements	- Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		0	0 0		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0
94	Original	Payments	FTP Phase 4: Contingency	- Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		0	0 0		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0
95	Original	Payments	FTP Phase 4: Analytics	1,440 Capex	Rags	See comment on Line 78	merged	merged	merged	merged	merged		1440	0 0		0 0) ok	1440	0	0	0 0	1440		0	0	0 0	0	0
96	Adjust - Inflight	Payments	FTP Phase 4 :	4,340 Capex	Rags	Plan (difference between Business Plan and in SAP)	Full authority in place	·	-43	3 -336.3	769.448		3,694	646 0		D O) ok	3694	646	0	0 0	4340		0	0	0 0	0	0
97	Adjust - C/Fwd Inflig	ht Payments	FTP Phase 4 :	124 Capex	Rags		merged	merged	merged	merged	merged		124	o 0		0 0) ok	124	0	0	0 0	124		0	0	0 0	0	0
98	Original	Payments	Cash in Transit Retender	- Opex	Rags			0	0	0 0	0		o	0 0		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0
99	Original	Payments	POM to Web Service Interface	- Capex	Rags			0	0	0 0	0		0	0 0		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0
	Original	Payments	HERMES	678			Has full authori but not at PJ	-			7																	
100	Adjust -	Paymente	HERMES	Capex	Rags	TfL Reader : SMP01.RDR (and subcodes)	level	3620 moreod					904	0 0	moread	0 0) ok	784 morrood	0	0	0 0	784	12	0	0	0 0	0	120
101	Inflight	Payments		Capex	Rags	TfL Reader : SMP01.RDR (and subcodes)	merged	merged	merged	merged	merged	merge	ed merged	merged	merged	merged	ok	merged	merged merged	I merged	merged	0	merged	merged	merged	merged	merged	0
102	Original	Payments	RFIS Stabilisation	Capex	Rags	No Project authority submission		0 0	D (0 0	0		11	0 0	(0 0) ok	0	0	0	0 0	0	1	1	0	0 0	0	11
103	Original	Payments	POM Enhancements	- Capex	Rags	No Project authority submission		0 0		0 0	0		0	0 0		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0
104	Original	Payments	Digital Oyster	1,000 Capex	Li Ma	No Project authority submission		0 0	D	<u> </u>	0		0	0 1000		0 0) ok	0	0	0	0 0	0		0	0 100	0 0	0	1000
105	Original	Payments	RID2	10,000 Capex	Li Ma	No Project authority submission		0 0	D	0 0	0		180 1	070 3000		0 0) ok	0	0	0	0 0	0	18	0 107			0	10000
106	Original	Payments	FTP Phase 5	- Capex	Li Ma	No Project authority submission		0 0	D	0 0	0		0	0 0		0 0) ok	0	0	0	0 0	0	10	0	0	0 0	0	0
107	Original	Payments	New Reader for Bus	9,900 Capex	Li Ma	No Project authority submission		0 0		0 0	0		0 3	2020 7880		0 0) ok	0	0	0	0 0	0		0 202	0 788	0 0	0	9900
107	Original	Payments	New Mayoral Initiatives	- Capex	Li Ma	No Project authority submission		0 4		0 0			0	0 /		0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0000
109	Original	Payments	OOL Modernisation	1,050 Capex	Li Ma	No Project authority submission							0	0 0	1050) ok	0	0	0	0 0	0		0	0	0 1050	0	1050
110	Original	Payments	RFIS Replacement Phase 2 & 3	1,000 Capex	Li Ma	No Project authority submission								000 0) ok	0	0	0	0 0	0		0 100	0	0 0	0	1000
111	Adjust - Inflig	ght Payments	Ticketing Vending Machine (TVM) Development	538 Capex		TVM - PJ97C	all authority	53	8		520		833	0				833	0	0	0 0			0	0	0 0	0	1000
111	Adjust - C/F	wd Payments	Ticketing Vending Machine (TVM) Development	295	Rags		all authority	53		0.0	538		000	morrad	mornod	mormod) ok		mormod		morred	033	morgod	morrood	morgod	mormod	morrand	0
112	Original	Payments	Development Delinking expired credit cards	250 Capex	Rags	TVM - PJ97C	covered	29		0.0	295	merge	and merged	merged	merged	merged		merged	merged merged	I merged	merged	0	merged	merged	merged	merged	merged	0
	Original	Payments	Photocards on app	Capex	Li Ma	No Project authority submission		0 0			0		250	<u> </u>		0) ok	0	0	0	0 0	0	25			0 0	0	250
114	Original	Payments	Point to Zone	1,200 Capex	Li Ma	No Project authority submission		0 (0	0		0	0 0		0) ok	0	0	0	0 0	0			0	0 0	0	0
115	Original	Payments	1G Oyster Migration Strategy	1.500 Capex	Li Ma	No Project authority submission				0 0	0			600 0		0) ok	0	0	0	0 0	0	60	0 60		0 0	0	1200
116	Original	Payments	Improved Refunds - Service Delay Refunds	500 Capex	Li Ma	No Project authority submission		<u>u (</u>		0 0	0		U	750 750		0) ok	0	0	0	0 0	0		0 75	0 75		0	1500
117	Original	Payments	Polymer Notes (£20)	300 Capex	Li Ma	No Project authority submission		0 (0 0	0		0	0 0	500	0) ok	0	0	0	0 0	0		0	0	0 500	0	500
118	Original	ERP	ERP - FINANCE Master Data	Capex	Li Ma Kaye Haywood/	No Project authority submission (There is Gate 0 approved for spend in 17/18		0 0		0 0	0		0	0 300		0 0) ok	0	0	0	0 0	0		0	0 30	0 0	0	300
119				Capex	Maggie Hii	only.)		0 0	0	0 0	0		1820	0 0		0 0) ok	0	0	0	0 0	0	182	0	0	0 0	0	1820
120	Adjust - C/F	wd ERP	ERP - FINANCE Master Data	270 Opex	Kaye Haywood/ Maggie Hij	No Project authority submission for delivery (There is Gate 0 approved for spend in 17/18 only.)		0 merced	margad	margad	merned	merge	ed merged	merged	merged	merged	~	merced	merced	moreor	mercod		merced	merced	merced	merced	merced	0
120	Original	ERP	ERP - Occupational Health Process Improvement & Application Rationalisation	685	Maggie Hii Kaye Haywood/ Maggie Hii			0 merged	merged	merged	merged		685	0				merged	merged merged	I merged	merged	0	merged 68	merged	merged	merged	merged	0
121	Original	ERP	ERP TECH - Legacy Portal Migration	100 Capex		(There is Gate 0 approved for spend in 17/18				0	0			0 (0) ok	0	0	0	0	0				0	0	685
	Adjust - C/F	wd ERP	ERP TECH - Legacy Portal Migration	70 Opex	Maggie Hii Kaye Haywood/ Maggio Hii			0		0 0	0	merge	170 ed merged		- merged	- merged	ok	0	0	0	0 0	0	17		manud	0 0	0	170
123	Original	ERP	ERP - FSC Transformation Programme	500 Opex	Maggie Hii	only.)		0 merged	merged	merged	merged							merged	merged merged	I merged	merged	0	merged	merged	merged	merged	merged	0
124	Original	ERP	ERP Change & Release Management Tool	150 Capex		No Project Authority submission		U (U	0 0	0		500	0 0		0) ok	0	0	0	0 0	0	50		0	0 0	0	500
125	Original	ERP	ERP Data Scrambling (TDMS)	200 Capex		No Project Authority submission		0 0		0 0	0			150 0		0 0) ok	0	0	0	0 0	0		0 15		0 0	0	150
126	Original	EDD		2,500 Capex	Kaye Haywood	No Project Authority submission		0 0	D	0 0	0		0	200 0		0 0) ok	0	0	0	0 0	0		0 20	0	0 0	0	200
127	Original	EDD	ERP - Cloud Hosting migration ERP - Managed Services retender & SAP S4	2,500 Opex		No Project Authority submission		0 0	D	0 0	0			500 1000		0 0) ok	0	0	0	0 0	0		0 150			0	2500
128		CDD	upgrade (Cloud SaaS)	CApex	Kaye Haywood	No Project Authority submission		0 (D	0 0	0		0 3	8810 4500	4350	0 2850) ok	0	0	0	0 0	0		0 381	0 450	0 4350	2850	15510
129	Original	ERP	ERP - S4 enhancements (Cloud SaaS)	4,300 Capex	Kaye Haywood	No Project Authority submission		0 0	D	0 0	0		0	0 0	2150	0 2150) ok	0	0	0	0 0	0		0	0	0 2150	2150	4300
1	Original	Infrastructure & Hosting	App Hosting - Footprint Reduction - Phase 1	-			SAP to be																					
130				Opex	Kaye Haywood	PJ114C	updated	1043	3	0 1043	0		0	0 0	(0 0) ok	0	0	0	0 0	0		0	0	0 0	0	0

	A	В	С	J K	L P	Q	R	S	T	U	V	W X	Y	Z	AA	AB	AC AD	AE	AF	AG	AH		AJ A	AK AL	AM	AN	AO	AP	AQ
1			Forecast (W11) & as per 17/18 Business Plan							Forecast in Ja			Profile b	y project wit	h adj merged		_	(if v	"\ alue is equal	Valid" remain to zero, we n	ing authority eed to ask fo	or full authority))			Additional Aut	hority Required		
2	New ID	Portfolio/Product familv	Programme/Project Name	Total Opex / Capex	Finance Business Partner/ Source	Notes/ Assumption	SAP Authority	Existing Authority	Prior Year Spend	2017/18	Remaining Authoritv	2018/19	2019/20	2020/21	2021/22	2022/23	Chekc	2018/19	2019/20	2020/21	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
	Original	Infrastructure & Hosting	App Hosting - Footprint Reduction Phase 2 & 3	1,868																									
	Oliginal	initiastructure & riosting	3				SAP to be																						
131			Ann Harting - Costoriat Paduction Phase 2.8		Kaye Haywood	PJ114C - Footprint reductions	updated	2608	0		2608	2398	3 249	0	0		0 ok	2398	210	0	0	0	2608	C	3	9 0	0	0	39
132			App Hosting - Footprint Reduction Phase 2 & 3	Capex	Maggie Hii	PJ114C		merged	merged	merged	merged	merged	merged	merged	merged	merged	ok	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
133	Adjust - C/Fwd	Infrastructure & Hosting	App Hosting - Footprint Reduction Phase 2 & 3	625 Capex	Maggie Hii	PJ114C		merged	merged	merged	merged	merged	merged	merged	merged	merged			merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
	Original	Infrastructure & Hosting	App Hosting - Discovery & Assessment	-			SAP to be																						
134				Opex	Kaye Haywood	RCE02.BD.HOST.DIS (and subcodes)	updated	640	0	356	284	0	0 0	0	0		0 ok	0	0	0	0	0	0	C		0 0	0	0	0
	Original	Infrastructure & Hosting	App Hosting - Pilot	128		3rd approval, assume overspent covered by underspend in other hosting lines	SAP to be																						
135				Opex	Kaye Haywood	RCE02.BD.HOST.PIL and subcodes underspend in other hosting lines	updated	500	0	336	164	75	5 0	0	0		0 ok	75	0	0	0	0	75	C		0 0	0	0	0
136	Adjust - Inflight	Infrastructure & Hosting	App Hosting - Pilot	- 53 Opex	Maggie Hii	RCE02.BD.HOST.PIL and subcodes		merged	merged	merged	merged	merged	merged	merged	merged	merged	ok	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
			An United Description (Defend																										
	Original	Infrastructure & Hosting	App Hosting - Decomission of Retired Services	85			010111																						
137				Opex	Kaye Haywood	PJ114C - Retire services & Programme support	SAP to be updated	224	0	42	182	182	2 0	0	0		0 ok	182	0	0	0	0	182	C		0 0	0	0	0
138	Adjust - Inflight	Infrastructure & Hosting	App Hosting - Decommission of Retired Services	97 Opex	Maggie Hii	PJ114C - Retire services & Programme support		merged	merged	merged	merged	merged	merged	merged	merged	merged	ok	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
139	Original		Application Hosting - Early Migrations	1,380 Capex	Kaye Haywood	PJ114C - Early Migrations only	SAP to be updated	1785	0	0	1785	1463	3 322	0	0		0 ok	1463	322	0	0	0	1785	c		0 0	0	0	0
140	Adjust - Inflight	Infrastructure & Hosting	Application Hosting - Early Migrations (Capex)	- 270 Capex	Maggie Hii	PJ114C - Early Migrations only		merged	merged	merged	merged	merged	merged	merged	merged	merged	ok	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
141	Adjust - Inflight	Infrastructure & Hosting	App Hosting - Early Migrations (opex)	675 Opex	Maggie Hii	PJ114C - Early Migrations only		merged	merged	merged	merged	merged	merged	merged	merged	merged	ok	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
142	Original	Infrastructure & Hosting	App Hosting - Mass Migrations (Option 4c)	- Capex	Li Ma				0	n						.	0 ok	0	0	0	0	0	0			0			0
				Captor		PJ113C ESH Phase 1 had no formal project authority				0								0			5	Ű						Ű	
	Original	Infrastructure & Hosting	App Hosting - Enterprise Service Hub Phase 2 and 1	251		submission. May be able to use Phase 2 authority which shows lifecycle. Assume so	SAP to be																						
143				Capex	Kaye Haywood	here. FC HIGHER PJ113C	updated	814	0	280	534	457	7 78	0	0	(0 ok	457	77	0	0	0	534	C		1 0	0	0	1
	Adjust - Inflight	Infrastructure & Hosting	App Hosting - Enterprise Service Hub Phase 2 and 1	76		ESH Phase 1 had no formal project authority submission. May be able to use Phase 2																							
144	Inflight		2 and 1	Capex	Maggie Hii	authority which shows lifecycle. Assume so here. FC HIGHER		merged	merged	merned	merned	merced	merned	merced	merged	merned	ok	merged	merced	merced	merged	merged	0	merged	merged	merged	merged	merged	0
				Capox		PJ113C		morgoo	morgou	morgou	morgou	morgou	morgoo	morgou	morgod	inoigou		morgou	morgou	morgou	morgou	inorgou		molgou	morgou	morgou	morgou	morgou	
	Adjust - Inflight	Infrastructure & Hosting	App Hosting - Enterprise Service Hub Phase 2 and 1	208		ESH Phase 1 had no formal project authority submission. May be able to use Phase 2 authority which shows lifecycle. Assume so																							
145				Opex	Maggie Hii	here. FC HIGHER		merged	merged	merged	merged	merged	merged	merged	merged	merged	ok	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
146	Original		Data Centre Rationalisation	- Capex	Li Ma			0	0	0	0		0 0	0	0		0 ok	0	0	0	0	0	0	c		0 0	0	0	0
147	Original	Infrastructure & Hosting	Hosting - Data Centre Consolidation	145 Capex	Rags	CS-PJ95C	9510	9510	6990	1453	1067	145	5 0	0	0		0 ok	145	0	0	0	0	145	C		0 0	0	0	0
	Adjust -	Infrastructure & Hosting	Data Centre Hardware Refresh	1,673																									
148	C/Fwd New			Capex	Maggie Hii	CS-PJ111C	10285	10285	0	8311	1974	1673	3 0	0	0		0 ok	1673	0	0	0	0	1673			0 0	0		0
149			Asset Management	50 Capex				0			0	50	0 0	0	0		0 ok	0	0	0	0	0	0	50		0 0	0	0	50
150			Content & Collaboration - Legacy SharePoint consolidation	440 Opex	Li Ma	No Project authority submission	0	0			0	50	0 100	150	140		0 ok	0	0	0	0	0	0	50	10	0 150	140	0	440
151			Content & Collaboration - Document management strategy and consolidation	750 Opex			0	0			0	50	250	250	200		0 ok	0	0	0	0	0	0	50	25	0 250	200	0	750
152	Original	Content & Collaboration	Content & Collaboration - Project Server consolidation	250 Opex			0	0			0	0	0 150	100	0		0 ok	0	0	0	0	0	0	c	15	0 100	0	0	250
153	Original	Content & Collaboration	Content & Collaboration - Livelink upgrade	600 Opex			0	0			0	600	0 0	0	0		0 ok	0	0	0	0	0	0	600		0 0	0	0	600
		Access & Networks Management	Computerised Track Access Control (CTAC)	500					1	_	7				7														
154		Access & Networks	Computerised Track Access Control (CTAC)	Capex		WBS: CX01LUIP.005.021.01	2186					531		0	0		0 ok	531	0	0	0	0	531	C		0 0	0	0	0
155	C/Fwd Inflight	Management		Capex	Kaye Haywood	WBS: CX01LUIP.005.021.01	merged	merged	merged	merged	merged	merged	merged	merged	merged	merged	ok	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
156	Original	Content & Collaboration	Replacement	1,000 Capex	Maggie Hii	A Gate 0 approved - 6872 (£230k approved of which £30k spend in 2017/18; the rest will draw down from the business plan)	SAP to be updated	230		20	200	500	500				0 ok	200			0		200	300	50	0			900
150	Original	EUC	EUC - Design and build modern desktop platform (core applications only), Desktop Migration: and Desktop Application Migration	4,650 Capex		No Project authority submission - Gate 0	apoditu r	230	0			2650					<u>о</u> ок 0 ок	200	0	0	0	0	200	2650				0	4650
157	Original	EUC	EUC -Office365 deployment	350 Capex	Kaye Haywood/	No Project authority submission - Gate 0 No Project authority for delivery costs, but has a Gate 0 for scoping stage	SAP to be updated		0	n	0	300					0 0k	0	0	0	J		0	300			0	0	
159	Original	EUC	EUC -Mobile management in-housing migration (includes business case development)	364 Capex		No Project authority submission - Gate 0		1 1	0	n	0	364		0	0		0 ok	0	0	0	0	0	0	364		0 0	0	0	364
160	Original		EUC -Identity management service Business Case	- Opex		No Project authority submission - Gate 0		0	0	0	0		o 0	0	0		0 ok	0	0	0	0	0	0			0 0	0	0	0
161	Original	EUC	EUC -Back Office Telephony business case	150 Capex		No Project authority submission - Gate 0	(0	0	0	0		0 150	0	0		0 ok	0	0	0	0	0	0	0	15	i0 0	0	0	150
162	Original	EUC	EUC -Desktop hardware refresh	11,000 Capex		No Project authority submission - Gate 0		0	0	0	0	1000		3500	1500	150		0	0	0	0	0	0	1000		-	1500	1500	11000
163	Original	EUC	EUC -Pull printing expansion	230 Capex		No Project authority submission - Gate 0		0	0	0	0	124		0	0		0 ok	0	0	0	0	0	0	124			0	0	230
164	Original	EUC	EUC -Azure mobile components remediation	1,583 Capex		No Project authority submission - Gate 0		0	0	0	0	75	5 419	348	363	37		0	0	0	0	0	0	75	41	9 348	363	378	1583
	Original	EUC	EUC -London Transport Museum IT in-	-																									
165				Opex	Kaye Haywood	No Project authority submission - Gate 0	0	0	0	0	0	0	0	0	0	(0 ok	0	0	0	0	0	0	0		0 0	0	0	0
166	Adjust - Small Works	Small Works	Small Works	7,618 Opex	Maggie Hii	Need to seek authority		00	0	0	0	1461	1 1495	1530	1566	156	i6 ok	0	0	0	0	0	0	1461	149	5 1530	1566	1566	7618
167	VVORKS	Small Works	Small Works	- 1 Opex	Maggie Hii	Need to seek authority		0	0	0	0	1	1 0	0	0		0 ok	0	0	0	0	0	0	-1		0 0	0	0	-1
168	Adjust - Small Works Transfer	Small Works	Small Works	- 2,518 Opex	Maggie Hii	Need to seek authority		0	0	0	0	-482	2 -494	-506	-518	-518		0	0	0	0	0	0	-482	-49	4 -506	-518	-518	-2518
169	Adjust - C/Fwd Linallocated	Unallocated	Unallocated	1,986 Capex	Maggie Hii	Need to seek authority		0	0	0	0	1786	6 200	0	0		0 ok	0	0	0	0	0	0	1786	20	0 0	0	0	1986
170	Adjust - C/Fwd		Unallocated	1,400 Capex	Maggie Hii	Need to seek authority		0	0	0	0	1400		0	0	(0 ok	0	0	0	0	0	0	1400		0 0	0	0	1400
171 172	Adjust - Unalloc	Unallocated Unallocated	Unallocated Unallocated	- 5,827 Capex 313,165 Opex	Maggie Hii Maggie Hii	Need to seek authority Need to seek authority	0	0	0	0	0	7276	6 563 4 1419	2613 725	9963 2322	-26242 2662	2 ok 2 ok	0	0	0	0	0	0	7276 2734	56	3 2613 9 725	9963 2322	-26242 2 2662	-5827 9862
173 174																													

		A	В	С	J	K	L	Р	Q	R	S	T	U	V	W X	Y	Z	AA	AB	AC AD	AE	AF	AG	AH	AI	AJ A	AK AL	AM	AN	AO	AP	AQ
1	Draft F	Budget - Co	mbination of Latest For	ecast (W11) & as per 17/18 Business P	an.								Forecast in J	lan 2018		Profile b	project with	adj merged			(if va	" Iue is equal	/alid" remain to zero, we n	ing authority eed to ask fo	or full authorit	ty)			Additional Auth	ority Required		
2	Ne	ew ID	Portfolio/Product family	Programme/Project Name	Total	Opex / Capex	Fin Pa	ance Business artner/ Source	Notes/ Assumption	SAP Authority	Existing Authority	Prior Year Spend	2017/18	Remaining Authority	2018/19	2019/20	2020/21	2021/22	2022/23	Chekc	2018/19	2019/20	2020/21	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
17	5				323,027										86,262	64,655	68,944	68,578	34,589		32,534	10,699	7,266	3,081	3,459	57,039	53,728	53,956	61,678	65,497	31,130	265,989

	A	В	С	D	E	F	G	Н	Ι	J	К	М	N	0	Р	Q	R	S	T U	V	W	Х	Y	Z
1	Detailed su	mmary of Enhanced Bus	iness Plan											۳۷	/alid" rema	ining authori	tv				Additional Au	thority Requi	ed	
2	New ID	Portfolio/Product family	Programme/Project Name	Description	2018/19	2019/20	2020/21	2021/22	2022/23	Total	Opex / Capex	201	18/19 2	2019/20	2020/21	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
3	Original	Tech Refresh	Tech Refresh - Tech Ref Hardware (including FTP, RCC & Cycle Hire) - 2022/2	3 Commercially committed spend. Funds provided to Cubi	-	-	-	-	12,060	12,060	Capex		0	0		0	0 0	0		0	0		12060	12060
	Original	Tech Refresh	Tech Refresh - Infrastructure Refresh - Compute	* Spend based on replacing 1/5th of all HP physical servers every year for 5 years. Current server (HP) count = 1075 @ £8370 each (sliced cost) - 215 per year * Spend based on replaced 2 T3 's every other year @ 75K each. (sliced cost)	1,949	2,008	2,068	2,130	2,194	10,349			0	0		0	0 0	0						
4				Refresh rate of 215 per year (£9223 per server - sliced cost)							Capex								194	9 200	206	3 2130	2194	10349
5	Original	Tech Refresh	Tech Refresh - Infrastructure Refresh- Storage Backup & SAN	* Spend based on retiring legacy storage arrays (VNX, ISILON) and backup solutions (Avamar, Data Domain) that are nearing EOSL, consolidating and replacing with new VMAX, ISILON and Avamar instance. * Spend to save * Recommended refresh generates a £5m saving compared with the 'Do Minimum'.	-	-	1,858	-	8,800	10,658	Capex		0	0		0	0 0	0		0	0 185	3 (8800	10658
6	Original	EUC	Skype for Business (network enablement)	Enabled QoS to facilitate Skype For Business Online across all sites (only for internal consumption for video links and voice (ON NET) and not for external video conferencing). There is no Opex impact. Cost covers management and implementation.	150	-	-	-	-	150	Capex		0	0		0	0 0	0	15	0	0) (0	150
7	Original	Infrastructure & Operations (TSO)	F5 BIG-IP Management Pack	Mgmt tool enabling capacity/demand management and proactive monitoring & compliance.allowing the reallocation of resources to other workstreams/BAU.	25	-	-	-	-	25	Capex		0	0		0	0 0	0	2	5	0		0	25
8	Original	Infrastructure & Operations (TSO)	IT Sourcing Straetgy (Infrastructure & Operations (TSO))	Sourcing strategy: to consolidate where appropriate the delivery of key IT services most of which are already currently outsourced	650	700	-	-	-	1,350	Opex		0	0		0	0 0	0	65	0 70	00		0	1350
9	Original	Infrastructure & Operations (TSO)	Operating System & Database Upgrades	Server 2008r2 (and earlier), SQL Server 2008r2 (and earlier), SQL Server 2008r2 (and earlier), SQL Server 2008r2 (and earlier). Based on approx 5200 servers running (mix) of = <server +="" 11.2<="" 2008r2="" and="<SQL" c1300="" oracle="" running="<" servers="" td=""><td>2,500</td><td>2,500</td><td>2,500</td><td>2,500</td><td>2,500</td><td>12,500</td><td>Capex</td><td></td><td>0</td><td>0</td><td></td><td>0</td><td>0 0</td><td>0</td><td>250</td><td>0 250</td><td>00 250</td><td>250</td><td>2500</td><td>12500</td></server>	2,500	2,500	2,500	2,500	2,500	12,500	Capex		0	0		0	0 0	0	250	0 250	00 250	250	2500	12500
	Original	Infrastructure & Operations (TSO)	Datacentre Rationalisation - Remaining Sites	Migrate and/or decommissining services from legacy datacentres to target hosting solution, where there is deemed to be operational risk or service no longer required. Lease deadlines dictated by Commercial Property are excluded from this list - this is just sites where we have operational risk.	700	700	-	-	-	1,400			-21	0		0	0 0	-21						
10	Original	Infrastructure &	JNP Integration	Migration of JNP infrastructure into Dca and Infrastructure support transitioned to T&D from Cap	1,500	700				2,200	Capex		0	0		0	0 0	0	72	1 70) (0 0	1421
11	Original	Operations (TSO) Infrastructure &	Service Resiliency Improvements	Gemini Pendina formalised outcome of Sourcina Improve service resiliency across shared platforms, based upon service tiering/business criticality. Including	1,120	1,000				2,120	Capex		0	0		0	0 0	0	150	0 70	00		0 0	2200
12	Original	Operations (TSO) Infrastructure &	Cloud/Hosting Target Operating Model	technical iterations and process chances. Outcome to Develop a new operatinng model to support a hybrid operating model (on-premise and the cloud/hosted),	580	-		-		580	Capex		0	0		0	0 0	0	112	100	00	<u>) (</u>	0 0	2120
13	Original	Operations (TSO) Infrastructure &	Licence Management	encompassing service delivery projects governance Licence Management	200	630				830	Capex		0	0		0	0 0	0	58		0	0 (0	580
14	g	Operations (TSO)		Oracle: Commercial Approach.							Capex								20	0 63	30 () (0 0	830
15	Original	Operations (TSO)	Oracle: Commercial Approach	Total costs is about £510k, most of this is in 17/18.	193	-	-	-	-	193	Opex		0	0		0	0 0	0	19	13	0		0	193
16	Original Adjust -	Operations (TSO)	Load Balancers Remote Access Consolidation & Migration of	Balancers	30	-	-	-		30	Capex		39	0		0	0 0	39		0	0	<u>)</u> (0 0	0
17	Inflight	Operations (TSO)	Load Balancers	Inflight variances This project is looking at the current solutions which	9	-	-	-		9	Capex	mergeo	d merg	ged I	merged	merged	merged	0	merged	merged	merged	merged	merged	0
18	Original	Infrastructure & Operations (TSO)	Infrastructure Monitoring Migration (Infrastructure & Service Operations)	monitor our IT infrastructure (IONIX) and auto-generates	600	200	-	-		800	Capex		600	200		0	0 0	800		0	0	0 (0	0
19	Original	Infrastructure & Operations (TSO)	IT Service Management (ITSM) Toolset	suite is a toolset used to log, create, manage and escalate IT related incidents, manage change, problem management, config, knowledge base and service request management within agreed service levels. We	400	1,000	-	-		1,400	Capex		0	0		0	0 0	0	40	0 100	00		0 0	1400
20	Original	Surface Buses	Radio Replacement	* Surface Narrow Band Radio Replacement - safety critical project to replace the Bus radio system, which is overburdened leading to dropped/unintelligble calls to/from buses - eg requests for urgent medical assistance. The current system and assets are also end of life and contract has been extended through derogation.	7,445	1,839	-		-	9,284	Capex		8606	31		0	0 0	8637		0	0		0	0
21	Adjust - Inflight	Surface Buses	Radio Replacement	Inflight variances	1,161 -	· 1,165	-	-		- 4	Capex	mergeo	d merg	ged i	merged	merged	merged	0	merged	merged	merged	merged	merged	0
22	Adjust - C/F Inflight	wd Surface Buses	Radio Replacement	Carry forward from 2017/18		- 644				- 644	Capex	mergeo	d merg	ged i	merged	merged	merged	0	merged	merged	merged	merged	merged	-
	Original	Surface Buses	iBus2 (back office)	IBus2 (back office) * IBus2 - will replace our bus tracking, performance management and real time bus passenger information system, the contract for which cannot be extended past 2022. Failure to replace the system would see the followign_toses over 10 years: F252 mol reduced	1,200	2,949	22,012	10,543	-	36,704	Capex		0	0		0	0 0	0	mergea 75					71557
24	Original	Surface Buses	iBus 2(kits+garages)	iBus 2(kits+garages) * iBus2 - will replace our bus tracking, performance management and real time bus passenger information	-		-	13,746	12,479	26,225	Capex	mergeo	d merg	ged i	merged	merged	merged	0	merged	merged	merged	merged	merged	0
25	Original	Surface Buses	iBus2 (Ticketing)	Bus2 (Ticketing) * iBus2 - will replace our bus tracking, performance management and real time bus passenger information		-	1,500	3,000	3,500	8,000	Capex	mergeo	d merg	ged i	merged	merged	merged	0	merged	merged	merged	merged	merged	0
26	Adjust - Inflight	Surface Buses	iBus 2	Inflight variances	- 450	450	451	-		451	Capex	mergeo	d merg	ged i	merged	merged	merged	0	merged	merged	merged	merged	merged	0
27	Adjust - C/F Inflight	wd Surface Buses	iBus 2	Carry forward from 2017/18	-	177	-	-		177	Capex	mergeo	d merg	ged i	merged	merged	merged	0	merged	merged	merged	merged	merged	0
- 21	-		1	1							Japon								morgeu	morgeu	morgeu	morgeu	morgou	0

	A	В	С	D	E	F	G	Н	Ι	J	К	M N	0	Р	Q	R	S	T U	V	W	Х	Y	Z
1	Detailed sumr	nary of Enhanced Busin	ess Plan											"Valid" remai	ning authority					Additional Aut	hority Requir	ed	
2	New ID	Portfolio/Product family	Programme/Project Name	Description	2018/19	2019/20	2020/21	2021/22	2022/23	Iotal	Opex / Capex	2018/19	2019/20	2020/21	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
28	Original		FBS (Future Bus Systems)	* Future Bus Systems (Routes and Schedules function only) - Current bus routes and schedules systems are life expired and already extended by SSJs. Loss of these systems would result in a) inability to manage bus operator performance b) out of date network information and therefore passenger information. This would lead to increased costs due to higher contract payments to operators and significantly degraded customer	3,752	1,604	1,289	-	-	6,645	apex	305	8 1052	2 444	0	0	4554	65	5 313	5 562	C	0	3762
29	Adjust - Inflight	Surface Buses	FBS (Future Bus Systems)	Inflight variances	- 629	459	- 283	-		- ⁴⁵³ Ca	apex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
30	Adjust - C/Fwd Inflight	Surface Buses	FBS (Future Bus Systems)	Carry forward from 2017/18	-	2,124	-	-	-	2,124	apex	merged	merged	merged	merged	merged	0	merged	merged		merged	merged	0
31	Original	Surface Buses	BPS (Bus Systems Result)	* Bus Performance Systems - used for early stage PoCs to inform requirements for major projects such as iBus2 and Countdown 3 as well some spend to save initatives and innovation trials.	185	194	210	262	271	1,122	apex		0 (D C	0	0	0	185					1122
32	Original	Surface Buses	iBus PVR & Garage Results	iBus PVR & Garage Results	-	-	-	-	-	- Ca	apex		0 (D C	o	0	0	0		o o	c	0	0
33	Original	Payments - CUBIC Service Delivery Assurance	Payments - CUBIC Service Delivery Assurance	Payments - CUBIC Service Delivery Assurance (committed contract costs)	13,606	12,151	11,762	7,561	7,939	53,019 Ca	apex	1360	6 1215 [.]	1 11762	7561	7939	53019	(0 0	c	0	0 0
34	Original	Payments - DCC Investment Fund	Payments - DCC Investment Fund	DCC Investment Fund - funding for Cubic projects & services	- 11,060	- 5,690	- 4,940	- 4,480	- 4,480	- 30,650 Ca	apex	-1106	0 -5690	0 -4940	-4480	-4480	-30650	(0 (o o	C	0	0 0
35	Original	Data & Analytics	Data & Analytics - TfL self-service reporting capability	to avoid extra costs of supporting multiple new systems.	280	300	350	-	-	930	apex		0 0	D C	0	0	0	280	0 30	350	c	0) 930
36	Original	Data & Analytics	Data & Analytics - GDPR	This is a pan-T&D provision for GDPR including a portion of the Data Analytics technical debt programme as required for business critical reporting. Also includes other elements under ERP (£500k) and Payments (de- THS current contract fum Lawleys and sin May 2018.	1,250	2,000	-	-	-	3,250	apex		0 0	D C	0	0	0	1250	2000	0 0	c	0) 3250
37	Original	Data & Analytics	Data & Analytics - Digital Marketing Cloud	This content contract with Dawleys ends in Way 2018, and cannot be extended via SSJ. Provision has been put in place to provide a bare minimum service to send emails to customers. There will be savings by reducing the bestice secter (155 (K) excursor sected to Davley) by	400	300	-	-	-	700 Ca	apex		0 0	D C	0	0	0	400	0 300	0 0	C	0) 700
38	Original	Data & Analytics	Data & Analytics - Technical refresh	Revise figures from £1m to £220k in 19/20 (remove this amount from Onex budget) total £1.22m This is for enhancements to work Analytics are	-	720	-	-	1,000	1,720 Ca	apex		0 0	D C	0	0	0	(720	o o	c	1000	1720
39	Original	Data & Analytics	Data & Analytics - Funding used to further enhance the existing project to provide wider benefits	This is for enhancements to work Analytics are er undertaking that would have a benefit to the wider TfL if there was slightly more funding to support project costs	100	500	500	500	500	2,100 Ca	apex		0 0	D C	0	0	0	100	500	500	500	500	2100
40	Original	Data & Analytics	Data & Analytics - Data Science	Cutting this would mean less efficiency in working, it will be slower and loose ability to run some reports.	100	500	500	500	500	2,100	apex		0 (D C	0	0	0	100	500	500	500	500	
41	Original	Data & Analytics	Data & Analytics - ODX Future Enhancements	Allocation of funding to support future enhancements to ODX to help better plan our network. This has already	150	300	300	300	300	1.350	apex		0 (D C	0	0	0	150					
42	Original	ссо	CCO - Eckoh Self Serve Contract re-tender		89	90		-		179	Dex		0 (D (0	0	0	88.5			000	000	178.5
42	Original	ссо	CCO - Eckoh IVR Contract re-tender	This contract covers automated journey planer. CPC Re-tender of the IVR Management Contract, contract award and transition to new contract.	90	90	-	-	-	180			0 (o c	0	0	0	90				0	
	Original	ссо	CCO -Batch 1 and 3 re-tender (potential 2 contracts that add up to the 60%)	This contract covers every public facing telephone Re-tender of the L&S, Telesales, and % of Adult Oyster telephony work, contract award and transition to new	-	9	9	-	-	18	bex		0 (0 0	0	0	0	90	9			0) 180
44	Original	ссо	CCO -Batch 2 re-tender	contract Re-tender of the % of Adult Oyster telephony work,		-	18	-		18	Dex		0 (D C	0	0	0	(9 9		0	18
45	Original	ссо	CCO -Batch 4 re-tender	contract award and transition to new contract. Re-tender of the Cycle Hire contact offering, contract	-	-	20	-	-	20			0 (D C	0	0	0	(18		0	18
46	Original	ссо	CCO -Mystery Shopping re-tender	award and transition to new contract. Re-tender of the Mystery shopping, Exit survey and Quality audit tools and services, contract award and	-	-	-	-	-	-	Dex		0 (D C	0	0	0	(20		0	20
47	Original	ссо	CCO -CCO Chat	trapsition to new contract to save initiative, as proven within the contact centre	-	-	-	-	-	-	Dex		0 0	D 0	0	0	0	(0 0		0	0
48	Original	ссо	CCO - SAP CRM Replacement CCO CRM	industry. (6260) Replacing CCO SAP CRM with MS Dynamics and (6792) Identifying new opportunities and delivering		-				-	apex		0 (0 0	0	0	0	(0 0	C	0	0
49	Original		Efficiencies CCO - Lost Property Service Review	efficiencies made nossible by the new MS Dynamics This project is to review of the lost property service to look for operational scalability, efficiencies and cost	962	428	-	-	-	Op 1,390	Dex		0		0	0	0			0 0	C	0	0
50		CC0	CCO - Contact Centre Services Framework	reduction make a recommendation for the future of the	7	-	_			.,000 Op	bex		0			0	0	962	2 42	3 0	C	0) 1390
51	Original		Outsourcing Batch 5 & 6	savings Current scope for Batch 5 is Ovster Re-tender of the Concessions Scheme Management	711		-		-		bex		0		0	0	0	7	7 (0 0	C	0	7
52	Original		CCO - Concessions Contract Re-Tender Networks - Access Networks & WAN	Contract, contract award and tranistion to new contract. Source a new bought-in network service contract that will provide the platform on to which TfL will consolidate its		-	-	-	-		bex		0		0	0	0	711	1 (0 0	C	0) 711
53	Original	Networks	Managed Service - Transition and Transformation	approximately 30 commodity network service contracts. Resource cost to support, shadow and assure the transition activities corried out by the new supplier	15,000	8,500	1,000	2,500	2,500	29,500 Ca	apex		0 0		0	0	0	11759	850	0 1000	2500	2500	26259
54	Adjust - C/Fwd Inflight	Networks	Networks - Access Networks & WAN Managed Service - Transition and Transformation	Brought forward to 2017/18 - approved at Gate 0 including Connect	- 3,241	-	-	-	-	- 3,241 Ca	apex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
55	Original	Networks	Networks - Equinix Cloud-IX Replacement	Replacement of CIX platform to ECX platform. Equinix's CIX service ends on 30/06/18. Service is used to connect to the Microsoft Azure and Amazon AWS public cloud environments and connectivity is used by Digital, ST, LU, Customer Technology, Application Hosting, and EUC and is critical for future Application Hosting and EUC transformation as well.	10	-	-	-	-	10 Ор	bex		0 0	D C	0	0	0	10	0	0 0	C	0) 10
56	Original	Networks	DC(a) Network Tech Refresh	Refresh is required for continuity of service and minimise security risk and extended outages. Much of the network equipment at DC(a) is already out of vendor support and more than 90% of network equipment in DC(a) will be out of vendor support by the end of 2019.	333	-	-	-	-	333	apex	33	3 (0 0	0	0	333	487	7			0) 487

	A	В	C	D	E	F	G	Н		J	K	M N	0	Р	Q	R	S	ΤU	V	W	Х	Y	Z
1	Detailed sumn	mary of Enhanced Busin	ness Plan											"Valid" remai	ining authorit	ty				Additional Au	thority Requi	ed	
2	New ID	Portfolio/Product family	Programme/Project Name	Description	2018/19	2019/20	2020/21	2021/22	2022/23	Total	Opex / Capex	2018/19	2019/20	2020/21	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
57	Adjust - C/Fwd New	Networks	DC(a) Network Tech Refresh	Carry forward from 2017/18	487	-	-	-	-	487	Capex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
58	Original	Networks	Networks - DCN Management Sourcing Project	Procurement of a third party services for operational and on-going duties of managing the DCN. It will be out of support when Fujitsu contract expires in August 2018 - this would present substantial risk to the on-going operational stability of this critical network.	260	-	-	-	-	260	Opex		0) (0	0 (0	26	0	0	0 0	0 0) 260
59	Original	Networks	Networks - Mobile Sourcing Project	Telefonica UK Limited ("02") currently provides TL with mobile services and a call-off agreement has since expired and been replaced by the CCS "Network Services" Framework for requirements gathering; extension of existing arrangements (beyond the May	317	558	500	-	-	1,375	Opex		0 0		0	0 0	0	31	7 55	58 50	0 0) 0) 1375
60	Original	CSIRT	CSIRT - Digital Forensics Tool (Encase)	Ability to perform forensics on endpoint, server, mobile & cloud infrastructure for the investigations team.	340	-	-	-	-	340	Capex	(0 0	0	0	0 0	0	34	0	0	0 0	0 0	340
61	Original	CSIRT	CSIRT - Risk & Threat Modelling Tool	A tool to store information on threats and vulnerabilities aligned to assets and model the risks.	123	-	-	-	-	123	Capex		0 0		0	0 0	0	12	3	0	0 0	0 0	123
62	Original	CSIRT	CSIRT - Key / Certificates Management	Tool to generate and manage keys/certificates for endpoints, applications, systems and network devices.	137	-	-	-	-	137	Capex		0 0) (0	0 (0	13	7	0	0 0	0 0	137
63	Original	CSIRT	CSIRT - Enterprise Encryption (SafeNet)	Provide robust encryption protection of sensitive data across the estate.	90	-	-	-	-	90	Capex	(0) (0	0 0	0	9	0	0	0 0	0 0) 90
64	Original	CSIRT	CSIRT - Firewall Monitoring & Analysis	A tool which monitors firewall traffic, analyses/manages firewall rules and detect changes to the firewall itself.	150	-	-	-	-	150	Capex		0	0	0	0 0	0	15	0	0	0 0	0 0) 150
65	Original	CSIRT	CSIRT - Network Security Monitoring & Modelling	Tool which allows modelling and visualisation of the network creating a baseline of usual activity to support	35	1,475		-		1,510	Capex		0 0		0	0 0	0	3		75	0		1510
66	Original	CSIRT	CSIRT - Threat Intelligence (Cyjax)	the identification of unusual or malicious behaviour A tool/service to aggregate, analyse and compile information related to cyber intelligence e.g. threats,	60	-	-	-	-	60	Capex		0		0	0 0	0	6		0	0 0		1010
67	Original	CSIRT	CSIRT - Awareness	A tool which allows us to test awareness and improve understanding of cyber threats with end users.	15	-	-	-	-	15			0		0	0 0	0	1	<u> </u>	0	0 0) 15
68	Original	CSIRT	CSIRT - Vulnerability Manager (Qualys)	A tool capable of identifying, classifying, remediating and mitigating vulnerabilities.	34	-	-	-	-	34	Capex Capex		0		0	0 0	0	1	4	0	0 0		15
69	Original	CSIRT	CSIRT - Data Loss Prevention	Tool to prevent sensitive data leaving the TfL estate	50	315		-	-	365	Capex) 0) (0	0 (0	5	0 31	15			365
70	Original	CSIRT	CSIRT - Pen Testing	Security assurance capability providing - Independent technical security assessment of applications and	30	-	-	-	-	30	Capex) 0) (0	0 0	0	3	0 31	0			303
70	Original	CSIRT	CSIRT - London Underground Security Monitoring (Starting w/Victoria Line	infrastructure Tools that enable the security monitoring of hardware and software that control physical devices and events	-	-	-	-	-	-	Capex) 0) (0	0 0	0		0	0			30
72	Original	CSIRT	CSIRT - London UnderGround Security Monitoring (other lines)	specific to those found in railways. Tools that enable the security monitoring of hardware and software that control physical devices and events	80	80	80	80	80	400	Capex) 0) (0	0 0	0	9		30 8		80	400
73	Original	CSIRT	CSIRT - End Point Security of Critical OT Asset Base	A tool which addresses the need of securing all endpoints within an industrial controls environment to	184		-	-	-	184			0		0	0 0	0	18		0 0		, 00	400
73	Original	CSIRT	CSIRT - Removal Media Protection - Operational Control Rooms (SheepDip)	miticate negative impact A tool for industrial organisations to securely use and monitor removable media in operational environements.	40		-	-	-	40	Capex		0		0	0 0	0			0			104
74	Original	CSIRT		New regulations in 2018 and 2019 which will require an assessment to determine the impact on TfL	105		-	-	-	105	Capex		0) (0	0 0	0	4		0			40
	Original	CSIRT	CSIRT - National Rail / Light Rail Security Programme DfT Regulation	New regulations in 2018 and 2019 which will require an assessment to determine the impact on TfL	72	-		-	-	72	Opex) 0) (0	0 0	0	10		0			0 105
76	Original	CSIRT	CSRIT - Incidence Response Tooling	Provide a central, secure place to record incidents, to allow for easy real time review, and updates from	-	-	-	-	-	-	Opex) 0) (0	0 0	0	7:	2	0			12
77	Original	CSIRT	CSRIT - Security Web Gateway (Forcepoint)	multiple team members URL content filtering of end user web activity and prevention call back of malware	-	-		-	-	-	Capex) 0) (0	0 0	0		0	0			0
/8	Original	CSIRT	CSRIT - Malware Protection	Tool capable of scanning infrastructure and endpoints for malicious software, report findings and quarantine	-	-		-	-	-	Capex) 0		0	0 (0		0	0	0 (0	0
79	Original	CSIRT	CSIRT - Incident Response Services	malicious software To provide emergency secuirty incident response support.	50	-		-	-	50	Capex) 0		0	0 0	0		0	0	0 (0	0
80			CSRIT - SIEM Tool (SPLUNK!)	support. Log management & analysis tool capable of correlating a large number of data sets, generating alerts and identifying patterns.	-	-	-	-	-	-	Capex		0 0		0	0 0	0	5		0		0	50
	Original	CSIRT	CSRIT _ Web Application Security Monitoring (CloudFlare)	A tool which can protect web facing applications from DDoS attacks, other forms of vulnerability exploits port permissions.	-	-	-	-	-	-	Capex Capex		0 0		0	0 0	0		0	0	0		
	Original	CSIRT	CSRIT _ Ironbridge Cyber Resillience	In the bare bone version, the continuation of the Ironbridge Cyber Resillience testing has not been budgetted. If there was an appetite within senior leadership to continue this we could reintroduce them providing both technichal and management scenarios to improve our ability to detect and respond to cyber security scenarios across the business.	100	100	100	100	100	500	Сарех		0 0)	0	0 (0	# 10	0 10	00 10	0 100	0 100	5 500
	Original	Pan T&D Compliance - Commercial	Other initiatives - CICT (Contracts Re- tendering)	Money to be budgeted at T&D level to cover small contract re-tender costs	-	-	-	-	-		Opex		0 0		0	0 0	0		0	0	0 0) 0	0
	Original	Payments	FTP Phase 3	Payment and Risk Engine Refactoring: - Ensures FTP2 is scalable to meet demand from growth in population and increased use of contactless from mid-2017. allowing up to _20 million tags per day Future 11cketing Programme Phase 4 (FTP4) will reduce	90	-	-	-	-	90	Capex	91	0 0)	0	0 0	90		0	0	0 0) 0) 0
86	Original	Payments	FTP Phase 4: Contactless on Ticketing App	Future Ticketing Programme Phase 4 (FTP4) will reduce the overall cost of revenue collection for TfL and deliver customer benefits by implementing an enhanced	250	-		-	-	250	Capex	25	0		0	0 0	250		0	0	0 0	00	0
87	Original	Payments	FTP Phase 4: Weekly Capping (back office)	0	700	700	-	-	-	1,400	Capex	70	700		0	0 0	1400		0	0	0 0	0 0	0 0
88	Original	Payments	FTP Phase 4: Weekly Capping on the Card	0	1,069	-	-	-	-	1.069	Capex	106	0		0	0 0	1069		0	0	0 (0 0	0
89	Original	Payments	FTP Phase 4: Prestige over Ethernet	0	265	-	-	-	-	265	Capex	26	6 0)	0	0 (265		0	0	0 0	0 0	0 0
90	Original	Payments	FTP Phase 4: Concessions on the App	0	750	750	-	-	-	1,500	Capex	75	750		0	0 0	1500		0	0	0 0) 0) 0

	A	В	С	D	E	F	G	Н	I	J	K	M N	0	Р	Q	R	S	T U	V	W	Х	Y	Z
1	Detailed summ	nary of Enhanced Busin	less Plan											"Valid" rer	maining authori	ty			F	dditional Aut	hority Requi	red	
2	New ID	Portfolio/Product family	Programme/Project Name	Description	2018/19	2019/20	2020/21	2021/22	2022/23	Total	Opex / Capex	2018/19	2019/20	2020/2		2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
91	Original	Payments	FTP Phase 4: CPC Capacity Improvements	0	250	250	-	-	-	500	Capex	2	250 25	60	0	o c	500	(C) (0 0	0
92	Original	Payments	FTP Phase 4: Apple Pay etc on App	0	-	-	-		-	-	Capex		0	0	0	o c	0	() (0) (0 0	0
93	Original	Payments	FTP Phase 4: App enhancements	0	-	-	-	-	-	-	Capex		0	0	0	o c	0	(c) (0 0	0
94	Original	Payments	FTP Phase 4: Contingency	0	-	-		-		-	Capex		0	0	0	o c	0	(0 0	0) (0 0	0
95	Original	Payments	FTP Phase 4: Analytics	0	1,440	-		-		1,440	Capex	14	40	0	0	o c	1440	() (0) (0 0	0
96	Adjust - Inflight	Payments	FTP Phase 4 :	Missing inflight work packages	3,694	646				4,340	Capex	36	64 64	16	0	o c	4340	(0 0	0) (0 0	0
97	Adjust - C/Fwd Inflight	Payments	FTP Phase 4 :	Carry forward from 2017/18	124	-	-	-	-	124	Capex	1	24	0	0	o c	124	(0 0	0) (0 0	0
98	Original	Payments	Cash in Transit Retender	The Contract for Cash in Transit and Cash Processing with G4S Solutions is to expire on 25 February 2018 following a 2 year extension to incorporate the follout of	-	-	-	-	-	-	Opex		0	0	0	o c	0	(0 0	0) (0 0	0
99	Original	Payments	POM to Web Service Interface	Security concerns, and the need to future-proof Oyster cards, have initiated an investigation into the activity required to migrate the remaining MiFare Classic Cards Hermes is the first project within a roadmap to deliver a	-	-		-		-	Capex		0	0	0	o c	0	(0 0	0) (0 0	0
100	Original	Payments	HERMES	Hermes is the first project within a roadmap to deliver a New Reader (The Hermes Reader) for operational TTL use	678	-		-		678	Capex	7	'84	0	0	o c	784	120.08698	3 0	0) (0 0	120.08698
101	Adjust - Inflight	Payments	HERMES	Inflight variances	226	-	-			226	Capex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
102	Original	Payments	RFIS Stabilisation	Stabilisation of Rail Fares Implementation System - Migrate from an outdated, out of support platform to a new solution in line with hosting strategy, so that oppoing	11	-	-	-	-	11	Capex		0	0	0	0 0	0	11	1 0	c) (0 0	11
103	Original	Payments	POM Enhancements	The project comprises two installations works: 1) Reduced QBM Functionality for RSLU; and 2) Portuguese on POMs	-	-	-	-	-	-	Capex		0	0	0	o c	0	(, c		0	0
104	Original	Payments	Digital Oyster	doing work on Digital Oyster - the idea of having the Oyster card in your phone is coming through strongly in faedback on the ann	-	-	1,000	-	-	1,000	Capex		0	0	0	o c	0	(1000		0 0	1000
105	Original	Payments	RID2	feedback on the app Procurement and/or development of a replacement for the current revenue inspection device which is out of support and cannot be used after December 2020	180	1,070	3,000	5,750	-	10,000	Capex		0	0	0	0 0	0	180) 1070			0 0	10000
106	Original	Payments	FTP Phase 5	Phase 1: Simplifying the legacy Oyster system - initial phase: reducing the cost of sale by making more transporting only through interacting Output on Output on the second s	-	-			-	-	Capex		0	0	0	0 C	0	() (C) (0 0	0
107	Original	Payments	New Reader for Bus	Deployment of the New Reader (Hermes) on buses including a complete re-build and simplification of the reader software	-	2,020	7,880	-	-	9,900	Capex		0	0	0	o c	0	(2020	7880) (0 0	9900
108	Original	Payments	New Mayoral Initiatives	Provision for manifesto commitments eg a TfL cap	-	-	-	-	-	-	Capex		0	0	0	o c	0	() (0) (0 0	0
109	Original	Payments	OOL Modernisation	Phases 2 &3: Decommission Opus - exit Rackspace	-	-	-	1,050	-	1,050	Capex		0	0	0	o c	0	(0	105	0 0	1050
110	Original	Payments	RFIS Replacement Phase 2 & 3	Rail Fares Implementation System (RFIS). Automation of Oyster route charges. Phase 2 is a dependency for Point to Zone to be able to	-	1,000	-	-	-	1,000	Capex		0	0	0	o c	0	(1000	0) (0 0	1000
111	Adjust - Inflight New	Payments	Ticketing Vending Machine (TVM) Development	NEW _ Not on original list - Inflight variance	538	-	-		-	538	Capex	٤	133	0	0	o c	833	() (0) (0 0	0
112	Adjust - C/Fwd New		Ticketing Vending Machine (TVM) Development	Carry forward from 2017/18	295	-	-	-	-	295	Capex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
113	Original	Payments	Delinking expired credit cards	Compliance to GDPR. Once a contactless card expires, we need to delink the PAN from the token. The time when this occurs is the as	250	-	-	-	-	250	Capex		0	0	0	o 0	0	250		0) (0 0	250
114	Original	Payments	Photocards on app	Include Photocard association for concessions in the App for Oyster inc proof of eligibility	-	-	-	-	-	-	Capex		0	0	0	o c	0	(c) (0 0	. 0
115	Original	Payments	Point to Zone	Implementation of new Fares Model for the Elizabeth Line. Denendency on REIS Phase 2 (to generate fares data) Funding for on-system changes (on TVM and POMs but	600	600	-	-	-	1,200	Capex		0	0	0	o c	0	600	600	c) (0 0	1200
116	Original	Payments	1G Oyster Migration Strategy	Funding for on-system changes (on TVM and POMs but not Xpert devices) to force swapout of 1st gen cards. Depends on approach - soft campaign based on Improved refunds including automatic service delay	-	750	750	-	-	1,500	Capex		0	0	0	o c	0	(750	750) (0 0	1500
117	Original	Payments	Improved Refunds - Service Delay Refunds	Improved refunds including automatic service delay refunds, more autofill, better service disruption management	-	-	-	500	-	500	Capex		0	0	0	0 0	0	(0 0	C	50	0 0	500
118	Original	Payments	Polymer Notes (£20)	Changes to revenue collection systems to accept new £20 notes	-	-	300		-	300	Capex		0	0	0	0 0	0	(300)	0 0	300
119	Original	ERP	ERP - FINANCE Master Data	To standardise the company account code structure in ERP to enable consistent reporting of financial information.	1,550	-	-	-		1,550	Capey		0	0	0	o c	0	1820					1820
120	Adjust - C/Fwd Inflight	ERP	ERP - FINANCE Master Data	Carry forward from 2017/18 - Gate 0	270	-			-	270	Capex Opex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	1020
120	Original	ERP	ERP - Occupational Health Process Improvement & Application Rationalisation	To Improve process flow, reduce dependency on numerous workarounds and reduce costs.	685	-			-	685			0	0	0	o c	0	685		riorgeu	mergeu		685
121	Original	ERP	ERP TECH - Legacy Portal Migration	To retire the legacy portal so that users have one place to review and approve all ERP inmteractions. This will	100	-	-		-	100	Capex Opex		0	0	0	o c	0	170					170
	Adjust - C/Fwd Inflight	ERP	ERP TECH - Legacy Portal Migration	vield has technology support savings as it removes Carry forward from 2017/18 - Gate 0	70	-	-		-	70	Opex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	170
123	Original	ERP	ERP - FSC Transformation Programme	A series of technology solutions to improve FSC processes.	500	-	-	-	-	500	Capex		0	0	0	o c	0	500		r			500
124	Original	ERP	ERP Change & Release Management Tool	Tool to control and automate the release of SAP configuration.	-	150			-	150	Capex		0	0	0	o c	0	300	150				150
125	Original	ERP	ERP Data Scrambling (TDMS)	Tool to encypt, randomise and scramble ERP data. Likely to be essential post GDPR.	-	200			-	200	Capex		0	0	0	0 0	0		200				200
120	Original	ERP	ERP - Cloud Hosting migration	Drive savings out of SAP hosting (£3.5m p.a) by hosting the current application configuration in the Cloud.	-	1,500	1,000		-	2,500	Opex		0	0	0	o c	0		1500				2500
127	Original	ERP	ERP - Managed Services retender & SAP S4 upgrade (Cloud SaaS)	The SAP Managed Services contract expires June 2019. This is onludes hosting and application management. This initiative would retender that contract converting	-	3,810	4,500	4,350	2,850	15,510	CApex		0	0	0	o c	0	(3810			2850	
129	Original	ERP	ERP - S4 enhancements (Cloud SaaS)	Essential business driven enhancements post Cloud migration in 2020	-	-	-	2,150	2,150	4,300	Сарех		0	0	0	o c	0	(215		
123			1		I		L	L			Сарых								/(210	2130	4300

	A	ВС	D	E	F	G	Н	I	J	K	M N	0	Р	Q	R	S	T U	V	W	Х	Y	Z
1	Detailed sur	mmary of Enhanced Business Plan											"Valid" rema	aining authorit	y			A	dditional Aut	hority Requi	red	
2	New ID	Portfolio/Product Programme/Project Name family	Description	2018/19	2019/20	2020/21	2021/22	2022/23	Total	Opex / Capex	2018/19	2019/20	2020/21	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
130	Original	Infrastructure & Hosting App Hosting - Footprint Reduction - Phase 1	This project will shrink TfL's presence in DC(a) by approx. 60% and consolidate all infrastructure and services into Module 1 before the current lease end date (July 2019) which will allow us to negotiate a new lease agreement for a smaller footprint which will reduce our annual lease costs by circa £4m per annum	-	-	-	-	-	-	Opex		0	0	0 0	0	0	C				0 0	0
131	Original	Infrastructure & Hosting App Hosting - Footprint Reduction Phase 2 & 3	Migration of remaining services (Storage and Migration) with a dependency on the Module 1 Expansion. Dilapidations of Mod 2 and 3	1,621	247	-	-	-	1,868	Capex	23	98 21	0	0 0	0 0	2608	o) 39) (0 0	39
132	Adjust - Inflight	Infrastructure & Hosting & 3	Inflight variances Phase 1	152	2	-	-	-	154	Capex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
133	Adjust - C/Fv Inflight	wd Infrastructure & Hosting App Hosting - Footprint Reduction Phase 2 & 3		625	-	-	-	-	625	Capex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
134	Original	Infrastructure & Hosting App Hosting - Discovery & Assessment	An in-depth analysis of the 467 services in scope to determine: - Whether the service is still required	-		-	-	-	-	Opex		0	0	0	0 0	0	C) 0) () (0 0	0
135	Original	Infrastructure & Hosting App Hosting - Pilot	Migration of 4 services to Azure and AWS	128	-	-	-	-	128	Opex		75	0	0	0	75	C) () () (0 0	0
136	Adjust - Inflight	Infrastructure & Hosting App Hosting - Pilot	Inflight variances	- 53	-	-	-	-	- 53	Opex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
	Original	Infrastructure & Hosting Services	As part of the Rapid Discovery Assessment completed by Cloudreach, over 1000 servers have been identified	85	-	-	-		85		1	82	0	0	0	182	inergeu		inergeu		inergeu	
<u>137</u> 138	Adjust - Inflight	Infrastructure & Hosting App Hosting - Decommission of Retired Services	to retire. These servers will go through further analysis to Inflight variances	97	-			-	97	Opex	merged	merged	merged	merged	merged	0	U	margad) () () 0	0
130	Original		Early Migration of services to the Public Cloud Service providers (circa 10 services)	1,380	-	-	-	-	1,380	Opex Capex	14	63 32	2	0	0	1785	merged	merged	merged	merged	merged	0
140	Adjust - Inflight	Infrastructure & Hosting (Capex)	Inflight variances	- 270		-	-	-	- 270		merged	merged	merged	merged	merged	0		, <u> </u>	,	, <u>, , , , , , , , , , , , , , , , , , </u>	, U	
140	Adjust - Inflight	Infrastructure & Hosting App Hosting - Early Migrations (opex)	Inflight variances	353	322	-	-	-	675	Capex Opex	merged	merged	merged	merged	merged	0	merged merged	merged merged	merged	merged merged	merged merged	0
141	Original	Infrastructure & Hosting App Hosting - Mass Migrations (Option 4c)	Remaining services migrating to the cloud and on prem services migrating to a new DC. Removed as potential saving is not strongly evident.		-	-	-	-	-	Capex		0	0	0 0	0	0						0
143	Original	Infrastructure & Hosting App Hosting - Enterprise Service Hub Phase 2 and 1	Develop TfL's ability to host applications in the public cloud using Microsoft's Azure or Amazon Web Services (AWS) to fulfil the T&D core technology vision: "Technology will be delivered faster and cheaper, by removing duplication and moving to the cloud where appropriate allowing scalability for services based on demand at a lower cost."	251	-	-	-	-	251	Capex	4	57 7	7	0 0	0	534	0				0 0	1
144	Adjust - Inflight	Infrastructure & Hosting App Hosting - Enterprise Service Hub Phase 2 and 1		76	-	-	-	-	76	Capex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
145	Adjust - Inflight	Infrastructure & Hosting 2 and 1	Inflight variances	130	78	-	-	-	208	Opex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
146	Original	Infrastructure & Hosting Data Centre Rationalisation	Decommission internet link, final network migrations and decommissioning in Global Switch	-	-	-	-	-	-	Сарех		0	0	0	0 0	0) () () () 0	0
147	Original	Infrastructure & Hosting Hosting - Data Centre Consolidation	Cost reduction in the technology refresh of the Cubic infrastructure. Standardisation and simplification of the technology stack that supports the ticketing platform leading to reduction in faults and reduction in OPEX through less people, reduction in training and common technology skills and knowledge.	145	-	-	-	-	145	Capex	1	45	0	0 0	0	145	O				0 0	0
148	Adjust - C/Fv New	wd Infrastructure & Hosting Data Centre Hardware Refresh	NEW - Carry Forward from 2017/18	1,673	-	-	-	-	1,673	Capex	16	73	0	0	0	1673	0) 0) (0 0	0
149	Original	Asset Management Asset Management	Asset Management - Upgrade Strategic AMIS System & Readiness for migration to Readiness system pan-TfL	50		-	-	-	50	Capex		0	0	0	0 0	0	50) 0) (0 0	50
150	Original	Content & Collaboration Content & Collaboration - Legacy SharePoint consolidation	TfL has a SharePoint estate that includes a significant number of sites in older versions of SharePoint TfL has 1.2Pb of used storage hosted in datacentres	50	100	150	140	-	440	Opex		0	0	0	0 0	0	50) 100	150) 14(0 0	440
151	Original	Content & Collaboration Content & Collaboration - Document management strategy and consolidation	ITL has 1.2PD or used storage nosted in datacentres that are mainly shared drive content. The future direction is to host the maiority of unstructured data in the cloud TfL uses different versions and configurations of MS	50	250	250	200	-	750	Opex		0	0	0	0	0	50	250	250	200	0 0	750
152	Original	Content & Collaboration Content & Collaboration - Project Server consolidation	Project Server, which need consolidating and enabled to support a coherent strategy and approach around	-	150	100		-	250	Opex		0	0	0	0	0	0	150	100		0 0	250
153	Original	Content & Collaboration Content & Collaboration - Livelink upgrade	Livelink (aka TDM, TfL Document Manager) This system is a booking system for the crews that carry	600	-	-	-	-	600	Opex		0	0	0	0 0	0	600) C) () (0 0	600
154	Original	Access & Networks Management Computerised Track Access Control (CTAC)	out the maintenance of the LU rail network. The system is operated by the TAC Office. Network Planning and	500	-	-	-	-	500	Capex	6	31	0	0 0	0	531	0) C) () (0 0	0
155	Adjust - C/Fv Inflight	wd Access & Networks Management Computerised Track Access Control (CTAC)	Carry forward from 2017/18	31	-	-	-	-	31	Capex	merged	merged	merged	merged	merged	0	merged	merged	merged	merged	merged	0
156	Original	Content & Collaboration Content & Collaboration - TfL Intranet Replacement	Replacement of TfL Intranet	500	500	-	-	-	1,000	Capex	2	00	0	0	0	200	300	500) (0 0	800
157	Original		Design and build a modern desktop platform, compatible with TfL's core applications. This will be placed in the service catalogue and supported by TSO. Migrate	2,650	2,000	-	-	-	4,650	Capex		0	0	0	0 0	0	2650	2000) (0 0	4650

	A	В	С	D	E	F	G	Н	I	J	К	M N	0	Р	Q	R	S	ΤU	V	W	Х	Y	Z
1	Detailed sumr	mary of Enhanced Busin	ness Plan										"V	alid" remain	ing authority				Ac	Iditional Auth	ority Required	1	
2	New ID	Portfolio/Product family	Programme/Project Name	Description	2018/19	2019/20	2020/21	2021/22	2022/23	Total	Opex / Capex	2018/19	2019/20	2020/21	2021/22	2022/23	Total	2018/19	2019/20	2020/21	2021/22	2022/23	Total
158	Original	EUC	EUC -Office365 deployment EUC -Mobile management in-housing	Deploy Office 2016 to desktops, migrate workloads for email, email archive, skype for business and home drives to Office365's cloud tenancy. Includes support for Deployment and migration of a new mobile device	300	50	-		-	350 C	apex	C	0	0	0	0	0	300	50	0	0	0	350
159	Original	EUC	migration (includes business case development)	management capability in order to realise the benefits from the business case	364		-		•	364	apex	C	0	0	0	0	0	364	0	0	0	0	364
160	Original	EUC	EUC -Identity management service Business Case	Provide the business case to launch an identity management service within T&D that can serve the needs for pan-TfL Identity Management	-	-	-	-	-	- 0	Dpex	C	0	0	0	0	0	0	0	0	0	0	0
161	Original	EUC	EUC -Back Office Telephony business case	Currently we have duplicate communication mediums e available to back office staff. This initiative will rationalise and deploy a back office telephony solution. It		150	-			150	apex	c	0	0	0	0	0	0	150	0	0	0	150
162	Original	EUC	EUC -Desktop hardware refresh	Purchase and deploy new endpoint devices to users	1,000	3,500	3,500	1,500	1,500	11,000	apex	c	0	0	0	0	0	1000	3500	3500	1500	1500	11000
163	Original	EUC	EUC -Pull printing expansion	Expand the use of the managed print service contract to provide printers in additional locations	124	106	-	-		230	apex	C	0	0	0	0	0	124	106	0	0	0	230
164	Original	EUC	EUC -Azure mobile components remediation	Azure components are regularly updated and depreciated due to the nature using cloud services. This means that there is a continual low level of work to ensure that application aren't negatively impacted.	75	419	348	363	378	1,583	Capex	c	0	0	0	0	0	75	419	348	363	378	1583
165	Original	EUC	EUC -London Transport Museum IT in- housing	The London Transport Museum have asked T&D to in- house their IT services after 3 of their 4 IT staff have left. T&D are working with the museum to provide options for in-housing services. This is a request to 1. Establish Pilot which will bring the LTM onto OneLondon 2. Establish a project to define & deliver the best solution to consolidate LTM desktop services into TFL T&D.*	-	-	-	-	-	-	Dpex	c	0	0	0	0	0	0	0	0	0	0	0
166	Adjust - Small Works	Small Works	Small Works	Pipeline work - Published Business Plan	1,461	1,495	1,530	1,566	1,566	7,618	Dpex	C	0	0	0	0	0	1461	1495	1530	1566	1566	7618
167	Adjust - Small Works	Small Works	Small Works	Pipeline work - phasing -	· 1	-	-	-		- 1	Dpex	c	0	0	0	0	0	-1	0	0	0	0	-1
168	Adjust - Small Works Transfer	Small Works	Small Works	Transfer to Surface; to align Small Works budget spend	482	- 494	- 506 -	518 ·	518 ·	- 2,518	Dpex	C	0	0	0	0	0	-482	-494	-506	-518	-518	-2518
169	Adjust - C/Fwd Unallocated	Unallocated	Unallocated	Aggregated Carry Forwards from 2017/18 - for projects a	1,786	200	-	-		1,986	apex	C	0	0	0	0	0	1786	200	0	0	0	1986
170	Adjust - C/Fwd Unallocated	Unallocated	Unallocated	Carry Forward from 2017/18	1,400	-	-	-	-	1,400	apex	C	0	0	0	0	0	1400	0	0	0	0	1400
171	Adjust - Unallocated	Unallocated	Unallocated	Investment Programme	7,276	563	2,613	9,963 ·	26,242 ·	- 5,827	apex	C	0	0	0	0	0	7276	563	2613	9963	-26242	-5827
172 173	Adjust - Unallocated	Unallocated	Unallocated	Investment Programme	2,734	1,419	725	2,322	2,662	9,862	Dpex	C	0	0	0	0	0	2734	1419	725	2322	2662	9862
174					<u>.</u>		<u>.</u>	-	_				,					, <u> </u>			<u>.</u>		
175				Total Draft Budget (version W11)	86,262	64,655	68,944	68,578	34,589	323,027		32,534	10,699	7,266	3,081	3,459	57,039	53,728	53,956	61,678	65,497	31,130	265,989

Technology & Data - Draft Budget version W11

Category	Programmes/Projects		2018/19	2019/20	2020/21	2021/22	2022/23	Total 2018/19 - 2022/23
			£'000	£'000	£'000	£'000	£'000	£'000
	Revised - Total Project budget for T&D - Published Business Plan - (A)		86,267	64,654	68,945	68,578	34,589	323,031
Portfolio	Payments - CUBIC Service Delivery Assurance	Payments - Revenue Collection Asset Investment	13,606	12,151	11,762	7,561	7,939	53,019
		Payments - Enhancements to Oyster and the		,	,	.,	1,000	00,010
Portfolio	Payments	Revenue Collection System	11,410	7,786	12,930	7,300	0	39,426
		Enterprise Resource Programme (ERP) –	, -	,	,	,		
Portfolio	ERP	mostly retain and enhance SAP	3,175	5,660	5,500	6,500	5,000	25,835
		Surface Buses - Bus Operating and Monitoring						
Portfolio	Surface Buses	Systems	12,664	7,988	25,179	27,551	16,250	89,632
Portfolio	Networks	Networks - Consolidation of Data Transmission	13,166	9,058	1,500	2,500	2,500	28,724
		Hosting - Data Centre Rationalisation and Cloud						
Portfolio	Infrastructure & Hosting	Migration	6,393	649	0	0	0	7,042
		End User Computing (EUC) Products -						
Portfolio	EUC	desktop, laptop, mobile, other	4,663	6,225	3,848	1,863	1,878	18,477
Portfolio	ссо	Contact Centre Operation (CCO)	1,859	617	47	0	0	2,523
Portfolio	CSIRT	Cyber Security	1,695	1,970	180	180	180	4,205
		Tech Refresh - Investment in our Data Centre						
Portfolio	Tech Refresh	Servers	1,949	2,008	3,926	2,130	23,054	33,067
		Technical Service Operation (TSO) -						
		Maintenance of Applications & Operations of						
Portfolio	Infrastructure & Operations (TSO)	Service	8,507	7,430	2,500	2,500	2,500	23,437
Portfolio	Data & Analytics	Data & Analytics	2,280	4,620	1,650	1,300	2,300	12,150
Product Family	Asset Management	Asset Management Products	50	0	0	0	0	50
Product Family	y Content & Collaboration	Content & Collaboration Products	1,200	1,000	500	340	0	3,040
Product Family	Access & Networks Management	Access & Networks Management Products	531	0	0	0	0	531
	Small Works	Small Works	978	1,001	1,024	1,048	1,048	5,099
	Capital Investment Programme	Sub-Total	84,126	68,163	70,546	60,773	62,649	346,256
Portfolio	Payments - DCC Investment Fund	Payments - Credit returned to TfL	-11,060	-5,690	-4,940	-4,480	-4,480	-30,650
			,	-,	.,	.,	.,	
	Total funding required by T&D (B)		73,066	62,473	65,606	56,293	58,169	315,606
		Variance against Total funding (B - A)	-13,201	-2,182	-3,339	-12,285	23,580	-7,425
	Unallocated	Unallocated (Capex and Opex)	13,196	2,182	3,338	12,285	- 23,580	7,421

580	7,421
-----	-------

PIC submission: Table 6.1 - Summary of the costs and fu

	Portfolio			
	Rounded to £m			
Cost	Investment Programme Total	(A)		
	Financial Authority from Adjusted Business Plan	(B)		
Funding	Other funding - Credit from Cubic	(C)		
	Actual funding required from T&D	(D) = (A - C)		
Variance	Unallocated	(V) = (B - D)		
		1		
	Existing Project Authority	(E)		
	Unallocated	(V)		
Authority				
	This Project Authority request	= (A - E) + (V)		
	Future Project Authority request	= (A - E) + (V)		

Technology & Dat
Existing
Financial Authority
for FY18/19 and
19/20
£ 167.7m
~ 107.1111

167.7 = (B) + (C)

Inding

	Business Plan						
18/19	19/20	20/21	21/22				
84.1	68.2	70.5	60.8				
86.3	64.7	68.9	68.6				
11.1	5.7	4.9	4.5				
73.1	62.5	65.6	56.3				
13.2	2.2	3.3	12.3				
43.6	16.4	12.2	7.6				
13.2	2.2	3.3					
F0 7	54.0						
<u>53.7</u> -	54.0 -	61.7	65.5				

a (T&D) Investment Programme FY18/19 and 19/20							
Estimated Final Cost for FY18/19 and 19/20	Existing Programme and Project Authority for FY18/19 and 19/20	Additional Authority Requested for FY18/19 and 19/20	Total Programme and Project Authority for FY18/19 and 19/20				
£ 167.7m	£ 60.0m	£ 107.7m	£ 167.7m				
167.7	60.0	107.7	167.7				

=(E)

22/23	Total
62.6	346.3
34.6	323.0
4.5	30.7
58.2	315.6
- 23.6	7.4
7.9	87.7
- 23.6	7.4
-	107.7
31.1	158.3