Certificate of Derogation from a Notified National Technical Rule

(in accordance with part 6 of the Railway Group Standards Code)

1. Type of deviation

Deviation Number: 12/129/DGN

Derogation

2. Details of applicant:

Southern Chief Engineer, Southern Railway Limited, Selhurst Traincare Depot, Selhurst Road, London, SE25 6LJ

3. Your reference number:

NC-31

4. Status of applicant:

Railway Undertaking, RSSB Member

5. Title of certificate:

TPWS functionality on Class 377/6 fleet.

6a. Details of Railway Group Standard (RGS):

RGS Number:	Issue No:	Issue Date:	Title:
GE/RT8035	Two	March 2012	Automatic Warning System (AWS)

6b. RGS clause(s):

Individual Isolation of AWS / TPWS:
GE/RT8035 2.6.8.2.

6c. RGS clause requirements:

"2.6.8.2 It shall be possible to isolate the trainborne AWS equipment independently of the isolation of TPWS equipment."

7. Scope of deviation:

Class 377/6 (26 five-car trains / 52 cabs) plus a contract option for additional 40 vehicles.

8. Impacts of complying with the current RGS requirement:

There are two areas of impact from complying with the RGS requirements:

- The manufacturing and validation timescales for compliant TPWS equipment do not meet the overall Class 377/6 programme and would lead to a project delay.
- Achieving full compliance with the requirements would require a number of design changes from the Class 379 and Class 377/5 designs, on which the Class 377/6 design is based. These changes would have a significant impact on the project, and are likely to delay the project.

Enhanced TPWS equipment is being manufactured by two suppliers, but both suppliers' equipment is still under development and testing. Delivery of the equipment is required in September 2012, which cannot be achieved. Full validation of the equipment would be required to support certification for on-track testing in May 2013. There is no assurance that suppliers' validation programmes will definitely achieve these dates.

The Class 377/5 and Class 379 units were fitted with Thales Mk.1 TPWS control units. Modifying these designs to achieve full compliance with GE/RT8030 Issue 4 would require:

- installation of a new control unit, which, depending on the supplier, may be considerably larger
- installation of a new, larger TPWS driver machine interface (DMI), which will displace some existing controls, changing the overall desk layout.
- installation of a new speaker / audible warning unit in the cab interior, which will also cause changes to the cab desk layout
- changes to vehicle schematics and wiring to provide the enhanced functionality
- additional data to be sent to and recorded on the Train Data Recorder
- depending on the supplier, changes to other TPWS equipment such as aerials and power supply.

These design changes would require a significant amount of re-engineering, causing a delay to the project programme. This is covered in more detail in document 3EER400017-1076.

In addition, if enhanced TPWS were fitted, there would be changes to the layout of a number of controls – both the TPWS DMI and other controls. As the Class 377/6 units are operated as part of a wider Class 377 fleet, this could lead to confusion and errors, particularly in emergency situations. A consistent desk layout across the fleet is considered to offer the clearest interface to drivers.

9. Proposed alternative actions:

The existing functionality of the Mk1 unit will be provided. The Mk3 unit to be fitted has increased reliability and availability.

10. Impacts of the alternative actions:

Individual Isolation of AWS/TPWS:

GE/RT8030 requires that TPWS can be isolated, which can be achieved by isolating the whole AWS / TPWS. GE/RT8035 requires that AWS can be isolated independently from the TPWS, which cannot be achieved. Providing separate isolation would permit one system to be maintained if the other fails, while a unit is taken out of service.

The Mk.3 control unit does not permit separate isolation. Given that the Mk.3 unit contains reliability improvements and that the Class 377/6 units will operate relatively short distances from depots (compared to freight locomotives or Intercity trains) there is not considered to be any significant impact from not providing isolation.

11. What other options have been considered?

Fitment of a fully-compliant system was not considered reasonable because of the cost and delay.

Delivering the vehicles with Mk.3 TPWS, but later upgrading this to an Issue 4 – compliant system has been considered, but this solution would be subject to the same issues as fitting the units with enhanced TPWS from build. The cost of retro-fitting enhanced TPWS would be higher than fitting the equipment at build.

There would be significant cost with retrofitting the units and the enhanced TPWS is not considered to offer significant benefits over the proposed Class 377/6 design. In addition, if enhanced TPWS were fitted, there would be changes to the layout of a number of controls – both the TPWS DMI and other controls. As the units are operated as part of a wider fleet, this could lead to confusion and errors, particularly in emergency situations. A consistent interface across the fleet is considered to offer the clearest interface to drivers.

12. Consultation with affected parties

The design of the on-board TPWS equipment does not affect the interface with the infrastructure, and hence this deviation does not affect Network Rail.

Network Rail does not object.

13. Additional actions/observations:

Upon receipt, the applicant is required to identify affected, interfacing parties and copy this certificate, together with supporting information, to those parties.

Attachments:

- Proposed TPWS Solution and Risk Assessment Ref. 3EER400017-1076 – Southern 377/06
- Breakdown of costs for Enhanced TPWS.

14. Method of elimination:

N/A

15. Start and end date:

N/A

16. Signature of applicant:

Southern Chief Engineer

Date of application:

26/07/2012

17. Status in respect of National Technical Rules:

GE/RT8035 Issue 4 is currently on the list of National Technical Rules under the

- Control Command and Signalling (published) Conventional Rail TSI
- Control Command and Signalling (published) High Speed Rail TSI.

18. Status in respect of National Safety Rules:

GE/RT8030 Issue 4 is not on the list of the proposed National safety Rules under the Conventional or High Speed Rail TSIs.

19. Lead Standards Committee details:

Name of Committee:	**Date of meeting**	**Minute reference:**
Control Command and Signalling	16/08/2012	12/CCS/08/160

Authorised by:	**Date of Authorisation:**
Signed by Jeff Allan on 17/09/2012	17/09/2012

Jeff Allan
Head of Delivery, Control Command & Signalling, and Energy