

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS



**Welding/Burning/Grinding &
Inspections
Method Statement**

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WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

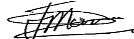
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Review and Acceptance on behalf of Contractors			
Name (Print)		Signature	
Co. Name			

The responsibility for the safety of the contract works rests fully and unreservedly with the contractor. The acceptance of this method statement by Contractors and involvement in safety studies or audits, does not in any way absolve the Contractor from that responsibility, nor is it intended to confirm or suggest that the Contractor fully meets the statutory requirements.

Revision	Date	By	Approval	Description of Modifications
01	08/08/07	R.D	J.S	first issue
02	15.02.08	R.D	J.S	Review of all sections. Alterations to 5.2.4/ 5.3.6/ 5.4.3
03	22.03.09	R.D	J.S	Review of all sections. Alteration to section 5.13
04	15.05.10	R.D	J.S	Review of all sections. Alteration to section 5.21/5.25
05	12/01/11	R.D	J.S	Review of all sections.
06	30/03/12	R.D	J.S	Review of all sections.
07	04.04.12	R.D	J.S	Alteration to section 4.2/5.3.6
08	04.07.12	R.D	J.S	Alteration to section 5.3.1/5.3.6 & Risk Assessments
09	15.08.12	R.D	J.S	Alteration to section 5.2.3 & Risk Assessments
10	08.08.13	R.D	J.S	Removal of reference to; TLL-2-043 Welding, Training, Inspection and Competence Assessment. TLL-2-044 Aluminothermic Welding – Installation, Reporting, Inspection and Rejection of Welds. TLL-2-045 Manual Metal Arc Welding – Installation, Reporting, Inspection and Rejection of Welds. TE-MTS-806 TE-MTS-802 Alteration to section 5.23
11	11/09/14	R.H	J.M	Alterations to section 5.2.2 – Pre-check to be carried out on carrying straps prior to use. 2 nd paragraph – Dual lift or team lift to be adopted.
12	23/09/14	R.H	J.M	5.3.6 Rail Grinding, Reference Update to NR Standard NR/L2/TRK/001 Inspection and Maintenance Of Permanent Way Alteration to Risk Assessment severity Addition of COSHH Assessments
13	20/02/15	RH	JM	Method Statements now uploaded onto Tablets Emergency contact details
14	19/11/15	RH	JM	5.16 RIDDOR update 5.20 Update on GN27 Carriage of Gas cylinders on vehicles Review of risk assessments and inclusion of Burning RA
15	24/11/15	RH	JM	Reference to DLR400 Maintenance Standard
16	05/06/2018	MC	JM	Full Review

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17	14/11/19	DC	JM	Full Review Addition of ultrasonic phased array inspection Change 'Railtech' to 'Pandrol'
18	28/09/21	DC	JM	Minor changes to 5.12 and 5.13 following review by DLR. Updates to Risks Assessments
19	05/07/23	DC	JM	Review and incorporation of air-fed masks
20	17/07/25	DC	JM	Periodic review. Cylinder carry straps removed. Reference to tablets removed. MP12 replaced by Robel 13.49.

This Method Statement		
	Name	Signature
<u>Prepared By</u>	D Coverley	
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1.0 Purpose

The purpose of this Method Statement is to provide details of the procedures and the methods that GPX Engineering will use during the works described to ensure the work is conducted in a safe and controlled manner.

2.0 Application

This Method Statement applies to Aluminothermic Welding, Manual Metal Arc Welding of Conductor Rail, Grinding RCF, Scrap Rail Burning, Points & Crossing Weld Repair, Plain Line Weld Repair, Crossing Inspection & Weld Inspection. It applies across the track maintained by the client, unless client specific documentation infrastructure overrides this method statement.

If other works are required a separate method statement must be drawn up and approved.

3.0 Introduction

The work to be carried out consists of Aluminothermic Welding, Manual Metal Arc Welding of Conductor Rail, Grinding RCF, Scrap Rail Burning, Points & Crossing Weld Repair, Plain Line Weld Repair, Crossing Inspection & Weld Inspection. All works will be carried out in accordance with TfL and, where appropriate, NWR standards.

3.1 Site Details

Site as directed by client's supervision

4.0 RESPONSIBILITIES

4.1 General

The responsibility for the safety and environmental aspects of these works rests fully and unreservedly with GPX Engineering Ltd.

The acceptance of this method statement and the involvement of the client in safety studies or audits do not in any way absolve GPX Engineering from that responsibility, nor is it intended to confirm or suggest that GPX Engineering fully meets the statutory requirements.

The responsibility to liaise with the Principal Contractor to confirm that this method statement and associated risk assessments are accepted by Client for the activities described.

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GPX will ensure that this method statement has been uploaded to the Edapp mobile application, and is briefed to all operational personnel involved in the work.

To review and revise this method statement as required with the client to inform and confirm acceptance of any changes.

To assess each site on its own merit to confirm that this method statement covers anticipated risks and states appropriate mitigation.

4.2 Person in Charge of Work (PICOW)

The PICOW shall:

- Ensure briefings will include reference to site specific information and protection arrangements. Operatives will also be advised of any relevant site specific hazards and safety alerts, where this is not met, work shall not commence.
- Keep a copy of or have ready access to the approved method statement whilst carrying out the work.
- Ensure that the contractor's site team members are suitably briefed on the requirements of the accepted method statement before work commences and that all work is carried out in accordance with the Method Statement, including any accepted revisions.
- Identify any change which may be required and submit to the Contractor for review.
- Brief the team of the method of working before work commences when working on or adjacent to the track.
- Determine what other works are being undertaken on the site, if any, and whether they will impact the contractor's works; if so, seek advice from the appropriate contact.
- Carry out a site specific risk assessment.
- When working in sub-surface sections, gas monitors will be provided by the client and used in accordance with manufacturer's guidelines by trained operatives.
- Ensure the worksite has been cleared of all tools, plant, equipment & materials prior to leaving the track.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.0 Procedure****5.1 General**

The following sections describe how works applicable to this method statement will be carried out in a safe and controlled manner.

The Person in Charge of Work (PICOW) will ensure that the content of this method statement will be briefed to all staff prior to work commencing.

All GPX staff will be required to sign a briefing sheet and/or PICER to confirm that they have received and understood the briefing. Records of these briefings will be maintained on site.

GPX operatives will not be allowed to work on site until they have received a briefing.

The Manual Metal Arc Welding Operations are used in joining conductor rails and repair welding running rails. Because the weld is not strong enough to withstand the bending forces transmitted by moving trains, manual metal arc welding is unsuitable for joining running rails together.

5.2 Scope of Work

All Engineering standards referenced will be kept on the Edapp mobile application available on the team's mobile phones.

5.2.1 Competence

All gas cutting equipment to be inspected/checked at the beginning and end of each shift, by a certified person in accordance with the BCGA Code of practice No 7.

All welders shall be qualified in the appropriate welding process, and hold a valid Sentinel card.

A trained and certificated Fire Watchman will be in place throughout the working activity and for one hour after the welding activities have ceased.

Isolation of the station fire detections system will be undertaken, where necessary, prior to welding taking place.

The hand back person and PICOW will be supplied by the client.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.2.2 Pre-Welding/Burning Requirements**

A Hot works permit will be required when any welding is going to take place and a competent Contractor will undertake appropriate fire isolations, if required. A Fire Watchman shall be present during all welding and grinding activities and for 1 hour after. They shall do no other work when hot works are being carried out, and have the full fire kit, and water butt with them.

The welding plant and oxy/fuel gas cutting equipment will be unloaded from the work vehicles and lifted down onto the station platform, cylinder trolley to be used (stair/escalator trolley where applicable). At no time are gas cylinders to be carried up/down by hand or left free standing.

It will be ensured that no one piece of material or equipment weighing over 25kg will be lifted by one individual. The lift will be shared between two individuals or if necessary a team lift will be adopted and a team leader appointed.

An escalator license will be required for certain stations if being used to move heavy plant or gas cylinders.

Extra care must be used when lifting oxygen and fuel gas cylinders up and down stairs. Operatives will take the cylinders that are being used to site on an approved carrying device, cylinder trolley, stair/escalator trolley where applicable. At no time are gas cylinders to be carried up/down by hand or left free standing.

All welding equipment, oxy/fuel cylinders etc. will be taken down to worksite on track trolleys, cylinders are to be secured to the trolley at all times.

Prior to any welding taking place, a safe working area will be established and appropriate signage will be displayed which will be the responsibility of the PICOW. GPX will provide an exclusion zone by means of "Hot Works in Progress" marker boards at either end of the work site.

Prior to welding the Engineer should check the track condition (applies on ballasted track) i.e. a) Rail alignment b) Ballast consolidation c) Sleepers spacing d) Condition of sleepers and rail fastenings and execute any remedial works necessary.

The site person in charge will carry out a site-specific risk assessment to identify any additional risks at the location or due to the track.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.3 Welding Activities**

Exclusion zone to be set up 5 metres around the work area (20 metres in tunnel sections). All persons (including welders) entering the exclusion zone during pre-heating, welding, cleaning of mould residue, flame cutting and grinding MUST wear positive pressure powered air respiratory protection.

Operatives will wear the appropriate PPE at all times while carrying out these hot works. Welders will wear flame retardant overalls, welding gloves, steel toe cap welder's boots, welding shield, burning goggles, grinding goggles when appropriate, ear defenders when using power tools, positive pressure powered air respiratory protection and hard hats. Refer to section 5.15 for PPE Specifications.

5.3.1 Track – Arc Weld Repair**Scope**

Includes: Plain line rails, switch & crossing components, manual metal-arc (MMA)

Preparation

Tools, equipment and plant items required but not limited to:

- Welding equipment as defined in the relevant TfL/Network Rail standards
- Any tools and equipment that are defined in the relevant TfL/Network Rail Standards

Work planning considerations:

- Weather conditions
- A thorough inspection of the rail and/or switch (053 inspection) & crossing (054 inspection) is carried out to establish the repair/s required

Method

1. Specifics on each task within the procedure are documented in the TfL/Network Rail and manufacturer's instructions.
2. It is essential that all grease and lubricants are removed from the proposed repair area.
3. All loose debris and combustible materials are removed prior to welding
4. Identify rail/crossing grade, and examine rail/S&C component(s) for defects that would prevent repair being carried out successfully.
5. Use non-destructive testing (NDT) as required.

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6. Excavate area to be repaired by grinding and confirm removal of defect(s) by NDT.
7. Carry out appropriate welding activity.
8. Profile finished weld to existing rail/switch/crossing profile (grinding).
9. Inspect finished weld (visually) for defects and carry out final weld check by NDT.
10. Check for rail alignment and level (where appropriate).
11. Check track is fit to allow safe passage of trains.
12. Record all relevant weld repair details on the relevant welders work return form.
13. The weld repair shall be marked / identified.
14. Upon completion of the work all welding debris materials are to be removed from site.

References

If applicable refer to the following associated documents:

- T0436 Weld Repair of Switches and Crossings.
- T0433 Conductor Rail Arc Welding
- NR/L2/TRK/0132 Maintenance Arc Welding of Rails, Switches and Crossing
- NR/L2/TRK/0053 Inspection and repair procedures to reduce the risk of derailment at switches
- NR/L2/TRK/1054 – Inspection, Maintenance & Repair Procedure for Cast Crossings

5.3.2 ALUMINOTHERMIC WELDING**Minimum Staff Requirement**

In each welding team there will be at least one suitably qualified competent welder and a welder's assistant who has been trained and certified in the process to be applied.

Minimum Competence Requirements

Welders and welders' assistants shall hold the appropriate Sentinel certificates of competence. They will also hold the relevant Aluminothermic Welding certification from an approved training school. All staff carrying out welding activities must hold track safety certification relevant to their respective roles in the safe system of work employed.

Work Site

On the permanent Way within DLR premises at various geographical locations.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**Hand Tools Required**

The following hand tools will be carried in the vehicle as part of the welding kit and will be used for both Thermit and Pandrol processes.

10lb Keying Hammer	Thermit Reaming Bar
Heel Bar	1 meter Straight Edge
Trimming Pole	Shovel/Grape

Plant/Equipment Required

The following general plant will be carried in the vehicle as part of the welding kit and will be used for both Thermit and Pandrol processes.

2 x 1 tons trolleys with brake lights	110v or battery LED Site Lighting with telescopic tripod
110v 10-metre extension lead	110v generator (if required)
Robel 13.49 Profile Rail Grinder	7" or 5" 110v or battery angle grinder
110v or battery Needle Gun	Twin blade weld shears
Crucible drying attachment	Magnetic Particle Testing (MPT) equipment
110v or battery LED Site Lighting with tripod	

Specific PPE Requirements

Flame retardant, high visibility overalls and foul weather clothing, welders calf length flame resistant boots, hand protection for hot work and handling materials and equipment, burning goggles, grinding goggles, clear glasses, ear defenders when utilising powered equipment or machinery, positive pressure powered air respiratory protection. Specific PPE should be worn throughout the process as specified within the risk assessment for the process being undertaken. Refer to section 5.15 for PPE specifications.

Environmental Requirements

All mould debris, head and vent risers and the welding consumable packaging should be removed from site in the steel container provided. No burning or burying of waste or discarded material is permitted on DLR infrastructure.

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Method Of Operation

Welding in inclement weather shall only be carried out when an approved weld tent is used for protection.

For all aluminothermic welding, it is essential to use the Process Supplier's filter fitted onto the One Shot Crucibles when using the Thermit welding process (Envirofilter) and when using the Pandrol PLA process the filter fitted onto the One Shot Crucibles CJ2 filtered lid (CCF). In addition adequate fire isolation should be arranged prior and during welding.

A fire tent will be used for containment of sparks if required.

Identify rail grade, rail section, head wear and check the necessary consumables are available to carry out the work.

Before the commencement of Flame Cutting, a thorough inspection of the site must be conducted to prevent any damage to cables and wires that may be obstructing the work area.

Always cut into stressed track using oxy fuel gas cutting. Preparation of the rail ends for welding must be carried out by the appropriate means, and to the specified tolerances for the process being undertaken.

With the aid of appropriate and approved alignment devices, align the rails prior to welding to the specified tolerances for the process to be undertaken. Two sleepers either side of the joint to be welded must be free from fastenings, pads and insulators. Immediately on completion of alignment datum marks must be applied on the 2nd sleeper on both sides of the joint to be welded.

Adjust and attach the preformed mould around the rail joint and apply the appropriate luting medium for the process being carried out to ensure the joint is correctly sealed to prevent leakage.

Prepare, dry out and charge the crucible in accordance with the process to be undertaken.

Preheat the joint as specified for the process to be undertaken. On completion of pre-heating, position the crucible over the moulds, ignite the portion, observe the reaction for abnormalities, observe and record the tapping parameters.

At the specified time for the process carried out:-

Remove the crucible, slag bowls and ironwork

Remove the head riser by the hydraulic shear

Secure alignment devices

Remove vent risers

Clean the mould debris from the weld

Replace pads, insulators and fastenings to secure the rail to support system.

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At the specified time for the process being carried out profile grind the weld to the tolerances specified for the line speed.

Apply welder identification and year of production stamps and record weld installation details. Detail the site location, line, road, meterage, mast number, date of installation, portion batch and individual portion number

Remove all weld debris and consumable packaging from site. Ensure licensed waste removal carrier removes weld debris from GPX yard.

Water will be used for the damping of the cutting area to reduce the risk of fire before and after the works have been completed. The water will be kept in containers and brought on-site by GPX as and when required.

5.3.3 Conductor Rail Arc welding

Operatives will wear the appropriate PPE at all times while carrying out these hot works. Flame retardant, high visibility overalls and foul weather clothing, welders' calf length flame resistant boots, hand protection for hot work and handling materials and equipment, grinding goggles, clear glasses, ear defenders when utilising powered equipment or machinery, positive pressure powered air respiratory protection with shaded visor for arc welding, hard hats to be worn when not welding. Refer to section 5.15 for PPE Specifications.

Competent Trained operatives will carry out the manual metal arc welding works using the appropriate tagged and tested welding plant equipment.

Welding personnel will be trained and certified in the appropriate welding technique and in the requirements of protection, hot working and fire prevention.

2 No. AFFF Extinguishers (9ltr), 1 No. CO2 Extinguisher (2kg) & 1 No. Fire Blanket on site at all times when welding/burning is taking place.

The location of the cuts will be clearly marked prior to starting works and the dimensions and tolerances of the cuts on conductor rails will be checked in compliance with TfL and/or NWR Standards.

The competent trained welder will examine and inspect the welding equipment on site prior to starting the works and portable generators will supply the power for the welding equipment and lighting.

Where the welding gap is to be cut or joined the rail ends need to be clean and free of scale and rust.

The conductor rail will be flame or disc cut to the required length. Rail ends will be prepared and welded using a single V butt weld, conductor rails will be cleaned and burrs and sharp edges will be removed prior to welding.

Electrodes shall be stored in an air tight plastic container, damaged or damp electrodes will not be used.

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If welding ramp ends onto conductor rail, the ramp end will be aligned to the conductor rail using a 1m straight edge by a suitably experienced operative. Once aligned, the welder will complete the weld following the relevant procedure.

For all arc welding, the supplied Tfl approved Nederman LEV units must be used to extract welding fumes and reduce exposure. Units must be set up and positioned in accordance with the instructions which were supplied by Tfl.

Once the weld is complete, it is then ground using a hand-held 7" angle grinder to ensure an even profile which can be checked with a 1m straight edge.

Plant/Equipment Required

7" 110v or battery angle grinder	2 x Jacks
Wedges	110v or battery task lights
Mosa TS 200 Diesel welder Generator	110v ten metre extensions
Propane Rail Heater	5l Jerry can – Petrol
Propane cylinder	5l Jerry can – Unleaded fuel
Nederman portable LEV unit	
Partner K1250 rail saw c/w arm	
110V Extension Cables	
110v long running generator	

5.3.4 Flame Cutting

Operatives will wear the appropriate PPE at all times while carrying out these hot works. Burners will wear flame retardant, high visibility overalls and foul weather clothing, welders calf length flame resistant boots, hand protection for hot work and handling materials and equipment, burning goggles or visor, positive pressure powered air respiratory protection when burning, hard hats when not burning. Refer to section 5.15 for PPE Specifications.

2 No. AFFF Extinguishers (9ltr), 1 No. CO2 Extinguisher (2kg) & 1 No. Fire Blanket on site at all times when burning is taking place.

All equipment will be cleaned and free from grease and dirt prior to starting works, all gas equipment shall be set up and confirm to British Compressed Gas Association (BCGA) CP7. The burning kit shall be leak tested, if a leak is found it shall be tightened and the leak check operation repeated. If the leak persists, then the gas kit has failed the check and shall be replaced and quarantined. Each set of equipment shall be marked with the date for the next examination. Each item of equipment shall be marked with the unique set number.

A fire blanket will be used for containment of sparks, if working in tunnel section a fire kit has to be signed out which contains flame retardant sheets, water sprayer, large sand tray, and cable deflection shields. Section 12 or areas where there are additional fire risks and surrounding assets are difficult to protect an enclosure must be erected.

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Before the commencement of Flame Cutting, a thorough inspection of the site must be conducted to prevent any damage to cables and wires that may be obstructing the work area.

Water will be used for the damping of the cutting area to reduce the risk of fire before and after the works have been completed. The water will be kept in 25ltr containers and brought on-site by GPX as and when required.

Competent Trained Operatives will carry out the flame cutting works using the appropriate tagged and tested equipment with the correct safety attachments.

The location of the cuts will be clearly marked prior to starting works and the dimensions and tolerances of the cuts on running rails and conductor rails will be verified by site representative.

The burner will carry out the flame cutting operations.

Conductor rail and running rail, which has been removed from the track prior to disposal may be flame cut.

5.3.5 Post Scrap Rail Burning

Following the flame cutting and burning works detailed above, the track operatives will stack the cut rail sections into appropriate bundles away from the track components and not in a position where they can fall onto the track.

A check will be made to ensure that they are secure and clear of the track and all access routes. All rubbish and detritus caused by these works will be removed from site at the end of each shift.

It will be ensured by the PICOW that all burning operations will cease at least one hour before call back time. All hot works including fire-watchman duties will be in accordance with Hot Works Procedure, and the Fire Watch training.

The procedure to be followed in the event of a fire is contained in the Emergency Preparedness Plan within the PICOW Site Safety File. This procedure will be communicated to the staff as part of the pre-work briefing.

The Fire Watch will not be involved in any other works when hot working is taking place and for one hour after the welding activities have finished.

The following fire equipment must be on site at all times:

- 2 No. AFFF Extinguishers (9ltr)
- 1 No. CO2 Extinguisher (2kg)
- 1 No. Fire Blanket
- 1 No. First Aid Kit
- 1 No. Burns Kit
- 1 No. Spill Kit

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Noise disturbance will be minimised at all times throughout these works by the work force. However, some noise will occur when rails are being moved and stacked in neat piles this cannot be avoided.

All rail scrap to be removed by Principal Contractor or Client excluding welding debris which will be placed in metal container and returned to GPX Depot.

5.3.6 Rail Grinding

Operatives will wear the appropriate PPE at all times while carrying out these grinding works. Grinders will wear flame retardant, high visibility overalls and foul weather clothing, welders calf length flame resistant boots, gloves, ear defenders when utilising powered equipment or machinery, positive pressure powered air respiratory protection with visor will be worn when grinding and hard hats when not grinding. Refer to section 5.15 for PPE Specifications.

Track – Grind Rails

Scope

Includes: Hand grinding of plain rails and adjustment switches to restore profile or for defect and/or RCF removal.

Excludes: Grinding of S&C and train borne grinding

Plant/Equipment Required

110 V or battery tools	Robel power pack (petrol or battery)
Diesel Lighting Generator (Yellow)	Petrol Tools
110V – 14M Extension lead (Yellow)	Petrol Lighting Generator (Yellow)
110v or battery powered site lighting	Geismar MV3 Rail Grinder
'A' Frame Grinder	Angle Grinder
Robel 13.49 Grinder	

Preparation

Tools, equipment and plant items required but not limited to:

- Magnetic Particle Testing (MPT) Equipment
- Bar Gauges & Templates
- Fire Point e.g. Fire Extinguishers
- Consumables for all the above mentioned machinery

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Work planning considerations:

- Rail depth – ensure that adequate fishplate clearances and minimum rail depths can be maintained after grinding works are completed
- Twist faults – ensure that twist faults are not made worse by only grinding on one rail
- Length of site to be ground – hand grinding will only be practical on short lengths of RCF and lipping on longer lengths if resources are available

Method

1. Inspect site and assess work required, ensuring extent of works is suitable for hand grinding. Consider the following:
 - Care must be taken to ensure that an adequate transverse and longitudinal profile is achieved after grinding
 - Depth of defects or cracks to be removed
 - Rails containing RCF with cracks that have propagated to a vertical depth greater than 5mm shall not be treated by hand grinding and shall be replaced
 - Rail depth, side wear, condition and profile and components when assessing the suitability of a site for hand grinding
2. Clear worksite of all debris and flammable materials
3. Remove all lipping from rail.
4. Undertake MPT on ground section to identify crack size and location
5. Scope worksite and break up into manageable area (s) if required depending on the depth of defect/severity of RCF.
6. Remove cracking with multiple passes of grinding equipment over individual defects/sites as identified above.
7. The Bar Gauge with the correct templates should be used throughout the grinding process to achieve the correct railhead profile.
8. Hand grinding shall be undertaken to achieve the same profiles as those specified for train based grinding. The high rail shall be ground to a NRHRI or ATH profile and the low rail and all straight track to a NR113A or ATL profile
9. Undertake MPT on ground section to ensure that all cracks have been removed.
10. Repeat steps 6 to 9 on all defects/sites to be treated by hand grinding.
11. Once all cracks have been removed, undertake final re-profiling works over the whole of the worksite and blend into un-ground section. Where cracks have not been completely

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removed and the maximum depth of grinding has been undertaken, minimum actions shall be adopted as specified in NR/L2/TRK/001- Inspection and Maintenance Of Permanent Way.

12. The transition from ground rail to the adjoining unground rail shall be progressive and over a minimum length of 1 in 600 either side of the area ground

13. Check final profile at every sleeper or support location in the worksite using the Bar Gauge.

14. When working at Adjustment switches; clean and lubricate adjustment switches as required.

15. Clear all debris from worksite.

16. Complete the relevant documentation.

17. RCF sites that have been ground shall be re-inspected after the passage of traffic so that the contract or running band can be assessed and any corrections to the final profile made as necessary.

References

If applicable refer to the following associated documents:

- S1176 – Inspection and repair to reduce the risk of derailment of switches
- NR/L2/TRK/001 Inspection and Maintenance Of Permanent Way
- Hand grinding record form

S&C - RCF Prevention - Hand Grind**Scope**

Includes: Hand grinding of S&C to restore profile or for defect and/or RCF removal

Excludes: Train based grinding

Preparation

Tools, equipment and plant items required but not limited to:

- Robel 13.49 or Geismar MV3 Grinding Machine
- 7" or 5" Inch angle grinder
- KV3A Generator
- Magnetic Particle Testing (MPT) Equipment
- Bar Gauge and Templates
- Fire Extinguishers
- Consumables required for the above mentioned machinery
- S&C gauges

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

Work planning considerations:

- All necessary preparatory works completed, e.g. fettling of S&C
- Location
- Signalling requirements
- Inspect site and assess work required, ensuring extent of works is suitable for hand grinding

Method

1. Clear worksite of all debris and flammable materials
2. All grinding works to be carried out in accordance with NR/SP/TRK/053 Inspection and Repair Procedures to Reduce the Risk of Derailment at Switches
3. Remove all lipping from the crossing, switchblade, stock rails & closure rail.
4. Undertake MPT on ground section to identify crack size and location.
5. Scope work required into manageable area(s) depending on the depth of defect/severity of RCF.
6. Remove cracking with multiple passes of grinding equipment over individual defects/sites as identified above.
7. The Bar Gauge with the correct templates should be used throughout the grinding process to achieve the correct railhead profile.
8. Undertake MPT on ground section to ensure that all cracks have been removed.
9. Repeat steps 5 to 7 on all defects/sites to be treated by hand grinding.
10. Once all cracks have been removed, undertake final re-profiling works over the whole of the worksite and blend into un-ground section.
11. Where cracks have not been completely removed and the maximum depth of grinding had been undertaken, minimum actions shall be adopted as specified in NR/L2/TRK/001- Inspection and Maintenance of Permanent Way.
12. Check final profile at every sleeper or support location in the worksite using the Bar Gauge.
13. Clear any grinding dust, debris or obstructions from flangeways and baseplates.
14. Where works have been undertaken on a set of switches S053 inspection to be carried out, if working on a crossing undertake an S054 inspection, to ensure that the S&C unit is within the appropriate specification tolerances. Implement any arising minimum actions as required.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

15. Where works have been undertaken on a set of switches S&T to undertake FPL examination, making any necessary adjustments.
16. Clear all debris from the worksite.
17. Complete the relevant documentation; forms.

References

If applicable refer to the following associated documents:

- S1176 – Inspection and repair to reduce the risk of derailment at switches
- W1310 Grinding of points and crossings
- W1258 Inspecting and monitoring switches and stock rails in points and crossings
- W1305 Inspecting and maintaining plain rails, switches, crossings and conductor rails ready for arc welding repairs.
- W1348 Testing (non-destructively) by magnetic particle testing
- NR/L2/TRK/001 Inspection and Maintenance of Permanent Way
- NR/L2/TRK/0053 Inspection and repair to reduce the risk of derailment at switches
- NR/L3/TRK/002/J02 Track – Magnetic Particle Testing (MPT)
- Detailed switch inspection report (053)
- Cast crossing inspection report (054)
- Hand grinding record form

5.3.7 Inspection of Cast Crossings

Scope	Includes:	Visual Inspection of Cast Crossing & Cast Vees
	Excludes:	Liquid Penetrant Testing (LPT) & Magnetic Particle Testing (MPT)

Preparation

Tools, equipment and plant items required but not limited to:

- Wire brush
- Soft dust brush
- Inspection mirror
- Torch (for shaded areas and poor light conditions)
- Magnifying glass
- Tape measure
- Rail marking paint

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

- Copy of minimum action sheets from NR/L2/TRK/1054

Work planning considerations:

- MPT cannot be used on AMS since the material is non-magnetic.

Method

1. Clear any rubbish, debris, ballast, chippings, dust etc. from the crossing.
2. Remove any rust flakes/oil/grease that may have built up.
3. Work systematically starting at one end of the casting, the following areas of the crossing shall be inspected for wear and defects:
 - all wheel contact surfaces
 - leg ends, particularly in the upper fillet radii
 - longitudinal changes of section
 - the top of the box end of the vee
 - the base of the flange-way
 - the aprons, particularly the areas adjacent to fish-plates
 - the foot, particularly changes of section at the flare ends and at fastening positions and
 - the flash welds on cast centre and cast vee crossings, particularly the foot tips and the upper fishing surfaces of these welds and the tri-metal weld areas of the leg ends
4. To confirm the presence and extent of suspected surface cracks; refer to NR/SP/TRK/056 Rail Testing – Non Ultrasonic Procedures.
5. For cracks seen coming from behind a fishplate, the fishplate shall be removed to enable full inspection of the crack.
6. Check the size of any existing marked defect.
7. Any visible rail defects found shall be measured, marked and actioned in accordance with the minimum actions referred to in NR/L2/TRK/1054.
8. Check for incorrect components.
9. Check condition of any tri-metal joints.
10. Check for any rail end batter.
11. Check for any broken or cracked fishplates.
12. Check for any broken, missing or loose fishbolts.
13. Check for any broken, missing or loose crossing pins/bolts.
14. Check for any missing, worn or ineffective pads.
15. Check for any hogging.
16. Check for any broken, missing or ineffective fastenings and fittings.
17. Check for any voiding
18. Check for any broken, missing or worn baseplates.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

19. Check condition of timber bearers and for any indentation/shuffle or voiding.
20. Check for wear, condition and position of any associated check rails.
21. Any defects shall be recorded for actioning in accordance with 1–158 Track – Inspection and Maintenance and 1–159 Track– Dimension and Tolerance.
22. Complete and submit – TLF-766-V1 Cast Crossing Inspection form.

References

If applicable refer to the following associated documents:

- T0436 Weld repair of plain rails, switches and crossings
- TLF-766-V1 Cast Crossing Inspection form

5.3.8 Weld Inspection***Visual Inspection***

The purpose of the inspection is to ensure the Aluminothermic weld geometry meets all the requirements specified in T0432 and the weld is free of any surface defects.

Checks to be made during inspection are as follows:

- Rail identification – wear/damage
- Vertical alignment – running surface
- Lateral alignment – running edge
- Lateral alignment – rail foot
- Alignment of gauge corner
- Profile finishing quality
- Weld smoothness
- Weld collar – verticality
- Weld collar – squareness across the foot
- Weld collar – junction and underside of foot
- Weld defects
- Procedure deficiencies
- Profile blending

Ultrasonic Phased Array Inspection

The purpose of ultrasonic inspection is to check for internal flaws, porosity or foot of rail defects.

Ultrasonic phased array inspection of welds will be carried out in accordance with T0432 by inspectors trained and competent in the use of the equipment

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

If the weld has met the requirements of the visual inspection but the ultrasonic inspection indicates micro-porosity the weld inspector shall apply a stamp with the letter 'M' and will notify the client that the weld will need to be inspected and monitored at 52 week intervals.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS***Action to be taken in the event of defective weld identification.***

If a weld fails to meet the visual inspection or ultrasonic inspection requirements, the Weld Inspector shall apply a stamp with the letter 'X', indicating that he has rejected the weld. The Weld Inspector shall notify the nominated DLR site supervisor / PICOW immediately.

All defective welds must be plated and clamped with emergency fishplates which comply with the rail type and LU standards.

The DLR Supervisor / PICOW shall instruct a T002/003 Track Handback person to clamp any welds deemed defective.

Note: P/way gangs to carry emergency clamps for BH & FB Rail at all times and shall install as instructed by the DLR Supervisor and to the satisfaction of the T002/003.

T002/003 Handback person determines the course of action to be taken following identification of a defective weld based on the nature of the defect.

DLR shall make arrangements for the defective weld to be replaced within the prescribed durations based upon the nature of the defect.

Weld Inspectors shall only work in areas where DLR staff and operatives are operating to ensure sufficient resource is available to attend to defective welds.

Details of weld inspection acceptance criteria and those minimum actions required for any non-compliance are contained in T0432.

Post Examination

After each examination, the weld and the surrounding area of rail shall be cleaned as detailed in T0432.

Certification of Weld Inspectors

Persons carrying out final visual inspection shall have attended a TfL approved training course and hold a current certificate of competence before carrying out inspection for and/or on behalf of DLR.

Weld Inspectors shall also have DLR track safety certification and any other certification relevant to the job.

Welding Inspectors shall also have a full understanding of T0432 Installation Inspection and Reporting of Aluminothermic Rail Welding before being allowed to carry out inspection on DLR.

The competency of inspectors will be managed in accordance with Network Rail procedure NR/L2/CTM/222 Competence and Training in Track Welding, Weld Inspection and Ancillary Processes.

GPX shall keep and maintain all inspectors' records of competency.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**Inspection Records**

An inspection report shall be submitted for each weld installed.

Copies of all inspection reports shall be kept and maintained by GPX Welding Manager, copies should also be submitted to DLR.

Records of all weld inspections shall be kept and maintained by GPX Welding Manager and made available for audit at all times.

References

- T0432 Installation, Inspection and Reporting of Aluminothermic Welding
- Network Rail Line Standards NR/L2/TRK/0032
- Network Rail Line Standards NR/L2/TRK/3011 (CWR)
- Goldschmidt Thermit (SKVE) Weld Procedure
- Pandrol UK (PLA) Weld Procedure

5.3.9 Contingency

On request back up plant will be supplied to site for all activities. These materials will not be left in a storage area on site unless the relevant storage licenses have been approved.

If a delay occurs at the start of the shift, for example, a delay of the current-off time, then the PICOW will liaise with the client supervisor and the work programmed will be reduced accordingly.

In the event of late current off-time or an early current-on, the PICOW may down scope the amount of works planned for that night if the planned works cannot be executed in the available time.

Should a problem occur and the track is disturbed, the PICOW will contact the night manager and commence repairs. A safety critical licensed person who will be provided by the client will be on site to hand the track back to traffic.

When working in sub-surface sections, gas monitors will be provided by the client and used in accordance with manufacturer's guidelines by trained operatives.

In order to leave the site in a clean and tidy state after finishing works the following points will be observed;

The site will be cleared of all signs, equipment and debris to the client's satisfaction and in accordance with DLR procedures.

All debris will be removed and disposed of to GPX/CCS yard.

Working areas will be left in a clear and safe condition at the end of the working periods.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

5.3.10 Sign off and Hand Back

A Licensed Hand Back Person (T002/003) will be on site during all operations to ensure a safe hand back of the track as fit for traffic in the event of any track disturbance.

In the event of any problems with the completed operation, further works will be carried out until the Licensed Hand back Person deems the track is safe for trains to run. Details of such operations will be recorded by the Licensed Hand back Person and details kept in the Site Safety PICOW file.

5.4 **Tools & Equipment**

(Plant approved certification available on request).

Diesel or petrol welding plant depending on location. Plant certification will be kept at GPX Engineering's head office.

All plant and equipment used in the course of work will comply with PUWER Regs. 1998. Where electrically powered tools are used, only 110V equipment (powered from the station supply or centre tapped diesel/petrol generator) or battery tools will be used unless special written dispensation is given. Super silenced generators or battery powered lighting will be used. Any mains electrical items will be PAT tested and tagged.

5.4.1 Plant

Name	Required Quantity
Standard Link Trolley	2
Twin Blade Weld Sheers	1
Oxygen Cylinders	2
Gas/Acetylene Cylinders	1
Petrol Welder/Generator	1(Open Section Only)
Diesel Welder/Generator	1 (Tunnel Section)
Robel 13.49 Grinder	1
Robel power pack (battery or petrol)	1
One Mtr Straight Edge	1
110V Fluorescent Lights or battery lights	1
Wedges	Shift Requirements
110v Ten mtr Extensions	1
7" 110v or battery Angle Grinder	1
Ultrasonic Phased Array Equipment	1(For Inspections)

Trolleys used by certified trolley operators.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.4.2 Protection of DLR Assets**

Asset	Means of Protection
Signal Cables	Marked up prior to works and protected by fire blankets

Any need to protect DLR assets during operations will be determined at the team briefings and appropriate measures taken prior to work commencement. Any damage will be reported to the client's representative.

5.5 Materials

- Fishplate clamps (In Emergency)
- Thermit Welding Portions
- Thermit Welding Moulds
- Eisenberger Sand
- Thermit Welding Ignitors
- Clay Cement
- Pandrol Ignitors
- Pandrol Luting Paste
- One Shot Crucible
- Pandrol Moulds
- Pandrol Portions
- Manual Metal Arc Welding Rods
- Penetrant/Developer/Cleaner for DPI testing
- Diesel.
- Petrol
- Oxygen
- Acetylene
- Propane
- Nitrogen
- Abrasive Wheels

All materials required for these works shall conform to NR standards and shall be accompanied by the appropriate COSHH assessments.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

5.6 Temporary Structures/False work

Not Applicable to these works.

5.7 Working at Heights

Not Applicable to these works.

5.8 Work Permits and Licences

Permits Required	Comments
Storage Licence(Fuels, Gases)	Arranged by Principle Contractor
Relevant access booking	Arranged by Principle Contractor
Entry Permit/DLR	Held by individual
Operational Assurance Cert.	In Site Safety File
Hot Works	With Fire Watchman
Fire Detection Isolation	Held by individual
Movement Licenses	Station Specific (Escalators etc.)

5.9 Temporary Lighting and Power

5.9.1 Lighting

Portable lights will be used and powered from the 110V power supply from the welder generators or will be self-contained battery lights.

Task	Lighting	Power Source
Rail Welding Rail Grinding	Portable LED Lights	110v power supply from the welder generators or battery

5.9.1 Power

Diesel/Petrol Generator on a drip tray. Station/tunnel power supply.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.10 Control of Work with Hazardous Substances and Processes**

All activities undertaken as part of the works have been risk assessed, and suitable controls put in place to mitigate identified risks.

The risk assessments relevant to these works are attached at Appendix A and will also be available in the PICOW Safety File.

All substances to be used as part of these works will be subject to a COSHH assessment and will also be available in the PICOW Safety File.

All staff will be briefed on the control measures in place when carrying out their activities or working with hazardous substances, and appropriate PPE will be issued.

Compliance with the control measures identified in the risk assessments and with PPE requirements will be monitored by the PICOW and via the system of planned inspections and safety.

Hazardous materials will not be stored on site. Spill kits will be available at all sites where chemicals and/or diesel/petrol is to be used.

Any materials to be used which are not in the PICOW pack will be subject to a COSHH assessment before use and this will be used with the site instructions.

If asbestos is found to be present in any working area, the work will be stopped and DLR will be notified and further instructions obtained.

5.11 First Aid

The first aider on site and the location of first aid boxes will be identified by the PICOW at the site briefing.

There will be a minimum of one first aider on site whilst these works are in progress. All welders, trainee welders and assistants will be competent in emergency first aid.

Full details of the procedure for contacting the emergency services are contained within the emergency preparedness plan, a copy of which will be contained in the PICOW Site Safety File.

This procedure will be communicated to staff as part of the pre-work briefing.

An accident book will be kept on site in the PICOW Site Safety File. All accidents and incidents will be reported as described in section 5.16.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.12 Welfare Arrangements**

In accordance with CDM regulations, arrangements for welfare facilities will be made by the Principal Contractor prior to works commencing on site.

Details of the welfare facilities will be briefed to the GPX operatives at the start of the shift by the Site Supervisor or PICOW.

The location of the nearest Accident and Emergency Hospital is:

Part of PICOW briefing received prior to going on or near the line

5.13 Fire

All hot works including fire-watchman duties will be in accordance with the Hot Working Procedure).

The procedure to be followed in the event of a fire is contained within the PICOW Site Safety File. This procedure will be communicated to the staff as part of the pre-work briefing.

The Fire Watchman will not be involved in any other works when hot working is taking place and for one hour after the welding activities have finished.

The fire watchman will complete the GPX Engineering fire watch form.

The following fire equipment must be on site at all times:

- 2 No. AFFF Extinguishers (9ltr)
- 1 No. CO2 Extinguisher (2kg)
- 1 No. Fire Blanket
- 1 No. First Aid Box
- 1 No. Burns Kit
- 1 No. Spill Kit

In Section 12 or areas where there are additional fire risks and surrounding assets are difficult to protect i.e. Station platforms, near Interlocking Machine Room (IMR)/Relay rooms, areas with high level meshing, grills, cables, voids etc. In addition to the normal fire watch person's duties and controls and the surrounding assets requiring protection an enclosure must be erected around all the hot works operations to prevent stray sparks causing risk of fire.

Smoking (including vaping) is not permitted at any time on Transport for London premises, all operatives will comply with the Transport for London no smoking policy

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.14 Excavation**

Excavations are not applicable to these operations.

5.15 Personal Protective Equipment (PPE)

The following PPE will be required for these works:

All welding staff shall be issued with the following PPE:

- Flame Retardant High Visibility Overalls to BS EN 470 / BS EN 471 / BS EN 531.
- Safety Boots to BS EN 20345 (heat resistant to 300°C).
- Flame Retardant Hi-Visibility Waterproof Jacket and Trousers.
- Safety Helmet to BS EN 397
- Clear Safety Goggles to BS EN166B.
- Shade 5 or 6 Coloured Goggles UVEC BS EN 169
- Welding Gauntlets to BS EN 12477.
- Rigger Gloves to BS EN 388
- CE Ear Defenders to BS EN 352-1
- 3M M307 Helmet with visor to BS EN 397 and BS EN 166
- 3M Adflo Powered Air Turbo
- 3M Particle Filter P3 grade
- Galvanised Steel – 3M Gas Filter A1B1E1 grade
- MMA – 3m 9100FX Helmet and visor to BS EN397, EN166 & EN175

GPX Engineering will provide all the above PPE to its operatives during all welding works.

The PICOW will check all operative's PPE as part of the method statement briefing, prior to going on site.

Where PPE is found to be unfit for use, it will be replaced prior to going on site.

The PICOW will check that all GPX staff are wearing the correct PPE at the Site Safety Briefing, and will monitor PPE compliance throughout the works.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.16 Incidents and Reporting of Injuries, Diseases and Dangerous Occurrences (RIDDOR) 2013**

The PICOW shall immediately report all accidents to DLR.

The GPX night manager will report all incidents to CCS/GPX H & S incident reporting desk – 0208 733 8552 H & S are to report to RIDDOR if applicable.

Arrangements for RIDDOR reporting are detailed in the Health and Safety Environmental Plan.

All accidents that occur during these works will be entered in the Accident Book.

The PICOW will also be responsible for undertaking an immediate investigation of the accident/incident, in order to identify:

- What happened?
- The immediate causes of the event and how they arose
- Remedial actions taken to make the area safe
- Ensure any evidence is preserved
- Initiate and record any actions taken to prevent a reoccurrence

Subsequent investigations will be carried out following all accidents and incidents as appropriate.

The scale of the investigation will be determined by the severity of the accident, or potential for loss from a near miss incident.

Incidents that are reportable under RIDDOR will be reported to the HSE on the central reporting number: 0845 300 9923.

Any lost time injuries (LTI's) shall be reported to the client.

All reporting shall be undertaken in accordance with the requirements of DLR and CCS Group procedures.

5.17 Housekeeping

Upon completion of the shift, the PICOW & T002/T003 hand back person will confirm that the site is clean, tidy and free of obstructions and that the track is fit for traffic to run prior to hand back to client.

The PICOW will have full regard for the health and safety of persons on the worksite, and those who may be adjacent to the worksite, throughout the works.

The area will be maintained in an orderly state in order to minimise the potential risks to persons on or about the worksite.

Housekeeping arrangements shall be subjected to regular work site inspection.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

All waste will be double bagged and removed from site at the end of each shift and disposed of to GPX/CCS yard. Documentation and approval for the removal and carrying of waste shall be available for inspection.

5.18 Access and Egress for Authorised Personnel

Welders along with equipment and materials will access onto DLR infrastructure at the nearest station. (refer to appropriate site specific risk assessment)

All GPX operatives will sign in at the appropriate station of access.

All visitors are required to identify themselves to the PICOW, and must be in possession of a valid DLR track certification if required.

Visitors to the site will be provided with a site safety briefing by the PICOW prior to being allowed to access the site. The briefing will cover the hazards likely to be encountered on site, the control measures in place and the emergency procedures including the staff assembly point.

All visitors to the site will be required to be in possession of the PPE described under Section 5.15.

Persons not in possession of the correct PPE or certificates will not be granted access to the site.

All visitors will be required to sign out with the PICOW before leaving to confirm that they have left the site.

5.19 Emergency Procedures

In the event of an emergency the PICOW will follow the site briefing pack which is available on site.

In an emergency, all operatives will evacuate the tunnel open section via the nearest authorised access or station. The PICOW will then check all operatives are accounted for by use of the site register. The PICOW will then contact the station Supervisor of the station of access, if different, to confirm all operatives are present and accounted for.

Contact telephone numbers are detailed below

GPX Engineering Ltd	HQ	0208 733 8888
Joel Morrison	Head of Operations (Days)	07972 167659
David Coverley	Assurance Manager (Days)	07469 083197
Shaun Hogben	Welding Manager (Nights)	07973 827749
John Bubbins	Manager (Nights)	07795 843323
Gergana Vasileva	HSQE Advisor (Nights)	07471 998608

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

All accidents are to be reported on the correct forms and shall be investigated by either the Assurance Manager, or the Head of Operations.

All accidents and incidents will be reported and described as in section 5.16.

5.20 Transportation

The transportation of the gas cylinders to site will comply with BCGA Guidance for Carriage of Gas Cylinders on Vehicles 2015

All operatives will be transported to site by GPX transport. The conclusion of the shift operatives will collect and load their vehicle from the station access/egress point.

All parking at site will be managed to ensure that vehicles do not block access or egress to the station or local premises, and do not cause a nuisance to local residents.

Vehicle engines and headlights will not be left on whilst at site, unless there is a valid operational reason to do so.

5.21 Standards and Technical Specifications

- NR/L2/TRK/0132 Maintenance Arc Welding of Rails, Switches and Crossing
- NR/L2/TRK/0053 Inspection and repair procedures to reduce the risk of derailment at switches
- NR/L2/TRK/0154 – Inspection, Maintenance & Repair Procedure for Cast Crossings
- NR/L2/TRK/001 Inspection and Maintenance of Permanent Way
- NR/GN/TRK/7001/TWI4P001 How to decide on whether to grind rails
- NR/L3/TRK/002/J02 Track – Magnetic Particle Testing (MPT)
- Track Trolleys Q6 004
- Safe Use of Gas Cylinders CP7
- PUWER(1998)
- Contract QUENSH Conditions - A18
- T0432 - Installation, Inspection and Reporting of Aluminothermic Rail Welding
- T0433 - Conductor Rail Arc Welding
- T0436 - Weld repair of plain rails, switches and crossings
- T0439 - Rail re-profiling
- T0443 - Manual Grinding of Rail

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.22 Statutory Records**

- Accident Book
- Signing-In Book
- Site Induction Record
- T002/T003 Licensed Hand back Person

This list is not exhaustive and where further documentation is required, this will be provided.

5.23 Noise and Vibration

Hand arm vibration is vibration transmitted from work processes into workers' hands and arms. It can be caused by operating handheld power tools, below are noise and operating values of plant and equipment used. See Risk Assessment in Appendix A for remedial actions.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

The below values are calculated for casting one weld using any combination of plant listed below;

Welding / Defect	Plant / Equipment	Vibration magnitude per m/s^2 r.m.s	No. points per hour	No. points per minute	Calculated duration of use in minutes	Vibration points for plant (points per minute x calculated duration of use)	Welder Points per weld	Weld Assisstant Points per weld	Noise dB (no hearing protection)	Noise dB (with hearing protection)	Noise Points Per Hour
Thermic	disc saw	-	-	-	0 minutes	N/A plant not used	-	-	-	-	-
Thermic	Needle Gun	18.7	699	11.65	5 minutes	vibration $18.7 m/s^2 \times 5 \text{ minutes} = 58.25 \text{ POINTS}$	-	58.25	103.3	73	1
Thermic	Robel 13.49	<2.5	<13	<0.21	7.5 minutes	Vibration $<2.5 m/s^2 \times 7.5 \text{ minutes} = <1.6 \text{ POINTS}$	1.6	-	86.8	56	0
Thermic	Angle Grinder	5	60	1	2 minutes	Vibration $5 m/s^2 \times 2 \text{ minutes} = 2 \text{ POINTS}$	2	-	105.2	75.2	1
						TOTAL POINTS PER WELD	3.6	58.25			2
PLA	disc saw	7	96	1.6	5 minutes	Vibration $7 m/s^2 \times 5 \text{ minutes} = 8 \text{ POINTS}$	8	-	-	-	-
PLA	Needle Gun	18.7	699	11.64	5 minutes	vibration $18.7 m/s^2 \times 5 \text{ minutes} = 58.25 \text{ POINTS}$	-	58.25	103.3	73	1
PLA	Robel 13.49	<2.5	<13	<0.21	7.5 minutes	Vibration $<2.5 m/s^2 \times 7.5 \text{ minutes} = <1.6 \text{ POINTS}$	1.6	-	86.8	56	0
PLA	Angle Grinder	5	60	1	2 minutes	Vibration $5 m/s^2 \times 2 \text{ minutes} = 2 \text{ POINTS}$	2	-	105.2	75.2	1
						TOTAL POINTS PER WELD	11.6	58.25			2
Con Rail	disc saw	7	96	1.6	5 minutes	Vibration $7 m/s^2 \text{ r.m.s} = 8 \text{ POINTS}$	-	8	114.6	85	13
Con Rail	Needle Gun	-	-	-	0 minutes	N/A plant not used	-	-	-	-	-
Con Rail	Angle Grinder	5	60	1	29 minutes	Vibration $5 m/s^2 \times 29 \text{ minutes} = 29 \text{ POINTS}$	29	-	105.2	75.2	1
						TOTAL POINTS PER WELD	29	8			14
Rail Defect	Needle Gun	-	-	-	0 minutes	N/A plant not used	-	-	103.3	73	1
Rail Defect	Robel 13.49	<2.5	<13	<0.21	7.5 minutes	Vibration $<2.5 m/s^2 \times 7.5 \text{ minutes} = <1.6 \text{ POINTS}$	1.6	-	86.8	56	0
Rail Defect	Angle Grinder	5	60	1	29 minutes	Vibration $5 m/s^2 \times 29 \text{ minutes} = 29 \text{ POINTS}$	29	-	105.2	75.2	1
						TOTAL POINTS PER WELD	30.6	0			2
					Vibration	Vibration Over an 8 hour period 100 points should not be exceeded (lower exposure value) Over an 8 hour period 400 points MUST not be exceeded (UPPER exposure value)				Noise	The Lower Exposure Action Value (an LEP,d of 80 dB) is represented by 32 exposure points, the Upper Exposure Action Value (LEP,d of 85

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS

5.24 Air Quality

The following schedule identifies the plant that emits pollution with the practical means of minimizing the emissions.

Plant/Works	Means of Reducing Emissions
Generator / arc welding generator fumes	- All GPX generators are certified and approved on required emissions testing* - Gas monitors will be provided by the client in tunnel areas *Available upon request.
Welding fumes	- When aluminothermic welding, Process Supplier's filter units / built in filters will be used. - When arc welding, TFL approved Nederman LEV units will be used
(*Available upon request).	

5.25 Waste Management

Waste	Containment	Removal
Welding moulds/slag	Placed in spent crucible -Not to exceed 25kg	From site to GPX/CCS Depot by GPX operative. Removed from depot by licensed waste carrier.

5.26 Protection of Water Quality

Drip trays are permanently attached to generators.

5.27 Traffic Management

All parking at site will be managed to ensure that vehicles do not block access or egress to the station or local premises, and do not cause a nuisance to local residents.

Vehicle engines and headlights will not be left on whilst at site, unless there is a valid operational reason to do so.

WELDING/BURNING/GRINDING & INSPECTION METHOD STATEMENT & RISK ASSESSMENTS**5.28 Inspection and Auditing**

The site may be subjected to a PGI by the client, and unplanned inspections by the GPX Managers to ensure compliance to the relevant standards and best practice.

If unsuitable practices are being carried out, the Assurance Manager/ Head of operations has the power to shut the site immediately until the situation is rectified.

GPX will carry out its own internal site audits at regular intervals. During these site audits an occupationally competent GPX representative will check the welder's activities. Areas to be assessed will be;

- 1) Correct PPE provided and utilised for the relevant works.
- 2) Safe working practices being followed at all times.
- 3) All relevant documentation available in site files.
- 4) Welders following correct welding procedures.
- 5) Welders carrying all their relevant permits.
- 6) Fire watch times adhered to after hot works have ceased.
- 7) Environmental procedures followed at all times (litter removal, noise pollution kept to minimum, good housekeeping)

5.29 Records and Documentation

Welding completion sheets will be completed and returned to GPX and forwarded to the appropriate contractor.

Waste transfer notes will be kept by GPX for all waste taken off site

Records of Inspections and Audits will be held by the Assurance Manager.

APPENDICIES

(These may change or be added, dependent on the work being undertaken)

- A Risk Assessments**
- B COSHH**

APPENDIX A

Risk Assessments

Latest Revision of Risk Assessments will be held on the welder's mobile phone app

APPENDIX B

COSHH Assessments

Latest Revision of COSHH Assessments will be held on the welder's mobile phone app