

Date: 22 November 2017

Item: Reducing Injuries Across TfL

This paper will be considered in public

1 Purpose

1.1 This paper sets out the plans for reducing total accidental injuries across TfL to meet the scorecard aim of a reduction of 17 per cent in total injuries at the end of 2017/18. This is part of the glide path to our vision of everyone home safe and healthy everyday and compliments the work being undertaken to achieve vision Zero.

2 Recommendation

2.1 The Panel is asked to note the paper and appendices.

Appendices

Appendix 1 – Surface Customer Safety Plan: Reducing customer accidental injuries by 10 per cent

Appendix 2 – London Underground Customer Safety Plan: Reducing customer accidental injuries by 17 percent

Background Papers

None

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Surface Transport Customer Safety Plan: reduce customer accidental injuries by 10% (NB: Bus Customer target: 5% reduction in taken to hospital)

I. The Challenge

Customer accidental injury targets may not be met

Surface Customer Injuries

Number of Injuries

Customer Injuries 10% Target

Draft Mayor's Transport Strategy Vision Zero targets:
 -70% reduction in Killed and Seriously Injured in or by a bus by 2022 (STATSI 9 data)
 -No-one killed in or by a bus in 2030 (STATSI9 data).

We also need to address the learning in respect of our tram and bus operations arising from the Sandilands incident and the GLA's "Driven to Distraction" Report.

While performance against the reduction of all injuries by 10% is good in our Rail and Service Operations businesses, we are not on track for achieving our goal of reducing major customer accidental injuries within Buses, (defined as those injuries requiring customers to be taken to hospital.) by 10% compared with 2016/17.

The volume of customer "major injuries" in Buses is significantly larger than the "all injury" figures in Rail and Service Operations, so the achievement of the overall Surface target hinges on performance against the Buses target. When compared with 2016/17 figures, we have only met our target for Buses in one of the first five periods of 17/18, despite lower patronage.

The "open" nature of the road network brings the additional challenge of needing to influence the behaviour of a significant number of other road users, in order to drive down injuries to customers of our services.

Where do accidents happen?

Customer Injuries in Surface 2016/17

Buses (4880) Rail (388) Service Operations (162)

DLR:
Woolwich Arsenal and Canning Town account for almost a quarter of all injuries over the last 3 years.

DLR:
Accidents at the Top 10 stations increased by 25% over the last 3 years.

London Overground:
Over a third of all LO accidents occur at the Top 10 stations

Trams:
No specific "hot-spot" locations for customer injuries.

50 routes (7%) account for 30% of injuries

Routes 55, 207, 96, 149 and 18 had 40+ injuries each

Service Operations:
 Cycle Hire 70
 Dial-A-Ride 60
 Victoria Coach Stn 30
 London River Serv 6

Location of incidents

Falls on Bus Routes

2014/15: 427, 93

2015/16: 57, 38, 29, 205, 114, 390, 285, 13, 10

2016/17: 11, 24, 183, 18, 142, 453, 73, 159, 36, 149, 220, 25, 119

2017/18: 9, 27, 141, 222, 59, 184, 297

253, 68, 197, 11, 51, 137, 185, 123, 85, 109

Reasons for injuries

Causes of Bus Customer Injuries

Loss of balance: Is the most common feature in Surface injuries: 62% of bus injuries are slips, trips, falls + a significant proportion of those associated with collisions and striking against object.

Passengers not anymore likely to fall on Hybrids (not stats significant)

Off-peak - Middle of the day

There is a marginal causal effect of delays on falls but none on collisions.

Passengers missing their step, or being unsteady on their feet accounts for 25% of falls on buses.

Change of speed of bus accounts for 36% of falls on buses.

Slips trips and falls account for:
 78% of incidents on London Overground
 79% of incidents on DLR
 60% of incidents on Trams
 50% on incidents in Service Ops

Falls leading to bus customer injuries

Rushing, Encumbered, Manual handling, Under the influence, Obstruction, Hazard braking

2. Our Approach

Reduce customer injuries and improve perception of safety on our networks by tackling high volume and high potential incidents and addressing the recommendations arising from the investigations into the Sandilands tram incident and the GLA Transport Committee's report on bus safety.

"Keep people in their seat. Keep people on their feet."

by applying the hierarchy of controls / Vision Zero approach to eliminate/reduce risk.

- Changing our infrastructure, designing out risk.
- Changing our vehicles and technology to mitigate risks; being mindful to consider the impact on all groups.
- Safe staff behaviour.
- Influencing customer and road user behaviour:
 - through direct communication,
 - via staff intervention
 - through 'nudges'

Our team

TfL Operational teams, Bus Operators x10, Rail and Tram Operators, Other Service Operators, Engineering, HSE, Marketing & Comms, Human Factors/Behaviour Change

3. Safety maturity: leadership, culture and systems

Over the past two years we have focused on developing the safety maturity of our business; developing the leadership, culture and systems to deliver and sustain reductions in incidents and injuries. This has seen our level of safety management maturity rise from 2 to 3 on the Office of Rail and Road's Risk Management Model (RM3) 5 point scale. Our next phase involves the following:

- Ambition:** Vision Zero: Everyone home safe and healthy every day – a firm commitment to no fatalities or serious injuries on our networks.
- Leadership:** the senior team leading their teams to demonstrate commitment and to deliver improvements.
- Personal accountabilitys:** Every Surface employee has personal objectives and safety behaviours that will contribute to achieving our targets.
- Strong partnerships with our Operators:** Effective partnership working, supported by robust assurance and governance.
- Focus to achieve that ambition:** targeted plans for specific injury types or causes.

Short term: influence customer behaviour and build understanding

Medium term: use understanding and partnerships to develop and deliver sustainable improvements

Long term: Infrastructure and vehicle interventions to design out/mitigate harm

4. Our Framework

The strategy sets the vision and framework. Delivery is via our operational teams and contracted service providers, who have focused plans and understand how they contribute to injury reduction.

Setting the strategy for injury reduction

Understanding issues, hot spots, root causes

Taking appropriate action – targeted plans

Monitoring of leading and lagging indicators via Surface Transport governance arrangements

Learning and Improving: understanding changing trends

Surface Transport Scorecard: RM3 safety maturity

Periodic H&S Performance: Leading and lagging indicators

Safety Performance Index (SPI): Leading and lagging indicators, Joint with Operators, Bus Operator SPI (TBC)

5.1 Our Plan (Short Term)

Deliverables: Influencing customer behaviour and building our understanding	Jul 2017	Aug 2017	Sep 2017	Oct 2017
Escalator safety at DLR stations: • Review escalator safety initiatives for London City Airport				C
Improved understanding of root causes of incidents and identification of potential solutions: • Bus safety workshop: falls on buses • Completion of bus "fatal file" research • Assess all assisted dispatch equipment positioning (mirrors, CCTV) on DLR • Review of crowd control arrangements on DLR	C	C	C	C
Manual handling at Dial-a-Ride: • Introduce physical capability test for Dial-a-Ride drivers			C	C
Communicating safety messages to customers: Rail • Customer safety poster campaign across Rail operations – eg hold the handrail • Passenger Safety roadshow at London City Airport • Trial announcements in lifts to alert mobility scooter users of proximity of platform edge • Deliver audio communication training to tram operators to support safety messaging			C	C
Communicating safety messages to customers: Buses • Customer safety poster campaign across bus operations – eg hold the handrail • Implementation of localised safety messaging at Hammersmith Bus Station • Feasibility of enhance audible safety announcements on buses "Hold tight-ding ding"			C	C
Evaluation of new bus safety technologies: • Test house procured to trial new bus technology • Publication of Intelligent Speed Assistance (ISA) trial report • Launch of Bus Safety Innovation Fund • Submission deadline for Bus Safety innovation Fund		C	C	C
Response to Sandilands incident • Changes to speed limits across tram network • Commence consultation on Driver Protection Device			C	C

5.2 Our Plan (Medium Term: to the end of the financial year)

Deliverables: use understanding and utilising partnerships to develop and deliver and sustainable improvements	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018
Development of Arriva Rail London's safety Improvement plan for London Overground by Station Safety Group					
Platform Train Interface (PTI) improvements on DLR: • Complete Rail Vehicle Accessibility compliance programme on DLR • Feasibility study into the installation of physical barriers between lifts and platform edge • Review of train dispatch arrangements • Use Rail Safety and Standards Board PTI risk assessment tool to assess all DLR platforms					
Manual handling at Dial-a-Ride: • Manual handling refresher training launched on e-zone					
Falls and collisions on buses and trams • Continue rollout of Hello London training for bus drivers • In-depth analysis of bus occupant injuries • Evaluation of suggested TfL measures to reduce falls on buses from bus safety workshop • Establish Crossing Panel to review and manage safety at tram crossings • Introduce tram driver safety communication when arriving/departing tram stop					
Improved bus design: • Roll out of Intelligent Speed Assistance commences • Speed compliance tool developed					
Addressing learning from Sandilands tram incident: • Conclude consultation on Driver Protection Device • Feasibility study of technology to prevent over-speed events on the tram network					

5.3 Our Plan (Long Term: 2018/19 on)

In the long term, maintaining and further improving customer safety depends on delivering vehicle and infrastructure improvements and developing new ways to engage with our customers to influence and change their behaviour in a way which will help keep our customers safe.

Reducing PTI risk on DLR

- Review of door warble duration
- Review technology enhancements for guideway intrusion technology and investigate use of smart/analytical CCTV
- Feasibility study on platform edge lighting/trial at one station
- Declutter platforms subject to crowding

Bus safety improvements

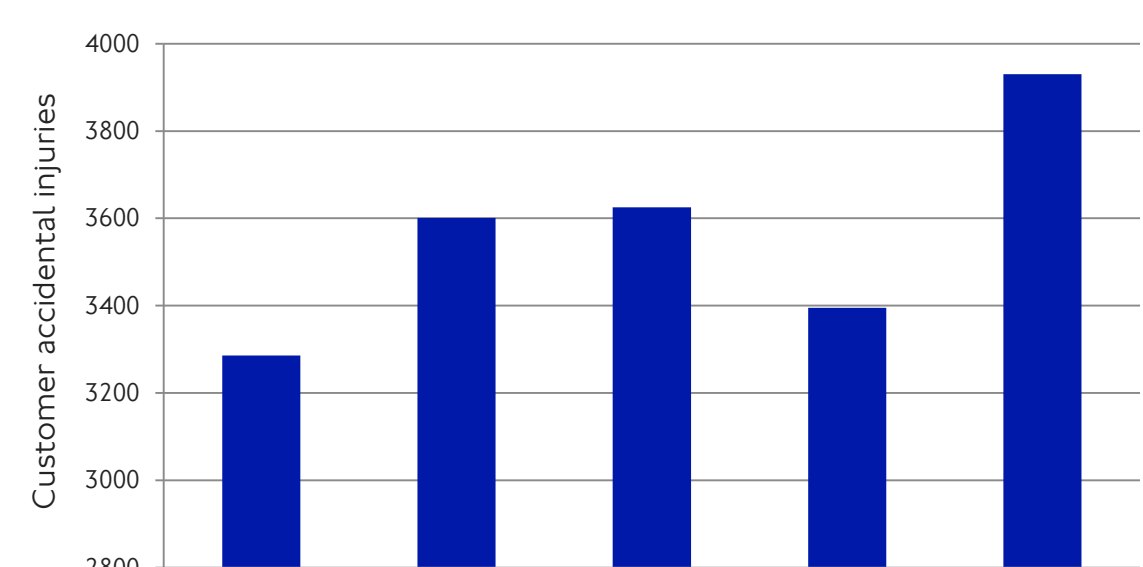
- Safe Urban Driving style training rolled out to all bus driving instructors
- Enhanced safety training for bus drivers
- Conclusion of Hello London training for bus operators
- First buses built to new Bus Safety Standard enter service
- Bus Operator Safety Performance Index incorporated into formal performance monitoring regime

Delivery of actions to address Sandilands recommendations

LU Customer Safety Plan: reduce customer accidental injuries by 17%

1. The Challenge

Customer accidental injuries increased last year



The number of customer accidental injuries increased in 2016/17 by 16% compared to the previous year, and by 8% compared to 2014/15. While there was an increase in customer numbers during these years, the rate of increase in customer accidents was significantly greater than the increase in customer journeys (customer journeys increased by 2.15% from 2015/16 to 2016/17, and by 6% from 2014/15 to 2016/17).

Customer safety initiatives to date have focused on the areas of highest risk (i.e. Platform Train Interface (PTI)) or on the location where the majority of accidents occur (escalators, stairs and PTI). Local station improvement activities were focused on their priorities. Customer safety has always been included on the LU and line scorecards, these targets were often normalised against passenger numbers and/or focused on the more serious injuries. Last year's scorecard focused on reducing customer accidents which resulted in the greatest harm. The 2017/18 London Underground scorecard focuses on all accidents and aims to reduce the total number of customer accidental injuries by 17% compared to 2016/17.

We are not on track for achieving our goal of reducing customer accidental injuries by 17% this year. The number of customer accidental injuries on the LU network at the end of P7 2017/18 is 2% lower than at this stage in 2016/17.

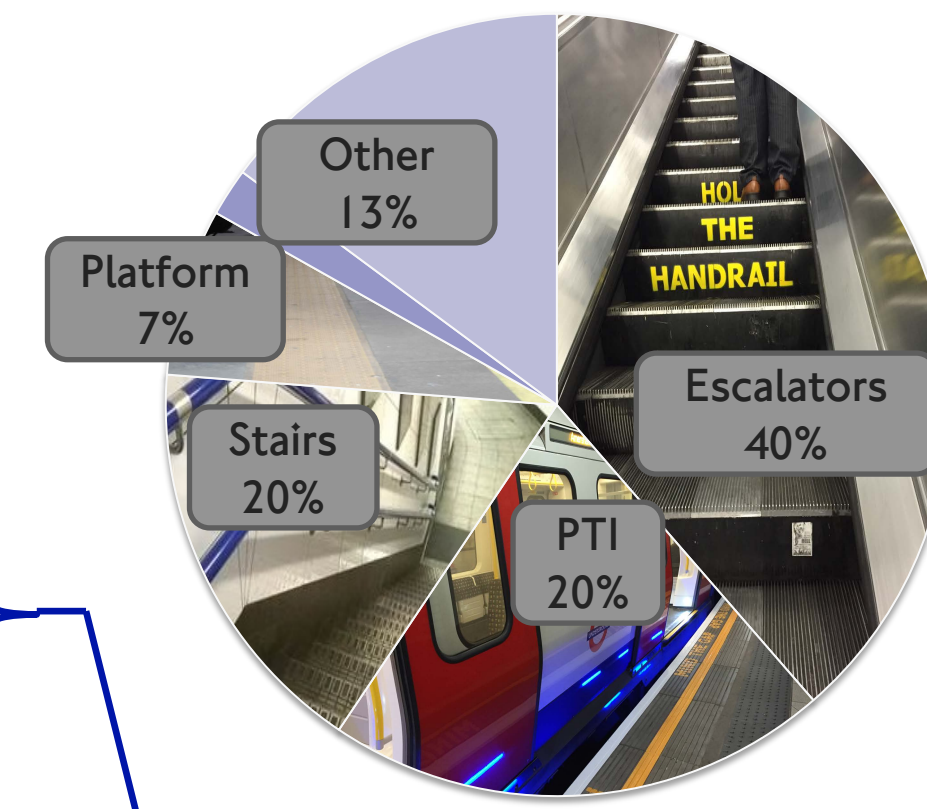
The increased focus on reducing customer accidents has also led to greater reporting of accidents.

Where do accidents happen?

40/20/20

- There is a broadly consistent trend over the past five years on where accidents happen, despite increasing passenger numbers.
- 40% of all accidents are on escalators; 22% of all customer accidents occur at the top 20 escalator stations; most accidents happen on escalators for all lines (apart from the District - PTI accidents)
- 20% of all customer accidents happen on stairs
- 20% of all customer accidents happen at the Platform Train Interface (PTI)
- 36% of all accidents happen at the top 20 stations

Top 20 stations	Number of accidents 2016/17 + 2017/18 YTD to P6
1 King's Cross St. Pancras	316
2 Waterloo	231
3 London Bridge	196
4 Bank & Monument	193
5 Oxford Circus	177
6 Baker Street	164
7 Green Park	141
8 Holborn	124
9 Euston	111
10 Liverpool Street	109
11 Victoria	99
12 Bond Street	98
13 Stratford	95
14 Tottenham Court Road	89
15 Piccadilly Circus	89
16 Seven Sisters	64
17 Knightsbridge	63
18 Shepherd's Bush	61
19 Warren Street	61
20 Wood Green	49
Total accidents on top 20	2,530
% of all accidents on Underground	44.1%



30% of all accidents happen at 10 stations

Escalators	Number of accidents	% all esc accidents	% of all accidents
1 King's Cross St. Pancras	134	7.1%	2.8%
2 Waterloo	121	6.4%	2.5%
3 London Bridge	108	5.7%	2.2%
4 Holborn	69	3.6%	1.4%
5 Green Park	58	3.1%	1.2%

Stairs	Number of accidents	% all stairs accidents	% of all accidents
1 Oxford Circus	49	5.2%	1.0%
2 Baker Street	33	3.5%	0.7%
3 King's Cross St. Pancras	28	3.0%	0.6%
4 Bond Street	19	2.0%	0.4%
4 Embankment	19	2.0%	0.4%
4 Leicester Square	19	2.0%	0.4%
4 Marble Arch	19	2.0%	0.4%
4 Piccadilly Circus	19	2.0%	0.4%
4 Waterloo	19	2.0%	0.4%

PTI	Number of accidents	% all PTI accidents	% of all accidents
1 Baker Street	36	4.9%	0.7%
2 Stratford	31	4.2%	0.6%
3 Finchley Road	28	3.8%	0.6%
4 Bank	22	3.0%	0.5%
5 Waterloo	22	3.0%	0.5%
6 Green Park	18	2.5%	0.4%

	2012/13 (%)	2013/14 (%)	2014/15 (%)	2015/16 (%)	2016/17 (%)	2017/18 YTD (%)
Escalator	40%	41%	39%	36%	38%	39%
Stairs	21%	19%	17%	19%	20%	21%
PTI	17%	18%	18%	19%	15%	17%
Platform	5%	5%	6%	5%	7%	7%
On train	5%	5%	6%	6%	6%	2%
Total	88%	88%	86%	86%	85%	85%

Data in the tables above are accidents in 2016/17 and 2017/18 up to Period 3.

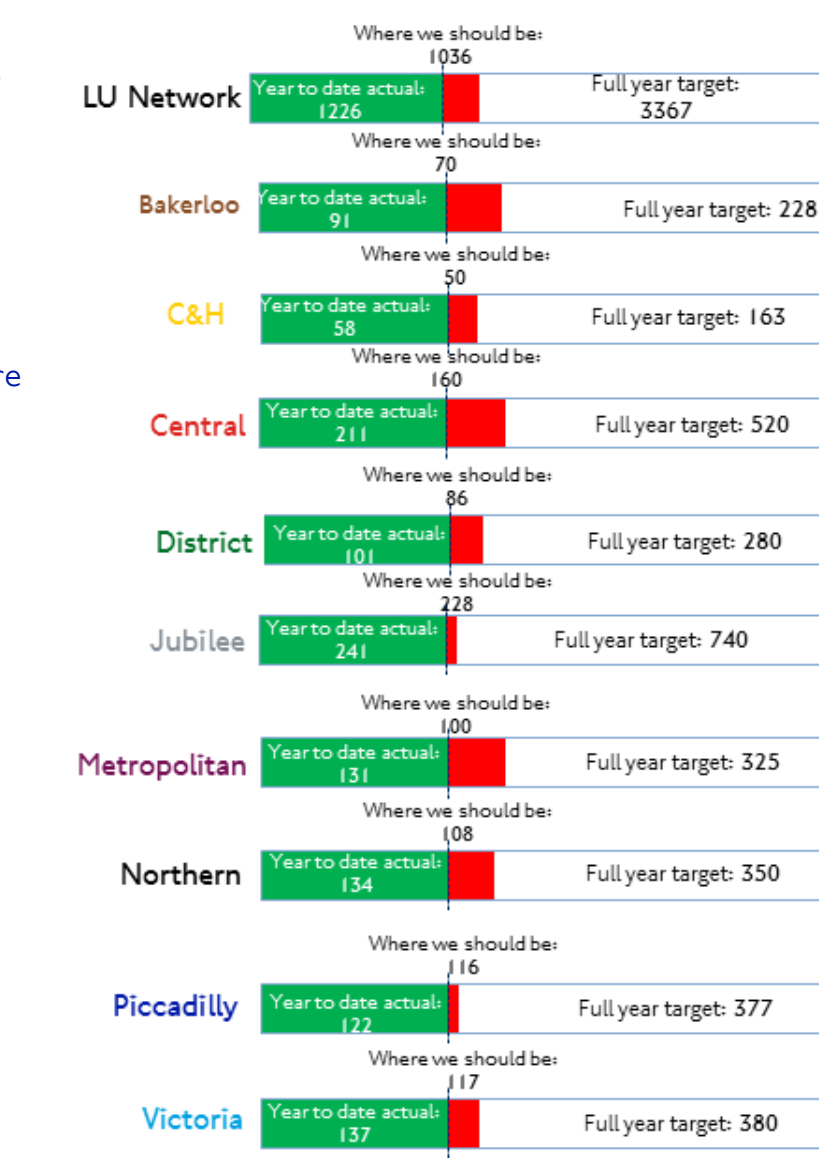
Reasons for accidents

Common factors in accidents

- There are a number of common themes in customer accidental injuries on the Underground
- Being encumbered, particularly with luggage, but also shopping bags, coffee, food, etc.
- Rushing
- Being under the influence of alcohol (particularly the more serious accidents and fatalities - add that alcohol has been an influencing factor in a significant proportion of all customer fatalities)
- Distraction - being on the phone, hand held devices, etc. This has played an increasing factor in customer accidents since the introduction of wi-fi on the Underground in 2011.

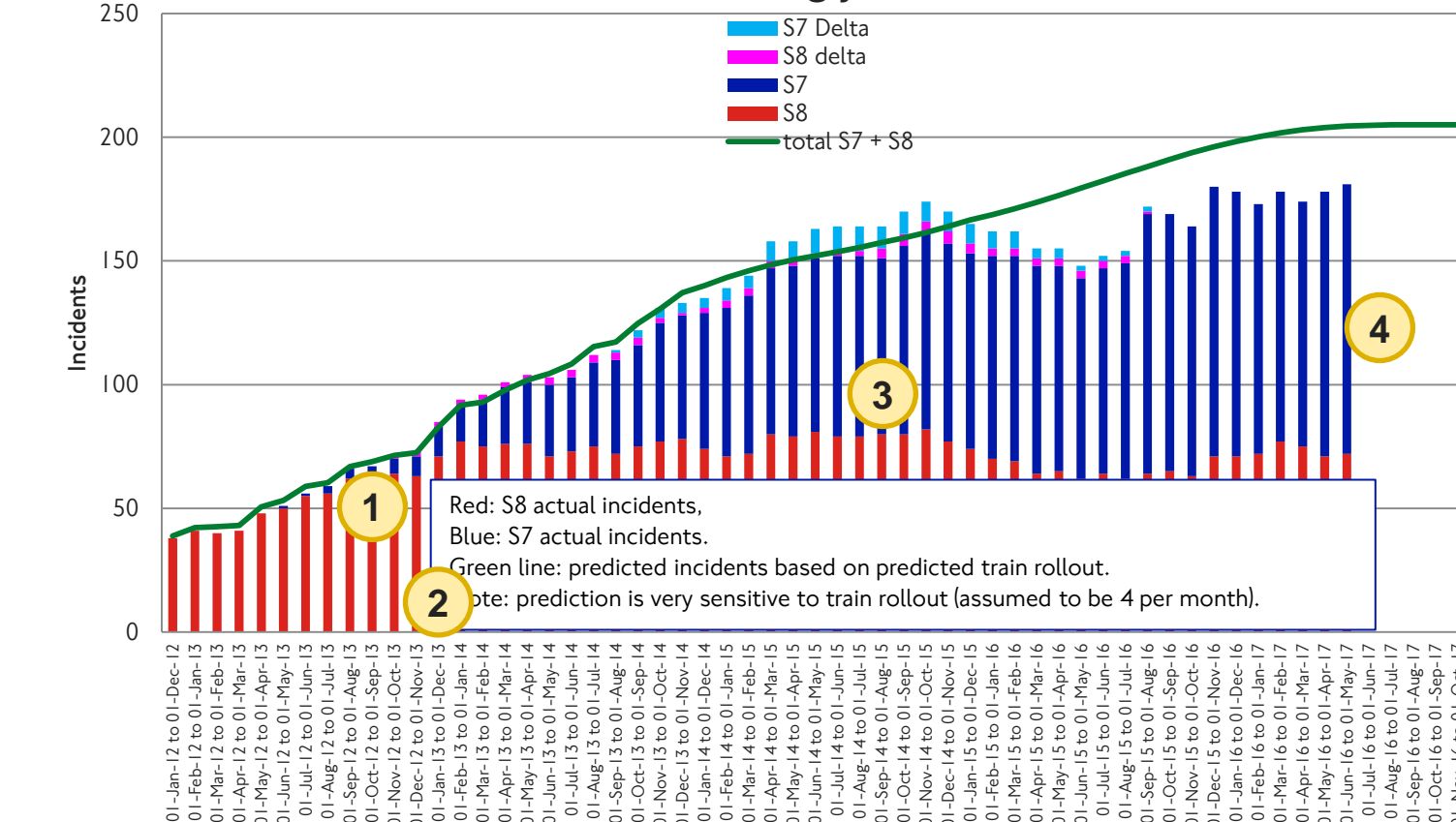
We have considered whether congestion/crowding is a contributor factor in accidents, particularly the more serious accidents, but there does not appear to be a link between congestion and accidents, including PTI accidents.

The majority of accidents happen in the off peak, and there does not appear to be a strong seasonal trend, apart from an increase in summer months.



Managing the PTI risks

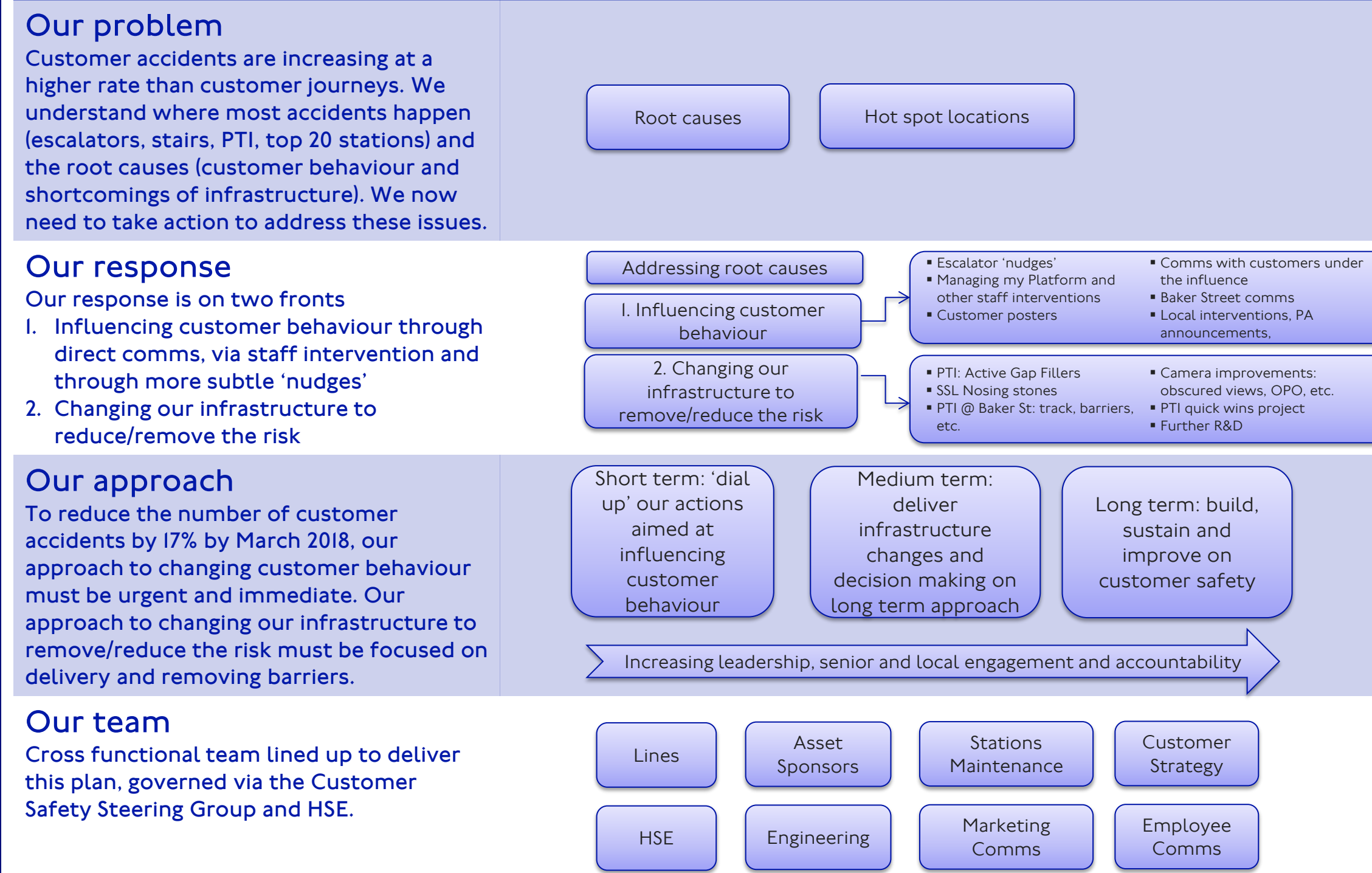
Platform Train Interface Accidents associated with the 5 Stock



PTI is LU's top customer risk as quantified by the LU Quantified Risk Assessment. We have actively encouraged increased reporting of all incidents over recent years. This has shown that approximately 48% of PTI incidents are not injured as a result of PTI incidents. We have encouraged the reporting of these as it is our highest risk area and to ensure that we are focused on the right areas.

2. Our Approach

To reduce the number of customer accidents on the Underground, we need to change our approach to this issue.



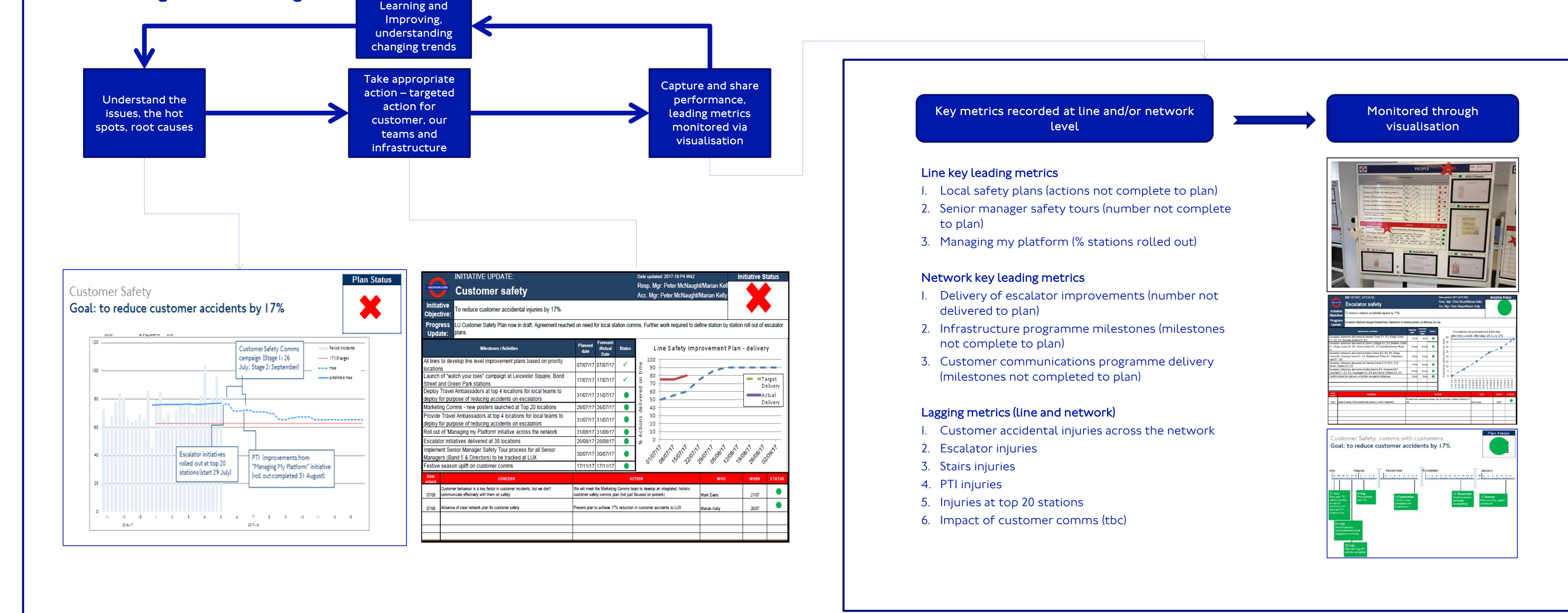
3. Leadership, accountability and local engagement

We have started by building on work done to date - reducing customer risk by focusing on the areas of highest risk (Platform Train Interface) and location where the majority of accidents happen (escalators). Our approach now involves

- Ambition:** ambition across LU to make a step change in performance.
- Urgency and focus to achieve that ambition:** a move from business as usual on customer safety to a culture where we place relentless focus on delivering short/medium and long term plans with more urgency.
- Leadership:** the senior team leading their teams to demonstrate commitment and to deliver.
- Network Plan:** An LU plan which focuses on the network wide issues.
- Local Safety Improvement Plans:** focused on the most important issues for each line and the top 20 stations
- Understanding that we have a shared goal:** individuals and teams across LU and TfL have a role to play in achieving the 17% goal.
- Accountability:** clearer accountability by the lines for customer safety on their lines, expecting and demanding the best from their colleagues across LU.

4. Our Framework

The network plan will set the direction, pace and provide the tools. Delivery will be via a range of teams across LU and TfL, all of who understand their role in contributing to the 17% target.



5.1 Our Plan (Short Term)

Deliverables	Progress				
	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017
Escalator safety initiatives: Top 20 stations Roll out of red comb. step riser messages and Passenger Positional Guides (blue footprints) on escalators at top 20 stations (38 escalators)(Lead: Chris Skuse) (start: 26 July; complete: 26 August 17)			◆		
Escalator safety initiatives: refresh of existing infrastructure/initiatives Once-around of existing escalator safety initiatives completed (Lead: Chris Skuse) (start: 26 July; complete: 26 August 17)			◆		
Keeping customers safe during holiday period Trialling impact of extra people at top 4 stations (Kings Cross, Waterloo, London Bridge, Oxford Circus) to reduce the likelihood of accidents (Lead: Peter McNaught)(start: 31 July, end: 14 Aug)			◆		
Communicating safety messages to customers New pan-TfL safety posters launched at top 20 escalator stations (hold the handrail and use the lift posters) and PTI posters at Baker Street and Farringdon initially (to be rolled out further across entire LU network)(Lead: Vicky Low/Jade Matthews/Mark Evers) (start: 21 July; ongoing)		◆			
Communicating safety messages to customers Safety posters rolled out to local teams - allowing them to communicate local safety messages to customers at their stations (Lead: Vicky Low/Jade Matthews/Mark Evers) (start: 15 September; ongoing)				◆	
Managing my Platform New approach to managing customer movement and safety on platforms rolled out to all stations with SATS (Lead: Dean Horler) (start: 26 July; complete: 31 August 17)			◆		
PTI quick wins programme complete Programme to improve the Train Operator view of the PTI, with the goal of reducing the risk of a serious PTI incident, complete (Lead: Jim Redmond) (start: 1 March; complete: 31 October)					◆
Stairs improvement Improvements to stairs completed at South Kensington station (Lead: Chris Skuse) (start: 31 July; complete: 27 October)					◆

5.2 Our Plan (Medium Term: to the end of the financial year)

Deliverables	Progress				
	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018
Communicating safety messages to customers Festive season campaign rolled out, including a specific campaign focused at customers who may travel when under the influence of alcohol (Lead: Vicky Low/Jade Matthews/Mark Evers) (start: 15 Nov, end 31 Dec)	◆				
Platform Trains Interface at Baker Street Robust, systemic solution in place for PTI at Baker Street (Lead: Chris Hobden) (start: 12 July, end 31 March)					◆
PTI nosing stones on platforms served by 5 Stock All work to adjust the nosing stones on the final 18 platform complete (Lead: Esther Olorunfemi) (start: 1 April, end: 31 December)		◆			
Communicating safety messages to customers Mind the Gap digital cross-track projections in place (Lead: Vicky Low/Jade Matthews/Mark Evers) (start: 15 January, ongoing)			◆		
Obscured view New camera system brought into use at Bank Central line (P5, P6) and Shepherd's Bush (PI) (Lead: Jim Redmond)(start: 11 June; end 30 November)	◆				
Stairs improvement Improvements to stairs completed at Paddington (December) Piccadilly, Bond Street and Oxford Circus stations (March) (Lead: Esther Shaples) (Start: 18 September, end 31 March)		◆			◆
Replacing platform cameras on Central Line Programme in place to improve the platform cameras on Central line to improve the Train Operators view of the PTI (Lead: Mike Everett) (start: May 2017, end 31 March)					◆

There are detailed project plans in place for all of the short and medium term plans.

5.3 Our Plan (Long Term: 2018/19 on)

In the long term, maintaining and further improving customer safety depends on delivering infrastructure improvements (particularly PTI) and developing new ways to engage with our customers to influence and change their behaviour in a way which will help keep our customers safe.

- Reducing Platform Train Interface risk**
 - Active Gap Filler: Assess viability of Active Gap Filler for use on LU, specifically Baker Street, proposal for decision to go to LU Leadership team by January 2018
 - Fixing obscure camera view of platform: plan and funding in place to improve Train Operator view of PTI to be completed on 94 platforms by 2 April 2021
 - Replacing platform cameras on Bakerloo line: plan and funding in place, to be completed by 31 March 2018
 - One Person Operated Track to Train Close Circuit TV transmission system replacement on Central line complete (2020)
 - One Person Operated Track to Train Close Circuit TV transmission system replacement on Jubilee line complete (2021)
 - Further research on reducing the risk at the Platform Train Interface
- Communicating safety risk/encouraging the right behaviours by customers**
As part of LU's developing/ongoing Customer Strategy, influencing our customers on safety will remain a key component of LU's Customer Safety Plan.
- Stairs improvement**
Opportunity/requirement to further improve stairs condition. As part of the Asset Resilience planning for 2018/19, funding to be agreed for highest risk stairs.