22-010 Review of AC and DC Rule Book Modules and GEGN8575

[This page should be deleted at the publication stage of the project]

Version:	0.5		
Purpose:	Approval to proceed to consultation		
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Lead industry committee:	Traffic Operation and Management Standards Committee (TOM SC)	**Date:**	25 March 2025
Lead industry committee:	Energy Standards Committee (ENE SC)	**Date:**	27 March 2025
Supporting industry committee:	Plant Standards Committee (PLT SC)	**Date:**	13 March 2025
Supporting industry committee:	Rolling Stock Standards Committee (RST SC)	**Date:**	03 April 2025

Decision

Traffic Operation and Management Standards Committee (TOM SC) is asked to:

a) **DECIDE** if the proposed modules and handbooks deliver the intentions of the proposals for change.
   - **DECIDE** if the proposed modules and handbooks are in a suitable state for consultation.
   - **APPROVE** that the proposed modules and handbooks are consulted on.
   - **SUPPORT** that the proposed Guidance Note GEGN8575 is consulted on.

b) **IDENTIFY** any specific organisations or individuals to be included in the consultation.

Energy Standards Committee (ENE SC) is asked to:

c) **DECIDE** if the proposed Guidance Note delivers the intentions of the proposals for change.
   - **DECIDE** if the proposed Guidance Note GEGN8575 is in a suitable state for consultation.

- **APPROVE** that the proposed Guidance Note GEGN8575 is consulted on.
- **SUPPORT** that the proposed modules and handbooks are consulted on.

d) **IDENTIFY** any specific organisations or individuals to be included in the consultation.

The supporting committees (PLT SC and RST SC) are asked to:

a) **DECIDE** if the proposed Guidance Note GEGN8575, modules and handbooks deliver the intentions of the proposals for change.

- **DECIDE** if the proposed Guidance Note GEGN8575, modules and handbooks are in a suitable state for consultation.
- **SUPPORT** that the proposed Guidance Note, modules and handbooks are consulted on.

b) **IDENTIFY** any specific organisations or individuals to be included in the consultation.

22-010 Review of AC and DC Rule Book Modules and GEGN8575

This business case for change has been developed to support standards committees in taking decisions related to changes to standards, it includes an assessment of the predicted impacts arising from the change.

Proposed revised document

Number	Title	Issue
GERT8000-AC	AC electrified lines	9
GERT8000-DC	DC electrified lines	7
GERT8000-HB16	AC electrified lines	7
GERT8000-HB17	DC electrified lines	6
GEGN8575	Guidance Note on the Management of Electrical Risk Related to Operational Tasks on Electrified Lines	2

Proposed superseded documents

Number	Title	Issue
GERT8000-AC	AC electrified lines	8
GERT8000-DC	DC electrified lines	6
GERT8000-HB16	AC electrified lines	6
GERT8000-HB17	DC electrified lines	5
GEGN8575	Guidance Note on the Management of Electrical Risk Related to Operational Tasks on Electrified Lines	1

Summary

Background and change

Historically, there had been no industry-level GB mainline documentation that assists railway undertakings and infrastructure managers (station operators) in undertaking efficient and effective assessment of electrical risk for day-to-day operational tasks on electrified lines. In 2021, a new guidance document GEGN8575 was published which addressed this by assisting organisations in undertaking a suitable and sufficient risk assessment and in demonstrating that the relevant legal obligations are being met. Issue one of the guidance note set out a methodology that can assist in managing electrical risk arising from uninsulated live parts on electrified lines. Associated with the publication of issue one were updates to the Rule Book and handbooks for ac and dc electrified lines to align with the guidance.

During the consultation process for issue one, and owing to the time required for completing issue one, it was recognised that further consideration of some outstanding issues would be required. Furthermore, since the publication of issue one, several requests for help (RfH) were raised by industry relating to the Rule Book modules and handbooks for ac and dc electrified lines, and GEGN8575. Given that the Rule Book and handbook have evolved incrementally over a number of years, they may contain aspects that might not fully reflect the most effective way of managing electrical risk when undertaking operational tasks on ac and dc electrified lines.

This project therefore seeks to publish revisions to the Rule Book modules and handbooks on electrified lines as well as to GEGN8575 issue one to better reflect industry experience.

Industry impact due to changes

Impact areas	Scale of impact	Estimated value £'s
A. Legal compliance and assurance	Low	£3,500
B. Health, safety and security	Low	£568,270
C. Reliability and operational performance	Medium	£1,496,630
D. Design and maintenance	N/A	N/A
E. People, process and systems	Medium	Disproportionate to quantify
F. Environment and sustainability	Low	Disproportionate to quantify
G. Customer experience and industry reputation	Low	Disproportionate to quantify
Total value of industry opportunity =		**£2,068,400**

The standards change contribution to the total value of industry opportunity				
☐ None or low	☐ Minor but useful	☐ Moderate	☑ Important / essential	☐ Urgent / critical

Detail

1. What are the objectives associated with this change?

Objective 1 –To better support duty holders in complying with Electricity at Work Regulations 1989 by reviewing and revising the Rule Book module AC and handbook 16

1.1 Transport operators whose activities include ac electrified lines have an obligation to comply with the Electricity at Work Regulations 1989 (EaWR). A means of supporting this is the content of the Rule Book module and handbook. As this content has evolved incrementally over several years, it may contain aspects that might not fully reflect the most effective way of managing electrical risk when undertaking operational tasks on ac electrified lines. Several consultation comments and Requests for Help have been submitted which have not previously fallen within the scope of a standards project, but which had the potential for improving management of that risk. This objective will be achieved by consideration of an agreed list of those potential improvements, which cover the following topic areas, and are listed in detail in Appendix A:

a. titles of modules and handbooks, description of electrification system and distribution of documents;

b. multi-mode trains;

c. emergency switch-off arrangements;

d. definitions and terminology;

e. other electrical risk from trains;

f. diagrams and explanatory text; and

g. actions following an OLE-related incident.

Objective 2 – To better support duty holders in complying with EaWR by reviewing and revising the Rule Book module DC and handbook 17

1.2 Similarly, transport operators whose activities include dc electrified lines have an obligation to comply with the EaWR. A means of supporting this is the content of the Rule Book module and handbook. As this content has evolved incrementally over several years, it may contain aspects that might not fully reflect the most effective way of managing electrical risk when undertaking operational tasks on dc electrified lines. As with Objective 1, a number of issues outside the scope of the last review have been addressed, and are listed in Appendix A.

Objective 3 – Publish revision to GEGN8575 issue one in accordance with Rule Book and handbook changes taking into consideration deferred consultation comments and 'Requests for Help' from industry that can be included within the document's purpose and scope.

1.3 Changes to the guidance note content resulting from the Rule Book and handbooks updates (see objectives 1 and 2), are incorporated in the guidance note, as appropriate.

1.4 In 2021, at the consultation stage prior to the publication of GEGN8575 issue one, some consultation responses indicated that further consideration would be given to several consultation items that were raised but deferred. Separately in 2022, RfH 22-REQ-023 was raised by Network Rail which proposed that a number of the aforementioned consultation comments needed to be addressed in a future revision of the guidance note (see Objective 4 for a summary of key topic areas in RfH 22-REQ-023).

1.5 This objective revises the guidance note taking cognisance of all deferred consultation comments and items from RfHs from the industry which can be reasonably incorporated within the existing purpose and scope of the guidance note.

1.6 GEGN8575 issue one sets out the purpose and scope of the guidance note in relation to the management of electrical risk related to operational tasks on electrified lines.

Objective 4 – Considering consultation comments and 'Requests for Help' from industry, to identify aspects that would result in a material change to the purpose and scope of GEGN8575 issue one and decide how these aspects might be addressed.

1.7 Consideration is given to consultation comments and items in RfHs to identify all aspects that are not covered by objective 3.

1.8 A summary of key topic areas identified in RfH 22-REQ-023 are as follows:

a) Development of a further guidance note to address operational tasks other than those that are day-to-day
b) Development of a generic section that covers both risks associated with passengers and train crew
c) Consideration of how parts of the contact line and its interfaces with rolling stock are treated.

1.9 In addition, this objective includes carrying out editorial revisions throughout to improve clarity or to correct typographical errors where applicable.

2. How has the content in the standard been changed to achieve the objective?

Objective 1

2.1 The content of GERT8000-AC and GERT8000-HB16 was revised as appropriate to take forward the relevant issues identified from outstanding consultation comments and RfHs, as summarised in Appendix A. These changes included

a) Inclusion of additional definitions.
b) Consistent use of the term 'dangerous' rather than variations.
c) Reference to unwired section where discontinuous electrification exists.
d) Inclusion of reference to roof-mounted electrical equipment that forms part of the train electric traction system.
e) Revised instruction concerning confirmation that a pantograph is in contact with the OLE and no arcing exists.
f) Clarification of instructions concerning train movement after the OLE has been examined using a train.
g) Revised requirements for 'coasting' to take account of lower permitted contact wire height.

Objective 2

2.2 The content of GERT8000-DC and GERT8000-HB17 was revised as appropriate to take forward the relevant issues identified from outstanding consultation comments, as summarised in Appendix A. These changes included:

a) Inclusion of additional definitions.
b) Consistent use of the term 'dangerous' rather than variations.

Objective 3

2.3 The content of GEGN8575 was revised in accordance with Rule Book and handbook changes to take forward the relevant issues identified from outstanding consultation comments and RfHs that are within the document's purpose and scope. These included:

a) Revised guidance giving further consideration to the treatment of auxiliary conductors such as return conductors, aerial earthwires and autotransformer feeders.
b) Revised appendix P clarifying that diagrammatic depictions are illustrative and the location of current collectors on vehicles differ
c) Revised appendix N to giving further consideration to members of the public
d) Addition of new definitions.

Objective 4

2.4 The content of GEGN8575 was revised to take forward, as appropriate, the relevant issues identified from outstanding consultation comments and RfHs. These included:

a) Revised guidance clarifying the purpose of GEGN8575 and its intended usage.
b) Revised guidance throughout to make users aware of the management framework scope limitations.
c) Revised guidance throughout to improve clarity and correct typographical errors.
d) Revised figures to improve clarity.

3. How urgently does the change need to happen to achieve the objectives?

3.1 So far as objectives 1 and 2 are concerned, the outstanding consultation comments represented views of industry representatives at the time they were raised in 2021. It is understood from more recent discussions that these views remain and that there is a degree of priority in resolving these at an early date. RfH 23-REQ-042 identifies a lack of clarity in the arrangements for permitting movement to be resumed after there has been an automatic dropping device (ADD) operation or damage to the overhead line equipment (OLE) with the possibility of an incorrect or unnecessarily restrictive decision being taken.

3.2 Changes in relation to objectives 3 and 4 were identified as important by industry. Items for further consideration were first raised by industry as part of consultation comments in 2021. Subsequently, some of these items were reiterated in RfH 22-REQ-023.

3.3 Taken together, the ability to complete the work for a publication date of September 2025 would meet industry aspirations and resolve an area of doubt.

4. What are the positive and negative impacts of implementing the change?

Justification of impact, scale and quantification for the seven impact areas

A. Legal compliance and assurance

4.1 The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended) (ROGS) require that the safety management system of transport operators shows how continuous improvement of the safety management system is ensured. Any changes to the Rule Book should help transport operators meet the requirement for continuous improvement of the safety management system. These changes can contribute to reducing a potential breach of ROGS and demonstrate continuous improvement.

If a serious personal injury is caused, then a likely outcome could be being issued with a prohibition notice or prosecution and/or civil claim. The following costs could be incurred:

- Prosecution (average) cost/fine = £200,000 including costs

- Prohibition notice (cost of stopping operations, rectification costs and reputational damage) = £50,000
- Civil claim (average amount for serious claim) = £100,000 pp including costs
- Total - £350,000

4.2 One such incident over five years would lead to a cost of £350,000 being incurred. If the proposed changes to the Rule Book were to reduce the possibility of an incident by 1%, there would be a benefit of £3,500 over a five-year period.

4.3 Revision of GEGN8575 will not change the legal compliance or assurance regime, therefore no direct benefit is claimed. However, the revised document will better assist duty holders to demonstrate how they are meeting legal obligations under the Management of Health and Safety at Work Regulations 1999 and the EaWR.

B. Health, safety and security

4.4 Several of the proposed rule changes have been advanced on the basis that they would provide added clarity, which can be assumed to promote improved understanding and reduce the potential for miscommunication. A value in the Safety Risk Model for incidents due to miscommunication is 0.05891 FWI per year. It would be unrealistic to assume that these changes would contribute to any greater reduction in this figure than 0.1% and therefore any benefit would be disproportionate to quantify.

4.5 Working on electrified lines poses the risk of injury or fatality due to electric shock from overhead wires or conductor rail electrification. The Safety Risk Model shows a total of 0.4607 FWI for workforce electric shock from contact with OLE or conductor rails. If there is a 10% reduction in risk of injury or fatality, this is 0.04607 FWI per year. Using the Value of Preventing a Fatality (£2,467,000), this results in a benefit of £568,270 over five years.

4.6 The revision of GEGN8575 will provide an opportunity for improvement to the consistency of the industry's approach to electrical risk assessments. However, it is not considered that this will materially affect the conclusions that would be achieved under any suitable and sufficient risk assessment process, therefore, no benefit is claimed.

C. Reliability and operation performance

4.7 Increasing clarity concerning the rules is anticipated to improve reliability and operational performance. It has been suggested that there is a lack of clarity concerning the ability to resume normal working after an ADD operation or suspected damage to the OLE. The average delay minute total attributable to all OLE and conductor rail defects over eight periods in 2022-23 has been assumed to apply over a five-year period. If the change in responses to RfH 23-REQ-042 resulted in a reduction of 0.1% of those delays, a reduction of 299,326 delay minutes over five years would occur. At an average cost of £50 per delay minute this would give a benefit of £1,496,630 over five years.

4.8 The revision to GEGN8575 will better assist railway undertakings and infrastructure managers (station operators) in assessing the electrical risk and implications for staff involved in tasks associated with operational duties. It is however, considered that any

mitigating control measures affecting reliability and operation performance as a result of this revision would not be significantly different to those currently undertaken. Therefore, no benefit is claimed.

D. Design and maintenance

4.9 It is not expected that the Rule Book or guidance note changes will have any impact in these areas, except for the proposal concerning earth wire markers, although any benefit would be disproportionate to quantify.

E. People, process and systems

4.10 There would be some costs associated with implementation of the proposed changes, including the purchase of Rule Book modules and handbooks. The nature of the proposed changes is not expected to require more than a routine level of briefing, rather than introducing any novel practices.

4.11 In setting out improvements to the processes for the assessment of electrical risk, the revised guidance note is considered to provide improved clarity to duty holders in relation to compliance with EaWR and the management of electrical risk based on a zonal approach. There could be some cost reductions associated with better management of risk, however, these costs are disproportionate to quantity.

4.12 The process and methodology in the revised guidance note will further support industry in undertaking appropriate assessments whilst avoiding unnecessary isolation costs. Considering that there are more than 35,000 isolations per year and approximately two thirds of these are on the AC network, it is estimated that there are at least 23,300 isolations on the AC network annually. By providing better guidance on the identification of the status of bare wires that are inherently safe to touch (e.g. earth wires), there is potential for reducing the effort and associated costs for isolations. However, these cost reductions are disproportionate to quantify.

F. Environment and sustainability

4.13 Although the wider use of electric traction provides benefits in both areas, it is not expected that these Rule Book or guidance note changes would directly impact the potential for extension of the electrified network.

G. Customer experience and industry reputation

4.14 Any reduction in incidents and consequent level of disruption is likely to benefit customer experience and industry reputation, but it is not easily possible to quantify these.

5. What is the contribution of this standards change in realising the value to industry opportunity?

5.1 The changes to be considered as part of objectives 1 and 2 would address industry concerns that perceived deficiencies in the existing publications do not provide an optimal set of instructions in either safety or performance terms and, if implemented, would provide both safety and efficiency improvements.

5.2 The changes to be considered as part of the revision of the guidance note will better support industry by improving the guidance provided to duty holders in relation to undertaking electric risk assessments. They will also support industry in undertaking appropriate assessments where required whilst avoiding unnecessary assessments that might incur costs; for example, isolation costs for earth wires.

6. What is the effort required by RSSB to make the change?

6.1 Objectives 1 and 2 will require the input of a Rail Operations Specialist for drafting and publication, with some support for peer review and testing compatibility with the Rule Book app. Supporting safety justification will be required from risk specialists and a degree of human factors support. Support from the Policy team is also necessary. The proposed introduction of new and revised diagrams will require input from the RSSB Marketing team, and there will be a requirement for production of an appropriate level of briefing material. Project management resources will also be required throughout the project.

6.2 Objectives 3 and 4 will require input from a Principal Energy Engineer for drafting and publication, with support from a Rail Operations Specialist, a Regulatory & Policy Specialist, a Lead Energy Engineer and a Principal Rolling Stock Engineer. Supporting safety justification will be required from a risk specialist. The proposed introduction of new and revised diagrams will require input from the RSSB Marketing team and project management resources will also be required, including supporting industry drafting review group meetings.

7. Can RSSB deliver against industry's expected timescales?

7.1 For objectives 1 and 2 it is anticipated that the necessary work can be completed to allow publication in September 2025 with a Rule Book in-force date of December 2025, which is the next available date when a tranche of rules changes would be delivered.

7.2 For objectives 3 and 4, it is anticipated that the necessary work will be completed to allow publication in September 2025.

8. How will the industry implement the change?

8.1 Implementation of changes arising from objectives 1 and 2 would be achieved by duty-holders undertaking briefing in the same way as for other Rule Book changes, supported by briefing material produced by RSSB. The changes will also be featured in a Quarterly Standards Webinar.

8.2 Implementation of changes arising from objectives 3 and 4 will better allow users to adopt the approaches set out in the document to fit the needs of their business and the individual situation.

9. How will RSSB assess whether the change is achieving the objectives?

9.1 RSSB will review deviation applications, enquiries and requests for help received following the proposed changes, as well as any other stakeholder feedback, and use this to inform the 12-month review of the reissued documents.

Appendix A Proposals for consideration

Objective 1

Table A1: Titles of modules and handbooks, description of electrification system and distribution of documents

Consultation comment or Request for Help	Proposed change
The defined distribution of module AC and handbook 16 should be reviewed to include 'persons in charge of platforms'.	It would not be appropriate to extend the issue of handbook 16 in this way as that audience is unlikely to be involved in working on or near electrification equipment. Module AC is known to be issued by some railway undertakings, whereas others provide extracts or equivalent information. Not all the content is relevant to this audience and a decision to make the change will depend on a clear preference emerging from wider industry consultation.
The title of module AC and handbook 16 should be changed to 'overhead electrified lines' as the content is relevant to both ac and dc overhead electrification. Any references in the text to be changed to remove references to 'ac'.	DC overhead electrification exists in only a small number of locations, where it is understood that there are either bespoke instructions, or an indication that module AC or handbook 16 would be applied to the extent relevant. Unless wider consultation reveals that this approach is deficient, it is not proposed to make any changes.

Table A2: Multi-mode trains

Consultation comment or Request for Help	Proposed change
References to 'bi-mode' trains in the definitions (section 1) and the content to be amended to 'multi-mode' in the interests of accuracy. Similarly, the definition of 'self-powered' train should include any form of traction power that is not dependent on an electrical contact system.	Issue 8 of module AC published as a result of project 23-026 includes amended definitions of 'electric train' and 'self-powered mode' and the definition of 'bi-mode train' has been replaced with 'multi-mode train' which has already addressed this proposal. No further change is proposed. Similarly issue 6 of handbook 16 has replaced the term 'bi-mode' with 'multi-mode' and these terms are not included within the existing definitions. No further change is proposed.

Table A3: Emergency switch-off arrangements

Consultation comment or Request for Help	Proposed change
Other options exist for the extent of an emergency switch-off other than those listed in the definitions.	The detail of any change awaits provision of a suggested alternative from a Network Rail stakeholder.
There is a lack of consistency between section 6.1 which requires the electrical control operator (ECO) to be advised immediately when an emergency switch-off is required, and module M1 in which the driver is required to immediately advise the signaller about a train accident and whether the traction supply requires to be switched off.	Section 6.1 is addressed to 'all concerned' and describes when it is necessary to contact the ECO to request an emergency switch-off. This already states that this may be done as a result of a message from another person about an emergency. Section 5.1 also addressed to all concerned states that if it is necessary to contact the ECO, this can be done directly or through another person such as the signaller. These statements are consistent with module M1, which requires the driver to advise the signaller in the quickest way possible that a train has met with an accident and whether it is necessary for the electric traction current to be switched off. This is consistent with the process described in sections 5 and 6 of module AC and it is not proposed that any further change is necessary.

Table A4: Definitions and terminology

Consultation comment or Request for Help	Proposed change
Definitions are not included for 'isolated', 'earthed', 'automatic power changeover', 'nominated person' or 'electrified line'. It was commented that 'electrified line' may be difficult to address in view of 'discontinuous electrification'.	It is proposed to include definitions of all these terms in module AC and handbook 16 as all of them are referred to in the text, however 'electrified line' will not be added as this already appears in the Glossary of Railway Terminology (GERT8000-GLOSS). Subsequent discussion has revealed that on unwired sections of line, the traction return current passes through the running rails and the precautions associated with this hazard should still be applied. Section 3.3 of the module and handbook have been amended to include this.
Section 3.1 refers to OLE being 'made safe' although 'made dead' may be a more accurate term.	It was proposed to make this change in section 3.1 of module AC and handbook 16, but it did not appear to be correct to make any change to section 6.2 where the words 'made safe' appear but in the context of 'made safe to be approached but not touched'. After further consideration it was decided that the proposed change was of little practical significance and no change is proposed. Significance. However, it was identified that both the module and the handbook in section 3.1 use the words 'dangerous', 'extremely dangerous' and 'dangerous to life' without any real difference in meaning. This

Consultation comment or Request for Help	Proposed change
	has been simplified for consistency by using 'dangerous'.
RfH 23-REQ-042 (part) This raises the point that there is inconsistent use of 'switch-off' and 'emergency switch-off' and that the latter is correct and should be used in all cases.	The term 'switch-off' rather than 'emergency swich-off' is used in sections 13.2 and 13.3 of module AC and it was initially proposed to amend the wording to use 'emergency switch-off' in all cases. However, it is apparent from Appendix A to the associated business Case for Change for project 20-902 as part of which these rules were developed, that this wording is deliberate. The means of making OLE 'safe' was intended to be a decision of the Electrical Control room and the timing and extent of any switch-off was not to result in disproportionate disruption. It is not now proposed to make any change.
RfH 23-REQ-059: This proposed that the overhead line permit should not be referred to as 'Form C' but only by name as other Network Rail engineering standards have also introduced a 'Form C' and there is potential for confusion.	Discussion with stakeholders did not identify this as being a serious concern, and it is not proposed to make any change.

Table A5: Other electrical risk from trains

Consultation comment or Request for Help	Proposed change
There is a requirement similar to that for an overhead line permit for a 'train permit' to indicate that any electrical equipment on the train is safe to approach and work on. It was suggested this should be included in relevant sections	Following discussion with stakeholders it has been agreed that the required change would be to expand the existing references to pantographs and associated roof-mounted electrical equipment to refer also to any other electrical equipment associated with the train's electric traction equipment, and appropriate changes are proposed.

Table A6: Diagrams and explanatory text

Consultation comment or Request for Help	Proposed change
Diagram AC1 is no longer representative of modern OLE construction and a revised diagram was available.	Alternative diagram to be provided.
Diagram AC1 and associated text (section 3.1) should state that return conductors and aerial earth wires are not dangerous to touch, but if in doubt any part of the OLE must be treated as 'live.'	Holders of module AC are not assumed to be sufficiently familiar with the construction of OLE at any given location to be able to identify return conductors or aerial earth wires from any 'live' along-track conductors. It is not therefore proposed to make any change to the present instructions which indicate that any overhead wiring must be assumed to be dangerous unless they have been made 'safe'. As part of another change, this term was proposed to be altered to be made dead, but on further consideration, this was not thought to add any value. Holders of handbook 16 are instructed to work on or near live OLE only in accordance with method statements or company instructions which should identify which parts of the OLE present a hazard.
A similar diagram to diagram AC1 should be provided for pantographs and roof-mounted electrical equipment	Alternative diagram to be provided.
RfH 23-REQ-012: This proposed that reference should be included to aerial earth wires bearing a green diamond marker as not posing an electrical hazard	Discussion with stakeholders indicated that the use of green diamond markers cannot be guaranteed to be consistent and, so far as holders of module AC are concerned, it is not proposed to change the existing default position of assuming all OLE to be dangerous. The same would apply to holders of handbook 16 unless the method statement specifically identifies the use of these markers.

Table A7: Actions following an OLE-related incident

Consultation comment or Request for Help	Proposed change
The means of establishing whether a pantograph is correctly in contact with the OLE without arcing when an electrical train supply is to be provided to a disabled train should be explained.	In the interests of completeness, it is proposed to add an explanation in section 12.7 that if the driver cannot tell by direct observation or the use of a pantograph camera, confirmation should be sought from a person competent to do so.
RfH 23-REQ-042: (Part) This questions the correct interpretation of section 14.2 of module AC which describes the arrangements when the OLE has been examined using a train without an object or a defect being found. This requires subsequent trains over the 'affected line' to proceed at no more than 20 mph. Where head span construction exists there is a doubt whether this means every line that has been	It is proposed to change the wording of this section to include these alterations.

Consultation comment or Request for Help	Proposed change
examined, or only that on which the original automatic dropping device (ADD) incident or reported damage occurred. The latter has been confirmed to be the intention. The question was also raised whether the need to proceed at reduced speed applied to all trains or only those with raised pantographs. An opinion has been obtained that again it is the latter that should be the case.	
RfH 22-REQ-012: This raised similar questions about the meaning of the term 'affected line' but also proposed that examination of the OLE from an adjacent line without finding evidence of anything amiss should be the basis of allowing normal working on the affected line.	Stakeholders were unable to provide definite support for the correctness of this view, and it is not proposed to make any change
An enquiry has recently been received questioning the advisability of permitting a train to continue to a suitable location, rather than being stopped immediately, if an ADD operation occurs without the line light going out. This adds to a degree to the complexity of the rules. It is proposed to give further consideration as to whether this gives sufficient benefit to perpetuate the instruction.	Following discussion with stakeholders it has been identified that some types of traction do not allow this practice to be adopted, as the automatic dropping device lowers all the pantographs on a train irrespective of which are affected. There is also no readily available data on the extent to which advantage has been taken of this facility. It is therefore proposed to make no changes to the existing instruction at this stage, but to do so before the 12-month review. That data would also indicate whether an attempt to apply the instruction has led to any worsening of OLE damage. .
A further comment has been made that the requirements for permitting the passage of trains under damaged OLE at no more than 20 mph refers to any obstruction being no more than 150 mm (6 inches) below the contact wire. The 150 mm figure was based on the minimum height of the contact wire being 4165 mm above rail level, which can now be reduced to 4040 mm. It would not be reasonable to assume that non-technical staff attending an incident would be aware of the actual height of the contact wire. The existence of a sufficient minimum clearance between any object and a train, taking into account permitted contact wire gradient, was also achieved by not allowing coasting within three OLE spans of a tunnel or overbridge. Where the contact wire height is a minimum of 4040 mm, an adequate minimum clearance is achievable providing the obstruction is at any point more than five spans away.	To amend the distance in module AC to read 75 mm (3 inches) and the minimum distance from a tunnel or overbridge is at least five spans.
RfH 24-REQ-086 This proposed an alternative method of moving a train past an object on the overhead line or damage by stopping a train, lowering the first paragraph and proceeding past	No change to the Rule Book is proposed.

Consultation comment or Request for Help	Proposed change
the object whilst drawing power from the second paragraph. The second paragraph would then be lowered and the train moved past the object whilst drawing power from the first. Having bypassed the object, the second paragraph would be raised. This solution is not available if a train has only one pantograph, or if the pantographs cannot be raised and lowered independently. It is not therefore proposed to document this arrangement in the Rule Book, but it is one that could be adopted by local instruction when it is practicable.	

Objective 2

Table A8: Titles of modules and handbooks, description of electrification system and distribution of documents

Consultation comment or Request for Help	Proposed change
The title of module DC and handbook 17 should be changed to 'conductor rail electrified lines' to avoid confusion with dc overhead electrification, and all references within the documents amended.	DC overhead electrification exists in only a few locations, where it is understood that there are either bespoke instructions, or an indication that module AC or handbook 16 would be applied to the extent relevant. Unless wider consultation reveals that this approach is deficient, it is not proposed to make any changes.
The defined distribution of module DC and handbook 17 should be reviewed to include 'persons in charge of platforms'.	It would not be appropriate to extend the issue of handbook 17 in this way as that audience is unlikely to be involved in working on or near electrification equipment. Handbook DC is believed to be issued by some railway undertakings, whereas others provide extracts or equivalent information. Not all the content is relevant to this audience and a decision to make the change will depend on a clear preference emerging from wider industry consultation.

Table A9: Multi-mode trains

Consultation comment or Request for Help	Proposed change
References to 'bi-mode' trains to be amended to 'multi-mode' in the interests of accuracy. Similarly, the definition of 'self-powered' train should include any form of traction power that is not dependent on an electrical contact system. In fact, there are no references in the existing module, but it would be appropriate to include any relevant references.	DC overhead electrification exists in only a few locations, where it is understood that there are either bespoke instructions, or an indication that module AC or handbook 16 would be applied to the extent relevant. Unless wider consultation reveals that this approach is deficient, it is not proposed to make any changes.

Table A10: Emergency switch-off arrangements

Consultation comment or Request for Help	Proposed change
There is a lack of consistency between section 6.1 which requires the electrical control operator (ECO) to be advised immediately following a derailment, and module M1 in which the driver is required to immediately advise the signaller about a train accident and whether the traction supply requires to be switched off. In reply, it was suggested that a greater degree of consistency might be achieved by referring to 'train accidents' rather than 'derailment'	Module DC only uses the words 'switch off' within the definition of 'emergency switch-off' and on further consideration there is no reason to make any change. There are no inconsistencies in handbook 17.

Table A11: Other electrical risk from trains

Consultation comment or Request for Help	Proposed change
In a similar way to a conductor rail permit, there is a requirement for a 'train permit' to indicate that any electrical equipment on the train is safe to approach and work on. It was suggested this should be included in relevant sections	Following discussion with stakeholders, it has been agreed that the required change would be to expand the existing references to pantographs and associated roof-mounted electrical equipment to refer also to any other electrical equipment associated with the train's electric traction equipment, and appropriate changes are proposed. A similar issue has not been identified in relation to dc traction equipment and no changes are proposed.

Table A12: Definitions and terminology

Consultation comment or Request for Help	Proposed change
Definitions are required for 'conductor rail equipment,' 'conductor rail permit,' 'isolated', 'strapped', 'earthed', 'automatic power changeover', 'authorised persons and 'electrified line'. It was commented that 'electrified line' may be difficult to address in view of 'discontinuous electrification' and battery charging locations.	It is proposed to include definitions of 'conductor rail equipment, 'isolated', and 'authorised person' in module DC and handbook 17, as these are all referred to in the text. A definition of automatic power changeover will be added to module DC. 'Conductor rail permit' is already defined in both the module and the handbook, and a definition of 'electrified line' is included in the Glossary of Railway Terminology (GERT8000-GLOSS). The terms 'strapped' and 'earthed' do not appear in either module, and it is not proposed to include definitions. It was identified that both the module and the handbook in section 3.1 use the words 'dangerous', 'extremely dangerous' and 'dangerous to life' without any real difference in meaning. This has been simplified for consistency by using 'dangerous'.

Appendix B Disposition tables

Table B1: GERT8000-AC issue 8 to GERT8000-AC issue 9

This table shows only changes arising from this project. Changes to other sections may be made as part of other projects.

From GERT8000-AC issue 8	To GERT8000-AC issue 9	Way forward	Comments	Objective
1 Definitions	**1 Definitions**	Revised – material change	Definitions have been added in the interests of completeness for 'automatic power changeover', 'earthed', 'isolated' and 'nominated person'.	1
3 Dangers of the system 3.1 Treating the OLE, pantographs and associated roof-mounted electrical equipment as being live	**3 Dangers of the system** 3.1 Treating the OLE, pantographs and roof-mounted electrical equipment as being live	Revised – material change	The title and wording have been changed as this now refers additionally to any roof-mounted equipment that forms part of the train's electric traction equipment that must be treated as live. An assurance is required if there is any such equipment that it is not dangerous from an electrical point of view. The word 'dangerous' has been used consistently rather than 'extremely dangerous' or 'dangerous to life'. Reference to 'train and locomotive pantographs' changed to 'pantographs' to simplify the wording without loss of meaning.	1
3.3 Reporting objects and defects	3.3 Reporting objects and defects	Revised – material change	New instruction added to refer to unwired lines.	1
4 Personal safety 4.2 When working on traction units or other vehicles	**4 Personal safety** 4.2 When working on traction units or other vehicles	Revised – material change	'Network Rail' has been changed to 'infrastructure manager' for accuracy. 'Train and locomotive pantographs' has been changed to 'pantographs' for reasons of simplicity without loss of meaning. New bullet point added and wording change to add reference to possible danger from other roof-mounted equipment forming part of a train's electric traction system.	1

From GERT8000-AC issue 8	To GERT8000-AC issue 9	Way forward	Comments	Objective
12 Driver's instructions following a loss of line light, ADD operation, tripping or damage to the OLE 12.7 Providing electric train supply when the train cannot proceed	**12 Driver's instructions following a loss of line light, ADD operation, tripping or damage to the OLE** 12.7 Providing electric train supply when the train cannot proceed	Revised – material change	Changed to say that if a driver cannot be sure that the pantograph is in contact with the OLE and that there is no arcing, this must be confirmed by a person competent to do so.	1
14 Instructions for examining the OLE 14.2.1 How the OLE is to be examined	**14 Instructions for examining the OLE** 14.2.1 How the OLE is to be examined	Revised – material change	The existing requirements for the maximum distance an object can be below the OLE, and the distance the affected OLE must be from a tunnel or overbridge were based on a minimum normal contact wire height of 4165 mm. To maintain sufficient clearance between the train and the object or damage in all cases, these have now been changed to those that would be appropriate for the now-permitted lower height of 4040 mm.	1
14.2.2 If a train can operate using its own traction power or coast with pantographs lowered	14.2.2 If a train can operate using its own traction power or coast with pantographs lowered	Revised – material change	The existing requirements for the maximum distance an object can be below the OLE, and the distance the affected OLE must be from a tunnel or overbridge were based on a minimum normal contact wire height of 4165 mm. To maintain sufficient clearance between the train and the object or damage in all cases, these have now been changed to those that would be appropriate for the now-permitted lower height of 4040 mm.	1

From GERT8000-AC issue 8	To GERT8000-AC issue 9	Way forward	Comments	Objective
14.2.4 If no object or defect is found	14.2.4 If no object or defect is found	Revised – material change	This has been changed in two ways to give greater clarity. The requirement to proceed at caution and at no greater speed than 20 mph is now applies (as intended) only on the line on which the ADD operation occurred or the damage was reported, and the requirement only applies to trains with raised pantographs.	1

Table B2: GERT8000-DC issue 6 to GERT8000-DC issue 7

This table shows only changes arising from this project. Changes to other sections may be made as part of other projects.

From GERT8000-DC issue 6	To GERT8000-DC issue 7	Way forward	Comments	Objective
1 Definitions	**1 Definitions**	Revised – material change	Definitions have been added in the interests of completeness for 'authorised person', 'automatic power changeover', 'conductor rail equipment' and 'isolated'.	2
3 Dangers of the system 3.1 Treating the CRE, shoegear and associated live train-mounted electrical equipment as being live	**3 Dangers of the system** 3.1 Treating the CRE, shoegear and associated live train-mounted electrical equipment as being live	Revised – material change	The word 'dangerous' has been used consistently rather than 'extremely dangerous' or 'dangerous to life'.	2

Table B3:GERT8000-HB16 issue 6 to GERT8000-HB16 issue 7

From GERT8000-HB16 issue 6	To GERT8000-HB16 issue 7	Way forward	Comments	Objective
1 Definitions	**1 Definitions**	Revised – material change	Definitions have been added in the interests of completeness for 'automatic power changeover', 'earthed', 'isolated' and 'nominated person'.	1
3 Dangers of the system 3.1 Treating the OLE, pantographs and associated roof-mounted electrical equipment as being live	**3 Dangers of the system** 3.1 Treating the CRE, shoegear and associated live train-mounted electrical equipment as being live	Revised – material change	The title and wording have been changed as this now refers additionally to any roof-mounted equipment that forms part of the train's electric traction equipment that must be treated as live. An assurance is required if there is any such equipment that it is not dangerous from an electrical point of view. The word 'dangerous' has been used consistently rather than 'extremely dangerous' or 'dangerous to life'. Reference to 'train and locomotive pantographs' changed to 'pantographs' to simplify the wording without loss of meaning	1
3.3 Reporting objects and defects	3.3 Reporting objects and defects	Revised – material change	New instruction added to refer to unwired lines	1
10 Arranging coasting under the OLE	**10 Arranging coasting under the OLE**	Revised – material change	The conditions for allowing coasting have been included for completeness.	1

Table B4: GERT8000-HB17 issue 5 to GERT8000-HB17 issue 6

From GERT8000-HB17 issue 5	To GERT8000-HB17 issue 6	Way forward	Comments	Objective
1 Definitions	**1 Definitions**	Revised – material change	Definitions have been added for 'authorised person' 'conductor rail equipment' and 'isolated'.	2
3 Dangers of the system 3.1 Treating the CRE, shoegear and associated live train-mounted electrical equipment as being live	**3 Dangers of the system** 3.1 Treating the CRE, shoegear and associated live train-mounted electrical equipment as being live	Revised – material change	The word 'dangerous' has been used consistently rather than 'extremely dangerous' or 'dangerous to life.'	2

Table B5: GEGN8575 issue 1 to GEGN8575 issue 2

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
Part 1 Purpose and introduction	Part 1 Purpose and introduction	No change		
G1.1. Purpose	G1.1. Purpose	Redrafted – no material change	Editorial change to improve clarity	3, 4
G1.2 Operational context	G1.2 Operational context	No change		
G1.3 User's responsibilities	G1.3 User's responsibilities	No change		
G1.4 Structure of this document	G1.4 Structure of this document	Redrafted – no material change	Editorial change to improve clarity	
G1.5 Copy right	G1.5 Copy right	No change		
G1.6 Approval and authorisation of this document	G1.6 Approval and authorisation of this document	Redrafted – no material change	Updated to reflect details for issue 2	4

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
Part 2 Establishing an electrical risk management framework	Part 2 Establishing an electrical risk management framework	No change		
G2.1 Management framework and scope	G2.1 Management framework and scope	Revised – material change	Editorial change to improve clarity and new guidance to clarify the document's scope	3, 4
G2.2 Compliance with legislation	G2.2 Compliance with legislation	No change		
Part 3 Approach to managing electrical safety	Part 3 Approach to managing electrical safety			
G3.1 Overview of approach to managing electrical safety	G3.1 Overview of approach to managing electrical safety	Redrafted – no material change	Editorial change to improve clarity	4
G3.2 Electrical safety distances	G3.2 Electrical safety distances	No change		

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
G3.2.1 Overview of electrical safety distances	G3.2.1 Overview of electrical safety distances	Redrafted – no material change	Updated references in G3.2.1.6	4
G3.2.2 Electrical safety distances – OLE, pantographs and associated roof mounted equipment	G3.2.2 Electrical safety distances – OLE, pantographs and associated roof mounted equipment	Revised – material change	Minor update of Figure 1 to improve clarity. Clause G3.2.2.2 was also updated to improve clarity	3
G3.2.3 Electrical safety distances – CRE, shoe gear and associated vehicle equipment	G3.2.3 Electrical safety distances – CRE, shoe gear and associated vehicle equipment	Revised – material change	Minor update to Figure 2 to improve clarity	4
G3.3 Assessment of all relevant roles and operational tasks	G3.3 Assessment of all relevant roles and operational tasks	No change		
G3.4 Electrical risk assessment principles	G3.4 Electrical risk assessment principles	No change		

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
G3.4.1 General electrical risk assessment principles	G3.4.1 General electrical risk assessment principles	Revised – material change	New clause G3.4.1.9 added to make users aware of the management framework scope limitations	3, 4
G3.4.2 Electrical risk assessment template – Part A, Assessment of operation task	G3.4.2 Electrical risk assessment template – Part A, Assessment of operation task	No change		
G3.4.3 Electrical risk assessment template – Part B, Making equipment Dead	G3.4.3 Electrical risk assessment template – Part B, Making equipment Dead	Revised – material change	Further guidance included to make users aware of the management framework scope limitations.	3, 4
G3.4.4 Electrical risk assessment template – Part C, Electrical risk assessment	G3.4.4 Electrical risk assessment template – Part C, Electrical risk assessment	No change		
G3.4.5 Electrical risk assessment template – Part D, Validation	G3.4.5 Electrical risk assessment template – Part D, Validation	No change		

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
G3.5 Electrical risk assessment framework	G3.5 Electrical risk assessment framework	Redrafted – no material change	Minor editorial change to G3.5.1.11 to improve clarity	4
Part 4 OLE System	Part 4 OLE System	No change		
G4.1 OLE system characteristics	G4.1 OLE system characteristics	Revised – material change	Editorial change to G4.1.2 to make users aware of the management framework scope limitations and to G4.1.5 to account for auxiliary conductors	3, 4
G4.2 Example OLE scenarios and electrical risk assessments	G4.2 Example OLE scenarios and electrical risk assessments	No change		
Part 5 CRE System	Part 5 CRE System	No change		
G5.1 CRE system characteristics	G5.1 CRE system characteristics	No change		
G5.2 Example CRE scenarios and electrical risk assessments	G5.2 Example CRE scenarios and electrical risk assessments	No change		

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
Appendix A Typical role and operational task matrix	Appendix A Typical role and operational task matrix	No change		
Appendix B Generic Electrical Risk Assessment Template	Appendix B Generic Electrical Risk Assessment Template	No change		
Appendix C Generic ERA example 1 – Train dispatch task	Appendix C Generic ERA example 1 – Train dispatch task	No change		
Appendix D Generic ERA example 2 – Entering or leaving a train	Appendix D Generic ERA example 2 – Entering or leaving a train	No change		
Appendix E Generic ERA Example 3 – Applying Track Circuit Clips	Appendix E Generic ERA Example 3 – Applying Track Circuit Clips	No change		
Appendix F Generic ERA Example 4 – Stepping over the conductor rail	Appendix F Generic ERA Example 4 – Stepping over the conductor rail	No change		

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
Appendix H Case Specific Electrical Risk Assessment Template	Appendix H Case Specific Electrical Risk Assessment Template	No change		
Appendix J Case specific ERA example 1 – Coupling and uncoupling trains	Appendix J Case specific ERA example 1 – Coupling and uncoupling trains	No change		
Appendix K Case specific ERA example 2 – Working on a train below the sole bar level	Appendix K Case specific ERA example 2 – Working on a train below the sole bar level	No change		
Appendix L Electrical risk assessment framework flowchart for an organisation developing / updating safety management system in relation to electrical risk	Appendix L Electrical risk assessment framework flowchart for an organisation developing / updating safety management system in relation to electrical risk	No change		

From GEGN8575 issue 1	To GEGN8575 issue 2	Way forward	Comments	Objective
Appendix M Electrical risk assessment framework for a person developing / updating safety management system in relation to electrical risk	Appendix M Electrical risk assessment framework for a person developing / updating safety management system in relation to electrical risk	No change		
Appendix N Consideration of General Public	Appendix N Consideration of General Public	Revised – material change	Updated with further guidance applicable to the general public	4
Appendix P Diagrammatic depictions of a range of typical operational tasks	Appendix P Diagrammatic depictions of a range of typical operational tasks	Revised – material change	Editorial change P1.5 to take account of differing locations of electrical equipment on different vehicles	3, 4
Definitions	Definitions	Revised – material change	New definitions added to improve clarity	4
References	References	Revised – material change	Updated references	4