

NEW EQUIPMENT & SYSTEM APPROVAL PROFORMA

Ref: 11/87895

Note: the prompts given below are only a guide to the information required for approval. Dependent on the type of equipment or system that requires approval delete any section that is not applicable or include additional information if necessary. **Mandatory** fields are marked with an asterisk (*).

1 **Equipment or System to be approved ***
Vortok – Safety Fence – Standard Telescopic (supplier Pandrol Australia Pty Ltd)

2 **Originator ***
Name: Anna Murray, Technical Manager UHVA Company: Upper Hunter Valley Alliance

3 **Introduction ***

The purpose of this document is to approve the use of Vortok Safety Barrier a temporary delineation barrier at 2060mm from the centreline of tangent track.

The application covers all ARTC works within all ARTC tracks. It may apply to both sides of the track.

The use of the Vortok Safety Barrier does not alter or replace the requirements for planning work within the Rail Corridor and assessing the work for safety.

The Vortok Safety Barrier will provide personnel with greater confidence in that an easily-seen (visual barrier), continuous boundary marker exists. It is only a warning that a boundary exists.

Structural Clearance

ETM-07-01 Figure 1a requires all permanent and temporary structures to be 2060mm from the centreline of tangent track (1343 from rail), with additional clearance where curvature exists.

Note: Refer to the Code of Practice, Section 7 for clearances in non New South Wales jurisdictions.

Works within the Danger Zone

NSW Network Rules and Procedures

The Danger Zone is defined by ARTC NSW Network Rule ANGE 200 as "all space within 3m horizontally from the nearest rail and any distance above or below this 3m, unless a safe place exists or can be created."

SA/WA Code of Practice, Volume 3 Operations and Safeworking Part 1: Rules

6.2.6 Position of safety

Positions of safety are places as follows:

- (a) Where there is at least 3 metres clearance between the person and the nearest rail of any line.
- (b) A place which has been properly constructed as a refuge.
- (c) Where a suitable structure or physical barrier has been erected to provide protection.
- (d) Behind the safety line on a station platform.

TA20 – ARTC Code of Practice for the Victorian Main Line Operations

Section 1 General Rules (c) Work on or near track

Persons requiring to be within 3 metres of the track or requiring to take control of any item of track, safeworking, signalling or communications infrastructure should first contact the relevant Train Controller.

They should advise the Train Controller of the nature of their work, seek train running information relative to the location where they are and seek the Train Controller's permission prior to taking control of safeworking, signalling or communication infrastructure.

It is proposed to create a "safe place" within the Danger Zone as described above, this will allow work to be undertaken up to 2060mm from the track centreline on tangent track (1343mm from rail).

The installation of the light weight barrier and works adjacent to the barrier will be within the danger zone. It will be the responsibility of Safe worker in charge of the worksite to safely manage works within the danger zone in the normal manner. Any barrier is in addition to requirements within the Rules and Procedures and not a replacement.

Background and Proposed Methodology

To deliver the ARTC works, construction or maintenance activities sometimes need to be completed adjacent to operating trains. A key objective is to construct all project elements safely without impacting on the operations of existing trains. Therefore, as a first principal, completing all the required works within existing possessions is considered. However, due to the quantity of works generally required and emergency reactive maintenance, along with the associated program and cost implications, this approach is not always possible. A method of allowing adjacent works to be undertaken out side of possession times has therefore been investigated.

To construct the works outside of possessions and within the Danger Zone, it is proposed to install a temporary light weight barrier from the foot of the existing rail, outside of the kinematic envelope.

Use of a construction safety barrier such as the Vortok Safety Barrier, which is fixed to the track structure, is required. This is because earthworks may be destabilised by other type barriers e.g. star pickets and bunting or webbing. These types of barriers result in increased maintenance requirements.

4 **Determination of Need ***

Light Weight Barrier

The barrier proposed is manufactured by Vortok International, part of the Pandrol group of companies.

It will be the responsibility of the Safeworker in-charge of the worksite to manage works within the danger zone. The Vortok Safety Barrier (VSB) is in addition to the requirements within the Rules and procedures and does not replace these requirements. The light weight barrier proposed will be similar to that illustrated in the figures attached. The support bracket that clips to the rail is made of a non metallic material and therefore has no potential to interfere with ARTC Signalling or track circuit infrastructure. The actual fencing tubes are made of plastic therefore the potential for electrical conductivity is not deemed a risk.

It is proposed to install this barrier outside the kinematic envelope, along an offset exceeding 2060mm from the centreline of track, with increased distances for curvature as ETM-07-01 requires. The Vortok Safety Barrier System is a form of rigid demarcation fencing that provides a visual barrier within the standard 3.0m danger zone, but no less than 2060mm from the centre line and is adjustable to cater for a variety of structural clearances.

The barrier provides both workforce and train drivers with a clear visual indication regarding the separation of train and personnel or plant. Positioning of the Vortok fencing has been risk assessed and measured to ensure there is no potential to infringe on out of gauge requirements detailed in ETM-07-01 with reference to Special out of Gauge Loads.

Further to the attached Risk Assessment, it is deemed no extra controls will be required in regards to positioning the Vortok Fencing.

An additional safety feature of the Vortok Safety Barrier is the ability for the horizontal poles to be pushed out from the Danger Zone side of the barrier. Arrangements must be made to replace the horizontal poles as soon as practicable after they are pushed out, irrespective of whether this occurred intentionally or accidentally.

When the Vortok System is installed a 1 metre gap will be provided at a maximum spacing every 50 metres, or less as determined by the safety assessment conducted for each location by the Project Site Supervisor and Protection Officer.

The photos below demonstrate the method of attaching to the foot of the rail.



Reduced Structural Clearances

The proposed temporary light weight barrier will be within the required horizontal structural clearances as defined by ARTC's Structures and Clearance standard ETM-07-01. ETM-07-01 states that the minimum horizontal clearance of temporary construction works from the track centreline is 3000mm. This waiver is to gain approval to reduce the horizontal structural clearance for the temporary safety barrier to a minimum of 2060mm from centreline of track (1343mm from nearest rail).

Safe Systems of work will ensure that no plant is able to encroach / strike the Vortok barrier system, and thereby increasing confidence that the live railway environment will be protected. An example will be excavators which will be positioned and remain at a safe distance where no operating part can physically encroach or strike the Vortok barrier system, which is positioned at a safe distance to not effect the operating railway.

In addition, train drivers will have increased confidence that workers can be seen behind the Vortok barrier system and therefore not in danger.

Risk Assessment

The installation of the temporary barrier has been risk assessed with members of ARTC (operators and maintainers) and UHVA. Outcomes of this risk assessment are attached.

5 **Significant Change or Not** *

This change in equipment or system is assessed as not a significant change as Vortok are an approved supplier to ARTC and a similar product; Roop Smartfence was approved for use by ARTC in November 2009.

6 **Review Panel**

- John Furness - Manager Standards
- Clinton Crump - Heavy Haul Corridor Manager
- Greg Watson - National Rules Manager
- Denis Snowden - WHS Co-ordinator
- John Ogilvy – Delivery Manager North Coast
- Gregory Riches – Delivery Manager Hunter Valley
- Jamie Threader – Project Manager Victoria
- Jo Dougan – Third Party Projects Manager

7 **Safety**

Previous approvals and documentation support this application viz:

- RailCorp Engineering Specification SPC-12 - Right of Way Demarcation fences - gives Vortok SB as an approved product for such delineation.
- Rail Corp Safe Notice 1047 - May 2009 Attached - approval for specific use when installed such that it doesn't encroach on Structure Gauge specifications.
- Australian Standard AS 4687 "Temporary Fencing and Hoardings" referenced in RC SPC-12 and should be adopted for reference in this case.
- HV Clearance Strategy 2008 Page 10 refers to a suggested outline plate to be used for clearance calculations. Use of an extended Plate F giving 3250mm width should be adopted to allow the proposed future North American width wagons to be used.

8 **Performance and Suitability**

The Vortok Safety Barrier is a worldwide market leading system for providing a visual demarcation barrier fixed to live railway infrastructure. At no times will it encroach on Structure Gauge which in turn implies transit space for Plate F Wagons in accordance with HV Clearance Strategy 2008 Page 10, is also not breached.

Attached Product Specification details materials used in construction and interface with signalling systems.

ARTC ETM-07-01 Structure Gauge 1994 used as main document for this application.
RailCorp Specification SPC 512 Demarcation fences plus RailCorp Product Approval Certificate. Section 4 Determination of Need gives details regarding the product, its use and management on site.

Attached Risk Assessment gives details on how the project teams would manage the installation on ongoing inspection to ensure the fencing does not breach the minimum Structure Gauge required by ETM-07-01.

(i)	<p>Use in other rail networks</p> <p>Vortok Safety Fencing is currently used on RailCorp Infrastructure in Sydney on the Kingsgrove to Revesby quadruplicating project. It is also extensively used in UK on Network Rail Infrastructure and other countries in Europe and South America.</p>
(ii)	<p>Use in the ARTC network</p> <p>Proposed to be used on all ARTC Network.</p>
(iii)	<p>Issues arising from usage of the equipment/system</p> <p>Suitable controls have being identified within the Risk Assessment to ensure risk is mitigated to So Far As is Reasonably Practicable.</p>
(iv)	<p>Changes required to infrastructure or systems for use of the equipment</p> <p>No changes required – clips onto existing rails.</p>
9	<p>Reliability</p> <p>No reliability issues have been identified with the interface with signalling or infrastructure.</p>
10	<p>Maintainability</p> <p>The light weight fencing is easily maintained with visual inspections occurring whilst in use daily; any defect equipment can easily be replaced. Field staff or contractors will remain responsible for ensuring the fencing is fit for purpose and is inspected / replaced as required. The design of the fencing will not restrict operational requirements and can be removed easily. Defected equipment can be easily replaced through Pandrol Australia Pty.</p>
11	<p>Approval *</p> <p>Supplier: Pandrol Australia Pty Ltd Manufacturer: Vortok International (Delachaux Group) Product Number: BA401 Product Name: Vortok Safety Barrier (VSB)</p>
12	<p>Conditions of Approval *</p> <p>All users of Vortok Safety Barriers (VSB) to:</p> <ol style="list-style-type: none"> 1. Install fencing in accordance with Vortok procedures. Must not interfere with track circuits. 2. To only erect, maintain and remove VSB under appropriate Work on Track methods of working applicable to the area on the ARTC network. 3. To develop a Safety Alert/New system approval communiqué which details both limitations on usage of the system but also management processes to be adopted in terms of inspection.

4. To develop an installation/removal instruction sheet with reference to Australian terminology and specifications.
5. Include within the Daily Pre Start Briefs a section regarding fencing for clear understanding of the purpose and functionality of the VSB.
6. Ensure within planning process for any works, the use of the VSB is only included if there are as far as is reasonably practicable, no other means of undertaking the works outside live operational times.
7. If the use of the VSB is to be included within the methodology for delivery of the works, its use and method of management is highlighted.
8. Regular review of the system and application is to be undertaken by both contractors and ARTC field staff using the product and by ARTC in terms of compliance to process with regard to inspection use.

13	Does the Originator accept the additional Conditions of Approval as set by the Review Panel:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	N/A	<input type="checkbox"/>
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14	Sign off Review Panel:	<i>ARTC office use only</i>
	J Furness	On file
	C Crump	On file
	G Watson	On file
	D Snowden	On file
	J Ogilvy	On file
	G Riches	On file
	J Threader	On file
	J Dougan	On file
		Date: 09/08/2012
		Date: 16/08/2012
		Date: 12/08/2012
		Date: 03/08/2012
		Date: 03/08/2012
		Date: 16/08/2012
		Date: 02/08/2012
		Date: 03/08/2012