

Zero Emission Vehicle Repower Accreditation Scheme (ZEVRAS) –  
Guidance document

Issue history

Version	Date released	Author	Approved
1	1 <sup>st</sup> September 2023	R Ward	A Eastlake

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## ZEVNAS outline

### 1. Background

- 1.1 The ZEVNAS Code of Practice has been developed to ensure that vehicles which become eligible for government incentive funding meet certain basic safety and efficiency standards. It does not replace any legal requirements that pertain to vehicle operation on public roads, and it does not absolve vehicle operators of any legal, moral or ethical obligations.
- 1.2 Government funding may be either up-front grant funding or in service funding via the Bus Service Operators Grant (BSOG) scheme depending on local and/or central government incentive programmes and contractual arrangements.
- 1.3 The technical requirement of ZEVNAS have been designed around the initial requirement for a scheme applicable to M2 and M3 vehicles (minibus, coach and service buses). However, the scheme has been designed in a manner to allow its applicability to be expanded to additional vehicle categories in future.

### 2. Scope

- 2.1 ZEVNAS is applicable to zero emission vehicle repowers and applies to all M2 and M3 vehicles that have already been registered for use on UK roads.
- 2.2 The objective of this Code of Practice is to establish a base level of performance for vehicles that are to be granted some level of government funding before or during their use in service. In order to reduce cost and complexity, this technical requirement will use worst casing and model report approaches wherever possible.
- 2.3 Compliance with this Code of Practice ensures a certain minimum target for performance and safety. As with any set of requirements, compliance with this code of practice is not a guarantee of the performance or safety of any one individual vehicle.

- 2.4 Whilst the defined warranty period does also place an obligation on repower manufacturers to remedy any in-service issues with vehicles, it does not necessarily prevent reliability issues being seen in operation. It is suggested that contracting parties may therefore choose to include reliability / minimum levels of service targets in individual contracts.
- 2.5 Once the ZEVNAS process is complete, the operator should be able to claim the BSOG incentive and potential future grant funding.

## 3. Definitions

- 3.1 ZEVNAS: Zero Emission Vehicle Repower Accreditation Scheme
- 3.2 M2 and M3: Passenger vehicles as defined in UN ECE Consolidated Resolution on the Construction of Vehicles (R.E.3).
- 3.3 EST: Energy Saving Trust
- 3.4 DVSA: Driver and Vehicle Standards Agency
- 3.5 DVLA: Driver and Vehicle Licensing Agency
- 3.6 BSOG: Bus Service Operators Grant
- 3.7 ZEB Certificate: Zero Emission Bus Certificate

## 4. Company and product accreditation process

- 4.1 The principle of ZEVNAS is that a repower manufacturer will first need a company approval issued by the Energy Saving Trust (EST) in accordance with the requirements in the document '*ZEVNAS Company Approval Guidance*' available on the EST website.

Once approved as a company, the repower manufacturer may then apply for an accreditation of their repower solution for a particular vehicle type(s) in line with the document '*ZEVNAS Code of Practice*' available on the EST website.

It should be noted that the obligation for vehicles to go through the DVSA Notifiable Alteration process (known as VTP5) remains and is the obligation of the vehicle operator to complete. The vehicle operator may direct the repower manufacturer to complete the VTP5 process on their behalf

during ZEVNAS accreditation. As part of the VTP5 approval process the normal requirement of DVSA is to inspect every vehicle that is to be approved. However DVSA may agree to inspect a limited number of vehicles approved as a batch, but reserve the right to periodically inspect selected vehicles based either on volume or duration of batch production.

Once the ZEVNAS process is complete, the operator should be able to claim the BSOG incentive and potential future grant funding. This process is defined at [www.gov.uk/government/collections/bus-services-grants-and-funding](https://www.gov.uk/government/collections/bus-services-grants-and-funding).

In order to reduce cost and complexity, this technical requirement will use worst casing and model report approaches wherever possible.

- 4.2 The following is a list of documentation to be completed by the repower manufacturer for ZEVNAS accreditation (downloadable from EST website [www.energysavingtrust.org.uk/service/zero-emission-vehicle-repower-accreditation-scheme](http://www.energysavingtrust.org.uk/service/zero-emission-vehicle-repower-accreditation-scheme)).

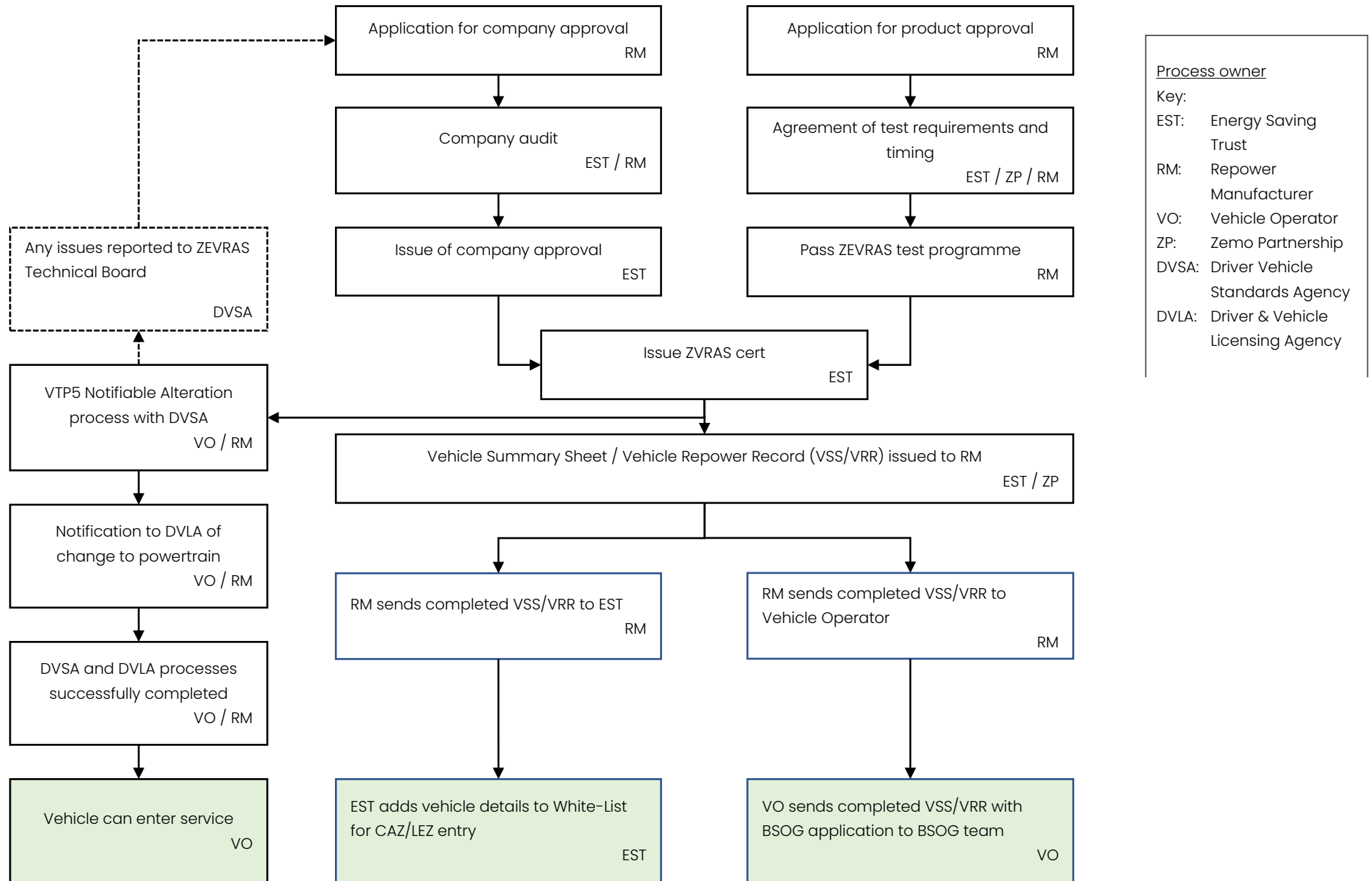
### Company Approval

- Application for ZEVNAS Company Approval

### Product Approval

- Application for ZEVNAS Product Approval (Form download from EST Website)
- ZEVNAS Information document

- 4.3 Upon a successful completion of the ZEVNAS process the repower manufacturer / operator should be in possession of the following:
- a. ZEVNAS Company Approval Certificate (Issued by EST) (valid for 12 months)
  - b. ZEVNAS Product Approval Certificate (issued by EST)
  - c. Zero Emission Bus Certificate (issued by Zemo)
  - d. Vehicle Summary Sheet / Vehicle repower Record (issued by Zemo)
- 4.4 List of required documentation for BSOG ZEB claim
- a. Zero Emission Bus Certificate (Issued by Zemo)
  - b. Vehicle Summary Sheet / Vehicle repower Record (Issued by Zemo)
  - c. BSOG Application Form for Zero Emission Buses (Issued by DfT)
- 4.5 A summary of the overall process is shown on the next page.



## 5. Commentary on ZEVAS Code of Practice requirements

### 5.1 Annex 1 – Brakes

Although the basic requirements of the ECE Regulation 13 brake standard revolves around the performance of brake tests on a test track, it should be recognised that the scope of Regulation 13 is wider than just brake performance stops.

Compliance evidence, such as a test report from a test facility, should cover all of the requirements as they apply to the relevant category of vehicles and that are affected by the vehicles re-power.

It should also be noted that those basic elements of Regulation 13 such as brake performance stops may, in some circumstances, not be required. For instance, if the only change in the brake system is a new air compressor then, as part of the discussion ahead testing, it may be agreed that comparisons of old v new compressor performance shows that basic brake performance tests are not required and only compressor build up times may be tested.

### 5.2 Annex 2 – Static Stability (Tilt)

The default position is that a tilt test will be required. The point of the requirement in the Code of Practice is to give an allowance for not doing a tilt test in the case where it can be clearly demonstrated that the Centre of Gravity has not moved in an adverse direction.

### 5.3 Annex 13 – Electromagnetic Compatibility (EMC)

Along with electrical safety requirements, the EMC requirements contained in the Code of Practice form one of the most complex areas of development and testing within ZEVAS.

The objective of the EMC requirements is that every type of re-power should undergo a whole vehicle EMC chamber test or should be related closely enough to a type that has been through a chamber test to allow a reliable read across of some/all of the test result.

The design of re-power systems and the integration of those systems into whole vehicles can be a complex process and it is recognised that there



can be a significant cost associated with testing in whole vehicle EMC chambers.

In order to ensure the most efficient use of time in test chambers and to give the greatest chance of success, it is suggested that repower manufacturers may want to seek expert advice to support their design from the initial stages.

Advice and design support is available from any of the test facilities detailed in section 0.

### **Extensions to accreditations and approved components**

It is recognised that during the initial accreditation process repower manufacturers may wish to include alternative parts or alternative parts may need to be added during the life of a vehicle accreditation. In this occurs it would add a significant additional cost if a new set of whole vehicle EMC chamber tests is required.

In a bid to reduce testing and cost the use of Reg10 approved component should be maximised. As a general principle, it is unlikely that a new EMC test will be required if an existing part is being replaced with a component that has an existing, standalone Reg 10 approval.

#### 5.4 Warranty

The ZEVTRAS requirement mandates that repower manufacturers offer a warranty of at least 2 years covering both technical performance & function, and quality of manufacture & installation. Vehicle owners should ensure that the terms of any warranty are realistic given the vehicle's expected mode of operation.

### 5.5 VTP5

It should be noted that the obligation for vehicles to go through the DVSA Notifiable Alteration process (known as VTP5) remains and is the obligation of the vehicle operator to complete. The vehicle operator may direct the repower manufacturer to complete the VTP5 process on their behalf during ZEVNAS accreditation. As part of the VTP5 approval process the normal requirement of DVSA is to inspect every vehicle that is to be approved. However, if suitable documentary evidence of compliance supports the VTP5, DVSA may agree to inspect a limited number of vehicles approved as a batch, but reserve the right to periodically inspect selected vehicles based either on volume or duration of batch production.

### 5.6 Warranty

The basic ZEVNAS requirement is that repower manufacturers offer a 2 year warranty as a minimum. Vehicle operators/owners are reminded that it is their responsibility to ensure that the terms of a warranty are realistic given their own particular operating practices.

### 5.7 Tachographs

Detailed requirements for tachographs are not given within the Code of Practice because they are covered in separate UK legislation that repower manufacturers should be aware of. Legislation is derived from EU Regulation 165/2014 which is now available as:

GB TRANSPOSED VERSION OF REGULATION (EU) No. 165/2014 as amended by Regulation (EU) 2020/1054, S.I. 2019 No. 453(\*), S.I. 2021 No. 135 and S.I. 2022 No. 126

UK legislation is available at: <https://www.legislation.gov.uk/>.

## 6. Fees

Costs associated with the ZEVNAS process are available from the Energy Saving Trust at [www.energysavingtrust.org.uk/service/zero-emission-vehicle-repower-accreditation-scheme](http://www.energysavingtrust.org.uk/service/zero-emission-vehicle-repower-accreditation-scheme)

7. Useful contacts

Organisation	Role	Contacts
Energy Saving Trust	ZEVAS scheme administrators	<a href="http://www.energysavingtrust.org.uk/service/zero-emission-vehicle-repower-accreditation-scheme">www.energysavingtrust.org.uk/service/zero-emission-vehicle-repower-accreditation-scheme</a> <a href="mailto:zevras@est.org.uk">zevras@est.org.uk</a> Colin Smith: <a href="mailto:Colin.Smith@est.org.uk">Colin.Smith@est.org.uk</a>
Zemo Partnership	ZEVAS technical support	<a href="https://www.zemo.org.uk/about-us/contact-us.htm">https://www.zemo.org.uk/about-us/contact-us.htm</a> +44 (0)20 3832 6070 <a href="mailto:hello@zemo.org.uk">hello@zemo.org.uk</a> Tim Griffen: <a href="mailto:timothy.griffen@zemo.org.uk">timothy.griffen@zemo.org.uk</a> Robert Ward: <a href="mailto:rob.ward@zemo.org.uk">rob.ward@zemo.org.uk</a>
UTAC Millbrook	Test facility, Millbrook, Bedfordshire	<a href="https://www.utac.com/">https://www.utac.com/</a> +44 (0)1525 404 242 Tony Soper: <a href="mailto:tony.soper@utac.com">tony.soper@utac.com</a> Simon Rowlands: <a href="mailto:simon.rowlands@utac.com">simon.rowlands@utac.com</a>
Horiba-MIRA	Test facility, Nuneaton, Warwickshire	<a href="https://www.horiba-mira.com/">https://www.horiba-mira.com/</a> +44 (0)24 7635 5000 Alex Julian: <a href="mailto:alex.jullien@horiba-mira.com">alex.jullien@horiba-mira.com</a> Steve Castaux: <a href="mailto:steve.castiaux@horiba-mira.com">steve.castiaux@horiba-mira.com</a>
	EMC testing and advice	Sandeep Bharat: <a href="mailto:sandeep.bharat@horiba-mira.com">sandeep.bharat@horiba-mira.com</a> Andy Heap: <a href="mailto:andy.heap@horiba-mira.com">andy.heap@horiba-mira.com</a>
Applus 3C Test	EMC testing and advice	<a href="https://www.3ctest.co.uk/">https://www.3ctest.co.uk/</a> +44 (0)1327 857500 Ioannis Psychas: <a href="mailto:ioannis.Psychas@applus.com">ioannis.Psychas@applus.com</a>

Organisation	Role	Contacts
Element Material Technology	EMC testing and advice	<a href="http://www.element.com">www.element.com</a> +44 (0)1684 571 723 Ian Forshaw: <a href="mailto:Ian.Forshaw@element.com">Ian.Forshaw@element.com</a>
Driver and Vehicle Standards Agency (DVSA)	Owner of legal VTP5 process	<a href="https://www.gov.uk/government/organisations/driver-and-vehicle-standards-agency">https://www.gov.uk/government/organisations/driver-and-vehicle-standards-agency</a> <a href="mailto:approvals.Technical@dvsa.gov.uk">approvals.Technical@dvsa.gov.uk</a> Put "ZEVROS" in subject box
Driver and Vehicle Licensing Agency (DVLA)	Updates to vehicle registration documents	<a href="https://www.gov.uk/government/organisations/driver-and-vehicle-licensing-agency">https://www.gov.uk/government/organisations/driver-and-vehicle-licensing-agency</a>
Tachograph centres	Tachograph accreditation	<a href="https://www.gov.uk/find-approved-tachograph-centre-atc">https://www.gov.uk/find-approved-tachograph-centre-atc</a>
Speed Limiter centres	Speed limiter accreditation	<a href="https://www.gov.uk/find-approved-speed-limiter-centre">https://www.gov.uk/find-approved-speed-limiter-centre</a>