

# Demarcation Fencing

EHS-PR-002

## Applicability

ARTC Network Wide

## Publication Requirement

Internal / External

## Primary Source

## Document Status

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## **1 Introduction**

### **1.1 Purpose**

No Harm is a foundational ARTC company value with a goal of ensuring that no one is harmed at work or on our network.

ARTC is committed to creating safe workplaces by ensuring that:

- The integrity of the Rail Corridor against unauthorised entry is maintained.
- All work activities within the Network are protected against unauthorised intrusion into the Danger Zone.
- The public and workers are effectively separated from rail and construction hazards.

This procedure provides guidance on the assessment, selection and maintenance of demarcation fencing for the following applications:

- Adjacent track protection
- Working in the Rail Corridor
- Working in the Danger Zone
- General WHS applications including construction hazards.

This procedure complements ETM-17-02 Boundary Fencing.

Any temporary demarcation fencing identified in this procedure intended to be used as Boundary Fencing should be done so in consultation with the local asset manager / Area Manager.

### **1.2 Scope**

This procedure applies to all workers and parties carrying out work at ARTC workplaces where demarcation fencing is required.

### **1.3 Procedure Owner**

The General Manager Safety Systems, Risk and Assurance is the Procedure Owner.

The General Manager Safety is the initial point of contact for all enquiries relating to this procedure.

Any amendments to this Procedure and any subsidiary procedures, tools and templates referenced within it, are subject to approval by the Procedure Owner.

### **1.4 Responsibilities**

#### **1.4.1 Group Executives and General Managers**

Responsible for the implementation of and ensuring compliance with this procedure within their respective Business Units and areas of responsibility.

### **1.4.2 Project Managers and Site Supervisors**

Ensure that workplaces under their control implement a risk based approach to determine appropriate demarcation fencing solutions in line with this procedure and commensurate with the suitability assessment criteria applicable to the workplaces.

Review the HSE Risk Assessment in conjunction with all relevant site workers.

Ensure all relevant Safe Work Method Statements consider hazards, risk exposure and appropriate demarcation fencing requirements and that SWMS and any amendments to SWMS are consulted with and communicated to workers.

Ensure that demarcation fencing at the workplace is periodically inspected and maintained for the duration of the works to ensure that fencing remains in a serviceable and effective condition.

### **1.4.3 Safety Advisors**

Provide advice and guidance to Project Managers and Site Supervisors to support the implementation of this procedure.

### **1.4.4 Competent Rail Safety Worker**

Participate in risk assessments and demarcation fencing selection activities to ensure that the appropriate forms of demarcation fencing are installed to manage rail safety risks in the Rail Corridor.

Record rail safety related demarcation fencing controls on Worksite Protection Plans (WPP) and communicate demarcation fencing requirements to impacted workers during WPP briefings.

## **1.5 Reference Documents**

The following ARTC reference documents support this procedure:

- RLS-PR-003 Protocol for Entering the ARTC Rail Corridor
- COR-PR-029 Pre-Work Brief & Worksite Protection Plan
- ARTC Network Rules & Procedures
- ARTC Track & Civil Code of Practice Section 7 Clearances
- SOP-00005 Magnetic Barrier Fencing
- ETM-17-02 Boundary Fencing

The following legislation and external reference documents should be considered when determining delineation and fencing solutions:

- WHS Act, WHS Regulations (Cth)
- Rail Safety National Law
- AS4687.1:2022 Temporary Fencing and Hoarding General Requirements

## **1.6 Definitions**

The following terms and acronyms are used within this document:

Term or acronym	Description
ARTC	Australian Rail Track Corporation Ltd.
Competent Rail Safety Worker (CRSW)	<p>Team member responsible for preventing unauthorised rail traffic entering the worksite limits. The CRSW will populate and deliver the worksite protection plan.</p> <p>A CRSW is known as:</p> <p>NSW &amp; Queensland Protection Officer (PO)</p> <p>Victoria Track Force Protection Coordinator (TFPC)</p> <p>South Australia and Western Australia Track Worker (TW) in Charge of Protection</p>
Contractor	A person conducting a business or undertaking (PCBU) who is engaged by ARTC to perform work, carry out a service, provide labour hire or supply goods or any other activity.
Danger Zone	As defined in the ARTC Glossary: everywhere within 3m horizontally from the nearest rail and any distance above or below this 3m, unless a safe place exists or has been created.
Demarcation fencing	<p>As defined by the ARTC Glossary: Easily seen, continuous worksite safety boundary markers.</p> <p>For the purposes of this procedure and general temporary fencing for construction and maintenance activities, the commonly used industry term 'delineation' can be used interchangeably with demarcation.</p>
Rail Corridor	<p>As defined by the ARTC Glossary: Everywhere within 15m of the outermost rails or</p> <ul style="list-style-type: none"> <li>• the boundary fence where boundary fences are provided and are closer than 15 metres, or</li> <li>• if the property boundary is less than 15 metres, the property boundary, or</li> <li>• a permanent structure such as a fence, wall or level crossing separating the operating rail corridor from leased or non-operational land.</li> </ul>
Rail traffic	As defined by the ARTC Glossary: Trains and track vehicles
Rail traffic crew	As defined by the ARTC Glossary: Competent workers responsible for the operation of rail traffic.
Safe place	As defined by the ARTC Glossary: A place where workers and equipment cannot be struck by rail traffic.
Workplace	<p>A workplace is a place where work is carried out for a business or undertaking and includes any place where a worker goes, or is likely to be, while at work.</p> <p>The workplace includes but is not limited to the Site.</p>
Worksite	As defined by the ARTC Glossary: A worksite with boundaries that are defined for the duration of the work.

## 2 Procedure

### 2.1 Introduction

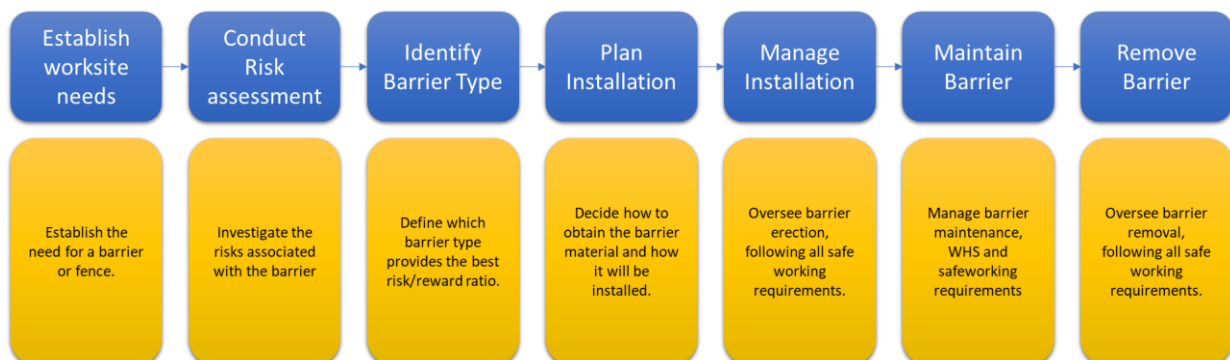
ARTC is committed to providing safe workplaces which involves ensuring that workers are effectively separated from adjacent tracks, rail safety risks and construction hazards and that workplaces are secured against unauthorised access.

Whilst demarcation fencing is an important control to ensure safety of our workers and prevent damage to infrastructure, it must be used in concert with other safety controls (e.g., signage, vehicle movement plans, site layout design, interface management, etc) to provide comprehensive and appropriate risk management and control of worksites specific risks.

Any works conducted in the ARTC Rail Corridor must be assessed for the potential to intrude on the Danger Zone and appropriate demarcation fencing controls installed to prevent unplanned exposure to rail safety hazards.

### 2.2 Workflow

The following workflow provides guidance on the planning, risk assessment, selection, installation and maintenance of demarcation fencing. Note that the term 'barrier' refers to demarcation fencing.



### 2.3 Establish Worksite Needs

A worksite needs assessment should be undertaken to identify all worksite hazards, risk to workers and demarcation fencing controls required. The following list provides guidance on situations where demarcation fencing may be required. Note that the list is indicative and there are many other examples where demarcation fencing may be required.

- There is the potential for workers or plant to be struck by rail traffic on an adjacent track.
- There is the potential for workers or plant to be struck by passing road traffic.
- The workplace must be secured against external parties / the public.
- There are construction hazards and high risk construction activities that workers and plant need to be separated from.
- Specific high risk activity exclusion zones.
- Pedestrian / Light Vehicle / Heavy Vehicle movement paths to support the site vehicle movement plans and/or traffic management plans.

- Laydown and storage areas (e.g. plant, equipment, hazardous substances/dangerous goods materials etc.)

## 2.4 Conduct Risk Assessment

A site-specific risk assessment should be completed utilising a suitable risk assessment tool to determine the risks posed by the worksite hazards and determine the suitable demarcation fencing to control the risks identified. For general works in the ARTC corridor the Pre-Work Brief supported by the Worksite Protection Plan are suitable for this purpose. More complex worksites may require more sophisticated risk assessment tools.

When working in the Rail Corridor there are numerous rail corridor specific considerations in addition to general WHS applications. These include applications such as adjacent track protection and working in the proximity of the Danger Zone.

The risk assessments for work in the Rail Corridor should consider as a minimum:

- Rail traffic crews – potential to distract or confuse, and the visibility of workers.
- Durability and robustness of the demarcation fencing – high wind / vibration / physical impact of plant / prevention of unintentional movement of plant and people from one side to the other of the fencing, ability to withstand disturbances caused by passing rail traffic and weather conditions.
- Duration of installation – durability and maintenance considerations.
- Visibility in the various lighting conditions – night / day / low light / inclement weather. – lighting, retro-reflective tape, etc.
- Movement of people and plant from the Danger Zone to a safe place – refuges / gates.
- Any type approvals for demarcation fencing that interfaces with track infrastructure (e.g. magnetic attachments or clamps to rail).
- Temporary works design considerations such as loading, foundation suitability, Safety in Design, constructability, maintainability, ease of removal, interface with other structures and activities, etc.
- The suitability of the fencing material when in close proximity to energised electrical installations such as overhead wiring and power sources.

## 2.5 Identify and Select the Appropriate Fencing Type

Following the risk assessment, appropriate forms of demarcation fencing need to be selected to control and mitigate the identified risks.

Appendix A to this procedure includes various forms of demarcation fencing and suggested usage cases.

To ensure adequate safety and protection, ARTC has approved the following types of demarcation fencing for use across worksites:

**Heavy Duty** demarcation fencing – is more durable and resistant to unauthorised access by persons and equipment, damage or vandalism and can be semi-permanent to permanent in nature and includes:

- Concrete or steel jersey barriers (with optional mesh fencing panels)
- Post and chain wire mesh fencing
- Steel post and rail fencing.

**Medium Duty** demarcation fencing - is typically difficult for workers to pass through other than at designated points / gates. It is typically quite durable and suited to long-term projects but is also able to be relocated relatively easily to suit changing site requirements and includes:

- Temporary fence panels (e.g. "ATF" style / crowd control)
- Water filled barriers (with optional mesh fencing panels)
- Demarcation fencing fixed to rails (either Magnetic or clamp-on) – approved types only.
- Star picket or bollards with barrier mesh / para-webbing / barrier fabric

**Light Duty** demarcation fencing – provides a visual separation only such as pedestrian walkways, parking areas, around site offices. It can be set up and removed quickly and is very economical but does not provide any physical barrier and may not be suitable for use in many cases such as adjacent track protection. Light duty demarcation fencing includes:

- Rope and flag (bunting) or barrier tape with star picket or bollards.
- T-top bollards with rails (tiger tails)

## 2.6 Plan and Install Demarcation Fencing

Planning the installation is required to ensure effective and safe installation. This also involves the procurement of materials and suitably experienced and qualified workers to install, maintain and remove the demarcation fencing.

The planning and installation of demarcation fencing should consider factors such as:

- Indigenous and European Heritage
- Land ownership and permissions
- In-ground services
- Visual / aesthetic amenity
- Impacts to the public and other stakeholders.

Installation of demarcation fencing is considered 'exempt development' in most jurisdictions and does not require planning approval to proceed, however, a written assessment to determine whether additional permits or approvals are required should be conducted and, where identified, these must be in place prior to the installation of delineation or fencing.

CRSW must, where the demarcation fencing forms part of a Work on Track Protection or Adjacent Track Protection Method:

- Put appropriate protection and safety measures in place to protect workers before installing demarcation fencing.
- Make sure that the demarcation fencing is installed before starting other work.

## 2.7 Monitor and maintain Demarcation Fencing

Project Managers and Site Supervisors must ensure that demarcation fencing has routine inspections and ongoing maintenance. This may include after significant weather events, periods of inactivity on site, or after an incident.

CRSW must, where the demarcation fencing forms part of a Work on Track Protection or Adjacent Track Protection Method:



**Training and Awareness**

- Keep workers and equipment on the safe side of the demarcation fencing.
- If necessary, place Lookouts to make sure that workers stay within the demarcation fencing.
- Make sure that the demarcation fencing is kept in good condition throughout the work.


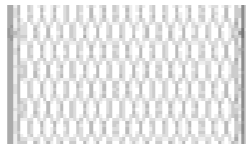



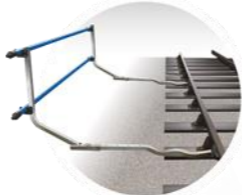
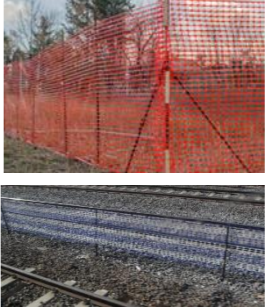


### 3 Training and Awareness

Project Managers and Site Supervisors should communicate the requirements for demarcation fencing that needs to be or has been established at a worksite so that workers are aware of and have a healthy respect for the demarcation fencing as a risk management control intended to keep people safe and prevent incidents. Such communications can take the form of:

- Site Safety Inductions,
- Toolbox Talks,
- Site Supervisor Pre-work briefings and CRSW Worksite Protection Plan briefings,
- Safety notice boards (Safety Alerts and awareness information),
- Signage (e.g., static, and variable message boards etc).

Certain types of fencing (e.g. post and chain wire mesh and post and rail) require specific worker competencies such as **TLIS2035 Install and repair fences and gates**. It is essential that workers are trained and hold the necessary competencies for the type of demarcation fencing being installed.

Appendix A – Demarcation Fencing Guidance Matrix

Type of demarcation fencing	Concrete or steel jersey barriers (optional mesh fencing panels)	Post and chain wire mesh fencing	Steel post and rail fencing	Interlocked Fence Panels	Water-filled plastic barriers	Rail-fixed barrier fencing	Para webbing / barrier mesh	Rope and flag (bunting) or barrier tape with star pickets or bollards	T-top bollards with rails (tiger tails)
Utility	Heavy Duty			Medium Duty				Light Duty	
Typical Photos									
Relevant Standard	AS 3972 AS 1379-2007	AS 1725.1 ARTC Track & Civil Code of Practice Section 7 Clearances.	AS 1657 ARTC Track & Civil Code of Practice Section 7 Clearances.	Complies with SCU Engineering Temporary Fence Standard	AS 1742.3	EN13374 – Class A	Australian Standards AS1742.3	No standard	AS1742.3
Usage guidance:	<ul style="list-style-type: none"> <li>Short and long term temporary applications that need to be durable and low maintenance.</li> <li>Good vandalism resistance</li> <li>Firm and reasonably level ground conditions.</li> <li>Adjacent track protection, preventing plant and workers from fouling the Danger Zone.</li> <li>Allows the provision of Safety Zone/Emergency Access/Egress.</li> <li>Protection of infrastructure above and underground assets</li> <li>Separation of hazards from plant and workers.</li> <li>Quickly and easily reconfigured.</li> </ul>	<ul style="list-style-type: none"> <li>Permanent or long term applications with low maintenance requirements.</li> <li>Good vandalism resistance</li> <li>Variable ground conditions and unlevel ground</li> <li>Adjacent track protection, preventing plant and workers from fouling the Danger Zone.</li> <li>Allows the provision of Safety Zone/Emergency Access/Egress.</li> <li>Protection of infrastructure above and underground assets</li> <li>Separation of hazards from plant and workers.</li> </ul>	<ul style="list-style-type: none"> <li>Permanent applications with low maintenance requirements.</li> <li>Excellent vandalism resistance</li> <li>Well prepared ground conditions.</li> <li>Adjacent track protection, preventing plant and workers from fouling the Danger Zone.</li> <li>Allows the provision of Safety Zone/Emergency Access/Egress.</li> <li>Protection of infrastructure above and underground assets.</li> <li>Pedestrian walkways and edge protection (e.g. culverts).</li> </ul>	<ul style="list-style-type: none"> <li>Short and medium term temporary applications that need to be durable and low maintenance.</li> <li>Fair vandalism resistance</li> <li>Variable ground conditions, reasonably level.</li> <li>Adjacent track protection, preventing plant and workers from fouling the Danger Zone.</li> <li>Allows the provision of Safety Zone/Emergency Access/Egress.</li> <li>Protection of infrastructure above and underground assets</li> <li>Separation of hazards from plant and workers.</li> <li>Quickly and easily reconfigured.</li> </ul>	<ul style="list-style-type: none"> <li>Short and medium term temporary applications that need to be durable and low maintenance.</li> <li>Fair vandalism resistance</li> <li>Variable ground conditions, reasonably level.</li> <li>Allows the provision of Safety Zone/Emergency Access/Egress.</li> <li>Protection of infrastructure above and underground assets</li> <li>Separation of hazards from plant and workers.</li> <li>Quickly and easily reconfigured.</li> <li>Must be water filled to provide protection against low-speed vehicles.</li> <li>Stability when empty or if water leaks out of barriers. Controls to ensure water levels are maintained if this is critical to barrier stability.</li> </ul>	<ul style="list-style-type: none"> <li>Short term temporary applications.</li> <li>Must use type approved barriers only – refer ARTC Standards for current type approved proprietary solutions.</li> <li>Suitable for temporary protection for workers against live adjacent track rail traffic.</li> <li>Not suitable for plant and equipment separation.</li> <li>Quickly and easily reconfigured.</li> </ul>	<ul style="list-style-type: none"> <li>Adjacent track and Danger Zone demarcation when supported by 3 strands of wire.</li> <li>Short and medium term temporary applications.</li> <li>Can be high maintenance.</li> <li>Low vandalism resistance</li> <li>Variable ground conditions.</li> <li>Allows the provision of Safety Zone/Emergency Access/Egress.</li> <li>Protection of infrastructure above and underground assets</li> <li>Separation of hazards from plant and workers.</li> <li>Quickly and easily reconfigured.</li> <li>Blue can be preferred due to the 'sea of orange' effect which can be disconcerting to train drivers.</li> </ul>	<ul style="list-style-type: none"> <li>Short term temporary applications.</li> <li>High maintenance and prone to damage in high winds.</li> <li>Excellent for use on uneven and soft ground.</li> <li>Environmental protection and demarcation of sensitive areas.</li> <li>Demarcation of stored material.</li> <li>Temporary car park areas</li> <li>Pedestrian access.</li> <li>Separation of hazards from plant and workers.</li> <li>Quickly and easily reconfigured.</li> </ul>	<ul style="list-style-type: none"> <li>Short term temporary applications.</li> <li>High maintenance and prone to being blown over in high winds.</li> <li>Excellent for use on uneven and soft ground.</li> <li>Environmental protection and demarcation of sensitive areas.</li> <li>Does not penetrate or disturb the ground.</li> <li>Demarcation of stored material.</li> <li>Temporary car park areas</li> <li>Pedestrian access and crossing points.</li> <li>Separation of hazards from plant and workers.</li> <li>Quickly and easily reconfigured.</li> </ul>
Additional risk elements to consider	<ul style="list-style-type: none"> <li>Shade cloth should not be affixed on the inside of the gawk screen as it may foul the danger zone in the event of high winds.</li> </ul>	<ul style="list-style-type: none"> <li>Ground disturbance during installation.</li> </ul>	<ul style="list-style-type: none"> <li>Ground disturbance during installation.</li> <li>Required design and detailing.</li> </ul>	<ul style="list-style-type: none"> <li>Stability of ground conditions.</li> <li>Routine maintenance and inspection.</li> <li>Wind loading and stability.</li> </ul>	<ul style="list-style-type: none"> <li>Limited impact resistance from plant and vehicles.</li> <li>Speed restrictions.</li> <li>Water leakages.</li> <li>tine maintenance and inspection.</li> </ul>	<ul style="list-style-type: none"> <li>Potential interference with signalling, train detection or trackside equipment.</li> <li>Limited protection, may give a false sense of security.</li> </ul>	<ul style="list-style-type: none"> <li>Ground disturbance during installation if using star pickets</li> <li>Worker's entrapment in the Danger Zone.</li> <li>Routine maintenance and inspection.</li> </ul>	<ul style="list-style-type: none"> <li>Ground disturbance during installation if using star pickets</li> <li>Susceptible to damage in high winds.</li> <li>Routine maintenance and inspection.</li> </ul>	<ul style="list-style-type: none"> <li>Susceptible to damage in high winds.</li> <li>Routine maintenance and inspection.</li> </ul>