

**THE RAIL VEHICLE ACCESSIBILITY (NON-INTEROPERABLE RAIL SYSTEM)  
(LONDON UNDERGROUND) EXEMPTION (MISCELLANEOUS PROVISIONS)  
ORDER 2017**

**Explanatory Note**

**What does the Order do?**

1. The Order exempts rail vehicles of the classes known as 09 train stock (Victoria Line), S7 (District, Circle and Hammersmith and City) and S8 (Metropolitan line) from the requirements under the Rail Vehicle Accessibility (Non-Interoperable Rail System) Regulations 2010 (“the RVAR 2010”) relating to the duration of door closure audible and a visual warning signals (paragraphs 3(5)(b) and 4(2) of Schedule 1 to the RVAR 2010). The exemptions are subject to conditions (which are outlined below) and will expire at the end of 2 January 2019.

**Why has the Order been made?**

2. London Underground Limited (LUL) has been granted the exemptions to cover a period of testing of RVAR 2010 compliant audio and synchronised visual door closure warning sequences. The testing will be carried out using trains operated on the Victoria line (09TS) and during this period trains operating on the District, Circle and Hammersmith and City lines (S7 stock) and Metropolitan lines (S8 stock) will retain existing door closure warning sequences (in accordance with the first condition mentioned below in paragraphs 8 and 9). The findings of the testing will determine whether there are any impacts on accessibility, safety and service reliability of complying with the 3 second audio warning duration requirement and of ceasing to display an illuminated visual warning 3 seconds before passenger door closure

3. The RVAR 2010 requires an audible signal to be given which starts at least 3 seconds before the vehicle’s doors begin to close and that, where available, the passenger control device (which at times enables passengers to open and/or close train doors) ceases to be illuminated at least 3 seconds before the doors are closed by a member of the operator’s staff. Trains which run on the Victoria line do not have passenger operable open or close buttons fitted. Instead, Victoria Line trains provide a visual signal by an illuminated symbol located in the door frame and not as part of a door control device. S7 and S8 stock trains do have passenger operable door control devices For this reason, the Order only exempts S7 and S8 stock vehicles from complying with the 3 second visual warning requirement

4. The trains which were operated on these lines before RVAR first came in to effect in 1999 gave an audible warning prior to door closure of 1.75 seconds duration. Door control buttons fitted to these older vehicles did not incorporate visual warning devices. Had these vehicles continued in operation on these lines, they would have been able to continue operating with this duration of audible warning until 31 December 2019 (except in some circumstances if refurbishment had taken place before that date).

5. LUL began a programme of introducing new stock on the Victoria, District, Circle, Hammersmith and City and Metropolitan lines in 2009. RVAR requires new trains to be compliant with the relevant standards as soon as they are introduced. During the phasing in of this stock, LUL applied for exemptions to maintain

consistency in door closure warnings between the older and new stock, with time-limited exemptions being granted to reduce the standard for the new stock to that operated by the existing stock (1.75 seconds). Exemptions were granted in 2010 (for the S8 Metropolitan line<sup>1</sup>), in 2012 (S7 stock<sup>2</sup>), in 2008 for the Victoria Line stock<sup>3</sup> (with an extension to May 2015 in 2014<sup>4</sup>). All of these exemptions have now lapsed.

6. In the period up to May 2015, LUL did not fully assess the impact of a 3 second door closure warning on the Victoria line by carrying out testing between 2013 and 2015. It applied for an exemption to permanently fix door closure warning times at 1.75 seconds duration in May 2015, but we were not satisfied with the level of supporting evidence submitted with the application. Evidence supplied consisted of statistical analysis relating only to the potential impact of increasing the length of door closure warnings on delivering a 36 train per hour service and not to the impact on passenger safety or accessibility. LUL previously asserted that it believes that a longer door closure sequence will lead to more slips, trips and falls as passengers run to board departing trains. It did not provide evidence in support of this assertion with the application submitted in May 2015.

7. Following 18 months of discussions with the Department, DPTAC and ORR concerning the requirement for testing to be carried out to demonstrate the impact on passenger safety and accessibility, LUL secured funding for the necessary trials and applied for an exemption in November 2016, to cover a period of testing taking place between January 2017 and January 2018 on the Victoria line.

8. The application stated the aim of the period of exemption as follows:

*The trial briefly consists of monitoring platform train interface incidents in which the doors are re-cycled to understand if [complying with the 3 second closure warning requirement] has an impact on safety, service reliability and customer behaviour.*

9. This Order provides exemption from the requirement to meet the applicable 3 seconds door closure warnings during a period of testing. To carry out the test, LUL will modify the existing audio visual door closure warnings on the Victoria line only and monitor the impact of these changes. Door closure warnings on the S7 and S8 stock will remain at the reduced level during the test period. The testing will seek to establish whether complying with the 3 second audible warning requirement and ceasing to display an illuminated visual warning 3 seconds before door closure has any impact on accessibility, passenger safety or service reliability in relation to 09TS Victoria line trains. LUL will then evaluate the testing and decide whether to apply for further exemptions from the audio-visual warning requirements in relation to 09TS (audio only), S7 and S8 stock. LUL's testing methodology includes a break clause that enables testing to be halted if serious risk to passenger safety is identified. In the event that testing is halted and provided LUL continue to meet the conditions referred to below, it will still be covered by the exemption.

10. The Order also revokes provisions in the previous exemption orders referred to in paragraph 5 above which are no longer needed.

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<sup>1</sup> [http://www.legislation.gov.uk/uksi/2010/435/pdfs/uksi\\_20100435\\_en.pdf](http://www.legislation.gov.uk/uksi/2010/435/pdfs/uksi_20100435_en.pdf)

<sup>2</sup> [http://www.legislation.gov.uk/uksi/2012/105/pdfs/uksi\\_20120105\\_en.pdf](http://www.legislation.gov.uk/uksi/2012/105/pdfs/uksi_20120105_en.pdf)

<sup>3</sup> [http://www.legislation.gov.uk/uksi/2008/2969/pdfs/uksi\\_20082969\\_en.pdf](http://www.legislation.gov.uk/uksi/2008/2969/pdfs/uksi_20082969_en.pdf)

<sup>4</sup> [http://www.legislation.gov.uk/uksi/2013/3318/pdfs/uksi\\_20133318\\_en.pdf](http://www.legislation.gov.uk/uksi/2013/3318/pdfs/uksi_20133318_en.pdf)

## **Are there any conditions for the operator to meet during the period of exemption?**

11. The exemptions are subject to conditions. LUL must ensure that the 09TS, S7 and S8 trains emit a distinct sound (different to that used when their doors are opening) that commences at least 1.75 before the doors close. They must also ensure that passenger door controls on S7 and S8 trains cease to illuminate at least 1.75 seconds before the operator closes the doors. This is not needed for 09TS trains as these vehicles do not have door buttons or any other passenger activated door control panel. The 09TS does have an additional visual warning indicator mounted into the interior door column to assist passengers with hearing difficulties, but this does not form part of a passenger door control. However, LUL will be synchronising the door column warning indicator with the audio warning for the purposes of the trial.

12. LUL must also confirm to the Secretary of State by 15 September 2017 that they have commenced the trial on the 09TS stock (to test the impact on accessibility, passenger safety and service reliability of complying with the audio door warning standard and of ceasing to display a visual warning in the column next to the doors at least 3 seconds before the doors begin to close), evaluate the trial by 31 March 2018 and apply for any further exemptions from the requirements outlined above (if LUL considers this desirable as a result of the evaluation) or confirm that they will not be applying for further exemptions by 31 May 2018. The exemptions will expire at the end of 2 January 2019. This gives LUL time to make changes to secure compliance across the five lines or to apply for a further exemption, if appropriate in view of the evidence.

13. LUL has agreed to provide the Secretary of State with an interim report in relation to the testing, by 31 December 2017. However, this is not a condition included in the Order. Should any of the conditions not be satisfactorily met, the exemptions will no longer apply and LUL will therefore be required to comply with the audio and visual door closure warning requirements in paragraphs 3(5)(b) and 4(2) of Part 1 of Schedule 1 to the RVAR 2010. Failure to do so could result in the Office of Rail and Road taking enforcement action.

## **Why has the exemption been made without being laid before Parliament?**

14. Following amendment of section 183 of the Equality Act 2010 by the Deregulation Act 2015, exemptions can now be made by administrative orders, rather than by statutory instruments. The Order will, however, be notified to Parliament in the Annual Report which the Secretary of State is required to lay before Parliament by section 185 of the Equality Act.

## **Who has been consulted and what did they say?**

15. We consulted the Disabled Persons Transport Advisory Committee (DPTAC), the Office of Rail and Road and London Travelwatch on the exemption request, as well as carrying out a period of public consultation via our website.

16. DPTAC requested conditions be applied to any exemption granted to focus the research conducted on accessibility and not capacity. The basis of its request was the assertion that accessibility cannot be reduced in order to increase capacity and that the methodology of the testing originated from a desire to demonstrate a negative impact on performance generated by an additional 1.25 seconds of dwell time at each station. DPTAC also raised concerns about risk of harm from closing doors and assumptions made about passenger behaviour in response to warning signals.

17. The conditions we have applied to the exemption granted include a requirement to test impacts on accessibility but also enable LUL to test wider impacts (including impacts on the service and passenger safety) so that LUL can take an informed decision about whether to apply for any further exemptions. LUL has confirmed that accessibility, safety and service reliability will all be tested separately and that they will be closely examining the current train dispatch protocol as part of the trial.

18. If LUL applies for any further exemptions, Ministers will take all relevant information into account (including any consultation responses, the Public Sector Equality Duty and the aims of the RVAR legislation) when making a decision.

19. ORR raised concerns that the timescales which LUL had requested for consideration of the data emerging from the testing period were excessive. In response, LUL were clear about the need for the trial to generate at minimum of six months of data, in order to adequately assess the impact, which we considered to be a reasonable assertion. Nevertheless they have committed to produce an interim report on early findings emerging from the first two months of testing for the Secretary of State by the end of December 2017

20. Consultation responses can be found at Annex A.

### **Is there an impact assessment?**

21. A Regulatory Triage assessment has been produced for this Order.

### **Contact**

22. Julia Christie at the Department of Transport: Tel: 07920 504300 or e-mail: [julia.christie@dft.gsi.gov.uk](mailto:julia.christie@dft.gsi.gov.uk) can answer any queries regarding the order.

## **Annex A – Stakeholder Consultation – Phase 1**

**ORR**

Dear Julia

Thank you for the opportunity to comment on London Underground's application for an extension of the temporary exemptions from the door closure warning time requirements applicable to 09 Tube Stock and S-Stock. From the application itself and discussions with London Underground we are satisfied that extending the existing exemptions until the end of January 2018 in order for London Underground to conduct a robust trial does not give rise to risks that are not capable of being managed by London Underground. It does not affect our ability to take regulatory action where necessary in respect of the other elements of RVAR that remain applicable. We have no objections to the granting of the exemptions.

Yours sincerely

Giles Turner

Senior Engineer, Rail Vehicles

### **DPTAC (see below for detailed response)**

Hi Julia,

In summary, I think it is difficult to refuse the request but think that there need to be clear conditions attached so that the research relates to accessibility and not capacity. The RVAR is about accessibility and so the trials need to focus on that aspect. The overarching principle should be that capacity is inclusive.

Regards

Olav

## **LondonTravelWatch**

Dear Julia,

Robert is on leave at the moment. I can confirm that London TravelWatch has no objection to the granting of these exemptions.

Yours sincerely

**Tim Bellenger**

Director, Policy and Investigation

## **Stakeholder Consultation Phase 2**

Following delays to the start of the trial period, LUL requested a revision to the dates for which the exemption would be in force for. This moved the trial dates to the following:

1. Baseline established by end Aug 2017
2. Trial started by 1Sept 2017
3. Trial mid-point review at end Nov 2017
4. Trial findings review by end March 2018
5. Decision on go/no go on modification for 09TS, S7 and S8 – with permanent exemption applied for if necessary – by end of May 2018
6. If S7 and S8 need modification, this will be completed by 1 Jan 2019.

**ORR**

Julia

LUL have been prevaricating for far too long I suggest dates as below

Keith Atkinson

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1. Baseline established by end Aug 2017
2. Trial started in Sept 2017
3. Trial mid-point review at end Nov 2017
4. Trial findings review by end ~~March~~ **Jan** 2018
5. Decision on go/no go on modification for 09TS, S7 and S8 – with permanent exemption applied for if necessary – by end of ~~May~~ **MARCH** 2018
6. If S7 and S8 need modification, this will be completed by 1 Jan 2019.

## **DPTAC**

Response LUL Exemption June 2017

While I am disappointed that there will be a delay in resolving the Door Chime issue I understand the need for LU to be confident that the RVAR provision works smoothly with increased capacity. As this seems to be a firm timetable I suggest that any further temporary Exemption is on the basis of clear evidence of exceptional circumstances.

DPTAC having accepted the need for a temporary exemption to give space for this research, will support a reasonable extension to ensure that it is well-designed, well managed and thorough.

Although I understand the wish of LU to be confident that the 3 second Chime works within the framework of increased train frequency I am concerned that the research focus may drift towards capacity and away from other key issues. The key issues, in a vertical hierarchy, are Safety, Accessibility and Capacity, and one should not be compromised for another lower in that list. It would be wrong to reduce Safety for Accessibility, and equally wrong to compromise Accessibility for Capacity. The tube needs to be an inclusive transport network serving the whole of London.

Current tube door edge technology means that anything larger than a belt trapped in a closing door will prevent the train moving. Trap and drag incidents reported to RAIB seem to relate to human error connected with less sensitive technology. The research should, to ensure Safety, examine the Train Despatch Protocol. Past errors seem to relate to a failure to make a visual check after doors

lock and before traction is applied. I wonder if there is a benefit at reviewing the time between the door edge encountering an obstacle and the doors opening to release the obstruction?

In real world terms the on board and platform announcements are also part of the process of managing passenger behaviour around door closing. I notice that different trains use different Chime sounds, and wonder if there is a difference in passenger response to those differences. I am sure the choice was rational, so there is probably existing documentation.

I am sure that it is common ground that LU and DPTAC aim for an accessible tube with maximum capacity, and agree the need for expert and credible research.

## **LondonTravelwatch**

Dear Julia,

Thank you for your email on this subject. I can confirm we have no objection to this proposal.

Yours sincerely

**Tim Bellenger**

Director, Policy and Investigation

## DPTAC Comment on LU Exemption application 2016

### Introduction:

- 1) London Underground (LU) is seeking temporary Exemptions from the RVAR requirements regarding door closing chimes until the end of January 2018. The background, as noted in the Application, is to undertake research previously promised, but not undertaken, by LU on the impact of applying the RVAR times.
- 2) As the requirement for research was agreed as part of earlier applications, it is on the face of it inconsistent to now refuse the opportunity for LU to undertake that research.
- 3) I am, however, concerned that the research outlined seems tasked to produce a result supporting the current position rather than finding evidence on which a decision can be made on the proper basis. The Application states that the purpose is "...to measure the impact of a longer door closure warning..." rather than to measure if there is any real risk of harm to passengers through using the RVAR door chime time, or if there is any accessibility benefit using the current shorter time. My understanding is that the LU Policy is to default to RVAR compliance, which means accepting the RVAR door chime as correct and any variation from that must be evidence driven.

### Basic Principles:

- 4) My views are based on three simple propositions. The first is that the service, in this case the tube network, should be accessible. This is a requirement under the RVAR and Equality Act, and there is a corresponding obligation on the DFT to have due regard to accessibility as part of its Public Body Duty when making relevant decisions. Accessibility, in this context, means that tube journeys are available to disabled people in the same way as they are to others.
- 5) The second principle is that capacity, or its proxy of service frequency, must relate to an accessible service. This means that accessibility cannot be reduced to increase capacity. To do that is to promote discrimination by creating an inaccessible service by design.
- 6) The third principle is "default to compliance", which I understood to be the current LU position. This means using the RVAR as the accessibility base so that credible evidence is required to show that the 3 second delay creates risk if it is to be abandoned, and also evidence to show that a different delay is significantly safer if the plan is to shift to that different timing. This means gathering the right data and analysing it, using appropriate Statistical methods, and finding differences which have a statistical relevance and are not just differences in absolute numbers or within the margin of error. So, unless there is clear evidence that a different time is safer, or if there is no difference between the safety of those times shown by the research, the default should be the RVAR provision.

### Passenger confusion:

- 7) Previously LU have proposed that Exemptions are necessary so that the whole LU network has the same duration chime to prevent confusion among disabled passengers moving from one line to another.

- 8) If LU want to still raise this point then they have not produced any evidence to support the proposition. Different tube line stock have different chimes at present, and at a number of stations there is a close interchange with heavy rail (and the full 3 second chime) and no evidence of confusion, risk or injury. If this is still an issue it should be possible to undertake some simple qualitative research, for example on the Island Platform at Stratford, asking passengers if they are confused when crossing the platform from one service to another with a different length door chime. As this differential has been in operation for many years with no evidence of any confusion or risk I am not sure that LU will wish to press this point.

### Line Capacity:

- 9) The supporting statement with the application says that the aim of the research is to look at the impact of the 3 second chime on "...service performance and safety ...", and then refers to the importance of increasing capacity rather than being about protecting accessibility. The LU research aims to look first at "...the impact on service reliability and robustness..." ahead of safety at the train door, and then consulting rail professionals about perceived impact on dwell times and platform departure. The implication is that if RVAR compliance has an adverse impact on capacity it is unlikely to be favoured by LU even if there is no greater risk to disabled travellers.
- 10) The reasoning, set out expressly in the Application for a permanent Exemption for the whole fleet, is that disabled passengers being trapped by the door as they board trains will significantly reduce capacity on the tube. This is difficult to understand, particularly in the context of other factors which regularly reduce capacity.
- 11) I recently took a number of journeys on the Central and Northern Line during Rush Hour, and quite regularly the doors failed to close at the first attempt and the driver had to ask passengers to keep clear. There are also delays through incidents like trespass on the line, passenger illness or accident, or insufficient staff or rolling stock. For the point to be important, that an increase in door chime from 1.75 seconds to 3 seconds (about 1.25 seconds difference) or disabled travellers caught by the doors reduces capacity, then the figures need to be taken in the context of overall capacity and of other delays. I suggest a good measure is if the total daily capacity is reduced by an amount which is statistically significant, and the same statistic used on other causes of delay. Different causes of measureable capacity reduction can be placed in a table to identify relative impact. It may be possible to check individual train records as to incidents when doors failed to close first time, then plot this to the use of Disabled Persons Freedom Pass at the same place and time.

### Risk of harm at doors:

- 12) The original LU concern about chime length was the risk to disabled passengers rushing to board and being caught by the closing doors. The research was suggested, and I suggested it at a DPTAC Rail Group meeting on this topic with LU, was to examine the evidence relating to this risk. Capacity was not an issue.
- 13) The most recent Application for a permanent Exemption raised the concern that disabled persons caught by closing doors could significantly reduce line capacity. There

was no evidence to support this. I have referred above the sort of evidence needed to show capacity reduction.

- 14) It seems to me that passengers do get caught in closing doors, and current door edge technology means that there is no harm to that person. The doors stop, then open and then can be closed again. The technology means that items as thin as a belt can stop the doors. This is very safe.
- 15) I can understand a risk if a white cane user has his cane caught, but this is large enough to trigger the door safety stop. Part of the safety is the whole of the Train Despatch procedure which should include a visual check if there is a serious delay due to door issues.
- 16) Doors would be dangerous if they capture a person but do not stop the train. There is no record of any “trap and drag” incidents on the tube. If there is such an incident the cause would be a failure of the technology and not the duration of the warning door closing chime.
- 17) There is a risk that concerns are expressed in terms of harm and safety when the real reason is perceived reduction in capacity.

## Conclusion:

- 18) As LU have been granted temporary exemptions in the past for them to undertake the research, it would be difficult now to refuse this short temporary exemption for the same purpose.
- 19) The starting point should be that the RVAR chime period is correct and that any change requires clear evidence which is statistically significant. The research aim should be to consider if there is clear evidence that the shorter period of chime gives significantly better accessibility or significantly safer journeys. If not then the RVAR period prevails. The RVAR is about accessibility and not capacity, and there should be a principle that accessibility is not sacrificed to increase capacity. Any consideration of capacity should be in the context of total daily line capacity, take into account other delays and only be relevant if statistically significant not just a difference in numbers. The RVAR, and other Equality legislation, seeks to improve the accessibility of services and the number of disabled people who can use public transport. It would be wholly unappealing if LU produces research which suggests maintaining capacity at the expense of accessibility.
- 20) I think that any Exemption should include conditions regarding the research, and also that it may be helpful if the research is commissioned from an independent body like the RSSB who understand the safety issues around train doors and can give useful advice on making train despatch as safe and accessible as possible.

Olav Ernstzen

DPTAC

12 December 2016

## **LUL responses to consultation issues:**

### **Timing:**

The Current plan reflects the dates as follows:

- Trial begins **30 August 2017**
- Interim report issues to stakeholders **13 November 2017** – This will be based on two months of data – decided upon owing to timings with Christmas break
- Trial concludes **28 February 2018**
- Final report available **28 March 2018**

The date in the previous draft of the exemption (31 May 2018) to either (i) submit a further exemption, or (ii) confirm that LUL will not be submitting a further exemption application is considered appropriate. This allows 2 months for the DfT to review the final report, for constructive dialogue between the Department and London Underground and subsequent exemption application, if necessary, given the potential long term impact which the decision may have.

We fully intend to continue evaluation throughout the trial and could be in a position to review the findings formally again by the end of January however the trial would not have completed a full six months by this point. LU could make best endeavours to bring forward the decision making based upon findings from earlier in the trial, but we run the risk of not collecting sufficient data to full understand the impact on safety, accessibility and capacity. If the interim findings are conclusive, we would seek to inform the DfT with a position in advance of the trial concluding.

### **Methodology and focus of testing:**

1. DPTAC have raised again concerns that the research focus may ‘...drift towards capacity and away from other key issues’. They wish to emphasise that the three testing condition – safety, accessibility and capacity – should be considered as a hierarchy rather than equally.

Noted. London Underground’s top priority is to ensure that we run a safe railway and as such have this at the top of all changes which are made to the environment. The intent of the trial is to assess the accessibility of the network with the changes being proposed. Transport for London is committed to creating a network which is accessible whilst providing a fast and reliable service. The Mayor Of London has committed an extra £200m to bring the step free access to an additional 30 stations by 2021 and improvements to rolling stock continue to improve accessibility.

The trial findings reports will address safety, accessibility and capacity as three separate issues and will address them in that order. Data from the 36 train per hour timetable implementation is showing that the service is robust and safe and not having detrimental effect on users with disabilities, noting that some seasonal variation is expected to service performance.

2. They also raise a secondary request that train dispatch protocol be reviewed as part of the safety monitoring aspect of this research– seeking confirmation of visual checks after doors are closed and before traction is applied.

Train operators are instructed to monitor the in cab CCTV which shows the length of the platform train interface during dwell, before closing the doors, and before commanding the train to move. This forms part of the key responsibility of ensuring safe dispatch of the train. During this time, they are able to re-open doors and make PA announcements. At times when platforms are busy, staff are positioned along the platform to aid dispatch of the train.

LU is confident that the current dispatch protocol is safe and as we are making changes to this through adjusting a timing parameter, it will be closely examined as part of the trial. We are currently circulating questionnaires to drivers on the Victoria line in order to collect data on train dispatch and will repeat this during and at the end of the trial. Interviews are to be conducted with station and train staff in order to gain further insight during the trial.

As described below, the O9TS has systems in place to prevent the departure of a train until the doors are proved closed. In addition to this, if thin material has been caught between the doors such that the doors can still close, it will be detected once power is applied to the motors and automatically apply the emergency brake. All fleets are unable to depart if the doors are 'not proved closed' through the train safety circuit.

- a. They also ask whether the testing should also review whether the door response time to release after detecting a trapped object was sufficient..

The Victoria line O9TS has two systems which are utilised to detect objects obstructing doors. Throughout both processes the train operator is able to view CCTV in the cab and make PA announcements which will aid them in rectifying the situation. In either case, the driver is made aware of the location of the event and must intervene to free the object if it is not self cleared.

**The first system is Obstacle Detection.** It detects resistance on the door motors as they are closing. Should an object be detected which is larger than 11mm, the door system will partially re-open and attempt to close again automatically. Should the object not be removed, or a further object obstructs the doors, the process is repeated. If a third closure is not successful, the doors will partially re-open and then "stall" in this state at which point the driver must intervene (If the doors "stall", the driver will re-open and re-close the affected door). Throughout this process, the driver is made aware that a door is not able to close and the location. They are able to intervene and re-open doors which are not proved closed (or all doors if required) at any time whilst utilising the in cab CCTV which shows the length of the platform train interface.

**The second system is Sensitive Edge.** This system detects objects only when the doors are proven closed. This relies upon a force being applied against the door edge rubbers (such as an attempt to remove a trapped object). Any item which is pulled from the doors will apply the emergency brake and prevent the train from powering the motors if it is stationary. If the train has started to move and the sensitive edge is activated, it will immediately apply the emergency brake and cut power to the motors. The driver will then act to re-open (If the train has not moved) only the door which has had the obstruction (or, again if required, can open all doors). Because of the configuration of the door control units, this process opens both a single leaf in a double door and the adjacent single door by 10cm to release the object. Should the doors fail to close again, the Obstacle Detection system will activate as described above.

- b. However, DPTAC have regularly raised the point that the testing should be driven by the need to understand the impact on accessibility of increasing the door closure warnings to 3 seconds.

To this end, do you have any documentation on the methodology of the testing (outside of the documentation attached which sets out the safety concerns related to the change in door closure timings)? I think that this might go some way to assure DPTAC that accessibility is being as sufficiently considered as safety and capacity.

The impact on accessibility will be measured using the following two data collection methods: recorded PTI incidents and train operator interviews. The form that is completed when there is an incident on the station includes a field to describe the person who has been injured/affected. Review of the existing data shows that station staff reliably include any disabilities/mobility issues or impairments that the person declares when asked. It will therefore be possible to review the PTI incidents with respect to disabilities/impairments as well as the absolute number. The train operator observes the PTI during door closure and train dispatch. The interview will include questions about the people who are boarding or alighting after the PTI is visibly clear, their behaviour and the impact this has on their ability to close the doors. When observing the PTI, there is a visible difference between, for example, people running for the doors and a family with young children struggling to board in time. The knowledge about the types of passengers boarding/alighting, their behaviours and number will give good evidence to how behaviours are affected by the increase in the door chime length.