NEW EQUIPMENT & SYSTEM APPROVAL PROFORMA

Ref: *08-08-11-122*

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** *

Rocla dual gauge (SG/NG) Heavy Duty prestressed concrete sleeper (DG30 – 227). Based on attached Rocla drawing B 208552 Rev A. – REVISED June 2009

2 **Originator** *

Name: Ric Lewtas Company: Rocla

3 **Introduction** *

As part of ARTC's Federal Government approved takeover of Border Loop to Acacia Ridge, dual gauge concrete sleepers are required for the section from Acacia Ridge to Bromelton – approx 40 kms

4 **Determination of Need** *

This is the first time that ARTC have required dual (SG/NG) gauge concrete sleepers. So Rocla have proposed a modified design, which they have previously used for DG sleepers between Brisbane and Fisherman's Island.

5 **Significant Change or Not** *

This change in equipment or system is assessed as SIGNIFICANT

6 **Review Panel** *

- John Furness, Manager Standards
- Tim Calver, Track Standards and Technical Services Engineer
- Alice Weatherford, Project Manager

7 **Safety**

Rocla and GHD completed favourable design checks; however ARTC sought additional advice from Janus and another experienced designer due to the complex nature of dual gauge sleeper design.

The design has been checked against AS 1085.14 and ETD–02–03 by two reputable concrete sleeper designers. ARTC's formal check was completed by Janus Railway and Civil Engineering - copy attached.

The results indicate that the sleepers are suitable for:

- Standard gauge – 30 tonnes axle load at 80 km/h and 23 t.a.l. @ 115 km/h.
- Narrow gauge – 26 t.a.l. @ 80 km/h and 23 t.a.l. @ 115 km/h.

8 **Performance and Suitability**

Subject to the controls listed below and past experience with a very similar Rocla design QR and for the standard gauge track on the N - S upgrades, detailed design check confirm that these sleepers will be suitable for the above loadings.

(i) **Use in other rail networks**

Rocla design for SG/NG has been used successfully by QR, but for lower axle loads than those proposed above.

(ii) **Use in the ARTC network**

An almost identical Rocla design has been satisfactorily used on ARTC's N – S upgrades during the last 3 years. However, the dual gauge version incorporating NG is slightly different, as this is the first application for ARTC, as we have never had narrow gauge track before.

(iii) **Issues arising from usage of the equipment/system**

In addition to the need for CWR listed in controls, the design check assumed quite good rail surface condition i.e. compliance with ARTC rail maintenance specifications is required.

(iv) **Changes required to infrastructure or systems for use of the equipment**

Configuration records will need to be changed - when sleepers are installed. ARTC will also have to develop a suite of standards for narrow gauge track, as currently ARTC has none. However, initially only SG rail are to be installed between Acacia Ridge and Bromelton.

9 **Reliability**

Rocla is a proven supplier, so QA for these sleepers should be satisfactory. Provided installation is completed satisfactorily, reliability should not be an issue.

10 **Maintainability**

The existing SG track is timber sleepered. Installing concrete sleepers will reduce maintenance and vastly improve track stability. ARTC has had concrete sleepers in mainline tracks for over 30 years. No significant maintenance issues have arisen – except for the need to ensure rail surface is good, ballast depth adequate and good drainage is maintained.

11	**Approval** * **Rocla dual gauge (SG/NG) Heavy Duty prestressed concrete sleeper (DG30 – 227). Based on attached Rocla drawing B 208552 Rev A.**						
12	**Conditions of Approval** * Prior to the running of any axle loads above 23 tonnes, all plain track containing these sleepers, has to be converted to Continuously Welded Rail (CWR) - except for insulated joints. However during construction and maintenance works approved temporary joints (such as Robel) may be used, provided appropriate Temporary Speed Restrictions (usually 40km/h) are applied. Trains operating at axle loads above 23 tonnes shall have axle spacings as specified in ARTC's RAS and National RISSB standards. The design check was based upon minimum spacings of 1.75m + 1.6m + 1.75m for Standards gauge and 1675+2740+1675 for NG.						
13	**Does the Originator accept the additional Conditions of Approval as set by the Review Panel:**	Yes	☐	No	☐	N/A	☐

14	**Sign off**		***ARTC office use only***
	Review Panel:		
	John Furness	Date:	5/8/09
	Tim Calver	Date:	26/6/09
	Alice Weatherford	Date:	26/06/09