



Business Plan 2020/21



Light Rail Safety and Standards Board
(LRSSB)

Business Plan 2020/21

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Section 1 Introduction

The Light Rail Safety Standards Board (LRSSB) has successfully completed its first year of Operation (2019/20).

LRSSB was formed by the Industry and UKTram in 2019, under the guidance of the Department for Transport (DfT), the Office of Rail and Road (ORR). This was following the Rail Accident Investigation Branch (RAIB) report into the Croydon Tram Accident at Sandilands (9th November 2016).

LRSSB has established a core base of Light Rail Standards and Guidance documentation and has determined how these are developed, researched, monitored, implemented and updated.

LRSSB has also established an industry risk model and a standards database to facilitate an improved system of risk profiling, precursor identification and risk mitigation. This work also enables a more structured industry approach to closing out recommendations from the Sandilands RAIB Report.

To further enhance the safety of the light rail industry. This document lays out the planned workstreams and areas of focus; including further standards and guidance development and enhanced risk management. Also how information collation from members, stakeholders and the industry, in the UK and internationally, will be analysed and utilised to further improve the long term safety of the industry for 2020/21.

The long term future of the LRSSB is dependent on funding both from its members and DfT. The current funding arrangement was one of joint funding by the members and DfT, which has resulted in significant cost to the members.

The initial funding from DfT (equivalent to one year's funding) was a third of the funding requested and as yet there is no further commitment given by DfT. This situation was further exacerbated by the General Election which was held on the 12th December 2019.

As a result, funding discussions will require re-energising during 2020, consequently some workstreams (which are dependent on funding) can only progress on completion of discussions with the DfT.

Member contributions will be reviewed on conclusion of those discussions.

Section 2 Chief Executive Officer's Review

The work of the LRSSB is intended to add value to work which is already carried out by its members and to also provide standards, guidance and assistance to members in areas where an industry view is required, especially in matters where that view may require technical focus best delivered on behalf of all networks.

Throughout 2019/20 LRSSB have worked alongside members to establish the processes required to successfully establish standards, update guidance and identify areas where LRSSB can add real value to members in forming an industry view, for example in the usability and acceptability of speed control and driver vigilance devices (DVD).

During this time LRSSB have also been able to offer guidance in respect to closing out recommendations from the Sandilands RAIB Report and also enabled the use of already published standards and guidance documentation, to assure RAIB and ORR of the work being carried out on the recommendations from other investigations that have industry wide implications.

The development of the Risk Model and Tramway Accident and Incident Reporting (TAIR) database for industry wide application has also been a very high priority within LRSSB on behalf of its members. The industry wide acceptance and usage of the two platforms, will improve safety across the industry by allowing greater clarity of common risks, better visibility of precursors to potential issues and much improved control of hazardous events in everyday operations. This, combined with the data received from other systems overseas, will give greater confidence to all duty holders that the likelihood of a hazardous event is being minimised.

Throughout the coming 2 years the Risk Model and TAIR systems will be further refined to make usage simpler and eradicate much of the need for double entry. This work will inevitably require some technical intervention and will require funding, hence the need to prioritise improvements based on value to end users. This process will require detailed involvement from duty holders to set the priorities for maximum return.

During the first quarter of 2020 LRSSB will publish our first annual report of outputs from the risk model, which will enable initial benefits to be realised and future scope of the reports to be decided. This time will also give members greater clarity of emerging risks, the risk profile achieved through greater focus and the future safety management plans and SMS changes this helps to drive.

All of this is, of course, dependent on a will to maximise the benefits of the systems and the opportunity being released to embed this into business as usual. LRSSB appreciate this is sometimes difficult with conflicting time pressures but LRSSB urge all duty holders to prioritise this work as much as possible.

The TAIR database is also subject to continued focus, with it's potential range of usage being expanded on a regular basis. The interface between TAIR and the Risk Model is a key focus to better integrate their operability, as is the development of additional modules for member benefit,



especially as the industry has suffered in the past from a lack of platforms for reporting and sharing data on risk, hazardous events and potential issues.

The TAIR database has vast potential which LRSSB will continue to develop through the next 2 years with support from our duty holders. The potential within TAIR can be unlocked but this has to be done with the support of members and with a conscious desire to make interaction with the system a part of business as usual but in an unobtrusive manner.

LRSSB have contributed to the development of the Risk Management Maturity Model (RM3) in conjunction with the team at ORR and the module is now much more 'light rail friendly' in its application. LRSSB believe that this tool can become very useful in all duty holders improve their interaction and balance, in terms of applied governance, to ensure safety management in the industry becomes more proactive and professional.

Section 3 Scope of LRSSB

LRSSB is responsible for providing expert support to the light rail industry, driving sustainable improvements in the safety and efficiency of the tramways and light rail systems across the British Isles. The primary functions of the LRSSB are:

- Industry Risk Analysis and trends.
- Industry Accident & Incident report data collation and analysis.
- Informing industry decisions and sharing best practice.
- Codification and development of Standards and Guidance.
- Relationship building with other light rail jurisdictions around the world, including benchmarking.
- Light Rail Safety Innovation and Research.
- Collaboration with other industry safety bodies.
- Reviewing industry safety, dissemination of information and 'lessons learned'.
- Oversight of Independent Competent Persons and accreditation.

Further detail on these key functions is set out below:

Industry Risk Model - LRSSB manage, maintain and develop the implemented industry wide risk model adopted by all relevant LRT systems in the UK which run on street. The risk model is supported and enhanced by the TAIR database system and the adoption of RM3.

Incident and Accident Reporting – LRSSB manage, maintain and develop the TAIR database developed by UKTram for the industry, to capture information of industry accidents and incidents. This information will be reviewed to ensure dissemination within the industry and lead to determining the target areas of priority for Standard development, Best Practice and areas of improvement.

Benchmarking - Through the Risk Model and TAIR database the LRSSB will develop system benchmarking processes for comparison with UK and international systems for mutual benefit both within UK and overseas. LRSSB will seek input and scrutiny of data internationally to improve the understanding of safety issues and subsequent development of standards and guidance for member benefit.

Safety Reporting - The LRSSB will develop a standardised safety reporting system (driven by the Risk Model and TAIR database) to be applicable to all tramways to provide national oversight and understanding of current risk profiles and changes within the profile over time.

Annual reports will be published which will highlight trends and actions taken by members as a result of the use of the models and their outputs, with resultant impact on risk profile and safety overall.

Peer Review – LRSSB will encourage and facilitate peer review between systems with shared and agreed outcomes to benefit all members. Although this may raise concerns regarding commercial sensitivity amongst private sector operators. LRSSB will encourage peer review in specific areas, highlighted as improvement areas as a result of work arising through the use of TAIR and RM3. The peer review process will facilitate the spread of best practice and improve safety overall across the industry. This will be an ongoing process and will not necessarily show significant improvement in the short term but will be able to demonstrate longer term benefit in annual reports.

Standards and Guidance - The LRSSB will be the custodian for Light Rail standards and guidance for the UK. To include, as a minimum, standards for operations, engineering, highways interface management, environment quality and health and safety. Standards and guidance documents will be written, approved and codified using an agreed process to ensure the documents capture the intent and spirit of subject matter.

As a standards body the LRSSB should not be involved in the assessment or approval of derogations from standards or guidance. Such decisions should remain the responsibility of duty holders as provided for in their Safety Management Systems. All derogations however, should be reported to LRSSB and recorded on a database to inform the future review and ongoing maintenance of the standards and guidance documentation.

Interface with Government Bodies - LRSSB will continue to develop and oversee mutually beneficial relationships with relevant government bodies/departments to including DfT and the ORR. LRSSB will also continue to lobby for a strengthened presence in DfT of the light rail industry as an important and growing sector within the department.

Interface with International Bodies - the LRSSB will develop and oversee mutually beneficial relationships with relevant international bodies to including VDV, UITP, Le Service Technique des Remontées Mécaniques et des Transports Guidés (STRMTG), Transport Infrastructure Ireland (TII), APTA, CUTA and EBA. Through regular dialogue and attendance at industry functions these relationships will be strengthened for the benefit of all international duty holders by improving access to information and sharing of data.

Safety Research and Innovation - The LRSSB will initiate and commission research relevant to its members for the benefit of member organisations with potential safety benefit in the industry. LRSSB will also monitor relevant international research programmes to ensure the benefit of any lessons learned. Human factors research and spread of best practice will be a high priority.

With its sister company UKTram, LRSSB will continue to research examples from light rail construction and operation (including the continuation of the low-cost light rail work stream) from a Safety perspective, with a view to reducing initial set up cost and whole life cost with emphasis upon efficiency and environmental impact. The results of this research will also help support business cases for future LRT schemes. The inevitable cross over of relevant subject matter with UKTram research and development and work streams means a close working relationship will enable findings, to be shared within both organisations for the benefit of the members.

Training and Competency Management - LRSSB will oversee the development of training packages, in relation to safety and standards with an emphasis on Independent and Competent Person (ICP) accreditation, initially, and the spread of best practice in training methods developed either in the UK or sourced from partner organisations in systems worldwide. LRSSB will work with RAIB and ORR to develop sector specific competencies. LRSSB will develop training modules with the aid of duty holders to improve the understanding and skills of industry professionals.

LRSSB will oversee the development of a suite of competency frameworks for all grades of operational staff but with emphasis on drivers, control staff and maintenance staff as a minimum but with potential for development for other grades.

LRSSB will formalise the certification of ICP's within the Light Rail sector. This will be formalised with a training syllabus and accreditation/certification granted via competency based assessment and monitoring.

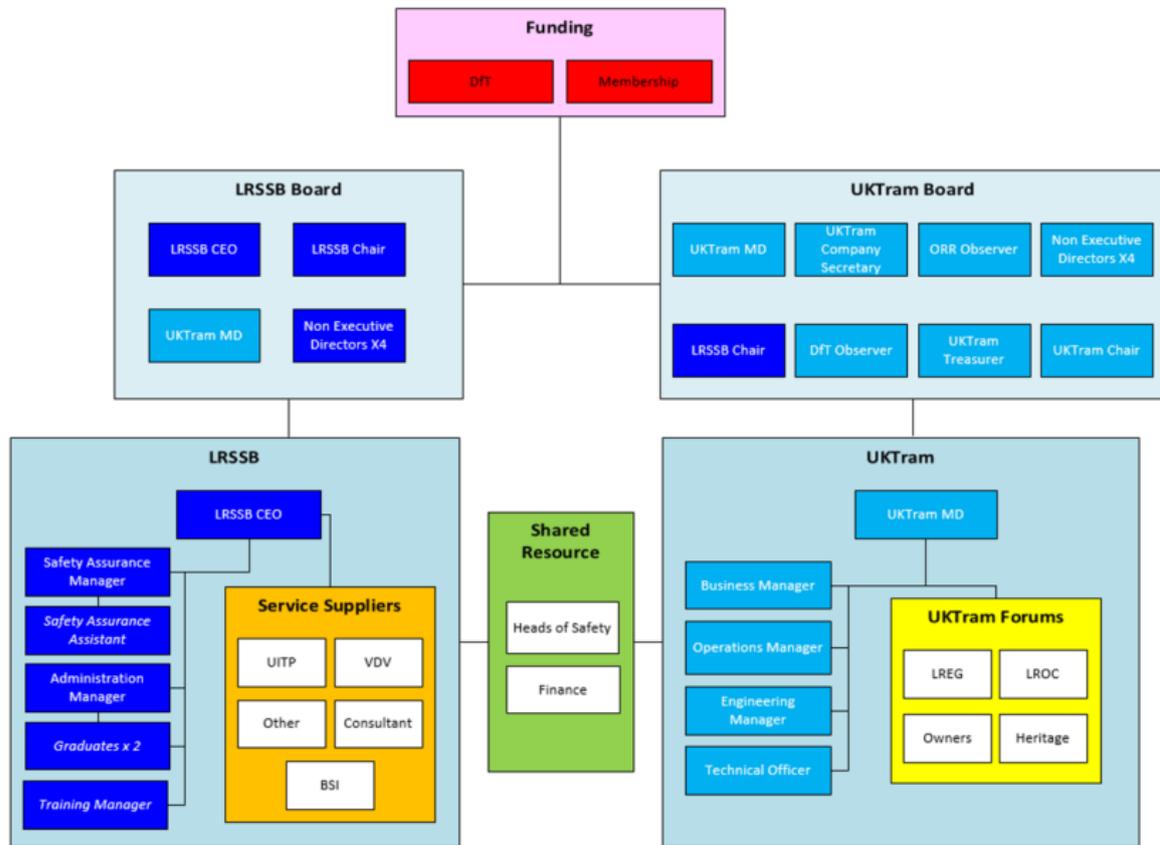
The work to develop and deliver training modules will be undertaken in co-operation with training specialists to ensure quality and delivery is of the highest standards.

Section 4 LRSSB Structure

The operation of LRSSB is overseen by the LRSSB Board which currently consists of the CEO, Chair, UKTram Manager Director, 4 Non-Executive Directors (consisting of representation from both Operators and Duty Holders) and an ORR Observer.

The current structure of LRSSB consists of the following; Chief Executive Officer, an Administration Manager and the Safety and Assurance Manager. Furthermore LRSSB are currently in the process of recruiting two Graduate Trainees and a Training Manager.

LRSSB will continue to actively work alongside their sister company UKTram. The current structure of both LRSSB and UKTram are shown below.



Section 5 Values and Behaviours

Collaboration

- Actively work together with UKTram for the benefit of LRSSB's members and stakeholders.
- Encourage teamwork within the UKTram & LRSSB subgroups through example.
- Support and challenge each other to ensure we deliver our objectives in a collaborative manner.
- Collectively support the work of UKTram's Functional Groups (LROC, LREG, OAG, HTC etc.).
- Actively Engage with Stakeholders and Statutory bodies (ORR, RAIB, DfT etc.).
- Support engage with and participate in European and International forums.

Integrity

- Be open and honest with all our stakeholders.
- Deliver what we promise either individually or as an organisation.
- Ensure that all monies are spent appropriately and are fully accounted for.

Innovation

- Encourage and support creative ideas where ever they may originate from.
- Be prepared to be open to new ideas.
- Be challenging of each other to ensure we are not closing our minds to different and sometimes untested ideas.

Proactive

- Be prepared to actively participate in ensuring the success of LRSSB as a members organisation.
- Be demanding of ourselves and our people in delivering our objectives.
- Be a champion of the LRSSB organisation and its associated companies.

Section 6 LRSSB Achievements 2019/20

The LRSSB has covered much ground in its first 12 months of operation, the key areas of activities and achievements are highlighted in the following section:

Formation of the Full LRSSB - The LRSSB successfully started full operation from the Shadow LRSSB in April 2019 as planned and has continued to grow and developed over the first 12 months.

Risk Model Development - LRSSB in conjunction with Atkins & UKTram has built a risk model for the industry to adopt with a view to a better understanding individual system risk profiles and ensuring more control of emerging risks/precursors to incidents.

Every system was live on the model within the first 12 months of the project. The first industry/system reports were produced by early 2020. Currently all systems are live on the model and data is being input to inform the risk position.

TAIR Introduction - In conjunction with the risk model, LRSSB has developed the UKTram database tool, the Tram Accident and Incident Reporting tool (TAIR). TAIR is a very flexible tool and is capable of numerous functions which are in the process of development. TAIR will become the LRSSB database, Communications network, Performance Management System and Investigation tool.

RM3 Roll Out Supporting ORR - LRSSB has worked closely with ORR to develop an enhanced light rail version update of the risk maturity model framework. This update is known as RM3 and is now published by ORR. LRSSB has completed a first round of training for all members which will be further supplemented by more training and guidance to enable members to use the model to best advantage.

New Standards and Guidance Published - LRSSB has developed a process for updating current standards for generating proposals for new standards for industry members, including suggested guidance from member organisations. Updated standards and new guidance documents have already started to be uploaded to TAIR and also published on the LRSSB website.

Several areas for further standards and guidance development have been identified and they have been worked on by members through UKTram and LRSSB workgroups to be then approved and published via the LRSSB process.

In 2019/20 four new standards and guidance documents were published by September 2019. These are as follows:

- Tramway Principles and Guidance (TPG).
- Non-Motorised Crossings.
- Management of Electro Magnetic Compatibility (EMC) Guidance.
- Tramway Audible Warning Acoustic Test Guidance.

A further 15 standards and guidance documents are currently under review and will be published in the first quarter of 2020.

Sandilands RAIB Report Recommendations (see Appendix A) - Importantly LRSSB has provided responses and supported the membership in helping to close out some of the recommendations from the report as follows:

- **Recommendation 1** – to increase the audibility of tram warning horns has been closed out.
- **Recommendation 2** – to improve the safety of pedestrian crossings on/off street sections where trams run at relatively high speeds has been closed out.
- **Recommendations 3 and 4** - are in the process of being closed out by some members. LRSSB is supporting by lab testing solutions for possible commercial treatment. All members have taken steps to manually monitor driver behaviours and overspeed occurrences, whilst investigations are ongoing into suitable automated speed control and driver attentiveness systems.
- **Recommendation 5** - has been closed out by all members; in terms of system signage. However, there is a further piece of work to be carried out with respect to highway signage by LRSSB. The use of common signage is appropriate where possible, particularly in on street areas. Segregated and off street areas of tramways continue to use generic and easily understood signage from highways, such as chevrons and countdown markers with no major concerns.
- **Recommendation 6** – following review and assessment of the recommendation for the introduction of measures to facilitate improvements associated to passenger containment provided by tram windows and doors. LRSSB in consultation with operators and manufactures have determined that the recommendation is generally feasible, however the range, type and application of additional practical controls will be fleet dependent given window and door systems design characteristics for individual vehicle types.
- **Recommendation 7** - will be closed out by individual system owners and operators in conjunction with the vehicle manufacturers, in terms of what is possible within the confines of vehicle structures.
- **Recommendation 8** - Following review and assessment of the recommendation for the introduction of measures to facilitate the rapid evacuation of a vehicle, LRSSB in consultation with operators and manufactures have assessed the application of both removable windscreens and emergency escape hatches.

BSI – LRSSB has registered and supplied UK experts in liaison with BSI for CEN/CENELEC/ISO to attend committee meetings, standards and guidance development, review and provide a voice on behalf of the UK Light Rail Industry. Experts have already attended and provided representation both nationally and internationally, particularly on infrastructure and engineering related issues.

RSSB, Tram Train - LRSSB has developed relationships with RSSB and Network Rail to enable enhanced light rail input to safety deliverables and also to be more informed regarding emerging notices and industry trends. This is a two way arrangement and regular dialogue with RSSB is seen as very positive. In addition, LRSSB is working with ORR and RSSB to identify a way forward for tram train, in terms of its industry positioning and regulatory framework in conjunction with Network Rail and will complete this work by early 2020.

Establishment of Overseas Relationships - Establishing working relationships with overseas bodies will ensure LRSSB stay abreast of developments from other nationality networks, as well as potentially becoming a source of income through commercialisation of LRSSB assets such as the Risk Model and TAIR systems.

Currently LRSSB have established relationships with VDV, UITP, TII (Transport Infrastructure Ireland), Danish Transport Ministry, APTA, and STTRMG in France. Work is continuing to spread our reach to ensure LRSSB capture as much as possible in terms of safety learning and best practice from overseas. For example, hazardous event data is being captured through a questionnaire, which many overseas systems are completing and submitting.

This has also been recognised as a two way process by ourselves, and our international colleagues, with a growing interest being shown in the work LRSSB are progressing on risk identification and mitigation.

Several countries have expressed interest in our progress and are keen to have future dialogue with LRSSB including Australia, USA, Canada, Israel, Spain and Denmark.

LRSSB is intending to take advantage of an offer to run a presentation followed by round tables to discuss progress and usage by overseas systems at Rail Live in Madrid in late March/early April 2020. The event is attended by many worldwide light and heavy rail networks and the opportunity will enable the team to engage with several interested parties at one event.

Section 7 LRSSB Key Objectives for 2020/21

LRSSB has collated the key objectives of members at a high level as well as in the focus areas of the members, the UKTram Functional Groups and stakeholders, as part of a 3 year Business plan. The high level objectives for 2020/21 are detailed in key areas below:

Close Out Sandilands - Focus will be applied through members and in continued work by LRSSB to close out as many of the Sandilands recommendations as possible. There may be some items with legacy works to be completed, speed control systems for example may take some time, but that is likely to be small in number.

The intention is also to ensure that overall risk management improves to a point where major incident control is much better and as a result overall safety is improved significantly.

Risk Model Development - Areas for additional focus through 2020 and 2021 will include overview of top risks, identification of changes in risk profiles with resultant actions, standards progression as a result of risk profile changes, reporting as individual systems and industry wide, identification of best practice and developing a peer review process. Most of this work will be undertaken at low cost to LRSSB however, the additional functionality work LRSSB would like to undertake is dependent on funding. The **reporting processes** will be developed and enhanced by **December 2020** with **Best Practice and Peer Review Process** in place by **mid 2021**.

TAIR Development - Some additional works will be required to develop **alerts (including Horizon Scanning Tool)** and **communications systems** as well as further development of the **standards library** to enable gap analysis to be undertaken. This work can be performed relatively quickly at low cost to LRSSB. This work should be completed by **September 2020**.

The Horizon Scanning Tool will enable development to ensure safety guidance, reports and incident investigation results from overseas sources, in addition to other industry safety bodies, are captured with learning points disseminated.

Standards and Guidance – LRSSB will also continue to develop a widening group of standards and guidance documents following requests from members and by adapting best practice from other industries, accident investigations (by RAIB and other bodies), or international light rail groups, particularly working on EU standards and guidance, which can be modified for UK use and build a comprehensive library of documentation.

Currently LRSSB have produced 4 standards and guidance documents to date, with a further **17** standards and guidance documents to be produced and published **by the end of 2020**.

In addition, the next 2 years will see first revisions of many standards and guidance documents taking into account updated practices and industry developments. These will be communicated to all members to ensure full understanding of changes made.

This process will be driven through and strengthened by using the TAIR database, as a platform and by the proposal process designed and adopted in 2019.

The standards development process will be accelerated by the recruitment of additional personnel or by using suitable consultancy support, given funding is available.

RM3 - Working with ORR, further **training and guidance** will be given to members to enable RM3 to be used to best effect by the industry. This work will enable individual member systems to review their risk maturity and LRSSB to gain a view of the industry progress as a whole. Equally as important, duty holders from the owners group will be able to assess their relative strengths in

terms of governance of their system working in conjunction with their operator. The **training and guidance** will be delivered by **May 2020**.

Commercialisation - The development of the Risk Model and TAIR is receiving significant attention from systems and governments overseas. Currently interest is being shown by Denmark, Australia, USA, Ireland and Israel, with a potential for membership of LRSSB and usage of the Risk Model and TAIR to be offered at a commercial rate.

This will enable a stronger funding base to be developed with the resulting ability to focus on more areas for development and potential reductions overall in member subscriptions.

Resourcing - LRSSB is currently under resourced to carry out some of its objectives for 2020/21 and beyond. Additional funding to allow further recruitment will make the additional workstreams possible and ensure LRSSB fulfil our objectives for 2020/21 and beyond.

The recruitment of **two graduate trainees** is ongoing, although this has been a gradual process with initially lack of responses from suitable candidates. It is anticipated that LRSSB should have the two positions filled by **Summer 2020**.

The position of **Safety Assurance Manager** will become a full time resource of LRSSB in **2020** on a secondment arrangement with UKTram. This will enable more time to be spent on TAIR and Risk Model deployment and benefit realisation; as well as additional standards and guidance focus.

To enable full focus on the additional workstreams identified for LRSSB will need to undertake further recruitment especially with regards to training and development, which will also need the additional input of specialist training companies for course development and delivery.

Communication – LRSSB now has a fully functioning dedicated website that was established in September 2019.

New standards and guidance documents have already been uploaded and published; both onto the website and TAIR database. These platforms will shortly have the facility to provide updates to documentation and 'Live Alerts' on emerging safety issues for the light rail industry (see TAIR Development section for Horizon Scanning).

The TAIR platform also has the benefit of being able to be developed as a primary safety communication system accessible to all members. We will continue to develop a plan and actions for fully enabling the systems to ensure a **comprehensive communications system** for all members which can become the prime tool for LRSSB to communicate in terms of safety information. This should be completed by **September 2020** with **December 2020** being a final date for all systems to be trained.

Further Research on Behalf of Members – The initial work undertaken through Ian Rowe Associates Limited (IRAL) with regards to driver attentiveness and vigilance systems has been very successful. The intention is to continue working in this field alongside RSSB and potentially with tram manufacturers.

The intention is to eventually enable new fleets to be fitted with DVD type systems and Perclos type systems. This will further improve the ability to help drivers and to help reduce incidents as a result of reduced attentiveness. By working across industries and with manufactureresd it is intended to make the addition of these systems much more affordable and integrated with tram systems rather than being expensive retro fitted systems.

Additional areas of research into safety systems will also be undertaken on behalf of members according to current need and potential future benefit as identified by members and/or other stakeholders and wider industry colleagues.

Secure Funding – To ensure the long term benefits of the work that LRSSB is doing on behalf of its members there is a necessity to obtain future sustained funding. To achieve this LRSSB will be developing further commercial activities, generating industry sponsors and lobbying Government for future funding streams. Members will continue to make regular contributions to the level agreed with DfT prior to LRSSB establishment.

Section 8 of this document details some of the additional workstreams and initiatives, which can only be entered into subsequent to obtaining additional funds. The objectives highlighted in Section 7 are sustainable for a period of two years (2020/2021) with current funding in place but it will be impossible for LRSSB to continue its work past this date, without long term commitment to funding from Government in a similar arrangement to the funding of RSSB.

Section 8 Additional Workstreams and Initiatives

Additional Workstreams (Funding Dependent) - Many opportunities exist for further workstreams to be undertaken on behalf of members given additional funding and certainty of future funding.

Further Research into Speed Control and Human Factors (vigilance and driver monitoring) - Following on from the work completed by IRAL into speed control and driver vigilance assistance it is anticipated that more work will need to be undertaken in this area.

Further Risk Model Functionality - It is possible that additional functionality will be identified as being appropriate for the Risk Model which will inevitably require funding for software development. Members have already made suggestions for future considerations in improving the functionality and scope. LRSSB and Atkins are developing a scope of improvement works for 2020 and beyond.

Further TAIR Improvements – In addition to the existing capabilities of the TAIR database further improvements include the following;

- On line resource for design, build and operations guidance.
- Generic Risk assessments module.
- COSHH risk assessments module.
- Published RIDDOR and RAIB reports for learning and action points
- In association with developing the technical communications plan we will also communicate to our members the annual programme of seminars, conferences and regular meetings for forward diary management and attendance assessments to take place.
- LRSSB will also be engaging with a communications specialist in terms of looking at enhancing the communications package with live streaming, webinars and other media aimed at improving communication generally.

Other Potential Additional Workstreams – Future potential workstreams (again subject to funding);

- Accreditation of Approved Suppliers – on behalf of members/duty holders.
- ICP Accreditation – currently the light rail industry have very few ICP skilled individuals. A means of accreditation, skills and experience based would be beneficial to the industry.
- LRAIB/RAIB – potential for light rail trained investigators or light rail training for RAIB team.

Training, Development and Delivery - LRSSB have identified numerous opportunities for training to strengthen the skillset of current light rail employees and new entrants to the industry. Some of the training is intended for senior level entrants/employees whereas other courses modules could be at entry level to the industry. Identified areas are as follows;

- ROGS Training – understanding the structure of ROGS and how that shapes duty holder responsibilities in a light rail environment.
- Safety Audit Training – increasing the value and quality of safety audits.
- Risk Model and TAIR Executive Level Course Training – to ensure senior execs are aware of the value and capability of these two applications.
- RM3 Executive Level Course Training – to ensure senior level professionals from operators and owners appreciate the value and application of RM3.

- Safety Diploma for Light Rail Safety Professionals – for safety professionals to obtain a recognised qualification (maybe chartership).
- External Education – Schools, Cyclists – much work is done locally by operators and owners but this could be more professionally delivered, at least in content and guidance terms.
- Strategic Safety Management – senior level course designed for current executives and new entrants to the industry.
- Training of people to act on behalf of LRSSB – e.g. Cen/ Cenelec, UITP and VDV – often LRSSB use willing volunteers to act on our behalf of these bodies but we should be more professional to maximise benefit.

Section 9 Summary

LRSSB has taken some big steps in its first year and is committed to driving forward the development and enhancement of Safety within the Light Rail Industry. With sufficient funding, the progress and speed of development can be further enhanced, which will benefit all Stakeholders, Duty Holders, the industry and ultimately the passenger as the end user and

LRSSB by working collaboratively, using the expertise available and sharing of best practice can demonstrate continuing added value to its members and DfT and will be viewed as an integral and forward thinking part of that development.

As Light Rail in all its different forms will continue to be part of, and develop, as a larger player in the focus to deliver better public transport, the integration of new and developing technologies will give even greater call for more Light Rail Standards and Guidance. The ability of LRSSB to deliver those standards and guidance documents will be tested but, with the support of UKTram and LRSSB workgroups, it will deliver to satisfy requirements from its members and stakeholders.

Through the initial formation and development of the LRSSB by Industry members, Stakeholders and Statutory Bodies, it is clearly evident that the industry is open minded, driven and forward thinking, it has a great desire to be the best it can be. By continuing to work together along with all stakeholders the LRSSB can deliver its objectives for its members with their support.

Through the initiatives outlined in this document and with the support of its members and other stakeholders we will ensure the light rail industry continues to improve its safety record and its profile as a very important and very safe transport mode in its own right.

This position however is dependant on the achievement of long term funding streams principally from DfT supported by members and other generated funding sources.

Appendix A – Sanidlands Report Recommendations (1 - 8)

Recommendation 1 - The intent of this recommendation is to improve the management of safety risk in the UK tram industry by enabling more effective UK-wide cooperation.

Recommendation 2 - The intent of the recommendation is to better understand all safety risk associated with tramway operation and then provide updated guidance for the design and operation of tramways (this could be achieved by issuing an updated version of the 'Guidance on tramways' with expanded coverage of operational matters). Particular attention will be required to recognise risks from low frequency / high consequence events which may not be apparent from precursor incidents on existing UK tramways. Identifying such events is likely to require input from specialists outside the UK tram community, including specialists with knowledge of main line rail and bus environments. Consideration of main line rail and bus issues is intended to inform evaluation of tramway risks; it does not imply that all heavy rail and bus requirements should be applied to tramways.

Recommendation 3 - The intent of this recommendation is to prevent serious accidents due to excessive speed at higher risk locations on tramways. These locations are likely to include all locations where a substantial speed reduction is required for trams approaching at relatively high speed. Implementation of this recommendation may be assisted by work in this area already underway by Croydon tramway organisations.

Recommendation 4 - The intent of this recommendation is to reduce the likelihood of serious accidents due to tram drivers becoming inattentive because of fatigue or other effects. Existing tram systems relying on drivers applying forces to driving controls (driver safety devices) do not necessarily detect an inattentive driver. Implementation of this recommendation may be assisted by work in this area already underway by Croydon tramway organisations.

Recommendation 5 - The recommendation is intended to provide tram drivers operating on line-of-sight with signage giving visual information cues comparable to those for bus drivers. This recommendation builds on the RAIB's Urgent Safety Advice issued in November 2016 and recognises that driving a tram on line-of-sight has considerable similarities with driving a bus on a public road.

Recommendation 6 - The intent of this recommendation is to reduce the likelihood of people being seriously injured or killed by being ejected through tram doors and windows (ie to provide better containment). Although it is not expected that ejection can always be prevented in case of overturning, the improvement of containment will deliver improved safety in a range of different scenarios such as collision with road vehicles. Any improvement to containment is dependent on the ability of passengers to easily open doors in an emergency. It is expected that implementation will build on similar research already undertaken by RSSB in respect of railway carriage windows.

Recommendation 7 - The intent of this recommendation is to provide emergency lighting which will operate without connection to remote power supplies such as the tram's main batteries and the overhead electrical supply. Implementation may involve tram operators seeking input from appropriate tram manufacturers.

Recommendation 8 - The intent of this recommendation is to minimise the risk of people being trapped in an overturned tram where side windows and doors are either facing the ground or facing the sky. Solutions could include the use of removable windscreens at the ends of trams. Implementation may involve tram operators seeking input from appropriate tram manufacturers.

Appendix B – Objectives and Timeline for 2020/2021

| Objective | Timeline |
|---|---|
| <ul style="list-style-type: none"> • Close Out Sandilands - Focus will be applied through members and continued work by LRSSB to close out as many of the Sandilands recommendations as possible. | Ongoing |
| <ul style="list-style-type: none"> • Risk Model Development - Reporting processes will be developed and enhanced. | December 2020 |
| <ul style="list-style-type: none"> • Best Practice and Peer Review Process | Mid-2021 |
| <ul style="list-style-type: none"> • TAIR Development - Additional works will be required to develop alerts (including Horizon Scanning Tool), comprehensive communications system and the further development of the standards library. This will be in place by September and all systems will be trained by December 2020. | September 2020 & December 2020 |
| <ul style="list-style-type: none"> • Horizon Scanning Tool - Will enable development to ensure safety guidance, reports and incident investigation results from overseas sources and other industry safety bodies. | September 2020 |
| <ul style="list-style-type: none"> • Standards and Guidance – Continue to develop a group of standards and guidance documentation by adapting best practice from light rail and other industries, accident investigations (by RAIB and other bodies), or international light rail groups. | December 2020 |
| <ul style="list-style-type: none"> • RM3 - Working with ORR, where further training and guidance will be given to members to enable RM3 to be used to best effect by the industry. | May 2020 |
| <ul style="list-style-type: none"> • Commercialisation - The development of the Risk Model and TAIR is receiving significant attention from systems and governments overseas. This has a potential for membership of LRSSB and usage of the Risk Model and TAIR to be offered at a commercial rate. | Ongoing |
| <ul style="list-style-type: none"> • Resourcing - Additional funding to allow further recruitment will make the additional workstreams possible and ensure LRSSB fulfil our objectives for 2020/21 and beyond. | 2020/2021 |
| <ul style="list-style-type: none"> • Graduate Recruitment - Anticipated that the two positions should be filled by Summer 2020. | Summer 2020 |
| <ul style="list-style-type: none"> • Safety Assurance Manager - Will become a full time resource for LRSSB. | January 2020 |
| <ul style="list-style-type: none"> • Communication – LRSSB now has a dedicated website that was established in September 2019. | September 2019 |
| <ul style="list-style-type: none"> • Further Research on Behalf of Members – Initial work for driver attentiveness and vigilance systems has been successful. Continue working in this field alongside RSSB and potentially tram manufacturers. | Ongoing |
| <ul style="list-style-type: none"> • Secure Funding – To ensure the long term benefits of the work that LRSSB is doing on behalf of its members and to obtain future sustained funding. | Ongoing |

Appendix C – Future Objectives (funding dependent)

| Objective | Timeline |
|--|------------------------|
| <ul style="list-style-type: none"> • Additional Workstreams (Funding Dependent) - Many opportunities exist for further workstreams to be undertaken on behalf of members given additional funding and certainty of future funding. | Ongoing |
| <ul style="list-style-type: none"> • Further Research into Speed Control and Human Factors (vigilance and driver monitoring) - Following on from the work completed into speed control and driver vigilance assistance. It is anticipated that more work will need to be undertaken in this area. | Ongoing |
| <ul style="list-style-type: none"> • Further Risk Model Functionality - Additional functionality identified as being appropriate for the Risk Model will inevitably require funding for software development. | 2020 and beyond |
| <ul style="list-style-type: none"> • Further TAIR Improvements – Additional capabilities of the TAIR database include; <ul style="list-style-type: none"> • On line resource for design, build & operations guidance. • Generic Risk assessments module. • COSHH risk assessments module, and • Published RIDDOR and RAIB reports for learning and action points. | Ongoing |
| <ul style="list-style-type: none"> • Other Potential Additional Workstreams – Future potential workstreams; <ul style="list-style-type: none"> • Accreditation of Approved Suppliers for members/duty holders. • ICP Accreditation – A means of accreditation, skills and experience based would be beneficial to the industry, and • LRAIB/RAIB – potential for light rail trained investigators or light rail training for RAIB team. | Ongoing |
| <ul style="list-style-type: none"> • Training, Development and Delivery - LRSSB have identified numerous opportunities for training. Key areas identified are as follows; <ul style="list-style-type: none"> • ROGS Training. • Safety Audit Training. • Risk Model and TAIR Executive Level Course Training. • RM3 Executive Level Course Training. • Safety Diploma for Light Rail Safety Professionals. • External Education – Schools, Cyclists etc. • Strategic Safety Management. • Training of people to act on behalf of LRSSB – e.g. Cen/ Cenelec, UITP and VDV. | Ongoing |