Transport for London Lane Rental Scheme

Monitoring Report – 1 April 2017 to 31 March 2018

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EVERY JOURNEY MATTERS

Contents

1. Document Control

1.1 Author

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1.2 Document Summary

This document provides updated information on the impacts of the Transport for London Lane Rental Scheme for the period 1 April 2017 to 31 March 2018.

1.3 Reference Documents

Transport for London Lane Rental Scheme
TLRS Cost Benefit Analysis v2.1, Jan 2012
TLRS First Annual Monitoring Report v0.5, Feb 2014
TLRS Interim Monitoring Report Oct 2013 to Jun 2014, Mar 15
TLRS Monitoring Report Jul 2014 to Mar 2015, Oct 2015
TLRS Monitoring Report Apr 2015 to Mar 2016, Oct 2016
TfL Lane Rental Scheme Supplementary Guidance V5.0, Jul 2016
Department for Transport Lane Rental Schemes Guidance for English Local Highway Authorities, Aug 2018

1.4 Distribution

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1.5 Document Quality Assurance

Step	Step Description	Undertaken by	Date	Remarks
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3	Second review 0.3	AE	23/08/2018	
4	Third review 0.4	HK, KK, GOT	21/09/2018	
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2. Executive Summary

The Transport for London Lane Rental Scheme (TLRS) was first introduced on 11 June 2012. Following analysis and stakeholder consultation the TLRS areas were changed with the new areas taking force on 1 July 2014 and covering 56 per cent of the TLRN, down from 57 per cent originally. The TLRS has not been updated recently due to the government consultation on the future of the scheme which took place in autumn 2017. It was decided that TfL and Kent County Council could retain their existing schemes and to allow other local authorities to bid for and set up Lane Rental schemes.

The TLRS is designed to minimise disruption caused by roadworks and streetworks in specified traffic-sensitive locations by applying a daily charge for each day that the street is occupied by an activity promoter's works. The daily charge is not applied if the works take place outside traffic-sensitive times providing all activity promoters with an incentive to change behaviour and adopt less disruptive practices.

This report is the fifth annual monitoring report and the third which aligns to TfL's financial year and covers the period of 1 April 2017 to 31 March 2018. A baseline of 1 October 2010 to 30 September 2011 has been used for the following reasons - it is prior to the implementation of the TLRS, it does not conflict with other schemes such as the Olympics Clearway and it aligns with that used in the first annual, 2015/16 and 2016/17 reports.

This is the latest in the series of statistical evaluation reports, backed by detailed analysis that TfL has published since the operation of the scheme in 2012. The reports continue to demonstrate that the parts of TfL's network where Lane Rental applies clearly outperform the parts that do not benefit from the scheme.

A significant amount of building and construction works have taken place to accommodate London's exceptional economic and population growth, with developers, boroughs and utility providers building additional homes, shops, public places and infrastructure. This growth is changing the way our roads operate and are used. As with previous years, TfL continues to oversee the largest ever investment in London's streets, comprising numerous projects and programmes that are transforming some of the busiest roads and junctions to improve them for all road users. This long term construction programme is still underway to transform junctions, bridges, tunnels, cycling lanes and pedestrian areas, all of which are expected to put even more pressure on the network in the short term.

As expected, the overall performance of the network is still being affected by this intense construction activity, which has continued (albeit to a lesser extent compared to 2015/16) in this reporting period, and is reflected in the decline of journey times and journey time reliability (JTR) across the network. In addition to this vehicle flows have increased in both TLRS and non-TLRS segments (2 and 5 per cent respectively). Vehicle flows in TLRS segments were found to be 17 per cent higher per lane than non-TLRS segments; this highlights the need for the TLRS due to the increasing demand over time compared to other parts of the network.

TfL has also adopted the Healthy Streets Approach which sets out how to move towards less car use and more walking, cycling and the use of public transport. As stated earlier, this programme of work is transforming how the road network is used, meaning road capacity loss for cars to make more space for cyclists and pedestrians. This will have a notable impact on road network performance.

The TLRS has had a positive impact in reducing congestion overall but since the start of the scheme this positive impact has been eroded as TLRS segments now carry 2 per cent more vehicles than the baseline in 2011. If this congestion benefit had been locked away by removing the extra demand the TLRS has enabled, the congestion benefit would have remained, and we would have likely been able to report a substantial improvement in journey times or reduction in congestion.

Analysis has shown that for the period 1 April 2017 to 31 March 2018:

- 99 per cent of TfL works and 85 per cent of utility works taking place in TLRS segments avoided incurring a TLRS charge
- A total of 134 applications to waive Lane Rental charges were submitted in 2017/18 (120 receiving approval)
- 830 days of Lane Rental were saved through early discussions with works promoters, with an estimated value of £1.5 million in charges avoided
- Between April 2017 and March 2018 the Lane Rental surplus funded 18 applications totalling £4,320,634 for roadworks congestion busting projects. Where it has been possible to calculate, the estimated social cost of delay saved through use of the funding is £16,272,641.

Compared to a baseline of 1 October 2010 to 30 September 2011:

- Average collaborative work sites per TfL period have increased from 16 to 26 (65 per cent)
- There has been a 30 percentage point increase in planned utility works taking place overnight on TLRS segments since the scheme was implemented from 11 to 41 per cent
- The total number of works completed within TLRS segments has decreased by 396 works (2 per cent)
- Average 24 hour vehicle flows on TLRS segments increased by 2 per cent and by 5 per cent on non-TLRS segments
- Average vehicle flows per lane in the TLRS are 17 per cent higher than in non-TLRS segments
- Highway Authority (TfL) serious and severe disruption caused from planned works in TLRS segments fell by 54 per cent (utility also decreased by 20 per cent)
- The total number of hours of serious and severe disruption in TLRS segments has decreased by 150 hours (41 per cent)
- Journey times and JTR saw deterioration in both TLRS and non-TLRS segments
- Overall journey time deterioration has been worse in non-TLRS segments during AM, inter and overnight periods (up to 0.4 per cent worse in the inter peak when compared to TLRS segments)
- JTR has deteriorated this year by -1 per cent in the AM peak and -3 per cent in the PM peak when compared to the 2010/11 baseline. Further analysis has revealed that sections of the A406 accounted for almost all of the overall TLRS results in the AM peak and 58 per cent in the PM peak where there was a major scheme constructed and a series of vehicle breakdowns and collisions that were the cause of significant delays
- It was found that within MWIAs the journey time deterioration was much more significant for both TLRS and non-TLRS segments compared to outside of MWIAs. Outside of MWIAs

journey time increases in both TLRS and non-TLRS were very similar, which indicates a general deterioration of road network performance caused from increases in demand and the knock on effect of the huge investment programme taking place in London

- Frustrations associated with 'Repeated roadworks on the same stretch of road within the same year', 'Lack of explanation about why roadworks are being carried out' and 'Seeing streets partially closed, but no-one working there' have experienced the greatest improvements in customer satisfaction since the TLRS was implemented (down 26, 22 and 22 percentage points respectively). It is reasonable to assume that the implementation of the TLRS has had a positive influence on these results.

3. Introduction

3.1 Scheme Scope

The Transport for London Lane Rental Scheme (TLRS) was introduced on 11 June 2012. The TLRS was designed to minimise disruption caused by roadworks and streetworks in specified traffic-sensitive locations by applying a daily charge for each day that the street is occupied by an activity promoter's works. The daily charge is not applied if the works take place outside traffic-sensitive times providing all activity promoters with an incentive to change behaviour and adopt less disruptive practices.

The same permitting regime is applied to all works on the Transport for London Road Network (TLRN), whether they are in the TLRS or not. TfL liaise with works promoters to reduce the length of time that the carriageway is occupied, especially in traffic-sensitive times; this typically includes changing works timings to overnight, off-peak or weekends.

The three charge bands and their typical times are shown in Table 1. During the TLRS calculations, segments of the TLRN are ranked by sensitivity. Charge band 2 is allocated to the most sensitive areas of the network and is therefore chargeable at a higher rate of £2,500 per day – this makes up approximately 17 per cent of the TLRN. Charge band 1 is allocated to approximately 60 per cent of the TLRS and charge band 2 and 3 make up the remaining 30 and 10 per cent respectively.

Table 1: Lane Rental Charges

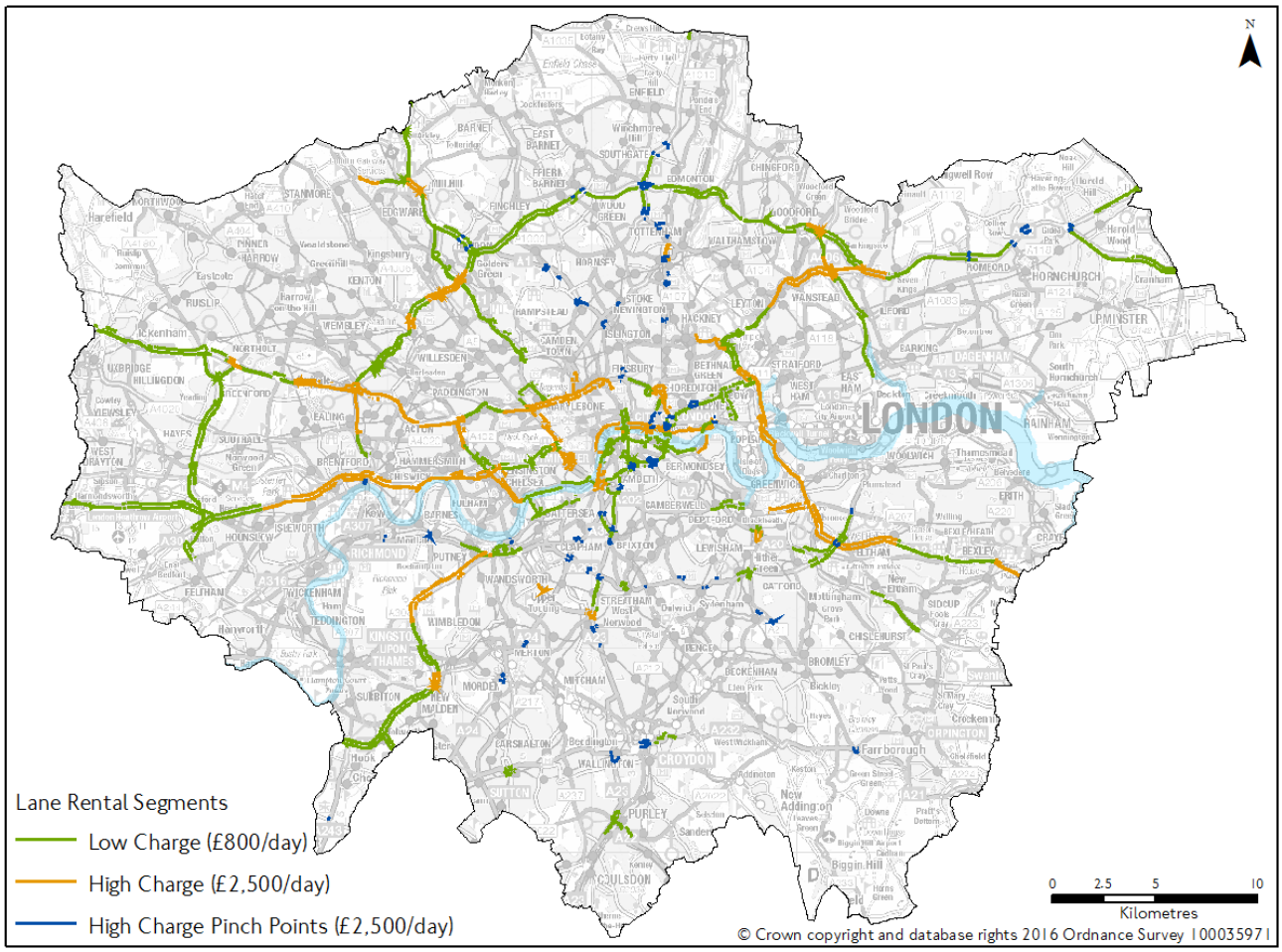
Charge Band	Type	Daily Charge	Typical Charging Times	
			Monday to Friday	Saturday and Sunday
1	Segment	£800	06:30-10:00 and15:30-20:00	12:00-18:00
2	Segment	£2,500	06:30-22:00	12:00-18:00
3	Pinch point	£2,500	07:00-20:00	12:00-18:00

The Government consulted on the future of Lane Rental schemes between 2 September and 28 October 2017. It was decided that TfL and Kent County Council could retain their existing schemes and allow other local authorities to bid for and set up their own Lane Rental schemes. The Government has now published guidance for authorities wishing to run their own Lane Rental schemes[1].

[1] Lane Rental Schemes Guidance for English Local Highway Authorities August 2018 - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/737417/lane-rental-bidding-guidance.pdf

The latest TLRS areas (adopted in July 2014) can be seen in Figure 1 below.

Figure 1: Lane Rental Segments by Charge Bands - July 2014 to Present



3.2 Reporting Periods

This report is the third annual monitoring report which aligns to TfL's financial year and covers the period of 1 April 2017 to 31 March 2018. A baseline of 1 October 2010 to 30 September 2011 has been used for the following reasons:

- It is prior to the implementation of the TLRS
- It does not conflict with other schemes such as the Olympics Clearway
- It aligns with that used in the first annual report.

Table 2 below details the previous reports and which lane rental designation they analyse.

Table 2: Lane Rental Monitoring Reports

Lane Rental Monitoring Report	Baseline	Lane Rental Areas
Lane Rental Monitoring Report April 2016 to March 2017	October 2010 to September 2011	New TLRS Areas (designated July 2014)
Lane Rental Monitoring Report April 2015 to March 2016	October 2010 to September 2011	New TLRS Areas (designated July 2014)
Lane Rental Monitoring Report July 2014 to March 2015	July 2010 to March 2011	New TLRS Areas (designated July 2014)
Lane Rental Monitoring Report October 2013 to June 2014	October 2010 to June 2011	Original TLRS Areas (designated June 2012)
Lane Rental Monitoring Report October 2012 to September 2013	October 2010 to September 2011	Original TLRS Areas (designated June 2012)
Lane Rental Monitoring Report October 2012 to March 2013	October 2011 to March 2012	Original TLRS Areas (designated June 2012)

3.3 Scope of Analysis

The change to TLRS segments in July 2014 means that the TLRN can be split into four categories as listed in Table 3. For the purposes of this report, and to align with previous TLRS reports, analysis has been restricted to non-TLRS and Updated TLRS (henceforth referred to as TLRS). TLRS is a combination of categories 'C' and 'D' which reflect the current TLRS extents adopted 1 July 2014.

Table 3: Areas Defined by LR Category

	TLRS Category	Description	Included within Report
A	Non-TLRS	Areas of the TLRN that were neither part of the original TLRS nor the updated TLRS	Yes as 'non-TLRS'
B	In Original TLRS not Updated TLRS	The original LR scheme extents which were valid between July 2012 and June 2014 and not included within the updated TLRS	Excluded
C	In Updated TLRS not Original TLRS	Areas of the updated scheme extents which were not part of the original TLRS	Yes as 'TLRS'
D	In Original TLRS and Updated TLRS	Areas which are within the original TLRS and updated TLRS	Yes as 'TLRS'

4. Objective of the TLRS

The TLRS seeks to encourage the undertaking of works at the least traffic-sensitive times, and timely completion of works. It also applies the following guiding principles:

- Safety must be ensured
- Inconvenience to people using a street, particularly people with a disability, must be minimised.

Other objectives of the TLRS are to:
- Treat all activity promoters on an equal basis
- Promote behaviour change to minimise the duration of occupation of the street at the busiest locations at traffic-sensitive times on the network
- Minimise the number of works taking place during traffic-sensitive times, and contribute to Journey Time Reliability (JTR) as required under the Mayor's Transport Strategy.

TfL will measure these objectives so as to evaluate whether they are being met[2].

5. Road Network Context

Below is a summary from the Mayor's Transport Strategy[3] which looks at the challenges London and its road capacity will face in the future[4].

Mayor's Transport Strategy – Supporting Evidence Challenges and Opportunities Summary

In 2015, London's population was 8.7 million and there was an average of 26.7 million trips per day made. London has grown rapidly in recent years, leading to increased demand on the transport system. Population is expected to reach 10.5 million by 2041, and London's employment is projected to grow to 6.8 million by 2041, from 5.7 million in 2016. As a result, travel demand is expected to increase to around 32 million trips on an average day, with most of the additional travel demand in the form of more public transport, walking and cycling. Despite a falling car mode share, car kilometres will rise by around 8%. This, coupled with a large rise in van traffic of 26 per cent, will lead to an overall rise in traffic on the network if left unchecked. Over the same period, the amount of space available for use by general road traffic is expected to reduce by 3 per cent, more in central London. This could lead to the average Londoner sitting in congested traffic for 2.5 days a year by 2041.

One of the key themes of the Mayor's Transport Strategy in tackling these issues is creating streets and street networks that encourage walking, cycling and public transport use which will reduce car

[2] TfL Lane Rental Scheme - https://consultations.tfl.gov.uk/streets/lane-rental/results/tfl-lane-rental-scheme-submission.pdf
[3] Mayor's Transport Strategy March 2018 - https://www.london.gov.uk/what-we-do/transport/our-vision-transport/mayors-transport-strategy-2018
[4] Mayor's Transport Strategy: Supporting Evidence Challenges and Opportunities June 2017 - http://content.tfl.gov.uk/mts-supporting-evidence-challenges-opportunities.pdf

dependency and the health problems it creates, otherwise known as the 'Healthy Streets Approach'.

The Mayor, through TfL, has begun to prioritise buses and bus infrastructure in conjunction with improvements to rail services, walking and cycling environments to support measures to reduce car use. This, along with a significant amount of building and construction works have taken place to accommodate London's exceptional economic and population growth, with developers, boroughs and utility providers building additional homes, shops, public places and infrastructure. This growth is changing the way our roads operate and are used. In response, TfL is continuing to oversee the largest ever investment in London's streets, comprising numerous projects and programmes that are transforming some of the busiest roads and junctions to improve them for all road users. This construction programme is still underway to transform junctions, bridges, tunnels, cycling lanes and pedestrian areas; all of which are expected to put even more pressure on the network in the short term. This and the increased traffic flow have led to deterioration in journey times and journey time reliability across the network, making effective traffic management, including operating the TLRS, more vital than ever.

Figure 2 shows the number of works which were actively being carried out during the financial year 2017/18, associated with different major schemes as part of the huge investment programme taking place across London. For the majority of the year analysed there were more than 10 different major works being carried out each month, with more than 15 during July 2017.

Figure 3 shows approximately how many days the works were carried out within each major scheme category between April 2017 and March 2018, regardless of the time of day they took place. This figure is only approximate as it assumes works were carried out every day between the start and end dates and that there were no breaks between phases. There were over 900 work days for Crossrail and Station Upgrade works and over 800 work days for major utility works which includes gas main replacement works along A23 Brixton Road and A3212 Chelsea Embankment.

Figure 2: Number of Works within Each Major Scheme

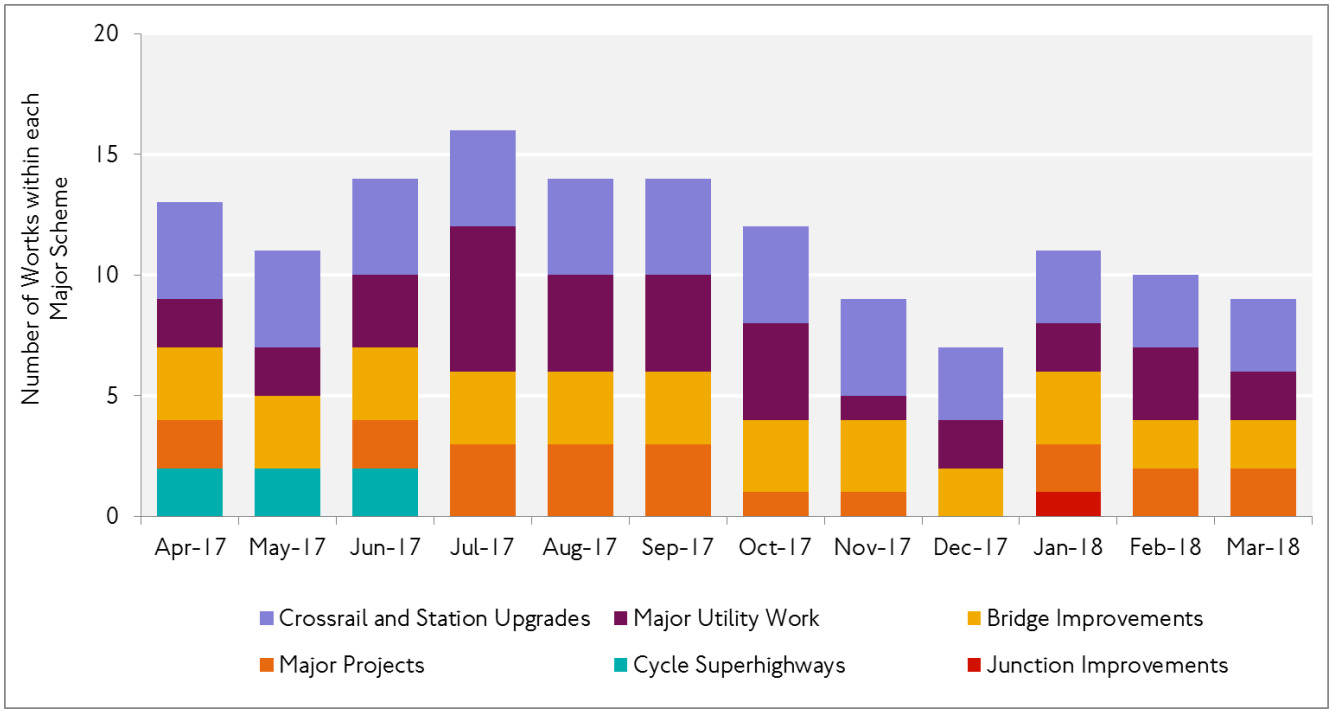
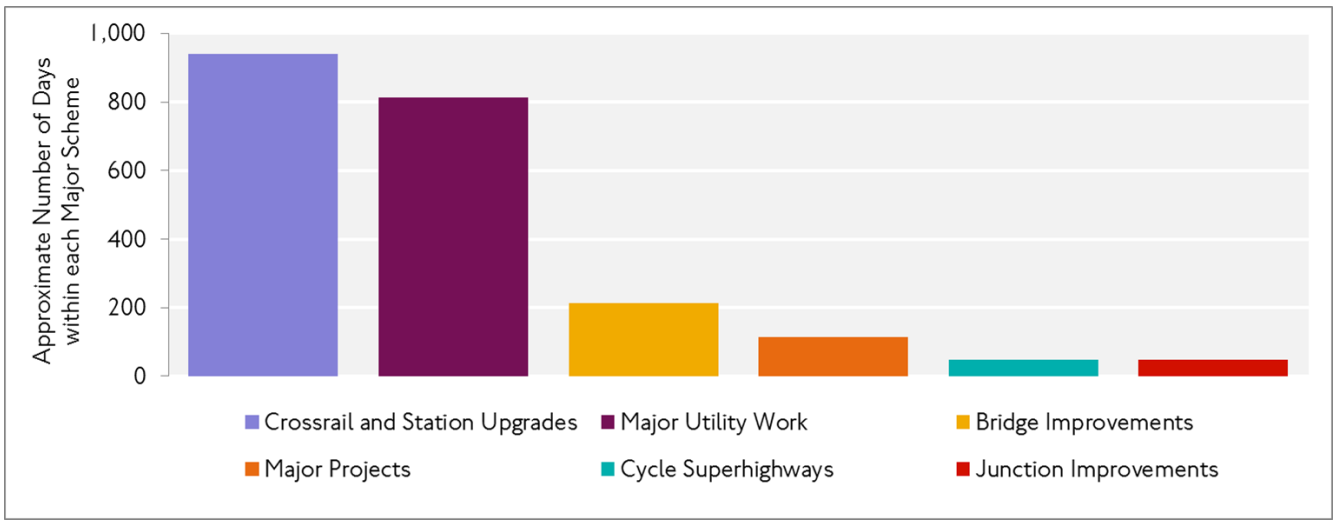


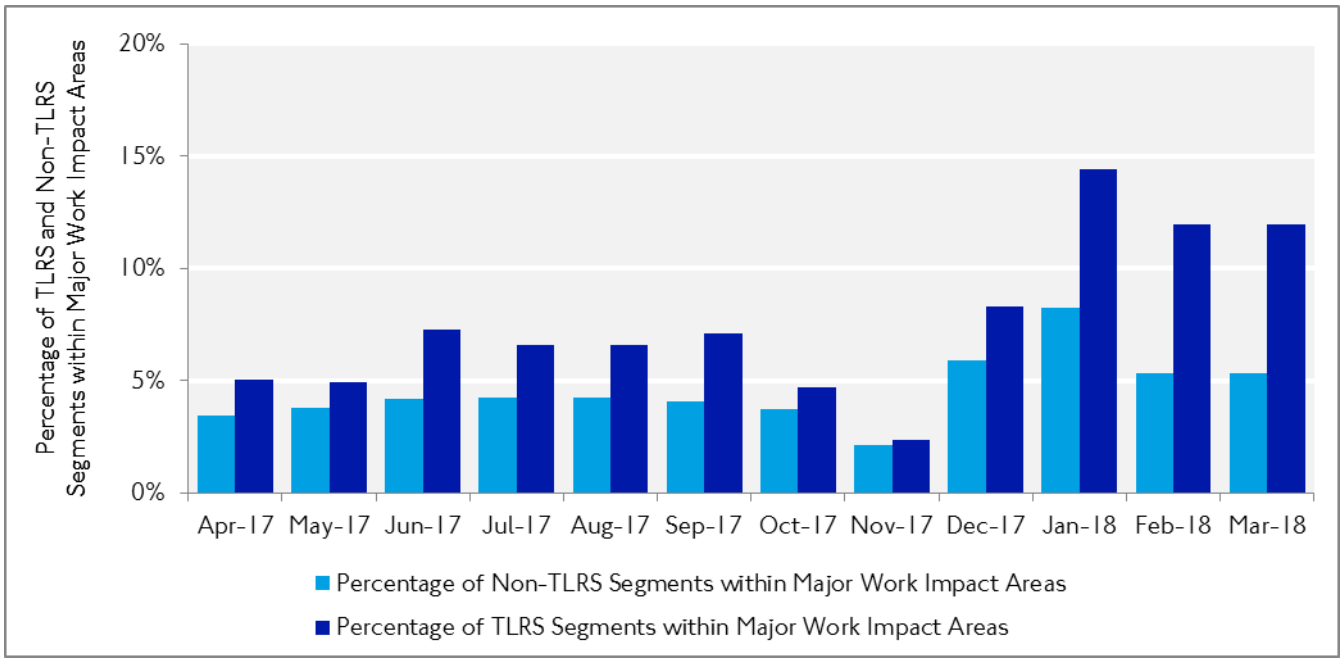
Figure 3: Approximate Number of Days within each Major Scheme Category



MWIAs were designated to roads within London to help plan for and mitigate the disruption from the huge investment programme. The areas were created based on an estimated impact agreed by various departments within TfL and in some cases modelling input. The areas are not exhaustive but are aimed to give an indication of where the impact will be worse because of construction work. Impact areas are reviewed regularly and modified where appropriate.

Figure 4 compares the percentage of TLRS and non-TLRS segments within MWIAs per month. Between January and March 2018 over 10 per cent of TLRS segments were located within MWIAs. It can be seen that there is a larger percentage of TLRS segments located within MWIAs for the entire year analysed compared to non-TLRS. For 2017/18 18 per cent of TLRS segments were located within MWIAs compared to 10 per cent of non-TLRS segments. The TLRS was originally designated to the parts of the road network with high sensitivity meaning that they will be more adversely affected from roadworks.

Figure 4: Percentage of TLRS and Non-TLRS segments within Major Work Impact Areas



6. Impact on the Road Network

6.1 Road Network Analysis

To assess the TLRS impact on the road network this report will analyse the recorded journey times, journey time reliability, vehicle flows, disruption and the number of works on the TLRN during the financial year 2017/18 (1 April 2017 to 31 March 2018) and compare it to the baseline period (1 October 2010 to 30 September 2011) prior to the TLRS implementation.

Throughout this report vehicle flows and journey times refer to the analysis of motorised vehicles only. Analysis where possible will be broken down into peak periods. This will help assess the influence the TLRS has had on peak period roadworks. The peak period definitions used throughout this report are shown in Table 4.

Table 4: Peak Period Times

AM Peak	Inter Peak	PM Peak	Overnight
07:00 to 10:00	10:00 to 16:00	16:00 to 19:00	19:00 to 07:00

6.2 Background to Journey Time and Journey Time Reliability

An objective of the TLRS is to contribute to JTR. JTR is measured as the percentage of nominal 30 minute journeys completed within 35 minutes. For example, if a corridor can be managed such that 9 out of 10 journeys can be completed within the expected journey time then the corridor would be considered 90 per cent reliable.

JTR is calculated using journey time data from the London Congestion Analysis Project (LCAP), which in turn is based on Automatic Number Plate Recognition (ANPR) camera data.

There will be some small differences in the numbers reported for the baseline of October 2010 to September 2011 between this report and within the Lane Rental Monitoring Report 2016/17. This is due to only corresponding financial periods being analysed for journey time and JTR analysis. For example if there is missing data for LCAP link 2090 in P1 2017/18 then the data for this same link is removed from the equivalent period in the baseline; this ensures comparable data is analysed within each annual report.

6.3 TLRN Journey Time Reliability

A comparison of JTR for the TLRS and non-TLRS segments on the TLRN has been performed. The results are summarised in Table 5.

Table 5: Change in JTR on the TLRN between October 2010 and March 2018

Average Journey Time Reliability (%)												
	Oct 10 - Sep 11				Apr 17 - Mar 18				% Point Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	89.6%	91.9%	87.2%	97.0%	88.3%	91.2%	84.1%	97.4%	-1.3%	-0.7%	-3.1%	0.4%
Non-TLRS Segments	90.3%	91.6%	88.4%	95.5%	90.5%	90.9%	87.4%	95.3%	0.2%	-0.7%	-1.0%	-0.2%
Difference									-1.5%	0.0%	-2.1%	0.6%

Table 5 shows that both TLRS and non-TLRS segments have seen a decrease in JTR with the exception of the AM peak in non-TLRS segments and overnight within TLRS segments. The decline in JTR has been more marked on TLRS segments in the AM and PM peaks, with 1 and 3 percentage point deterioration respectively. Performance was better on the TLRS segments than non-TLRS segments in the inter peak and overnight.

Compared to 2016/17[5] there has been no significant deterioration in JTR over the past year in all time periods within TLRS segments (within 1 percentage point difference) – see Section 11 for more detail.

Sections of the A406 accounted for almost all of the AM peak TLRS results and 58 per cent in the PM peak. Figure 5 shows the sections of the A406 which have contributed to this deterioration and Table 6 details works or incidents which have contributed to the poor performance.

There were no major roadworks on the eastern section of the A406 during the day within 2017/18. Planned works on the A406 are not usually allowed to take place during the day due to the impact they would have on the network. However there have been multiple collisions and vehicle breakdowns. This resulted in over 170 hours of serious and severe disruption during 2017/18. There were similar results reported within the 2016/17 report. There are no traffic signals on the eastern side of the A406 therefore JTR is heavily influenced by the severity of accidents and incidents.

The sections illustrated in Figure 5 would also be affected by incidents which have occurred on any of the three motorways which feed into the A406. All of the above highlights the pressures the A406 has seen during the financial year 2017/18. This has led to the deterioration of the A406 resulting in a significant impact on the overall JTR results.

[5] Transport for London Lane Rental Scheme Monitoring Report April 2016 to March 2017 - http://content.tfl.gov.uk/lane-rental-monitoring-report-apr-2016-mar-2017.pdf

Figure 5: Sections of the A406 affecting AM and PM Peak JTR

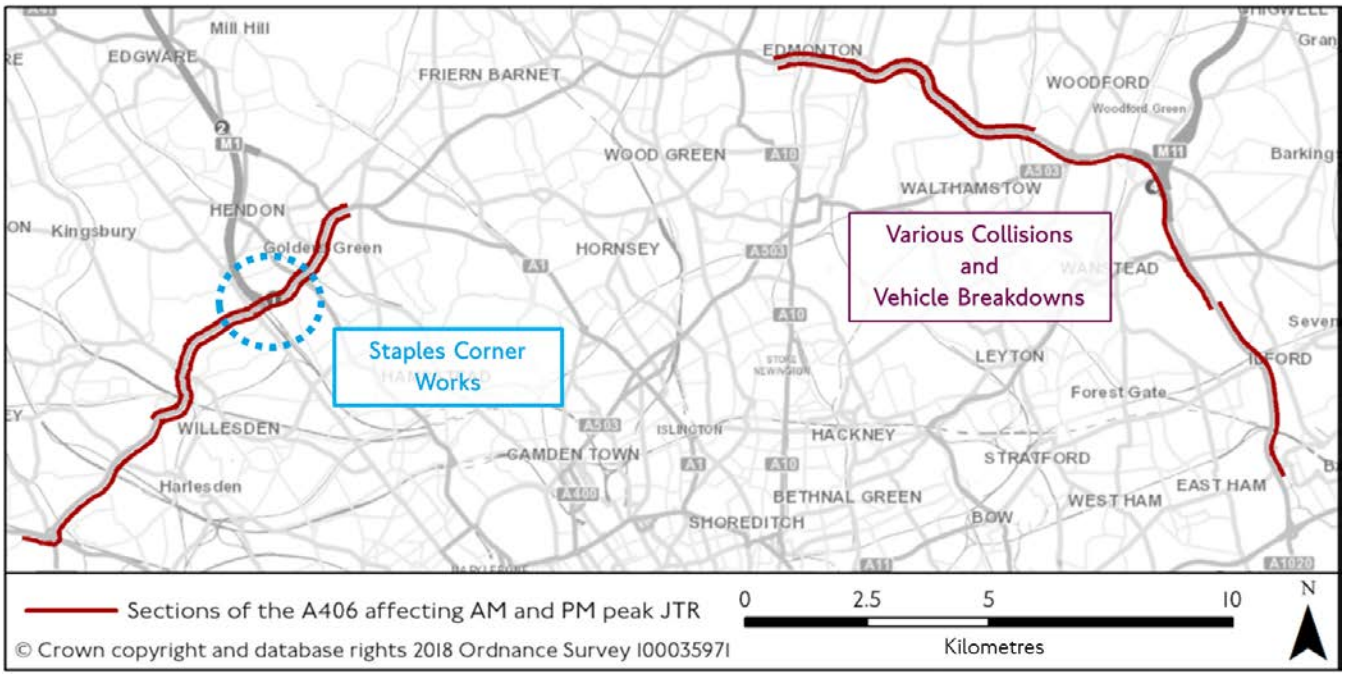


Table 6: Specific Areas of the A406 Impacting the JTR Performance within TLRS Segments

Location	Works	Duration
A406 Staples Corner	Works were carried out to replace two 22 metre long steel expansion joints. The joints which are vital to allow the flyover to cope with temperature change were repaired over 10 years ago, but were in a poor condition and it was essential to replace them to avoid long-term disruption to motorists. Staples Corner Flyover was closed for three weekends. Various measures were put in place to help reduce the impact of the closure. See Section 6.8 for more detail.	August to September 2017
A406 between the junction with the A10 and A13	There have been various collisions and vehicle breakdowns along this section of the A406 during 2017/18.	Throughout 2017/18

To demonstrate the impact the A406 has had on the overall JTR results within TLRS segments, the sections identified above have been removed from the following table. Comparing the baseline to 2017/18 (Table 7 and Table 5) it can be seen that JTR is better in the AM and PM peaks once the A406 links have been removed, by 0.6 and 0.8 percentage points respectively. In addition, JTR within TLRS segments during the PM peak has deteriorated at a lower rate when sections of the A406 are removed (down 3.1 percentage points with sections of the A406 included and down 1.6 percentage points with sections of the A406 removed). JTR during the AM peak saw an improvement of 0.1 percentage points within TLRS segments when sections of the A406 were removed (as opposed to the 1.3 percentage point deterioration seen with sections of the A406 included).

Table 7: Change in JTR on the TLRN between October 2010 and March 2018 with sections of the A406 removed

Average Journey Time Reliability (%)												
	Oct 10 - Sep 11				Apr 17 - Mar 18				% Point Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	88.8%	91.3%	86.5%	96.6%	88.9%	91.0%	84.9%	97.2%	0.1%	-0.3%	-1.6%	0.6%
Non-TLRS Segments	90.3%	91.6%	88.4%	95.5%	90.5%	90.9%	87.4%	95.3%	0.2%	-0.7%	-1.0%	-0.2%
Difference									-0.1%	0.4%	-0.6%	0.8%

6.4 TLRN Journey Time

Journey time data has also been analysed for each time period throughout the day and has been separated into TLRS and non-TLRS segments.

As with JTR, journey times have deteriorated across the TLRN. Table 8 shows that the largest negative impact in TLRS segments occurred during the AM and PM peaks. Journey times increased on average by 7 and 11 per cent respectively. However, the deterioration was worse in non-TLRS segments across all time periods with the exception of the PM peak. The performance of the network has been affected by the construction activity as highlighted in Section 5. TfL has also adopted the Healthy Streets Approach[6] which sets out how to move towards less car use and more walking, cycling and the use of public transport. As stated earlier, this programme of work is transforming how the road network is used, meaning road capacity loss for cars to make more space for cyclists and pedestrians. This will have a notable impact on road network performance.

Table 8: Change in Journey Times on the TLRN between October 2010 and March 2018

Average Journey Times (mins/km)												
	Oct 10 - Sep 11				Apr 17 - Mar 18				% Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	1.77	1.58	1.91	1.19	1.90	1.67	2.12	1.24	7.3%	5.7%	11.0%	4.2%
Non-TLRS Segments	2.08	1.98	2.33	1.41	2.24	2.10	2.54	1.47	7.7%	6.1%	9.0%	4.3%
Difference									-0.3%	-0.4%	2.0%	-0.1%

The sections of the A406 North Circular as detailed above (Figure 5 and Table 6) accounted for 42 per cent of the journey time results in the AM peak and 30 per cent in the PM peak in TLRS segments. Similar to Table 7, these sections of the A406 have been removed from the analysis. Table 9 shows that deterioration was worse in non-TLRS segments compared to TLRS (by up to 2.6 per cent). As shown and summarised in the analysis within this section, the TLRS is providing a level of protection against network wide deterioration. The analysis also shows that many smaller incidents occurring on the A406 (Table 6) can have a significant impact on the overall results.

[6] Transport for London Healthy Streets for London - http://content.tfl.gov.uk/healthy-streets-for-london.pdf

Table 9: Change in Journey Times on the TLRN between October 2010 and March 2018 with sections of the A406 removed

Average Journey Times (mins/km)												
	Oct 10 - Sep 11				Apr 17 - Mar 18				% Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	1.96	1.74	2.10	1.28	2.06	1.82	2.28	1.32	5.1%	4.6%	8.6%	3.1%
Non-TLRS Segments	2.08	1.98	2.33	1.41	2.24	2.10	2.54	1.47	7.7%	6.1%	9.0%	4.3%
Difference									-2.6%	-1.5%	-0.4%	-1.1%

6.5 Journey Times and JTR within Major Work Impact Areas

Journey times and JTR on the TLRN have been analysed further to try to determine how much the MWIAs (referenced in section 5) have impacted performance.

Table 10: Change in JTR Inside of Major Work Impact Areas between October 2010 and March 2018

Average Journey Time Reliability (%)												
Inside MWIAs	Oct 10 - Sep 11				Apr 17 - Mar 18				% Point Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	85.4%	84.4%	83.0%	90.3%	83.6%	82.2%	82.3%	90.2%	-1.8%	-2.1%	-0.7%	-0.1%
Non-TLRS Segments	83.4%	83.1%	81.2%	88.9%	84.0%	82.5%	81.5%	88.9%	0.6%	-0.6%	0.3%	0.0%
Difference									-2.4%	-1.6%	-1.0%	-0.2%

Table 10 shows JTR inside MWIAs has deteriorated at a higher rate within TLRS segments at all times during the day, than in non-TLRS segments.

Table 11 shows that JTR has deteriorated at a higher rate in TLRS segments outside of MWIAs during the AM and PM peak compared to non-TLRS segments. However, this is at a lower rate when compared to the deterioration experienced within MWIAs (Table 10) with the exception of the PM peak which experienced a drop in JTR of 3.2 percentage points.

Table 11: Changes in JTR Outside of Major Work Impact Areas between October 2010 and March 2018

Average Journey Time Reliability (%)												
Outside MWIAs	Oct 10 - Sep 11				Apr 17 - Mar 18				% Point Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	89.9%	92.3%	87.4%	97.3%	88.5%	91.7%	84.2%	97.8%	-1.4%	-0.6%	-3.2%	0.5%
Non-TLRS Segments	90.7%	92.1%	88.8%	95.8%	90.8%	91.4%	87.8%	95.5%	0.1%	-0.7%	-1.0%	-0.3%
Difference									-1.5%	0.1%	-2.2%	0.8%

Table 12 shows that inside the MWIAs journey times increased between 5 and 15 per cent on non-TLRS segments and between 17 and 23 per cent on TLRS segments. Journey times outside of the MWIAs increased between 4 and 9 per cent on non-TLRS segments and between 2 and 10 per cent on TLRS segments (Table 13). This is logical as the TLRS was designated to the most sensitive parts of the network.

Table 12: Changes in Journey Times Inside of Major Work Impact Areas between October 2010 and March 2018

Average Journey Times (mins/km)												
Inside MWIAs	Oct 10 - Sep 11				Apr 17 - Mar 18				% Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	3.39	3.38	3.68	2.14	4.10	4.17	4.33	2.52	20.9%	23.4%	17.7%	17.8%
Non-TLRS Segments	3.32	3.52	3.72	2.21	3.84	4.03	4.07	2.33	15.7%	14.5%	9.4%	5.4%
Difference									5.3%	8.9%	8.3%	12.3%

Table 13: Change in Journey Times Outside of Major Work Impact Areas between October 2010 and March 2018

Average Journey Times (mins/km)												
Outside MWIAs	Oct 10 - Sept 11				April 17 - Mar 18				% Difference 10/11 to 17/18			
	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night	AM Peak	Inter Peak	PM Peak	Over night
TLRS Segments	1.65	1.44	1.78	1.12	1.74	1.49	1.96	1.15	5.5%	3.5%	10.1%	2.7%
Non-TLRS Segments	2.01	1.88	2.24	1.36	2.14	1.97	2.45	1.42	6.5%	4.8%	9.4%	4.4%
Difference									-1.0%	-1.3%	0.7%	-1.7%

Table 10 to Table 13 highlight the scale of building and construction works taking place within London. When compared to last year's Lane Rental Report which saw increases of up to 28

percentage points for journey times in TLRS segments located within MWIAs[7] and up to 50 percentage points in 2015/16[8], the impact has reduced considerably. Prior to the implementation of the largest ever investment in London's streets (as detailed in Section 5), Lane Rental reports[9] showed improvements within TLRS segments and it can be seen that deterioration in TLRS segments outside of MWIAs are substantially lower that those within.

As previously mentioned (see Section 2) the TLRS has had a positive impact in reducing congestion overall but since the start of the scheme this positive impact has been eroded as TLRS segments now carry 2 per cent more vehicles than the baseline in 2011. If this congestion benefit had been locked away by removing the extra demand the TLRS has enabled, the congestion benefit would have remained, and we would have likely been able to report a substantial improvement in journey times or reduction in congestion.

6.6 Vehicle Flows

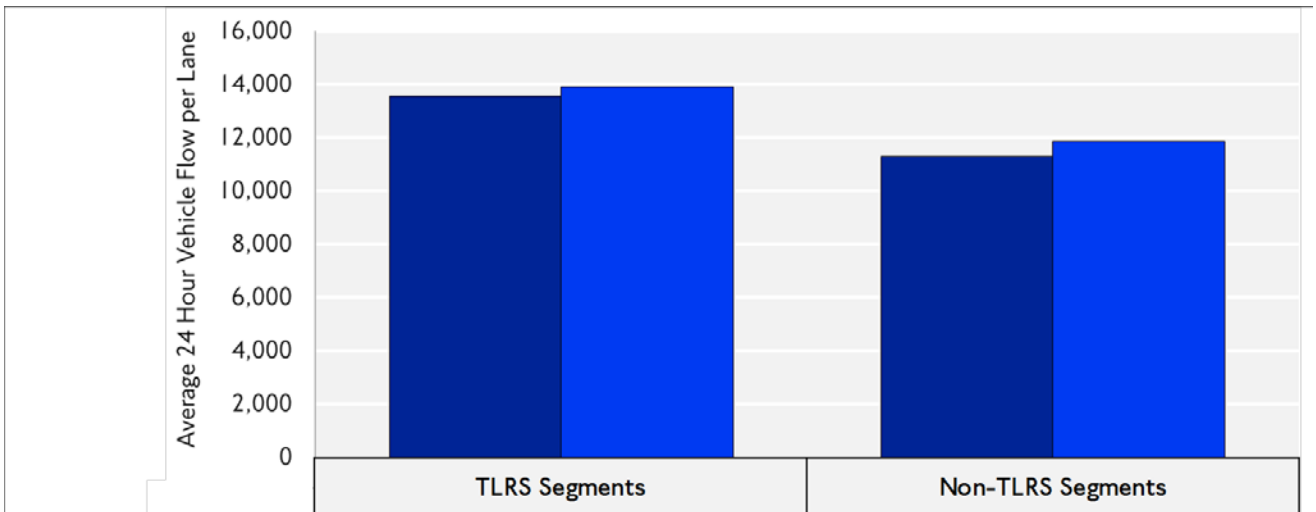
Vehicle flows within TLRS segments have much higher flows per lane than non-TLRS segments, approximately 17 per cent higher (as shown in Figure 6). This is logical, as vehicle flows were one component used to determine the TLRS segments, as they are expected to be more susceptible to congestion and disruption as a result of incidents such as roadworks.

Figure 6 shows the average 24 hour vehicle flows over the monitoring period (April 2017 to March 2018) and compared to the baseline (October 2010 to September 2011) as measured from Automatic Traffic Counters (ATCs) located in TLRS and non-TLRS segments. Vehicle flow averages were calculated using weekday flow data only (i.e. excluding weekends and bank holidays), where there is data available for both the monitoring period and equivalent dates in the baseline period.

Average 24 hour vehicle flows increased within TLRS segments by 2 per cent whilst flows within non-TLRS segments increased by 5 per cent. The combination of both increasing vehicle flows over time and much higher average 24 hour flows when compared to non-TLRS segments, has led to increasing pressure on TLRS segments. This has been a major contributing factor to the deterioration in JTR and journey time in TLRS segments.

[7] Transport for London Lane Rental Scheme Monitoring Report April 2016 to March 2017 - http://content.tfl.gov.uk/lane-rental-monitoring-report-apr-2016-mar-2017.pdf
[8] Transport for London Lane Rental Scheme Monitoring Report April 2015 to March 2016 - http://content.tfl.gov.uk/lane-rental-monitoring-report-apr-2015-mar-2016.pdf
[9] Transport for London Lane Rental Scheme First Annual Monitoring Report 2012/13 - http://content.tfl.gov.uk/lane-rental-monitoring-report-oct-2012-sep-2013.pdf
Transport for London Lane Rental Scheme Interim Monitoring Report Oct 2013 to Jun 2014 - http://content.tfl.gov.uk/lane-rental-monitoring-report-oct-2013-jun-2014.pdf

Figure 6: Average 24 Hour Vehicle Flow per Lane



	TLRS Segments	Non-TLRS Segments
Oct 10 to Sep 11	13,566	11,310
Apr 17 to Mar 18	13,894	11,875
Change	328	565
% Change	2%	5%

6.7 Background to Disruption

Disruption data is taken from both the London Traffic Information System (LTIS) and its successor the Traffic Information Management System (TIMS). Data is aligned to TfL financial accounting periods whereby Period 1 always starts on 1 April and each period is 28 days (with the possible exception of Periods 1 and 13). Therefore data for Periods 1 to 13 2017/18, corresponding to 1 April 2017 to 31 March 2018 has been used for the monitoring period. As the baseline has been set to October 2010 to September 2011 the closest TfL periods have been chosen, running from Period 8 2010/11 to Period 7 2011/12. Disruption data relates to motorised vehicles only. The most disruptive events are labelled 'serious' and 'severe' as defined in Table 14.

Table 14: Serious and Severe Disruption

Type	Description
Serious	0.Traffic Congestion unusual for that time of day 1.Traffic which has been stopped for less than five minutes but in excess of the red signal time for traffic signals operating on the road 2.The traffic queuing is longer than normal for the time of day 3.The incident causes inconvenience to road users within a short space of time
Severe	Similar to above however: 0.The traffic has been stopped for more than five minutes 1.The incident can quickly cause significant inconvenience of at least an additional 20 minutes to the road users' journeys

A reduction in the duration of works taking place in traffic-sensitive times should lead to a reduction in the amount of disruption taking place on the road network. The analysis has been

separated into works undertaken by the highway authority (TfL) and those by utility companies, within TLRS and non-TLRS segments. Serious and severe disruption is calculated as a total amount regardless of the time of day it occurred. Other causes of disruption such as collisions and congestion have been excluded from this analysis as the TLRS targets roadworks only.

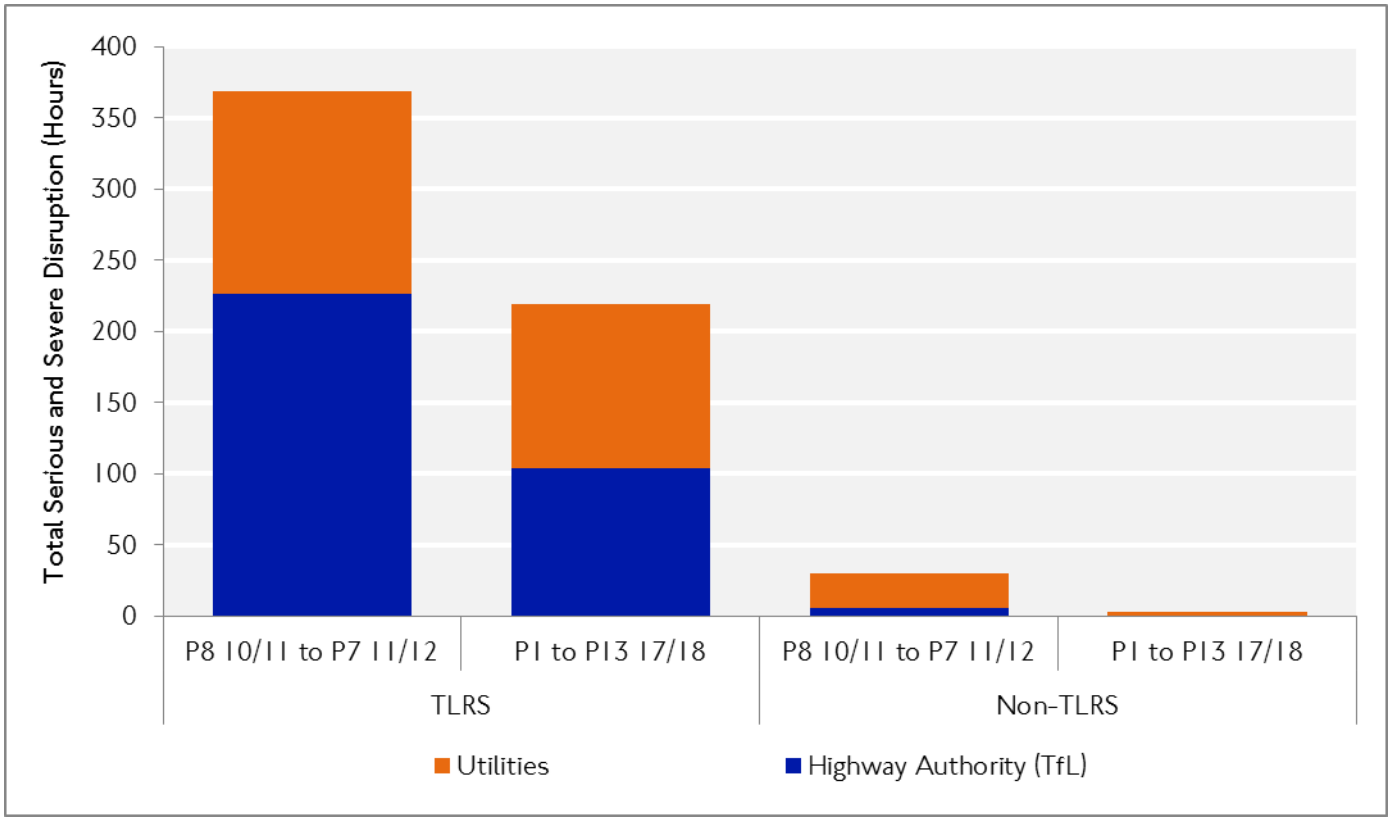
6.8 Serious and Severe Disruption

Table 13 and Figure 7 show the contribution of highway authority (TfL) and utility planned works by TLRS and non-TLRS segments.

Table 15: Hours of Serious and Severe Disruption due to Planned Works

Total Serious & Severe Disruption Associated with Planned Works (Hours)				
	P8 10/11 to P7 11/12	P1 to P13 17/18	Change	% Change
TLRS Segments	**369**	**219**	**-150**	**-41%**
Highway Authority (TfL)	226	104	-122	-54%
Utilities	143	115	-28	-20%
Non-TLRS Segments	**29**	**3**	**-26**	**-90%**
Highway Authority (TfL)	6	0	-6	-100%
Utilities	24	3	-21	-88%

Figure 7: Total Serious and Severe Disruption Associated with Planned Works

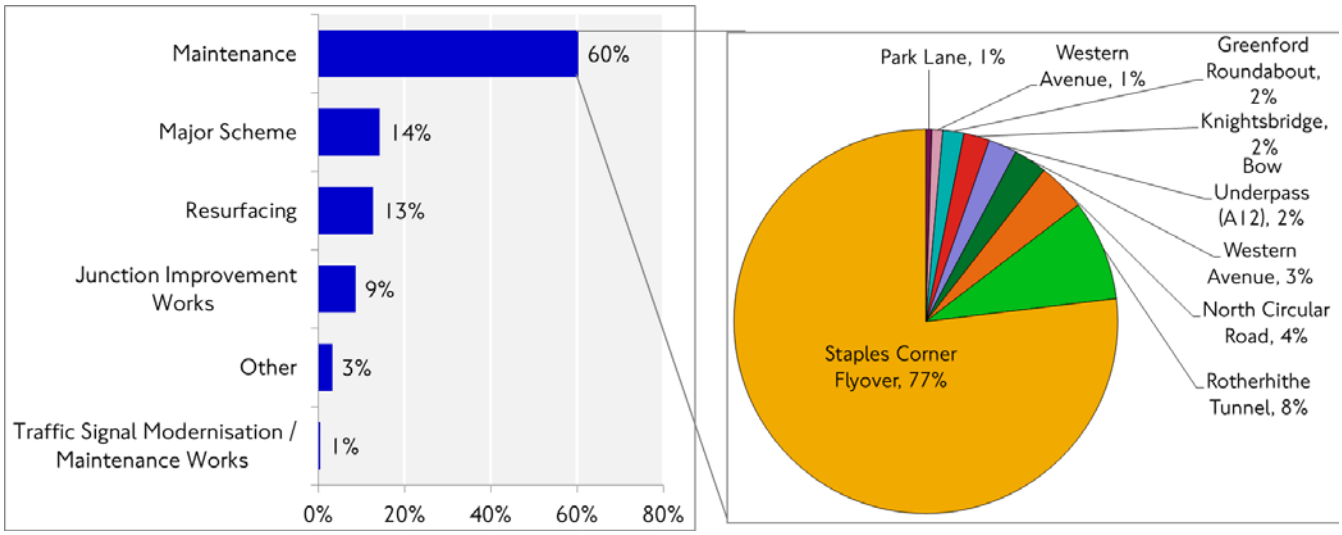


Serious and severe disruption decreased by 150 hours within TLRS segments and decreased by 26 hours within non-TLRS segments. The significant decrease seen in TLRS segments is largely driven

by the overall 2 per cent reduction in works (Section 8.1) and more efficient working such as an increase in collaborative working and overnight works (Sections 9.1 and 8.3 respectively). In contrast to this, there has been deterioration in journey times and JTR which is due to other factors such as increased traffic flows (Section 6.6) unplanned incidents (such as numerous incidents on the A406 as mentioned in Section 6.3) and some reduction in capacity.

Disruption caused by highway authority (TfL) planned works within TLRS segments has been broken down further into categories to see what the causes have been (Figure 8).

Figure 8: Percentage of Total Serious and Severe Disruption (hours) by Highway Authority (TfL) Planned Works within TLRS Segments, P1 to P13 17/18



It was found that 60 per cent of all highway authority (TfL) serious and severe disruption within TLRS segments was caused by maintenance works.

The roadworks on the A406 Staple Corner Flyover caused 77 per cent of the maintenance works serious and severe disruption hours and 46 per cent overall. The works took place in August and September 2017 and involved replacing two 22 metre long steel expansion joints. The joints, which are vital to allow the flyover to cope with temperature change, were repaired over 10 years ago, but were in a poor condition and it was essential to replace them to avoid long-term disruption to motorists. Staples Corner Flyover was closed for three weekends. TfL considered every alternative to the full closure of the flyover, however to do this work using part-closures would have taken nearly 50 days and would have affected many more road users. In addition to the three full weekend closures the flyover had some reduced lanes and closures during overnight periods only.

TfL had a number of measures in place to help reduce the impact of the closure, including:

- Rapid response units placed around the area on standby to clear any incidents or accidents on surrounding roads
- Messaging advising drivers of the closures
- Re-phasing of traffic signals in the area to reduce disruption as much as possible and ease displaced traffic
- Cancellation of any non-urgent roadworks in the local area
- An extensive awareness campaign to help road users plan for the closures. This included letters to nearly 20,000 homes and properties in the area, direct emails to nearly 500,000 road users and stakeholders as well as TfL's usual real-time social media alerts

Works on the A41 Baker Street were the only set of works to cause serious and severe disruption within the major scheme category. This accounted for 14 per cent of all serious and severe disruption caused by highway authority (TfL) in TLRS segments. The works began in July 2017 and will continue until early 2019. The works are being carried out to create a large one-way system from Regent's Park to Oxford Street, which will reduce the dominance of traffic along Baker Street and Gloucester Place, making it safer and easier to access. The majority of the disruption occurred during February 2018 which coincided with some of the most disruptive stages of the works. There were planned lane closures and part of the mitigation plan was to allow general traffic to use the bus lane and therefore retain capacity. However initially this did not appear obvious to drivers and led to a considerable amount of delay as drivers were only using the one lane, rather than the planned two. Once the information to drivers was made more clear disruption reduced.

TfL has put in place a number of mitigation measures for the A41 Baker Street works which include:

- Encouraging as many collaborative works to take place as possible
- A planned traffic signal strategy
- Multiple Vehicle Messaging Signs (VMS) to warn road users about the works
- Public consultation emails are sent out every week to explain what is going on and how journeys may be affected
- Limits on all other works within the area

Table 16 shows that the numbers of works in TLRS segments associated with serious and severe disruption has reduced by 13. This represents less than half a per cent of all works (as shown in Table 18).

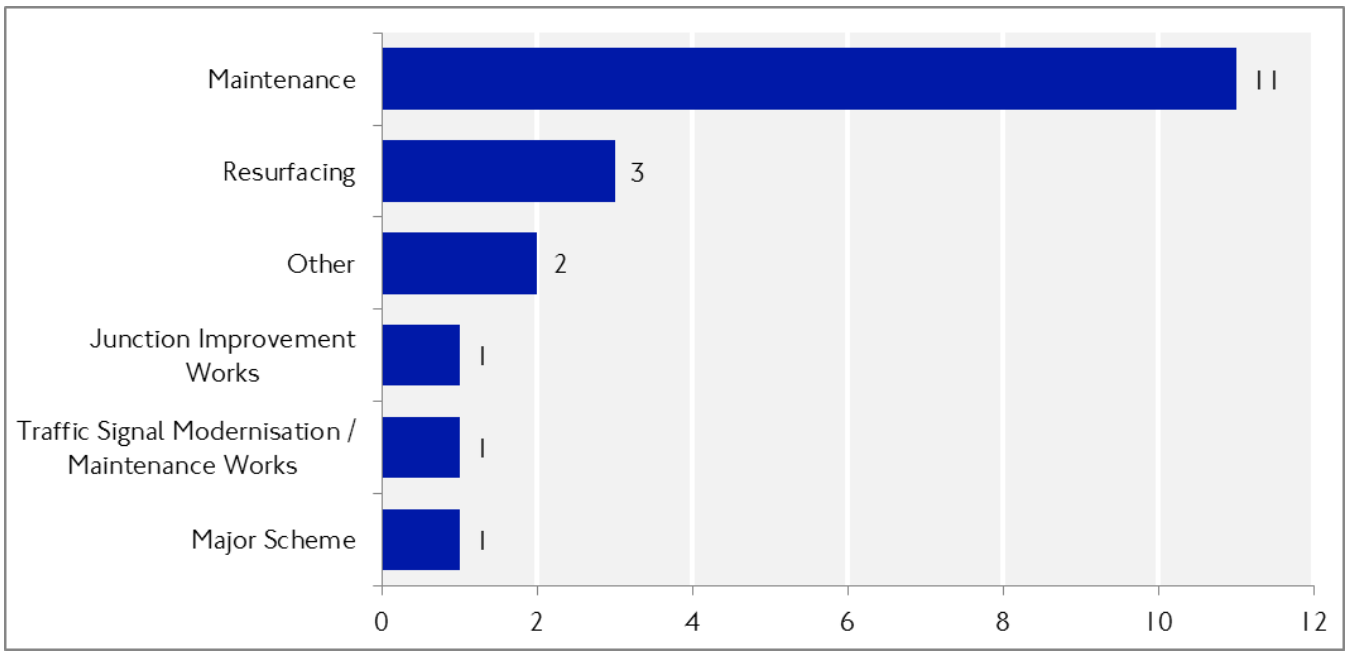
Table 16: Number of Works Resulting in Serious and Severe Disruption

Total Number of Planned Works Resulting in Serious & Severe Disruption				
	P8 10/11 to P7 11/12	P1 to P13 17/18	Change	% Change
TLRS Segments	**46**	**33**	**-13**	**-28%**
Highway Authority (TfL)	26	19	-7	-27%
Utilities	20	14	-6	-30%
Non-TLRS Segments	**10**	**1**	**-9**	**-90%**
Highway Authority (TfL)	6	0	-6	-100%
Utilities	4	1	-3	-75%

Highway authority (TfL) planned works resulting in serious and severe disruption has reduced by 7 works (27 per cent) within TLRS segments.

Figure 9 shows that 58 per cent of planned highway authority (TfL) works resulting in serious and severe disruption within TLRS segments were caused by maintenance works, and Figure 8 showed they were responsible for 60 per cent of disruption.

Figure 9: Highway Authority (TfL) Planned Works Resulting in Serious and Severe Disruption within TLRS Segments



The total number of hours of serious and severe disruption in TLRS segments has increased by 27 per cent (46 hours) when compared to 2016/17 but has decreased by a significant amount when compared to 2015/16 – a reduction of 844 hours (79 per cent). This significant decrease can be attributed to the positive effects of the Lane Rental Scheme combined with the reduction in the number of projects and programmes which are transforming London's streets as part of the largest ever investment in London's streets (as discussed in Section 5 and Figure 2).

7. Customer Satisfaction

Using an online survey, TfL began measuring customer satisfaction with TLRN users in 2010. Users were asked to score their satisfaction on their three most recent trips. For low satisfaction scores the respondents were then asked to provide reasons why. From April 2015 these follow up questions were removed which resulted in much lower satisfaction scores. The reason behind this is that respondents were taking 'avoidance action' when completing the score ratings for trips 2 and 3 to avoid having to complete the follow up questions, leading to an artificial uplift in scores. Therefore it is not possible to compare customer satisfaction with the management of roadworks pre 2015 to results from 2015 onwards. It should be noted that the Lane Rental Monitoring Report 2015/16 showed scores which were calibrated using the old methodology so do not match those listed in Figure 10 which represent the new methodology. It has been decided that the survey will only be carried out once a year from 2018/19 due to costs. In order to achieve this, the survey was not carried out during Q4 2016/17 and was only carried out twice in 2017/18.

Figure 10 shows the difference in customer satisfaction with the management of roadworks scores pre and post survey changes. There is an increase in satisfaction during 2017/18 when comparing the same quarters to the previous year.

Figure 10: Customer Satisfaction with the Management of Roadworks

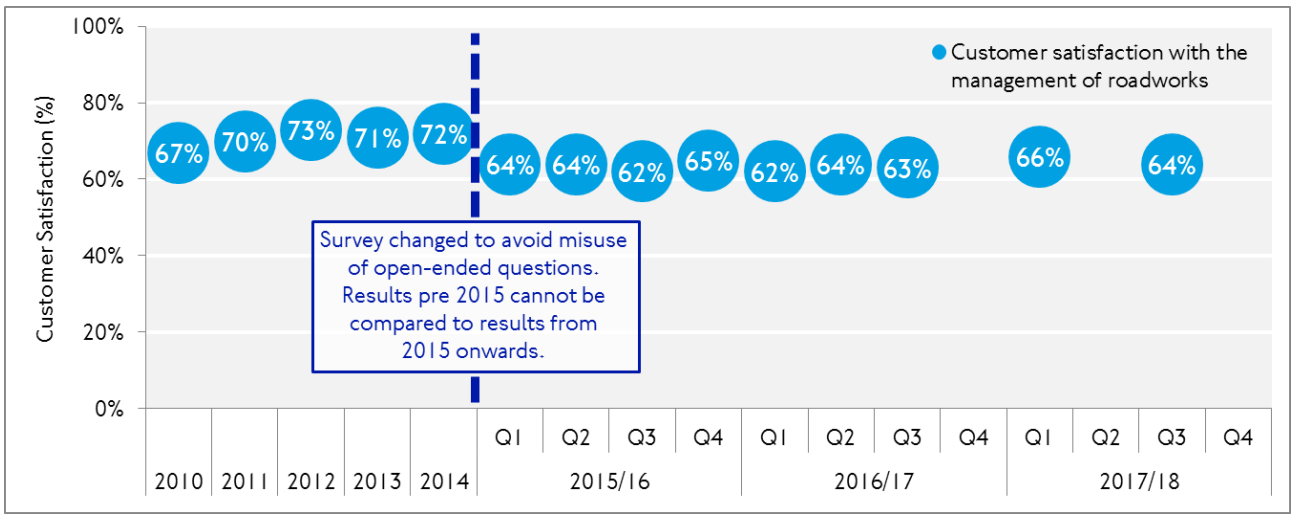


Table 17 shows the percentage of customers that experienced roadworks on their journey. This has been broken down by quarter between 2016/17 and 2017/18 – as previously discussed the format of the questionnaire has changed therefore results for 2017/18 are only available for Q1 and Q3. Customers who experienced roadworks on their journeys have gone down by 3 and 1 percentage points compared to the previous year (Q1 and Q3 respectively).

Table 17: Customer Satisfaction - Percentage who Experienced Roadworks on Journey

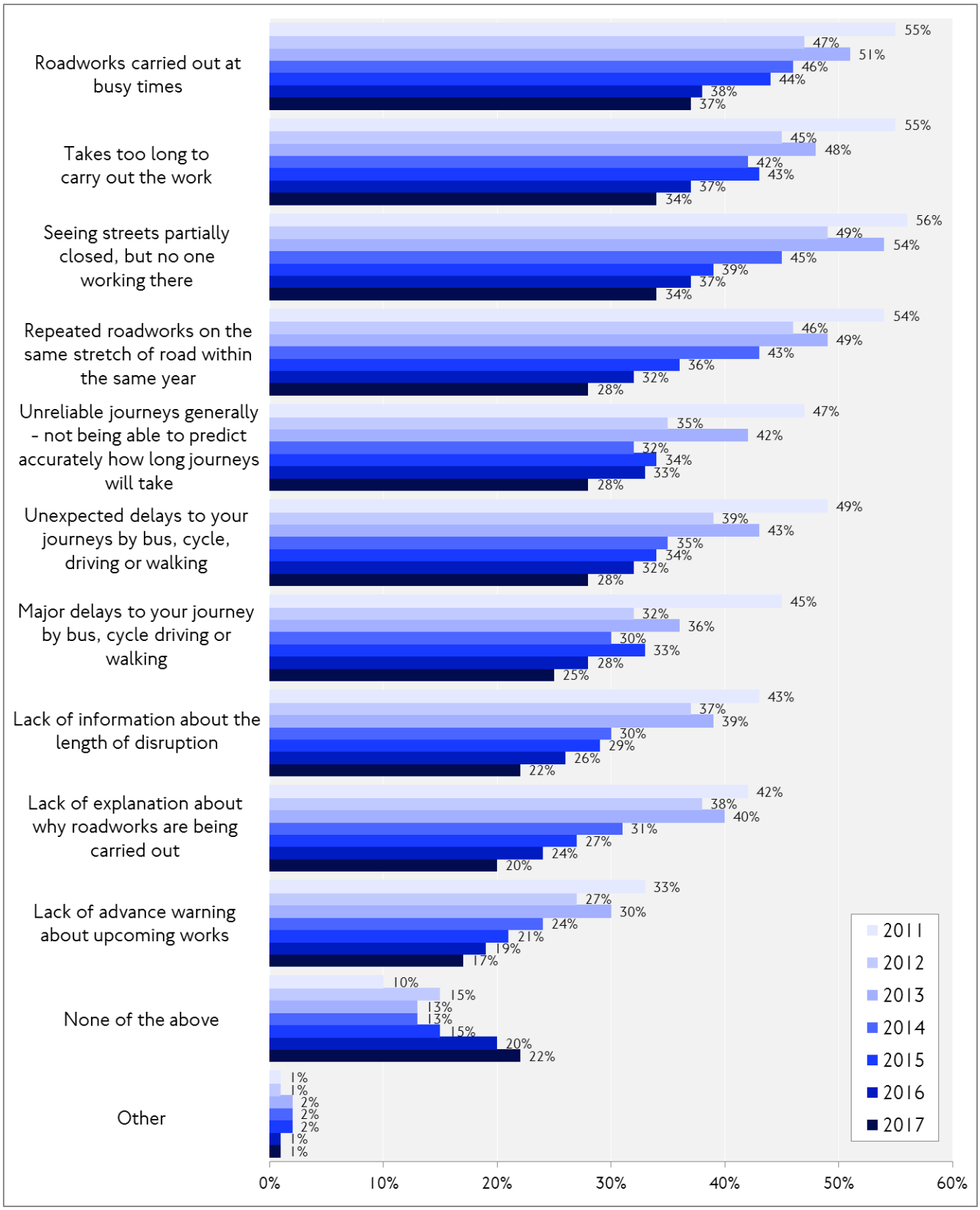
Customer Satisfaction Survey - Percentage who experienced roadworks on journey				
	Q1	Q2	Q3	Q4
2016/17	18%	15%	16%	-
2017/18	15%	-	15%	-
% Point Difference	-3%	-	-1%	-

In 2011 the satisfaction survey started recording the most frustrating aspects of roadworks for TLRN users and all results are shown in Figure 11.

Customer satisfaction has improved in all areas since the survey began. There was a small drop in results between 2012 and 2013, which coincided with the Olympic and Paralympic periods.

The greatest improvement in customer satisfaction between 2016/17 and 2017/18 was a reduction in frustrations associated with 'Unreliable journeys generally - not being able to predict accurately how long journeys will take' (down 5 percentage points). Frustrations associated with 'Repeated roadworks on the same stretch of road within the same year', 'Lack of explanation about why roadworks are being carried out' and 'Seeing streets partially closed, but no-one working there' have experienced the greatest improvements in customer satisfaction since the TLRS was implemented (down 26, 22 and 22 percentage points respectively). It is reasonable to assume that the implementation of TLRS has had a positive influence on these results.

Figure 11: Roadworks Related Frustrations for TLRN Users



8. Behaviour Change

8.1 Number of Works Taking Place

Using data obtained from the Local Streetworks Register (LSWR), Table 18 shows the number of works that took place within TLRS and non-TLRS segments, separated into highway authority (TfL) and utility works, regardless of time of day and whether traffic-sensitive or not.

Table 18: Number of Works on TLRS and Non-TLRS Segments

Number of Works Completed on TLRS and Non-TLRS Segments			
	Oct 10 to Sept 11	Apr 17 to Mar 18	% Change
Highway Authority (TfL) Total	**21,300**	**20,272**	**-5%**
TLRS Segments	17,202	16,652	-3%
Non-TLRS Segments	4,098	3,620	-12%
Utility Companies Total	**7,814**	**7,780**	**0%**
TLRS Segments	5,933	6,087	3%
Non-TLRS Segments	1,881	1,693	-10%
Grand Total	**29,114**	**28,052**	**-4%**
TLRS Segments	23,135	22,739	-2%
Non-TLRS Segments	5,979	5,313	-11%

Note that the 'grand total' reflects only TLRS and non-TLRS categories as described in Table 3 and does not represent the entire TLRN.

The total number of works undertaken on TLRS and non-TLRS segments combined has decreased by 4 per cent with non-TLRS segments experiencing a larger decrease (11 per cent). The number of highway authority (TfL) works has decreased overall (5 per cent) with the greatest decrease seen in non-TLRS segments (12 per cent). For the first time since monitoring commenced, utility companies are now undertaking more work in TLRS segments (3 per cent), but they continue to do less work in non-TLRS segments (10 per cent).

It is worth noting that, while there were over 16,000 completed highway authority (TfL) works in TLRS segments, 99 per cent of these works did not attract a Lane Rental charge (as shown in Section 10.1). This indicates that while a relatively large number of highway authority (TfL) works took place, they are generally restricted to overnight or 'off-peak' hours (i.e. less traffic-sensitive times of day) or took part in other measures such as collaborative working to avoid the Lane Rental charge.

To further encourage more work to be carried out outside of TLRS chargeable times, TfL began implementing block closures. This is where certain sections of road are shut overnight or off-peak and as many routine maintenance works are carried out at the same time as possible thus avoiding the disruption the works would have had if they have been carried out individually or during different parts of the day.

The block closure programme has expanded to include direct working with utility companies, other highway authorities and third parties to offer them the opportunity to carry out their own maintenance activities within these sites. Increasing the number of utility works and sites within the block closure programme will result in multiple unnecessary work sites being avoided and hundreds of hours of disruption saved for the public.

8.2 Changes to Planned Carriageway Works

Lane Rental days are those where works took place during chargeable hours. Table 19 shows the total number of Lane Rental days for carriageway works that utility companies applied for and were approved in the monitoring period. The analysis is based on when the discussion between TfL and utility companies took place and not when the works were carried out.

The system used to record Lane Rental days changed during 2016/17 and there have been some data quality issues since. Therefore the following results should be used as an indication only.

As it can be seen from Table 19 below a total of 830 Lane Rental days were saved between April 2017 and March 2018 due to TfL liaising with promoters to reduce the length of time and the time of day that the carriageway is occupied. For example, if the works were proposed to take place during the day and then through discussions the works were changed to take place overnight instead, this would be a Lane Rental day saved. Although there has been a decrease in the overall number of Lane Rental days saved from 2016/17 to 2017/18 there were a total of 745 fewer days originally requested. This indicates a positive behaviour change amongst promoters whereby duration and timings are being considered when first applying to carry out works, to avoid both TLRS charges where possible and minimise disruption.

The charges recovered between April 2017 and March 2018 were on average made up of 30 per cent low charge band and 70 per cent high charge band (See Table 25). Assuming the ratio between low and high charge bands on the network is 30:70 then there would be an average daily charge of £1,800, resulting in £1,494,000 worth of charges avoided.

Table 19: Planned Carriageway Utility Works on TLRS Segments (LR Days)

Planned Carriageway Utility Works on TLRS Segments (Lane Rental Days)										
	Oct 13 to Jun 14		Jul 14 to Mar 15		Apr 15 to Mar 16		Apr 16 to Mar 17		Apr 17 to Mar 18	
	Total	Proportion	Total	Proportion	Total	Proportion	Total	Proportion	Total	Proportion
Total Requested Lane Rental Days	3,900	-	2,736	-	4,940	-	5,822	-	5,077	-
Agreed Lane Rental Days	1,003	26%	1,419	52%	3,088	62%	4,487	73%	4,541	85%
Lane Rental Days Saved	2,987	74%	1,317	48%	1,878	38%	1,679	27%	830	15%

8.3 Changes to Works in Traffic Sensitive Times

TfL has been proactive in approaching borough Environmental Health teams to allow extended working hours during night-time periods and has already reached an agreement with a number of boroughs. The proportion of works taking place during the day or overnight is shown in Table 20.

Table 20: Proportion of Day Time or Night-Time Planned Utility Works

Proportion of Planned Utility Works Taking Place During the Day or Night					
	Oct 10 to Sep 11		Apr 17 to Mar 18		Percentage point increase in night-time works
	Day time	Night-time	Day time	Night-time	
TLRS Segments	89%	11%	59%	41%	30%
Non-TLRS Segments	81%	19%	66%	34%	15%

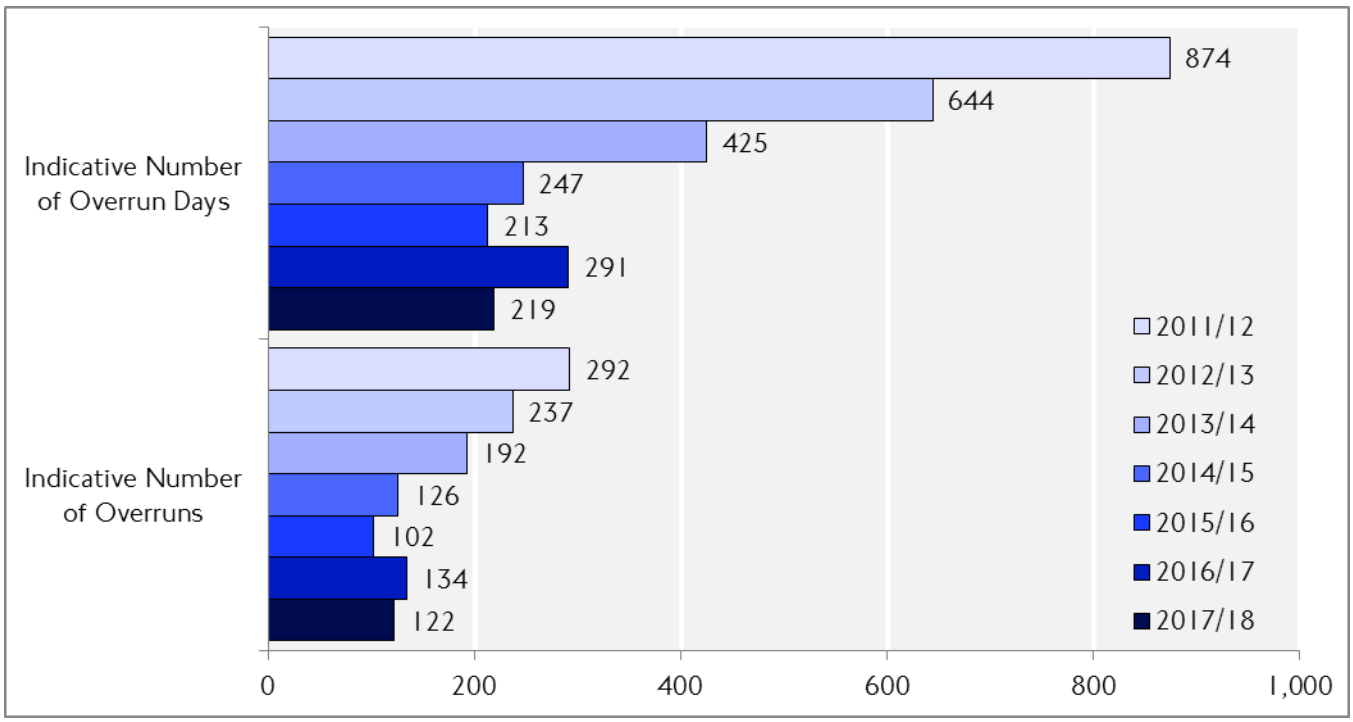
Table 20 shows that the proportion of utility works taking place at night has increased from 11 to 41 per cent in TLRS segments. Night-time works also increased in non-TLRS segments, albeit to a lesser extent. The increase was 16 percentage points higher in TLRS segments than non-TLRS segments, showing that the TLRS is having a direct impact on the time of day that works take place in the TLRS; whilst the TLRN-wide increase hints at a wider indirect impact.

8.4 Section 74 Overrun Works

One standardised permitting regime is applied to all works on the TLRN. The duration for each set of works is agreed between the promoter and the highway authority (TfL). If the works take longer than the agreed period then a Section 74 overrun charge is applied – taken from the New Roads and Street Works Act 1991(NRSWA). The Section 74 overrun charge is in addition to the TLRS charge if the works are located within a TLRS area and take place during chargeable hours. Activities carried out by or on behalf of TfL cannot legally be subject to Section 74 overrun charges.

Section 74 overruns for utility works across the whole of the TLRN have been analysed and are shown in Figure 12. It can be seen that Section 74 overruns have reduced considerably since the introduction of the TLRS in 2012. The number of Section 74 overruns has reduced by 58 per cent (170) between 2011/12 and 2017/18 and the number of overrun days has reduced by 75 per cent (655 days).

Figure 12: Indicative Number of Section 74 Overruns and Overrun Days for Utility Works



9. Other Benefits of the Scheme

9.1 Collaborative Working

As discussed earlier, the TLRS encourages works promoters to minimise their duration of occupation of the street. One of the ways this can be achieved is through collaborative working, where promoters work within the same traffic management footprint or share trenches in order to avoid having to dig up the road a number of times. To further encourage collaborative works, as of June 2015, all charges are waived for the period of collaboration where prior agreement has been given.

Collaborative works that have taken place across the whole of the TLRN have been examined and are shown in Table 21. While it is not possible to separate out the numbers for the TLRS, these figures give a good indication of changes which have occurred in these segments.

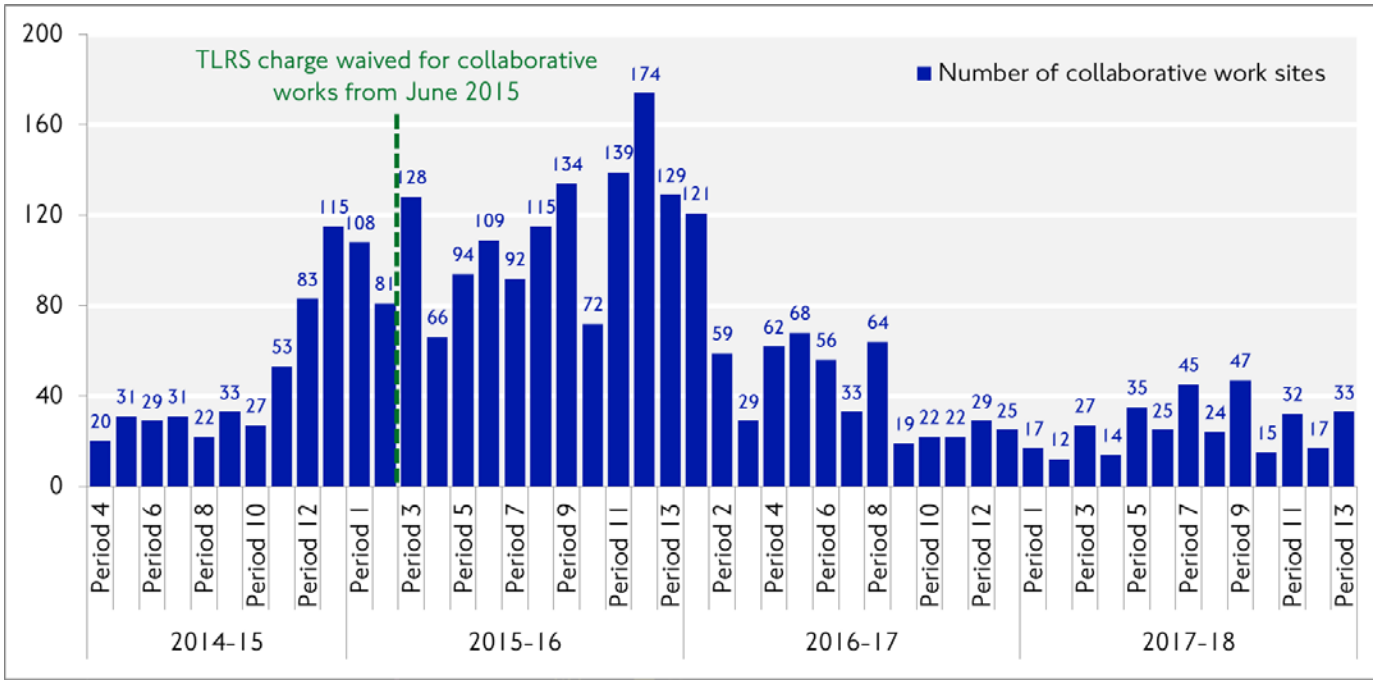
Table 21 shows works promoters are undertaking more collaborative works per period (on average 10 more), demonstrating a significant number of works promoters are undertaking works in this way. The average number of days of disruption that were avoided as a result of collaborative working each period has decreased by 32 days (29 per cent). The reason for this drop is that there has been a reduction in the number of major schemes taking place compared to the last few years. For example, previously there could have been a major scheme such as junction re-design taking place over 6 months. This would have led to a whole range of collaborative works taking place at the same time and therefore a large number of disruption days saved at that one site. However there have been fewer of these longer duration major schemes taking place, resulting in fewer opportunities to save disruption days. This is why there are still more general collaborative work sites but the total number of disruption days saved has reduced.

Table 21: Collaborative Working Figures across the TLRN

Collaborative Working				
	P8 2010/11 to P7 2011/12	P1 to P13 2017/18	Change	% Change
Average number of collaborative work sites per period	16	26	10	65%
Average number of days of disruption avoided per period	110	78	-32	-29%

Figure 13 shows that the total number of collaborative work sites increased significantly during 2015/16 but has returned to similar levels to 2014/15. This is due to the huge build programme which was seen during 2015/16 whereby there were considerably more major impact schemes. This is evidenced in previous sections such as Sections 5 and 6.5.

Figure 13: Collaborative Work Sites per TfL Period



One example where an industry wide collaboration took place was the construction of a new hotel on the land north of Holywell Lane in Hackney which has a high TLRS charge. Prior to the construction TfL negotiated a package of highway works with the developer which involved:

- The widening of the southern footway to allow for increased pedestrian movements
- A new surface for the carriageway
- The decluttering of the existing footways to improve the pedestrian environment

To minimise future disruption TfL engaged with utility promoters to encourage collaborative working to take place within TfL's footprint. As stated above TLRS charges are waived for collaborative working. Many different utility companies agreed to the trench share to complete their works which led to a reduction in the amount of excavations, materials required, structural integrity and duration. This approach demonstrated an industry wide commitment to collaborate and saved 33 days of disruption.

9.2 Reduced or Waived TLRS Charges

As mentioned above the TLRS charge is waived for collaborative working. There are a number of other scenarios where consideration will be given to reduce or waive TLRS charges[10], which can include:

- Using innovative technology
- Where there is no net loss to carriageway space – the traffic management or work space takes up the same footprint as an existing island or when an existing island has been removed in order to create adequate temporary working space
- Implementing future proofing methods to the road network – such as providing additional ducting and access chambers to reduce the number of future interventions on the network from utility providers
- Using extraordinary measures – where special provisions have been made to reduce congestion that are over and above normal practices

Between April 2017 and March 2018 a total of 134 waiver applications were submitted, with 90 per cent receiving approval (120).

9.3 Use of New Technology

The Lane Rental Governance Committee (LRGC) is formed of senior managers from TfL and utility companies who have responsibility for ensuring that the expenditure of surplus income generated from the TLRS in in accordance with DfT regulations.

The LRGC meet quarterly to review requests for funding from the net proceeds, which must be used for purposes intended to reduce the disruption and other adverse effects caused by street works.

Applications must also directly or indirectly benefit London. This is not to say that items outside of London would not be considered, but they must have the potential to be used within London, for example the use of innovative technology.

Between April 2017 and March 2018 18 applications for LRGC funding were approved totalling £4,320,634. Where it has been possible to calculate, the estimated social cost of delay saved is approximately £16,272,641.

[10] Transport for London Lane Rental Scheme Supplementary Guidance V5.0 July 2016 - http://content.tfl.gov.uk/tlrs-supplementary-guidance....pdf

The following is a list of funding requests that have been approved by the LRGC in 2017/18:

Table 22: Funding Requests Approved by the LRGC in 2017/18

Title	Summary
Improving Traffic Management on the TLRN	Dedicated and experienced traffic management specialist to manage, coordinate, design, consult and review all aspects of traffic management (TM) documentation and produce a consolidated document for works undertaken on the TLRN.
BIM / Vault London	Trial a shared data platform that will map all buried services in 2D with the aim of moving to 3D in future.
Early Trafficking On-Street Trials	Carry out a trial to stress-test the curing time required prior to trafficking of readily available concrete used in highway reinstatements.
Nine Elms Service Corridor - Future Proofing Network	Installation of additional capacity in a regeneration area.
Finchley Road Extraordinary Measures	Extraordinary measures to reduce disruption. This included the removal of a segregated island to facilitate traffic movement and minimize disruption during the works.
Events Solution Trial	Trial of an events solution which looks to use intelligent signals in conjunction with 4G routing to enable a dynamic use of left and right hand turning during planned and unplanned events. It is hoped that this will allow for better control of traffic around Parliament Square, with the potential to be rolled out to other locations on the network in future.
The HAUC(UK) App	Development of a smart device app which will provide the most up to date reference library and tool box talks for site operatives and street works industry stakeholders.
Strategic Modelling for Major Utility Works	Trial the use of modelling for major utility works to ensure best solution is in place to mitigate disruption.
Islington Extraordinary Measures	Extraordinary measures to reduce disruption. This included the provision of a free shuttle bus to run daily for those wishing to access Angel station and otherwise would have had to use diverted bus services and walk the remainder of the journey.
Finding and Managing Culverted Watercourses	Establishing accuracy regarding location and ownership of culverted watercourses while producing a process to resolve unidentified assets.
London Infrastructure Mapping Application Version 3	Continuing development and testing of the application over the next 24 month period to ensure ongoing integration with existing databases and other data source systems across the industry securely, while promoting the application with a view to wider use.
Stratford Gyratory	Trial of an alternative method of temporary cycle lane segregation at works sites, which can be moved according to programme.
Power Road Bridge Enabling Works	Construction of a temporary highway layout during the bridge construction to maintain traffic flow.

Strengthening the Network via Plastic Recycling	Trial the use of recycled plastic pellets within polymer modified bitumen and stone mastic asphalt to strengthen surface and increase longevity.
Croydon Infrastructure Coordination Pilot	Project to share data on a common web map in order to promote collaborative working. This will aim to feed into the GLA's Infrastructure Mapping Application (IMA) and complement the Infrastructure Development Coordination Unit (IDCU).
LondonWorks2 Enhancements	User lead improvements to infrastructure and functionality enhancements.
Ramp trial	Two stage trial of a new ramp to assist the public, particularly, vulnerable road users. Off-street trials, followed by on-street trials. Report and specification to be produced.
A2/M2 Connected Corridor	Use of connected vehicle technology to manage the road network more effectively, particularly around roadworks and incidents.

Since the TLRS commenced a total of 58 applications have been approved by the committee with a funding value of £12,549,359 and an estimated social cost of delay saving of £96,274,951. Over the past three years some applications have been amended following approval therefore total numbers may not be identical between monitoring reports. All information within this report is up to date as of 31 March 2018.

The projects funded can be broadly categorised as follows:

Table 23: Project Categories for LRGC Funding

Congestion Busting Measures	Future Proofing Measures	Extraordinary Measures
Autonomous Robot Technology	IT Software	Material Testing
Industry Training	Solutioneering Workshops	Utility Infrastructure Mapping

The surplus funds generated from the scheme are considered to be a highly valuable ring-fenced source that can be reinvested into facilitating continuous innovation and improvements within the industry for the purposes of reducing road network disruption.

10. The Financial Impact of the TLRS

Although TLRS charges do not apply 24 hours of the day, the scheme has increased the cost of carrying out works on the TLRN. This can be in the form of charges for undertaking works during traffic-sensitive times in TLRS segments, or as a result of changing working practices to avoid working during these periods of the day, such as additional overtime for staff working at night.

10.1 Number of Works Avoiding TLRS Charges

Table 24 shows that 99 per cent of TfL works and 85 per cent of utilities works in TLRS segments completed within the reporting periods of 1 April 2017 to 31 March 2018 avoided TLRS charges. This is where works took place within TLRS segments but were planned to take place outside the chargeable, traffic-sensitive hours of the day or took additional measures such as collaborative working to avoid the TLRS charge.

Telecoms avoided the highest number of works incurring TLRS charges with 2,017 works avoiding a charge (93 per cent). Gas promoters had the lowest proportion of works avoiding a change (76 per cent).

Table 24: Proportion of Works Avoiding TLRS Charges

Proportion of Works in TLRS Segments Avoiding TLRS Charges	
Promoter	Apr 17 to Mar 18
Transport for London	**99%**
Utility	**85%**
Telecoms	93%
Water	87%
Electric	77%
Gas	76%

10.2 Number of Works Incurring TLRS Charges

Table 25 relates to the value of TLRS charges invoiced between 1 April 2017 and 31 March 2018, regardless of whether the work took place in this period or earlier.

Table 25: Charges Invoiced (April 2017 - March 2018) from Works Incurring a TLRS Charge

Sector	No. of Works where Charges were Invoiced	Number of Days	% Low Charges (£800/day)	% High/PP Charges (£2,500/day)	Total Charges Invoiced	Average Charges per Work	% of Total Charges Invoiced
TfL	62	1,055	34%	66%	£1,318,800	£21,270	21%
Water	242	1,140	38%	61%	£1,910,050	£7,892	31%
Electric	183	763	23%	73%	£1,202,000	£6,568	20%
Gas	139	796	36%	64%	£1,097,500	£7,896	18%
Telecoms	150	415	37%	62%	£582,000	£3,880	10%
Total	**776**	**4,169**			**£6,110,350**		**100%**

All works sectors (except water and TfL) were invoiced for a similar number of works (139 to 183) and all sectors attracted similar proportions of higher charges (61 to 73 per cent); TfL, water, gas and electric sectors were invoiced considerably more charges in total (over £1 million each). Water were invoiced the highest amount of charges which exceeded £1.9 million – over £500,000 more than any other sector. With the exception of TfL, water and gas had the highest average charges per work (nearly £7,900 compared with £4,000 for telecoms and £6,500 for electric). Water had a considerably higher number of works accounting for 31 per cent of the total.

Despite 99 per cent of TfL works avoiding a TLRS charge, over £1.3 million has been invoiced for 2017/18 accounting for 21 per cent of the total of the charges invoiced. The number of works days is over 1,000, which is 25 per cent of the total number of days invoiced for. This helps to explain that whilst there are fewer major schemes taking place overall, there are still some which are part of the largest ever investment in London's streets (as detailed in Section 5).

Compared to the previous Lane Rental Report which ran from April 2016 to March 2017 there has been a 6 per cent decrease in the total number of works for which charges were invoiced and also a 42 per cent decrease in the total number of days incurring a charge. As mentioned throughout the report the TLRS charges analysis (Table 25) signifies the magnitude of the road investment programme works and the impact they have had; TfL works incurred over £7.6 million during 2015/16, over £5.6 million during 2016/17 and over £1.3 million during 2017/18.

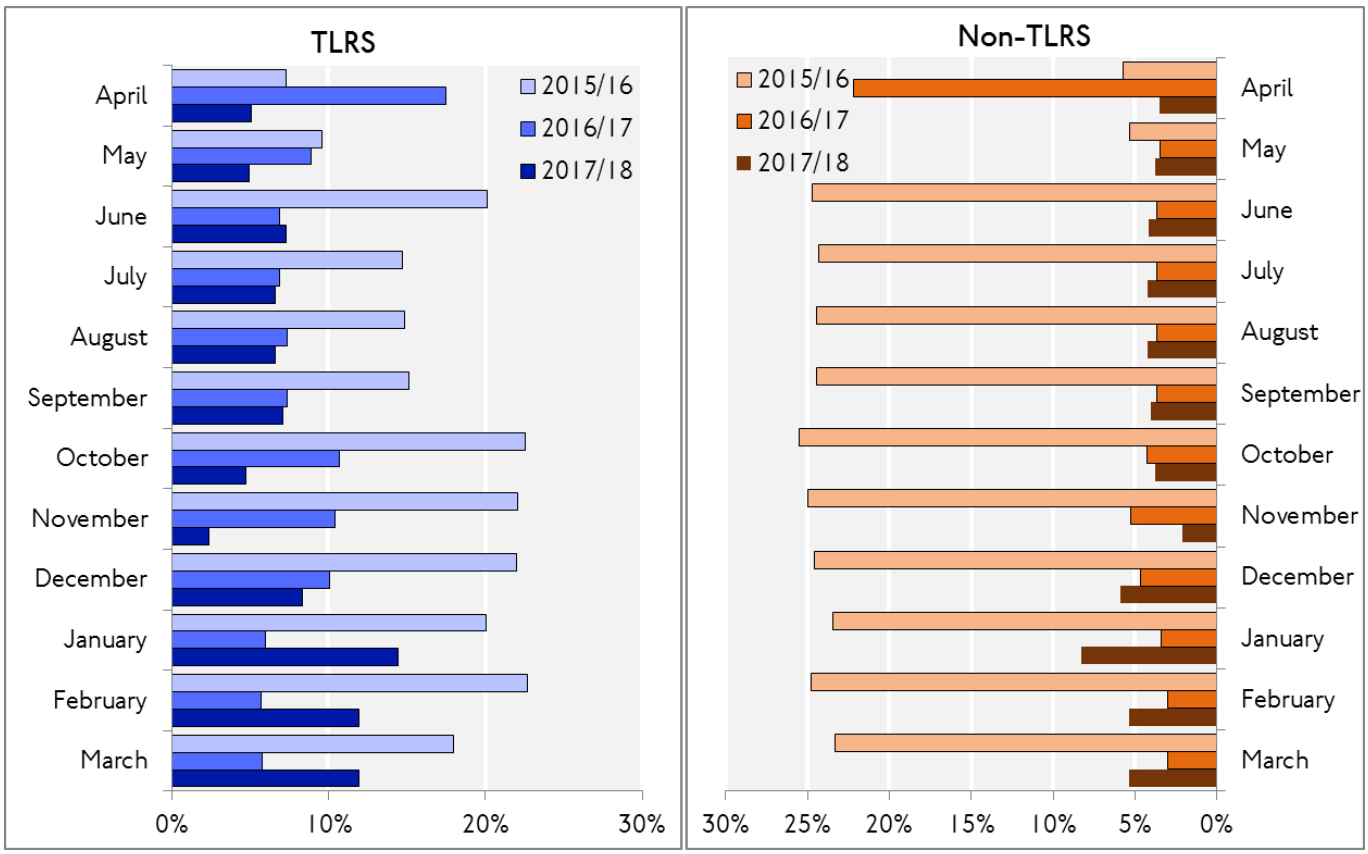
11. Changes from 2015/16 to 2017/18

This section will compare the results from this report covering the period between 1 April 2017 and 31 March 2018 to those in the fourth Lane Rental Monitoring Report 2016/17[11] and third Lane Rental Monitoring Report 2015/16[12] which covers the same months in the previous years.

The results within the third Lane Rental Monitoring Report 2015/16 were significantly affected by the huge investment programme taking place to transform London's roads (also discussed in Section 5). Figure 14 shows that there were similar percentages of TLRS and non-TLRS segments located within MWIAs in 2016/17 and 2017/18. 2017/18 had considerably lower levels of both TLRS and non-TLRS segments within MWIAs when compared to 2015/16. Between January and March 2018 over 10 per cent of TLRS segments were located within MWIAs which would still have an adverse effect on performance.

[11] Transport for London Lane Rental Scheme Monitoring Report April 2016 to March 2017 - http://content.tfl.gov.uk/lane-rental-monitoring-report-apr-2016-mar-2017.pdf
[12] Transport for London Lane Rental Scheme Monitoring Report April 2015 to March 2016 - http://content.tfl.gov.uk/lane-rental-monitoring-report-apr-2015-mar-2016.pdf

Figure 14: Comparison of 2015/16, 2016/17 and 2017/18 Percentage of TLRS and Non-TLRS segments located within MWIAs

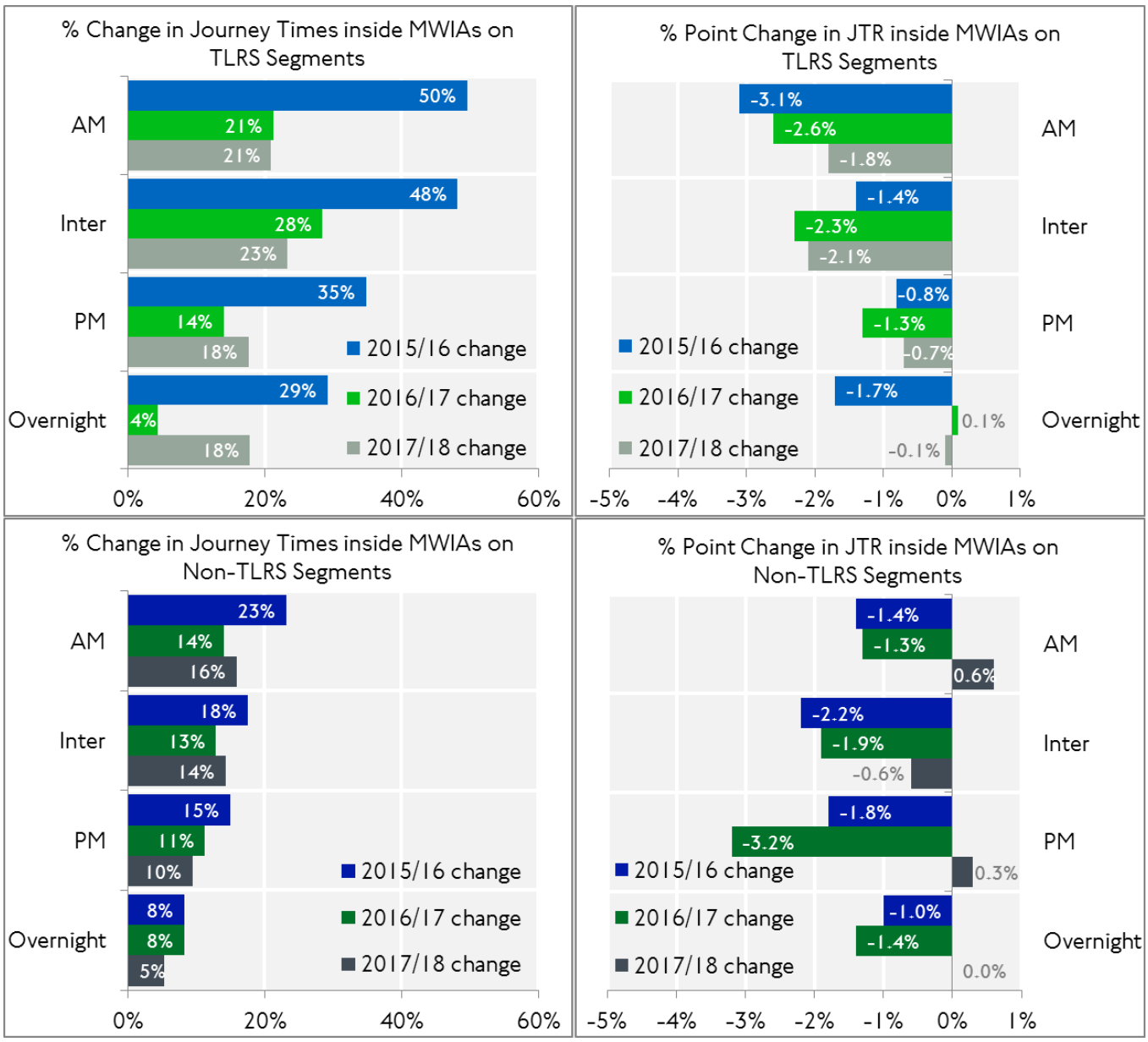


As previously discussed within the report journey times and JTR both within and outside of MWIAs have deteriorated, but the deterioration has been greater within MWIAs. Within MWIAs, deterioration was greater in TLRS segments. As the TLRS was not designed to mitigate or manage the substantial number of major works seen in MWIAs, this is not unexpected. Outside of MWIAs the deterioration was similar across TLRS and non-TLRS segments, indicating that the TLRS is providing a level of protection.

Figure 15 compares the changes in journey times and JTR for both TLRS and non-TLRS segments located within MWIAs compared to the 2010/11 baseline – the results for 2017/18 are also shown in Table 10 and Table 12. Results for 2015/16, 2016/17 and 2017/18 cannot be directly compared to one another as the locations of the MWIAs have changed over the past few years. The following analysis has been included as an indication of the scale of the change in journey times and JTR within MWIAs over the past few years.

Figure 15 shows that although there has been deterioration in 2017/18 when compared to the baseline, it was significantly worse during 2015/16 in all categories. The only exception is that the PM peak JTR within both TLRS and non-TLRS segments declined at a higher rate during 2016/17. Figure 15 also shows that inside MWIAs journey times and JTR have deteriorated at a lower rate during the AM and inter peaks when compared to 2016/17.

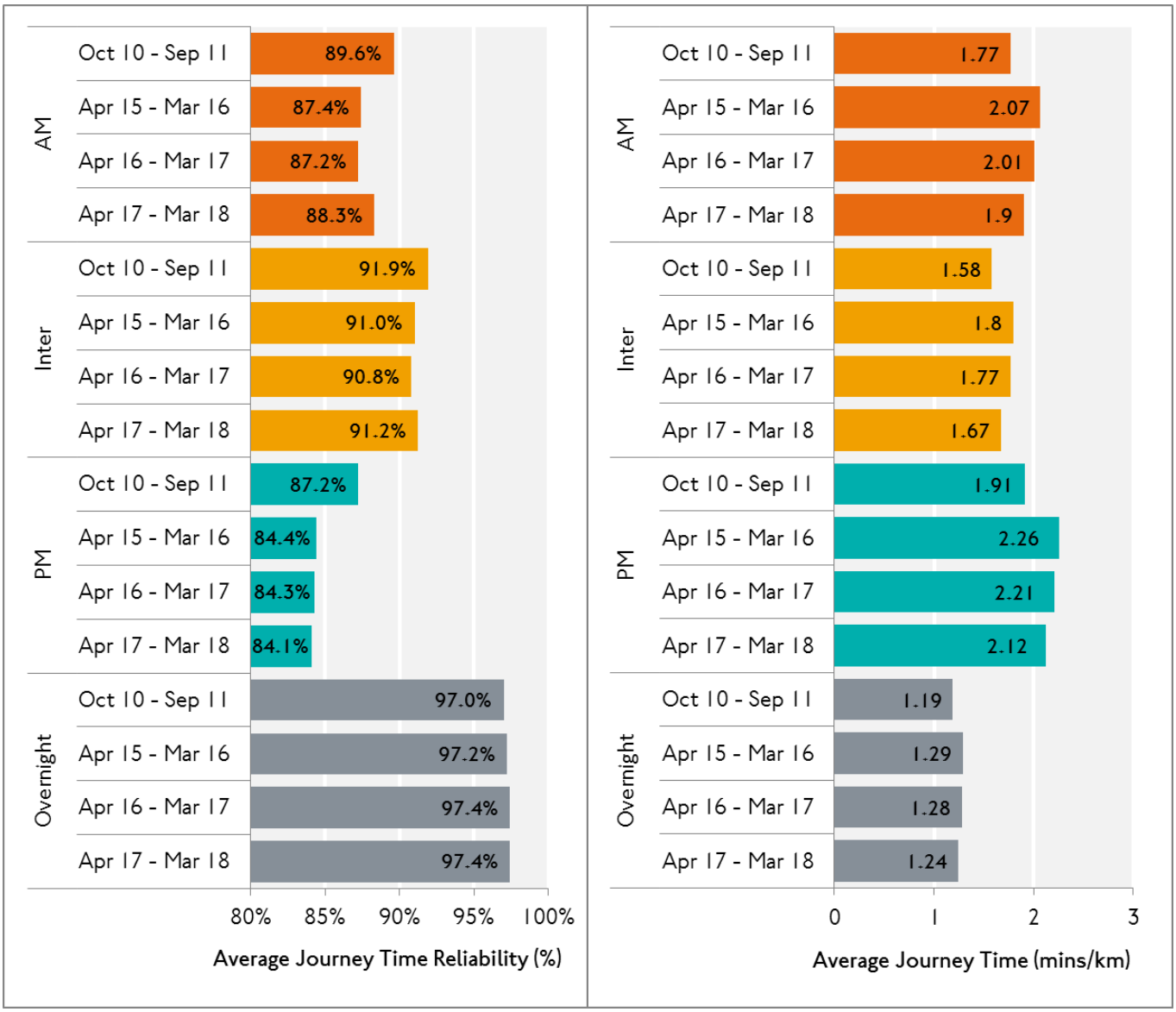
Figure 15: Changes in Journey Times and JTR inside MWIAs



Overall results for JTR within TLRS segments show that there has been an improvement between 2016/17 to 2017/18 with the exception of the PM peak which experienced a drop in JTR of 0.2 percentage points (Figure 16).This indicates that whilst there have been poorer results when compared to the baseline, there has been a slight improvement particularly during the AM peak over the past year (1 percentage point).

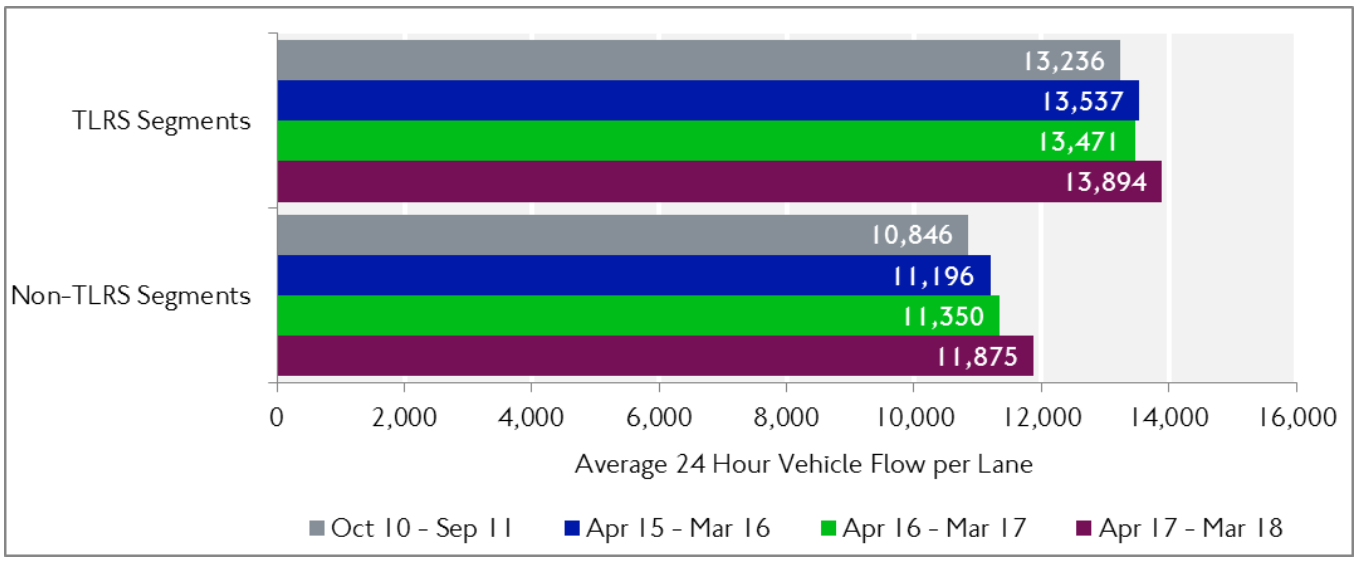
Journey times within TLRS segments have improved in 2017/18 when compared to 2016/17. Figure 16 shows that journey times have improved by up to 5 per cent in the AM peak and 4 per cent in PM peak.

Figure 16: Comparisons of JTR and Journey Times in TLRS Segments



Average 24 hour vehicle flows per lane are up to 17 per cent higher in TLRS segments compared to non-TLRS segments. Vehicle flows have increased by 2 per cent in TLRS segments in 2015/16, 2016/17 and 2017/18 compared to the baseline and by 5, 3 and 5 per cent respectively in non-TLRS segments. Changes in flows between 2016/17 and 2017/18 were small (3.1 per cent in TLRS segments and 4.6 per cent in non-TLRS segments). The increased level of flow over the past few years has caused a proportion of the negative impact on the journey times and JTR.

Figure 17: Average 24 Hour Vehicle Flow per Lane in the Baseline, 2015/16, 2016/17 and 2017/18



During 2015/16 there was a significant amount of serious and severe disruption caused by highway authority (TfL) planned works within TLRS segments. This was largely caused by the major works on the A406 near Neasden. Serious and severe disruption has significantly reduced from 2015/16 to 2017/18 but has increased between 2016/17 and 2017/18 within TLRS segments (Figure 18). The works which took place on the A406 Staples Corner Flyover caused 46 per cent of all highway authority (TfL) serious and severe disruption within TLRS segments as described in Section 6.8.

Figure 18: Comparisons of Total Serious and Severe Disruptions Associated with Planned Works

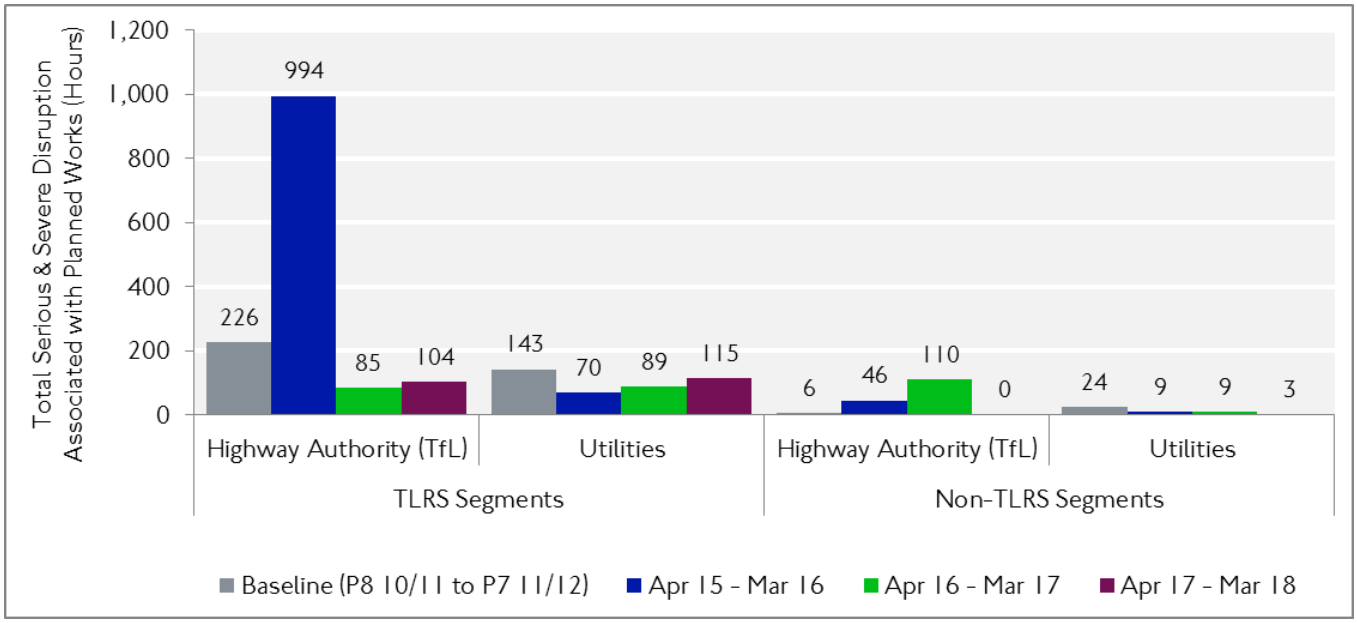


Figure 19 shows that during 2017/18 there has been an increase in the number of works completed within all categories when compared to 2016/17. The number of utility works completed within TLRS segments increased by 12 per cent when compared to 2016/17. This coincides with the increase in serious and severe disruption shown in Figure 18.

Figure 19: Comparison of Number of Works Completed on TLRS and Non-TLRS Segments

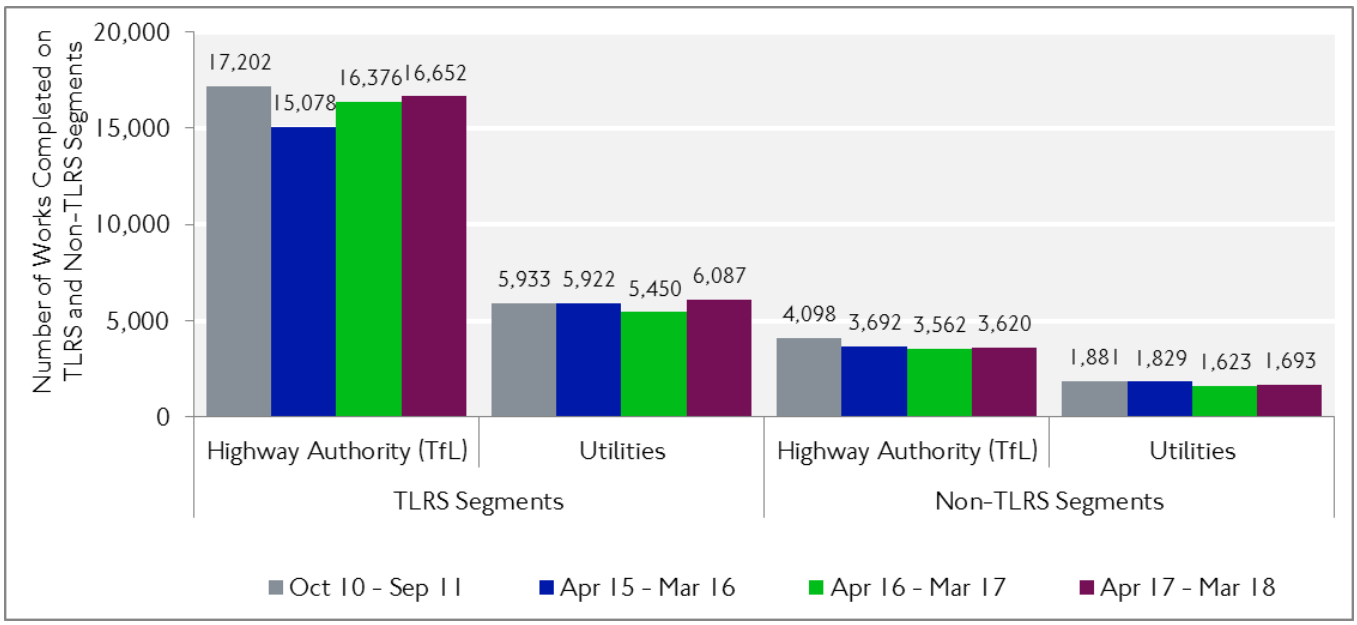


Figure 20 shows that the average number of collaborative work sites per period increased significantly during 2015/16 which coincided with the most impact build phase of the improvement program for London's roads, but also when TLRS charges were waived for collaborative working. There has been a decline in the average number per period since 2015/16 demonstrating that the most build intensive stage of the improvement programme is now over.

Figure 20: Comparison of the Average Number of Collaborative Work Sites per Period

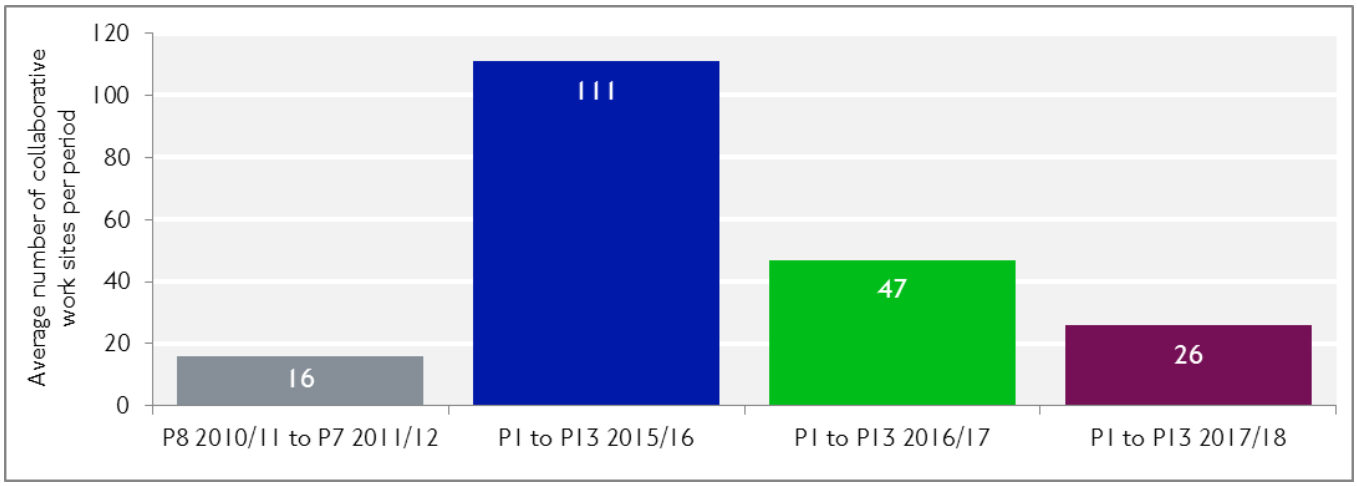
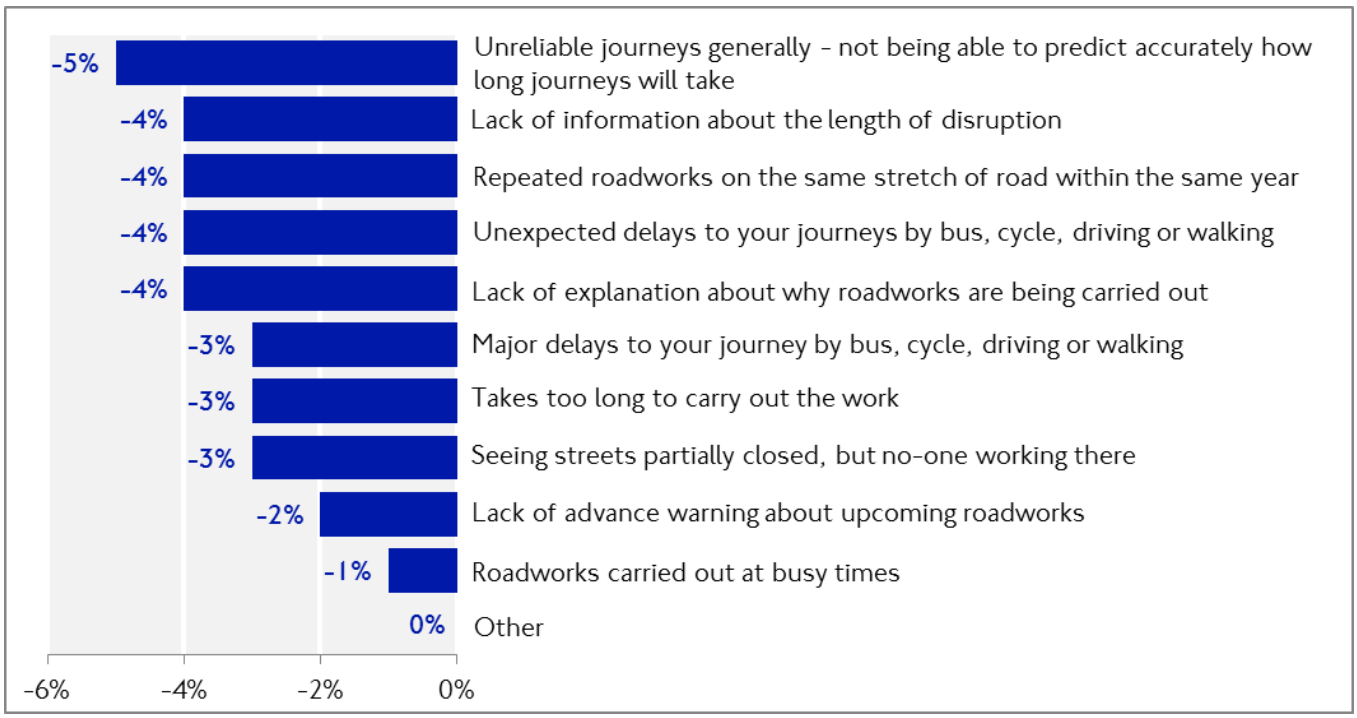


Figure 21 shows that customer satisfaction has continued to improve with the greatest improvements in satisfaction between 2016/17 and 2017/18 were reductions in frustrations associated with 'Unreliable journeys generally - not being able to predict accurately how long journeys will take', and the four categories which include lack of information and explanation, repeated roadworks and unexpected delays (5 and 4 percentage points respectively). It is reasonable to assume that the implementation of the TLRS has had a positive influence on these results.

Figure 21: Customer Satisfaction Survey - reduction in frustrations from 2016/17 to 2017/18



Whilst there were a relatively high number of works taking place on the network during 2015/16, 2016/17 and 2017/18 only a very small proportion of those had TLRS charges applied. Table 26 shows that there has been no change in the proportion of TfL works avoiding a TLRS charge within TLRS segments whereas there were 2 per cent more utility works being charged compared to 2016/17. The largest increase in works being charged by sector was for electric works (10 per cent between 2015/16 and 2017/18 and 8 per cent between 2016/17 and 2017/18).

Table 26: Comparison of the Proportion of Works in TLRS Segments Avoiding the TLRS Charge

Proportion of Works in TLRS Segments Avoiding TLRS Charges					
Promoter	Apr 15 to Mar 16	Apr 16 to Mar 17	Apr 17 to Mar 18	% Change 2015/16 vs 2017/18	% Change 2016/17 vs 2017/18
TfL	**99%**	**99%**	**99%**	0%	0%
Utility	**88%**	**87%**	**85%**	-3%	-2%
Telecoms	94%	94%	93%	-1%	-1%
Water	86%	83%	87%	1%	4%
Electric	87%	85%	77%	-10%	-8%
Gas	76%	69%	76%	0%	7%

Table 27 relates to the value of TLRS charges invoiced between 1 April and 31 March in 2015/16, 2016/17 and 2017/18, regardless of whether the work took place in this period or earlier. TfL incurred a total of over £14.5 million in TLRS charges over the last 3 years. This highlights the scale of the huge investment programme taking place to transform London's roads. TfL charges have reduced by 77 per cent from 2016/17 to 2017/18 which also demonstrates that the most impactful build phase is now over. With the exception of TfL, gas and telecoms, all other sectors have had an increase in the levels of charges invoiced between 2016/17 and 2017/18. Table 27 shows that

there has been a 49 per cent decrease in the total amount of charges invoiced overall between 2016/17 and 2017/18 (down by £5.8 million).

Table 27: Comparison of Charges Invoiced April to March from Works Incurring a TLRS Charge

	2015/16		2016/17		2017/18		Change 2016/17 vs 2017/18	
	Charges Invoiced		Charges Invoiced		Charges Invoiced			
Sector	Total	%	Total	%	Total	%	Total	%
TfL	£7,615,250	64%	£5,630,500	47%	£1,318,800	22%	-£4,311,700	-77%
Water	£1,501,000	13%	£1,756,600	15%	£1,910,050	31%	£153,450	9%
Gas	£1,324,750	11%	£3,008,600	25%	£1,097,500	18%	-£1,911,100	-64%
Electric	£925,900	8%	£910,500	8%	£1,202,000	20%	£291,500	32%
Telecoms	£460,300	4%	£618,600	5%	£582,000	10%	-£36,600	-6%
Total	**£11,827,200**		**£11,924,800**		**£6,110,350**		**-£5,814,450**	**-49%**

Funding can be requested from the net proceeds of the TLRS. Table 28 shows that there was an increase in the total amount of LRGC funding which was approved from 2015/16 to 2017/18 (over £2 million), leading to over £10.7 million being approved in the last three years. Where it has been possible to estimate, from the 50 applications approved for funding over the past three years, the social cost of delay saved exceeds £84million. Over the past three years some applications have been amended following approval therefore total numbers may not be identical between monitoring reports. All information within this report is up to date as of 31 March 2018.

Table 28: Funding Requests Approved by the LRGC in 2016/17 and 2017/18

	April 2015 to March 2016	April 2016 to March 2017	April 2017 to March 2018
Total Number of Approved LRGC Funding Applications	13	19	18
Total Amount of Approved LRGC Funding	£2,059,759	£4,350,031	£4,320,634
Estimated Social Cost of Delay Saved	£30,226,403	£37,673,107	£16,272,641

In summary, although results for 2017/18 show deterioration overall most categories such as serious and severe disruption and journey times have improved compared to 2015/16. All categories have remained at similar levels when compared to 2016/17. There has been a network wide decline in performance which can be attributable to increased vehicle flows over time, the large scale investment programme on London's roads and in some places a loss of capacity.

12. Summary

There is a complexity to the TLRN which is incomparable to many other cities within the UK. In particular 2017/18 saw the continuation of the largest ever investment in London's streets which seeks to improve a large proportion of the road network within London. This has put a huge amount of pressure on the performance of the network and the results within this report reflect this. TfL has also adopted the Healthy Streets Approach which sets out how to move towards less car use and a move to more walking, cycling and the use of public transport; this in some cases will result in road capacity loss for cars and therefore will impact on road network performance.

One major issue to consider when understanding the results of this report and the influence the TLRS has had, is that the TLRS was not designed to mitigate or manage the substantial number of major works which has been seen in the last three years. Every effort has been made to try to disentangle the investment programme from the results to try to understand the more day to day or regular sets of roadworks that the TLRS helps mitigate.

For the majority of 2017/18 there were more than 10 different major works taking place each month; including over 15 during July 2017. There were over 900 work days for Crossrail and Station Upgrade works and over 800 work days for major utility works. From January to March 2018 over 10 per cent of TLRS segments were located within MWIAs.

Vehicle flows have increased in both TLRS and non-TLRS segments (2 and 5 per cent respectively). Vehicle flows in TLRS segments were found to be 17 per cent higher per lane than non-TLRS segments; this highlights the need for the TLRS due to the increasing demand over time compared to other parts of the network. TLRS has had a positive impact in reducing congestion overall but since the start of the scheme this positive impact has been eroded due to the increase in vehicles compared to the baseline in 2011. If this congestion benefit had been locked away by removing the extra demand the TLRS has enabled, the congestion benefit would have remained, and we would have likely been able to report a substantial improvement in journey times or reduction in congestion. Instead increased vehicle flows have contributed to the overall deterioration of the road network.

Since the TLRS scheme commenced a total of 58 applications for funding have been approved by the LRGC with a funding value of £12,549,359 and, where it has been possible to estimate, the social cost of delay saved through use of the funding exceeds £96 million.

Overall the analysis of the TLRS segments adopted in July 2014 has shown benefits ranging from increased works overnight, increased collaborative working and a reduction in serious and severe disruption. Customer satisfaction with aspects that the TLRS was designed to address has increased significantly indicating that TLRS is having a positive impact on London residents.

This report shows that the TLRS has resulted in numerous benefits including increasing the amount of roadworks taking place during less traffic sensitive times and the increased use of innovative traffic management and works techniques, leading to substantial savings in delay to road users. London's growing population and TfL's ongoing investment programme means the TLRS is more critical than ever in minimising the impact this extra utilisation of the road network will bring.

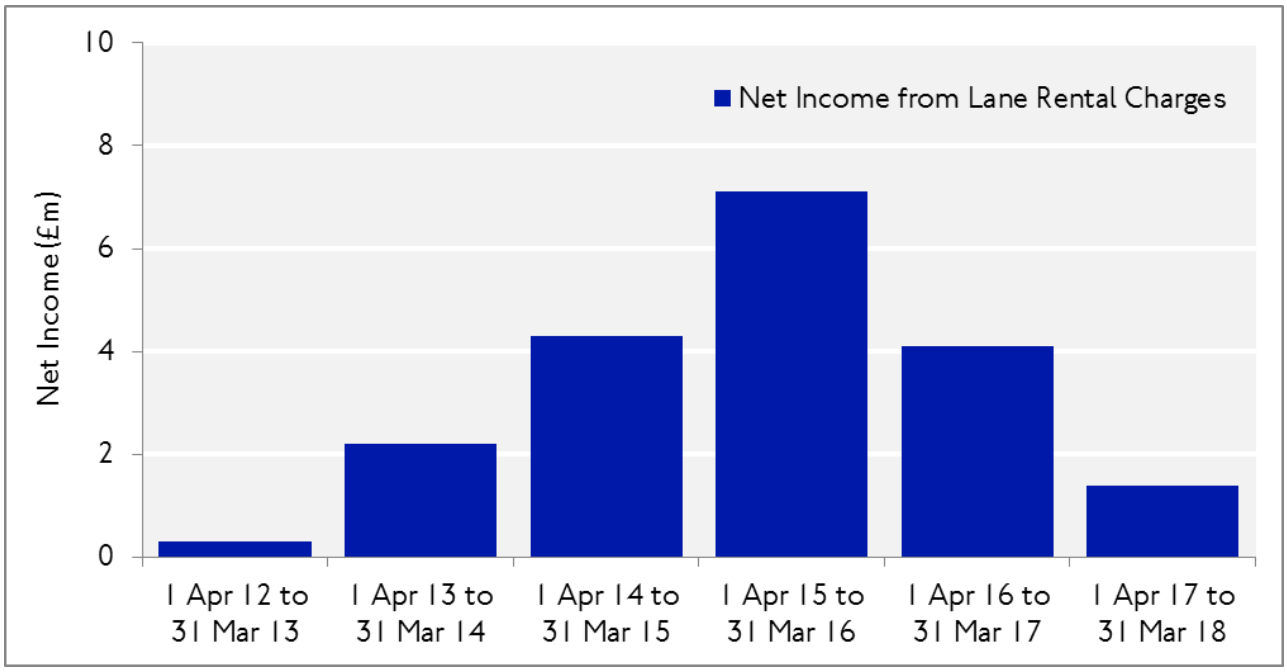
Appendix 1: Financial Summary

Table 33 displays the financial summary of the TLRS by financial year.

Table 29: Financial Summary

£m	1 Apr 12 to 31 Mar 13	1 Apr 13 to 31 Mar 14	1 Apr 14 to 31 Mar 15	1 Apr 15 to 31 Mar 16	1 Apr 16 to 31 Mar 17	1 Apr 17 to 31 Mar 18
Income	1.9	3.6	6.3	12	8.1	6.1
Scheme Development, Running Cost and Lane Rental Governance Funding Approved Bids	-1.6	-1.4	-1.9	-4.9	-4	-4.7
Net Income from Lane Rental Charges	0.3	2.2	4.3	7.1	4.1	1.4

Figure 22: Net Income from Lane Rental Charges



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