Network Outcomes Contract Governance & Management Group Clarification	
Reference Number:	NOCC no. 23
Subject Title:	OPM Groups 6.3.2 and 6.3.3 Barriers and Handrails
Issue Date:	26 September 2017
Clarification Purpose	Clarification is provided to ensure the NOC is being interpreted consistently. The clarification does not remove or supersede the Network Outcomes Contract documentation.

SUBJECT

OPMs 62-63 and 64-67 relate to Barriers, End Treatments and Hand Rail maintenance and damage repairs.

The NOC Appendices definition of a "Barrier' refers us to a 'Road Safety Barrier' which is defined as:

a) *A physical BARRIER, including guardrails, designed to resist penetration by an out-of-control vehicle and, so far as is practicable, to redirect colliding vehicles back into the travelled path*

b) *A BARRIER meeting the specification requirements of NZTA M/23.*

The M/23 specification further notes:
For the purpose of this specification, a road safety barrier system comprises one or a combination of the following components:

- *Roadside and/or Median Barriers,*
- *Bridge Barriers,*
- *Crash Cushions and/or End Terminals, and*
- *Barrier Transitions.*

Hand Rails are not defined in the contract documents but would be deemed to include roadside facilities which are intended for the protection or guidance of pedestrian or cyclists, or a bridge or structure railing that is not a standard M/23 barrier system as defined above, a pedestrian refuge resting rail or a sight rail intended to guide road users.

A Barrier 'system' has been defined by NZTA to be a system on one side of the road, or in the median from start to finish (e.g. Terminal end to Terminal end). Barrier systems on a bridge or similar structure would be considered as one 'system' across the structure, even if not continuous.

Background

OPMs 62 and 63, Barriers, End Treatments and Handrail maintenance are measured annually and we would expect the assessment to be recorded on a suitable Asset Inspection Form from the contractors MMP, which is based on the manufacturers, recommended inspection forms for the specific Barrier system.

OPM assessment criteria

OPMs 62 and 63 relate to an annual 100% "maintenance" inspection, i.e. have all the barrier, end treatments or handrail system individual components been maintained to ensure the system will operate 'as designed'? i.e. at the time of the inspection the OPM Contract Standard number of defects apply, but within 12 months all of these identified defects must have been repaired.

OPMs 64 to 67 relate to a 100% bi-monthly "repairs" inspection, i.e. has any structural damage to all the barrier, end treatments or handrail systems been repaired to ensure the system will operate 'as designed'? i.e. no structural damage (e.g. crash) defects should be evident from this inspection, or if damage is observed during the OPM audit, then a subsequent check should show a repair has already been agreed with the MCM and a completion date planned and the works programmed. The OPM audit initial identification of a damaged barrier or handrail system can be done from a slow drive-by, but the assessment and recording of any necessary repairs must be done on foot.

The maintenance specification section 6.3.1 notes:

Barriers and Handrails

A barrier is any structure that protects road users from known hazards. Refer to the Principal's assets database.

All barrier repairs shall be undertaken in accordance with NZTA M/23.

Whilst end treatments are risk-excluded, it is the Contractor's responsibility to make safe the structure under incident response, report to the Principal, and agree appropriate remedial repair and response time.

GMG Clarifications required:

In the context of these OPMs:

1. What is an 'Inoperative barrier system as designed'?

2. For the purposes of OPMs and Risk/Payment, are bridge or structure railings (timber or steel) that are not M/23 Barrier systems to be treated as a "Hand Rail"?

3. Can we please have a 'plain English' interpretation of what the "excluding end treatments" is intended to mean for OPMs 64 – 66?

4. If a barrier is structurally damaged such that it is inoperative and this is picked up in the bi-monthly audit inspection and the contractor then "programmes" a repair, does this then mean they can discount it as a OPM defect in that months OPM audit performance report?
   Note: the wording (and not programmed for repair) *is NOT used in OPMs 62 and 63 which is the annual barrier and handrail 'maintenance' audit. (see next page for more background)*

5. For the bi-monthly OPMs 64 – 67, when is an OPM defect expected to be addressed by?

6. What is the expectation when a terminal end treatment is identified as defective as to when this will be repaired?

RESPONSE

It is the Principal's intent that for the purposes of assessing compliance for OPMs 62 – 63 and OPMs 64 – 67 that the Contractors OPM compliance management system notes:

The OPM Auditor who checks a Barrier and End Treatments System and a Handrail System must have completed either an NZTA endorsed

- Road Safety Barrier – Installation, Maintenance & Inspection Workshop and have passed the associated system assessment, *or a has completed and hold the*
- Barrier Design and Certification Qualification (BDCQ)

This training will enable an Auditor to assess Road Safety Barrier system defects and to assess and record whether a system is 'inoperative as designed'. If there is any dispute about a system being 'inoperative as designed', it shall be referred to an appropriately qualified barrier designer for a decision.

A physical on-site detailed inspection of each Barrier and Rail system is required annually.

For the Bi-monthly inspection for OPMs 64-67 it is expected that the OPM Auditor will undertake a slow drive past of all systems to ensure that there is no evidence of recent crash damage, and review all previous periods OPM inspection defects recorded to ensure that the necessary repairs have been completed.

1. What is an 'Inoperative barrier system as designed'?

All road safety barrier systems must be installed and maintained in accordance with the manufacturer's instructions.

Any integral component of a system that is defective, missing or not maintained to a good standard to preserve the system integrity and the ability to withstand a crash impact is likely to compromise a system and make it an 'inoperative barrier system as designed'. This is an non-exhaustive example list of defects that could compromise a barrier system: e.g. missing or incorrect bolts, loose bolts or anchor wires, washers or bolts in the wrong location, bolts or posts extending too high above rails, missing, seriously split or rotated block outs, missing backing plates, anchor plates rotated or upside down, broken or incorrect posts, posts inadequately founded/backfilled/compacted/supported/bolted down, damaged rail sections or terminal end components, incorrect lapping of rails, incorrect installation.

Note; where the barrier or rail is rusted or at its end of life and no longer considered structurally sound, then that barrier or rail component has reached its useful life and should be programmed as a renewal for replacement, this would mean the cost of the repair is outside the lump sum.

In case of any doubt or dispute, to assess whether the system is 'Inoperative barrier system as designed', for all proprietary road safety barrier systems including terminals, the system supplier should be approached for advice on the correct method of inspection and determination of acceptable condition, i.e. The question: *Is this damage or defect sufficient to create a risk that the system will not function as designed?*

For W-Beam section and Thrie-beam guardrail elements, the rule of thumb is if one rib is dented it is still 'serviceable', but this defect should be noted and the rail section programmed for replacement within 12 months. If 2 ribs are dented (top and bottom) then this will compromise the ability of the W-Beam or Thrie-Beam to operate as intended and this defect must be remedied as soon as possible by component replacement.

For all proprietary flexible (wire rope) road safety barrier systems, the terminal is an integral part of the barrier system and must not be treated separately as this may compromise system performance. As with semi-rigid systems, the system supplier should be approached for advice on the correct method of inspection and determination of acceptable condition, again the question: *Is this damage sufficient to create a risk that the system will not function as designed?*

Further guidance can also be found in the current road safety barrier standard, AS/NZS 3845 Part 1 2015.

2. For the purposes of OPMs and Risk/Payment, are bridge or structure railings (timber or steel) that are not M/23 Barrier systems to be treated as a "Hand Rail"?

The answer is Yes. However if the railing or post requires structural design input to repair, then the repair would not be considered routine maintenance and as such the repair would be risk excluded, i.e. outside the lump sum.

Note; where the rail is rusted or at its end of life and no longer considered structurally sound, then that barrier component has reached its useful life and should be programmed as a renewal for replacement, this would mean the cost of the repair is outside the lump sum.

3. Can we please have a 'plain English' interpretation of what the *"excluding end treatments"* is intended to mean for OPMs 64 – 66?

This is intended to signify that end treatments or terminal end systems are 'risk excluded' in terms of payment for crash related repairs or reinstatement. (ref. Contract Risk Profile 35).
It does <u>not</u> mean that any structural damage or non-compliant barrier or guardrail terminal end system can be ignored or discounted from the OPM compliance assessment. It requires the contractor to address the problem immediately (i.e. it is treated as a road user safety related incident response task). In addition to the OPM audit process, it is expected that Routine Patrols or any Network Inspection activity would continuously and regularly identify these end treatment defects and that follow up action is taken as follows:
The site should be made safe, the damage immediately notified to the Principal and a plan/timeline to repair is discussed and agreed with the MCM.

The associated PIP times for OPMs 62 – 63 and 64 – 67 indicate maximum timelines within which the permanent repairs should be completed from the time of identifying any defect.

4. If a barrier is structurally damaged such that it is inoperative and this is picked up in the bi-monthly audit inspection and the contractor then "programmes" a repair, does this then mean they can discount it as a OPM defect in that months OPM audit performance report?

The OPM Auditor should note the NC defect/s and report this. If the Contractor can demonstrate that they had already previously logged and notified the required repair and this had already been agreed with the MCM and a reasonable completion date planned, then in this instance and in discussion with the MCM this OPM defect can be excluded from the monthly compliance report and a note made in the comments field on the OPM upload report.

If the structural damage had not been identified and programmed for repair, then the OPM defect must still be addressed and recorded.

5. For the bi-monthly OPMs 64 – 67, when is an OPM defect expected to be addressed by?

As these systems are Road User safety related, it is expected that urgent attention will be given to any damaged or defective Barrier or Handrail system. In all cases, any timeframe for repair will be partially dependent on those managing the NOC, but any damage or defect should not compromise the safety of the traveling public.

The associated PIP times for OPMs 62 – 63 and 64 – 67 indicate the maximum timelines within which the permanent repairs must be completed from the time of identifying any defect.

6. What is the expectation when an end treatment is identified as damaged or defective and when will this will be repaired?

An end treatment is frequently the crash impact location on the barrier system so urgent attention and priority must be given to any damaged or defective end treatment system and repairs should be actioned immediately. The points in item 5 above must again be noted.