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Seasonal Challenge Steering Group

GB Rail Industry Approach to Hot Weather Management

Version 2.0

Issued Feb 2024

Version history

Version	Notes	Issue date
2.0	Version 1.0 updated and re-issued as v2.0	07/02/24

Notes

1. Where links to Rule Book references have been added to the tables in section 4.1, these links direct the user to Rule Book modules on [RSSB.co.uk](https://www.rssb.co.uk). However, it was not possible to establish links to specific Rule Book sections. Access to these modules is via free registration.
2. Where links to Network Rail standards have been added to the tables in section 4.1, these links direct the user to the relevant page of Network Rail's Standards Portal. These standards are freely available via free registration to Network Rail's Standards Portal.
3. The Seasonal Challenge Steering Group (SCSG) is not a regulatory body and compliance with guidance notes produced by SCSG is not mandatory; they reflect good practice and are advisory only. Users are recommended to evaluate the guidance against their own arrangements in a structured and systematic way, noting that parts of the guidance may not be appropriate to their operations. It is recommended that this process of evaluation, and any subsequent decision to adopt (or not adopt) elements of the guidance, should be documented. Compliance with any or all of the contents herein, is entirely at an organisation's own discretion.
4. Note that the ordering and grouping of the Control Measures in this document have changed when compared to previous versions of this document.

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Definitions

Executive Summary

The suite of documents

This document sets out the approach to the management of hot weather on the GB mainline rail network. It is the first update of the document which was first issued in January 2023. This hot weather document is part of a suite of documents, which includes two previously issued documents covering adhesion and cold weather management. The suite of documents is aimed at sharing good practice within the rail industry on management of seasonal effects.

The main aim of the document

The document was requested by the industry Seasonal Challenge Steering Group (SCSG) and aims to:

1. Be a single reference source for all relevant proven and practical control measures that will help Duty Holders manage risk arising from hot weather
2. Set out future control measures being developed that, if successful, will give new tools for Duty Holders to improve the management of these risks

The four groups

The control measures have been categorised into four groups (infrastructure, trainborne, operational, and management processes). Each control measure has a Lead Duty Holder identified and is classified as being mandatory or advisory. All include links to information from existing standards, guidance notes, published research, or custom and practice.

Document ownership

This document is owned by SCSG and will be updated when needed.

Section 1 - The Purpose of the Document

1.1 Aims of the Document

1.1.1 Lower system risk

The purpose of this document is to set out the industry approach to managing the impact of hot weather on the GB mainline rail network. It aims to improve consistency thus leading to lower system risk, improved system performance and customer satisfaction.

1.1.2 Existing and future control measures

This document follows similar approach documents produced at the request of SCSG covering adhesion and cold weather management. The aim is to provide greater clarity on existing control measures and to highlight future control measures being developed by the industry. It will also assist railway management staff by sign-posting standards and guidance concerning management of hot weather on the railway.

1.1.3 Mandatory or Advisory

This document will provide reference sources that identify control measures currently authorised and available and whether they are understood to be mandatory or advisory.

1.2 Target Audience

1.2.1 Practitioners and assurers

Within Duty Holders, the target audience for the document is:

- staff responsible for the line management of others carrying out hot weather control measures (practitioners) and
- staff responsible for assuring those control measures (assurers) within Duty Holder organisations

1.2.2 Duty Holders

Duty Holders are:

- Infrastructure Operators (IOs) (i.e. Network Rail (NR), in most cases)
- Train Operators (TOs) (i.e. Train Operating Companies (TOCs) or Freight Operating Companies (FOCs), in most cases)

1.2.3 Infrastructure and Train Operators

The term Infrastructure Operator (above) has the same meaning as the term Infrastructure Manager which is used in the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended) (ROGS). The term Train Operator has the same meaning as Railway Undertaking as used in ROGS.

1.2.4 Who will use what

Within Infrastructure Operator organisations, it is likely that the 'infrastructure' and 'operations' groups of control measures will be mainly used. Within Train Operator organisations, it is likely that 'trainborne' and 'operations' groups will be mainly used. All users are likely to refer to the 'management process' group of control measures.

1.2.5 Access to current version

The current version of this document can be accessed via:

- Network Rail Weather Hub
- RDG web-site
- Rail Partners, Operator Services Member SharePoint Portal

1.3 Control of the Document

1.3.1 Document ownership

The document is owned by SCSG on behalf of Network Performance Board (NPB). SCSG will update it when necessary and will add any new control measures once they are assessed to be proven and practical to deliver.

1.3.2 Briefing of changes

Changes included in updated versions of this document should be briefed to the relevant practitioners and assurers within Duty Holder organisations. SCSG is accountable for making sure Duty Holders have access to each update of the document.

1.4 Control Measure Codes

1.4.1 Control measure codes

The control measures included in Section 3 of this document have all been given short reference codes to allow ease of use, for example, PN1C:

- The first letter defines the status of the measure as either P or N. P means proven and practical; N means new and emerging
- The second letter defines the group to which the measure belongs. N means infrastructure, T means trainborne, P means operational and M means management process
- The number is simply the order in which the measures are listed in the group
- The final letter in the reference in this document is always the letter H. H means Hot Weather (and differentiates the measure from those measures included in the similar documents for adhesion and cold weather management)

Section 2 - The Approach

2.1 The Application of Control Measures

2.1.1 *As low as reasonably practicable*

The hot weather control measures are intended to reduce the risk to as low as reasonably practicable (ALARP), while allowing the network to maintain operational effectiveness.

2.1.2 *Risk control*

The control measures are generally aimed at:

- Reducing the impact of hot weather on the railway system
- Carrying out mitigations to control the risk arising from the impact of hot weather
- Maintaining the comfort and safety of employees and passengers during hot weather

2.1.3 *Selection of control measures*

The selection of control measures and how they are used is for Duty Holders to determine.

2.1.4 *When control measures fail 'on the day'*

When control measures fail 'on the day', Lead Duty Holders need to carry out processes, agreed jointly with other affected Duty Holders, which:

- Quickly identify that a planned control measure has failed 'on the day'
- Consider carrying out other control measures to manage the risk and record the conclusions reached

2.1.5 *Control measure categories*

The control measures in Sections 3 and 4 have been categorised as belonging to one of four groups:

- Infrastructure control measures – those measures that mitigate risks to the fixed infrastructure
 - Including:
 - All depots managed by NR (or equivalent infrastructure owners) or their contractors
 - All equipment and on-track plant used to treat infrastructure
 - Excluding:
 - All stations
 - All depots managed by TOCs/FOCs or their contractors
- Trainborne control measures – those measures that mitigate risks to rolling stock and onboard crew and passengers
 - Including:
 - All passengers and crew on trains in normal operation
 - All depots managed by TOCs/FOCs or their contractors
 - Excluding:
 - All passengers and crew on failed and stranded trains
- Operational control measures – those measures, not included in the above two categories, that mitigate risks to the operation of the railway
 - Including:
 - The movement of all trains
 - All stations and all passengers and staff on all stations
 - All passengers and crew on failed and stranded trains
 - All passengers and crew who have been de-trained onto the operational railway
 - Excluding:
 - Control measures listed in the Infrastructure and Trainborne sections
- Management processes – those processes or control measures not included in any of the above three categories

2.2 Hot Weather Management Plans

2.2.1 *Responsibility to produce plans*

Relevant Duty Holders are jointly responsible for producing a hot weather management plan which sets out the mix and scope of control measures for each part of their network and the way they are used. Duty Holders should decide if the plan forms part of an all-seasons weather management plan or stands alone.

2.2.2 *Contents of plans*

It is expected that each hot weather management plan will normally include some or all of the following details:

- The contributing Duty Holders
- The extent of the network to which the plan applies
- The range, scope and timing of the (infrastructure, trainborne, operational and management) control measures to be used
- The justification, if the Lead Duty Holder concludes after consultation with potentially affected Duty Holders, that a control measure will not be used for any reason (including a lack of funding or resources)
- Which Duty Holder is responsible for implementing which parts of each selected control measure
- The process for preparing each control measure in advance of hot weather
- The process for assuring preparations and use of each control measure
- The process for assessing the adequacy of the hot weather plan as conditions change and making suitable changes as necessary
- The process for identifying other risk mitigations when a planned control measure fails 'on the day'
- The input measures and targets set for the readiness and use of each control measure

2.2.3 *Indicative metrics*

Each of the tables in section 4 include a short list of indicative metrics which could be used to measure the state of preparation, or effectiveness of delivery, of each control measure. These indicative metrics are suggestions only and are for Duty Holders to consider and conclude whether they wish to use them, or alternative metrics, to monitor progress with their seasonal management plans.

2.3 Joint Seasonal Management Groups

2.3.1 *Form of JSMGs*

Relevant Duty Holders are recommended by SCSG to hold local joint seasonal management groups in order to create hot weather management plans. The exact form of each group (for example, its name, terms of reference, meeting arrangements, the form of the agreed plan, etc) is for relevant Duty Holders to decide. In many cases, existing joint management meetings are expected to serve as joint seasonal management groups.

2.3.2 *Responsibilities of Lead Duty Holders*

Each control measure used on the network should have a Lead Duty Holder. The Lead Duty Holder for each control measure is proposed in the tables in Section 4. The Lead Duty Holder is responsible for satisfying itself that the control measure is being properly applied in accordance with the hot weather management plan. If the Lead Duty Holder is not satisfied, then it must escalate the matter to the joint seasonal management group.

2.3.3 *Assurance processes*

The Lead Duty Holder is responsible for satisfying itself that the assurance processes which apply to the control measures they lead are fit-for-purpose. Where assurance processes require joint actions with other Duty Holders, these should be agreed with the other relevant Duty Holders and documented in the hot weather management plan. SCSG recognises that Duty Holders may decide that assurance processes will be based on the existing industry stage-gate process. SCSG has developed a weather-related maturity model which complements the Industry Risk Management Maturity Model for Performance (RM3P). This can be adopted by Duty Holders as part of their weather-related assurance processes.

2.4 Mandatory or Advisory Control Measures

2.4.1 *Mandatory or Advisory*

Where a control measure is identified as mandatory, this is because a statutory or regulatory requirement has been imposed by an authorised body (for example, RSSB, NR, DfT or ORR). The tables in Section 4 include references to the source of the mandatory requirements. These are typically:

- Legislation affecting the rail industry
- A Railway Group or Railway Industry Standard
- A designated mandatory Duty Holder company standard
- Contractual terms and conditions

2.4.2 *Derogations and deviations*

In some instances, Lead Duty Holders may conclude that compliance with mandatory control measures is not possible for reasons such as insufficient time, resources or funding. In these cases, the Lead Duty Holder will need to follow the derogation or deviation process specified by the relevant authorising body or contract.

2.4.3 *Rejection of Advisory control measure*

Where a control measure is non-mandatory, the decision of whether and how to employ it lies with the Lead Duty Holder, in consultation with other affected Duty Holders. If the Lead Duty Holder decides not to adopt a non-mandatory control measure, it is recommended that the Lead Duty Holder records the justification, rationale and the outcomes of any consultation with other potentially affected Duty Holders.

2.5 The Role of SCSG

2.5.1 *Authority of SCSG*

SCSG is an industry-wide steering group, not a formal authorising body. It is a sub-group of NPB and takes direction from it. SCSG cannot direct Duty Holders or authorise new control measures. This responsibility remains with the relevant industry authorising bodies. The role of SCSG is to endorse new or emerging control measures once proven and include them in this document.

2.5.2 *Proven and practical control measures*

In verifying control measures as 'proven and practical', SCSG will consider several factors, for example, that:

- The control measure has been successfully trialled, peer-reviewed and has received appropriate system approvals
- Where standards and guidance notes have been produced, they are fit-for-purpose
- In the case of mandatory control measures,
 - That any parts and materials needed when employing the control measure can be procured in time and cost-effectively from approved suppliers
 - That the business case and industry funding arrangements are robust
 - Any contractual issues between Duty Holders can be mutually agreed

2.5.3 *Legacy control measures*

Legacy control measures are those which have been routinely used for a number of years. SCSG will, over time, verify that these measures are proven and practical. This will usually require one of following:

- A simple statement by SCSG that a control measure can be considered proven and practical
- SCSG to commission a check on the fitness-for-purpose of any historic verification process
- SCSG to commission new research to verify that the legacy measures are proven and practical

2.5.4 *New and emerging control measures*

SCSG offers guidance and support to organisations developing new control measures. SCSG can help with the authorisation process and will verify, but cannot authorise, those which are proven and practical.

2.5.5 Developers of new control measures

Many different organisations can lead the development of new control measures. These include industry research bodies such as the Rail Safety and Standards Board (RSSB) and Network Rail (NR), UK Rail Research and Innovation Network (UKRRIN) universities, private industry, small and medium enterprises (SMEs), etc. SCSG actively encourages new control measures to be developed. However, SCSG cannot assume lead responsibility for developing new control measures.

Section 3 - The List of Control Measures

Notes:

1. Control Measures shown as **bold text** are understood to be 'Mandatory'. Others are 'Advisory'
2. The suggested Lead Duty Holder is shown in brackets after each control measure

3.1 Control Measures verified as being PROVEN AND PRACTICAL good practice

- **PROVEN AND PRACTICAL Infrastructure Control Measures**
 - [PN1H - Briefing track asset management teams about hot weather control measures \(IOs\)](#)
 - [PN2H - Completing preparation work and maintenance before hot weather \(IOs\)](#)
 - [PN3H - Maintaining the rail ends and insulation condition at insulated joints \(IOs\)](#)
 - [PN4H - Assessing track sites where a deficiency exists or could exist \(IOs\)](#)
 - [PN5H - Recording the stress condition of all CWR track \(IOs\)](#)
 - [PN6H - Maintaining a register of JCTs and CRTs at all deficient or disturbed track \(IOs\)](#)
 - [PN7H - Applying mitigations during or before track CRTs are exceeded \(IOs\)](#)
 - [PN8H - Reporting track buckles \(IOs\)](#)
 - [PN9H - Painting rails white at high buckle risk sites \(IOs\)](#)
 - [PN10H - Assessing OLE equipment for hot weather, registering and rectifying defects \(IOs\)](#)
 - [PN11H - Recording and carrying out OLE maintenance in advance of hot weather \(IOs\)](#)
 - [PN12H - Applying mitigations to OLE sites during or before hot weather \(IOs\)](#)
 - [PN13H - Authorising electric trains to coast under OLE defects \(IOs\)](#)
 - [PN14H - Checking mechanical signalling equipment and removing defects \(IOs\)](#)
 - [PN15H - Switching off points heaters and apparatus case heating during the summer \(IOs\)](#)
 - [PN16H - Monitoring and controlling lineside and roadside foliage \(IOs\)](#)
 - [PN17H - Monitoring and maintaining steel lifting and swing bridges \(IOs\)](#)
 - [PN18H - Reducing the risk of fire at high-risk timber bridges \(IOs\)](#)
 - [PN19H - Managing high ambient temperatures during construction \(IOs\)](#)
 - [PN20H - Developing Extreme Weather Plans for metal bridges with spans over 30m \(IOs\)](#)
 - [PN21H - Adapting buildings to extreme heat to improve climate resilience \(IOs\)](#)
 - [PN22H - Limiting overheating of any roof without solar PV panels or is not a Green Roof \(IOs\)](#)
 - [PN23H - Correctly sizing cooling systems for critical equipment \(IOs\)](#)
- **PROVEN AND PRACTICAL Trainborne Control Measures**
 - [PT1H - Functional testing, maintaining and repairing HVAC systems \(TOs\)](#)
 - [PT2H - Cleaning and maintaining cooling systems for traction and auxiliary systems \(TOs\)](#)
 - [PT3H - Implementing scheduled maintenance and summer settings of door systems \(TOs\)](#)
 - [PT4H - Regular emptying of Controlled Emission Toilet \(CET\) tanks \(TOs\)](#)
 - [PT5H - Testing, cleaning and maintenance tasks to control Legionella \(TOs\)](#)
 - [PT6H - Providing on-board water for passengers and staff for emergency situations \(TOs\)](#)
 - [PT7H - Drawing blinds/curtains whilst trains are stabled for long periods of time \(TOs\)](#)
 - [PT8H - Managing infestations, insects, vermin, bird nesting and waste management \(TOs\)](#)
 - [PT9H - Preventing and removing bacterial growth in fuel tanks \(TOs\)](#)
 - [PT10H - Closing or opening train doors when stabled \(TOs\)](#)
 - [PT11H - Suspending carriage washing if water shortage occurs \(TOs\)](#)
 - [PT12H - Isolating heaters and warmers \(TOs\)](#)
 - [PT13H - Cleaning the front of trains \(TOs\)](#)
 - [PT14H - Preparing and refining pre-hot weather maintenance instructions \(TOs\)](#)
- **PROVEN AND PRACTICAL Operational Control Measures**
 - [PP1H - Implementing operating restrictions when needed \(IOs\)](#)
 - [PP2H - Implementing Key Route Strategies and Amended Timetables \(IOs\)](#)
 - [PP3H - Implementing coasting of electric trains under OLE defects \(All Duty Holders\)](#)
 - [PP4H - Implementing Blanket Speed Restrictions \(IOs\)](#)
 - [PP5H - Implementing Emergency Speed Restrictions \(IOs\)](#)
 - [PP6H - Controlling the risk of fire from the running of steam locomotives \(IOs\)](#)

- [PP7H - Managing high risk infrastructure, inc. swing bridges \(IOs\)](#)
- [PP8H - Ensuring situational awareness is maintained in all conditions \(All Duty Holders\)](#)
- [PP9H - Enhancing and developing non-technical skills \(All Duty Holders\)](#)
- [PP10H - Managing the needs of stranded trains and passengers \(TOs\)](#)
- [PP11H - Improving traincrew rolling stock knowledge \(TOs\)](#)
- [PP12H - Maintaining route knowledge to ensure key locations are known \(TOs\)](#)
- [PP13H - Preparing to drive to the conditions \(TOs\)](#)

- **PROVEN AND PRACTICAL Management Processes**
 - [PM1H - Responding to non-delivery of control measures 'on the day' \(Lead Duty Holder\)](#)
 - [PM2H - Creation of a joint hot weather management plan \(IOs\)](#)
 - [PM3H - Sourcing, sharing and responding to weather forecasts \(All Duty Holders\)](#)
 - [PM4H - Using hot weather forecasting tools \(IOs\)](#)
 - [PM5H - Sourcing, sharing and responding to convective rainfall forecasts \(IOs\)](#)
 - [PM6H - Distribution of a Critical Rail Temperature \(CRT\) Risk Register \(IOs\)](#)
 - [PM7H - Application of operational blanket speed restrictions during extreme heat \(IOs\)](#)
 - [PM8H - Supporting development of new and emerging control measures \(All Duty Holders\)](#)

3.2 NEW AND EMERGING Control Measures not yet verified as being proven and practical good practice

- **NEW AND EMERGING Infrastructure Control Measures**
 - Nil

- **NEW AND EMERGING Trainborne Control Measures**
 - [NT1H - Painting or coating train vehicle roofs with infrared reflective materials \(TOs\)](#)
 - [NT2H - Implementing measures to address higher temperatures on legacy HVAC systems \(TOs\)](#)

- **NEW AND EMERGING Operational Control Measures**
 - Nil

- **NEW AND EMERGING Management Processes**
 - Nil

Section 4 - The Control Measures in Practice

4.1 Control Measures verified as being PROVEN AND PRACTICAL good practice

PROVEN AND PRACTICAL Infrastructure Control Measures

PN1H - Briefing track asset management teams about hot weather control measures

Purpose	To reduce the risk of track buckles by alerting staff to at-risk locations or activities before the onset of hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD14 Issue 8, Managing track in hot weather, Clause 4
Indicative metrics	<ul style="list-style-type: none"> All relevant staff briefed
Key advice and tasks	<ul style="list-style-type: none"> Buckles are triggered by the presence of at least one other factor (a disturbance, a deficiency or incomplete preparatory maintenance work), the most common are: <ul style="list-style-type: none"> Ballast disturbance (e.g. tamping, stoneblowing or opening out, lifting and packing, sluing track) Ballast deficiency (e.g. insufficient ballast in the cribs or on the shoulder) Seized joints (e.g. over tightened fishbolts, lack of lubrication) Rail creep Low joint closure temperature (because expansion gaps are too small) A low stress-free temperature Poor top and/or line (e.g. voiding sleepers, misalignments) Sleeper and bearer changing Disturbance of the track system caused as result of intervention to non-track infrastructure Poor condition of fastenings, coach screws, etc.
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN2H - Completing preparation work and maintenance before hot weather

Purpose	To reduce the risk of track buckles by undertaking effective preparation work before the onset of hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD14, Issue 8, Managing track in hot weather, clause 5
Indicative metrics	<ul style="list-style-type: none"> Stage gate reviews completed ahead of hot weather and work completed to plan Reduction in numbers of sites with low Critical Rail Temperature (CRT) values
Key advice and tasks	<ul style="list-style-type: none"> Complete the list of maintenance work in Table 1 (in the standard) prior to the hot weather period. The CRT register shall be maintained throughout the year for all sites except for transient sites, which are valid for seven days or less and which shall be added from March to September inclusive. An in-depth review in the three periods prior to 01 April shall be held by the Infrastructure Maintenance Engineer (IME) Ballast profile - Confirm that the ballast profile is compliant to Table 2 or Table 3. Deficient sites shall be made good and recorded in the CRT register until made compliant Rail lubrication - Lubricate fishplates, nuts, bolts and fishing surfaces of the rail ends Rail adjusting - Rail adjust (regulate rails) on sites: a) subject to rail creep, b) with irregular expansion gaps or c) if the Joint Closure Temperature (JCT) is found to be below 38°C Rail anchors - Fit in locations where rail creep is likely to be a problem Jointed rails in excess of 100ft (30m) - Assess rails longer than 100ft (30m) and provide additional joints where required Adjustment switches - Check gaps and overlaps are within tolerance (see NR/L2/TRK/001/mod16). Reset if required. Lubricate accessible sliding contact surfaces once a year. Check for defects such as lipping which might affect the correct operation of the adjustment switch S&C or jointed plain line abutting CWR at an adjustment switch - Maintain fastenings in good order. Extend CWR ballast profile into jointed track for at least 90m Voids and minor misalignments - Repair voids and minor misalignments, prioritising welded joints, insulated joints, all S&C including catch points and trap points, underline structures including bridges, viaducts, longitudinal timbers and level crossings Insulated joints - Inspect. Remove any rail-end lipping. Renew worn insulation and replace damaged end-posts. Confirm high-tensile bolts are fitted and the correct torque of 880Nm (650lbf) applied Switch diamonds and toe-to-toe switches within 10m - Inspect and confirm dimensions between switch diamond rails and the knuckles. Paint toe-to-toe switches, switch diamonds and other vulnerable S&C such as full depth timber layouts white where deemed necessary. A change in rail temperature of 15°C will alter the length of the switch rail and its clearance to the knuckle by 1mm (for normal grade steels) and 1.5mm (for manganese steels). Switch diamonds with a history of detection failure might require the installation of adjustment switches to reduce the thermal forces and limit switch rail movement relative to the knuckle. Switch diamond switch rails should be 115 + 3mm from the knuckle when the rail temperature is 20°C Ball and Claw – Record the position of the Ball relative to the Claw and the rail temperature. Check tightness (to the correct torque) of the Ball and Claw bolts. Check that, in hot weather, the ball is towards the toes (at rail temperatures higher than 27°C) “Stress Unknown” sites – Produce a dated and resourced programme to re-stress, or to measure, the Stress Free Temperature (SFT) of all Continuous Welded Rail (CWR) track within this classification. Plan to re-stress all such sites in CWR track “Stress Required” sites – Prioritise sites with the lowest CRT. Obtaining valid stressing records for “Stress Required” sites should normally take priority over similar work on “Stress Unknown” sites
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN3H – Maintaining the rail ends and insulation condition at insulated joints

Purpose	To reduce the risk of track circuit failures by ensuring that jointed track and Insulated Rail Joints (IRJs) are in good condition and adequately maintained prior to hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD04, Issue 8, Rail Joints, clause 4, table 2, clause 10.4 and 10.5
Indicative metrics	<ul style="list-style-type: none"> Work completed to plan
Key advice and tasks	<ul style="list-style-type: none"> Fishplates, bolts and fishing surfaces on non-insulated expansion joints in running lines shall be lubricated Install and reset rail gaps for fishplated expansion joints to the dimensions shown in Table 2 Undertake an annual rail joint gap survey where any of the following apply: a) known rail creep; b) the gaps appear incorrect, or joints are seized; c) the distance between fishplated expansion joints exceeds 60ft (18.3m); or d) tight radius curves Following the rail gap survey, calculate the Joint Closure Temperature (JCT) and complete rail adjusting prior to the onset of hot weather Fit rail anchors in areas prone to rail creep Do not install or create rails longer than 30m (100ft) between fishplated expansion joints Removing any lipping on the rail ends at insulated joints before it causes electric contact across the joint. This is more likely to happen in warm weather when the insulated end post is compressed due to expansion of the rails Worn and dipped IRJs have the highest risk of T-piece and insulation failure When trimming rail ends, take care to minimise damage to both the rail end and the end post Remove any metal swarf, created by trimming or drilling operations, from around the joint
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN4H – Assessing track sites where a deficiency exists or could exist

Purpose	To maintain a register of sites (a 'CRT register') that are deficient, disturbed or inadequately stressed so that appropriate mitigation can be applied during periods of hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD14, Issue 8, Managing track in hot weather, clause 6
Indicative metrics	<ul style="list-style-type: none"> Rail Stress and CRT registers up to date and correctly populated
Key advice and tasks	<ul style="list-style-type: none"> Assess the following track risk locations: <ul style="list-style-type: none"> All unstressed CWR sites ('stress required'), including sites subject to rail defect removal (review the Rail Defect Management System (RDMS) for rail defects and corresponding stress restoration certificates) All CWR sites without stress records ('stress unknown') All disturbed or deficient sites covered by Table 5 and Table 9, including the additional Critical Rail Temperature (Watchperson) (CRT(W)) reductions where appropriate All full depth flat bottom S&C on timber bearers with a line speed of 100mph or above (with the CRT(W) reduction from Table 6 applied) Curve locations with jointed rail lengths in excess of 30m without lateral restraint Curve locations with a radius of 500m or less, where Lateral Resistance Plates (LRPs) have not been fitted, have been temporarily removed or unfastened Maintenance sites identified for completion prior to the hot weather season Unconsolidated lineside works (e.g. drainage, cable or cess works, which may affect the track stability) Sites with active subsidence (an embankment site where regular intervention is needed to restore track geometry, or a Temporary Speed Restriction (TSR), has been imposed as a precautionary measure) Misalignments, particularly at welded or insulated joints Sites of known rail creep Level crossings where voiding sleepers are present Complete a site assessment on Track Engineering Form 3207 (TEF3207) for all sites where work that could affect track stability has been undertaken or where a track infrastructure deficiency has been identified
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN5H – Recording the stress condition of all CWR track

Purpose	To maintain, for ease of reference, a record of the stress condition for all CWR in a national database ('Railstress' or similar) and use the SFT values specified in database to calculate the CRT for disturbed or deficient CWR track.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD14, Issue 8, Managing track in hot weather, clause 6.4.1
Indicative metrics	<ul style="list-style-type: none"> Rail Stress is up to date and complete and the average SFT values have been used where applicable
Key advice and tasks	<ul style="list-style-type: none"> The CRT for CWR track is based on the SFT Where the SFTs of the two rails are different, the CRT shall be calculated based on track type; a) for S&C, or spiked plain line track, use the lowest SFT of the two rails; or b) other plain line track use the average SFT of the two rails Restress up to stress-level required and stress unknown sites and sites with a low SFT
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN6H - Maintaining a register of JCTs and CRTs at all deficient or disturbed track

Purpose	To calculate and record the CRT for disturbed or deficient CWR track and jointed track using JCTs.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD14, Issue 8, Managing track in hot weather, clauses 6.4.2 to 6.5.4 and tables 4 to 9
Indicative metrics	<ul style="list-style-type: none"> CRT register is up-to-date and complete for all disturbed or deficient CWR JCTs have been assessed and CRTs for jointed track
Key advice and tasks	<ul style="list-style-type: none"> Use the SFT values specified in database to calculate the CRT for disturbed or deficient CWR track using TEF3208 or 3286, 3287, 3288 and 3289 and apply controls until the stress has been restored, the specified period of time required for ballast consolidation has elapsed, or the deficiency has been repaired Where track is subject to more than one disturbance or deficiency, then the lowest calculated value of CRT(W) shall apply Measure the available expansion gaps at the rail joints, at a recorded rail temperature, over sections of jointed track and calculate the JCT and use to calculate the CRTs for jointed track using TEF3206 or 3209, 3290 and 3291
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN7H - Applying mitigations during or before track CRTs are exceeded

Purpose	To apply the required mitigations during hot weather based on the rail temperatures, such that speed restrictions are applied at the required temperatures where necessary, to reduce the risk and consequence of track buckles.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD14, Issue 8, Managing track in hot weather, clause 7 and table 10, clause 8 and table 11
Indicative metrics	<ul style="list-style-type: none"> Sites mitigated at the temperatures required based on the records in the CRT register
Key advice and tasks	<ul style="list-style-type: none"> Identify the mitigations which are likely to be required and agree implementation plans Apply the required mitigations during hot weather based on the rail temperatures, such that speed restrictions are applied where necessary, to reduce the risk and consequence of track buckles
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN8H - Reporting track buckles

Purpose	To learn from previous incidents by reporting any buckles that occur along with the investigation on TEF3032 and calculate the hazard score using the process detailed within TEF3064. This should be done so that cause and prevention measures are considered, and lessons learnt for future knowledge.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> Buckle report - TEF3032 and hazard score - TEF3064 NR/L2/TRK/001/MOD14 Managing track in hot weather, clause 11
Indicative metrics	<ul style="list-style-type: none"> Buckle reports completed and submitted, corresponding hazard scores recorded, TEF3064 completed and submitted
Key advice and tasks	<ul style="list-style-type: none"> Report any buckles along with the follow up investigation on TEF3032 and calculate the hazard score using the process detailed within TEF3064 (see NR/L2/TRK/001/MOD14 Managing track in hot weather, clause 11)
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN9H - Painting rails white at high buckle risk sites

Purpose	To reduce the temperature and the thermal expansion of rails during hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/TRK/001/MOD14, Issue 8, Managing track in hot weather, table 1 Painting of rails guidance document Track Work Information Sheet "How to paint S&C" Blue Book CECDG007 Hot Weather Guidelines for Permanent Way – NR/8000/1 (Issue: 2) Hot Weather Guidelines for Permanent Way
Indicative metrics	<ul style="list-style-type: none"> Preparation work completed prior to hot weather
Key advice and tasks	<ul style="list-style-type: none"> Paint toe-to-toe switch layouts, switch diamonds and other vulnerable S&C such as full depth timber layouts white where deemed necessary. Paint rails ahead of hot weather, check painted rails remain clean and are not coated with grease and other products that will reduce albedo (i.e. reflective coefficient)
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN10H - Assessing OLE equipment for hot weather, registering and rectifying defects

Purpose	To create a register to identify and rectify or mitigate all high-risk locations and Weather Related Critical Defects (WRCDs) and assess risk levels and weather-related trigger points.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/ELP/21090, Issue 1, OLE Seasonal Preparation Response for Extreme Weather NR/L2/ELP/21087, Issue 11 Specification of Maintenance Frequency and Defect Prioritisation of Overhead Line Electrification Equipment, Appendix C, National Template Overhead Line Defect Prioritisation Matrix NR/L3/ELP/27237 Overhead Line Work Instructions
Indicative metrics	<ul style="list-style-type: none"> Monthly reviews of the register completed to make sure any WRCD are recorded and notified to Electrification and Plant Maintenance Engineer (EPME) and the Route Asset Manager (RAM) (E&P)
Key advice and tasks	<ul style="list-style-type: none"> The maximum ambient operating temperature of the OLE is dependent upon the system type, the maximum range is between 38°C and 40°C. Network Rail standard NR/L2/ELP/21088 details these limits. However, historical performance statistics indicate reliability of the system decreases when temperatures go above 30°C If the ambient temperature is forecasted to exceed 33°C, then the pre-assessments should be undertaken to understand the risk and implement additional mitigation measures as detailed in NR/L2/ELP/21090 Appendix A Maintain a register of defects in-line with NR/L2/ELP/21087 Appendix C (i.e. Ellipse) and a register of WRCDs that have not been addressed prior to entering a period of extreme hot weather, this should include as a minimum: <ul style="list-style-type: none"> Balance weight anchor configurations and identify the ambient temperature at which the weights will bottom out or reach the top of the guide tube & lock out Fixed Termination (FT) equipment, detailing all sites and highlighting the high-risk sites where: <ul style="list-style-type: none"> Wire run tension differentials are exasperated (overlaps and crossovers), including transitions between Automatically Tensioned (AT) & FT locations The tensions of the wire runs are below the minimum design tensions. The minimum requirements are as detailed in NR/L3/ELP/27237 – NR/OLE C09 The line speed exceeds 40mph The contact wire height is below 4.2m Span lengths are 60m or above Locations where FT ancillary wires cross catenary wires, other live equipment and earthed equipment, high risk locations and locations where the ancillary wire does not have a 600mm clearance should be highlighted The Route Asset Manager (RAM) [E&P] shall inform each Electrification & Plant Maintenance Engineer (EPME) of the Weather-Related Critical Defects (WRCD) (using Ellipse defect codes) and assets that shall be reviewed and prioritised in advance of hot weather periods based upon route experience Existing and emerging weather-related weaknesses or defects in OLE components and the overall system shall be monitored to identify their impact on safety, reliability, availability and maintainability. This shall be carried out each period by the RAM [E&P]. The EPME shall, on a periodic basis review the condition of all WRCDs against seasonal criteria
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN11H – Recording and carrying out OLE maintenance in advance of hot weather

Purpose	To identify and rectify weather-related critical defects ahead of hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/ELP/21087, Issue 1, Specification of Maintenance Frequency and Defect Prioritisation of Overhead Line Electrification Equipment, clause 4.1 and 4.2 NR/L2/ELP/21090 OLE Seasonal Preparation Response for Extreme Weather
Indicative metrics	<ul style="list-style-type: none"> Work carried out to plan
Key advice and tasks	<ul style="list-style-type: none"> Within the OLE, there are assemblies and components which are vulnerable to extreme weather conditions. Understanding their condition and the status of defects is fundamental in maintaining the safe and reliable operation of the system The rectification of defects shall be managed in accordance with NR/L2/ELP/21087. However, assessment of rectification timescales shall evaluate additional seasonal factors when prioritising defects Check the condition of critical components prior to expected hot weather including: <ul style="list-style-type: none"> Balance weight anchors and other tensioning systems FT conductors, including contact/catenary wires, ancillary conductors and mid-point anchor tie-wires Electrical jumpers in overlaps and crossovers Identify the defects affecting the system performance in high ambient temperature which the RAM (E&P) should consider when selecting Delivery Unit (DU) specific WRCDs. These include: <ul style="list-style-type: none"> Low wire tension and excessive sag in FT conductors Restricted movement of balance weights Excessive movement of registration assembly along track Conductor creep recovery Insufficient electrical clearances between ancillary conductors (e.g. Return Conductor & out-of-running catenary) Poor electrical in-span jumper set up (i.e. "C" jumpers or feeds) To support better asset performance, WRCDs should be: <ul style="list-style-type: none"> Rectified prior to 31st March and prioritised until 31st Aug Mitigated with control measures which are documented by the EPME as an Ellipse activity where the defects cannot be rectified
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN12H - Applying mitigations to OLE sites during or before hot weather

Purpose	To manage, mitigate, monitor and communicate maintenance defects to allow safe operation when the forecasted weather is within or outside the operating parameter of the OLE.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/ELP/21087 Specification of Maintenance Frequency and Defect Prioritisation of Overhead Line Electrification Equipment NR/L2/ELP/21090 OLE Seasonal Preparation Response for Extreme Weather
Indicative metrics	<ul style="list-style-type: none"> Work carried out to plan
Key advice and tasks	<ul style="list-style-type: none"> Apply additional mitigations such as speed restrictions or operating the system with degraded feeding, depending on whether the forecast weather is within or outside the operating parameters of the OLE Hot weather patrols should be applied to the following locations when the ambient temperature is predicted to exceed 27°C and will be dependent on the weather and knowledge of the actual on-site temperature of the equipment: <ul style="list-style-type: none"> Termination locations and Mid-Point Anchor (MPA) locations where fault rectification before the onset of hot weather is not feasible FT Wire Runs where there are known issues with Electrical Clearance or excessive uplifts in high temperatures All areas where a specific survey of Balance Weight Equipment is required to determine condition
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN13H – Authorising electric trains to coast under OLE defects

Purpose	To consider plan and communicate operational controls authorising trains to operate at reduced speed or to coast with pantographs lowered to reduce the risk of damage to OLE and pantographs.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L2/ELP/21090 OLE Seasonal Preparation Response for Extreme Weather, clause 6.3.3 and Appendix A
Indicative metrics	<ul style="list-style-type: none"> Number of plans developed and communicated for high-risk locations
Key advice and tasks	<ul style="list-style-type: none"> Review the register of all high-risk locations and WRCDs and assess risk levels and weather-related trigger points and assess if coasting is an appropriate action Balance Weight Anchor – Check the set up and confirm that there is sufficient free movement. Calculate the predicted temperature range the anchor will bottom out or lock out Spring tensioner – If the temperature range of the device is exceeded (40°C for Tensorex C+ or for Tensorex C) then the system effectively becomes a FT system Support and registrations – Check separation between adjacent support & registrations at overlaps and crossovers Stagger change due to along-track movement – Check areas of high (but compliant) staggers to assess the effect of the additional stagger change Review the wire and pan interfaces at high-risk areas on main lines (with converging & diverging wires present) and low wire height areas (less than 4.2m) FT conductors – Validate known sites where the electrical clearance is less than 600mm (e.g. a defect), understand the actual clearances based on the temperature, span length, wire tension (in that vicinity) and predict/calculate the expected clearance based on the forecasted temperature, tensions and length of span Jumpers at overlaps at crossovers – Validate known defects and assess the profile of the jumper to estimate if there is sufficient slack in the jumper profile to cope with increased temperature range
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PN14H – Checking mechanical signalling equipment and removing defects

Purpose	To mechanically regulate/adjust signal wires, points and rodding before the onset of hot weather in order to increase reliability.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/SIG/10064 General Instructions to Staff Working on S&T Equipment, clause 2 NR/L3/SIG/10064/GI/M002 Seasonal Precautions, clause 2
Indicative metrics	<ul style="list-style-type: none"> Work carried out to plan
Key advice and tasks	<ul style="list-style-type: none"> Mechanically adjust signal wires Points and rodding should be regulated/adjusted before the onset of hot weather
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN15H – Switching off points heaters and apparatus case heating during the summer

Purpose	To make sure additional heating is turned off during hot weather in order to reduce cable degradation caused by excessive heat.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/SIG/10064 General Instructions to Staff Working on S&T Equipment NR/L3/SIG/10064/GI/M002 Seasonal Precautions, clause 2
Indicative metrics	<ul style="list-style-type: none"> All heating equipment operating correctly and turned off
Key advice and tasks	<ul style="list-style-type: none"> Heating equipment should be operating correctly and turned off when not required, especially, before periods of hot weather and during the summer (typically April to September) Heaters in ground equipment and apparatus cases should only be operative from early October to the end of the cold weather period, usually the end of March
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN16H – Monitoring and controlling lineside and roadside foliage

Purpose	To ensure adequate visibility of the lineside signs and signals is maintained.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/SIG/10064 General Instructions to Staff Working on S&T Equipment NR/L3/SIG/GI/M002 Seasonal Precautions, clause 2
Indicative metrics	<ul style="list-style-type: none"> Work carried out to plan
Key advice and tasks	<ul style="list-style-type: none"> Review signal and roadside crossing sighting to maintain adequate visibility Manage vegetation and foliage during high growth rates ahead of hot weather to allow adequate visibility of the lineside signs and signals to be maintained
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PN17H – Monitoring and maintaining steel lifting and swing bridges

Purpose	To ensure that steel lifting and swing bridges can be operated effectively during hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/021/02 Summer Management
Indicative metrics	<ul style="list-style-type: none"> Number of hot weather management plans registered for specific bridge locations
Key advice and tasks	<ul style="list-style-type: none"> Moveable steel bridges can expand as the temperature rises, preventing them from being opened or closed Ensure equipment is available and staff are competent to manage lubrication and the use of jacking to allow the bridge to be put back into place Maintain a register of specific at-risk moveable metal bridges in their route-specific appendix and plan for effective management during hot weather Basic preparations to mitigate failure include: <ul style="list-style-type: none"> Availability of jacks to aid the bridge back into place Training of personnel in the usage of jacks Lubrication carried out according to maintenance programme
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN18H - Reducing the risk of fire at high-risk timber bridges

Purpose	To monitor and remove the build-up of litter and other combustible materials at high risk timber bridges.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/021/02 Summer Management
Indicative metrics	<ul style="list-style-type: none"> Maintain a list of at-risk timber bridges in their route-specific appendix
Key advice and tasks	<ul style="list-style-type: none"> Mobile Operation Managers (MOMs) should undertake regular audits to monitor litter levels to reduce the risk of fire Each route's list of at-risk timber bridges is in their route-specific appendix
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN19H - Managing high ambient temperatures during construction

Purpose	To prevent the risk of cementitious construction materials suffering thermally-induced damage and cracking during hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> Civil Engineering Works - Technical Approval of Standard Designs and Details, Part A: NR/CIV/SD/F003/ADDM2/1700 (Issue: B) Form 003 Addendum 2: SDC Review Package A – clause 4.7.2
Indicative metrics	<ul style="list-style-type: none"> All necessary Design Reviews and Hazard Identifications completed
Key advice and tasks	<ul style="list-style-type: none"> Rapid hardening materials typically generate a lot of additional heat and may need additional controls during periods of high ambient temperatures Consider ambient temperatures during construction and the rate of strength gain Manage risk of thermally-induced cracking during hot weather Consult manufacturers to select correct materials for the required performance Monitor mixing, placing and compaction during curing in hot weather
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PN20H - Developing Extreme Weather Plans for metal bridges with spans over 30m

Purpose	To define a standard approach for the development of Extreme Weather Plans (EWPs) for metal bridges with continuous spans of over 30m in order to prevent functional or structural failure.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/CIV/190 Developing Extreme Weather Plans, clause 5
Indicative metrics	<ul style="list-style-type: none"> All necessary EWPs developed and updated annually All management actions associated with EWPs delivered
Key advice and tasks	<ul style="list-style-type: none"> Identify structures at higher risk from extreme weather Develop EWPs for metal bridges spanning over 30m continuously Outline the management actions to protect these structures under extreme weather conditions Define a procedure for receiving and acting upon notifications of extreme weather By implementing an EWPS, the adverse impact of extreme weather can be mitigated, thus reducing the risk of a functional or structural failure and, therefore, offering a greater level of protection to railway operations
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PN21H - Adapting buildings to extreme heat to improve climate resilience

Purpose	To improve climate resilience of new buildings by using the Fabric First approach.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/GN/CIV/100/04 Climate Action Design for Buildings & Architecture, clause 6
Indicative metrics	<ul style="list-style-type: none"> All new buildings designed using Fabric First approach
Key advice and tasks	<ul style="list-style-type: none"> Renewing assets and designing new buildings using the Fabric First approach will improve climate resilience
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PN22H – Limiting overheating of any roof without solar photo voltaic (PV) panels or is not a Green Roof

Purpose	To limit internal overheating during hot weather by considering adapting or changing any roof that does not have solar PV panels or is not a Green Roof in order to provide a higher albedo (i.e. a reflection co-efficient).
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/GN/CIV/100/04 Climate Action Design for Buildings & Architecture, clause 4.2.5
Indicative metrics	<ul style="list-style-type: none"> Identify specific roof structures that do not have a high albedo
Key advice and tasks	<ul style="list-style-type: none"> Review designs against expected temperatures and consider adaptation and changes to limit internal overheating during hot weather
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PN23H – Correctly sizing cooling systems for critical equipment

Purpose	To prevent overheating and failure of critical equipment on extreme hot weather days.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/GN/CIV/100/04 Climate Action Design for Buildings & Architecture, clause 4.3
Indicative metrics	<ul style="list-style-type: none"> Design of structures
Key advice and tasks	<ul style="list-style-type: none"> Correctly sized cooling systems for critical equipment to prevent overheating on extreme hot weather days
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PROVEN AND PRACTICAL Trainborne Control Measures

PT1H – Functional testing, maintaining and repairing of HVAC systems

Purpose	To reduce the risk of failures and to ensure the heating, ventilation and air-conditioning (HVAC) systems provided in all passenger and train crew areas, are working to their full capability.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan RDG-GN015 Issue 4 Extreme Weather Arrangements, including Failure or Non-Availability of On-Train Environment Control Systems
Indicative metrics	<ul style="list-style-type: none"> Maintenance schedules and records up to date Performance measures of the HVAC systems Monitoring and tracking of train crew reports and customer satisfaction of interior air temperature and ventilation
Key tasks	<ul style="list-style-type: none"> Test and repair vehicle HVAC systems before onset of hot weather Overhaul and/or repair all spare HVAC systems before onset of hot weather Schedule maintenance in accordance with vehicle and/or subsystem instructions Adjust HVAC set point to summer setting Change and/or increase frequency of changing filters to maximise air flow and effectiveness Clean air-conditioning system condensate drains to avoid blockage
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT2H – Cleaning and maintaining cooling systems for traction and auxiliary systems

Purpose	To reduce the risk of traction and auxiliary systems de-rating or failing due to overheating.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> All maintenance schedules and records up to date Performance measures of the diesel engine, cooling, traction, electrical, electronic and auxiliary systems
Key tasks	<ul style="list-style-type: none"> Clean diesel engine radiators and charge air coolers to remove dirt, debris and pollen Check diesel engine radiator flow rates Check performance of transformer, electrical converters, traction motors and other electrical and electronic equipment coolers Clean electrical and auxiliary system coolers and heatsinks Change or increase frequency of changing intake filters to maximise air flow Carry-out jobs as detailed in vehicle and/or subsystem maintenance instructions Review and update vehicle maintenance instructions
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT3H - Implementing scheduled maintenance and summer settings of door systems

Purpose	To reduce the risk of poor performance and failure of train door systems during hot weather due to poor condition, mis-adjustment or binding.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> Maintenance schedules and records up-to-date Performance measures of the train door systems
Key tasks	<ul style="list-style-type: none"> As detailed in vehicle and/or subsystem maintenance instructions
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT4H - Regular emptying of Controlled Emission Toilet (CET) tanks

Purpose	To reduce the risk of toilets being out-of-use due to full CET tanks or emitting unwanted odours during hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan RDG-GN015 Issue 4 Extreme Weather Arrangements, including Failure or Non-Availability of On-Train Environment Control Systems
Indicative metrics	<ul style="list-style-type: none"> Maintenance schedules and records up-to-date Performance and availability measures of on-train toilet systems Customer satisfaction measures associated with on-train toilet availability and condition meeting expectations
Key tasks	<ul style="list-style-type: none"> Carry-out jobs as detailed in vehicle and/or subsystem maintenance instructions
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT5H - Testing, cleaning and maintenance tasks to control Legionella

Purpose	To reduce the risk of Legionella by carrying out specific cleaning and maintenance tasks.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> Legionnaires' disease: The control of legionella bacteria in water systems. Approved Code of Practice and guidance on regulations L8 Legal status of HSE guidance and ACOPs Rail Partners, Control of Risk posed by Legionella Bacteria in On-train Water Systems, Guidance Note 13, Issue 4, April 2023
Indicative metrics	<ul style="list-style-type: none"> Legionella laboratory culture results following sample dipping of on-train water storage tanks
Key tasks	<ul style="list-style-type: none"> Carry-out jobs as detailed in vehicle and/or subsystem maintenance instructions Test vehicle water storage tanks at regular intervals Dose water to eliminate legionella bacteria Flush water systems Modify sinks, taps and toilets to reduce aerosol generation
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PT6H - Providing on-board water for passengers and staff for emergency situations

Purpose	To provide and replenish bottled water on-board trains for refreshing passengers and staff during emergency situations.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG-GN015 Issue 4 Extreme Weather Arrangements, including Failure or Non-Availability of On-Train Environment Control Systems
Indicative metrics	<ul style="list-style-type: none"> Water bottles sourced compared to plan Water bottles issued to train services compared to plan Customer satisfaction and performance metrics
Key tasks	<ul style="list-style-type: none"> Carry-out jobs as detailed in vehicle and/or subsystem maintenance or train preparation instructions
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT7H - Drawing blinds/curtains whilst trains are stabled for long periods of time

Purpose	To reduce the effects of solar gain whilst trains are stabled, by drawing blinds/curtains in passenger saloons, where fitted, and in driver's cabs.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG-GN015 Issue 4 Extreme Weather Arrangements, including Failure or Non-Availability of On-Train Environment Control Systems
Indicative metrics	<ul style="list-style-type: none"> Dates of issue and withdrawal of train preparation instructions to deploy on-train blinds/curtains (where fitted) Confirmation by staff that all instructions have been implemented Customer and train crew feedback
Key tasks	<ul style="list-style-type: none"> Preparation of templated train preparation instructions to deploy on-train blinds/curtains (where fitted)
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT8H - Managing infestations, insects, vermin, bird nesting and waste management

Purpose	To reduce the impact on depot safety resulting from infestations, insects, vermin, birds nesting and waste management, noting the Wildlife and Countryside Act 1981 constraints around moving/destroying bird nests.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> All depot facility management and maintenance records appropriate and up-to-date
Key tasks	<ul style="list-style-type: none"> Carry-out jobs as detailed in depot facility management and maintenance instructions
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT9H – Preventing and removing bacterial growth in fuel tanks

Purpose	To reduce the impact on diesel train performance resulting from fuel filter and injection equipment blockage due to bacteria contaminating the fuel.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> Number of diesel engine and fuel system related technical incidents and faults
Key tasks	<ul style="list-style-type: none"> Drain depot and vehicle fuel tanks of water Dose fuel with biocide Increase fuel filter changes 'Polish' (filter) fuel to remove bacterial growth
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT10H – Closing or opening train doors and windows when stabled

Purpose	To retain cold air where fitted with air-conditioning or cooling equipment, or open the doors and windows to allow hot air to ventilate where not fitted with air-conditioning/cooling or force ventilation systems.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG-GN015 Issue 4 Extreme Weather Arrangements, including Failure or Non-Availability of On-Train Environment Control Systems
Indicative metrics	<ul style="list-style-type: none"> Customer satisfaction metrics and train crew feedback Vehicle condition monitoring systems
Key tasks	<ul style="list-style-type: none"> Production of train preparation instructions Informing staff when to implement instructions
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT11H – Suspending carriage washing if water shortage occurs

Purpose	To reduce water usage when low rainfall and high temperatures result in water shortage.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> Passenger and train crew feedback Vehicle condition monitoring systems
Key tasks	<ul style="list-style-type: none"> Monitor advice and restrictions from water companies and Environment Agency Inform staff when to implement instructions Wash trains in advance of hot and dry conditions, or in locations not subject to a restriction
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT12H – Isolating heaters and warmers

Purpose	To prevent unnecessary operation of heaters and warmers and avoid increasing vehicle interior temperature or causing diesel engines to derate.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> Recording of heating or warming systems isolated along with dates and vehicle or unit identification (to aid reinstatement) Vehicle system performance Vehicle condition monitoring systems
Key tasks	<ul style="list-style-type: none"> Isolate heaters and warmers, including cab and saloon heaters, auxiliary diesel fuel fired heaters, fuel warmers, air system vent warmers and coupler warmers Reinstate heaters and warmers after hot weather passes
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT13H – Cleaning the front of trains

Purpose	To remove flies from windscreens, vehicle end lights and yellow warning panels to ensure driver vision and visibility of the train, noting any restrictions due to traction electrical supply systems.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> Trains washed in period immediately before onset of hot weather Number of locations and quantity of washing equipment provided Train crew feedback
Key tasks	<ul style="list-style-type: none"> Provide water and brushes at suitable train preparation and reversal locations
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PT14H – Preparing and refining pre-hot weather maintenance instructions

Purpose	To reduce the risk to persons and occurrence of rolling stock failures due to hot temperature and associated weather conditions.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> RDG 20 Point Plan
Indicative metrics	<ul style="list-style-type: none"> Fleet reliability and availability performance
Key tasks	<ul style="list-style-type: none"> Prepare and refine summerisation maintenance jobs Review vehicle systems for potential issues caused by hot temperatures Review performance in previous hot weather periods Update and issue vehicle maintenance instructions
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PROVEN AND PRACTICAL Operational Control Measures

PP1H – Implementing operating restrictions when needed

Purpose	To ensure that if the nature of train operation is affected by extreme weather or reported infrastructure issues, measures such as operating restrictions are safely imposed.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/021 Weather Management Index The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended)
Indicative metrics	<ul style="list-style-type: none"> Incidents where implementation and management of operating restrictions have not been successful
Key tasks	<ul style="list-style-type: none"> Implementation of a plan as required Briefings developed and distributed on likely restrictions required Non-technical skills training around operating restrictions
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP2H – Implementing Key Route Strategies and Amended Timetables

Purpose	To ensure that Key Route Strategies (KRSs), in response to anticipated or actual limited infrastructure availability, and Amended Timetables are implemented effectively.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/045/3.23 Train Service Management NR/L2/OPS/021 Weather Management Index Network Rail Route Summer Working Arrangements
Indicative metrics	<ul style="list-style-type: none"> Number of jointly agreed and signed-off KRSs available Number of jointly agreed Amended Timetables available Incidents where the implementation of KRSs has not been successful
Key tasks	<ul style="list-style-type: none"> Pre-defined key route strategies considering key risk areas Pre-defined contingency timetables to align with KRSs Agreed process and timescales for implementation
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP3H – Implementing coasting of electric trains under OLE defects

Purpose	To ensure that operational staff, including train drivers, understand how and when to implement and enact coasting for OLE issues.
Lead Duty Holder	<ul style="list-style-type: none"> All Duty Holders
References and guidance	<ul style="list-style-type: none"> GERT8000 Module AC Electrified Lines NR/L3/OPS/045/3.33 Authorising Trains to Coast with Pantographs Lowered
Indicative metrics	<ul style="list-style-type: none"> Assessment results of drivers Assessment results of signallers Incidents of OLE issues where coasting is involved
Key tasks	<ul style="list-style-type: none"> Implement rolling stock module (basic principles) Provision of correct boards in key locations ready for implementation
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP4H – Implementing Blanket Speed Restrictions

Purpose	To ensure that Blanket Speed Restrictions are safely and consistently imposed.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> GERT8000 Module SP Speeds NR/L3/OPS/045/3.19 Speed Restrictions RS523
Indicative metrics	<ul style="list-style-type: none"> Adverse incidents relating to blanket speeds entered in CCIL (NR Control logging system)
Key tasks	<ul style="list-style-type: none"> Pre-defined blanket speed areas, as required Process for implementation in place Driver informed by a late notice or GSM-R Local Operations Manager assessments of signallers
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP5H – Implementing Emergency Speed Restrictions

Purpose	To ensure that Emergency Speed Restrictions are correctly and safely imposed.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> GERT8000 Module SP Speeds CRT Register (see PN4H) NR/L2/OPS/060 The Management of Heat-Related Emergency Restrictions of Speed Resulting from High Air Temperature RS521 RIS-0735-CCS
Indicative metrics	<ul style="list-style-type: none"> Adverse incidents related to ESRs entered in CCIL
Key tasks	<ul style="list-style-type: none"> Sufficient signage and personnel ready to be deployed Correct signage placed on track Driver manager assessments of drivers Local Operations Manager assessments of signallers Assessment of staff placing ESR
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP6H – Controlling the risk of fire from the running of steam locomotives

Purpose	To ensure that restrictions and/or mitigations are imposed on the running of steam locomotives during periods of extreme fire risk to prevent line-side fires.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/021/02 Summer Management NR/L3/OPS/045/3.18 Operation and Control of Heritage Trains RIS-3440-TOM RIS-4472-RST
Indicative metrics	<ul style="list-style-type: none"> Incidents of fire involving steam locomotives Briefings delivered to affected staff
Key tasks	<ul style="list-style-type: none"> Operating restriction guidance briefed and clear for Control and Signalling teams Appropriate briefings developed/issued to affected parties
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP7H – Managing high risk infrastructure, inc. swing bridges

Purpose	To ensure that mitigations are imposed for specifically at-risk structures, such as swing bridges, during hot weather.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/021/02 Summer Management NR/L3/OPS/045/4.05 Management of Infrastructure Incidents
Indicative metrics	<ul style="list-style-type: none"> Incidents involving high risk structures in hot weather
Key tasks	<ul style="list-style-type: none"> Operating restriction guidance briefed and clear for Control and Signalling teams Appropriate briefings developed/issued to affected parties
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP8H – Ensuring situational awareness is maintained in all conditions

Purpose	To ensure that the environmental conditions at locations are managed such that operational staff remain capable of safety critical work.
Lead Duty Holder	<ul style="list-style-type: none"> All Duty Holders
References and guidance	<ul style="list-style-type: none"> Health and Safety at Work Act etc. NR/L3/OPS/045/1.01 Health, Safety & Welfare Inspections of Staffed Operational Locations Local staff welfare arrangements RDG-GN015 Issue 4 Extreme Weather Arrangements, including Failure or Non-Availability of On-Train Environment Control Systems
Indicative metrics	<ul style="list-style-type: none"> Operational location visits Safety tours
Key tasks	<ul style="list-style-type: none"> Appropriate notices/support for operational staff for welfare, including sleep, hydration and rest All appropriate checks carried out as per company generic and location specific booking-on procedure prior to shift start
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP9H – Enhancing and developing non-technical skills

Purpose	To manage risk and workload to ensure staff maintain concentration and focus while carrying out safety critical work.
Lead Duty Holder	<ul style="list-style-type: none"> All Duty Holders
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/045/2.02 Controller Competence Assessment Process NR/L3/OPS/045/2.06 Competence Standard and Assessment Framework for Operating Signalling Equipment Network Rail Operations Training Materials Train Operator Training Materials Non-technical skills supporting material
Indicative metrics	<ul style="list-style-type: none"> Fitness for duty check results Accidents/incidents where environment identified as a factor
Key tasks	<ul style="list-style-type: none"> All appropriate checks carried out as per company generic and location specific booking-on procedure prior to shift start NTS training Site or location visits
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PP10H – Managing the needs of stranded trains and passengers

Purpose	To ensure the welfare of staff and passengers on stranded trains, that they are kept safe and informed and that they are moved as soon as it is safe to do so.
Lead Duty Holder	<ul style="list-style-type: none"> All Duty Holders
References and guidance	<ul style="list-style-type: none"> RDG-OPS-GN-049 Issue 5 Meeting the Needs of Passengers Stranded on Trains NR/L3/OPS/045/4.15 Managing Stranded Passengers and Train Evacuation RDG-GN015 Issue 4 Extreme Weather Arrangements, including Failure or Non-Availability of On-Train Environment Control Systems Non-technical skills supporting material NR/L3/OPS/021/02 Summer Management, Section 6.5
Indicative metrics	<ul style="list-style-type: none"> Briefings delivered to affected staff Investigation into events involving evacuation of stranded passengers
Key tasks	<ul style="list-style-type: none"> Briefings for key operational staff developed and distributed Water available at key locations for distribution 'Trapped trains' timer and risk assessment implementation NTS training Complete NR/L3/OPS/045/4.15FA Stranded Trains Risk Assessment Establish whether customers comfort is impacted, e.g. air-con on, water available when deciding if train should be evacuated If the decision is made to evacuate, complete NR/L3/OPS/045/415FB Train Evacuation Risk Assessment
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP11H – Improving traincrew rolling stock knowledge

Purpose	To ensure train drivers are familiar with the variabilities in the different unit types that they operate, especially air-conditioning and opening windows.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> Organisational training material – Rolling stock module knowledge (basic principles)
Indicative metrics	<ul style="list-style-type: none"> Distribution of driver reminder notices Driver feedback
Key tasks	<ul style="list-style-type: none"> Preparation and distribution of organisation reminder notices
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PP12H – Maintaining route knowledge to ensure key locations are known

Purpose	To ensure that train drivers understand the key infrastructure areas where blanket speed restrictions (BSRs) and other operational restrictions may be imposed.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> GERT8000 Module SP Speeds RS523 Organisational notices
Indicative metrics	<ul style="list-style-type: none"> Driver manager assessments of drivers' knowledge No speeding events where blanket speed restrictions are imposed Evidence of collaboration between Duty Holders to understand the impact of BSR on drivers
Key tasks	<ul style="list-style-type: none"> Distribution of late notices procedures Late notice case review Route learning and unit learning modules – maintained competency
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PP13H – Preparing to drive to the conditions

Purpose	To ensure that operational staff are familiar with types of speed restrictions and other operating restrictions.
Lead Duty Holder	<ul style="list-style-type: none"> Train Operators
References and guidance	<ul style="list-style-type: none"> GERT8000 Module SP Speeds GERT8000 Module TW1 Preparation and movement of trains Operational notices RIS-3215-TOM
Indicative metrics	<ul style="list-style-type: none"> Number of operational incidents Assessment results of staff
Key tasks	<ul style="list-style-type: none"> Driver manager assessments of drivers Local Operations Manager assessments of signallers All appropriate checks carried out as per company generic and location specific booking-on procedure prior to shift start Informing staff of speed/operating restrictions in place
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PROVEN AND PRACTICAL Management Processes

PM1H – Responding to non-delivery of control measures ‘on the day’

Purpose	To take corrective actions when a control measure, which is an element of the plan described in PM2H, is not or cannot be applied. Such corrective action should continue to reduce hot weather risk to acceptable levels, as required by ROGS regulations.
Lead Duty Holder	<ul style="list-style-type: none"> • Whichever Duty Holder is the Lead Duty Holder for the control measure not delivered
References and guidance	<ul style="list-style-type: none"> • The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (as amended)
Indicative metrics	<ul style="list-style-type: none"> • Possible scenarios considered and alternative control measures planned and agreed • Command structure implemented • Route proving completed
Key tasks	<ul style="list-style-type: none"> • Implementation of a plan, as described in PM2H • For expected extreme conditions, consider possible scenarios and additional resources required • Ensure command structure considers hot weather risks • Hot weather management plan
Mandatory or Advisory	<ul style="list-style-type: none"> • Mandatory

PM2H – Creation of a joint hot weather management plan

Purpose	To have a plan which sets out the mix and scope of control measures for each part of the Duty Holders’ network and the way they are used.
Lead Duty Holder	<ul style="list-style-type: none"> • Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> • NR/L3/OPS/021/02 Summer Management, Section 6.1 • NR TWI 3G026 How to Manage Hot Weather
Indicative metrics	<ul style="list-style-type: none"> • Number of hot weather plans produced, jointly agreed and signed-off • Creation of a CRT Register • Number of assets or sites which will remain a risk after the onset and throughout the period of hot weather • Number and location of painted switch diamonds
Key tasks	<ul style="list-style-type: none"> • Joint consultation amongst Duty Holders in advance of hot weather • Creation and signing-off of hot weather management plans
Mandatory or Advisory	<ul style="list-style-type: none"> • Mandatory

PM3H – Sourcing, sharing and responding to weather forecasts

Purpose	To ensure that weather forecasts are received, reviewed and shared in good time to enable mitigations to be put in place, as required.
Lead Duty Holder	<ul style="list-style-type: none"> • All Duty Holders
References and guidance	<ul style="list-style-type: none"> • NR/L2/OPS/021 Weather – Managing the Operational Risks • NR/L3/OPS/045/3.17 Weather Arrangements
Indicative metrics	<ul style="list-style-type: none"> • Provision of forecasts to key stakeholders • Scheduling of EWATs (Emergency Weather Action Teleconferences), as required
Key tasks	<ul style="list-style-type: none"> • Sources of weather forecasts confirmed • Distribution lists for weather forecasts confirmed • Key risks and triggers for responses and mitigations identified
Mandatory or Advisory	<ul style="list-style-type: none"> • Mandatory

PM4H – Using hot weather forecasting tools

Purpose	To aid decision-making by using fire risk forecasts and hot running rail forecasts which are available on the Network Rail Weather Service (NRWS).
Lead Duty Holder	<ul style="list-style-type: none"> • Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> • NR/L3/OPS/021/02 Summer Management • NR/L3/OPS/045/3.18 Operation and Control of Heritage Trains • NRWS Help Menu
Indicative metrics	<ul style="list-style-type: none"> • Fire risk status established
Key tasks	<ul style="list-style-type: none"> • Understanding of the operation of fire risk and hot running rail forecasts
Mandatory or Advisory	<ul style="list-style-type: none"> • Advisory

PM5H – Sourcing, sharing and responding to convective rainfall forecasts

Purpose	To reduce convective rainfall risks by applying 40mph speed restrictions following consecutive extreme alerts on the same Operational Route Section (ORS).
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/045/3.17 Weather Arrangements Introduction to CAT, NRWS Help Page CAT Rollout – Training Pack v6, NRWS Help Page CAT Process Map v2, NRWS Help Page
Indicative metrics	<ul style="list-style-type: none"> Record of emergency speed restrictions applied
Key tasks	<ul style="list-style-type: none"> Complete training on Convective (Rainfall) Analysis Tool (CAT)
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PM6H – Distribution of a Critical Rail Temperature (CRT) Risk Register

Purpose	To keep stakeholders aware of CRT risk sites and potential speed restrictions.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/021/02 Summer Management, Section 5.1, Section 6.4
Indicative metrics	<ul style="list-style-type: none"> Rail Stress and CRT register up-to-date and fully populated, including rectification dates
Key tasks	<ul style="list-style-type: none"> Identify who will undertake this task for the Route Create a user-friendly format which provides all the relevant information required by affected Duty Holders
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

PM7H – Application of operational blanket speed restrictions during extreme heat

Purpose	To reduce hot weather risks by applying a 30/60mph blanket speed restriction at an air temperature of 41°C between 14:00 to 18:00 based on the weather forecast.
Lead Duty Holder	<ul style="list-style-type: none"> Infrastructure Operators
References and guidance	<ul style="list-style-type: none"> NR/L3/OPS/021/02 Summer Management, Section 5.3 – 5.7 NR/L3/OPS/045/3.19 Speed Restrictions
Indicative metrics	<ul style="list-style-type: none"> Record of actions undertaken using NR/L2/OPS/060, using Appendix A
Key tasks	<ul style="list-style-type: none"> Advise all interested parties of the likelihood of blanket speed restriction being imposed, their duration and location, the likely impact on route capacity Assign competent staff to measure rail temperatures
Mandatory or Advisory	<ul style="list-style-type: none"> Mandatory

PM8H - Supporting development of new and emerging control measures

Purpose	To facilitate, by providing a reasonable and appropriate level of support to the development, testing and trialling of new and emerging hot weather control measures.
Lead Duty Holder	<ul style="list-style-type: none"> All Duty Holders
References and guidance	<ul style="list-style-type: none"> Key Train Requirements Version 7
Indicative metrics	<ul style="list-style-type: none"> Current number of material offers of support made and active involvement with new and emerging control measures Quantity of trials undertaken Number of new and emerging control measures in current Approach Documents
Key tasks	<ul style="list-style-type: none"> Active documented offers reported to SCSG and/or Seasonal Challenge Comms Group (SCCG)
Mandatory or Advisory	<ul style="list-style-type: none"> Advisory

4.2 NEW AND EMERGING Control Measures not yet verified as being proven and practical good practice

NEW AND EMERGING Infrastructure Control Measures

- Nil

NEW AND EMERGING Trainborne Control Measures

NT1H - Painting or coating train vehicle roofs with infrared reflective materials

Purpose	To reduce surface and interior temperatures by the use of solar reflective materials, coatings and glass.
Organisation responsible for development	<ul style="list-style-type: none"> • RSSB
Research body currently commissioning research	<ul style="list-style-type: none"> • n/a
Trials and pilots underway	<ul style="list-style-type: none"> • Knowledge Search S359
References and Reports on File	<ul style="list-style-type: none"> • RSSB Solar Reflective Materials (S359)
Target Timescales for Gaining PROVEN AND PRACTICAL Status	<ul style="list-style-type: none"> • 1-3 years
Envisaged sources of further funding	<ul style="list-style-type: none"> • n/a
Current Technical Readiness Level (TRL) attained	<ul style="list-style-type: none"> • n/a

NT2H - Implementing measures to address higher temperatures on legacy HVAC systems

Purpose	To consider and, where practicable, implement measures to reflect and address, even if only partially, higher ambient temperatures occurring more often and for longer periods than those for which legacy on-train HVAC systems were originally designed and specified.
Organisation responsible for development	<ul style="list-style-type: none"> • n/a
Research body currently commissioning research	<ul style="list-style-type: none"> • n/a
Trials and pilots underway	<ul style="list-style-type: none"> • n/a
References and Reports on File	<ul style="list-style-type: none"> • n/a
Target Timescales for Gaining PROVEN AND PRACTICAL Status	<ul style="list-style-type: none"> • n/a
Envisaged sources of further funding	<ul style="list-style-type: none"> • n/a
Current Technical Readiness Level (TRL) attained	<ul style="list-style-type: none"> • n/a

NEW AND EMERGING Operational Control Measures

- Nil

NEW AND EMERGING Management Control Measures

- Nil

Definitions

ALARP	ALARP is short for "as low as reasonably practicable". Reasonably practicable involves weighing a risk against the effort, time and money needed to control it. Thus, ALARP describes the level to which we expect to see workplace risks controlled
Amended timetable	A modified timetable, often with fewer services, changed stopping patterns and lengthened journey times, used during periods of severe weather disruption with the aim of improving reliability
Assurer	A person within a Duty Holder organisation that is involved in an assurance process to make sure control measures have been implemented properly
Competent body	Competent body means any body that has authority to issue standards, guidance or recommendations for the delivery of control measures
Compliance	The act of obeying an order, rule or request
Control measures	Protective precautions put into place to reduce performance and safety risks and hazards
Duty Holders	The main railway Duty Holder organisations are: <ul style="list-style-type: none"> • Infrastructure Managers, referred to in this document as 'Infrastructure Operators' (e.g. Network Rail) – companies responsible for infrastructure such as track, stations, signalling and electrification, and • Railway Undertakings, referred to in this document as 'Train Operators' (e.g. Train Operating Companies and Freight Operating Companies) – the companies that provide passenger and freight train services Each Duty Holder is responsible for its own part of the railway
GB mainline rail network	The GB mainline rail network: <ul style="list-style-type: none"> • Includes running lines as shown in Table A of the Network Rail Sectional Appendix, as a passenger line or as a non-passenger line, plus connected depots and freight yards • Excludes metros and other light rail systems; networks that are functionally separate from the mainline; heritage, museum or tourist railways and privately-owned infrastructure, as defined in the ROGS regulations
Good practice	A process or method that has been shown to work well, succeeds in achieving its objectives, is widely accepted and therefore, can be recommended as a reasonable approach
Infrastructure Operator	Is any person or organisation that: <ul style="list-style-type: none"> • Is responsible for developing and maintaining infrastructure (not including a station) or for managing and operating a station • Manages and uses that infrastructure or station, or allows it to be used, for operating a vehicle Note that, the term Infrastructure Operator, as used in this document, has effectively the same meaning as the term Infrastructure Manager as used in the ROGS regulations
Key Route Strategy	A Key Route Strategy-sets out the policy for managing the reduced availability of infrastructure when normal operations cannot be maintained
Lead Duty Holder	The Duty Holder which is responsible for satisfying itself that the control measure is being properly applied and that the assurance processes which apply to the control measures are fit-for-purpose
New and emerging	A control measure which is under development, but which has not yet been approved by SCSG as being proven and practical
Practitioner	Someone involved in a job or activity to implement control measures
Proven and practical	A control measure which has been approved by SCSG as being effective in the reduction of performance and safety risk
RM3P	Risk Management Maturity Model for Performance developed by a group of industry stakeholders to encourage organisations to achieve excellence in performance and safety management
Train Operator	Is any person or organisation that operates a vehicle in relation to any infrastructure. Note that, the term Train Operator, as used in this document, has effectively the same meaning as the term Railway Undertaking as used in the ROGS regulations