

ISSUE DETAILS

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BRIEFING REQUIREMENTS

The following table defines how revised issues of this document are briefed to existing employees according to related specific responsibilities.

This is determined using the 'RACI' principle. Those roles identified as 'Responsible' and 'Accountable' should receive a formal awareness briefing facilitated by the Document Owner.

Role	RACI	Type of briefing
Project Manager	Accountable	Detailed
Engineering Department	Responsible	Detailed
Plant/Machine Operatives	Responsible	Detailed

PURPOSE

This Standard sets out the safe methods to be adopted when using hand held ballast tamping equipment. Use of incompetent staff, any incorrect machinery and/or techniques is very unsafe and may lead to personal injury or damage/sudden deterioration to infrastructure sites, components and equipment.

Where it is necessary to carry out a safety critical process which requires the use of tools or equipment, then only persons who have been trained and who hold a current VolkerRail certificate of competence may undertake that work.

SCOPE

This Standard is mandatory. It applies to all hand held ballast tamping operations undertaken on VolkerRail work sites and other operations where VolkerRail are working as a subcontractor on sites in the custody of "others". Hand held ballast tamping is not to be undertaken on sites with live 3rd or 4th rails.

Packing using either electrically powered or petrol powered hammers is suitable for packing joints or short lengths of track. For this method to be successful the ballast should be:

- Reasonably free from fine ballast fines otherwise the hammers will merely punch holes in the ballast crust;
- Of sufficient depth to allow packing of the sleepers without letting the sub-grade material contaminate the ballast;
- Of a material which is strong enough to resist the repeated hammering (usually granite).

WHAT HAS CHANGED IN THIS LATEST ISSUE AND WHY

The second issue has been reformatted and minor changes made throughout.

ISSUE RECORD

Issue No.	Date	Summary of changes
1	Apr 2008	The requirements of Engineering Briefs ED/P&E/42 & ED/P&E/47 are included in this instruction and therefore cancelled upon implementation of this document.
2	Oct 2008	Reformatted and minor changes throughout, template forms taken out and added to Intranet "forms".

Use of Hand Held Ballast Tamper



Use of Hand Held Ballast Tamper

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Chief Executive Officer

(Signatures have been removed from electronic copies)

Use of Hand Held Ballast Tamper**Document Control**

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Issue/Revision Control

This standard will be updated when necessary by distribution of a complete replacement.

Amended or additional pages will be marked by a vertical black line in the adjacent margin.

Revision Details

Issue No.	Revision No.	Issue date	Comments
1	0	Apr 2008	First Issue – the requirements of Engineering Briefs ED/P&E/42 & ED/P&E/47 are included in this instruction and therefore cancelled upon implementation of this document.
2	0	Oct 2008	Second Issue, reformatted and minor changes throughout, template forms taken out and added to Intranet "forms".

Compliance

Compliance with this procedure is mandatory.

All personnel who are issued with a personal controlled copy of this document are responsible for ensuring they, and any persons working under their direction or supervision, comply with the instructions contained within it.

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Appendices

A Exposure Time Limit

Use of Hand Held Ballast Tamper**1. Purpose**

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- (ii) Of sufficient depth to allow packing of the sleepers without letting the sub-grade material contaminate the ballast;
- (iii) Of a material which is strong enough to resist the repeated hammering (usually granite).

3. Compliance

Compliance with the requirements of this standard is necessary to enable the company to meet its Health & Safety responsibilities under current legislation.

All staff who manage, supervise and /or carry out work activities associated with this standard have a legal obligation to comply with the specified arrangements herein.

4. Definitions

AWD	Audible warning device built into the generator system so that on sound of warning, equipment automatically cuts out.
Ballast	Granular material of specific properties placed on the formation to provide vertical and lateral support to the sleepers or bearers. The ballast on NWR Infrastructure is to be in accordance with NR/SP/TRK/006.
Ballast Fines	Small particles of ballast broken off the individual pieces of ballast by the action of traffic or ballast packing activities.

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Boxing In	Filling of the beds with ballast and reforming of the ballast shoulder(s) of a track or track(s).
CEWA	Civil Engineering Workplace Assessments
CRE(PW)	Contractor's Responsible Engineer (Permanent Way)
Cross level	(i) The difference in level between the two running rails of a straight track. (ii) An instrument for measuring the difference in level between the two running rails of a straight track.
GIFAS	A proprietary audible warning/cutout designed for use with ballast tampers (not approved by NWR for use in red zone)
GRCMS	Competency Management System within GR Group Integrated Management System
HAVS	Hand Arm Vibration Syndrome
Infrastructure Controller	The client organisation responsible for management of network operations.
Kango	Manufacturers name now used as a generic term associated with Hand Held Ballast Tampers
Method Statement	Includes, Method Statement, Site Specific Addendum, Construction Phase H & S Plan, Works Package Plan or Task Briefing or Tool Box Talk as appropriate for the specific project requirements to communicate the requirements to those who will be undertaking the work on site.
Packing Area	The area of a sleeper, timber or bearer under which ballast should be packed to support the track. The area is 300mm (15") either side of the running edge of each rail.
Robust	A robust system, organization which is strong and not likely to have problems.
S&C	Switches and Crossings
Through timbers or bearers	Timber or concrete bearers for S&C which support switches and crossings of more than one track. Also known as tied timbers or bearers.
Timbers	Softwood or hardwood beams that provide vertical and lateral support and gauge restraint to switches, crossings and adjustment switches.
Voids	Spaces under sleepers or S&C timbers or bearers, especially in the packing area, where the ballast is not tightly packed to the underside of the sleepers, timbers or bearers and giving rise to potential instability.

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5. References**5.1. Railway Group Standards**

Rule Book GE/RT 8000 – All T modules

5.2. Network Rail Standards

NR/SP/TRK/006 - Track ballast and Stoneblower Aggregate

NR/SP/TRK/0011 - Continuous Welded Rail (CWR) Track (section 14 – Critical Rail Temperature)

NR/SP/BUS/02009 Engineering Management of Projects

Network Rail Track Work Instructions (available on the Intranet):

2B008 – How to recognise types of ballast

2T013 - How to lift and pack plain line

2G015 - How to use sighting boards

5.3. VolkerRail Group Ltd Standards

PW/401 – Management of Thermal Stresses in Rail

CAS 01 – CMS Management of Arrangements

CAS 02 – CMS Safety Critical Work Arrangements

TAP 407 – Preparation and Operation of Small Plant including Cutting & Drilling of Rails

GrantRail Training Guide - Hand Held Ballast Tampers Performance monitoring

There are no KPIs for the activities covered by this Standard

6. Management Arrangements**6.1. The Plan**

It is the responsibility of the **Project Manager** to ensure through a robust plan that the following objectives are met:

- Ensure the correct protection arrangements are in place for the work to be carried out.
- Ensure all operatives undertaking the task have the required in date competence and certification.
- Ensure all tools being used in the task have the required in date certification.
- Choose the correct tool for each job. Using an incorrect tool or tool in the wrong way will shorten its useful life, may damage the tool and may result in personal injury.
- Keep all tools in a good, clean condition with regular maintenance

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- Inspect tools for defects before using them.
- Use appropriate warning systems (red zone paramount).
- When not in use, tools, equipment and materials must be placed so as to be clear of the line and not within 2 metres of the rails. Special care must be taken in the case of lightweight tools, equipment and materials, which may be moved by the draught of passing trains.
- Tools left on site must be securely locked away or protected by chaining to a fixed object.
- The tools shall always be used in accordance with the manufacturer's instructions and the training/competence regime.
- Use appropriate Personal Protective Equipment.

6.2. Pre-work site visit

It is the responsibility of **the CRE (PW)** to:

- Arrange a site visit to establish the start and finish of the packing area.
- Provide a layout of the site and ascertain the ballast condition – will it allow the track to be packed?
- Providing a robust Method Statement for the work to be carried out.
- Establish the nearest access point for transport.
- Consider noise nuisance – where is the worksite located urban/rural? Can the generators be screened? Order silent generators.

6.3. Planning the work

The CRE (PW) is accountable for checking to ensure that the Critical Rail temperature of the section of track to be worked on is ascertained and to establish how to get the equipment to site and check if there is anything on/around the worksite than can be damaged by the activities.

6.4. Doing the work

The CRE (PW) is accountable for ensuring that the track has been fettled and all the components are sound and tight prior to the work commencing. The COSS must make sure all the team are certificated and familiar with the equipment. For best results, kango hammers should work in pairs, effectively pushing ballast against each other and it is usual practice to use mechanical hammers in sets of four, one either side of the sleeper at each rail. Care should be taken to assess when adequate consolidation has been achieved without unnecessary crushing of the ballast where it is unavoidable to work in a red zone. Lifts necessary for local fettling of a dip in the track must not exceed lifts of 25mm where a track lift greater than this amount is required a speed restriction should be imposed. When both rails have to be lifted they should be raised at the same time to retain the correct cross level and avoid twists.

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The packing of sleepers should be limited to 375mm each side of the centre of the rail seating because hard packing outside these areas will result in centre or end binding of the sleepers or bearers.

When any lifting/packing is carried out the track should be checked as the work proceeds and any errors found be corrected as necessary. any deficiency of ballast following lifting/packing must be made good to reduce the risk of track misalignment due to reduced lateral stability. All bays and ballast shoulders must be correctly filled with ballast and correctly profiled before the workgroup leaves the site. The **Project Manager** must ensure a member of the workgroup has a valid competency certificate for the track handback at linespeed and type of work carried out who although work is under red zone conditions, shall ensure it remains within permissible tolerances for the speed for the complete times whilst work is in progress.

6.5. S&C Work – specific requirements

The **CRE (PW)** shall arrange for competent Kango resource and set up a robust plan associated with all S&C work.

Kango packing of all the parts of S&C that cannot be tamped, the critical areas around signalling equipment, must always be planned as part of all maintenance or renewal tamps. This shall occur on the same shift as the tamping, following behind the tamper. The tamper will deliver line and level; the kango operators will tamp only to tighten up where the tamper has been unable to access. Clamped joints in S&C or Plain Line must also be tamped by kango, at the same time as tamping if the tamper cannot access them (e.g. due to type of clamps). They are obviously the most vulnerable part of the layout and lack of compaction could lead to dipped joints, poor welds outside the permitted tolerances or permanent damage to the layout.

6.6. Types of Hand Held Ballast Tampers

There are two types of Hand Held Ballast Tamper available for packing of the track: electric and petrol (see Appendix A).

Electrical operation – powered by a generator and suitable for red zone working if fitted with an automatic cut out that stops the machines working when released by the lookout man. This acts as a signal for the men to move clear of the line when the cut out is operated. The lookout man must be certified competent at LKT (K) under the Sentinel scheme and must have been trained and certified competent on the operation of the relevant warning system.

Petrol operation – powered by petrol or 2-stroke engine and can only be used in green zone unless fitted with the GIFAS warning system (or other system approved by the Infrastructure Controller).

It is mandated that COBRA TT equipment is used rather than other manufacture units as this significantly reduces the Health and Safety elements and exposure risk to staff, but this is NOT APPROVED for use with GIFAS or in red zone at the current time therefore can only be used in green zone.

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6.7. Safety considerations

6.7.1. Risks

Risk	Mitigation
Hearing damage	Wear ear defenders if operating machines or within 16 metres of the machine
Finger damage	Use of vibration reducing gloves and use of COBRA TT in preference to other makes
Toe damage	Safety footwear
Rail & trackside equipment damage	Take care & keep to the confines of the working area avoiding hazards.
Risk to personnel From Train Movements	VolkerRail policy to use green zone unless agreed otherwise by Engineering & SQE Managers
Derailment of Trains	Work in Green zone subject to handback to traffic under Standard PW/431 by competent person

6.7.2. HAVS (Hand Arm Vibration Syndrome)

Hand arm vibration syndrome (HAVS) is caused by exposure of the hands to excess levels of vibration from hand held power tools. The most common form of HAVS is vibration white finger (VWF), which is caused by damage to the blood circulation and characterised by whitening and numbness in the fingers. The two main risk factors are the level of vibration from work tools and the duration over which the worker is exposed.

The key legal duties in relation to HAVS include general responsibilities, under the Health and Safety at Work etc Act, on employers to minimise risks to their employees. The Management of Health and Safety at Work Regulations require employers to make a suitable and sufficient assessment of the risk to health (including HAVS) and to make suitable arrangements to control these risks. The immediate risks of HAVS come from the level of vibration and the duration of exposure to the vibration source both in terms of hours per day and years of work. Hand transmitted vibration is expressed in terms of the acceleration of the equipment in contact with the hand and is normally given in metres per second squared (m/s^2). An operative's daily vibration exposure therefore depends upon this measure of vibration and the length of time an employee is exposed. HSE recommend an 'action' level of $2.8m/s^2$ averaged over an eight hour day but suggest that such exposure should be reduced to as low as is reasonably practicable.

Anti vibration gloves usually provide little attenuation at the most hazardous frequencies and in some cases may increase the vibration reaching the hand and are therefore not considered effective in reducing vibration exposure.

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It is the responsibility of the **Project Manager** to ensure that these objectives are met by appropriate planning of sufficient measures. A table of exposure rates is given in Appendix A.

7. Training, Competence and Certification**7.1. Safety devices and lookout competency**

In accordance with Engineering and Safety requirements when using hand held tamping devices in a red zone a suitable safety cut out device must be in operation. Touch Lookouts are an unacceptable alternative when undertaking this task in red Zone working. In addition the look out must be qualified to perform the duty while the device is in use. **Qualified Lookouts** are identified by the LKT (K) endorsement on the look outs NCCA card. Cobra TT and other Petrol Driven hammers are not currently certified for use in red zone. If they become certificated during validity of this Standard then the matter shall be agreed with the **Engineering Director** allowing, amendment of Standards, prior to use. The Lookout will require instruction on the cut out device used with this tool in addition to LKT (K) on their NCCA card. It is the responsibility of the **Project Manager** to evaluate their staff competencies and identify any training/competency needs to be determined before committing to use these tools in a red zone.

It is VolkerRail Policy that green zone working is the preferred choice for hand held ballast tampers.

7.2. Safety Critical Work

Safety Critical Work regulations require the operatives to be competent in CEWA 2a. (GR CMS) Subcontract Staff may have been trained on the equipment use, but this does not constitute a safety critical competence certificate. Failure to use competent staff could lead to sudden deterioration in track quality and render the line unsafe for use. This must be avoided at all costs.

8. Maintenance of Records

Record	Retained By	Retention Period
Competence records for use of equipment	VolkerRail Competency Systems Manager	40 Years
Operatives daily vibration exposure	Project Manager	During Project
	VolkerRail Competency Systems Manager	Following Project completion 40 years

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9. Audit Requirements

Implementation of this standard shall be checked as part of the Annual Cat 3 Audit checks by the **Safety and Compliance (S&C) Manager and S&C Controller**.

The **Local Manager (Project Manager)** is recommended to undertake (or have undertaken on his behalf) management checks to ensure that these systems and processes are working. A template form which may be used for this purpose, can be found on the VolkerRail Intranet under Internal Standards/Templates and forms/Plant and Equipment/332/Management Self Assurance Checklist.