The Tramway & Light Railway Society is a Registered National Charity for the purpose of advancing public education and knowledge of all aspects of tramways and light railways. The objects of our Society as stated in the constitution are:

a) To bring together those interested, professionally or otherwise, in tramways and light railways.

b) To encourage tramway and light railway modelling and demonstrate such models in museums and other places and promote and participate in exhibitions.

c) To publish a journal and other literature, photographs, and drawings of prototype and model tramway and light railway interest, and to publish the results of research into and study of all facets of tramways and light railways.

d) To hold meetings to consider matters of tramway and light railway interest and arrange visits to tramway and light railway systems and places connected therewith.

e) To collect and collate tramway and light railway archives and other relevant material, and to maintain a library.

HISTORY

It all started as an informal tramway organisation with no official secretary, subscription fee or even name. The “members” were mostly tramway company employees plus a few enthusiasts from other walks of life. It was largely begun by our late Vice President, Mr S G (George) Jackman. He was appalled that at the time tramways were maligned by operators and press alike. On photographic visits to tramway systems he became friendly with other enthusiasts who held similar views and they set about putting a pro-tram point of view.

In 1936 the London Passenger Transport Board announced its plans to scrap the London tram system, converting it to trolleybuses. Being against this idea, the “organisation” decided to write to MPs, municipalities and the press. It got no response whatever. On seeking advice from a member of the Press Association, George Jackman was told that he needed to set up a formal organisation with a President and paid up members if he wanted to be noticed and have any effect. Several well known people were approached to be President, none accepted. However, it was decided to formalise the organisation and on 30th June 1937 the Light Railway Transport League (now Light Rail Transit Association) came into being. At first very few of the “organisation” members joined the formal LRTL, not doing so till later.

One proposal of the infant LRTL was that propaganda leaflets opposing London Transport’s closure should be distributed on the final night at the terminus of each route. This and other similar activities, which he described as dustbin-lid-banging, did not sit well with George Jackman, so he went on to start another formal Society for those interested in all matters of tramways, not just opposition to closures.

On January 1st 1938 the Tramway and Light Railway Society (at that time often called just the Tramway Society) was formed.

Contemporaneously in the 1930s the beginnings of tramway modelling in ¾ ins. scale were taking place, with exponents such as Richard Elliott, Frank Roche and Frank Wilson. They found the new TLRS was the type of organisation for them and Richard Elliott, together with George Jackman, became a member of its first committee.

In March 1938 the first edition of the magazine TRAMFARE (then called “The Tramway Society Bulletin”) was published, with other editions to follow. The war then intervened and running the TLRS was not easy. Early committee meetings took place in cafes. After the war, things really took off. Regular magazines were issued and the Society took part in many exhibitions showing its tramway models. From this point we have never looked back.

Initially the Society was centred on London, followed in the post-war years by the formation of a group in Birmingham. As interest grew, the membership increased, helping to create a more balanced geographic spread. This has encouraged the formation of further area groups, with seventeen including one in German speaking countries currently in operation. Activities vary from illustrated talks to film shows with, as a bonus, the facilitation of a programme of joint ventures. These have included modelling projects and the production of leaflets giving a précis of the history of the local tramways.
As previously mentioned, from the earliest days modelling has been a significant component within the Society’s structure. A number of museums around the country house model trams or dioramas constructed by our members. These exhibits are often the only visual record of this particular aspect of the local transport history. Membership of the TLRS gives access to materials, castings and facilities for modelling in a wide range of scales and gauges. Advice and assistance is readily to hand with the construction and exhibition of working layouts is actively encouraged.

Over the years the Society has published detailed histories of London and other tramway systems. Many of these have been in collaboration with the Light Rail Transit Association (LRTA) and the London Tramways History Group. Additionally, a number of members have researched the more esoteric aspects, track construction or ticketing systems, for example. A number of these became the subject of an annual lecture and were subsequently published. Within three months of the Society’s formation, a magazine was produced. This has grown over the years and is now issued bi-monthly free to members. Called “TRAMFARE”, it contains articles of technical, historical and modelling interest, as well as recording the activities of the area groups. Importantly, it includes a trade update and diary of events. A lively and informative letters column provides an invaluable channel for the exchange of information and ideas.

From the objectives mentioned above, it will be noted that the TLRS is obliged to maintain an archive. It contains a variety of maps, diagrams, accident reports, press cuttings, manufacturers’ catalogues etc. The number of documents held has grown over the years and will continue to do so as suitable material becomes available. A database of its contents has been created, enabling information to be located quickly. A recent radical development is the creation of the National Model Tram Collection. This contains toy and model trams, adverts, instruction sheets and drawings to help illustrate the history and development of model tramways from crude tinplate toys to highly detailed miniatures. Selections from the collection are on public display at Heaton Park Tramway Museum in Manchester.

We hope this has helped give a flavour of how the Society came about and developed into the organisation of approximately one thousand members you see today. We have collected documentation and made models of vehicles from the birth to the demise of the first generation of tramways in this country. However, the rest of the world did not lose faith or allow development to die. Britain has now re-discovered the tram and, capitalising on the technological advances from other nations, is building new lines of its own. So remember, history begins today. Just as we were there to record it in the last, so the Tramway and Light Railway Society will be there to record it in the 21st century.

Before going into a breakdown of sources of information, kits and components, it should be made clear that the environment in which they exist is constantly changing. Books come in and go out of print, photographic collections are broken up or disappear and even museums close. The situation regarding model manufacturers seems to be equally fluid. In an attempt to keep the members informed, the Society has created two useful tools.

The first is “Tramfare” or, to be specific, that part of it which covers the review of books, DVDs and the trade update. The latter covers the output of manufacturers of models in all scales, both British and Continental. If you want further information, write to its Editor. A letter in “Tramfare” gives your questions a wide audience and the answers will be of interest to many other members.

The second tool is the Internet. The address is: www.tramwayinfo.com Created by John Prentice this web site provides a plethora of information on tramways world-wide as well as pages on the TLRS. It also enables you to renew your membership electronically. Popular features are ‘Postcard of the Month’ and ‘How to Build a Model Tram’. There are even links to live web cameras throughout the world where you may see a tram.

Links to a variety of related topics such as model manufacturers and other tramway societies are included. Questions may be input and will probably elicit a faster response. The site has proved very popular and is updated on a regular basis. TLRS also supports a Tramway Modelling group on Facebook - www.facebook.com/groups/modeltrams - where views can be exchanged and photos of models posted.

Communication with other members, suppliers, etc will doubtless be done electronically. If you do find it necessary to resort to post, please remember to include an s.a.e. Many manufactures within our interest operate on a modest scale and even museums have tight budgets.
The following information is written with a view to helping someone new to tramway modelling. It does not claim to be the definitive treatise on the subject, but rather assist in locating the beginning of the thread which, if followed, should help in answering some of your questions.

**SOURCES OF INFORMATION**

**DRAWINGS**
The most comprehensive collection of tramcar drawings is produced by Terry Russell. Many are based on works’ drawings and are available in 4mm and 7mm scales as standard. They can be supplied in 3/8 ins. scale to special order and doubling the dimensions renders them suitable for the 3/4 ins. modeller. The drawings range from ancient horse cars to modern articulated Light Rail Vehicles (LRVs) and, whilst the majority are of British prototypes, the coverage is truly global.

Over the years tramcar drawings have appeared in technical journals and the model railway press, a tradition continued today by “Tramways & Urban Transit”, formerly “Modern Tramway”. As a rule, these drawings tend to be of new vehicles or merely design proposals. They often appear within the text and are, consequently, rather small and seldom to a recognised modelling scale. However, they are usually dimensioned and successful models have been built using these as a basis.

Occasionally the model railway press have included articles on tramway modelling and incorporated a drawing, a bonus being its reproduction to a conventional scale, normally 4mm. Such articles have often provided the catalyst to add a tramway to an existing model railway layout or, in a number of cases, to convert entirely to tramway modelling.

For anyone interested in the former London Transport or any of its constituent companies, there is an excellent collection of large scale works’ drawings available. Not only do they included general arrangements, but also some of the trucks and fittings. Quality varies from basic but adequate to exceptionally detailed, including numerous sections to illustrate the prototype’s method of construction. These drawings were originally available from London Transport, but owing to the fragmentation of this organisation, their location has been subject to several changes in recent years. It is, therefore, advisable to contact the London Transport Museum in the first instance.

Within the world of the serious railway modeller, there has been a steady move towards taking the same assiduous approach to track construction and its appearance as there is to locomotives and rolling stock. Currently, tramway modellers tend to concentrate their efforts on the vehicles, but one or two are starting to experiment with finer standards and a high degree of visual fidelity for both track and overhead. A number of publications have included details of track and overhead components and the following may be found useful:

- **Tramways their Construction and Working**
  D Kinear - Clark (Reprint Adam Gordon)

  The original was published in 1894 and consequently tends to concentrate on the horse, steam and cable period. It gives detailed information on the development of track construction as early engineers strove to find a method capable of surviving the rigours of intensive use.

- **Construction and Equipment of Electric Railways and Tramways Vol. 22**
  International Correspondence Schools Limited. Published 1914

- **Modern Electrical Engineering Vol. 4**
  The Gresham Publishing Company Limited. Date unknown.

Both of these books were published as part of a series of educational text books for would-be engineers. Not only do they provide excellent information on the construction of pre-WW1 electric tramways, they include dimensioned drawings of trackwork components and engravings of overhead equipment.
• Current Collection for Tramways and Trolleybus Systems
  G E Badderley and E R Oakley. Published by authors in 1975. Now out of print.

As the title suggests, this book provides an overview of the wide variety of methods used to collect electrical current. Details of trackwork are included only where they form part of a surface or subterranean collection system, such as stud contact or conduit.

• Cassier’s Magazine. Electric Railway No. 1899
  (Reprint Adam Gordon)

• Tramway Classics series
  Published by Middleton Press; dates various

There are more than 50 books in this series, providing photographic coverage coupled with informative text of each system. Drawings and photographs of trams are included. Occasionally track and lineside equipment diagrams are an added bonus. Larger networks are spread over a number of volumes, 24 in the case of London. Written by modellers with modellers in mind, they can be considered a primary source for information.

The next two publications are aimed specifically at the modeller, helping to translate prototype information into practical modelling techniques:

• How to go Tram and Tramway Modelling
  David Voice. Published Adam Gordon 1998

The most comprehensive book on 4mm scale tramway modelling. Starting with a potted history of model trams and covering kit and scratch-building, layout planning, construction and operation plus a list of suppliers. Much of the information applicable to larger scales.

• Large Scale Tramway Modelling. An Introduction and Guide
  Peter Hammond & Peter Howard. Published by TLRS 2015

The definitive book for modelling in the larger scales, with 148 pages, around 350 photographs, drawings and diagrams. Detailed notes on building a Preston Standard in 1:16 scale and modelling in other large scales. It also covers track, overhead and many new construction methods. Well illustrated with full size drawings included.

• Introduction to Tramway Modelling The Manx Electric and Snaefell Mountain Railways- A Modeller & Historian’s Inspiration
  Robin Winter. Published by TLRS 2010.

A 180 page book with over 400 photos, mostly in colour, plus maps and drawings. This book is not just for the model maker, the tourist will find it of equal interest. It shows you what the railways look like and provides suggestions and all the detail that you need should you be inspired to model them.

Where books are out of print or too expensive to purchase, ask your local library if they can obtain a copy for loan. Such books also turn up on second-hand stalls at exhibitions or specialist book dealers.

An increasing number of books are being published on specific tramway systems, with some thought given to the modeller. They occasionally include drawings of cars and track, often where it is necessary to illustrate some unusual feature.

The Society has its own archive which contains a growing number of tramcar drawings, some of which are unpublished works’ drawings. Others are from enthusiastic amateurs or model manufacturers. The quality is variable but they are retained for their intrinsic historical value.

Perhaps it is worth making a final point regarding the use of drawings, official, professional or amateur. Do not assume they are accurate! Modifications to the design were often carried out on the shop floor before the tram took to the road. Similarly, a large class of vehicles with a long life span would undergo changes over time.
Changes were often unique to a particular vehicle within the class. One of the most popular trams was the 4-wheeled, three windowed Preston Standard by Dick Kerr. They were the first generation electric car employed by operators nation wide. However, each town would probably request a degree of tailoring to its own needs, including a narrowing of the body work for operating on 3ft 6 ins. gauge systems.

Remember the old adage; “Between 1898 and 1924 Glasgow Corporation Tramways built a thousand Standard class tramcars of which no two were alike”

PHOTOGRAPHS

There is an ever-growing number of well-illustrated publications on tramways in general as well as system histories and these are recommended as a starting point. They may describe and even illustrate the changes made to trams throughout their existence. Obtaining a photograph of a particular car at a specific date may not be easy, although the local library may be able to help. Again London Transport is well served in this respect, having photographed many of its vehicles. The TLRS has published the definitive histories of London’s tramways, illustrated with photographs from the London Transport library. Many of these include the negative reference number. As with drawings it is probably advisable initially to contact them. Many of the original photographers of tramways have died and a number of specialists have acquired their negatives making prints available on a commercial basis. They will often have a stand, with a representative selection of postcards on display, at exhibitions and transport gatherings.

Members have been encouraged to allow pictures they have taken to be digitized, helping form the Society’s own archive. A request placed in Tramfare for pictures of a particular type of tram can also be successful.

The National Tramway Museum at Crich in Derbyshire stock postcards of trams, both from their own collection and similar museums around the world. Crich is renowned for it’s collection of trams and related artefacts, most of which are available to be photographed. If the car is in service it is possible to photograph the roof from the Bowes-Lyon bridge or picnic grounds. Unlike the prototype where it may be of little visual significance, the roof is the most prominent part of any small scale model.

Over the past decade or so, a number of other museums have restored a variety of tramcars, the majority of which are available to be photographed. You may also find that the organisations responsible for the restoration have a selection of photographs available of other trams from the same and associated systems.

READY BUILT MODELS

The tramway enthusiast modelling in OO/HO is fortunate in receiving some support from the larger model manufacturers. Their activities on our behalf have generally been as an adjunct to their main business of model railways or items produced as part of a range of die-cast road vehicles. Trams made by the model railway manufacturers have tended to be of plastic, are ready to run, 3.5mm scale and American or Continental in outline. The Bachmann and Mehano ranges of American trolleys are reasonably priced and come ready powered. Because of this, along with their wide availability, many modellers have used the chassis to motorise their own kit or scratch-built creations. The Bachmann range includes 4mm scale models of the Hong Kong double deck tramcar, two of which are running on the Birkenhead Heritage Tramway. Some models from the ranges are also available in 2mm scale and have proved to be equally adaptable.

At the other end of the scale are the models of Continental trams made in Germany and Austria. Again to HO scale, they come ready to run and fully painted, although some are sold with finely detailed etchings or mouldings packed separately to minimise damage in transit. The quality of finish detail and the mechanism fitted is of the highest order and this is reflected in the price. That said, it is no more than commensurate with the equivalent model railway items from the same source and we tramway modellers do not have to spend equally large sums on further vehicles for our motive power to pull! When it comes to that all-important bottom line, there is no doubt that tramway modelling is comparatively cheap. The Austrian manufacturer Halling has also produced limited production runs of modern British tramcars.
Other European manufacturers which produced the odd ‘one-off’ item have been Lilliput, Lima, Roco and Riverossi. This last company re-entered the model tramway market dramatically in the 1970s with a complete toy tram set which included tram, trailer and plug-together road/pavement panels, equipped with track, points and overhead. With the exception of Roco and Lima (the tram models are now sold under the Electrotren label), these manufacturers have departed the model tramway field but their products do turn up on the second-hand scene.

An unusual source of model trams is the transport museum in Vienna, who supply a range of HO scale replicas of some of the cars held within their collection. As standard, they are sold ready painted and un-powered, but motor units are also available which just clip into position. The quality is good and the price reasonable. These models are not exported in the conventional sense, although one or two outlets have appeared in this country.

For many years, the American market was renowned for its brass trolley cars both city and interurbans. These are still produced in small quantities in both 3.5mm and 1/4 in. scales. They were originally made in Japan at the request of an American agent (Ed Suydam, North West Short Line, Model Traction Supply); more recently production has moved to Korea to keep costs down. Extensive use is made of photo-etching and lost-wax casting and, coupled with the labour intensive methods of assembly and limited runs, prices tend to be high. A number of models in scales as small as 2mm, have also been made for the Continental market using the same procedure.

Moving into the larger sizes, some years ago the German company LGB made a 4-wheel tram and trailer in G scale. They are ready powered and of Continental outline, though stereotypical rather than prototypical. Bachmann make two American style 4-wheeled trolleys in G scale and have recently introduced a narrow gauge enclosed 4-wheeler in ‘O30’ gauge (1/4 ins.). All of these vehicles are excellent value for money.

Moving on to the world of the manufacturers of die-cast models, we find what is probably one of the most famous and long-lived miniature trams, the Matchbox E1. The originals were made in Great Britain by Lesney during the 1950s and are considered collectable. Younger members may know this vehicle by the name of “Typhoo Tram” when the eponymous tea producer re-marketed the model to celebrate the company’s 80th anniversary coupled with 100 years of electric street tramway operation in England. They are nominally 2mm scale and, apart from the substitution of plastic wheels, remain very much as they were. Production has now moved to Hong Kong. Small they may be, but it is not uncommon to see them motorised.

Perhaps the first company to produce a 4mm scale die-cast model tram of British outline was EFE. Based on the Leeds ‘Horsefield’, it is available in a wide range of liveries, including war-time grey. The quality of finish is excellent and they are easy to motorise, although not now that easy to obtain.

The other well-known maker of die-casts is Corgi. For some years they produced a range of 3-window four wheelers in a wide variety of guises and uncertain parentage or scale. They redeemed their credibility with the serious modeller with a vengeance by the introduction of the Blackpool ‘Balloon’. Beautifully finished in many different liveries, as well as a number of overall advertising options. Hot on their heels came the single deck railcoaches from the same period. They also produced the London and Leeds ‘Feltham’ tramcars. Well-detailed models of popular prototypes, all to 4mm scale and capable of being powered.

Some time ago Peak Horse produced models of Hong Kong double deckers in a variety of liveries in 4mm scale. 80M Bus Models in Hong Kong now do an extensive range of 4mm scale HK trams.

Corgi also produce a model of an American Presidents’ Conference Committee (PCC) car, unfortunately to a scale of 1:50 rather than 1:48 as used by modellers in the USA. It is available in the livery of a wide variety of operators and captures well the image of the PCC rather than attempt to be a scale model. This would be difficult as the prototypes were assembled from a standard range of components in slightly different configurations to suit each operator. Like the Preston ‘Standard’, the cars of no two operators looked the same. A notable anomaly in the range is that painted in Pacific Electric colours; Corgi’s model is single ended, PE’s were double. The other point is one of historical interest rather than accuracy; Louisville never ran PCC cars in service. They were ordered but by the time they were delivered in 1946, traffic patterns had changed and the system in the process of converting to buses. All were sold to Cleveland, Ohio, later moving to Toronto.
KITS AND COMPONENTS

In the 1990s, three manufacturers, Keil Kraft, Blackpool Models and Tower Models, introduced a small useful series of 4mm scale plastic kits of tramcars. The Tower Models kits are still available from BEC-Kits, while the Keil Kraft and Blackpool Models kits can often be seen on second hand stalls at exhibitions and auction websites even though they have been out of production for some time. These kits have provided a number of benefits to the modeller; they have been cheap and attractively packaged, so encouraging the majority of model shops to stock them. This wide availability, coupled with pocket-money prices, has brought tramway modelling within the range of the younger generation and those whose interest is only peripheral but with the potential to become enthusiastic. As mentioned previously, ease of modification has allowed a wide variety of other prototypes to be modelled.

The production of plastic kits requires a substantial capital investment for what is quite a small market. Surprisingly, even on the Continent, where trams continued to run, the number of tramway modellers remains fairly modest. This inability to take advantage of the economies of scale, in conjunction with an unwillingness to compromise on quality, accounts for the high prices of models from Germany and Austria. Fortunately, white metal, photo-etching and these days 3D printing allow the manufacture of kits and components by a small but dedicated cottage industry.

An enormous boost to the model tramway market came in the early 1960s with the introduction of white metal kits by BEC. Starting with a Leeds ‘Horsefield’, a sizeable stable developed covering both British and Continental prototypes, plus an American pre-war PCC car. They were made in OO/HO scales as appropriate but their big advantage was that they were complete, including ready-assembled power-unit, transfers and adverts. The original manufacturer has sold the range on with the Continental models now available by mail order or at selected exhibitions only (see below for details). The British models went to ABS but most are not currently available. BEC’s initiative was taken up by Anbrico, Varney and later by Tramalan. Like BEC, Anbrico and Varney are now part of the ABS stable. Tramalan produced both complete kits and packs of castings to assist in the modification of models from other manufacturers. The Tramalan range is now produced by Majestic Trams. KW trams have also joined the market with a range of British cars and now produce the BEC style motor units.

A small number of etched-brass kits of Blackpool prototypes were made for a short while by Model Tramcar Design and Modern Traction Kits. Using the same process, PC Models produced kits for power units in both 4mm and 7mm scales. ABS supply kits for four wheel ‘00’ gauge motorised chassis. Chris Cornell produces a range of etched brass kits in 4mm and 7mm scales, although they are in short supply. Pete Watson card kits as PDF downloads can be obtained exclusively from the TLRS. They are in 00 scale but can be reduced in size for the smaller scales and sometimes printed at 7mm.

The 7mm scale market is well catered for by Terry Russell. A comprehensive selection of white metal fittings is available, along with a large variety of ready to run power trucks. BEC experimented in ‘O’ gauge with kits for two London County Council (LCC) four wheelers, a single deck driver training car and double deck B class, 106 and a Liverpool ‘Bellamy’ type. As with their 4mm range, they were in white metal and included a ready-assembled power unit.

The largest popular scale for tramway modelling is 1:16 and is the one with which, for many years, the Society was synonymous. The scale owes its universal popularity to being the smallest in which it was possible to obtain motors powerful enough to propel the model yet fit beneath the floor. Today, we take powerful miniature motors for granted and 4mm scale models are being built with under-floor mechanisms.

The TLRS can supply brass castings for a variety of truck side frames in 1:16 scale. These need fettling and finishing by the modeller. Wheel castings, gears, motors and an assortment of materials are also available.
It may be noticed from the above that while much is made of the trams themselves and, to a lesser extent, overhead fittings, trackwork received hardly any mention. There is little doubt that this remains a sadly neglected area due, I suspect, to there being a lack a consistent standards for each scale. Some years ago, PC Models produced a set of etchings for grooved rail and points in both 4mm and 7mm scales. These were chrome plated brass, but the grooves were insufficiently deep and relied on the wheels running on their flanges. In the USA, Richard Orr manufactured Lengths of grooved rail suitable for OO/HO. Currently available from Proto87 Stores in the United States of America is the 'Electric Avenue' tramway track system for OO/HO. Point components cast in pewter were also advertised and, together with the rail, were briefly available in the UK. Hamo and Riverossi produced track and points aimed at the HO toy market and were compatible only with their own products. Hartel made points, crossings and track for OO/HO scale. These were a model tramway equivalent of the railway modeller’s ‘set track’. It consisted of rails held within a plastic base moulded to represent granite setts. Radii are pre-determined and flange-ways at the crossings on a point (frog) do not provide sufficient guidance for certain wheel profiles.

MOTOR DRIVES / TRUCKS

The only ready to run powered units in 2mm scale are available as part of a complete kit. Made by Modemo, who also produce two or three Japanese-type bogie cars. Their long wheel base prevents their use in British outline trams without extensive modification. It is possible to adapt the motor bogies from Graham Farish diesels, but this manufacturer has recently been taken over and their product range is under review. Currently the diesels are not available new but can be acquired second-hand.

The smallest scale in which power units are readily available commercially is 4mm. One of the most popular is the Tenshodo SPUD sold with 24.5; 26; 28.7; 31 and 35mm wheel bases. Not only are they suitable for the majority of 4-wheelers but they can also be used for American inter-urban and Continental bogie cars. A weakness is the plastic axle mounted gear wheel, which tends to split. Spares are available from Branchlines.

BEC supplied a number of ready-to-run 4-wheel trucks and bogies, both equal wheel and maximum traction. These tended to be cheaper and more robust in construction than the SPUD. Wheel bases for 4-wheelers run from 24 - 34 mm in 2mm increments. They are now produced by KW Trams. Some of this range is also marketed in kit form by ABS. Gear fitted wheel sets, worms, gear wheels, sideframes and chassis castings are also sold as separate items.

Terry Russell is the most prolific supplier of trucks and bogies in 7mm scale. These come ready-assembled using white metal sideframes and motor driving one axle through a worm and worm-wheel. Bogie cars are normally supplied with only one truck powered. Wheel profile is 4mm finescale.

North West Short Line manufacture what are probably the best-known power units in 1:48 scale, by name if not by number used. Known as ‘Magic Carpet’, they consist of a motor mounted on, and parallel to, the axle, the latter being driven by a cluster of spur reduction gears. Side frames are not provided, these being scratch-built or sourced elsewhere. NWSL recommend two units be used per vehicle (both mounted in the same truck on a bogie vehicle) which makes a model tram quite expensive. Their prototype appearance is followed through by the ability to be mounted beneath the floor of the car. Wheel profiles are as Q Car, who also market their products.

The TLRS can supply castings, wheels, motors, gears and materials for 1:16 scale.
## Scale Terminology - Basic Data

<table>
<thead>
<tr>
<th>Commercial Name</th>
<th>Scale</th>
<th>Ratio</th>
<th>Available Standards</th>
<th>Notes</th>
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<tbody>
<tr>
<td>N (UK)</td>
<td>2mm / 1 ft</td>
<td>1 : 148</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N (Continental)</td>
<td>1.9mm / 1 ft</td>
<td>1 : 160</td>
<td></td>
<td></td>
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<tr>
<td>HO</td>
<td>3.5mm / 1 ft</td>
<td>1 : 87</td>
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<tr>
<td>OO</td>
<td>4mm / 1 ft</td>
<td>1 : 76</td>
<td></td>
<td>May also be referred to as EM when used with a specific track gauge</td>
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<td>O (American)</td>
<td>1/4in / 1 ft</td>
<td>1 : 48</td>
<td>NMRA</td>
<td></td>
</tr>
<tr>
<td>O (Europe)</td>
<td>1 : 45</td>
<td>MOROP</td>
<td>Recommended for model railway work in Europe</td>
<td></td>
</tr>
<tr>
<td>O (UK)</td>
<td>7mm / 1 ft</td>
<td>1 : 43.5</td>
<td>GOG</td>
<td>Also used in France and Italy for model railway work</td>
</tr>
<tr>
<td>G</td>
<td>13.5mm / 1 ft</td>
<td>1 : 25.5</td>
<td></td>
<td></td>
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<tr>
<td>3/4 in</td>
<td>3/4 in / 1 ft</td>
<td>1 : 16</td>
<td>TLRS</td>
<td>Sometimes referred to as &quot;three and a half&quot; referring to track gauge</td>
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**Note:**
- NMRA is the National Model Railway Association (North America)
- MOROP is the modelling association in Europe similar to NMRA
- GOG is the Gauge 0 Guild modelling association in the UK.

The above data on scales is used with various track gauges (distance between inner faces of rail) to cater for the prototype standard and narrow gauges, and data on this aspect will be covered in the Standards documentation issued separately. It should also be noted that ready built models produced in Europe and North America will tend to comply to local scale standards even if they are models of UK prototypes.

AREA GROUPS

Listed below are the areas in which the Society holds meetings together with the name and address of its respective Chairman or Secretary. Please bear in mind that these details are subject to change; refer to Tramfare for latest information. Please enclose a stamped, self addressed envelope when writing to anyone in the Society.

<table>
<thead>
<tr>
<th>Area Group</th>
<th>Area</th>
<th>Chairman/Secretary</th>
<th>Address</th>
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<tr>
<td>Blackpool</td>
<td></td>
<td>John Whitehouse</td>
<td>14 Buttermere Rd, Burnley, Lancs, BB10 4HU</td>
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<td>Northern Ireland</td>
<td></td>
<td>J Adams</td>
<td>17 Abbey Gardens, Belfast, BT5 7HL</td>
</tr>
<tr>
<td>Norfolk</td>
<td></td>
<td>C Greenwood</td>
<td>9 Beresford Road, Holt, Norfolk, NR25 6EW</td>
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<tr>
<td>Oxford and the Chilterns</td>
<td></td>
<td>P Griffiths</td>
<td>1 Stoutsfield Close, Yarnton, Oxford, OX5 1NX</td>
</tr>
<tr>
<td>East Midlands</td>
<td></td>
<td>D Hangar</td>
<td>15 Maxwell Way, Lutterworth, Leics LE17 4GS</td>
</tr>
<tr>
<td>Solent</td>
<td></td>
<td>R A Howes</td>
<td>54 Stoney Lane, Winchester, Hants SO22 6DP</td>
</tr>
<tr>
<td>Leicester (Meetings – joint LRTA &amp; TMS)</td>
<td></td>
<td>1 Sickleholme Drive, Stoneygate, Leicester, LE5 5TS</td>
<td></td>
</tr>
<tr>
<td>South Anglia</td>
<td></td>
<td>D Carson</td>
<td>24 Treeview, Stowmarket, Suffolk, IP14 1SS</td>
</tr>
<tr>
<td>Merseyside</td>
<td></td>
<td>A Matthews</td>
<td>4 Layburn Avenue, Flixton, Manchester, M41 6HL</td>
</tr>
<tr>
<td>Sussex</td>
<td></td>
<td>PF Guiver</td>
<td>Wyncombe Close, Fittleworth, Pulborough, Sussex, RH20 1HW</td>
</tr>
<tr>
<td>North East</td>
<td></td>
<td>G J Bulmer</td>
<td>Holly Lodge, Seaton Lane, Seaton, Co Durham SR7 0LS</td>
</tr>
<tr>
<td>Thames Valley</td>
<td></td>
<td>R J Howes</td>
<td>28 Broughton Avenue, Ham, Richmond, Surrey, TW10 7TS</td>
</tr>
<tr>
<td>North Lancs.</td>
<td></td>
<td>R J Hargreaves</td>
<td>19 Grange Rd, Rawtenstall, Rossendale, BB4 7RU</td>
</tr>
<tr>
<td>West of England</td>
<td></td>
<td>E Earnshaw</td>
<td>The Willows, Higher Westford, Wellington, Somerset, TA21 0DT</td>
</tr>
<tr>
<td>North Wales</td>
<td></td>
<td>N E Beaumont</td>
<td>27 Heol Colwyn, Abergale, Conwy, LL22 7UP</td>
</tr>
<tr>
<td>West Midlands</td>
<td></td>
<td>A J Kirkman</td>
<td>17 Park Road, Sutton Coldfield, W Midlands, B73 6DB</td>
</tr>
</tbody>
</table>
USEFUL ADDRESSES

These are the details of the manufacturers and museums mentioned in the Information Pack. Please note that they are subject to change. Refer to Tramfare for up-to-date information.

ABS Kits
36 Napier Road,
Hamworthy,
Poole,
Dorset,
BH15 4LX

London Transport Museum
33 Huggins Lane
Welham Green
Herts.,
AL9 7LJ

London WC2E 7BB
Tel: 020 7565 7299 (24 hour recording)
Tel: 020 7379 6344

Terry Russell
23 Thorned
Cowfold
Horsham
West Sussex RH13 8AE
Catalogue 4 x 1st class stamps
(Overseas 4 x International Reply Coupons)

Adam Gordon Books
Kintradwell Farmhouse
Brora
Sutherland KW9 6LU
Tel: 01408 622660

Chris Cornell
36 Napier Road
Hamworthy
Poole,
Dorset,
BH15 4LX

London
London WC2E 7BB
Tel: 020 7565 7299 (24 hour recording)
Tel: 020 7379 6344

Peter Howard (TLRS) *
Model Engineering Secretary
9 Manor Close
Bognor Regis
West Sussex PO22 7PN
Tel: 01243 82472 (evenings)

Elro card kits
Robert Hendry
6 Ash Grove,
Ramsey,
Isle of Man,
IM8 3HT.

The Bookshop
National Tramway Museum
Crich
Derbyshire DE4 5DP
Tel: 01773 852565
Fax: 01773 852326

Alan Kirkman
Model Tram Builder
17-19 Park Road
W.Mids
B73 6BD
0121 354 3201

Branchlines
P O Box 4293
Westbury
Wiltshire
BA13 9AA
Tel/Fax: 01373 822231

John D Whitehouse
East Lancs Model Tramway Supplies
14 Buttermere Road
Burnley
Lancs BB10 4HU
Tel: 01282 436802

The Tramway Bookshop
Derek Lambelle
40 Weston Road
Lichfield
Staffs
WS13 7NT
Tel: 01543 253916b

Majestic Trams
4 Berrywell Walk,
Dyce,
Aberdeen, AB21 7BT,
Scotland.
Tel: 01202 681440

BEC-Kits
6 The Cliffs
Heysham
Morecambe
Lancs
LA3 1NY
www.bec-kits.co.uk

Paul Coles
KW Trams
3 Merlin Gardens
Fareham
PO16 8HB
Tel: 01329 827809
www.kwtrams.co.uk

Pete Watson
Card Kits (PDF downloads)
On-line only
www.tramwayinfo.com/watson