

# Light Rail Engineers Group Meeting Minutes

Meeting held at the Barrool Suite, Legislative Buildings, Douglas,  
Isle of Man, IM1 3PW  
Thursday 19<sup>th</sup> September 2019

**Present:**

Craig O'Brien (COB) – UKTram	Dan Hill (DH) - UKTram
Ian Middlemiss (IM) – Blackpool Trams – Chair	Gail Blythe (GB) - Siemens
Alex Barry - (AB) TfL	Lindsey Smith (LS) – British Steel
Ian Hale (IH) – London Trams	Ian Ambrose (IA) – Network Rail
Mike Crabtree (MC) – NTM Crich	Matthew Fellows (MF) – West Midlands Metro
Cathal Dwane (CD) - Siemens	Graham Thornton (GT) - Manchester Metrolink
Mike Szender (MS) – Isle of Man	Melvyn Tapper (MT) – West Midlands Metro
Neil Cundy (NC) – Nottingham Trams	Tony Marsden (TM) – Blackpool Trams
Tracy Barnett (TB) – Siemens	James Burgess (JB) – Manchester Metrolink
Martin Marshall (MM) – Lucchini Unipart Rail	Colin Kerr (CK) – Edinburgh Trams
Andy Cowie (AC) – Isle of Man Government	Shane Harris (SH) - Voestalpine
James Hammett (JH) - UKTram	

**Apologies for absence:**

Clive Pennington (CP) - Amey	Lee Joyce (LJ) – SYPTE
Mike Doughty (MD) – KeolisAmey Metrolink	Roger Anto (PJ) – KeolisAmey Docklands
Seamus Egan (SE) – Transdev	Steve Firth (SF) – Independent
Dr Ian Coleman (DrIE) – Network Rail	Lorraine George (LG) – UKTram

<b>ITEM</b>	<b>NOTE</b>	<b>ACTION</b>
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**1. WELCOME TO ISLE OF MAN**

- 1.1 Prior to the meeting, Andy Cowie from the Isle of Man provided the group with a presentation on the Snafell Railway.  
  
IM welcomed everyone to the meeting and thanked MS, AC and the Isle of Man for hosting the meeting.

**2. INTRODUCTIONS AND APOLOGIES FOR ABSENCE**

- 2.1 All attendees introduced themselves around the table and IM advised of apologies received (listed above).

### 3. REVIEW OF LAST MEETING

#### 3.1 Review of Previous Meeting Notes

The notes from the previous meeting were accepted as an accurate reflection of the meeting. The minutes were proposed by CK and seconded by MC

#### 3:2 Review of Previous Meeting Actions

Enquire with James Hammett as to whether he thinks there is a benefit to Laura Waters presenting at UK Tram executive – **Completed – Date to be agreed.**

Item 5 - Produce a working document for capturing data relating to all Rail breaks on Light Rail Systems – **Completed – Draft document produced.**

Item 5 - Submit all existing data and procedures relating to Rail Breaks & how these are currently managed – **Completed**

Item 5 - Submit all existing OLE terminology to Des Coulson – **COB to pick this up**

Item 5 - Recommend volunteers and get firm commitment for existing working groups and put forward to Craig O'Brien – **Completed**

Item 5 - Find out availability of running the "Understanding derailments" course and gather names of interested parties – **Ongoing**

#### **Actions from this meeting**

Item 4 – Circulate a list of working groups to recruit industry experts – **Action DH/UKTram**

Item 4 – Add forums to the UKTram Members Area on the website – **DH/ARHA**

Item 4 – Provide updates prior to the meeting – **UKTram/LRSSB**

Item 5 – Circulate draft Rail Break document for feedback - **COB**

### 4. UKTRAM UPDATE

#### 4.1 Update on UKTram – JH/COB

**UKTram** Geoff Inskip has now officially retired as Chairman of UKTram. George Lowder from Edinburgh Council took over as Chairman from the 1<sup>st</sup> August. George is very keen to get involved and intends on visiting all the systems to introduce himself.

Next week is the UKTram AGM meeting where the election for the 3 new Board Members will take place. Not everyone has to attend the meeting as members can send in their votes by proxy, but you can attend if you wish. Once the votes have been counted, we will send an E-shot to all members advising them as to who has been elected.

**LRSSB** The LRSSB website has now gone live. There will be a big push for industry members to take advantage of this as this is where all the safety details and documents will sit going forward. COB advised that now we have a presence at BSI meetings, we need to work on building a strong working relationship with them. CK raised that UKTram should take the action away to recruit industry experts to sit on some of their working groups.

IA informed the group that Network Rail and LRSSB have agreed a way to include Tram Train into the TPG document and to future Guidance Documents.

**Action: DH to circulate Working Group list**

**TPG** – The TPG document has now been updated and is now available on the LRSSB website under the LRSSB Portal – [www.lrssb.co.uk](http://www.lrssb.co.uk)

**Website** – Members can now subscribe to monthly E-shots on the UKTram website, where they will receive industry updates and news. If members no longer want to receive these updates they can opt out from receiving the emails.

CK suggested sending a communication to all members regarding the forums on the UKTram website and advising them that they can use these to raise topics for discussion or if they have any questions. IH requested that there be an opt in/opt out option for the forums. DH advised that the forums were previously removed due to lack of interest but stated that he will speak to the site developers and have them incorporated on to the website again.

**Action: DH to arrange for the forums to be readded to the website**

**Recruitment** – With the expanded team, the functional groups have benefited the most with having the extra resource to help support with their work streams. Julia Whittaker from The Big Solution will also be leading on training and careers for UKTram.

**Training and apprenticeships** – Julia Whittaker from the Big Solution has been working with the web developers on getting the Apprenticeship section of the members area on the website up and running. Once completed, this will detail what apprenticeships are and what courses are available. Once this section is completed, we will update all members and encourage them to promote this.

**Mainspring** look out for further dates for Excellence days which will be tailored for operators/engineers which will take place later in the year. So far this year there have been two excellence days: one in Rotherham and one in Nottingham which have both been well attended with positive feedback.

**Events** – Lorraine George will be visiting Tokyo for their annual Light Rail Conference in October.

**UKTram Summit** – The summit was held on the 10th of September. It was a well attended event with a lot of positive feedback. Steve Berry attended the event and gave the Keynote speech and announced that further funding would be provided to UKTram and to the LRSSB in the future. He also thanked the industry for their responses to the DfT consultation.

IM requested that going forward, can UKTram and LRSSB provide their updates prior to the meeting.

**Action: UKTram/LRSSB to provide updates ahead of the meeting.**

## 5. LREG – WORKING GROUPS

IM and COB advised the group that going forward there would be changes to Best Practise days and to the way the group delivers it's objectives/deliverables. Therefore it was agreed that a small number of working groups would be formed to deliver the required guidance and standards to members which would be brought to best practice.

### **Rail Breaks**

- Working Group Chair – Lee Joyce (SYPTTE)
- Group Members – John Weaver, Mike Doughty, John Hemsall and Stephen Lewis

This came out from a discussion at a meeting in Crich and a request was formally made to create a Working Group.

The first meeting was held in Sheffield at the end of July and over thirty actions came out of the meeting. A draft document has been produced and is set to be reviewed again next week. Once the draft has been reviewed, the document will be circulated to the group for feedback. Lee Joyce has agreed to Chair the meeting going forward.

**Action: COB to circulate draft document for feedback.**

### **OLE terminology & Competency**

- Working Group Chair – Craig O'Brien (UKTram Engineering Manager)
- Group Members – Des Coulson, Danny Davis and Mike Crabtree

Des Coulson originally issued a survey for all the systems to complete. COB advised that he would pick this up and form a working group.

### **Under Run Protection**

- Working Group Chair – Colin Kerr (Edinburg Tram)
- Group Members – Suggested – Dave Skirrow (formerly Manchester Metrolink) Glin Stanford (Sheffield Supertram) Marek Szwej (Nottingham Trams) Tracy Barnett (Siemens – Edinburgh)

CK chaired the first meeting. A lot of work had been done prior to the meeting. Manchester had already done a lot of work, which formed the base of the working group.

It was agreed that collision testing wouldn't be carried out due to varying networks differences, but the offer is there if people want to.

### **Apprenticeships**

**Tramway Construction Operative (TCO)** – This is the first ever Tramway construction apprenticeship available in the UK. It is intended that this will bridge the skills gap and provide apprentices with progressive opportunities.

## **Rolling Stock & Infrastructure Maintenance**

The first meeting was well attended. In order for the apprenticeship course to be recognised, it needs to tick all the boxes. For companies to draw down the funding levy, the apprenticeship course has to be Government approved.

The NTAR Training Academy have offered to host the next LREG Meeting in November.

## **6. ORR/RAIB/USAN'S**

- 6.1 ORR – No updates  
RAIB/USAN – Please find a copy of the report attached to the minutes.

## **7. SYSTEM UPDATE**

**IM reminded the group to forward their system updates to LG two weeks before the meeting so that they can be shared within the group prior to the meeting.**

### **Croydon – IH**

#### **Incidents**

Unfortunately yet another period of good learning opportunities as we have had three derailments in the last couple of months. Investigations are continuing but it appears one was due to vandalism (large piece of rubber left on rail damaged the lifeguard which then struck a check rail) and two probably due to operator error.

We also have had a RRV run away down a small slope while staff were in the bucket; movement was stopped by dropping the bucket onto the rails. A recovery plan has been agreed on this one that required us to document all local hazards across the network for use with generic method statements.

#### **Sandilands**

Works continue in implementing improvements in response to the Sandilands incident with considerable focus on the design and implementation of the Positive Prevention of Overspeed System; this has brought up a philosophical discussion on whether this is a preventative system or an intervention system; the former being considerably more complicated than intended. Progress is also being made on the improvements to the lighting within Sandilands tunnel and the provision of iTram in the fleet. Although not directly connected to Sandilands, the team is working towards a system to prevent wrongside door opening on the trams; although testing of the proposed system, is presenting challenges.

#### **Projects**

It has been a very busy period for projects.

The main focus has been our August shutdown which required the eastern half of the network to be closed for 10 days allowing us to carry out the largest volume of work we have ever attempted in a closure.

The works at Ampere Way replacing the retaining wall have also been completed with no impact on tram services.

### **Maintenance**

Analysis of the data from the maintenance staff fatigue study has indicated considerable issues in the infrastructure maintenance team. An assessment is now underway to agree the required resources for the team which has indicated significant increases will be required.

Following complaints from drivers last year, we continue to investigate ways to improve the cooling in the cabs in the CR4000 fleet; this is proving difficult due to space constraints. Two prototype units have been procured and are currently running as a trial due to end in February. Early indications are that TOL will reject the product.

Another challenge Fleet are facing at the moment is RVAR compliance. Engineering are working through the initial report and on designs to systems to enable compliance and derogations where design/modification is not available, due by Jan 2020.

We had some issues during the recent hot weather, with a couple of areas of rough ride and some issues with the Stadler traction systems. The overhaul of the Stadler saloon HVAC has also been progressing although still many customer complaints during the summer.

## **Blackpool – IM**

### **Extension**

The extension to Blackpool North Train Station has been put back for some time. The track is laid and connected to the main line but there is still an issue at the Wilko end with no real end date.

### **Maintenance**

Bombardier have commissioned Dorlec to replace 68 traction motor bearings that were damaged during delivery. The damaged have caused noise from the bearing as well as some dropping all their oil. This work has now been completed and the trams are much quieter.

We continue to have a fault with the SCADA system as it does not automatically change over from fibre connection to GMS when there is a fault. Austin Lenika are working on a solution.

On 27<sup>th</sup> August 2019 we had a collision with cyclist who ended up under the tram. The cyclist was a 14 year old boy who suffered serious injuries. This was the first time the fire brigade had to lift a flexity tram to aid recovery of a casualty. Thankfully all the past training in the depot was successful and the child was released quickly. No issues were found with the tram.

We have a number of Knorr Bremse brake calliper that have seized. Knorr Bremse have quoted a 53 week turnaround for replacement and a similar timescale for repair with replacement being cheaper. We have had a meeting with Lucchini Unipart Rail Ltd who shown an interest in repairing the callipers. We will be sending them a faulty calliper to see if they can assist.

### **Lost Mileage**

Period 3 (26/05/19 – 22/06/19) saw a loss of 918km which equates to 0.98% of overall journeys. The main problems were driver shortages.

## **Midland Metro – MT**

Please find attached.

## **Crich – MC**

The Tramway re-opened on Saturday 16th March 2019 and will run every day until Sunday 3rd November 2019

This year the The Tramway Museum Society is celebrating that it is 60 years since the Society acquired the site at Crich and commenced to build The National Tramway Museum.

### **Catering Facilities:**

The project to build a new hospitality/catering centre has received planning permission.  
Engineering staff recruitment:

Recruitment of a mechanical technician for rolling stock work in the Museum's Workshop is on going

### **Rolling stock developments:**

London Transport 1622 is undergoing a periodic 'lift and inspection' pre planned maintenance event. The traction motors have been found to be in a far poorer condition that was orinally anticipated requiring a new armature shaft, commutator re-build, 8 field coils and 6 interpole coils requiring rewind.

The part life restoration of Newcastle 102 is proceeding well with the new tyres having been delivered and the motor overhaul progressing well.

The major restoration project on London County Council No 1 is on going

### **PW Developments:**

The relaying of the Museum line's northern terminus has been completed in so far as one side of the newly laid loop can now used for tramcars to reverse, currently passengers are not permitted to alight at this location.

### **Traverser overhaul:**

The traverser that is used to enable tramcars to access the Exhibition Hall and the depot roads used to store non-operational tramcars has been returned from contractor , installed, commissioned and operators trained to use the new 'wifi' hand held pendant control system..

## **Manchester Metrolink – GT**

Trafford Park Line – Work continues on the latest extension to the network with most of the line approaching substantial completion. Overhead line and TMS work at Pomona junction was completed over the weekend of 7<sup>th</sup> and 8<sup>th</sup> of September. Testing and commissioning of the line both static and dynamic starts in December.

Crumpsall – The stop development works are complete with the addition of a fully signalled bay platform which will form the northern terminus for the Trafford Park Line. Dynamic testing is due to take place on the weekend of 19<sup>th</sup> and 20<sup>th</sup> October. The stop has benefited from a facelift wth new shelters at grade crossings and improved access etc.

Metrolink Capacity Improvement Program (MCIP) this consists of Depot expansion works at both depots, Network (750V) power supply improvements including two new sub stations, two enhanced and one new park and ride car parks.

MCIP Trams – 27 new M5000 Flexity Swift vehicles for network capacity. The vehicles are in production and it is expected the first will arrive in March 2020.

Vehicle availability has been stretched due to three major issues:

The first being the identification of fractures in the roof frame “rafts” which carry the roof mounted equipment this has not been confined to one car and has seen both A and B ends affected. The fracturing is subject to investigation by both KAM’s systems engineers and Bombardier. The issue was compounded by a long lead time for the replacement items which on being received failed incoming goods inspections. A repair process is now in place with a number of vehicles to be addressed.

The second being loss of axle end earth return conductivity. A number of vehicles (4) were identified with loss of earth return connections. This has been a long running problem for the fleet however this escalated to the point where it is suspected bearing damage may have occurred to these vehicles. The issue has previously been investigated as a purely mechanical issue with various fixes attempted. However the issue may be due to the earth return units being “insulated” by the mounting compound being used. This is now subject to further research.

The third and possibly most challenging issue has been road traffic collisions (RTC). At times up to six vehicles have been “stopped” with varying degrees of damage. Severity is becoming an issue with two vehicles having had severe damage to doorway areas and two vehicle with severe damage to cabs. This has led to the single vehicle workshop at Queens Road (14 road) being upgraded to a damage repair facility. This coupled with a long term agreement with a selected contractor will see a greatly increased response to these incidents.

Remaining T68 vehicles – A plan is now in place which should see the four remaining T68 vehicles leave storage at Trafford Depot for varied destinations by the end of November.

Sandilands – KAM and TfGM are looking into solutions to recommendations 3,4,6,7 and 8 would like to discuss these as agenda items at the forthcoming meeting.

## **Network Rail – IA**

### **Tram Train**

Project shortlisted for 2 light rail awards.

Performance remains good.

Issues with NR located VIS loops investigated.

Replacement of rectifier in Ickles substation has almost eliminated system trips.

### **Other**

NR Exec has approved the setting up of a dedicated light rail/tram train support team and posts are being evaluated.

Continue host visits to see Sheffield system in conjunction with SYSL and SYPTE.

Presented more lessons learned at Engineering Excellence Day in Rotherham.

Continuing to work with promoters on new schemes.

Met with LRSSB to develop standards for light/heavy rail interfaces.

## **Isle of Man – MS**



### **Douglas Bay Horse Tram**

Passenger traffic has not yet commenced on the DBHT, but traffic is expected over the summer period, over a limited length of re-laid line.

Construction of the temporary Tram Shed to house the running fleet of the Douglas Bay Horse Tram is proceeding.

The temp Shed will have storage space for the running fleet, during the season.

Track relaying is running a little behind expectations, and is accelerating as the weather has improved.

We are soon to return tram 21 to serviceable conditions and have commenced the rebuild of tram 28.

### **Manx Electric Railway**

The season start has been a busy time and is working well, with improved reliability, but problems persist with component supply and the lack of available spares is constraining maintenance and rebuild programmes.

Particular problems have been experienced with Brill bogies and much effort is being expended to overhaul and refurbish these bogies. A fleet-wide overhaul programme is being developed. We have been working with Alstom in searching their records and systems for all details relating to a range of equipment formerly supplied by GEC, AEI, Met-Vic and BTH. In one instance 85% of the manufacturing information is extant.

We are looking to agree a manufacturing licence with Alstom for this equipment. The last set of tramway equipment supplied by GEC was in the mid-1980s to Calcutta Trams, hence certain materials, such as asbestos, cadmium plating and the like were replaced and the documents and drawings were updated and scanned.

Within this agreement, we are also considering some of the designs that were previously deposited with the National Railway Museum at York, where we have had some retired colleagues collating the archives.

### **Snaefell Mountain Railway**

The SMR has been the focus of most of our engineering efforts over the winter period. The season start has been a particularly busy time with limited stock available. The winter work has involved substantial heavy maintenance, but with limited stock, any equipment failure is disproportionate in its impact. We have had a number of minor reliability issues, but the situation is now improving.

Over the winter we have designed and installed electro-magnetic track brakes onto 3 of the 4 trams we have. The trams now have four independent braking systems. These trams have been released to traffic, following testing and approval and operate. Material for the 4th tram is en-route from Germany.

Following the incidents we experienced, as a result of the work performed last winter (to raise a Prohibition Notice) coupled with work done this year, the Improvement Notice has been lifted and the railway is fully operational.

We are designing a new steel framework for the rebuild of trams 6 and 3 and are looking to re-equip the traction system. The initial work looking to purchasing of new trams for future traffic growth continues.

### **Steam Railway**

The Steam Railway has had a successful season start and is in a better position than previous years, with improved loco availability, but there is still much work to be done to achieve a sound footing.

The rebuild of loco 11 chassis at Alan Keef continues; with new and repaired boilers coming available from Severn Valley Railway Engineering.

The loco DE21 has been tested and is now on engineering duties pending further re-commissioning.

The rebuild of the all-wood body-work of F15 coach on Island is progressing well and return to the railways is expected with a month, for completion with fitting out and painting within our own workshops.

The rebuild of the 'pairs' F62 coach in the UK is progressing, but this is a full rebuild, including bogie refurbishment and return to the railways expected later summer, for testing and commissioning before returning to traffic.

The supply of fittings and fixtures such as door furniture is a significant concern.

## **Edinburgh – CK**

### **Driver Innovation Safety Challenge**

The DISC project has now issued its European Single Procurement Document (ESPD) and we have received over 30 registered notes of interest in the project.

We will carry out the first sift of these applications towards the end of September with a view to reducing this to 5 candidates.

We have established a single supply framework of interested stakeholders and are now working with UKTram to call a stakeholder working group to establish communications going forward and to realise the potential use of all resources and simulator equipment.

### **Saughton Pedestrian Crossing Incident**

We have now replaced the horn system on all our trams and have tested them to be in compliance with the emerging BS EN 15153-4 and LRSSB Audible Warning Device Test Plan.

We have reviewed all our off-street pedestrian crossings in line with LRSSB Non-Motorised User Crossing (NMUC) guidance. We have identified a number of measures to improve the ability of NMUC users to recognise that there is a crossing there and these will be rolled out over the next few months.

### **Trams to Newhaven**

The Early Contractor Involvement phase is nearing completion with full clarification of requirements being addressed and design basis statements being delivered.

The early Operator involvement is proving to be beneficial.

### **Renewals**

Edinburgh Trams requires a line of sight micro-wave link between our Depot and Edinburgh Castle to serve our tram radio system in the city areas. It operates in the 1.4GHz band and we have just been informed by OfCom that the frequency band is being allocated to 5G telecommunications from 2022 and that we will lose our license. We must now look into early lifecycle replacement for our radio system.

We are in the process of reviewing lifecycle renewals for the customer facing systems on the trams including CCTV, Passenger Information, Passenger Announcements and Public Address.

We are also considering necessary obsolescence upgrades for the OCC equipment.

## **Nottingham**

### **Track**

A cracked transition rail required replacement (18 hr possession); the cause was incorrect positioning (gauge too wide) during repairs c.2010.

A lightning strike on 25th April caused considerable damage to equipment controllers

### **Rollingstock**

Citadis – a full fleet replacement of suspension springs is underway after it was found that the springs were breaking after less than 4 years in service. The break is in the first coil and the springs remain contained within the spring cups. Motor bogie springs are more affected than trailer bogies.

### **General**

Nottingham celebrated 15 years since opening in 2004.

## **BEST PRACTISE**

Instead of the usual BP session, the group discussed what the systems were doing in regards to the RAIB Recommendations in relation to Sandilands.

## **ANY OTHER BUSINESS**

COB thanked everyone who has shared resources and assisted with the working groups, the functional group and sharing best practice.

### **FUTURE MEETING DATES**

**21<sup>st</sup> and 22<sup>nd</sup> November – NRTA, Northampton**

**8.**

**9.**