

Safety and Systems (Track & Civil) Form

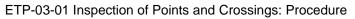
ETP-03-01 Inspection of Points and Crossings: Procedure

Form number: ETP0301F-07

TURNOUT DETAILED INSPECTION – Spring Wing

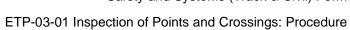
Location:	Turnout Number:	Equipment No.:	Kilometrage:
Inspector Name:	Date:	Work Order:	Track:

OVERVIEW INSPECTION T	hese tasks ap	ply generically to all po	ints and crossings assemblies		
ELEMENT	MEASURE	COMMENT	CONDITION		RESPONSE
Component Damage			Any component loose, missing or broken.	A6	Increase monitoring, prioritise repair
Track geometry, Pumping			5 – 20 mm	A6	Increase monitoring, prioritise repair
in Critical Areas			20 mm or more	A6	Increase monitoring, prioritise repair
			Visible deterioration	A6	Increase monitoring, prioritise repair
Track Geometry, Overall Condition			Single Measured defect	-	ETS-05-00 5.4 table 5-15
			Multiple measured defects	-	ETS-05-00 5.4 table 5-15
			1	A6	Increase monitoring, prioritise repair
Bearers and Fasteners, Ineffective in Critical Areas			2 consecutive	А3	40 km/h TSR until repaired
			> 2 consecutive	A1	10 km/h TSR until repaired
			< 20% loose clips, screws or spikes, timbers degraded	A6	Increase monitoring, prioritise repair
Bearers and Fasteners, Overall Condition			Pads and insulators skewed some fasteners missing 1 in 4 timbers deteriorating	A6	Increase monitoring, prioritise repair
			> 50% loose clips, screws or spikes, 1 in 3 timbers degraded missing fasteners	A6	Increase monitoring, prioritise repair
Ballast, condition and			Fines on surface. Ballast shoulder reduced.	A6	Increase monitoring, prioritise repair
profile			Trapped moisture, mud and track pumping. Ballast low, ends of multiple bearers visible.	A6	Increase monitoring, prioritise repair
			Ballast < 25 mm from moving parts. Ballast loose on sleepers.	A6	Increase monitoring, prioritise repair
Ballast, Excess			Ballast touching moving parts or ballast obstructing inspection of fasteners. Ballast fallen into trough.	A6	Increase monitoring, prioritise repair





OVERVIEW INSPECTION These tasks apply generically to all points and crossings assemblies						
ELEMENT	MEASURE	COMMENT	CONDITION		RESPONSE	
			Any of below			
			Misalignment at heel			
			Signs of rail movement			
Rail, Creep			Blade up out of square.	A6	Increase monitoring, prioritise repair	
			Greater than 15 mm clearance of moving drive locking and detection equipment from fixed parts.			
			Anti creep device not correctly positioned for current rail temp			
			Irregular contact band.	A6	Increase monitoring, prioritise repair	
Rail, Condition			Minor RCF, wheel burns or top / side wear. Evidence of bent rail.	A6	Increase monitoring, prioritise repair	
Kall, Condition			Severe RCF likely to interfere with Ultrasonic testing. Advanced wear. Corrugations. Other rail defects requiring a response.	A6	Increase monitoring, prioritise repair	
			35mm to 26 mm	A7	Routine scheduled inspection	
Rail, Remaining Head Height			24 to 26 mm and without defect per Section 1 Rail	A6	Increase monitoring, prioritise repair	
			Head height defect	-	Section 1 Rail	



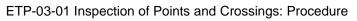


POINTS INSPECTION						
ELEMENT	MEASURE	COMMENT	CONDITION		RESPONSE ACTION	
	LEFT		85 mm to < 95 mm	A6	Increase monitoring, prioritise repair	
Switch Opening, actual	LEFI		80 mm to < 85 mm	A2	20 km/h TSR until repaired	
	RIGHT		< 80 mm	A1	10 km/h TSR until repaired	
			≥ 1456 mm	-	Assess as per ETS-05-00 Table 5-15	
			1445 mm to < 1456 mm	A6	Increase monitoring. Prioritise repair	
Track gauge (at the switch			1430 mm to < 1445 mm	A7	Routine scheduled inspection	
tip)			1427 mm to < 1430 mm	A4	60/65 km/h TSR until repaired	
			1425 mm to < 1427 mm	A2	20 km/h TSR until repaired	
			< 1425 mm	A1	10 km/h TSR until repaired	
Back of switch blade to	LEFT		1360 mm to < 1365 mm	A6	Increase monitoring. Prioritise repair	
opposite switch gauge	LEFI		1365 mm to < 1370 mm	A2	20 km/h TSR until repaired	
face at tip	RIGHT		≥ 1370 mm	A1	10 km/h TSR until repaired	
Dool of quitab blode to	LEFT		1370 mm to < 1380 mm	A6	Increase monitoring. Prioritise repair	
Back of switch blade to opposite switch blade at			1380 mm to < 1390 mm	А3	40 km/h TSR until repaired	
supplementary drive or stretcher, measurement	RIGHT		1390 mm to < 1400 mm	A2	20 km/h TSR until repaired	
Stretcher, measurement	RIGHT		> 1400 mm	A1	10 km/h TSR until repaired	
Throat Opening (Back of	LEFT		≥ 40 mm	A7	Routine scheduled inspection	
switch blade to stock rail at	LEFI		35 mm to < 40 mm	А3	40 km/h TSR until repaired	
the junction of heads)	RIGHT		< 35 mm	A1	10 km/h TSR until repaired	
	LEFT					
Switch blade and stock rail		-	1 mm or more flow	A6	Increase monitoring. Prioritise repair	
condition, metal flow	RIGHT		THILLOUTHOUGHOW	AU	increase monitoring. Phontise repair	



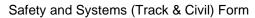
ETP-03-01 Inspection of Points and Crossings: Procedure

POINTS INSPECTION							
ELEMENT	MEASURE	COMMENT	CONDITION		RESPONSE ACTION		
Switch blade and stock rail condition, surface	LEFT		Visible damage, breakout of cracks, moderate to severe RCF and head checking	A6	Increase monitoring. Prioritise repair		
condition	RIGHT		service rec. and nead checking				
Switch Alignment	LEFT		Bends evident, possible previous repair. Gap to switch stops and/or gap switch blade to stock rail through (excepting toe) 5 -10 mm.	А3	40 km/h TSR until repaired		
	RIGHT		Bent, gaps greater 10 mm	A1	10 km/h TSR until repaired		
	LEFT		1 mm to 3 mm	A6	Increase monitoring. Prioritise repair		
Switch blade closed gap	LEFT		>3 mm	A1	10 km/h TSR until repaired		
	RIGHT		20 111111	ΛΙ	10 kili/il 1310 ulitil repailed		
	LEFT		3 mm to < 4 mm	A6	Increase monitoring. Prioritise repair		
Switch width at the tip, conventional only			> 4 mm to < 5 mm	А3	40 km/h TSR until repaired		
,	RIGHT		5 mm or more	A1	10 km/h TSR until repaired		
Switch height at the tip,	LEFT		> 10 mm to < 12 mm	A6	Increase monitoring. Prioritise repair		
measured using ARTC switch tip gauge,	LLII		> 8 mm to < 10 mm	А3	40 km/h TSR until repaired		
conventional only	RIGHT		8 mm or less	A1	10 km/h TSR until repaired		
Switch height at the tip,	LEFT		> 12 mm to < 13 mm	A6	Increase monitoring. Prioritise repair		
measured with ruler,	LEFI		12 mm or less	A1	10 km/h TSR until repaired		
conventional only	RIGHT		12 IIIIII OI less	AI	10 km/m 13K until repaired		
	LEFT		2 mm to > 1 mm	A6	Increase monitoring. Prioritise repair		
Switch Tip Wheel Clearance, undercut only	LEFI		1 mm to > 0 mm	A3	40 km/h TSR until repaired		
	RIGHT		0 mm or less	A1	10 km/h TSR until repaired		
	LEET		100 mm to < 200 mm	A6	Increase monitoring. Prioritise repair		
Switch blade damage	LEFT		> 200 mm	A1	10 km/h TSR until repaired		
	RIGHT	1	7 200	/	10 Killin Fork dilai ropanod		





POINTS INSPECTION	POINTS INSPECTION						
ELEMENT	MEASURE	COMMENT	CONDITION		RESPONSE ACTION		
	LEFT		≤ 22	A7	Routine scheduled inspection		
Stock rail or switch blade gauge wear face angle	LEFI		>22 to < 26	A6	Increase monitoring. Prioritise repair		
gaage near race angle	RIGHT		26 or greater	A1	10 km/h TSR until repaired		
					80/90 km/h TSR until repaired		
Fixed and pivot heel	LEFT		Cracked	A4/A3	Heavy Haul 40 km/h TSR until repaired		
blocks	RIGHT		Broken but still effective	A3	40 km/h TSR until repaired		
	RIGHT		Missing/Broken and ineffective	A1	10 km/h TSR until repaired		
					60/65 km/h TSR until repaired		
Fixed and pivot heel	LEFT		Missing/ineffective ≤ 2	A4/A3	Heavy Haul 40 km/h TSR until repaired		
blocks, bolts			Missing/ineffective 3	А3	40 km/h TSR until repaired		
	RIGHT		Missing/ineffective >3	A1	10 km/h TSR until repaired		
Anti creep device including	LEFT		Loose cracked but effective.	A6	Increase monitoring. Prioritise repair		
bolts	RIGHT		Missing/Broken and ineffective	A6	Increase monitoring. Prioritise repair		
			1 only - Cracked/loose	A6	Increase monitoring. Prioritise repair		
	LEFT				60/65 km/h TSR until repaired		
			1 only - Broken/Ineffective	A4/A3	Heavy Haul 40 km/h TSR until repaired		
Rail brace/chair. slide			2 consecutive - cracked / loose / broken / ineffective	А3	40 km/h TSR until repaired		
Rail brace/chair, slide plates and rollers.	RIGHT		> 2 consecutive - cracked / loose / broken / ineffective	A1	10 km/h TSR until repaired		





ETP-03-01 Inspection of Points and Crossings: Procedure

POINTS INSPECTION						
ELEMENT	MEASURE	COMMENT	CONDITION		RESPONSE ACTION	
			1 only - Cracked/loose	A6	Increase monitoring. Prioritise repair	
	LEFT				60/65 km/h TSR until repaired	
Switch Stops			1 only - Broken/Ineffective		Heavy Haul 40 km/h TSR until repaired	
	RIGHT		2 consecutive - cracked / loose / broken / ineffective	А3	40 km/h TSR until repaired	
			> 2 consecutive - cracked / loose / broken / ineffective	A1	10 km/h TSR until repaired	
Carandar har			Loose fastenings or worn insulators	A6	Increase monitoring. Prioritise repair	
Spreader bar			Missing/broken	A1	10 km/h TSR until repaired	
Switch Blade Support	LEFT		Gaps up to >2mm through blade or >1mm at drive points	A6	Increase monitoring. Prioritise repair	
	RIGHT					



Safety and Systems (Track & Civil) Form

ETP-03-01 Inspection of Points and Crossings: Procedure

CROSSING INPSECTION						
ELEMENT	MEASURE	COMMENT	CONDITION	RESPO	ONSE	
			≥ 1443 mm	A1	10 km/h TSR until repaired	
	LEFT V1		> 1440 mm to < 1443 mm	A4	60/65 km/h TSR until repaired	
	LEFIVI		> 1438 mm to 1440 mm	A6	Increase monitoring. Prioritise repair	
Track gauge (at the crossing nose)			> 1430 mm to 1438 mm	A7	Routine scheduled inspection	
o. 666g . 1666./		7	> 1427 mm to 1430 mm	A6	Increase monitoring. Prioritise repair	
	RIGHT V1		> 1425 mm to 1427 mm	A4	60/65 km/h TSR until repaired	
			1425 mm and less	A1	10 km/h TSR until repaired	
			≥ 1400 mm	A1	10 km/h TSR until repaired	
	LEFT V1		1398 mm to < 1400 mm	А3	40 km/h TSR until repaired	
	LEFIVI		1396 mm to < 1398 mm	A4	60/65 km/h TSR until repaired	
Check Rail Effectiveness			1389 mm to < 1396 mm	A7	Routine scheduled inspection	
	RIGHT V1	1	1386 mm to < 1389 mm	A6	Increase monitoring. Prioritise repair	
			1384 mm to < 1386 mm	A4	60/65 km/h TSR until repaired	
			1382 mm to < 1384 mm	А3	40 km/h TSR until repaired	
			< 1382 mm	A1	10 km/h TSR until repaired	
			15 mm to 20 mm width	A6	Increase monitoring. Prioritise repair	
Crossing nose break width	V1		20 mm to 25 mm width	А3	40 km/h TSR until repaired	
			> 25 mm wide	A1	10 km/h TSR until repaired	
Crossing nose condition, metal flow	V1		1 mm or more flow	A6	Increase monitoring. Prioritise repair	
Crossing nose condition, batter/ hollow	V1		2 mm or more hollow / severe	A6	Increase monitoring. Prioritise repair	
Crossing nose condition, surface condition	V1		Pieces 3mm or more across have fallen from surface	A6	Increase monitoring. Prioritise repair	





CROSSING INPSECTION						
ELEMENT	MEASURE	COMMENT	CONDITION	RESPO	DNSE	
			No cracks	A7	Routine scheduled inspection	
			Noncritical	A6	Increase monitoring. Prioritise repair	
Crossing Cracks	V1		Critical	A6	Increase monitoring. Prioritise repair	
			Fully (not affecting the running surface)	A4	60/65 km/h TSR until repaired	
			Fully (affecting the running surface)	A1	10 km/h TSR until repaired	
	LEFT V1		Visible evidence of flange tips running in dirt.	A6	Increase monitoring. Prioritise repair	
Crossing flangeway	RIGHT V1		Flangeway obstructed (with ballast etc) or evidence of flange tip running on steel work	A1	10 km/h TSR until repaired	
					60/65 km/h TSR until repaired	
Crossing spacer blocks	V1		Cracked	A4/A3	Heavy Haul 40 km/h TSR until repaired	
			Broken but still effective	А3	40 km/h TSR until repaired	
			Missing/Broken and ineffective	A1	10 km/h TSR until repaired	
		Single or multiple bolts loose yet effective	A6	Increase monitoring. Prioritise repair		
					60/65 km/h TSR until repaired	
Crossing spacer blocks, bolts	V1		Missing/ineffective ≤2	A4/A3	Heavy Haul 40 km/h TSR until repaired	
			Missing/ineffective 3	А3	40 km/h TSR until repaired	
			Missing/ineffective >3	A1	10 km/h TSR until repaired	
Wing rail vertical wear	LEFT V1		5 mm to 10 mm	A6	Increase monitoring. Prioritise repair	
vvilig rali vertical wear	RIGHT V1		>10 mm	А3	40 km/h TSR until repaired	
Wing Rail Condition, metal	LEFT V1		1 mm or more flow	A6	Increase monitoring. Prioritise repair	
flow	RIGHT V1		1 min of more now	Ao	increase monitoring. Phontise repair	
Min - Deil Oan dition	LEFT V1		Bisses Ossas and a second base fallow (
Wing Rail Condition, surface condition	RIGHT V1		Pieces 3mm or more across have fallen from surface	A6	Increase monitoring. Prioritise repair	



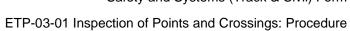
ETP-03-01 Inspection of Points and Crossings: Procedure

CROSSING INPSECTION						
ELEMENT	MEASURE	COMMENT	CONDITION	RESPO	DNSE	
	LEFT V1		1360 mm to < 1365 mm	A6	Increase monitoring. Prioritise repair	
Wing Rail flare	LEFIVI		1365 mm to < 1370 mm	A3	40 km/h TSR until repaired	
	RIGHT V1	1	≥ 1370 mm	A1	10 km/h TSR until repaired	
			>49 mm	A4	60/65 km/h TSR until repaired	
	LEFT V1		48 mm to 49 mm	A6	Increase monitoring. Prioritise repair	
Check rail flangeway			40 mm to < 48 mm	A7	Routine scheduled inspection	
	DICHT VA		38 mm to < 40 mm	A6	Increase monitoring. Prioritise repair	
	RIGHT V1		< 38 mm	A4	60/65 km/h TSR until repaired	
	LEFT V1	ET VA	1360 mm to < 1365 mm	A6	Increase monitoring. Prioritise repair	
Check rail flare	LEFIVI		1365 mm to < 1370 mm	A3	40 km/h TSR until repaired	
	RIGHT V1		≥ 1370 mm	A1	10 km/h TSR until repaired	
	V1				60/65 km/h TSR until repaired	
Check rail spacer blocks			Cracked	A4/A3	Heavy Haul 40 km/h TSR until repaired	
·			Broken but still effective	А3	40 km/h TSR until repaired	
			Missing/Broken and ineffective	A1	10 km/h TSR until repaired	
					60/65 km/h TSR until repaired	
Check rail spacer blocks,	V1		Missing/ineffective ≤2	A4/A3	Heavy Haul 40 km/h TSR until repaired	
bolts	V 1		Missing/ineffective 3	А3	40 km/h TSR until repaired	
			Missing/ineffective >3 or missing end bolt in check rail.	A1	10 km/h TSR until repaired	





SPRING WING V CROSSII	SPRING WING V CROSSING DETAILED INSPECTION - Additional Tasks						
ELEMENT	MEASURE	COMMENT	CONDITION	RESPO	NSE		
Gauge from wing when jacked open to opposite stock rail immediately			>1485mm	A2	20 km/h TSR until repaired		
ahead of crossing nose.			>1490 mm	A1	10 km/h TSR until repaired		
Wing closed gap			1 mm to 3 mm	A6	Increase monitoring. Prioritise repair		
(excluding crossing tip)			>3 mm	A2	20 km/h TSR until repaired		
			10 to 16mm	A7	Routine scheduled inspection		
Wing closed gap (at crossing tip)			16 to 19mm	A6	Increase monitoring. Prioritise repair		
orocoming up)			>19mm	А3	40 km/h TSR until repaired		
			1 only - Cracked/loose	A6	Increase monitoring. Prioritise repair		
Rail brace/chair, slide			1 only - Broken/Ineffective	A2	20 km/h TSR until repaired		
plates and rollers.			> 2 consecutive - cracked / loose / broken / ineffective	A1	10 km/h TSR until repaired		
			1 only - Cracked/loose	A6	Increase monitoring. Prioritise repair		
					60/65 km/h TSR until repaired		
Wing Travel Stops			1 only - Broken/Ineffective	A4/A3	Heavy Haul 40 km/h TSR until repaired		
			2 consecutive - cracked / loose / broken / ineffective	А3	40 km/h TSR until repaired		
			> 2 consecutive - cracked / loose / broken / ineffective	A1	10 km/h TSR until repaired		
Wing Support			Gaps up to >2mm through wing or >1mm at drive points	A6	Increase monitoring. Prioritise repair		





SPRING WING V CROSSING DETAILED INSPECTION - Additional Tasks						
ELEMENT	MEASURE	COMMENT	CONDITION	RESPO	NSE	
					80/90 km/h TSR until repaired	
Fixed and pivot heel			Cracked	A4/A3	Heavy Haul 40 km/h TSR until repaired	
blocks			Broken but still effective	А3	40 km/h TSR until repaired	
			Missing/Broken and ineffective	A1	10 km/h TSR until repaired	
			Missing/ineffective ≤ 2		60/65 km/h TSR until repaired	
Fixed and pivot heel blocks, bolts				A4/A3	Heavy Haul 40 km/h TSR until repaired	
DIOCKS, DOILS			Missing/ineffective 3	А3	40 km/h TSR until repaired	
			Missing/ineffective >3	A1	10 km/h TSR until repaired	
Ming roll vertical weer			2 mm to 6.5 mm	A6	Increase monitoring. Prioritise repair	
Wing rail vertical wear			>6.5 mm	А3	40 km/h TSR until repaired	
			Bends evident, possible previous repair.	A3	40 km/h TSR until repaired	
Wing Alignment			Bent, gaps greater 10 mm	A1	10 km/h TSR until repaired	