

4. Policy Statements

The following policy statements apply to the track assets. They are differentiated by four route criticality quadrants (quadrants 1a, 1b, 2a & 2b), superseding the differentiation by three route types (primary, secondary, rural & freight only) that was used in the previous version of the policy.

Figure 1 Policy Statements for Track Assets					
No	Activity	Quadrant 1a High Cost of Incidents High Frequency	Quadrant 1b High Cost of Incidents Low Frequency	Quadrant 2a Low Cost of Incidents High Frequency	Quadrant 2b Low Cost of Incidents Low Frequency
Policy Statements for Track Systems					
General					
1	Route Asset Management Plan	Route asset management plans shall be developed for the track on each SRS. The plans shall specify the maintenance and renewal required to enable the track assets to meet the output targets for each SRS. The plans will take account of: <ul style="list-style-type: none"> the business criticality of the SRS, as determined by the route quadrant the current performance of the track assets measured against the output targets for the SRS and/or route the impact of key junctions on the SRS the sustainability of the track assets in future Control Periods (i.e. performance, work volumes and costs that are deliverable and affordable in the available track access) 			
2	Route Asset Management Plan	Route asset management plans shall specify a mix of routine maintenance, refurbishment and renewal designed to deliver the best overall means of meeting the output targets for the track on each SRS, sustainably and within the available funding. The plans shall specify at least 5-year programmes of work, with increasing detail closer to the delivery date. Where possible they shall be designed to deliver minimum whole life cost of the track assets Note: plans should preferably be developed using a diagrammatic display of each route, showing details such as track construction type, track geometry history, work history, etc. Route-specific considerations such as the existing track components, underlying geology, availability of track access etc. will affect the mix of routine maintenance, refurbishment and renewal on each SRS. For example, refurbishment options may be economic on some SRSs but not on others			
3	Safety Outputs	Route asset management plans shall be designed to limit the number of serious defects or failures of the track system that cause risk of derailment or fatality to ALARP, dependent on the nature of the assets and the traffic on each route			
4	Performance	Route asset management	Route asset management	Route asset management plans shall	Route asset management

	Outputs	<p>plans shall be designed to improve existing performance by reducing and minimising the number of defects or failures of the track system that cause delays to trains. In particular:</p> <ul style="list-style-type: none"> • there shall be no broken rails from detectable defects • there shall be no condition of track speed restrictions imposed for longer than 48 hours • speed restrictions due to rail defects shall be minimised • there shall be no immediate action geometry exceedences 	<p>plans shall be designed sustain existing performance by preventing an increase in the number of defects or failures of the track system that cause delays to trains. In particular:</p> <ul style="list-style-type: none"> • there shall be no broken rails from detectable defects • there shall be no condition of track speed restrictions imposed for longer than 48 hours • speed restrictions due to rail defects shall be minimised • there shall be no immediate action geometry exceedences 	<p>be designed to either improve or sustain existing performance by reducing or preventing an increase in the number of defects or failures of the track system that cause delays to trains, depending on the degree of business risk on the route, All condition of track speed restrictions shall be rectified</p>	<p>plans shall be designed to either sustain or relax existing performance by preventing or allowing a controlled increase in the number of defects or failures of the track system that cause delays to trains, depending on the degree of business risk on the route. Condition of track speed restrictions shall be rectified if they cause unacceptable delays to trains</p>
5		<p>Route asset management plans shall be renewals led. They shall focus on achieving modern track construction. They shall include the maintenance and refurbishment required to achieve the desired track service lives</p>		<p>Route asset management plans shall include an appropriate balance of maintenance, refurbishment and renewal, depending on the degree of business risk on the route</p>	<p>Route asset management plans shall be maintenance and refurbishment led. They shall focus on sustaining existing track construction. They shall include the minimum quantity of renewal required to sustain the existing capability of each SRS</p>
6	Construction Improvements	<p>The performance and service life of track shall be progressively improved at renewal by the following actions:</p> <ul style="list-style-type: none"> • the elimination of fishplated rail joints by: <ul style="list-style-type: none"> • replacement of jointed rails with CWR • replacement of jointed and tight joint plated S&C with fully welded S&C 			

		<ul style="list-style-type: none"> • replacement of jointed track circuits and IBJs with jointless train detection systems in conjunction with resignalling schemes • the replacement of defect-prone rails made from ingots (generally manufactured up to 1976) with rails made by continuous casting • the elimination of older, weaker rail welds with shorter fatigue lives (such as old composite and SMW) by re-railing and targeted replacement • reduction in the number of welds in CWR by the use of new rail manufactured in longer lengths with fewer intermediate flash-butt welds • the replacement of timber sleepers and bearers with contemporary concrete designs <p>Refurbishment may be used to achieve similar outcomes, where justified by a route-specific business case</p>
7	Track Position: Clearances	<p>Route asset management plans will include improved management of track position, to enable:</p> <ul style="list-style-type: none"> • better control of gauge capability and through alignment • optimisation of gauge clearances between trains, other trains and structures <p>The gauge capability aspirations set out in the Freight RUS shall be achieved at renewal where there is a business case. Further guidance is given in policy statements 16, 17 & 20</p>
Inspection		
8	Inspection Regime	Track shall be inspected at regular intervals, dependent on its construction and the equivalent annual tonnage of traffic carried. The regime shall include visual inspection, track geometry recording and ultrasonic inspection of the rails. Specific complex components shall receive additional special inspections
Maintenance		
9	Preventive Maintenance	The service life of the track system may be limited by rail surface damage, dipped joints or welds, sleeper soffit wear, voiding, attrition, or ballast contamination from fines, spillage, blocked drainage or formation failure, singly or in combination. Route asset management plans shall comprise appropriate volumes of rail lubrication, train based grinding, rail defect repair and replacement, geometry maintenance, drainage maintenance and replacement of rail pads and insulators, prioritised by route quadrant, to deliver the desired service life of the track system
Refurbishment		
10	Refurbishment	<p>Refurbishment may be considered at any point during the life cycle of the track, where it offers an effective whole life cost solution to one or more of the following:</p> <ul style="list-style-type: none"> • achieve the desired service life of the track system, or • extend the service life of the track system, or • reduce the volume or cost of maintenance to the track system, or • improve the performance of the track system <p>Note: this will require a proportion of funding previously allocated to complete renewal to be allocated to refurbishment (including single component replacement) in future. A Refurbishment Handbook will be produced to give advice on the range of treatments available</p>

Renewal				
11		The target volume of renewal to be included in the route asset management plan for each SRS shall be determined by modelling. The modelling rules shall be designed to produce volumes that support achievement of the policy objectives. A process shall be put in place to manage proposals to deviate from the modelled volume on an SRS within the overall volume for the network, where the Route Asset Manager determines that it is significantly lower or higher than required to meet the business outputs		
12	Refurbishment or Renewal	<p>Track shall be considered for renewal:</p> <ul style="list-style-type: none"> when it reaches its planned service life (in terms of cumulative equivalent tonnage), or where its maintenance cost is disproportionate when compared to the 'norm' for the SRS (plain line or S&C as appropriate) <p>Refurbishment shall be considered instead of renewal where:</p> <ul style="list-style-type: none"> the overall NPV of refurbishment now together with renewal in future is lower than the NPV of renewal now, and the output targets for the track can still be met sustainably, or refurbishment would create the potential for longer stretches of track to be renewed more economically in future years <p>Note: on some SRSs, historic refurbishment or changes to traffic can have a significant impact on the estimation of cumulative equivalent tonnage and judgement is required</p> <p>Note: track shall be considered for renewal up to 5 years before achievement of its planned service life where this would create the potential for longer stretches of track to be renewed more economically</p> <p>Note: track shall not be considered for renewal solely on the grounds that stoneblowing is being used to maintain track geometry</p>	<p>Track shall be considered for renewal where:</p> <ul style="list-style-type: none"> refurbishment has been applied previously, and the cost of maintenance is disproportionate when compared to the 'norm' for the SRS (plain line or S&C as appropriate) <p>Note: the Delivery Unit shall produce evidence that demonstrates to the Route Asset Manager that the cost of maintenance is disproportionate</p> <p>Refurbishment shall be considered instead of renewal where:</p> <ul style="list-style-type: none"> the overall NPV of refurbishment now together with renewal in future is lower than the NPV of renewal now, and the output targets for the track can still be met sustainably, or refurbishment would create the potential for longer stretches of track to be renewed more economically in future years 	<p>Track shall only be considered for renewal where refurbishment:</p> <ul style="list-style-type: none"> cannot keep the track operational, or would have a higher NPV than renewal <p>Track shall be considered for refurbishment where:</p> <ul style="list-style-type: none"> the cost of maintenance is disproportionate when compared to the 'norm' for the SRS (plain line or S&C as appropriate), or the existing construction can be sustained by the programmed replacement of individual components <p>Route asset management plans shall include the minimum quantity of renewal required to sustain the existing capability of each SRS. All renewal work on track that carries less than 3EMGTPA requires approval of an investment paper by IRG</p>

13	Formation Treatment	<p>Track renewals shall include formation treatment, where required to achieve the desired service life, maintenance cost or performance of the track system. All formation treatment requires validation by TBI, together with track geometry and maintenance records. The length of formation treatment shall not exceed the length proposed in the TBI</p> <p>Note: 50mm depth of ballast (additional to the minimum depth required by the track construction standard) shall be specified and installed to protect newly installed formation treatments from damage by future renewals</p> <p>Note: particular care shall be taken to avoid unintentional removal of existing formation treatments when specifying ballast cleaning or replacement</p>	<p>Formation treatment shall not be installed unless it is the only feasible option to keep the track operational. All formation treatment requires approval by IRG, based on validation by TBI, together with track geometry and maintenance records</p>
14	Drainage: Refurbishment or Renewal	<p>Drainage shall be refurbished, renewed or installed, either stand alone or in conjunction with other track renewal works, where required to:</p> <ul style="list-style-type: none"> • achieve the desired service life of the track system, or • extend the service life of the track system, or • reduce the volume or cost of maintenance to the track system, or • improve the performance of the track system <p>Existing drainage shall be refurbished where practicable. Drainage shall be considered for renewal where more than 60 metres:</p> <ul style="list-style-type: none"> • has failed, or • requires regrading or reprofiling, or • has non-functional or contaminated lining or filter medium <p>The specified work, in conjunction with appropriate maintenance, shall enable the whole drainage system to function correctly through to the outfall.</p> <p>All drainage renewal work requires validation by:</p> <ul style="list-style-type: none"> • drainage maintenance records that include the results of proving and clearance from both ends • drainage inspection results • track geometry quality and maintenance records <p>Note: maintenance includes all proving and clearance of drainage by rodding and jetting. The need for regular clearance of a drain does not of itself justify renewal</p> <p>Note: CCTV inspection is not mandatory, but it provides the best evidence of the internal condition of a drain</p> <p>Note: see Appendix A for drainage specification guidelines</p>	

15	Timing of Formation or Drainage Renewal	The timing of formation treatment installation or drainage renewal at a site shall be considered, relative to associated complete renewal, to identify the best value option (i.e. before, during or after the renewal), particularly on routes targeted for High Output delivery		
16	Clearance Specification for Complete Renewal	<p>The installed position of renewed track relative to structures and adjacent tracks shall enable the published gauge capability of the route to be maintained throughout the service life of the track. In particular, the clearance through structures shall be reset if necessary to allow for future maintenance</p> <p>Note: teams involved in the design and planning of plain line or S&C renewal through structures should consult the following people to determine whether there is a case to consider incremental freight gauge enhancement:</p> <ul style="list-style-type: none"> • Principal Route Planner • Gauging Engineer • Senior Route Freight Manager <p>Any proposal to add an enhancement to a renewals work item will normally be managed and funding provided (if required) via the Route Enhancement Manager</p>		
17	Clearance Specification for Complete Renewal	Standard clearance shall be provided through structures at renewal (in particular, a minimum of 100mm clearance to kinematic envelope shall be provided beneath overline structures). Proposals to retain or install Reduced or Special Reduced clearances require prior justification and approval		
Interfaces				
18	Resignalling and Enhancement Schemes	<p>Route asset management plans shall be integrated with future planned resignalling and enhancement schemes to:</p> <ul style="list-style-type: none"> • reduce the cost of renewals • abandon surplus track infrastructure • move S&C from curves onto straights • reconfigure slips and switch diamonds • improve performance, capability or capacity <p>This may require track to be renewed either earlier or later than achievement of its planned service life</p>		
19	Incremental Enhancement	The opportunity to incorporate incremental enhancements to improve performance, capability and capacity shall be considered at renewal		
20	Track Position: Geometry	Managed track position shall be installed and maintained at all fixed points, transitions, regular curves and S&C on the East Coast and Western main lines. ATG shall be used to support EPS operation on the West	When track is renewed, designed alignments shall be	

		Coast main line. Other routes shall be as for quadrant 2b	installed and referenced at all fixed points, transitions, regular curves and S&C
Policy Statements for Plain Line Systems			
Inspection			
21	Inspection Methods	Track inspection shall make maximum use of train borne and remote methods	Track inspection shall use an appropriate mix of train borne, remote and manual methods
Maintenance			
22	Intervention Level and Immediate Action Defects	Track maintenance shall be planned to: <ul style="list-style-type: none"> • rectify defects before intervention levels are reached • minimise the number of immediate action defects 	Track maintenance shall be planned to: <ul style="list-style-type: none"> • rectify defects when intervention levels are reached • reduce the number of immediate action defects
Renewal			
23	Renewal Categories	<p>The following renewal categories may be specified:</p> <ul style="list-style-type: none"> • complete renewal of rails, sleepers and ballast (cats 4, 10, 14, 16, 23, (20+24)) • renewal of rail only (cats 1 & 2) • ballast cleaning or renewal of ballast only by ABC (cats 5 & 20) <p>Specification of other categories of renewal work requires approval of an investment paper by IRG</p> <p>Note: renewal category 10 is redefined as renewal of rail and sleepers together with ballast cleaning or renewal of ballast irrespective of delivery method – the best value delivery method should be chosen. Ballast cleaners can deliver complete renewal of ballast at economic cost and their use should be positively discounted before excavators are considered</p> <p>Note: see policy statement 28 below for re-use of ballast</p> <p>Note: specific requirements for formation and drainage renewal are given in policy statements 13-15 above</p>	
24	Multiple Renewal	The use of multiple renewal categories within a specification shall be minimised to avoid uneconomic mobilisation of resources. Multiple categories may be justified where:	

	Categories within Specifications	<ul style="list-style-type: none"> a section of track within a site requires formation renewal structural factors within a specified renewal require 'non-volume' renewal category works (e.g. level crossings) a section of track within a high output site cannot be delivered with high output plant (e.g. underbridges) 					
25	Standardisation of Renewal Specifications	<p>Renewal shall be specified in lengths compatible with economic delivery using methods suited to the route and the track access arrangements. In particular:</p> <ul style="list-style-type: none"> complete renewal shall be specified in multiples of 108 metres (118 yards) the minimum length of complete renewal specified shall be 216 metres (236 yards), including the ramps at each end Note: the above requirements do not apply to renewal category 2 where jointed rail is specified <p>Specifications shall include the following standard approaches:</p> <ul style="list-style-type: none"> consistent rail and sleeper type throughout the length of the renewal Note: standardised approaches shall be developed for platforms, level crossings etc. within steel sleeper renewal sites consistent sleeper spacing and fastenings throughout the length of the renewal ballast ramps where new rail is being installed. Their length (in metres) shall be 1/6 of permissible speed (in mph) new EG47 3R sleepers where DC conductor rail systems are present Fastclip fastenings on all plain line renewals where new sleepers are specified, including on 3rd rail electrified routes 					
26	Construction Specification for Complete Renewal	<p>Typical construction specifications in each route quadrant are given below. Notwithstanding these examples, construction shall be specified in accordance with NR/SP/TRK/102 'Track Construction Standards'</p> <table border="1"> <tr> <td> <p>Renewal cats 10, 23, (20+24):</p> <ul style="list-style-type: none"> CEN60 rail G44, EG47 or EG47 3R concrete sleepers at 600mm centres 300mm depth of ballast 3.75 metre dig width (unless trial holes demonstrate that a wider dig is required to provide a clear drainage path to the cess or drainage system – this may require preparatory work for HOBC / ABC) 1 in 30 cross fall </td> <td> <p>Track categories 1 & 2 – as for quadrants 1a & 1b.</p> <p>Track categories 3 to 5 - renewal cats 10, 23, (20+24):</p> <ul style="list-style-type: none"> CEN56 rail G44, EG 47 or EG47 3R concrete sleepers at 650mm centres 200mm depth of ballast 3.75 metre dig width (unless trial holes demonstrate that a wider dig is required to provide a clear drainage path to the cess or </td> <td> <p>Track categories 1 & 2 - as for quadrant 2a.</p> <p>Track categories 3 to 5 - renewal cat 10:</p> <ul style="list-style-type: none"> cascaded or serviceable flat bottom rail serviceable concrete sleepers at 700mm centres 200mm depth of ballast 3.75 metre dig width </td> </tr> </table>			<p>Renewal cats 10, 23, (20+24):</p> <ul style="list-style-type: none"> CEN60 rail G44, EG47 or EG47 3R concrete sleepers at 600mm centres 300mm depth of ballast 3.75 metre dig width (unless trial holes demonstrate that a wider dig is required to provide a clear drainage path to the cess or drainage system – this may require preparatory work for HOBC / ABC) 1 in 30 cross fall 	<p>Track categories 1 & 2 – as for quadrants 1a & 1b.</p> <p>Track categories 3 to 5 - renewal cats 10, 23, (20+24):</p> <ul style="list-style-type: none"> CEN56 rail G44, EG 47 or EG47 3R concrete sleepers at 650mm centres 200mm depth of ballast 3.75 metre dig width (unless trial holes demonstrate that a wider dig is required to provide a clear drainage path to the cess or 	<p>Track categories 1 & 2 - as for quadrant 2a.</p> <p>Track categories 3 to 5 - renewal cat 10:</p> <ul style="list-style-type: none"> cascaded or serviceable flat bottom rail serviceable concrete sleepers at 700mm centres 200mm depth of ballast 3.75 metre dig width
<p>Renewal cats 10, 23, (20+24):</p> <ul style="list-style-type: none"> CEN60 rail G44, EG47 or EG47 3R concrete sleepers at 600mm centres 300mm depth of ballast 3.75 metre dig width (unless trial holes demonstrate that a wider dig is required to provide a clear drainage path to the cess or drainage system – this may require preparatory work for HOBC / ABC) 1 in 30 cross fall 	<p>Track categories 1 & 2 – as for quadrants 1a & 1b.</p> <p>Track categories 3 to 5 - renewal cats 10, 23, (20+24):</p> <ul style="list-style-type: none"> CEN56 rail G44, EG 47 or EG47 3R concrete sleepers at 650mm centres 200mm depth of ballast 3.75 metre dig width (unless trial holes demonstrate that a wider dig is required to provide a clear drainage path to the cess or 	<p>Track categories 1 & 2 - as for quadrant 2a.</p> <p>Track categories 3 to 5 - renewal cat 10:</p> <ul style="list-style-type: none"> cascaded or serviceable flat bottom rail serviceable concrete sleepers at 700mm centres 200mm depth of ballast 3.75 metre dig width 					

			<p>drainage system)</p> <ul style="list-style-type: none"> • 1 in 30 cross fall 	<ul style="list-style-type: none"> • 1 in 30 cross fall; or <p>Track categories 4 to 6 - renewal cat 4:</p> <ul style="list-style-type: none"> • cascaded or serviceable flat bottom rail • steel sleepers at 650mm centres • re-used ballast scarified to a depth of 150mm and width of 3.75 metres; or <p>Track categories 4 to 6 - renewal cat 16:</p> <ul style="list-style-type: none"> • cascaded or serviceable flat bottom rail • serviceable concrete sleepers at 700mm centres • re-used ballast scarified to a depth of 150mm and width of 3.75 metres <p>Selection will be on a site by site basis, depending on prevailing traffic, installation cost, availability of recovered materials and suitability for scarifying (ballast condition and clearances for lifting)</p>
27	Recovery of Materials	Rails and sleepers shall be recovered from renewals sites for re-use unless their condition is unsuitable. Rails may either be directly cascaded to low category tracks or certified as serviceable after refurbishment	Concrete bullhead sleepers, 98lb flatbottom rail etc. shall be recovered from renewals sites for re-use in refurbishment programmes unless their condition is unsuitable. The volume likely to be generated by the national track renewal programme shall be monitored and the programme adjusted if financially justified to generate sufficient volume	

28	Re-use of Materials	Cascaded or serviceable rails and sleepers shall not be specified for installation in renewals. Ballast may be cleaned where suitable and re-used as bottom ballast in situ	Cascaded or serviceable rails and sleepers shall be specified for installation in renewals in accordance with policy statement no.27 above. Ballast may be cleaned or scarified where suitable and re-used as bottom ballast in situ	
29	High Output	Optimum use shall be made of high output renewal methods. Route asset management plans shall move progressively towards cyclic renewal of sections of SRS Note: this will require a proportion of track to be renewed either earlier or later than achievement of its planned service life	Tactical use shall be made of high output renewal methods where appropriate	N/A
Policy Statements for Plain Line Rail				
Inspection				
30	Ultrasonic inspection	UTU compliant regimes shall be used for the ultrasonic inspection of rail in track categories 1A to 3. The balance of inspection shall be by UTU where practical, otherwise manual testing shall be used	Track categories 1 & 2: as for quadrants 1a & 1b. Track categories 3 to 6: UTU compliant regimes shall be considered for the ultrasonic inspection of rail in track category 3, depending on: <ul style="list-style-type: none"> • proportion of CWR/jointed track • age of rail • access for manual testing • deliverability of UTU programme nationally The balance of inspection shall be manual	
Note: current UTU resources enable 100% of category 1A, 1 & 2 track and approximately 75% of all category 3 track to be covered				
Maintenance				
31	Lubrication	All curves with radii below 1500 metres shall be lubricated using non contact remote mounted lubricators. Existing mechanical lubricators shall be replaced when the rail is renewed	All curves with radii below 800 metres shall be lubricated. Curves with radii between 1500 and 801 metres shall be lubricated if the rail life due to sidewear without lubrication is (or would be) less than 5 years. Installation of non contact remote mounted lubricators should be considered on multiple curves when the rail is renewed	Curves with radii below 800 metres shall be lubricated if the rail life due to sidewear without lubrication is (or would be) less than 5 years. Lubricators shall be installed on unlubricated curves when the rail is renewed
32	Lubrication	The adequacy of existing lubrication shall be reviewed following significant changes to the type of rolling stock or tonnage of traffic along a		

		route		
33	Grinding	<p>Rail shall be ground using train based grinders to restore the specified transverse and longitudinal rail head profile at regular intervals, dependent upon:</p> <ul style="list-style-type: none"> whether the track is straight or curved the passage of specified tonnages of traffic 	<p>Track categories 1 to 3: as for quadrants 1a & 1b.</p> <p>Track categories 4 to 6: train based grinding shall be considered where inspection identifies problems due to poor transverse or longitudinal rail head profile</p>	<p>Train based grinding shall be considered where inspection identifies problems due to poor transverse or longitudinal rail head profile</p>
34	Grinding	<p>Rail grinding shall be used to prevent the formation of RCF by control of the rail head profile. Grinding heavy or severe high rail RCF shall only be used as temporary mitigation. Rail that exhibits heavy or severe high rail RCF shall be planned for replacement</p>		
35	Welds	<p>Welds shall be straightened and ground and/or lifted and packed before intervention level dip angles are reached. Welds that repeatedly deteriorate to intervention level dip angle shall be considered for replacement or rerailing</p>	<p>Welds shall be straightened and ground and/or lifted and packed when intervention level dip angles are reached. Welds that deteriorate to immediate action level dip angle shall be replaced or rerailed</p>	<p>Welds shall be straightened and ground and/or lifted and packed when intervention level dip angles are reached</p>
36	IBJs	<p>IBJs and adjustment switches shall be tamped or lifted and packed before intervention level dip angles are reached</p>	<p>IBJs and adjustment switches shall be tamped or lifted and packed when intervention level dip angles are reached</p>	
37	IBJs	<p>IBJs shall be replaced after the passage of specified tonnages of traffic</p>	N/A	N/A
38	IBJs	<p>Irrespective of the tonnage that has been carried, IBJs shall be replaced:</p> <ul style="list-style-type: none"> if they repeatedly deteriorate to intervention level dip angle if they cause track circuit failure if the insulations show signs of failure <p>Shop manufactured glued IBJs shall be used. They shall be 6-hole unless precluded by curvature. Site made IBJs may only be used as a temporary measure and shall be replaced within specified timescales</p>		<p>IBJ insulations shall be replaced:</p> <ul style="list-style-type: none"> if they show signs of failure if the IBJ causes a track circuit failure <p>IBJs shall be replaced:</p> <ul style="list-style-type: none"> if they repeatedly deteriorate to intervention level dip angle if the insulations require

				to be replaced, but cannot be without replacing the whole joint Like for like replacements shall be used, unless the existing IBJ type is obsolete
Renewal				
39	Renewal Criteria	Rail shall be renewed if specified replacement criteria are met for: <ul style="list-style-type: none"> defect history (frequency of intervention) safety (heavy or severe RCF, risk of broken rail, etc) wear (sidewear, railhead profile grinding) 		
40	Renewal Criteria	All pre-1976 rail in track categories 1A & 1 shall be renewed by the end of CP4 and in track categories 2 & 3 by the end of CP5. Note: approx. 1200 and 1500 track km respectively	N/A	N/A
41	Renewal Criteria	Rail in wet tunnels and other aggressive environments shall be replaced at specified frequencies to suit the rate of rail corrosion at each site. Coated rail shall be specified for the replacement of rails due to corrosion at level crossings, where justified by a site-specific business case		
42	Material Specification for Renewal	Premium rail steel shall be specified for the replacement of rails due to sidewear or RCF, where justified by a site-specific business case		
Policy Statements for Plain Line Sleepers				
Maintenance				
43	Pads and Insulators	5mm pads and insulators shall be replaced after the passage of specified tonnages of traffic		
44	Pads and Insulators	Irrespective of the tonnage that has been carried, pads and insulators of all types shall be replaced: <ul style="list-style-type: none"> where inspection identifies local deterioration where pad condition is adversely affecting track circuit reliability when rails are replaced in conjunction with mid-life ballast cleaning (where the original pads are still in place) 		
45	Refurbishment		Concrete sleepers that have ineffective fastening systems but are	

			otherwise serviceable shall be considered for refurbishment in situ by replacement of the fastening systems e.g. by core drilling and installation of replacement systems with epoxy resin
Renewal			
46	Renewal Criteria	Timber sleepers and older concrete sleeper designs with 5mm pads shall be prioritised for replacement in renewal programmes	Timber sleepered jointed track shall be prioritised for replacement in renewal programmes
47	Cable Management	Cable installation or reinstatement shall enable every sleeper to be tampable	
Interfaces			
48	Longitudinal Timbers	Longitudinal timbers shall be progressively eliminated by replacement with ballasted track or other improved track support systems. Future track and structures renewals plans shall be reviewed to identify potential sites for improvement	N/A
49	Weak Embankments	Weak embankments that cause high rates of track settlement shall be identified and considered for strengthening in structures renewals plans	N/A
Policy Statements for Plain Line Ballast and Track Geometry			
Inspection			
50	Monitoring	Track geometry shall be monitored to enable: <ul style="list-style-type: none"> deterioration rates to be determined future track geometry maintenance requirements to be planned the specified track geometry targets to be met 	
Maintenance			
51	Maintenance Criteria	Track geometry shall be maintained at regular intervals dependent upon the deterioration rates along sections of route	Track geometry shall be maintained when target intervention limits are predicted to be met
52	Tamping, Stoneblowing and Manual Maintenance	The preferred method of track geometry maintenance is tamping. Stoneblowing may be used instead of tamping on older track, if ballast conditions are such that geometry targets cannot be met by tamping at economic intervals. Additional localised lifting and packing may be required to rectify geometry exceedences	As for quadrants 1a, 1b & 2a. If the rail, sleepers, fastenings or ballast on a section of jointed track are unsuitable for tamping or stoneblowing,

			geometry shall be maintained manually
Renewal			
52	Ballast Cleaning	<p>CWR track shall be considered for ballast cleaning if:</p> <ul style="list-style-type: none"> • track geometry cannot be sustained by stoneblowing • the rails and sleepers have at least 15 years' remaining service life • there is no significant formation failure <p>Track shall be restressed after ballast cleaning where required by risk assessment</p> <p>Note: typical sites would be suffering ballast contamination due to wash down in cuttings or spillage from wagons</p>	
53	Ballast Cleaning	<p>CWR track shall be considered for ballast cleaning at approximately half the service life of the track system, where required to enable:</p> <ul style="list-style-type: none"> • effective tamping at economic intervals • achievement of geometry targets • achievement of the desired service life of the track system <p>Track shall be restressed after ballast cleaning where required by risk assessment</p> <p>Ballast cleaning should also be considered for stoneblown track if the rail and sleepers have at least 15 years remaining service life</p>	N/A
Policy Statements for S&C Systems (plain line policies also apply to S&C unless modified below)			
Inspection			
54	Inspection Criteria	<p>S&C systems shall receive detailed inspection at regular intervals, so that the maintenance required to ensure their reliable and safe operation is identified and programmed. The following aspects shall be addressed:</p> <ul style="list-style-type: none"> • reliability – avoidance of point failures, track circuit failures or speed restrictions due to track condition • asset life – preventive maintenance to achieve the expected service life <p>safety – avoidance of derailment risk from worn, damaged, broken or incorrectly adjusted components</p>	
Maintenance			
55	Grinding	S&C shall be ground using train based grinders to restore the specified rail head profile at regular intervals, dependent upon	<p>Track categories 1 to 3: as for quadrants 1a & 1b.</p> <p>Track categories 3 to 6: N/A</p>

		the passage of specified tonnages of traffic. Crossing noses shall be ground manually	
56	RCF	S&C that exhibits heavy or severe RCF shall be planned for replacement. Grinding heavy or severe RCF shall only be used as temporary mitigation pending replacement of ironwork	
57	Switches	Switch blades and stock rails that exhibit lipping, ridges or other derailment hazards shall be manually ground using supported grinders before intervention limits are reached	Switch blades and stock rails that exhibit lipping, ridges or other derailment hazards shall be manually ground using supported grinders when intervention limits are reached
58	Switches	Wear to the top of switch blades within the planed length shall be weld repaired before intervention limits are reached	Wear to the top of switch blades within the planed length shall be weld repaired when intervention limits are reached
59	Crossings	Crossings shall be manually ground within a specified timescale after renewal, to remove lipping from around the nose and enable the expected service life of the crossing to be achieved	
60	Crossings	Crossings shall be weld repaired at regular intervals, before intervention level wear to the nose and/or wing rails is reached	Crossings shall be weld repaired when intervention level wear to the nose and/or wing rails is reached
61	Geometry Maintenance Criteria	Track geometry at S&C shall be maintained at regular intervals dependent upon the deterioration rates at each layout	N/A
62	Tamping, Stoneblowing and Manual Maintenance	The preferred method of S&C geometry maintenance is tamping. Every bearer shall be tamped (this may require manual resources). All S&C tamping shall be to a design scheme. Stoneblowing may be used instead of tamping on older S&C, if ballast conditions are such that geometry targets cannot be met by tamping at economic intervals. Additional localised lifting and packing may be required to rectify geometry exceedences	
63	Tamping and Manual Maintenance	Parallel tamping is required to achieve long lasting results on concrete bearer layouts	Manual methods may be used if this is more economic than tamping, due to the location or condition of the S&C (i.e. due to the cost of sending a tamper to a remote location, or the cost of component refurbishment and replacement to make the S&C fit for tamping)

64	Cable Management	Cable installation and reinstatement shall enable every bearer to be tampable	When S&C is renewed, cable installation or reinstatement shall enable every bearer to be tampable
Renewal			
65	Renewal Criteria	S&C shall be considered for complete renewal after the passage of specified tonnages of traffic	N/A
66	Renewal Criteria	<p>S&C shall be considered for complete renewal:</p> <ul style="list-style-type: none"> • if geometry targets cannot be met by maintenance at economic intervals • if points failures due to track condition cannot be prevented by maintenance at economic intervals • if the ironwork and/or bearers have no remaining service life (but if the condition of switches and/or crossings is the only renewal driver, only the switches and/or crossings shall be renewed) <p>S&C on timber bearers on high cant deficiency curves or of older inclined design shall be prioritised for replacement in renewal programmes</p>	<p>S&C shall be renewed if economic maintenance (including the repair and replacement of defective components) cannot prevent:</p> <ul style="list-style-type: none"> • the imposition of a TSR due to track geometry or component condition • unacceptable numbers of point failures due to track condition
67	Abandonment	The opportunity to abandon S&C shall always be considered as an alternative to renewal	
68	Partial Renewal or Refurbishment	<p>Partial renewal or refurbishment of S&C shall be considered as an alternative to complete renewal at planned service life where either</p> <ul style="list-style-type: none"> • the output targets for the S&C can still be met sustainably, or • partial renewal would create the potential for abandonment or complete renewal to be carried out in conjunction with planned resignalling or enhancement schemes in future years 	<p>The service life of S&C shall be extended as far as possible by the replacement of individual components. Partial renewal or refurbishment of S&C shall always be considered as an alternative to complete renewal. Route asset management plans shall include the minimum quantity of complete renewal of S&C required to sustain the existing capability of each SRS. Complete renewal of S&C that carries less than</p>

			3EMGTPA requires approval of an investment paper by IRG
69	Construction Specification for Complete Renewal	Switch lengths SG, G & H: NR60 S&C fully welded and stressed on concrete bearers and 300mm depth of ballast Switch lengths B to F: shallow depth vertical S&C fully welded and stressed on concrete bearers and 300mm depth of ballast	All switch lengths: shallow depth vertical S&C fully welded and stressed on concrete bearers and 300mm depth of ballast Note: the existing geometry and signalling footprint shall be retained unless there is no additional cost, or a funded enhancement, or a site-specific business case to change it
70	Point Operating Equipment (POE) for Modular S&C Renewal	Hydrive shall be specified for NR60 S&C renewals In bearer clamplock with mechanical backdrive shall be specified for vertical S&C renewals	
71	Mechanically Driven S&C	Mechanically driven S&C shall be prioritised for replacement in renewal programmes. Appropriate treatments for mechanically driven S&C that requires renewal are, in order of preference: <ul style="list-style-type: none"> • abandonment • motorisation and renewal 	Appropriate treatments for mechanically driven S&C that requires renewal are, in order of preference: <ul style="list-style-type: none"> • abandonment • motorisation and renewal in shallow depth vertical on concrete bearers • retention of mechanical operating mechanism and renewal in full depth vertical on hardwood bearers • retention of mechanical operating mechanism and renewal in bullhead on hardwood bearers Selection will be on a site by site basis, depending on operational requirements and practicability

72	Reballasting	S&C that is otherwise serviceable but that sits on poor ballast shall be considered for refurbishment by reballasting, preferably in situ e.g. by undercutting or vacuum extraction		
73	Switches and Crossings	When the condition of switch blades, stock rails or crossings is such that they have to be replaced, new half sets of switches or crossings shall be used. The preferred replacement types are weldable half sets and cast centre block crossings, to avoid or reduce bolted joints in the S&C. Bolted monoblock crossings may be used by exception or in lower speed station layouts. Serviceable half sets or crossings and semi-welded or fabricated crossings may only be used as a temporary measure and shall be replaced within specified timescales	As for quadrants 1a & 1b, except that for S&C in track categories 4 to 6:	
			<ul style="list-style-type: none"> new or serviceable replacement half sets of switches or crossings may be used semi-welded or fabricated crossings may be used as follows: <ul style="list-style-type: none"> to replace existing semi-welded or fabricated crossings like for like: on a permanent basis to replace existing cast crossings: only as a temporary measure 	
74	Material Specification for Renewal	Where justified by a site-specific business case: <ul style="list-style-type: none"> premium rail steel shall be specified for the replacement of half sets due to sidewear or RCF explosive depth hardened crossings shall be specified for the replacement of crossings due to wear or defects 		N/A
75	Crossings	Replacement crossings shall be installed with new check rails		
76	IBJs	IBJs in S&C shall be replaced after the passage of specified tonnages of traffic	N/A	N/A
77	IBJs	IBJs in S&C shall be replaced: <ul style="list-style-type: none"> if they repeatedly deteriorate to intervention level dip angle if they cause track circuit or points failure if the insulation shows signs of damage Shop manufactured glued IBJs shall be used if practicable. They shall be 6-hole unless precluded by curvature or geometry constraints. Site made IBJs not specified as such in the layout drawings may only be used as a temporary measure and shall be replaced within specified timescales		Track categories 1 & 2: as for quadrants 1a, 1b & 2a. Track categories 3 to 6: IBJ insulations in S&C shall be replaced: <ul style="list-style-type: none"> if they show signs of failure if the IBJ causes a track circuit or points failure IBJs in S&C shall be replaced: <ul style="list-style-type: none"> if they repeatedly

				<p>deteriorate to intervention level dip angle</p> <ul style="list-style-type: none"> • if the insulations require to be replaced, but cannot be without replacing the whole joint <p>Like for like replacements shall be used, unless the existing IBJ type is obsolete</p>
Policy Statements for Lineside Assets				
Drainage				
78	Inspection regime	Drainage shall be inspected no less than annually		
79	Maintenance	Track drainage pipes and/or catchpits shall be cleared at regular intervals to suit the monitored condition of the drainage	Track drainage pipes and/or catchpits shall be cleared where inspection identifies that water is not free flowing	Track drainage pipes and/or catchpits shall be cleared if: <ul style="list-style-type: none"> • inspection shows that water cannot flow away; or • flooding is causing unacceptable delays to trains or nuisance to neighbours
80	Maintenance	All existing open channels shall be cleared/reinstated in CP4 to permit the free flow of water through to the outfall and beyond		Crestline drainage at cuttings and toe drainage at embankments shall be cleared/reinstated in CP4 to permit the free flow of water through to the outfall and beyond
Boundary Measures				
81	Inspection regime	Boundary measures shall receive a tactile inspection every 12 to 36 months depending on track category and adjacent land use		

82	Inspection regime	At locations where route crime is evident, boundary inspections shall be inspected every 3 to 6 months	
83	Maintenance	Boundary measures shall be maintained to reduce the risk of trespass and animals incursion	
84	Maintenance	Boundaries shall be repaired following damage	
85	Maintenance	The reliability and longevity of boundaries shall be progressively improved by the cyclic re-tensioning of all fences with in-line straining devices at appropriate intervals	
Vegetation			
86	Inspection regime	Vegetation shall be inspected to assess risks to the operational railway, track worker safety and neighbours	
87	Inspection regime	Vegetation shall be surveyed every 5 years. The National Vegetation survey will be completed by 2011	
88	Maintenance	Risk mitigation timescales for dangerous trees shall be commensurate with the assessed risk	
89	Maintenance	Cut stumps shall be treated with herbicide to reduce undesirable regrowth. Cut stumps on steep cutting slopes shall be risk assessed and removed if necessary	
90	Maintenance	All woody vegetation shall be progressively cleared to 5 metres from the cess rail and maintained to prevent regrowth	Track categories 1 & 2: as for quadrants 1a, 1b & 2a. Track categories 3 to 6: all woody vegetation shall be progressively cleared to 3 metres from the cess rail and maintained prevent regrowth
91	Maintenance	Sites assessed as having a vegetation risk category 4 or 5 on any earthwork type shall have the vegetation within our boundary managed to reduce the risk to risk category 2 or below	
92	Maintenance	Sites in cuttings assessed as having a risk category 3 shall have the vegetation within our boundary managed to reduce the risk to risk category 2 or below	
93	Maintenance	Japanese Knotweed growing within the Network Rail boundary will be controlled	
94	Maintenance	Lineside vegetation (not captured above) shall be cleared, including the pruning or felling of trees, where: <ul style="list-style-type: none"> inspection or reports from staff/traincrew indicate that sight lines or the cess are obstructed there is a high risk of obstruction of the track or overhead line electrification there is an unacceptable risk to neighbours required to mitigate leaf fall risks (SPAD, wheelslip and loss of track circuit detection) 	

95	Maintenance	The track and cesses shall be maintained clear of all vegetation using train-based weedspraying no less than annually, supported where necessary by manual spraying/clearance at environmentally sensitive locations or locations where access by train is limited
96	Maintenance	Vegetation in the 3-5m area shall be managed on a cyclic regime utilising a combination of manual, mechanical and chemical measures within the defined maintenance regime
Level crossings		
97	Inspection regime	Level crossing surfaces shall be inspected at regular intervals, dependent upon crossing user and rail traffic volumes, to identify defects that pose potential risk to crossing users or trains
98	Maintenance	Level crossing surfaces shall be maintained to reduce the risk to users and to trains
99	Maintenance	Manufacturer-specified maintenance shall be carried out on A-road, skewed and high load crossings no less than annually
End stops		
100	Inspection regime	End stops shall be inspected every 6 months
101	Maintenance	End stops shall be maintained in effective working order
Lineside signs		
102	Inspection regime	Lineside signs shall be inspected during basic visual track inspections
103	Maintenance	Lineside signs shall be maintained in a legible condition
Access points		
104	Inspection regime	Access points shall be inspected no less than annually
105	Maintenance	Access points in regular use shall be maintained in a safe condition for users

Glossary

ABC	Automatic Ballast Cleaner
ALARP	As Low As Reasonably Practicable
ATG	Absolute Track Geometry
CCTV	Closed Circuit Television
CEN60	Flat bottom rail section, weight 60kg/metre
CEN56	Flat bottom rail section, weight 56kg/metre
CP	Control Period
CWR	Continuously Welded Rail
DC	Direct Current
EMGTPA	Equivalent Million Gross Tonnes Per Annum
EPS	Enhanced Permissible Speed

HOBC	High Output Ballast Cleaner
IBJ	Insulated Block Joint
IRG	Investment Review Group
NPV	Net Present Value
NR60	A type of S&C incorporating CEN60 rail
RCF	Rolling Contact Fatigue
RUS	Route Utilisation Strategy
S&C	Switches & Crossings
SMW	An older type of rail weld, no longer in use
SPAD	Signal Passed At Danger
SRS	Strategic Route Section
TBI	Track Bed Investigation
UTU	Ultrasonic Test Unit