

# Engineering Manual

## General

### CRN GM 006

## ENGINEERING WAIVERS

Version 1.2

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**Owner:** Manager Engineering Services  
**Approved by:** Committee of Principal Engineers  
**Authorised by:** J Zeater, Manager Engineering Services

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## Document control

Revision	Date of Approval	Summary of change
1.0	November, 2012	First Issue
1.1	October, 2015	5.1 - Included of reference to "Concessions"; Included reference to discipline standards for waivers; 6 - Corrected reference errors
1.2	August, 2020	See Summary of changes below

## Summary of changes from previous version

Section	Summary of change
Title	Update JHR Logo
5.4	Inclusion of Completion criteria for Waivers
7 (new)	Inclusion of section on TOC Waivers
Appendix 1	Reviewed in light of organisational changes

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# 1 Introduction

CRN engineering standards include mandatory requirements. Likewise CRN's Train Operating Conditions (TOC) Manual includes approved locomotive and vehicle operations on the Country Regional Network (CRN). Deviation from a standard requirement detailed in these documents is only permitted with the written waiver authorisation from the relevant Principal Engineer.

In the first instance every effort should be made to comply with the engineering standards. A waiver is a last resort when compliance to the standards is not possible or unrealistic to achieve.

# 2 Purpose

This manual sets out the requirements for the requisition, assessment and authorisation of engineering standards waivers to CRN engineering standards. It applies to all engineering disciplines. It also establishes similar requirements for TOC waivers for the variation of train operating conditions.

This procedure applies to designers, constructors and maintainers of CRN assets, operators of rolling stock who request access to CRN tracks and to CRN staff involved in assessing waiver requests.

The purpose of this manual is to specify:

- minimum information to be supplied in a request for a waiver
- factors to be taken into account by the Principal Engineers when assessing a waiver request
- the form of advice returned to the requestor
- the requirements for record keeping.

# 3 References

## 3.1 Australian and International Standards

Nil

## 3.2 CRN documents

CRN GM 001 - Engineering Standards System Manual

## 3.3 Other documents

Nil

# 4 Terms and definitions

ALARP	as low as reasonably practical
Authorising officer	the JHR CRN Principal Engineer or delegate authorising or rejecting a waiver request
Assessor	a JHR CRN person with engineering authority who is responsible for evaluating and making recommendations on the waiver request

Principal Engineer	person recognised as having responsibility for assuring technical integrity of a particular class of assets (e.g. Principal Track and Civil Engineer being responsible for assuring technical integrity of civil infrastructure) (from CRN Engineering Manual CRN GM 001)
Engineering authority	the authority to make and approve engineering decisions
Engineering standards	the types of engineering technical documents listed in CRN GM 001
Engineering standards waiver	a written authority issued by a Principal Engineer or an authorised representative that allows a particular design, operation or asset condition to deviate from a JHR CRN engineering standard subject to given conditions. Waivers may be temporary or permanent.
Requestor	a person who identifies an existing or proposed item that does not or will not comply with CRN engineering standards, Train Operating Conditions or standard designs

## 5 Requirements

### 5.1 General

Engineering Waivers may be:

**Temporary** –permits non-compliance of an asset, process, operation or vehicle with the requirements of a specified CRN Engineering standard for a specified time period.

**Permanent** (also known as a **Concession**)- permits non-compliance of an asset or vehicle with the requirements of a specified CRN Engineering standard for the life of that asset or vehicle.

Waivers, whether temporary or permanent, must meet the following criteria:.

1. The granting of the waiver does not adversely impact on the JHR CRN risk profile. In this respect a risk assessment of the waiver is to be undertaken and any required controls for treatment of the risk are to be implemented as conditions for granting of the waiver.
2. An expiry date is specified for temporary waivers.
3. When a permanent waiver is approved, this shall be clearly identified on the published approval
4. The responsibility for implementing the conditions of a waiver is clearly specified. This includes the responsibility of assuring compliance on expiration of the specified time period of a waiver.
5. A register of waivers is maintained by the Principal Engineers.
6. Where considered necessary by a Principal Engineer a separate register of Permanent Engineering Waivers may be maintained and published.

The detailed processes for engineering standards waivers are specified within the engineering standards documents of each discipline area.

The discipline specific processes are:

Rolling Stock	CRN RM 003 “Train Operating Conditions Waiver Process”
Signalling	CRN SP 049 “Signal Engineering Waivers”
Civil	CRN CM 002 “Engineering Waivers”

The specific discipline process must meet the following requirements.

## 5.2 Process

The process for a waiver request generally follows the path in Figure 1.

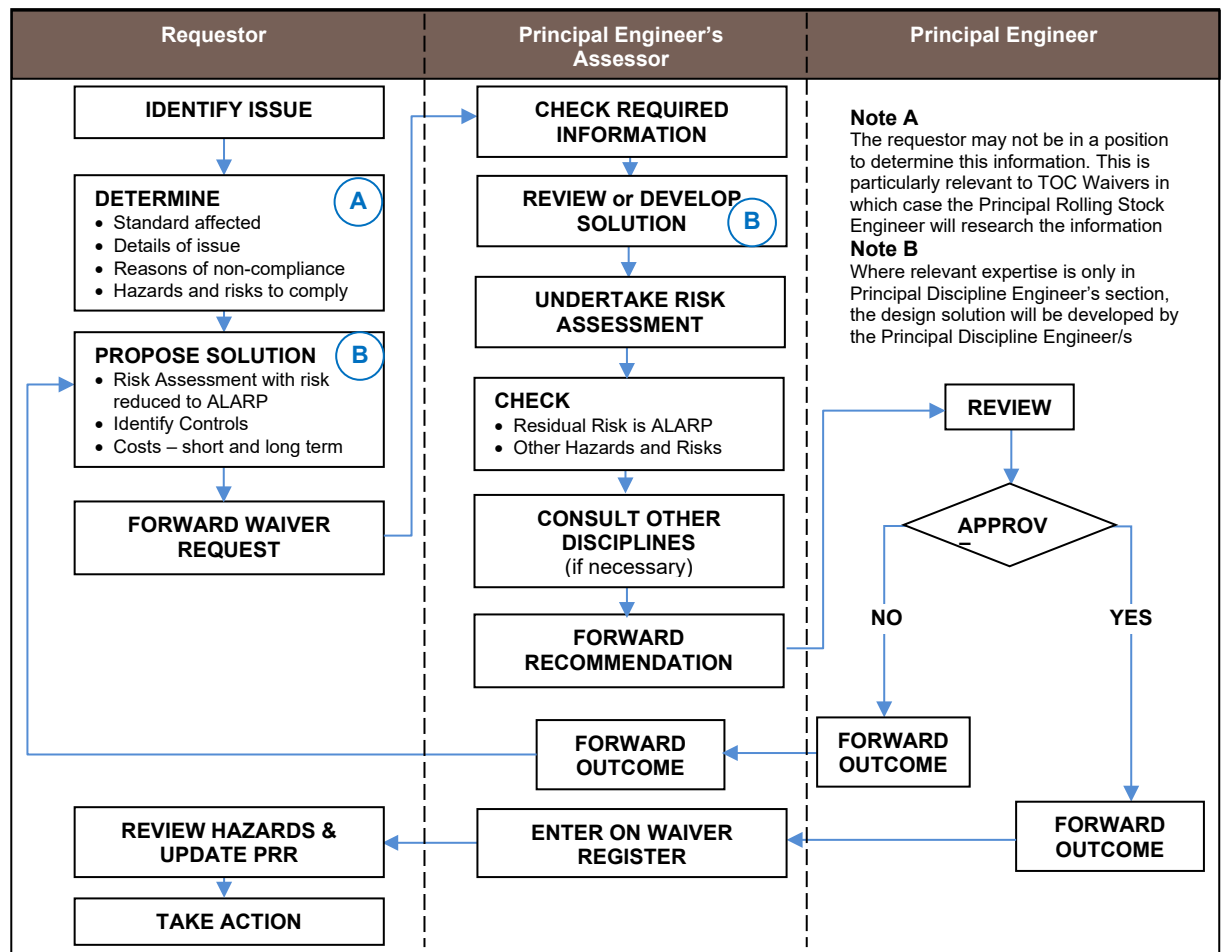


Figure 1 – Typical path of Waiver request

## 5.3 Waiver request

Waivers requests are submitted to the appropriate discipline head or delegate. The type of information required is listed below:

- Location – could be a specific site, track section, line or all or the CRN
- Requestor details – name, contact etc.
- Discipline
- Waiver request details – CRN standard , including Section or clause
- Waiver type requested – permanent or temporary (including start and end dates)
- Details of the situation - Background and nature of the proposed non-conformance, Specific requirements in the standard that cannot be met, Reasons that the relevant standard cannot be met, such as practicality, access, timing.
- Cost implications (short, medium and long term) to JHR CRN due to non-compliance including ongoing maintenance
- Proposed alternative / solution

- Risk assessment — including Hazards, Risk controls to bring risk level to ALARP, Factors which bear on the risk both positive and negative, Non-risk related implications of the non-compliance that may affect reliability, maintenance requirements, durability, track access etc.
- Other information - include competencies or engineering authorities for any relevant technical assessments provided in the waiver application.

The requestor shall provide as a minimum sufficient detail to enable the reviewer to understand the circumstances of the request and the implications of the non-conformance. Waivers which do not provide sufficient information may be rejected.

Any technical aspects of the waiver submission shall be developed by a person with the relevant technical competence or engineering authority in the case of an engineering design.

Further information may be requested by the assessor.

## 5.4 Principal Engineer response

Each discipline shall maintain a standards waiver register. Upon receiving a formal waiver request, it shall be responded to within a reasonable time.

The assessor shall consider the proposed risk controls and cost implications of non-compliance and consult other JHR CRN authorities as necessary when determining the waiver application.

The outcome of the assessment of the waiver request shall be formally advised to the requestor. A waiver approval shall include information defining what has been approved including any relevant controls required. Other affected parties shall also be advised.

Further information may also be provided to the requester as to the reasons for the waiver rejection. Alternatively the assessor may request amendments to the waiver or further information during the waiver review process.

If approved, a Waiver Approval Notice will be issued. It will contain the following information:

- Registry Number (Supplied by discipline head office)
- Variation: (Title of Proposed Waiver / Variation)
- Relevant standard: (Number of standard against which a waiver is sought)
- Clause or section: (Relevant clause(s) or section(s) of above standard)
- Use approved for: (Name of Company, Division, Section or External party seeking waiver)
- District: (Area in which waiver will apply)
- Discipline (Civil, Signals or Rolling Stock)
- Location - Geographical location and/or JHR CRN location reference where the waiver is to apply
- Start Date
- Permanent (Yes or No - if Temporary include End Date.)
- Variation Details (Details of waiver sought)
- Controls - Controls to be put in place to address risks normally controlled by the standard and by whom
- Attachments if required
- Completion criteria (Success & Failure)

## 5.5 Records

Principal Engineers shall maintain records of all approved waivers. The record needs to contain copies of the request, assessment, risk assessment, determination, issued waiver, any supporting documentation and communication regarding the waiver.

Records may be electronic.

## 5.6 Review of waivers

A regular review of waivers (at least annually) by each discipline should incorporate:

- a review of all current waivers to determine status and risk including consideration of required changes to controls or rebuilding of assets where risks are unacceptable.
- withdrawal of all waivers that have been completed or are no longer required.

## 6 Cross discipline waivers

There are situations where a waiver is proposed that affects more than one of the engineering disciplines. This occurs when interfaces between the disciplines are involved. Current recognised interfaces are detailed in Appendix 1.

Where a waiver is proposed involving an interface, it is the responsibility of the Principal Discipline Engineer who is nominated as the Lead Discipline in Appendix 1 to co-ordinate the responses from the other disciplines involved and maintain the complete waiver record (including the approvals/rejections from the other disciplines). In addition each Principal Discipline Engineer will maintain a record of their own investigation and response to the Lead Discipline Engineer.

## 7 TOC Waivers

Where a TOC waiver is required and input from another Principal Discipline Engineer is required to support the TOC waiver. The Principal Discipline Engineer will maintain a record of their own investigation to support the change, which includes;

- Unique identifier for the record
- Conditions to extend the TOC waiver
- Conditions to withdraw the TOC waiver
- Conditions to accept the TOC waiver as a permanent change to the TOC



## Appendix 1 Interfaces

Interface	Requirement	Lead Standard	Subsidiary Standards
<b>Interfaces owned by the Principal Track &amp; Civil Engineer</b>			
Standard Vehicle Outlines	Authorised outlines	CRN CS 215	CRN RS 008 TOC Manual
Special Load Outline Conditions	Vehicles that exceed the rolling stock outlines for a particular route may be permitted to travel under special conditions	CRN CS 215	CRN RS 008
Rolling Stock and Loading Infringements	Approval requirements	CRN CS 215	CRN RS 008
Platform clearances	Refer CRN CS 215	CRN CS 215	CRN RS 008
Wayside Equipment Infringements	Allowable infringements for rubber tyres on road/rail vehicles	CRN CS 215	CRN RS 006
Axle Load Limits	Wheel and axle loading and axle spacing limits	CRN CS 200	CRN RS 008
Rail Contact stress limits	Maximum allowable P/D ratios for operation	CRN CM 005	CRN RS 008
P2 force	P2 force limits	CRN CM 005	CRN RS 008
Twist test requirements	Twist replicates track condition	CRN RS 008	CRN CM 203
Wheel/rail interaction	Rail profiles	CRN CS 220	CRN RS 008
	Rail properties	CRN CS 220	CRN RS 008 CRN SD 026
Traction performance requirements	Wheel slip/creep %	CRN RS 008	
<b>Interfaces owned by the Principal Rolling Stock &amp; Plant Engineer</b>			
Grades	Maximum Grades	TOC Manual	CRN CS 210
	Ruling Grade	TOC Manual	CRN CS 210
Wheel/rail interaction	Wheel profiles	CRN RS 008	CRN CS 220 CRN SD 026
	Wheel properties	CRN RS 008	CRN CS 220 CRN SD 026
	Rail lubrication	CRN CS 220	
Vehicle/bogie operating clearance requirements	Curve radius 70m test – actual minimum in service 100m – 90m in yards but not an issue	CRN RS 008	CRN CS 210
Vehicle/vehicle operating clearance requirements	100m radius curve, 120m reverse curve without transition 300m radius vertical curve (convex and concave)	CRN RS 008	CRN CS 210
Vehicle body roll and lateral displacement limit requirements	superelevation applied to the vehicle represents a cant deficiency of 160 mm or a lateral acceleration of 0.1g acting on the vehicle at its centre of gravity.	CRN RS 008	CRN CS 210
Ride Performance Requirements	Base ride performance requirements The pitch and bounce performance requirements	CRN RS 008	CRN CS 215

Interface	Requirement	Lead Standard	Subsidiary Standards
Vehicle curve stability requirements	Curve stability tests	CRN RS 008 & CRN RS 010	
Loop and Siding lengths	Train length calculation	CRN CS 200	
<b>Interfaces owned by the Principal Signalling Engineer</b>			
Signal visibility requirements	direct line of sight to dwarf or ground signalling equipment and high or gantry signalling equipment	CRN SD 026	CRN RS 008
Train Detection	Wheel/rail conductivity,	CRN SD 026	CRN RS 008
	Maximum axle spacing	CRN SD 026	CRN RS 002
	Wheel diameter for axle counters	CRN SD 026	CRN RS 008
	Wheel and rail electric and magnetic properties	CRN SD 026	CRN RS 008 CRN CS 220
Top of rail conductivity	Maximum re-railing length without signalling support	CRN SP 026	CRN CM 221
Signal interference	See Signal Interference CRN SD 026	CRN SD 026	CRN RS 008
Train braking requirements	See CRN SD 026 Use of advisory speed signs for train braking within the required signal spacing.	CRN SD 026 CRN SD 003	CRN RS 008 TOC Manual
Interference tests	See CRN SD 026	CRN SD 026	CRN RS 008
Wayside equipment positioning	Positioning of and access to signalling equipment	CRN CS 215 & CRN CS 250	