

# Ivatt Diesel Re-creation Society Business Plan

## September 2018



10000 on its launch day at Derby, 5th December 1947.

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# **I. EXECUTIVE SUMMARY**

## **I.1 Organisational summary**

The society is a charity established in 2011 to construct and operate a new-build D16/1 design locomotive. The first loco of this design, 10000, Britain's first mainline diesel, was scrapped in 1968.

The project is viable because essential components are available, including a power unit with very low running hours, now owned by the Society.

Our aim is to construct a loco that is sympathetic to the original, using as many original or similar parts as possible. In addition, an educational package will tell the story of the original loco and its place in British post-war engineering history.

The project is financed by subscriptions and sponsorship.

## **I.2 Market summary**

The intent is to produce a locomotive that will demonstrate a key missing link in British traction development as well as providing an asset to be used on heritage railways. The general public will have the opportunity to learn about the history of British locomotive design and to see a demonstration in practice. The original loco was a pioneer and prototype for all later designs and the reconstructed loco will be unique among heritage railway diesels.

Peak Rail is the home base for our project. Our intention is to make an arrangement with Peak Rail which would see the finished loco based exclusively on that line for the first few seasons of operation, with agreed periods of loan to other railways following this period. We anticipate a great deal of interest from the rail enthusiast community, and this will be of financial and reputational benefit to the home railway.

## **I.3 Financial summary**

The Society is funded entirely by donations. Previously a 'Buy-a-Litre' campaign funded purchase of the power unit. Since the latest campaign began, to buy the bogies, £11,000 has been raised in 3 months. Half that figure came from one-off donations or life membership fees. The trustees have restructured the membership system to create a constant flow of income via monthly donations.

Our funding strategy is to build upon visible success. Once the bogies are purchased potential donors will be able to see measureable progress since the restoration process will begin immediately.

New campaigns for 2018/19 will focus on encouraging new donors via our information stand at galas, targeted appeals for specified items and a '100 club' lottery for which the Society is registered.

## **I.4 What we need to make it happen**

- a) EM2 bogies – currently in negotiation for purchase
- b) Covered accommodation
- c) Additional parts from redundant main-line locos, or a complete donor loco.
- d) Sufficient income to obtain the above.

See appendices for more details.

## **2. ABOUT THE SOCIETY**

The society is a not for profit organisation, registered as a charity, and made up of volunteers with a shared interest in the recreation and operation of this historic locomotive

The Society was formed by a core team of engineers, current railway staff and business professionals. The current management structure comprises six trustees, supported by a growing membership, which now extends across the world. We have good contacts in the rail industry, close ties with a number of heritage railways, and other preservation groups in the UK.

### **2.1 The Vision**

To recreate the sight, sound and performance of the first successful mainline diesel engine for future generations to enjoy.

### **2.2 History**

The Society was formed in 2012 by a core team of engineers, current railway staff and business professionals, supported by a small group of members. We were successful in the purchase of a English Electric 16SVT engine and a class 58 loco. A great deal of preparatory engineering research has been undertaken to identify the most suitable options for the re-creation.

However since 2015 the Society has been beset by of a number of issues that brought progress to a halt, other than the purchase of 58022. The Society had struggled to attract active members to produce newsletters or membership renewals. It was not very active publicly and the trustees at the time were not social media users, so public awareness was limited. Some trustees stepped back from active involvement. One key trustee had heavy employment commitments that meant he no longer had free time to offer the Society. Sadly, another key trustee passed away, which resulted in the loss of a great deal of knowledge and of contacts within the industry.

The society 'relaunched' in 2017 with an additional four trustees and further volunteers taking regular part in activity. Contact with members and the wider public has increased markedly. Membership has doubled and income raised considerably. There is room for progress on all fronts and the trustees are actively pursuing improvements with guidance from similar groups.

### **2.3 Where we are now**

The society now has regular communication with members. We are active on social media and our information stand has attended many events at preserved railways across the UK to raise public awareness about the project.

Since the new trustees came onboard the key stats are:

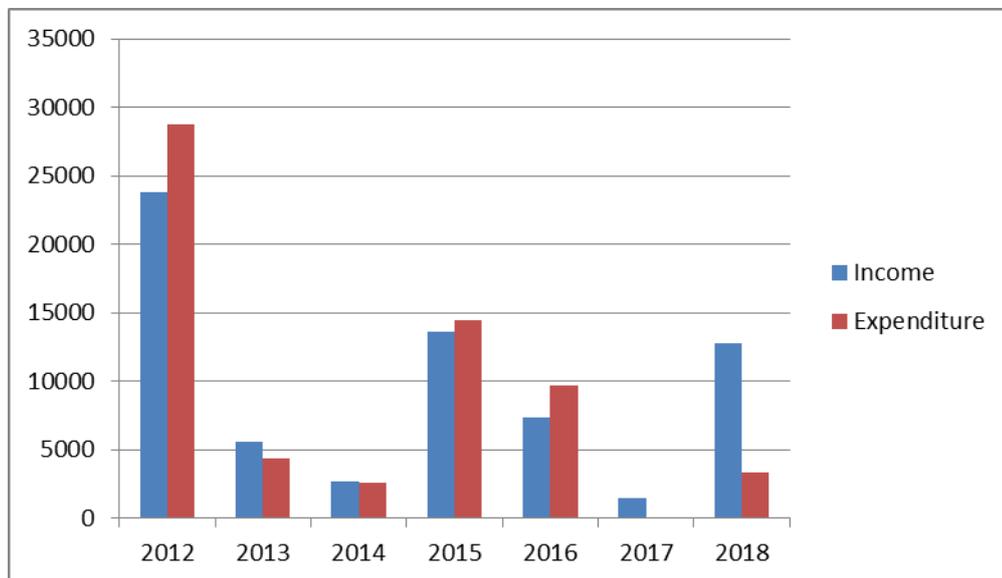
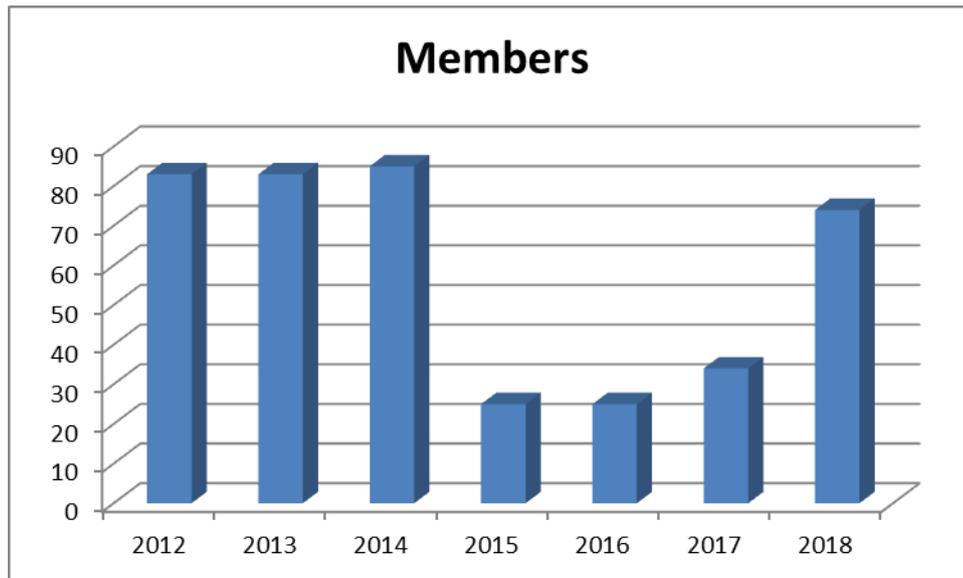
- a new website has been launched, which is currently receiving almost 5000 visitors per month
- membership has doubled within 12 months
- income has increased by a factor of 8 compared to the previous year.

We have also taken steps to ensure that no information is held by only one person, to protect against the loss of any individual.

Now that the society is on a strong footing once again, with fundraising increasing and progress being made on the purchase of the bogies, our next priority is the acquisition of covered accommodation.

The tables below indicate the significant change in fortune of the society since the relaunch.

	Members	Income	Expenditure
2012	83	23775.73	28718.88
2013	83	5612.00	4418.00
2014	85	2737.00	2640.00
2015	25	13583.00	14504.00
2016	25	7351.00	9688.00
2017	34	1506.00	0
2018	74	12801.47	3375.00



## 2.4 Legal status

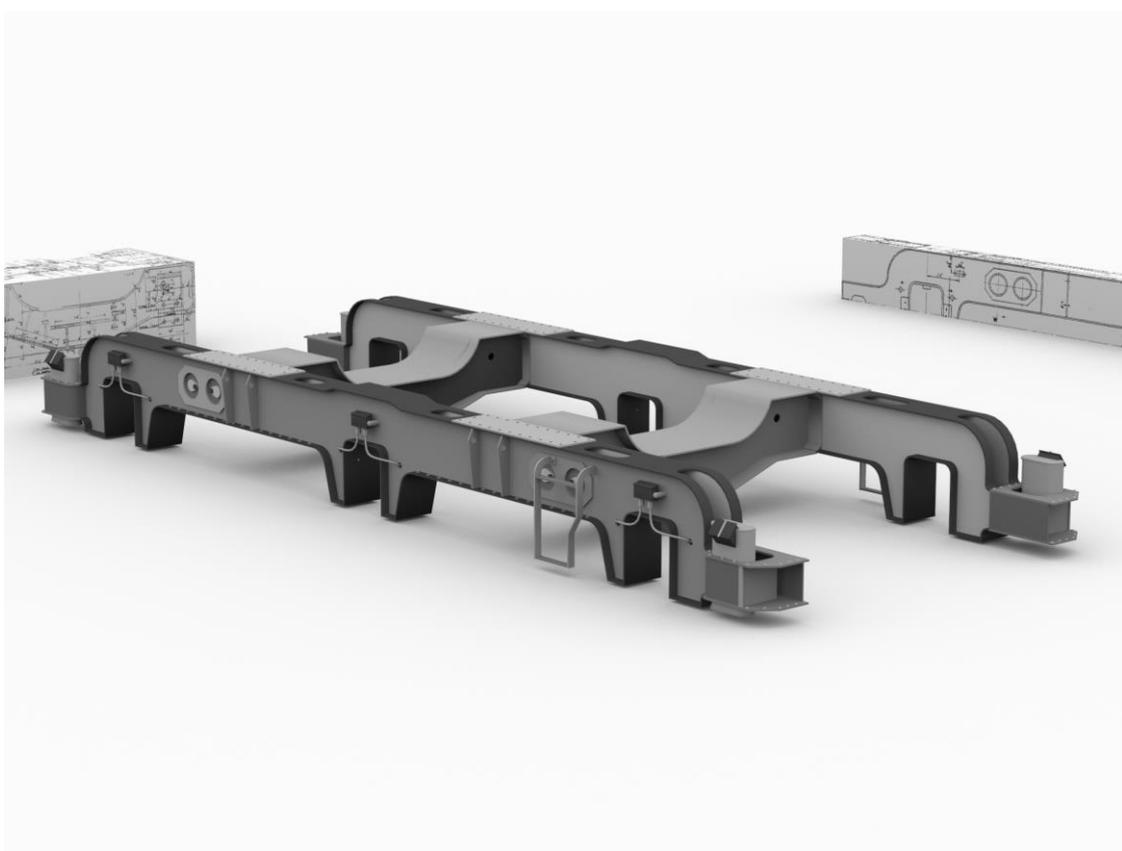
The Ivatt Diesel Recreation Society is a registered charity in the UK, registration number 1147032.

### 3. OPERATIONAL PLAN

#### 3.1 Milestones

The key future milestones for the project will be contained in our detailed Engineering Plan.

<b>Engineering Plan:</b>	This is due to be completed early in 2019.
<b>Purchase of the bogies:</b>	A set of EM2 bogies, almost identical to the originals, are currently stored at the Midland Railway - Butterley. Negotiations are underway to agree a purchase price.
<b>Bogie refurbishment:</b>	The bogies have been stored outdoors for many years, and will require full dismantling, shot-blasting and painting. Quotations have been received for this work to be carried out by an external contractor. Some strengthening and alterations will be carried out, as 10000 will be approximately 20 tonnes heavier than the loco they were previously used on.
<b>Covered accommodation:</b>	Dry accommodation and a solid working surface will be required to allow all further stages of the project to proceed.
<b>Stripping of the Class 58:</b>	The bogies and all items above the solebar will be removed to release the chassis.
<b>Alteration of the chassis:</b>	Some alterations and strengthening of the chassis will be completed to create the correct tapered profile in the cab sections and prepare the chassis to accept the refurbished EM2 bogies.
<b>Reassembly of chassis and bogies:</b>	This will be a key milestone, enabling work to commence on the key electrical and mechanical parts of the loco, and will also allow the loco to be moved as necessary.
<b>Installation of the engine and other internal components:</b>	Many of these items will be obtained either from the class 58, or from redundant class 20 and 37 locomotives which are expected to become available in the near future.
<b>Construction of bodywork:</b>	This will mostly be carried out in house, with key items such as cabs and nose ends manufactured by external contractors.



Our CAD Team are currently at work digitising our extensive drawing collection to produce material to be used as part of the design and approval process. The pictures above are examples of their current work on the bogies and cabs.

### 3.2 Non-engineering milestones for 2019

- Increase the rate of donations toward £15,000 in 2019 and £30,000 in 2020
- Establish local core group in the Midlands/Derbyshire [already begun]
- Build links with local business, colleges and universities
- Hold trustee progress review meetings to review the business plan and engineering plan and progress against aims.

### 3.3 Costings

All costings are estimates based on the experience and research carried out by the Society's engineering team. If more detailed costings are required, these can be provided on request.

#### Key project targets:

- Utilisation of external crane contractor.
- Use of our existing lifting beams.
- Basic two road canopy structure including 70ft x 20ft x 45ft rafted concrete pad.
- Use of class 58 full electrical system, wiring, brake system modified cooler group repaired elements.
- Use of class 37 fixtures fittings, fire protection system vacuum braking system.
- Design analysis of bogies to assess modifications.
- Bogies refurbished and repaired utilizing class 58 traction motors, brake pistons and aesthetically modified to match originals.
- Calibration and repair of all apparatus and instruments as required.
- Replacement alternator and electrical system repairs as required.
- New tyres or wheel pans
- General tooling and consumables

**Total estimate £405,000 minimum.**

Additional cost for new basic two road shed:

Estimate: £15,000

Additional cost of a DC generator Loco based on class 37/0 if class 58 not suitable or in adequate condition, including full rewire of the loco, as class 37/0 wiring is likely to be life expired.

Total estimate: £250,000

## 4. PEOPLE, MANAGEMENT AND GOVERNANCE

### **President: Mr Stanley Fletcher:**

We are honoured to have Stan Fletcher as our Society President. Stan was the English Electric engineer with special overall responsibility for commissioning the original locomotives, and clocked up over 150,000 miles behind 10000 and 10001. His knowledge of the original locos, and their good (and bad!) points, has been invaluable to the project.

Day to day running of the society is the responsibility of the six trustees, who have a wide variety of experience in organising and completing projects of all kinds:

### **Chair: Mark Walker:**

Mark works as the Local Resilience Forum Co-ordinator for Warwickshire, and is currently involved in restoring an ex-NCB locomotive at the Midland Railway Centre.

### **Secretary: Andrew Hoseason:**

Andrew has a background in industrial photography followed by serving as a trustee for Citizen Advice, a money advice worker and a school governor. He has experience of running various charities.

### **Treasurer: Michael Prince:**

Michael has worked as emergency services support staff for 18 years and previously worked for the Land Registry. He qualified as a professional artist to Master's level, as well as gaining a business and accountancy diploma.

### **Engineer: Paul Etherington:**

Paul has many years experience working within the power and petrochemical industry, starting as an apprentice, culminating in managing outage projects on rotating plant and equipment. He has a vast railway interest and knowledge. Paul is supported in Engineering issues by Vaughan Cole, an experienced engineer with many years of railway experience.

**Project Manager: Hanson Haigh:** Hanson spent 27 years running his own Road Haulage business until 2002 and has been Operations Manager for a steel stockholder and processor overseeing around 55 shop floor staff and drivers.

### **Merchandise Manager: Tony Ellershaw:**

Tony is a retired mainframe storage analyst with experience over 16 years including disaster recovery and testing.

In addition to the Trustees, the Society also has a media team, responsible for producing AutoCAD drawings of all parts of the locomotive, and the production of promotional videos.

Great efforts have been made to ensure that the society has no single points of failure, and this project is now complete. All files, drawings and documents are held centrally online, and all accounts and passwords etc are held by at least two trustees.

## Future aspirations

The trustees would like to expand the team. An additional engineer with extensive rail experience was added to the team during 2018. More would be ideal, particularly those with rail industry experience.

We are mindful of our limitations, and are keen to attract dedicated volunteers with prior experience in fundraising, publicity and project management to augment the current team.

## 5. RISKS

<b>Risk</b>	<b>Likelihood</b>	<b>Impact</b>	<b>Mitigation tactics</b>
Loss of Trustee	Low	Medium	All information centrally held, and all account details and passwords held by at least two trustees. Initial impact may be higher, but long-term impact will be low.
Lack of funding	Medium	High	Significant effort made to publicise the society, and the progress made. Approaches to be made to large rail industry partners when visible restoration progress is made.
Non-availability of parts	Low	High	Project work underway to identify appropriate mechanical and electrical options and identify parts required while they are still available.  Contact with key staff within the rail industry has already been made.
Lack of covered accommodation	Low	High	Discussions to take place with Peak Rail to arrange a long-term home base with undercover accommodation.  Trustees are exploring non-railway sites where restoration of smaller parts could be undertaken if limited or no covered accommodation was immediately available.

## **Appendix I – BACKGROUND**

The Ivatt 'Twins', No's 10000 and 10001 were designed by H.G. Ivatt and built by the London, Midland and Scottish Railway (LMS) at Derby Works. 10000 was completed in 1947 as an LMS loco, and 10001 in 1948 following the formation of British Railways. They were the first main line diesel locomotives and successfully set the shape of UK diesel traction for decades to come.

H.G. Ivatt, the LMS Chief Mechanical Engineer was given the task to design and build two diesel prototypes to test their suitability for use on the main line in direct comparison with steam locomotives. Highly successful as prototypes, they operated until the mid-1960s, travelling around 2 million miles between them.

The Ivatt diesels were built in an 'Art Deco' style. With their smooth lines, shiny black paintwork and raised aluminium numerals they were the cutting edge of design and technology for their time.

10000 and 10001 ran until 1963 and 66 respectively and both had been scrapped by 1968 before the railway preservation movement had turned its attention to diesel locomotives.

The aim of the Ivatt Diesel Re-creation Society is to build, exhibit and operate a re-creation of LMS 10000. Whilst undertaking this task, we are also collating an archive of the locomotives, from the people that built, commissioned and worked with them, to information, drawings, and workings of 10000 and 10001 as an educational resource for future generations.

The society owns a class 58 locomotive, which was purchased to provide the chassis for the recreated locomotive, and an original 16SVT engine, from the same batch as the original engines used in 10000 and 10001, which has been well maintained and has a low number of hours use. Following a quiet period, the group was relaunched in 2017 with several new Trustees. Over the last 12 months, the priority has been to raise the profile of the society and raise funds for the purchase and restoration of a set of bogies which are virtually identical to those used under the original locos.

## **Appendix 2 - BENEFICIARIES**

From the start of the project, it was known and accepted that this was very unlikely to be a profit-making venture. Although we anticipate significant interest in the loco, the potential income is not expected to recoup the full costs of the recreation. The beneficiaries of the project are;

- Peak Rail, as the home base for our project. Our hope is to make an arrangement with Peak Rail which would see the finished loco based exclusively at Peak Rail for the first few seasons of operation. We anticipate a great deal of interest from the rail enthusiast community, and this will be of financial and reputational benefit to the home railway.
- Rail enthusiasts. The feedback we have received so far indicates that there will be great interest in the loco by enthusiasts, given its position as the first successful mainline diesel engine, and a missing link in the history of modern traction.
- The general public. In comparison to steam engines, there is a 'they all look the same' attitude to preserved diesel traction from the public. However, 10000 will have the benefit of a striking appearance, with its unique black and silver livery, and an impressive soundtrack to match, from the 16SVT engine. Added to its position as the first of its kind, we expect public interest to be significantly higher than in other preserved diesels.

### **Appendix 3 - EDUCATION**

Our intention is to provide three forms of education, subject to funding from grants, sponsors or donations.

1. Within a shed building - a permanent display centred around 10000
2. Internet education package aimed at enthusiasts, adults and school children
3. A mobile display which can be transported with 10000 when it leaves the home base

The topic in each case will be 10000 and it's place in British post war engineering history.

- a) the history of 10000 and it's context within British locomotive development (including 10000's test runs on the Matlock route).
- b) the history of 10000's descendants, such as classes 40 and 50 and the links to other English Electric designs and to the EM2 and D600 Warships etc
- c) Background to the 16SVT power unit showing the history of British engineering in a wider scope to reflect the power unit's use by the Ministry of Defence.
- d) Background to the bogies showing the design, similarity to other builds, use of the bogies in the UK and Holland, and the improvements and alterations made for their re-use.

### **Appendix 4 - FINANCIAL**

The society is funded entirely by donations. Around £45,000 was raised to purchase a class 58 loco, to provide the chassis for the recreated loco, and an original English Electric 16SVT engine, in working order, from the same batch as the engine originally fitted to 10000 and 10001. At the time of writing we are negotiating the purchase price of a set of EM2 bogies of an almost identical design to the originals, for which funding is available. The next priority following the purchase of the bogies will be the purchase and erection of a loco shed to provide undercover and secure accommodation.

Since the relaunch of the society in 2017, fundraising has been increasingly successful. However, we are conscious that there has been little visible activity since the purchase of the Class 58, and this has affected public confidence and fundraising success. Feedback from enthusiasts and rail industry contacts are that donations will increase once the project progresses mechanically. Although donations from members will always be a necessary source of income, it is anticipated that interest from the rail industry will result in larger donations being made.

## **Appendix 5 - FURTHER STEPS**

The milestones required to enable us to complete the project are:

- Covered accommodation.

This is the next key part of the project, which will allow us to strip the class 58 loco to remove the chassis and various other parts for re-use on 10000.

- Donor loco

We are currently looking at a number of different options for the remaining components required to complete 10000. Some of these options will require the purchase of a class 37/0 locomotive, to be broken up for parts. The final option will depend on the availability and cost of parts, and the condition of parts when dismantled. The main options are:

- Refurbishment of the existing traction motors in the EM2 bogies.
- Replacement of the existing traction motors with class 20 alternatives, which will require the wheelsets to be altered or replaced.

Both these options will require the use of the electrical system and brakes from a class 37/0 loco. Should this option be chosen, we already have a compatible electrical cubicle available.

- The use of the alternator and electrical system from the class 58 loco, with either original or replacement traction motors, or those already available from the class 58.

This option may allow the use of the existing class 58 wheelsets and brakes, although additional parts will be required to complete the braking and electrical system, as some brake parts and, more recently, all the control cards from the electrical system have been removed from the loco.

- Additional parts

Whichever of the above options is taken for the main components of the loco, a large number of smaller parts will be required. These will be obtained from class 20 and 37 locomotives which are expected to be withdrawn from mainline service in the next few years. If the key items are obtained from the class 58, it will likely not be necessary to purchase a donor class 37/0 loco.

## **Appendix 6 - SAFE OPERATING PROCEDURE**

A detailed safe operating procedure has been produced to promote safe working practices during the upcoming mechanical work, and is available on request.