

Ref:	NR/L3/SIG/10665
Issue:	24
Date:	07 June 2025
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Level 3

Work Instruction

Reliability Centred Maintenance of Signalling Equipment

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Red requirements – no variations permitted

- Red requirements are to be complied with and achieved at all times.
- Red requirements are presented in a red box.
- Red requirements are monitored for compliance.
- Non-compliances will be investigated and corrective actions enforced.

Amber requirements – variations permitted subject to approved risk analysis and mitigation

- Amber requirements are to be complied with unless an approved variation is in place.
- Amber requirements are presented with an amber sidebar.
- Amber requirements are monitored for compliance.
- Variations can only be approved through the national variations process.
- Non-approved variations will be investigated, and corrective actions enforced.

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- Guidance is not monitored for compliance.
- Alternative solutions should be documented to demonstrate effective control.

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NOTE 1: Legislation includes National Technical Specification Notices (NTSNs)

NOTE 2: The relationship of this standard/control document with legislation and/or external standards is described in the purpose of this standard.

NOTE 3: For more information on PACE see NR/L2/P3M/201.

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¹ This can include gross proportionate project costs with the agreement of the Network Rail Assurance Panel (NRAP).

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Issue record

Issue	Date	Comments
1	September 2009	First issue.
2	March 2010	Addition of new asset types and correction of minor typos, etc.
3	June 2010	Addition of new asset types and minor changes to improve clarity.
4	December 2010	Clarification of restrictions on application of ROSE to location cases with wet cells.
5	March 2011	Minor change to 'missed maintenance' criteria, addition of criteria for low voltage DC TCs and minor changes to wording to improve clarity
6	June 2011	Addition of criteria for Western Region Quick Release TCs
7	September 2011	Addition of criteria and maintenance specifications for AHB level crossing with BR843 barriers and VMS searchlight signal. Addition of criteria for TOWS, PLODs, medium voltage DC TCs with older style feed sets and Ansaldo Loc's. Minor change to section 7 to retain alignment with NR/L2/SIG/10661. Also, standard modularised for ease of updates
8	December 2011	New regimes added for TCAIDS, AWS and Howells SL35 LED Modules
9	March 2012	Additional information added to Module 070 to assist with implementation (CCMS2 document no. 62367807).
10	March 2013	Module 11 and associated record card updated
11	December 2013	Modules 22 – 35 inclusive added.
12	June 2014	Modules 01,10,36,37 issued
13	June 2015	Modules 01, 02, 15 & 70 updated, Module 70/1 formally published
14	March 2017	Rewritten with the inclusion of former Mod 001 & Mod 002. All other modules are transferred to the SMS
15	March 2018	Updated TC16, SG19 and included SG17
16	Sept 2018	7.1.7 – AX15 Updated to show the RBM and Standard SMS services have been combined into one SMS

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Issue	Date	Comments
17	June 2019	HPSS Updated to show the RBM and Standard SMS services have been combined into one SMS. TC16 RA service changed to R1 and IBCL Mk.3 added PB11 exclude box. SG16 split into SG16 and SG17 to cover SARI and MARI's Document reformatted and numbered for clarity
18	March 2020	SG14 RE service removed not required, TC04 Service RE removed as not required. SG04 also removed as no longer required.
19	December 2020	SG16 R1 service removed as it is no-longer required The prerequisites for the new SG16C service (EBI Track 200 - Remotely Maintained) have been added.
20	September 2021	Document format changed to portrait. EBI 200 track reference removed from 7.9 excludes box. Clause 9.5 Busbar Test on all unmonitored bars supplying iLs signals. Reference to 10670 have been removed after 10670 was withdrawn. All EL21 services completely updated following PMR Review. Section 9.13 Banner Repeater Signal – LED the Service RA has been corrected to Service R1, to align with 10663. TC10 corrected to reference Service A instead of Service RA. Section 10.6 Added to cover Point Fitting prerequisites for extending maintenance
21	December 2021	Train detection section reordered by SMS reference. New sections added for AX12, AX28, AX29, TC30, SG13 and SG18. Revisions to prerequisites for TC03, TC04, TC08 and TC12. Removed SG14 R1 and SG03 R1. SG21 introduced as a universal service for additional lens cleaning.
22	June 2022	7.17 Notes corrected. All EL31 Services have been amended. 9.2 Service B only required. 9.6 PT task shall be continued. 9.17 Clarification for Banners. 9.20 correction of equipment type. 10.2 correction to POE type

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Issue	Date	Comments
23	June 2023	9.3, 9.4 and 9.6 updated to incorporate content of TI 180.
24	June 2025	7.19 (EBI400) Added 12.2 (PLODS) Removed

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Legislation

No legislation has been identified that is applicable to the content of this standard/control document.

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1 Purpose

This document contains the prerequisites, allowing Reliability-Centred Maintenance to be implemented on signalling equipment as an alternative to the default maintenance regime.

2 Scope

This document covers the conditions required to allow the transition from the default maintenance regime to a Reliability-Centred Maintenance regime for signalling equipment.

This document applies to:

- a) Section Managers (Signals).
- b) Signal and Telecoms Maintenance Engineers.
- c) Route Engineer [Signalling], Principal Route Engineer [Signalling] or equivalent.

3 Definitions

Default Maintenance Regime	The maintenance regime to be applied for all signalling assets on Network Rail Managed Infrastructure, excluding equipment which has gone through the Reliability-Centred Maintenance process.
Fix on Failure “FoF”	Maintenance can be removed from the asset when the prerequisites are met.
RA	Service A carried out at RoSE frequency.
RB	Service B carried out at RoSE frequency.
RE	Additional prerequisites, which allow the associated service to be extended further.
R1 or R2	RoSE Services to be used where specified in place of Service A and B.

4 NR/ROSE Implementations

Reliability-Centred Maintenance of signalling equipment regimes shall be implemented with the agreement of the Route Asset Manager (Signals).

5 Task and Tests Undertaken to NR/ROSE Periodicity

The following sections contain the prerequisites that shall be carried out to allow transition from a default maintenance regime to Reliability-Centred Maintenance.

Frequencies are located in NR/L3/SIG/10661.

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6 Train Protection

6.1 AWS

Includes	AWS Permanent, Electro, Suppressor Magnets and PSR Permanent Magnets maintained by signalling teams	
Excludes	This does not apply to AWS magnets which are known to have security problems (rotten sleepers) or which have a history of being damaged by train mounted equipment	
Maintenance Spec	Prerequisites	
NR/SMS/AW11 Service RA	None	
NR/SMS/AW11 Service RE FoF	<p>Before moving any AWS to the revised Rose regime, the cable entry gland and termination box lid seal shall be effective.</p> <p>Any defects shall be corrected before implementation.</p> <p>If practical, a dynamic earth reading of the Electro-Magnet should be recorded on the AWS record card. Subsequent Electro-Magnet earth checks on the supply can indicate any deterioration.</p>	

6.2 TPWS

Includes	All TPWS Installations with fault detection	
Excludes	TPWS without fault detection, TPWS with Self-Powered OSS (SPOSS), Lineside Status Indicators (LSI)	
Maintenance Spec	Prerequisites	
NR/SMS/TP11 /Service RA	None	
NR/SMS/TP11 Service RE FoF Monitored by the passage of trains	<ol style="list-style-type: none"> 1. Check trackside equipment secure. 2. Check trackside equipment is not damaged. 3. Check loop end caps secure. 4. Check dis box cover seal is effective and secure. 5. Check terminations in dis box are secure. 6. Check tail cables are correctly secured to sleepers. 7. Confirm TPWS Modules to Mod. State in RIA036, issue 2. 8. Check any inter location case cables that carry TPWS VCR circuits are suitably protected. 	

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7 Train Detection

7.1 AZLM Axle Counter

The RCM services were combined with the Standard SMS Services in [NRSMS/PartC/AX15](#) on 03/03/2018.

7.2 Frauscher Advanced Counter: Remote Access Data Check

The RCM services were combined with the Standard SMS Services in [NR/SMS/PartC/AX40](#) on 07/03/2020.

7.3 AzL 70/30 Axle Count Head

Includes	AzL 70/30 Axle Count Head	
Excludes	Other types of axle counter heads	
Maintenance Spec	Prerequisites	
NR/SMS/AX12 Service A	There are no prerequisites.	

7.4 Siemens AzS ZP 43 D (DEK 43 Count Head)

Includes	Siemens AzS ZP 43 D (DEK 43 Count Head)	
Excludes	Other types of axle counter heads	
Maintenance Spec	Prerequisites	
NR/SMS/AX28 Service A	There are no prerequisites.	

7.5 Siemens AzS ZP 43 V (DEK 43 Count Head)

Includes	Siemens AzS ZP 43 V (DEK 43 Count Head)	
Excludes	Other types of axle counter heads	
Maintenance Spec	Prerequisites	
NR/SMS/AX29 Service A	There are no prerequisites.	

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7.6 DC Track Circuits - Low Voltage (Primary Cell Fed)

Includes	Primary Cell low voltage DC Track Circuits with a track relay operating coil of at least 9Ω as defined in NR/L2/SIG/11755	
Excludes	<p>Any TC with an operating coil <9Ω.</p> <p>Electrically Un-staggered IRJ's at the relay end.</p> <p>Electrically Un-staggered IRJ's at a feed end except where the feed end abuts the feed end of the adjacent track circuit or the IRJ abuts a different type of DC TC.</p> <p>IRJ's that are at the end of traction immunised railway.</p> <p>Low Voltage DC Track Circuits with secondary cells.</p> <p>Track Circuits with known poor performance or safety issues.</p>	
Maintenance Spec	Prerequisites	
NR/SMS/TC03 Service RA (Carried out up to 364 days)	<p>Each track circuit that does not have a feed end relay shall have Test 251 clause 3 - Residual Voltage Check completed within the last 12 months.</p> <p>If <30% of the minimum drop away voltage cannot be achieved, the track circuit should be excluded from this change.</p> <p>Additional consideration should be given to Track Circuits approaching 30% of the minimum drop away voltage.</p>	
NR/SMS/TC03 Service RB (Carried out up to 364 days)	<p>Primary Cells – Recommended on the RB service replace the primary cells. To maintain reliability using this replacement frequency, the capacity of the cells used should be based on the service frequency, and the time the track circuit is in an occupied state.</p> <p>There are two versions of cells which should be used.</p> <ul style="list-style-type: none"> AS10/1 600Ah (cat no. 54/003198) for low use track circuits and AS10/2 1200 Ah (cat no. 54/003199) for heavily used track circuits 	

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7.7 DC Track Circuits – Low Voltage (Transformer/Rectifier/Secondary Cell fed)

Includes	Track circuits fed by Secondary Cells/Battery Charger configuration. T/J fed low voltage DC Track Circuits with a track relay operating coil of at least 9Ω as defined in NR/L2/SIG/11755
Excludes	<p>Any TC with an operating coil $<9\Omega$.</p> <p>Electrically Un-staggered IRJ's at the relay end.</p> <p>Electrically Un-staggered IRJ's at a feed end except where the feed end abuts the feed end of the adjacent track circuit or the IRJ abuts a different type of DC TC.</p> <p>IRJ's that are at the end of traction immunised railway.</p> <p>Track Circuits with known poor performance or safety issues.</p>
Maintenance Spec	Prerequisites
Basic NR/SMS/TC03 Service RA (Carried out up to 364 days)	<p>Each track circuit that does not have a feed end relay shall have Test 251 clause 3 - Residual Voltage Check completed within the last 12 months.</p> <p>If $<30\%$ of the minimum drop away voltage cannot be achieved, the track circuit should be excluded from this change.</p> <p>Additional consideration should be given to Track Circuits approaching 30% of the minimum drop away voltage.</p>
Extended NR/SMS/TC03 Service RA (Carried out up to 728 days)	<p>Each track circuit that does not have a feed end relay shall have Test 251 clause 3 - Residual Voltage Check completed within the last 12 months.</p> <p>If $<30\%$ of the minimum drop away voltage cannot be achieved, the track circuit should be excluded from this change.</p> <p>Additional consideration should be given to Track Circuits approaching 30% of the minimum drop away voltage.</p> <p>Apply NR/SMS/TC30 as required, see 10665 section – 'Track Circuit additional bonding check'.</p> <p>Route risk assessment required to confirm RAM(S) or equivalent has agreed an extended frequency up to 728.</p>
Extended NR/SMS/TC03 Service RB (Carried out up to 728 days)	<p>Route risk assessment required to confirm RAM(S) or equivalent has agreed an extended frequency up to 728.</p>

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7.8 DC Track Circuits - Medium Voltage

Includes	AC-immune DC track circuits with non-adjustable feed sets (medium voltage) as defined in NR/L2/SIG/11755, BR904 feed sets, Westatic R4/R4B feed sets. Track circuits fed by Secondary Cells/Battery Charger configuration.
Excludes	Electrically Un-staggered IRJ's at the relay end. Electrically Un-staggered IRJ's at a feed end except where it abuts another feed end or the IRJ abuts a different type of DC TC. IRJ's that are at the end of traction immunised railway. Track Circuits with known poor performance or safety issues.
Maintenance Spec	Prerequisites
Basic NR/SMS/TC04 Service A (Carried out up to 364 days)	Each track circuit that does not have a feed end relay shall have Test 251 clause 3 - Residual Voltage Check completed within the last 12 months. If <30% of the minimum drop away voltage cannot be achieved, the track circuit should be excluded from this change. Additional consideration should be given to Track Circuits approaching 30% of the minimum drop away voltage.
Extended NR/SMS/TC04 Service A (Carried out up to 728 days)	Each track circuit that does not have a feed end relay shall have Test 251 clause 3 - Residual Voltage Check completed within the last 12 months. If <30% of the minimum drop away voltage cannot be achieved, the track circuit should be excluded from this change. Additional consideration should be given to Track Circuits approaching 30% of the minimum drop away voltage. Apply NR/SMS/TC30 as required, see 10665 section – 'Track Circuit additional bonding check'. Route risk assessment required to confirm RAM(S) or equivalent has agreed an extended frequency up to 728.
NR/SMS/TC04 Service B (Carried out up to 728 days)	Route risk assessment required to confirm RAM(S) or equivalent has agreed an extended frequency up to 728.

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7.9 Reed TC – Type RT

Includes	The regime change applies to standard Reed Type RT Track circuit (Single rail and Double rail including simple loop receivers)	
Excludes	High Power, High Performance and Jointless Reed Track circuits, RT compound loops and Pre type Reed RT track circuits (e.g. AEI GRS large plug in or the variant of Reed tunnel tracks)	
Maintenance Spec		Prerequisites
NR/SMS/TC06 Service RA		TCs with parallel bonding which is not compliant with the requirements of NR/L2/SIG/11752 .
NR/SMS/TC06 Service RB		<ol style="list-style-type: none"> 1. All bonding to be checked to confirm it is effective and correct to diagram. 2. All impedance bonds (where installed), check that a hole has been drilled in the bottom of the termination box to enable any water to drain freely. 3. All internal wiring is secured clear of terminal box casing (by zip tie if necessary) to prevent damage to outer insulations. 4. Terminal boxes are sealed, and glands fitted and effective. 5. Check no unsecured redundant rails are in the 4 foot for the length of the track circuit likely to cause a short circuit (this can be checked and corrected at 1st maintenance visit to allow implementation). 6. Track lead rail pin connections are correctly stacked (this can be checked and corrected at 1st maintenance visit to allow implementation).
NR/SMS/TC06 Service RE This can be used instead of the RA and RB		As above. This is carried out instead of the RA and RB.

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7.10 50Hz AC Track Circuit

Includes	50Hz AC Track Circuits	
Excludes	All types where a joint abuts a WR Quick Release Track Circuit. All Western Region variants. All types with electrically unstaggered IRJs	
Maintenance Spec	Prerequisites	
NR/SMS/TC08 Service R1 NR/SMS/TC08 Service R2	<ul style="list-style-type: none"> • Apply NR/SMS/TC30 as required, see 10665 section – ‘Track Circuit additional bonding check’. • AC Double Rail track Circuits where the Relay end capacitor is set >10µF AND it abuts another AC 50Hz circuit derived from a different supply, this shall have a separate Special Stagger Test for ‘Spanish Condition’ scheduled at 91-day interval. Consideration should be given to fitting permanent test cables to the rails to enable the test to be performed from a Separated Protection type Safe System of Work. • All types shall have no outstanding WAIF in the Work-bank, including any SIN169 follow-up actions. • All types the Track Relay shall be manufactured or serviced in the last 10 years and is confirmed to be in the Relay Database. • The VT1 relay base is covered by a Silver Migration inspection regime in accordance with NR/L2/SIG/11107. 	
Clarifications	The intervals of both R1 and R2 can be scheduled up to the maximum shown in 10661.	

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7.11 FS2600 Track Circuits

Includes	standard FS2600 Double Rail track circuits	
Excludes	None	
Maintenance Spec	Prerequisites	
NR/SMS/TC09 Service R1 Carried out instead of the service A & B	<ol style="list-style-type: none"> 1. All bonding to be checked to confirm it is effective and correct. 2. All impedance bonds, check that a hole has been drilled in the bottom of the termination box to enable any water to drain freely. 3. Tuner blocks in impedance bonds are either secured with the terminals as near to the block as possible or are connected via flying lead to minimise mechanical breakage by vibration. 4. All internal wiring is secured clear of terminal box casing (by zip tie if necessary) to prevent damage to outer insulations. 5. Terminal boxes to be hermetically sealed. 6. Check TX supply voltage is approx. 101v and that tapping's are set at 8 for >99v or 9 for <99v. 7. Document on record card. 8. Carry out an initial check to confirm redundant rails are not likely to cause a problem. 9. Confirm that annual check of FDM carrying cables for cross talk in locations where FS2600 track circuits are housed. 	

7.12 Aster U type/SF15 Track Circuits

Includes	All Aster U type/SF15 TCs including those through S&C	
Excludes	None	
Maintenance Spec	Prerequisites	
NR/SMS/TC10 Service A	<p>Service A can be carried out at 364 days</p> <p>Teams undertaking the new maintenance regime shall be in possession of and competent in the use of an approved Aster frequency selective meter.</p> <p>Local managers retain the option to undertake maintenance more frequently at any individual TC</p>	

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7.13 HVI Track Circuits

Includes	All HVI Track Circuit	
Excludes	All other types of Track Circuit	
Maintenance Spec	Prerequisites	
RBM Basic NR/SMS/TC12 Service A NR/SMS/TC12 Service B	Any track circuit that contains parallel bonding shall have the following checks undertaken on them prior to implementation: <ol style="list-style-type: none"> 1. The bonding arrangements in place are compliant with the requirements of section 4.4 of NR/L2/SIG/11752. 2. The bonding is in general good condition i.e., mechanically sound, clipped and protected where necessary. 3. The bonding has sound electrical connections. 	
Extended NR/SMS/TC12 Service RE	Track circuits containing interrupters shall be scheduled at 0364 days. Others can be maintained at 0728 days. Apply NR/SMS/TC30 as required, see 10665 section – ‘Track Circuit additional bonding check’.	

7.14 Western Region Quick Release Track Circuits

Includes	The regime change applies to all Western Region Quick Release Track circuits as defined in NR/L3/SIG/11303	
Excludes	TC's containing Electrically Un-staggered IRJ's, TC with known poor performance or safety issues	
Maintenance Spec	Prerequisites	
NR/SMS/TC14 Service RA	A full A and B service shall be carried out on each applicable asset before it can be considered transferable on to the new amended ROSE service frequency.	

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7.15 EBI Track 200 Track Circuits

Includes	AC and DC traction in single rail configuration using ETUs or TCUs, AC and DC traction in double rail configuration using TTUs for jointless or ETU for jointed track circuits. Non-electrified areas	
Excludes	EBI Track 400.	
Maintenance Spec	Prerequisites	
NR/SMS/TC16 Service A&B (carried out at 364 days)	<ol style="list-style-type: none"> 1. All bonding to be checked to confirm it is effective and correct. 2. Check that a hole has been drilled in the bottom of the termination box to enable any water to drain away freely. 3. Tuning Capacitors terminals in impedance bonds are secured. 4. All internal wiring is secured clear of impedance bond terminal box casing (by cable tie if necessary) to prevent damage to outer insulations. 5. Check terminal box seals are undamaged. 6. For the length of the track circuit, check that any new/ redundant rails are not likely to create a short circuit and are clear of cables and other signalling equipment. <p><i>NOTE: scrap/new rail laid in the 4ft can creep either by vibration or heat expansion, if found, Report to your SM(S).</i></p>	

7.16 EBI Track 200 - Remotely Maintained

Includes	Remotely Monitored Digital EBI Track 200 tracks which are integrated into the II RCM RADAR System.	
Excludes	All Other Digital EBI Track 200 Track Circuits that are not Integrated into the II RCM RADAR System (Centrix is not part of the ii RCM RADAR system). Also, EBI Track 200 Analogue Tracks.	
Maintenance Spec	Prerequisites	
NR/SMS/TC16 Service C	Maintenance System <ol style="list-style-type: none"> 1. The data monitoring process shall align with NR/L3/MTC/II0219 - Intelligent Infrastructure Remote Condition Monitoring Manual. 2. Maintenance Technicians shall be capable of accessing and interpreting the II (Radar) system. 	

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Each asset

If you are not currently using the ROSE maintenance regime then you shall carry out the prerequisites shown in 7.15.

3. Confirm the track circuit has a 'digital' track circuit EGI code assigned to it.
4. The track circuit monitoring shall be integrated into the II RCM System.
5. Confirm the system is receiving data from the correct track circuit.
6. Confirm that the asset monitoring is correctly set up and calibrated, (this will help minimize spurious alarms) [NR/SIG/10664 - GI R001](#). Any alarms/alerts or calibration issues that cannot be eliminated should be recorded as a "known issue".
7. If a track circuit is connected to a logger monitoring a total of more than 4 track circuits then it shall be confirmed that the logger is able to cope with the amount of data generated and there is no risk of the logger locking up due to excessive data flow'.
8. Check that there are no additional tasks or outstanding variations from [NR/SMS/PartC/TC16](#) currently applied to the track circuit.
9. Schedule maintenance task TC16C service at a maximum interval shown in NR/L3/SIG/10661.
10. Any track with a history of wrong side failures shall be excluded with the exception of WSF failure mode that is related to rail head contamination.
11. If Yellow Bonds are installed within the EBI 200 Track Circuit an [NR/SMS/PartC/TC30](#) shall be scheduled.

NOTE: For yellow bonds within S&C, this task can be scheduled to coincide with adjacent MSTs to optimise the maintenance visit.

NOTE: If Yellow Bonds are fitted and an RX is fitted to the turnout, then any loss of continuity will be detected and TC30 will not be required.

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7.17 Track Circuit additional bonding check

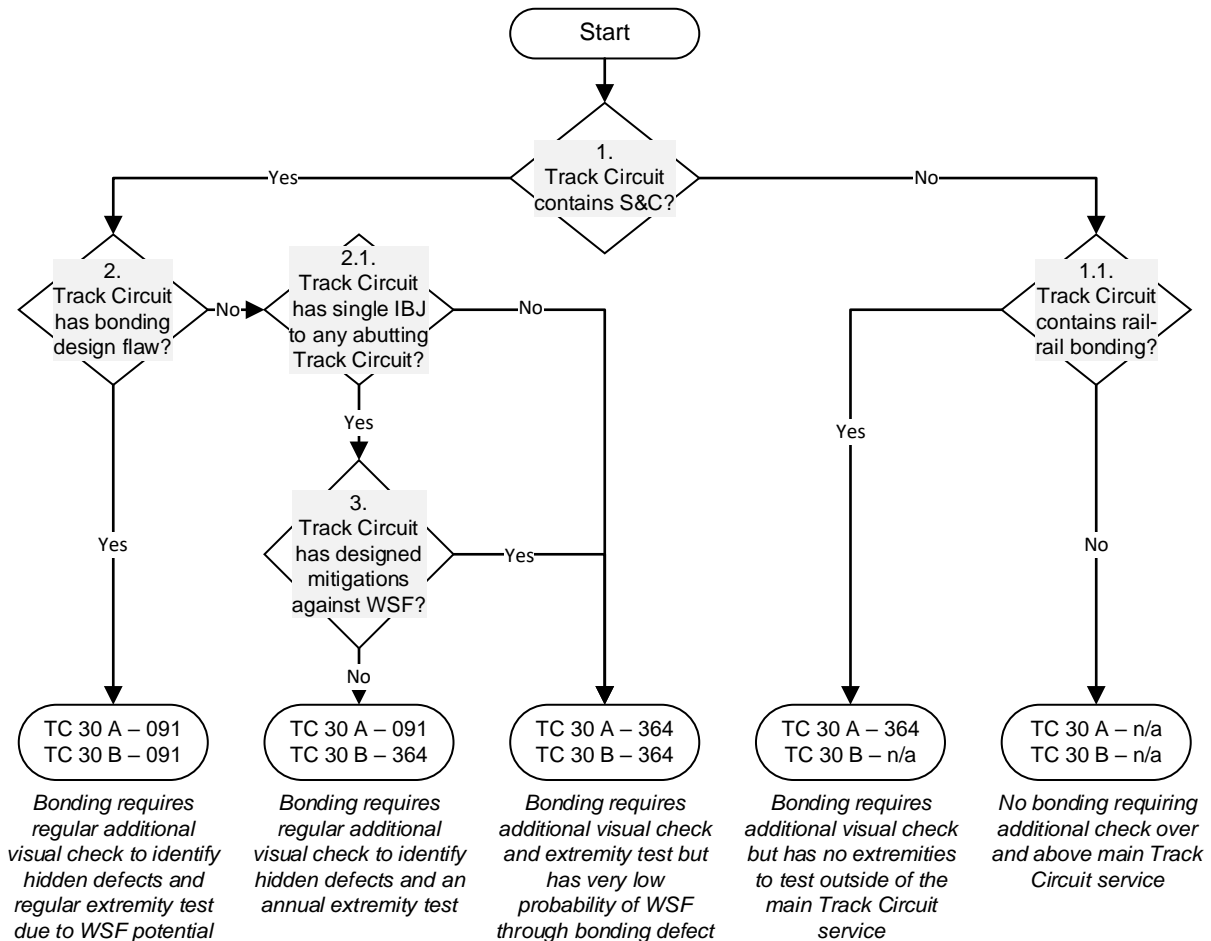


Figure 1 - Application process for Track Circuit additional bonding check

NOTE 1: Flowchart in Figure 1 - Application process for Track Circuit additional bonding check

NOTE 2: Additional bonding checks through S&C might be scheduled to coincide with points maintenance for efficiency.

NOTE 3: 1.1. For example, non-Continuously Welded Rail, or Transposition Bonding.

NOTE 4: 2. For example, parallel bonded section contains set of switches, historical incident, or has an additional bonding check already scheduled.

NOTE 5: 2.1. i.e., Track Circuit shares common rail with any abutting Track Circuit at an extremity (Feed/Relay/Tx/Rx/Turn-outs)

NOTE 6: 3. Would a breakdown in the continuity of bonding likely be detected or consequences mitigated? E.g., EBI200 with additional Rx in turn-out, DC feed end relay, sequential locking circuits in place.

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Includes	Track circuits where an additional bonding check is required	
Excludes	All other track circuits	
Maintenance Spec	Prerequisites	
NR/SMS/TC30 Service A at 91 days Service B at 91 days	Track circuit: contains switches and crossings, and has a known bonding design flaw (e.g., parallel bonded section contains set of switches, or there is already an additional bonding check scheduled)	
NR/SMS/TC30 Service A at 91 days Service B at 364 days	Track circuit: contains switches and crossings, and has no known bonding design flaws, and shares a common rail with an abutting track circuit at an extremity, and has no designed mitigations against WSF	
NR/SMS/TC30 Service A at 364 days Service B at 364 days	Track circuit: contains switches and crossings, and has no known bonding design flaws, and either does not share a common rail with an abutting track circuit at an extremity, or has designed mitigations against WSF (e.g. EBI200 with additional Rx, DC feed end relay, sequential locking circuits in place)	
NR/SMS/TC30 Service A at 364 days Service B not required	Track circuit on plain line with rail-rail bonding (e.g. jointed track or transposition bonding)	
NR/SMS/TC30 Neither Service A or Service B is required	Track circuit on plain line with no rail-rail bonding	

7.18 TCAIDS

Includes	All TCAID's	
Excludes	None	
Maintenance Spec	Prerequisites	
NR/SMS/TC91 Service R1	None A1 service for all TCAIDS	

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7.19 EBI Track 400 - Remotely Maintained

Includes	Remotely Monitored Digital EBI Track 400 tracks which are integrated into an approved RCM System (e.g. RADAR or Centrix)
Excludes	All Other Digital EBI Track 400 Track Circuits that are not Integrated into an approved RCM System.
Maintenance Spec	Prerequisites
NR/SMS/TC17 Service C	<p>Maintenance System</p> <ol style="list-style-type: none"> 1. The data monitoring process shall align with NR/L3/MTC/II0219 - Intelligent Infrastructure Remote Condition Monitoring Manual. 2. Maintenance Technicians shall be capable of accessing and interpreting the RCM system. <p>Each Asset</p> <ol style="list-style-type: none"> 3. The Surge Arrestors at all ends of the Track Circuit shall be removed. 4. The track circuit monitoring shall be integrated into the RCM System. 5. Confirm the system is receiving data from the correct track circuit. 6. If a track circuit is connected to a logger monitoring a total of more than 4 track circuits then it shall be confirmed that the logger is able to cope with the amount of data generated and there is no risk of the logger locking up due to excessive data flow'. 7. Confirm that the asset monitoring is correctly set up and calibrated to <u>NR/SIG/10064 - GI R004</u>. Any alarms/alerts or calibration issues that cannot be eliminated shall be recorded as a "known issue". 8. Schedule maintenance task TC17C service at an interval up to the maximum shown in NR/L3/SIG/10661. 9. If Yellow Bonds are installed within the EBI 400 Track Circuit an <u>NR/SMS/PartC/TC30</u> shall be scheduled. <p>NOTE: For yellow bonds within S&C, this task can be scheduled to coincide with adjacent MSTs to optimise the maintenance visit.</p> <p>NOTE: If Yellow Bonds are fitted and an RX is fitted to the turnout, then any loss of continuity will be detected and TC30 is not required.</p>

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8 Equipment Housing

8.1 Location Cases or Portable Equipment Rooms

Includes	Apparatus Case, Location Cases, Relay Cabinets, Equipment Cupboards, Stump Boxes
Excludes	Unipart Rail – Dorman integrated Lightweight Signal [iLS] Modular Enclosures and Ansaldo Location cases (used on the Manchester South Scheme)
Maintenance Spec	Prerequisites
NR/SMS/EL21 Service PT1 (Periodic Task 1)	<p>Schedule Periodic Test 1 for Track side Location Cases where remote bus bar monitoring is installed.</p> <p>Service PT1 shall be scheduled at 91 days. Where the location contains SSI or double cut lineside circuits it can be extended to 364 days.</p>
NR/SMS/EL21 Service A	<p>Service A for Track side Location Cases without remote bus bar monitoring</p> <p>Service A shall be scheduled at 91 days. Where the location contains SSI or double cut lineside circuits it can be extended to 364 days.</p>
NR/SMS/EL21 Service B	<p>Service B shall be scheduled at no greater than 364 days if:</p> <ol style="list-style-type: none"> 1) Locations contains power supplies that are not remotely monitored. 2) Locations containing oil filled capacitors. 3) Location cases that contain black phenolic relay bases, unless a silver migration check has been scheduled, or it has been confirmed that relay spade connectors are not silver plated. 4) Location cases that contain relays that are not managed by a relay data base. 5) Location cases that contain thermal timers. 6) Location cases where there is a high risk of rodent damage unless effective preventative measures have been implemented. <p>Note <i>Location cases shall have a wire degradation check scheduled in Ellipse at the appropriate frequency for the condition of the wiring</i></p> <ol style="list-style-type: none"> 7) Location cases containing batteries/ cells shall have service CE03 scheduled in Ellipse.

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Includes	Relay Rooms and Relocatable Equipment Buildings	
Excludes	All other Equipment Housings	
Maintenance Spec	Prerequisites	
NR/SMS/EL31 Service RA	Wire Deg status should be Normal or Fair, no historic record of cable damage, ONLY maintenance free secondary cells allowed such as Alcad Vantage, M ranges EnerSys Cyclon etc.	
NR/SMS/EL31 Service RB	Wire Deg status should be Normal or Fair, no historic record of cable damage, ONLY approved maintenance free secondary cells allowed such as Alcad Vantage, M ranges EnerSys Cyclon etc.	
NR/SMS/EL31 Service RE Carry out the Service A and B	<p>Wire Deg status should be Normal or Fair, no historic record of cable damage, ONLY approved maintenance free secondary cells allowed such as Alcad Vantage, M ranges EnerSys Cyclon etc.</p> <p>For Installations <5 years old there shall be no outstanding commissioning defects. For Installations >5 years old the site visit shall indicate good condition.</p> <p>These additional prerequisites allow the Service RA to be carried out annually.</p>	

8.2 Data Loggers Contained within Location Case or PER

Maintenance Spec	Prerequisites
ER11 – ER22 Service RE	Data Loggers which are not remotely monitored need to be maintained at their current frequency. Remotely monitored loggers can be maintained at the same frequency as the location case or PER.

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9 Signals

9.1 Reflective Boards and signs

Includes	All signs included within NR/SMS/SG20	
Excludes	Signs in dirty or hostile environments, Signs in areas prone to vandalism, Signs which are prone to vegetation overgrowth, Signs which are in poor condition (e.g. rusted mounting posts/fixings or on unstable ground), Externally lit signs if the lighting source is considered likely to fail in less than a year.	
Maintenance Spec	Prerequisites	
NR/SMS/SG20 Service RA	Signs shall be assessed for risk of obscuration and Service RA scheduled at the appropriate interval.	
Clarifications	This service can be pushed to FoF for signs of low consequence or likelihood of obscuration.	

9.2 Signal Post Replacement Switch, Signal Box Replacement Switch

Includes	All SBR's and SPR's	
Excludes	None	
Maintenance Spec	Prerequisites	
NR/SMS/SG02 Carry Service B	No prerequisites	
Clarifications	The service should match the frequency of the parent asset or telephone	

9.3 Main Colour Light Signal – Dorman Lite

Includes	Dorman Lite	
Excludes	Dorman classic, Dorman iLS, VMS, Signal house & all other types of signals	
Maintenance Spec	Prerequisites	
NR/SMS/SG07 Applies only to Service A and B Service RE FoF	Each Signal lens should be clean before applying the new regime. For signal heads and other associated indications that are not exposed to free-falling rain (under station canopies, bridges etc.), lens cleaning should be scheduled at an interval determined by local policy.	
Includes	Dorman Lite	
Excludes	Dorman classic, Dorman iLS, VMS, Signal house & all other types of signals	
Maintenance Spec	Prerequisites	
NR/SMS/SG07 Service PT	Where the Periodic Task frequency is extended beyond 14 years the supporting risk assessment should consider, but not limited to:	

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a) Is Train protection fitted

b) Is there more than one signal in the driver's field of view (understanding the driver's viewpoint and local environment)

c) What type/classes of routes does the signal protect

d) Is the signal East-West facing (Phantom mitigation / sunlight issues)

e) Is the signal classed as a multi SPAD signal

f) Confidence of age of signal module and duty cycle

g) No outstanding WAIF (Work Arising Information Forms) against the signal

h) Is the signal on a share gantry / structure (consider replacing all modules together)

DUTY	RED (Years)	YELLOW (Years)	GREEN (Years)
100%	14.84	14.84	11.76
75%	19.78	19.78	15.68
50%	29.68	29.68	23.52

Frequency of renewal based on aspect duty cycle

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9.4 Main Colour Light Signals – (iLS)

Includes	Dorman – integrated lightweight signal (iLS) and iLS Modular, including integrated Position Light and Junction Indicators.																		
Excludes	All other types of signal.																		
Maintenance Spec	Prerequisites																		
NR/SMS/SG09 Applies to service A, service B and service C Service RE FoF	A bus-bar earth test is scheduled on all unmonitored busbars supplying the iLS signals? For signal heads and other associated indications that are not exposed to free-falling rain (under station canopies, bridges etc.), a lens cleaning should be scheduled in Ellipse at an interval determined by local policy.																		
Includes	Dorman – integrated lightweight signal (iLS) and iLS Modular, including integrated Position Light and Junction Indicators.																		
Excludes	All other types of signal.																		
Maintenance Spec	Prerequisites																		
NR/SMS/SG09 Service PT	<p>Where the Periodic Task frequency is extended beyond 14 years the supporting risk assessment should consider, but not limited to:</p> <ul style="list-style-type: none"> a) Is Train protection fitted b) Is there more than one signal in the driver's field of view (understanding the driver's viewpoint and local environment) c) What type/classes of routes does the signal protect d) Is the signal East-West facing (Phantom mitigation / sunlight issues) e) Is the signal classed as a multi SPAD signal f) Confidence of age of signal module and duty cycle g) No outstanding WAIF (Work Arising Information Forms) against the signal h) Is the signal on a share gantry / structure (consider replacing all modules together) <table border="1"> <thead> <tr> <th>DUTY</th><th>RED (Years)</th><th>YELLOW (Years)</th><th>GREEN (Years)</th></tr> </thead> <tbody> <tr> <td>100%</td><td>14.84</td><td>14.84</td><td>11.76</td></tr> <tr> <td>75%</td><td>19.78</td><td>19.78</td><td>15.68</td></tr> <tr> <td>50%</td><td>29.68</td><td>29.68</td><td>23.52</td></tr> </tbody> </table> <p>Frequency of renewal based on aspect duty cycle</p>			DUTY	RED (Years)	YELLOW (Years)	GREEN (Years)	100%	14.84	14.84	11.76	75%	19.78	19.78	15.68	50%	29.68	29.68	23.52
DUTY	RED (Years)	YELLOW (Years)	GREEN (Years)																
100%	14.84	14.84	11.76																
75%	19.78	19.78	15.68																
50%	29.68	29.68	23.52																

9.5 Main Colour Light Signal - VMS

Includes	VMS Signals mounted on modular or conventional posts or gantries, VMS Route indicators
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Excludes	All other types of signal
Maintenance Spec	Prerequisites
NR/SMS/SG08 Service R1	None.

9.6 Main Colour light signals - LED Signals

Includes	Dorman Classic																		
Excludes	Signals in a dirty or hostile environment including tunnel signals, Dorman iLS (all types) and Signal house																		
Maintenance Spec	Prerequisites																		
NR/SMS/SG10 Service R1 Carry this out instead of the service A and B	Each signal lens should be cleaned before applying the new Regime. The PT Service shall continue to be scheduled.																		
Includes	Dorman Classic																		
Excludes	Signals in a dirty or hostile environment including tunnel signals, Dorman iLS (all types) and Signal house																		
Maintenance Spec	Prerequisites																		
NR/SMS/SG10 Service PT	<p>Where the Periodic Task frequency is extended beyond 14 years the supporting risk assessment should consider, but not limited to:</p> <ul style="list-style-type: none">a) Is Train protection fittedb) Is there more than one signal in the driver's field of view (understanding the driver's viewpoint and local environment)c) What type/classes of routes does the signal protectd) Is the signal East-West facing (Phantom mitigation / sunlight issues)e) Is the signal classed as a multi SPAD signalf) Confidence of age of signal module and duty cycleg) No outstanding WAIF (Work Arising Information Forms) against the signalh) Is the signal on a share gantry / structure (consider replacing all modules together) <table border="1"><thead><tr><th>DUTY</th><th>RED (Years)</th><th>YELLOW (Years)</th><th>GREEN (Years)</th></tr></thead><tbody><tr><td>100%</td><td>14.84</td><td>14.84</td><td>11.76</td></tr><tr><td>75%</td><td>19.78</td><td>19.78</td><td>15.68</td></tr><tr><td>50%</td><td>29.68</td><td>29.68</td><td>23.52</td></tr></tbody></table> <p>Frequency of renewal based on aspect duty cycle</p>			DUTY	RED (Years)	YELLOW (Years)	GREEN (Years)	100%	14.84	14.84	11.76	75%	19.78	19.78	15.68	50%	29.68	29.68	23.52
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9.7 Main Colour Light Signals - SL35 8000hr Filament

Includes	Colour light signals with SL35 long life (8000 hrs) with full lamp proving of the main signal
Excludes	SL35 signals in dirty or hostile environments, Signals with flashing aspects, SPAD indicators, Other filament lamps, Searchlight signals, FOCLs
Maintenance Spec	Prerequisites
NR/SMS/SG11 Service R1 Carry this out instead of the service A and B	SL35 long life (8000hr) lamps shall be installed in all main aspects.

9.8 Main Colour Light Signals - SL35 LED light engine replacement module.

Includes	Colour Light Signals fitted with Howells LED SL35 light modules with full lamp proving of the main signal
Excludes	Signals in dirty or hostile environments, Signals with flashing aspects, SPAD indicators, Searchlight signals, FOCL's and Filament lamps
Maintenance Spec	Prerequisites
NR/SMS/SG11 Service R2 Carry this out instead of the service A and B	All main aspect lamps shall be fitted with the Howells LED light module. A mixture of 8000 hrs lamps and LED light modules are not permitted on the same signal.

9.9 Position Light Signal (Dorman)

Includes	Dorman PL's
Excludes	Filament & Halogen PL's and all other LED types
Maintenance Spec	Prerequisites
NR/SMS/SG14 Service R2	Signals shall be assessed for risk of obscuration and NR/SMS/SG21 scheduled as required for additional lens cleaning.
Clarifications	SG21 is a universal service for additional lens cleaning. It should only be scheduled if a lens clean is required more often than the main service.

9.10 Position Light Signal (Filament & Halogen)

Includes	Filament & Halogen PL's
Excludes	Dorman PL's and all other LED types
Maintenance Spec	Prerequisites
NR/SMS/SG14 Service A and B	Signals shall be assessed for risk of obscuration and NR/SMS/SG21 scheduled as required for additional lens cleaning.
Clarifications	SG21 is a universal service for additional lens cleaning. It should only be scheduled if a lens clean is required more often than the main service.

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9.11 Position Light Junction Indicator

Includes	Position light junction indicators, Filament 8000hr, light engine and Dorman
Excludes	VMS, Dorman iLS and all other PLJI's, Signals in dirty or hostile environments.
Maintenance Spec	Prerequisites
NR/SMS/SG15 Service R1 for Dorman	Each signal lens should be cleaned before applying the new Regime.
NR/SMS/SG15 Service R2 for LED light Engines	Each signal lens should be cleaned before applying the new Regime. All lamps shall be fitted with the Howells LED light module. A mixture of 8000 hrs lamps and LED light modules are not permitted on the same signal.
NR/SMS/SG15 Service R3 for Filament 8000hr	Each signal lens should be cleaned before applying the new Regime. All lamps shall be fitted with SL35 long life (8000hr) lamps. A mixture of 8000 hrs lamps and LED light modules are not permitted on the same signal.
NR/SMS/SG15 Service RE FoF for Dorman Lite	Each signal lens should be cleaned before applying the new Regime. Signals shall be assessed for risk of obscuration and NR/SMS/SG21 scheduled as required for additional lens cleaning.

9.12 Miniature Stop Light (MSL)

Includes	All Miniature Stop Light (MSL) or Miniature Warning Light (MWL) level crossings fitted with the Dorman LED type Red and Green modules
Excludes	Crossings where only 1 audible warning is fitted
Maintenance Spec	Prerequisites
NR/SMS/LC15 Service R1	None
NR/SMS/Part D/LX94	None

9.13 Banner Repeater signal – LED

Includes	Banner repeater signal – LED
Excludes	All other signals
Maintenance Spec	Prerequisites
NR/SMS/SG22 Service R1	Each signal lens should be cleaned before applying the new Regime.

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9.14 Crown Post Counter Balanced Support

Includes	Gantry Mounted Counter-Balanced Signal Support Posts only	
Excludes	Post mounted Counter-Balanced Signal Support Post	
Maintenance Spec	Prerequisites	
NR/SMS/SG05 Service R1 Carry out instead of the service B.	Confirm chains and sprockets have sufficient grease applied. Lubricate with Grease (ROCOL). Check for correct operation of cable management - cable weight disc is in situ and correctly adjusted. Check that cable conduit is free from water ingress and drain from bottom of loop if required. Confirm disconnection box seals and cable glands effective to prevent ingress of water into tubing. If required, install new disconnection box and re-route cable entries via the underside of the disconnection box. Check earth braid on door is installed so not to foul door lugs when raising or lowering signal head. Confirm counterbalance is of correct weight to allow ease of operation.	

9.15 MARI SARI (Filament lamp and Fibre optic)

Includes	Standard (SARI) and Miniature (MARI) Alphanumeric Route Indicators (all types – filament lamp and fibre optic)	
Excludes	LED Type MARI and SARI Route Indicators	
Maintenance Spec	Prerequisites	
NR/SMS/SG16 Service R1	Each indicator should be cleaned before applying the new Regime.	

9.16 MARI SARI (LED Type)

Includes	Standard (SARI) and Miniature (MARI) Alphanumeric Route Indicators LED Type	
Excludes	MARI and SARI Route Indicators associated filament lamp, fibre optic, Dorman iLS and VMS LED signals	
Maintenance Spec	Prerequisites	
NR/SMS/SG17 Service R1	Each indicator should be cleaned before applying the new Regime.	

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9.17 Banner - Filament and Fibre Optic

Includes	Filament and Fibre Optic only
Excludes	Light Engines, Halogen lamps and all other Banner types
Maintenance Spec	Prerequisites
NR/SMS/SG19 Service R1	All lamps shall be fitted with SL35 long life (8000hr) lamps. A mixture of 8000 hrs lamps and LED light modules are not permitted on the same signal.

9.18 Banner - Light Engine

Includes	Light Engine
Excludes	Filament and Fibre Optic and all other types
Maintenance Spec	Prerequisites
NR/SMS/SG19 Service R2	All lamps shall be fitted with Light Engines A mixture of 8000 hrs lamps and LED light modules are not permitted on the same signal.

9.19 Electro-Mechanical Banner Repeater

Includes	Electro-Mechanical Banner Repeater Signals
Excludes	LED Banner repeater signals, banner repeater signals using Quartz Halogen lamps with fibre optic systems.
Maintenance Spec	Prerequisites
NR/SMS/SG13 Service A	Each signal lens should be cleaned before applying the new Regime.

9.20 Indicators Signals – Filament Type Head

Includes	Indicators Signals – illuminated using standard filament lamps (8000hr only), Light Engines or Halogen lamps
Excludes	Electro/Mechanical and LED Banners. Filament lamps that are not 8000hrs.
Maintenance Spec	Prerequisites
NR/SMS/SG18 Service A and Service B	Each signal lens should be cleaned before applying the new Regime.

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10 Point Operating Equipment

10.1 FPL Testing Frequency

Includes	All RCPL and In-Bearer Clamp Lock
Excludes	RCPLs with fabricated bodies (Mk.1), IBCL Mk.3 and any other type of hydraulic points
Maintenance Spec	Prerequisites
NR/SMS/Part B/Test/003	As defined in section 13 FPL Testing Frequencies of this module.

10.2 Point Operating Equipment – RCPL and In-Bearer Clamp Lock

Includes	All RCPL and In-Bearer Clamp Lock
Excludes	RCPLs with fabricated bodies (Mk.1), IBCL Mk.3 and any other type of hydraulic points
Maintenance Spec	Prerequisites
NR/SMS/PB11 Service V1, R1 & R2 Carry out these instead of services RT, A & B	None. REGULAR TEST - FPL test NR/L3/SIG/10663 Signal Maintenance Specifications, NR/SMS/PartB/Test/003 Shall be carried out at the current frequency or at the relevant frequency stated in section 13 FPL Testing Frequencies of this document when using the Reliability centred Maintenance of Signalling criteria (RoSE) FPL Testing criteria.

10.3 Point Operating Equipment – HPSS

Includes	All HPSS POE
Excludes	All other POE types
The RCM services were combined with the Standard SMS Services in NR/SMS/PartC/PC51 on 07/09/2019	

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10.4 Point Operating Equipment – HW1000 / HW2000

Includes	All HW1000 / HW2000 point machines	
Excludes	None	
Maintenance Spec	Prerequisites	
NR/SMS/PC05 Service V1, R1 & R2 Carry out these instead of services RT, A & B	None. REGULAR TEST - FPL test NR/L3/SIG/10663 Signal Maintenance Specifications, NR/SMS/PartB/Test/001 Shall be carried out at the current frequency or at the relevant frequency stated in section 13 FPL Testing Frequencies of this document when using the Reliability centred Maintenance of Signalling criteria (RoSE) FPL Testing criteria.	

10.5 Point Operating Equipment – Style 63

Includes	All Style 63-point machines	
Excludes	None	
Maintenance Spec	Prerequisites	
NR/SMS/PC41 Service V1, R1 & R2 Carry out these instead of services RT, A & B	REGULAR TEST FPL- test NR/L3/SIG/10663 Signal Maintenance Specifications, NR/SMS/PartB/Test/001 Shall be carried out at the current frequency or at the relevant frequency stated in section 13 FPL Testing Frequencies of this document when using the Reliability centred Maintenance of Signalling criteria (RoSE) FPL Testing criteria.	

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10.6 Point Fittings

Includes	Fixed Stretcher Bars; Adjustable Stretcher Bars; Tubular Stretcher Bars; Lock Stretcher Bars; Bracket Fasteners; Extension Pieces; Drive Rods; Lock Rods; Detector Rods; Connections; Lugs and Insulations	
Excludes	Nuts/ bolts not associated with point fittings; Adjustable tie bars fitted to some Clamplocks; and Hand Points	
Maintenance Spec		Prerequisites
NR/SMS/PF01 Service A		<p>The Interval can be increased to 182 days subject to a Risk Assessment and the Authority of the Route Engineer [Signalling], Principal Route Engineer [Signalling] or equivalent.</p> <p>The Risk Assessment should consider:</p> <ul style="list-style-type: none"> • Points used for trailing moves only. • Points entirely contained within sidings • Line Speed. • Layout. • Type of Traffic.

11 Level Crossings

11.1 AHB Level crossing with BR843 barriers

Includes	Automatic Half Barrier level crossing fitted with BR843 barrier machines	
Excludes	Those level crossing controlled by Predictor circuitry	
Maintenance Spec		Prerequisites
NR/SMS/LC20 R1		In dirty or hostile environments additional cleaning should be scheduled at suitable intervals for affected Road Lights (Wigwags).
NR/SMS/LC20 R2		In dirty or hostile environments additional cleaning should be scheduled at suitable intervals for affected Road Lights (Wigwags).
NR/SMS/LC20 R3		In dirty or hostile environments additional cleaning should be scheduled at suitable intervals for affected Road Lights (Wigwags).
NR/SMS/LC20 R4		In dirty or hostile environments additional cleaning should be scheduled at suitable intervals for affected Road Lights (Wigwags).

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12 Misc. Signalling

12.1 Disconnection Boxes

Includes	All Disconnection Boxes	
Excludes	None	
Maintenance Spec	Prerequisites	
Annually with associated asset	Disconnection Box should be maintained at the same frequency as the associated asset.	

12.2 TOWS

Includes	Train Operated Warning systems	
Excludes	None	
Maintenance Spec	Prerequisites	
NR/SMS/PartC/SW02 Service RA	A risk assessment is advised if the controlling TC has a history of WSF's or failure to operate due to leaf fall or rail head contamination; this does not impact on the maintenance requirement.	

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12.3 TRTS, CD and RA Button / Switch

Includes	The regime change applies to all CD RA and TRTS Buttons / Switch and Housings
Excludes	Does not apply to CD RA and TRTS Buttons / Switch and Housings that do not meet the prerequisites
Maintenance Spec	Prerequisites
NR/SMS/PartC/EL12 Service RE FoF	<p>Before moving any button / switch to the revised RoSE regime, it should be checked for the following:</p> <ol style="list-style-type: none"> 1. That the unit is not damaged. 2. That the unit is secure on its mountings and that both the cable entry gland and any seals are correctly fitted and effective. 3. That any doors and locking devices are effective. 4. That tail cables and internal wiring are correctly routed, secure, free from degradation and correctly terminated. 5. That all internal and external labelling is fitted, clean, and legible. 6. That the unit operates correctly. 7. Test the supply during its operating cycle to confirm it is free from earths. 8. Any defects identified shall be corrected before moving to a condition led regime. 9. Condition monitoring of the asset shall be via the asset inspection regime, undertaken by the Section Manager (Signals) and S&TME Engineer as part of their NR/L2/SIG/10028 inspection plans.

12.4 Platform Identification Beacon System (PIBS)

Includes	The regime change applies to Platform Identification Beacon Systems only
Excludes	All other types of beacon or Balise
Maintenance Spec	Prerequisites
NR/SMS/PartE/BA12 Service RE FoF	<p>Tail cables are in good condition, installed correctly and secured clear of tamping zone.</p> <p>Dis boxes are installed correctly.</p> <p>The beacon is installed correctly and not damaged.</p> <p>Cable glands and cover seals are in good condition.</p> <p>PIBS loc secure, door seals are effective and labelled correctly.</p>

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12.5 Vaughan Small Train Describer (4M)

Includes	Vaughan Harmon Small Train Describer (4M)
Excludes	Vaughn small TD's fitted on the former BR-WR and TD Scottish type
Maintenance Spec	Prerequisites
NR/SMS/PartC/TD31 Service R1	Monitors shall be Flat screen type, not CRT.

13 FPL Testing Frequencies – Selection Criteria

The default interval for FPL testing is 0028 days. If the current FPL testing regime is between 0028 and 0042 days, this can be used instead of the default interval.

NOTE The 0028 and 0042 days only applies to Depots where the interval has been applied since 31st March 2009.

In all other cases the 28-day period shall be applied.

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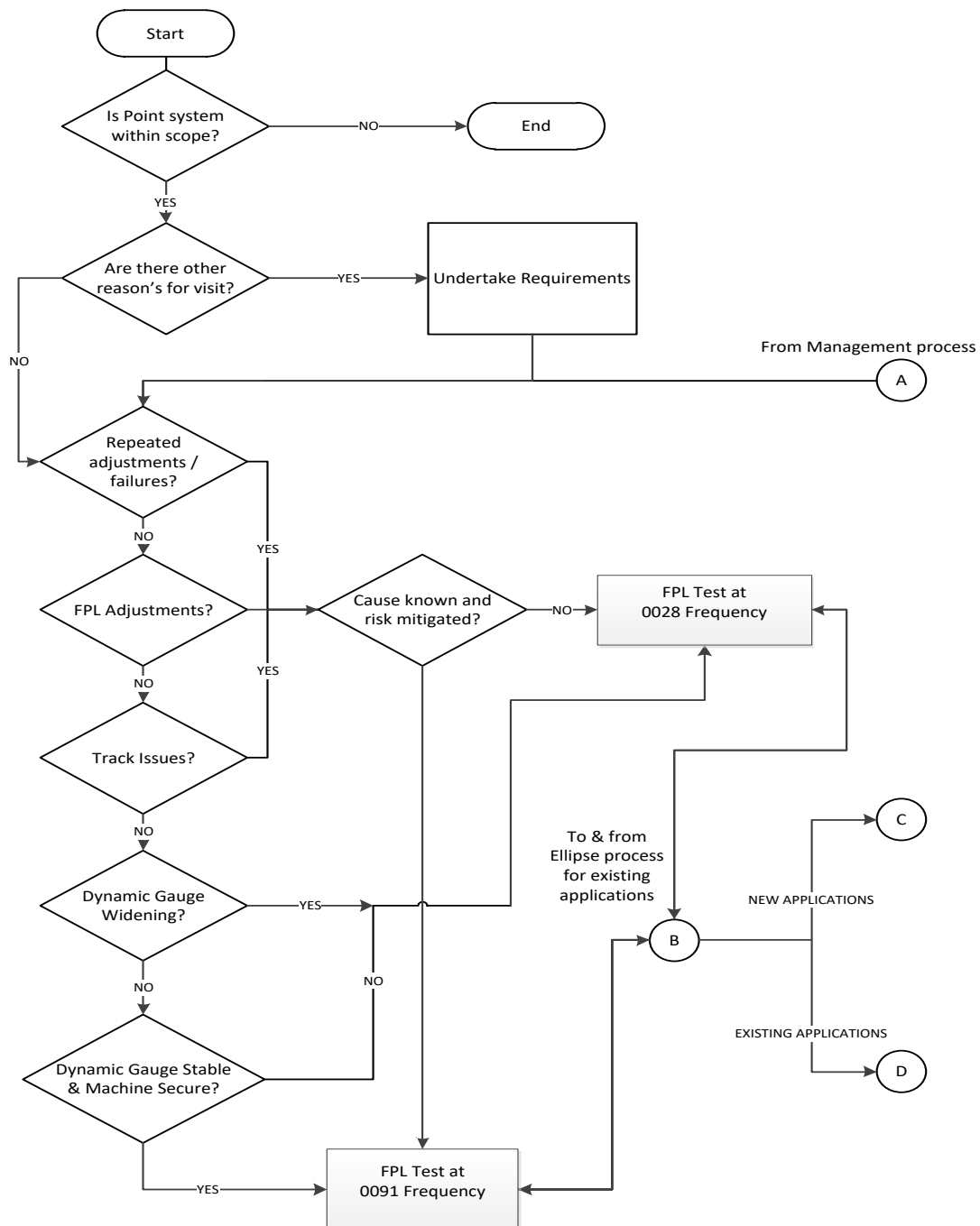


Figure 2 – Selection Criteria Flow Chart

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14 Point system within scope

14.1 Points in scope

The Infrastructure Maintenance Engineer (IME) in liaison with the Signal and Telecom Maintenance Engineer (S&TME) and the Track Maintenance Engineer (TME) shall only select point systems for this regime that meet the criteria in Table 1:

Switch Rail Type	Point Operating Equipment	Supplementary Drive Type	In Scope
flat bottom, full depth vertical or shallow depth vertical or inclined rail sections of 113A, UIC54, NR60 or Bullhead (see note)	Alstom HW style, WRSL Style 63, Ansaldo T72/VCC, or Rail Clamp Point Lock. (RCPL)	None	Yes
		Mechanical	Yes
		Hydraulic	No
		Torsional	No
	In bearer Clamp Lock (IBCL)	None	Yes
		Mechanical	Yes
		SO Backdrive (Hydrive)	Yes
		Torsional	No
		Other hydraulic	No
	Mechanical	N/A	No
	Other	N/A	No

Table 1 – Points in Scope

Switches with bullhead rail shall meet the conditions in bull head rail application criteria, (Clause 17).

14.2 Other reasons for signalling visits

The S&TME in liaison with the IME shall identify any other reasons for inspections or preventative maintenance visits to the point system. This can include but is not limited to:

- 1) Signalling inspections defined by NR/L2/TRK/6100.
- 2) Signalling inspections required by a Special Inspection Notice (NR/SIN).
- 3) Signalling inspections required by local performance issues.

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If for any reason(s) an inspection or preventative maintenance visit to the point system is required over and above that required by NR/SMS cyclic preventative maintenance for the point system, even if the frequency of these is different from the Facing Point Lock (FPL) frequency decided by this selection process, the S&TME shall be responsible for those inspections/tasks being carried out.

NOTE: Other point configurations not currently covered by this standard can also require more frequent inspections in line with the Track inspection regime detailed in NR/L2/TRK/6100.

14.3 Repeated adjustments or failures

The S&TME, Section Manager (Signals) (SM(S)) or the Performance and Assurance Engineer (PAE) in liaison with the IME shall examine the records of signalling corrective maintenance to the point system. These records can come from (but are not limited to):

- a) Fault Management System (FMS).
- b) Ellipse Work Arising.

If there has been repeated lock stretcher or point rodding (drive, lock and detection rod) failures, or adjustments to these (repeated is defined as two or more incidents in the last two years) the root or fundamental cause for these failures shall be investigated and rectified or the risk mitigated. If this is not undertaken or the risk cannot be mitigated FPL testing at a frequency of 0028 days shall be required in this instance.

14.4 FPL adjustments

The S&TME, SM(S) or the PAE in liaison with the IME shall examine the records of FPL adjustments that have been undertaken on the point system. These records can come from (but not limited to):

- a) Fault Management System (FMS).
- b) Ellipse Work Arising.
- c) NR/SMS Record Cards.

If there have been repeated FPL adjustments (repeated is defined as two or more adjustments in the last two years) the root or fundamental cause for these failures shall be investigated and rectified or the risk mitigated. If this is not undertaken or the risk cannot be mitigated FPL testing at a frequency of 0028 days shall be introduced in this instance.

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NOTE: An FPL adjustment is required when some part of the system changes. In some cases (e.g. a 0.6mm shim for a Rail Clamp Point Lock due to wear or repairs following a run-through), no risk remains but the details should be recorded and then excluded as part of the process of changes to the FPL frequency.

14.5 TRACK ISSUES - GENERAL

The TME, Section Manager (Track) or the Performance and Assurance Engineer (PAE) in liaison with the IME shall examine the records of required reactive work for the Point system. This can include but is not limited to:

- a) voiding of switch tips.
- b) dynamic gauge widening.

Liaison with the S&TME or PAE shall be undertaken for signalling records of corrective items that can support or add to the detail of Track issues on the point system.

These records can come from (but are not limited to):

- a) Fault Management System (FMS).
- b) Ellipse Work Arising.
- c) NR/SMS Record Cards.
- d) Patrolling Records.

If there has been repeated reactive work for Track issues (repeated is defined as more than two instances of reactive work in the last two years) the root or fundamental cause for these failures shall be investigated and rectified or the risk mitigated. If this is not undertaken or the risk cannot be mitigated FPL testing at a frequency of 0028 days shall be required in this instance.

Excess voiding or poor track geometry (as detailed in NR/L2/TRK/001) leads to vibration and premature wear of signalling components which causes the FPL to require adjustment. This is more likely to be an issue on high speed and/or high traffic lines.

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14.6 Dynamic Gauge Widening

If timber bearers are used in the point system, the TME and the S&TME shall check (by direct observation in a site visit or detail from their relevant SM(T) and SM(S)) the following:

- a) the track gauge is stable.
- b) the point machine (if used as the actuator) is secure and stable.

NOTE: *The risk of gauge spread or point machine shuffle is greatest for switches on timber bearers in poor condition.*

If concrete bearers are used in the point system, the TME and the STME shall check (by direct observation in a site visit or detail from their relevant SM(T) and SM(S)) the track gauge is stable

NOTE: *All components used to fasten the rail to the bearer should be in place and in good condition to maintain the gauge.*

If the conditions for timber or concrete bearers are not met FPL testing at a frequency of 0028 days shall be introduced.

If these conditions are met, along with the requirements in; Points System within scope, other reasons for signalling visits, repeated adjustments or failures and FPL Adjustments then FPL testing at a frequency of 0091 days can be introduced.

14.7 Continuation of Process

The IME in liaison with the TME, STME, and SM(S) shall be responsible for starting implementation at this stage of the process for new applications or following the management process for existing assets.

A record of the selection shall be made. The following information on this selection or change to the original selection shall include the following as a minimum:

- a) Point identification and location.
- b) Original frequency (use Ellipse terminology, e.g. 0091 days).
- c) Reason for original frequency (only required when the frequency is changed from the original selection by this process).
- d) As appropriate, change which has taken place or reason for no change.
- e) Proposed frequency (use Ellipse terminology, e.g. 0091 days).
- f) Proposer (Name / Post / Date).
- g) Authorised (Name / Post / Date).

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15 Implementation Process

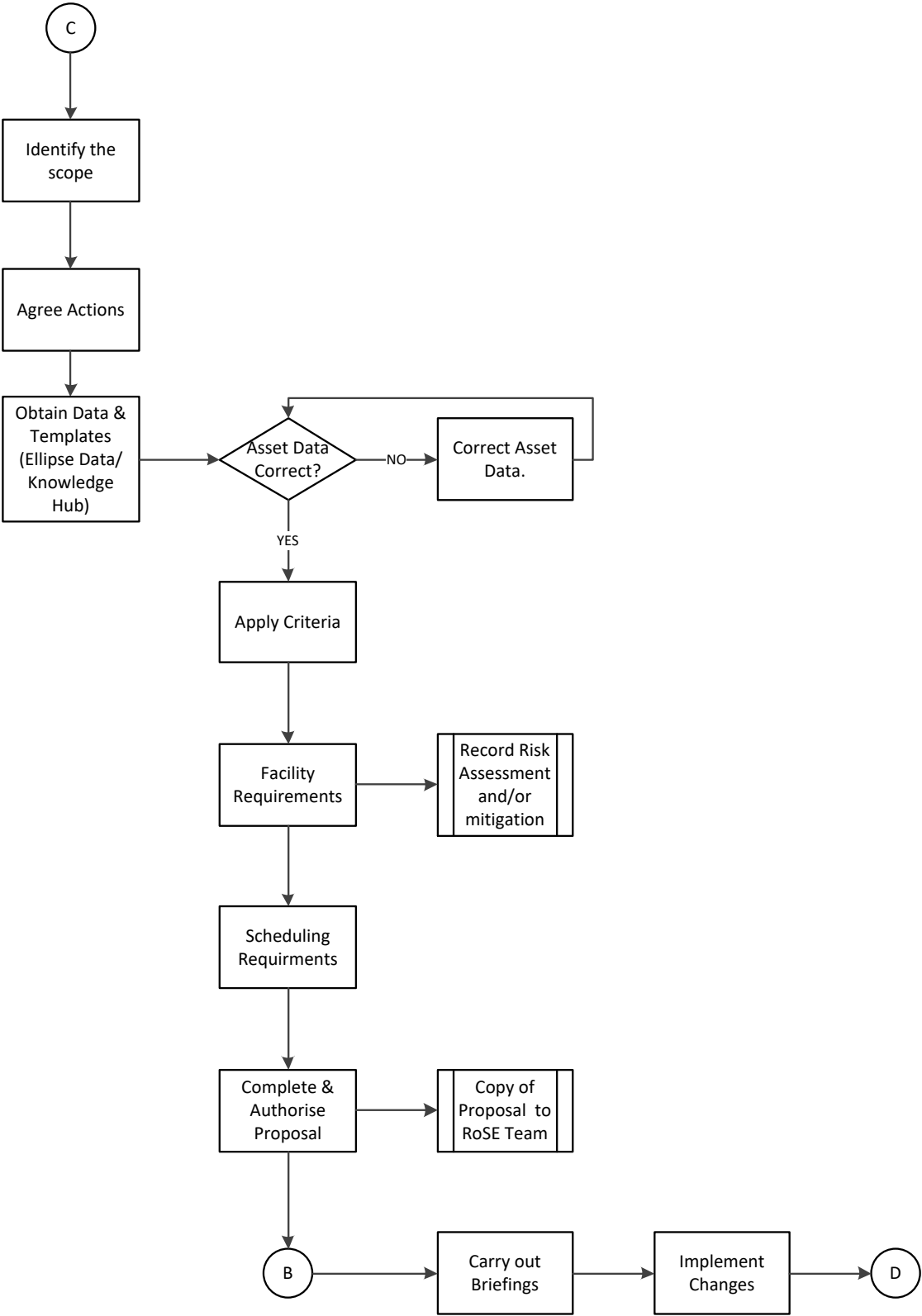


Figure 3 – Implementation Process Flow Chart

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15.1 Identify Scope

The IME in liaison with the STME and the RBM Route Champion shall identify the following:

- a) the scope of the implementation.
- b) the target implementation date.

From this information the IME and S&TME shall produce an implementation plan.

15.2 Agree Actions

The IME, S&TME and LRC shall jointly agree on actions required to implement the process.

15.3 Obtain Data

The STME shall request the Systems Support Manager (SSM) to obtain the relevant point system asset information from Ellipse.

The SSM shall supply the STME with the Ellipse data.

The STME shall verify that the asset list is correct, (correct point system type at correct location). If any errors are found the SSM shall be informed. The SSM shall be responsible for the correction of this information in Ellipse and re-supplying the corrected information. This shall take place prior to the implementation.

15.4 Apply Criteria

The IME in liaison with the STME, TME, SM(S), SM(T), and the LRC shall apply the selection criteria obtained in section 1.1 to each point end included in this process. This information shall be recorded on a suitable medium. The Route Engineer [Signalling], Principal Route Engineer [Signalling] or equivalent. shall be informed of the results.

15.5 Facility Requirements

The IME shall take into account the following requirements as part of the implementation process:

- a) changes from current practices.
- b) impact on any agreed Temporary Non-Compliances or Derogations within Tracker
- c) any local issues or requirements
- d) any briefing or training needs.

The IME shall conduct a risk assessment if any of these issues impact on the process. The issue shall be resolved, or the risk mitigated before the implementation continues. These issues shall be recorded.

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15.6 Scheduling Requirements

The IME in liaison with the STME, TME, and Infrastructure Maintenance Services Manager (IMSM) shall work in the new FPL testing frequencies with the existing or planned scheduling.

NOTE: This can require rationalising of testing frequencies where necessary to make the best use of team availability and track access.

Under no circumstances shall a frequency of FPL testing decided by the selection process be decreased because of team availability or track access.

15.7 Complete and Authorise Proposal

When the implementation proposal is complete the IME shall obtain bulk agreement and sign-off from the following:

- a) STME.
- b) TME.
- c) Route Engineer (Signalling), Principal Route Engineer (Signalling) or equivalent.
- d) Route Engineer (Track), Principal Route Engineer (Track) or equivalent.

The IME shall send a copy of the completed and signed proposal to the RBM Program team.

15.8 Ellipse Amendments

Amendments required to Ellipse shall be implemented as detailed in section 16.

15.9 Briefing

A full briefing to all staff involved with the delivery of this process shall be undertaken before implementation.

The Route Engineer (Signalling), Principal Route Engineer (Signalling) or equivalent shall be responsible for instigating and delivering the brief.

The RBM Program team shall be responsible for supplying the briefing material.

The following staff shall receive a brief:

- a) IME.
- b) Route Engineer (Track), Principal Route Engineer (Track) or equivalent.
- c) TME.
- d) S&TME.
- e) SM(S).
- f) SM(T).
- g) Maintenance delivery staff (Signals and Track).

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15.10 Implement Changes

When all the requirements of the implementation process have been completed testing of the FPL shall be undertaken to the results of the selection process.

16 Management Process Flow Chart

Ongoing monitoring shall be undertaken using the management process in Figure 3.

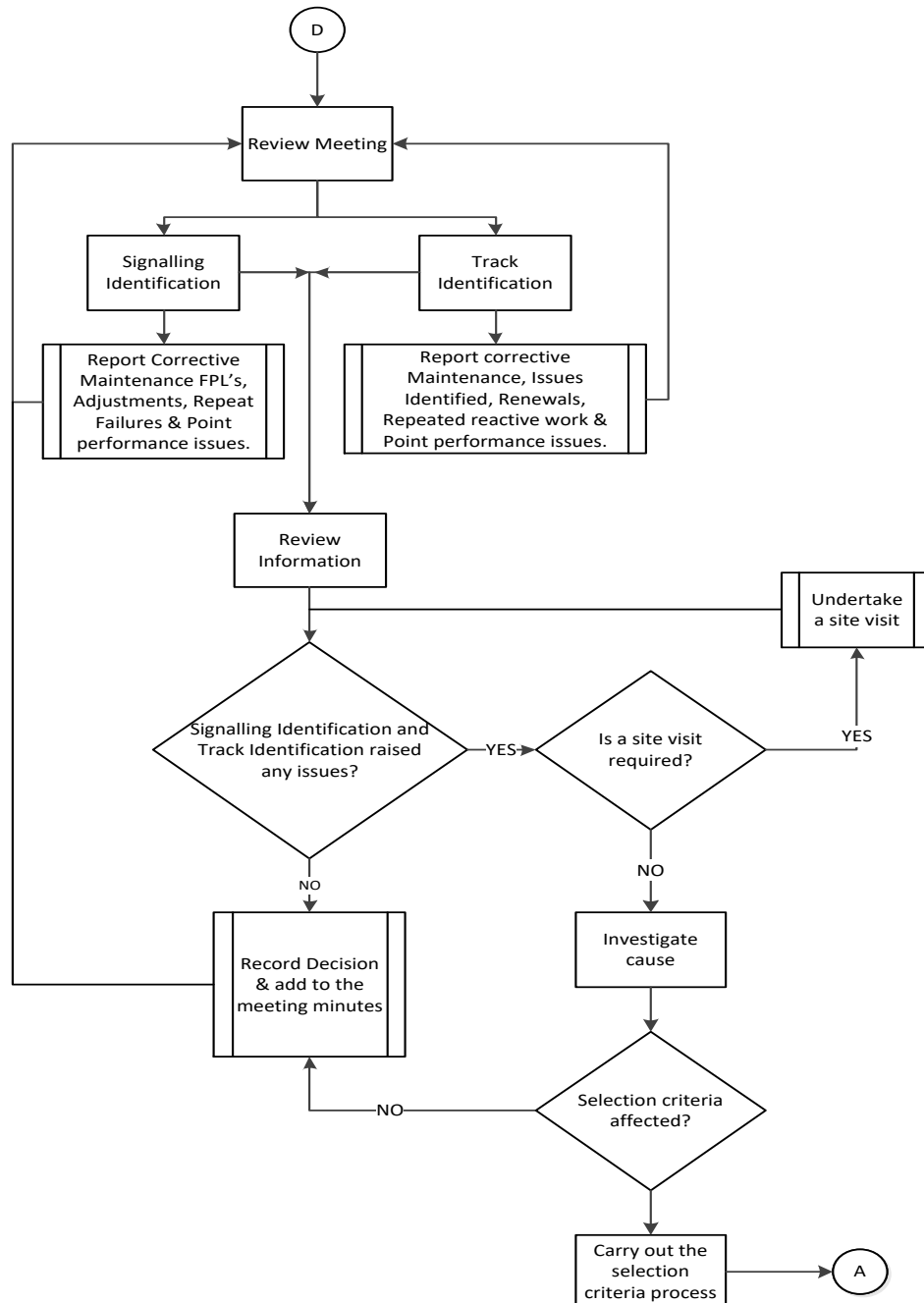


Figure 4 – Management Process Flow Chart

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16.1 Review Meetings

The IME shall undertake a review meeting with the S&TME and TME of the implemented FPL process at least once per maintenance quarter.

All reviews, decisions, or planned actions associated with this FPL process shall be recorded as meeting minutes.

NOTE: *This meeting can be a part of an existing meeting or a new separate meeting.*

16.2 Signalling Identification

The SM(S) shall identify all point ends that have had FPL adjustments, corrective maintenance undertaken, or have had repeat failures on them since the last completed scheduled maintenance visit. This information shall be given in advance of the review meetings.

All corrective or renewal items undertaken on point systems shall be recorded in Ellipse (this is an important part of this process) as work arising on appropriate Work Arising Identification Forms (WAIF) and the task undertaken to a suitable standard Job.

16.3 Track Identification

The SM(T) shall identify all point ends that have had corrective maintenance of any type undertaken on them, any issues identified (e.g. gauge change), any renewals, or repeated reactive work since the last completed scheduled inspection. This information shall be given in advance of the review meetings.

All corrective or renewal items undertaken on point systems shall be recorded in Ellipse (this is an important part of this process) as work arising on appropriate Work Arising Identification Forms (WAIF) and the task undertaken to a suitable standard Job.

16.4 Review Information

The PAE shall monitor the performance of the point system(s) within this process. Feedback to the IME shall be given in advance of the review meetings.

If none of the occurrences listed 15.2 and/or 15.3 have taken place and there are no point system performance issues, no change to the established procedure is required. This decision shall be recorded as detailed in 15.1

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If any of the occurrences in 15.2 or 15.3 have taken place, the SM(S) and the SM(T) shall in liaison with the S&TME and the TME review the corrective maintenance/renewals and adjustments undertaken. This information can come from (but not limited to):

- a) FMS (corrective maintenance undertaken as part of failure rectification).
- b) Ellipse (work arising requirements from preventative or corrective maintenance actions).
- c) NR/SMS FPL record cards.

This shall include a site visit to the affected point end(s) if the information obtained does not supply enough detail.

16.5 Investigate Cause

The S&TME and TME in liaison with the IME shall investigate the underlying or root cause of the criteria change in 15.2 and/or 15.3 on the point end.

Any corrective actions shall be recorded on a WAIF

If this investigation does not affect any of the selection criteria in section 13 then this decision shall be suitably recorded.

NOTE: *If this investigation is part of the review meeting the decision should be recorded as in 15.2*

If the investigation does affect the selection criteria in section 13 and the implied risk introduced by the change in criteria cannot be mitigated, proceed to section 15.6.

16.6 Selection Criteria

If the investigation undertaken in 15.5 has affected any aspect of the selection criteria the complete selection criteria process in section 13 shall be undertaken on the point end.

The selection criteria shall be undertaken within 14 days and the revised frequencies implemented within 28 days.

NOTE: *Re-running the selection criteria can increase or decrease the existing frequency for FPL testing.*

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17 Ellipse Changes Procedure

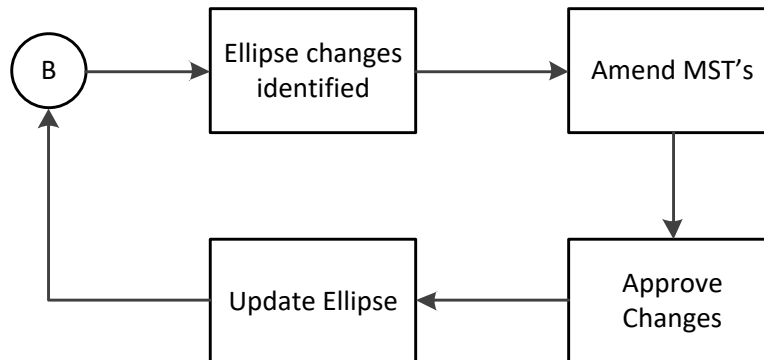


Figure 5 – Ellipse Amendment Flow Chart

17.1 Ellipse Changes Identified

The IME in liaison with the S&TME and TME shall inform the SSM of any changes required to the frequency of FPL MSTs.

This information shall correctly identify the point end(s) affected by this process.

17.2 Amend Ellipse

Ellipse data shall be amended by the using standard Ellipse processes

17.3 Update Ellipse

The National Specialist Team - Systems & Data shall amend the Ellipse information on the point end(s) to the requirements of the RoSE FPL process supplied by the SSM.

18 Bullhead Rail Application Criteria

The frequency of facing point lock tests for points with Bullhead rail switches shall be as set out in table 2.

POE	Line speed		
	< or =20mph	20mph> to 40mph	Over 40mph
Point Machine	13 Weeks	6 Weeks to 13 Weeks	6 Weeks
Pre-requisites		Metric Fastenings/ Hard lock nuts, Switches square within 15mm	

Table 2 – Bullhead FPL Matrix

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Line speed			
POE	< or =20mph	20mph> to 40mph	Over 40mph
Clamp Lock	13 Weeks	13 Weeks	13 Weeks
Pre-requisites	<p>POE secure to bearers</p> <p>Correct Stretcher bars installed and secure</p> <p>Anchor bar, chair bolts spacer blocks fitted and tight.</p> <p>Chairs secure to timber all coach screws tight</p> <p>Correct switch openings Ref SMS and supplementary drive is set up</p> <p>Confirm machine is not overdriving</p>	<p>Previous +</p> <p>Correct sole plate fitted with chair stops and extension with point machines</p> <p>Geometry / voiding within criterion#</p> <p>Timbers sound/holding gauge/fastenings tight</p> <p>Consistent and even contact between stock and switch (500mm from toe)</p>	<p>Previous + METRIC Fastenings/ lock nuts</p> <p>Switches square within 15mm</p>

Table 3 – Bullhead FPL Matrix 2

END

Standard and control document briefing note

Ref: NR/L3/SIG/10665		Issue: 24	
Title: Reliability Centred Maintenance of Signalling Equipment			
Publication date: 07 June 2025		Compliance Date: 06 September 2025	
Standard/Control Document Owner: Network Technical Head Signalling			
Standard change lead/contact for briefings: Jude Parsons		Tel: 07801841260	
Purpose: This document contains the prerequisites, allowing Reliability-Centred Maintenance to be implemented on signalling equipment as an alternative to the default maintenance regime.		Scope: This document covers the conditions required to allow the transition from the default maintenance regime to a Reliability-Centred Maintenance regime for signalling equipment. This document applies to: <ul style="list-style-type: none"> a) Section Managers (Signals). b) Signal and Telecoms Maintenance Engineers. c) Route Engineer [Signalling], Principal Route Engineer [Signalling] or equivalent. 	
What's new, what's changed and why: New section 7.19 EBI Track 400 – Remotely Maintained to support the transition to RCM2 regime detailing the mandatory pre-requisites to be met.			
Detail of change			
<u>Module(s)/ Section(s)/ clause(s)</u>	<u>Summary of changes</u>		
7.19	New to detail pre-requisites for application of RCM2 regime for EBI Track 400 type Track Circuits, aligning with NR/SMS/Part C/TC17 Service C and NR/GI/R004, both of which are in publication for June.		
Affected documents			
<u>Reference</u>	<u>Issue</u>	<u>Impact</u>	<u>Document type</u>
NR/L3/SIG/10665	23	Superseded	Standard
Briefing requirements: <i>Briefings are given to those who have specific responsibilities within, or are directly affected by, this standard/control document.</i> <i>A copy of briefings may be available from the Standards & Controls site.</i> <i>Requirements to cascade briefings are described within any implementation plans.</i>			
Briefing (O-Overview/ D-Detailed)	Post	Function	Responsible for cascade briefing? Y/N
O	Chief Control, Comm & Signalling Engineer	Technical Authority	N
O	Network Technical Head Switches & Crossings	Technical Authority	N
O	Head of System Authority	Technical Authority	N
D	Regional Engineer [Signalling & Telecoms]	Regions (Eastern)	Y
D	Regional Asset Manager [Signalling]	Regions (Scotland)	Y
D	Regional Engineer [Signalling & Telecoms]	Regions (NW & C)	Y
D	Regional Engineer [CCS]	Regions (Western & Wales)	Y
D	Regional Engineer [Signalling & Telecoms]	Regions (Southern)	Y
O	Senior Programme Manager (F-CCS)	Technical Authority	N
Briefing (O-Overview/ D-Detailed)	Role	Function	Responsible for cascade briefing? Y/N
O	CCS Engineer	Technical Authority	N
O	S&C Engineer	Technical Authority	N
O	Asset Engineer	Regions	N
O	SINCS Engineer	Regions	N

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D	Signal & Telecoms Maintenance Engineer	Regions (Maintenance)	Y
D	Section Manager (Signals)	Regions (Maintenance)	Y
D	Signalling Technical Support Staff	Regions (Maintenance)	N
O	S&T Maintenance Test Engineer	Regions (Maintenance)	N
O	Works Delivery Manager (Signals)	Regions (Works Delivery)	N
O	Works Delivery Supervisor (Signals)	Regions (Works Delivery)	N
O	Technician	Regions (Works Delivery)	N
O	Operative	Regions (Works Delivery)	N

NOTE: Contractors are responsible for arranging and undertaking their own Detailed and Overview Briefings in accordance with their own processes and procedures.