Ref:	**NR/SMS/Part/D**
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NR/L3/SIG/10663

NR/SMS/Part/D

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INDEX

The level crossing annual tests (Service B in NR/SMS/Test/070-076, 80-81, and NR/SMS/LC10) are produced in an A4 format only for use of the person(s) conducting the annual test of the level crossing. They are formatted to provide a tick box next to each item that requires to be tested so that an auditable record of the test is produced.

These test documents are only available electronically and can be downloaded from Connect (on Network Rails Intranet) from the 'Network Rail Standards' link and use the search function to call up document NR/L3/SIG/10663.

The index of these documents is as follows:

Annual Test	Crossing Type
LX70	Automatic Half Barrier Crossing (AHBC)
LX70/1	Automatic Half Barrier (AHBC) - RCM
LX71	Automatic Barrier Crossing Locally Monitored (ABCL) and Automatic Full Barrier Crossing Locally Monitored (AFBCL)
LX72	Automatic Open Crossing Locally Monitored (AOCL)
LX73	Automatic Open Crossing Remotely Monitored (AOCR)
LX74	Miniature Stop Light Crossing (MSL)
LX75	Manually Controlled Barriers (MCB)
LX76	On Call Barriers (OCB)
LX77	EBI Gate 200 Level Crossing System
LX78	VAMOS Level Crossing System
LX79	Flex Level Crossing system
LX80	Automatic Half Barrier (AHBC) - With Level Crossing Predictor
LX81	Miniature Stop Light Crossing (MSL) - Using A Level Crossing Predictor
LX83	Automatic Open Crossing Locally Monitored + Barriers
LX94	Miniature Stop Light Crossing (MSL) - (RCM)

END

LEVEL CROSSING TESTING

AUTOMATIC HALF BARRIER CROSSING

NR/SMS/LX70

Uncontrolled copy once printed from its electronic source.

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GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 (Level Crossings Operational Sequences), NR/SMS/PartB/Test/070 (AHB Operational Sequence Test). It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that the particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/PartC/SG00 (Signals : General) for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S).	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Barrier and Machine BR Standard Mk1 (Penguin)

Is This Section Applicable to the Crossing Under Test?	Yes	No

2.1	Examine the exterior of the pedestal unit; Check the concrete is not excessively cracked or crumbing. Report as corrective maintenance if any of the concrete re- enforcing bars are visible.	Y	Z
2.2	Check that the pedestal unit and foundation are stable and correctly aligned.	Y	Z
2.3	Check that the cement plug at the top of the pedestal unit is intact and secure. If missing secure the hole with a wooden plug and arrange for a more permanent fixture.	Y	Z
2.4	Remove the pedestal covers and anti-guillotine shields.	Y	Z
2.5	Check the condition of the rubber up and down stops; replace any that have become soft or damaged.	Y	Z
	With the barriers on manual operation, lower and check the following:		
2.6	The boom takes 6 to 8 seconds to lower.	Y	Z
2.7	The boom is horizontal when fully lowered.	Y	Z

2.8	The boom is the correct length.	Y	Z
	Design	Y	Z
	Actual	Y	Z
2.9	The boom saw cuts for signs of splitting.	Y	Z
2.10	Condition of the boom.	Y	Z
2.11	The security of the boom.	Y	Z
2.12	The reflective strips are undamaged, clean and are in the correct position.	Y	Z
2.13	The boom lamps, hoods, brackets, and fastenings are undamaged, free from corrosion and correctly aligned.	Y	Z
2.14	The boom wiring, plugs, clamps, and terminations are undamaged.	Y	Z
	Check the height of the boom from the road surface.		
2.15	Top of barrier at the centre of the road (0.9m Minimum).	Y	Z
2.16	Underside of barrier at any point (1m Maximum).	Y	Z
2.17	Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device the tip weight by using the following method:	Y	Z
	• At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.		
	• Connect the weight measuring device to the tip end of the boom.		
	• Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.		

Boom Length	Tip Weight
3.99m to 6.02m	2.3Kg (Min) to 2.5Kg (Max)

2.18	Check that the boom can be lifted by hand to the fully raised position.	Y	Z
2.19	Check the interior of the pedestal for water ingress and contamination. Clean as necessary.	Y	Z
	Check the following on the hydraulic pack assembly:		
2.20	The pack is secure to the carrier.	Y	Z
2.21	There are no signs of a fluid leak.	Y	Z
2.22	The hose connections are tight.	Y	Z
2.23	The pack, hoses, and ram are clean and undamaged.	Y	Z

2.24	The fluid level is correct. Just visible in the filter strainer or to the max mark on the indicator.	Y	Z
2.25	The motor brushes. They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.	Y	Z
2.26	The motor commutator (where accessible). It shall be undamaged and a light coffee colour.	Y	Z
2.27	Record the pack details (Mk and serial number).		

Unit	Mk	Serial Number
Y		
Z		

2.28	Check that the modifications to the top ram pin (the fitting of the clamp to prevent it turning) have been carried out. Any installations that do not have this modification shall be reported to the S&T Maintenance Engineer immediately.	Y	Z
2.29	Check that the turned pins are lubricated and free from wear.	Y	Z
2.30	Check that the pedestal wiring and terminations are undamaged, secure and positioned so that they will not be trapped by the boom movement. Wiring to the boom lamps through the spindle is especially prone to damage Protect as necessary.	Y	Z
2.31	Check the spindle is lubricated and free from wear. If fitted with PTFE bearing do not lubricate.	Y	Z
2.32	Unfasten the lid of the circuit controller and check the following items:		
2.33	The spindle and control arm are lubricated and free from wear. Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.	Y	Z
2.34	Terminations and wiring.		
2.35	Contact fingers. Replace any fingers that are worn or have lost their spring tension.	Y	Z
2.36	Bands. Check they are clean and not worn (copper dust in the bottom of the casting). If worn the complete controller shall be renewed.	Y	Z
2.37	Measure by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on ‘hand’ operation. Adjust if necessary (Appendix A).	Y	Z
2.38	Close and fasten the circuit controller. Check if any adjustments have been carried out that all the terminations have been correctly tightened.	Y	Z
2.39	Raise the boom under ‘power’ operation and check the following:		
2.40	The booms are between 80° and 85° when fully raised.	Y	Z
2.41	The booms do not excessively oscillate when they come to rest in the raised position.	Y	Z

2.42	The booms do not 'hunt' when fully raised. This is a sign of an internal fluid leak inside the hydraulic pack.	Y	Z
2.43	Check the condition of the anti-guillotine shields and covers. Replace and secure shields and covers. Arrange for replacements to be fitted if any are damaged.	Y	Z

3. Barrier and Machine (BR Spec. 843)

Is This Section Applicable to the Crossing Under Test?	Yes	No

	Check the following on the barrier pedestal unit:		
3.1	The pedestal is correctly aligned and stable.	Y	Z
3.2	The locks and hinges are undamaged.	Y	Z
3.3	With the boom in the raised position there is adequate clearance between the side arm/counter balance weights and the ground/base.	Y	Z
3.4	The main shaft to side arm fastenings. Check that there is not any excessive play in the keyway.	Y	Z
3.5	Lower the barriers on local control and leave the LCU switch in the lower position. Open the front and rear doors of the pedestal units and fully extend the manual pump handle. Pump the booms to the fully raised position and observe they remain raised.	Y	Z
3.6	On each barrier in turn raise the pump handle until the boom begins to lower. Check that the pump handle roll pin has not reached an alignment where its top is above the bottom edge of the handle guide slot.	Y	Z
	Allow the boom to fully lower and check the following:		
3.7	The boom takes 6 to 8 seconds to lower.	Y	Z
3.8	The boom is damped during the last 10° to 15° of movement.	Y	Z
3.9	The boom is horizontal when fully lowered.	Y	Z
3.10	The boom is the correct length.	Y	Z
	Design	Y	Z
	Actual	Y	Z
3.11	Condition of the boom.	Y	Z
3.12	The security of the boom.	Y	Z
3.13	The boom fixing bolt 'E' clips are undamaged and the whole shear bolt assembly has had grease applied.	Y	Z
3.14	The reflective strips are undamaged, clean and are in the correct position.	Y	Z

3.15	The boom lamps, hoods, brackets, and fastenings are undamaged, free from corrosion and correctly aligned.	Y	Z
3.16	The boom wiring, plugs, clamps, and terminations are undamaged.	Y	Z
3.17	(If Fitted) the strainer wire, support bracket and fastenings are effective.	Y	Z
	Check the height of the boom from the road surface.		
3.18	Top of barrier at the centre of the road (0.9m Minimum).	Y	Z
3.19	Underside of barrier at any point (1m Maximum).	Y	Z
3.20	Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device the tip weight by using the following method:	Y	Z
	• At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.		
	• Connect the weight measuring device to the tip end of the boom.		
	• Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.		

Boom Length	Tip Weight
3.6m to 4.1m	7.6Kg ±0.5Kg
4.6m to 9.1m	6.1Kg ±0.5Kg

3.21	Check that the boom can be lifted by hand to the fully raised position.	Y	Z
3.22	Check the interior of the pedestal for water ingress and contamination. Clean as necessary.	Y	Z
	Check the following on the hydraulic pack assembly:		
3.23	The pack fastenings.	Y	Z
3.24	The top and bottom pack trunnion block mountings and lock washers.	Y	Z
3.25	Bolts through the trunnion to the operating lever are the correct length and spiral pins are fitted correctly.	Y	Z
3.26	The ram adjusting screw and lock washer. Do not adjust the screw.	Y	Z
3.27	The auto/manual valve is set in the auto position and the split pin and seal are intact.	Y	Z
3.28	The wiring and terminations to the pack. The movement of the pack can cause the B24 feed wire to break internal strands, disconnect the wires to check for this type of damage.	Y	Z
3.29	The fluid level is correct. Just visible in the filter strainer or to the max mark on the indicator.	Y	Z
3.30	The motor brushes. They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.	Y	Z

3.31	The motor commutator (where accessible). It shall be undamaged and a light coffee colour.	Y	Z
3.32	Record the pack details (Mk and serial number).		

	Unit	Mk	Serial Number
	Y		
	Z		

3.33	Check that the shock absorber plunger cannot be depressed more than 3mm by finger pressure.	Y	Z
3.34	Check the up and down stop block striker pads. Replace if worn.	Y	Z
3.35	Unfasten the lid of the circuit controller and check the following items:		
3.36	The spindle and control arm are lubricated and free from wear. Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.	Y	Z
	Terminations and wiring.		
3.37	Contact fingers. Replace any fingers that are worn or have lost their spring tension.	Y	Z
3.38	Bands. Check they are clean and not worn (copper dust in the bottom of the casting). If worn the complete controller shall be renewed.	Y	Z
3.39	Measure by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on ‘hand’ operation. Adjust if necessary (Appendix A).	Y	Z
3.40	Close and fasten the circuit controller. Check if any adjustments have been carried out that all the terminations have been correctly tightened.	Y	Z
3.41	Check the circuit controller cam, cam slot and roller assembly.	Y	Z
3.42	Check the earth-bonding strip is secure and undamaged.	Y	Z
3.43	Check the main shaft bearings and fastenings. Check that sufficient grease has been applied to the bearings	Y	Z
3.44	Check the bearing end cap seals are effective. Water ingress into the end caps can freeze and prevent the booms from lowering.	Y	Z
3.45	Check that the pedestal fixing bolts are all fitted and correctly tightened.	Y	Z
3.46	Check the operator’s door (rear) micro switch assembly, fastenings and wires. Check that they are secure and undamaged.	Y	Z
3.47	Raise the boom by hand pumping, check that the boom does not lower between pumping strokes.	Y	Z
3.48	Lower both the booms; stow the pump handles and close and lock the operator’s doors (rear). Raise the boom under ‘power’ operation by switching the LCU to raise and check the following:	Y	Z

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3.49	The booms are between 80° and 85° when fully raised.	Y	Z
3.50	The booms do not excessively oscillate when they come to rest in the raised position.	Y	Z
3.51	The booms do not 'hunt' when fully raised. This is a sign of an internal fluid leak inside the hydraulic pack.	Y	Z
3.52	Close and lock the front pedestal door.	Y	Z

4. Local and Manual Control

Is This Section Applicable to the Crossing Under Test?	Yes	No

NOTE: *The LCU control unit is normally fitted to the Y pedestal but on some installations it may on the Z pedestal.*

4.1	On the pedestal with the LCU unit, unlock the local control access door.	Y	Z
4.2	Check when unlocked the key is retained in the lock and cannot be withdrawn unless the door is locked again.	Y	Z
4.3	Pull the control arm to the lowered position and operate the raise button. Check that on pressing the raise button the auto button is released.	Y	Z
4.4	Check that two buttons cannot be depressed at the same time. The pressing of a button will release the button already depressed, the button interlocking shall prevent two buttons locking down at the same time.	Y	Z
	Operate the lower button and allow the booms to lower. Observe the following items:		
4.5	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Y	Z
4.6	After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red flashing road signals start to flash.	Y	Z
4.7	After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower.	Y	Z
4.8	The booms take 6 to 8 seconds to reach the fully lowered position.	Y	Z
4.9	Red flashing road lights continue to be illuminated. Audible warnings may continue to sound depending on design (check diagrams).	Y	Z
	Press the hand button then operate the control valve to the raise position and hand pump the LCU side boom to the raised position. Observe the following items:		
4.10	The boom does not lower between pumping strokes.	Y	Z
4.11	The red flashing road signals are illuminated.	Y	Z
4.12	The audible warnings are silent.	Y	Z

4.13	On the other pedestal unlock the local control access door and check when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.	Y	Z
	Operate the control valve to the raise position and hand pump the boom to the raised position. Check the following items:		
4.14	The boom does not lower between pumping strokes.	Y	Z
4.15	The red flashing road signals stay illuminated until the boom is above 80° from the horizontal.	Y	Z
4.16	The audible warnings are silent.	Y	Z
4.17	On the LCU pedestal operate the control valve to the lower position and allow the boom to fall sufficiently to illuminate the red flashing road signals.	Y	Z
4.18	Operate the control valve to the raise position and check that the boom movement is arrested.	Y	Z
4.19	Check that the audible warnings are silent. Pump the boom to the raised position.	Y	Z
4.20	Observe that the red flashing road signals are extinguished when the boom is above 80° from the horizontal.	Y	Z
4.21	Repeat 4.17 to 4.20 for the other boom.		
4.22	Check that the blocks are fitted to the inside of the local control access doors on both the Y and Z pedestals. The blocks prevent the local control access door being closed and locked with the control valve in the raise position.	Y	Z
4.23	Operate the control valve on both the Y and Z pedestals to the lower position and allow both booms to fully lower.	Y	Z
4.24	Close and lock the local control access door in the non LCU pedestal.	Y	Z
4.25	Operate the raise button on the control unit in the LCU pedestal and Observe the following:		
4.26	Both booms rise together.	Y	Z
4.27	The audible warnings sound, if designed to operate when the booms are lowered (check diagrams).	Y	Z
4.28	The red road lights extinguish and the audible warnings (depending on design) cease before the booms have reached 45° from the horizontal.	Y	Z
4.29	Check that the local control access door on the LCU pedestal cannot be closed with the control arm in the lowered position		
4.30	Press the lower button, allow the booms to lower then operate the auto button. Check that the same sequence of events occur as listed in 4.6 to 4.10.	Y	Z
	When the booms are fully raised, stow the control arm and close and lock the access door.		

5. Local and Manual Control BR Spec. 843

5.1	Open the local control unit door. Check when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.		
5.2	Operate the control switch to the lower position and Observe the following items:		
5.3	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Y	Z
5.4	After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red flashing road signals start to flash.	Y	Z
5.5	After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower.	Y	Z
5.6	The booms take 6 to 8 seconds to reach the fully lowered position	Y	Z
5.7	Red flashing road lights continue to be illuminated. Audible warnings may continue to sound depending on design (check diagrams).	Y	Z
5.8	Open the operator's door (rear) of Y pedestal. Check that if the audible warnings are designed to continue to operate when the booms are fully lowered they are silenced.		
	Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
5.9	The boom does not lower between pumping strokes.	Y	Z
5.10	The red flashing road signals are illuminated.	Y	Z
5.11	The audible warnings remain silent.	Y	Z
5.12	Open the operator's door (rear) of Z pedestal. Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
5.13	The boom does not lower between pumping strokes.	Y	Z
5.14	The red flashing road signals stay illuminated until the Z boom is above 80° from the horizontal.	Y	Z
5.15	The audible warnings remain silent.	Y	Z
5.16	On Y pedestal lift the pump handle and allow the boom to fall sufficiently to illuminate the red flashing road signals.	Y	Z
5.17	Release the pump handle and check that the boom movement is arrested.	Y	Z
5.18	Check that the audible warnings are silent. Pump the boom to the raised position.	Y	Z
5.19	Observe that the red flashing road signals are extinguished when the boom is above 45° from the horizontal.	Y	Z
5.20	Repeat 5.16 to 5.19 for Z pedestal.		

5.21	On Y pedestal lift the pump handle and allow the boom to fully lower	Y	Z
5.22	Check that the operator's door cannot be closed and locked unless the pump handle is in the stowed position.	Y	Z
5.23	Check that the guide pin is seated in the bottom of the guide slot when the pump handle is fully stowed.	Y	Z
5.24	Check that the spiral pin is not bent and the spiral pin guide is not worn or does not have a 'step'.	Y	Z
5.25	Close and fully lock the operator's door ensuring that the audible warnings remain silent. When locking the operators' door check that the key is turned a further 90° clockwise then back again to the removal position to correctly operate the door proving micro switch.	Y	Z
5.26	Repeat 5.21 to 5.25 for Z pedestal ensuring that when the operator's door is fully locked the audible warnings (if designed to operate when the booms are lowered) begin to sound.		
	Operate the switch in the local control unit to the raise position and Observe the following:		
5.27	Both booms rise together.	Y	Z
5.28	The red road lights extinguish and the audible warnings cease before the booms have reached 45° from the horizontal.		
5.29	Check that the guide on the inside of the local control unit door prevents the door being closed and locked unless the switch is in the auto position.		
5.30	Operate the switch to the lower position and observe that the sequence of events occurs as listed in 5.3 to 5.7.		
5.31	Operate the switch to the auto position and observe the sequence of events occur as listed in 5.27 to 5.28. On modern installations the switch can be put straight to the auto position, which will cause the booms to perform a lowering sequence then rise. Check the diagrams for the correct mode of operation applicable to the crossing.		
5.32	Close and lock the local control unit door.		

6. Road Traffic Light Signals

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

	Signal Number	Signal Identification
	Aux 1	
	Aux 2	

	On each of the road traffic light signals check the following items:						
6.1	The signal structure is stable.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.2	The signal light units are undamaged and the hoods are securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.3	The signal lenses are undamaged, clean and correctly orientated.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.4	Signs and notices attached to the signal post are undamaged, clean, and legible. See NR/SMS/PartC/SG00 (Signals : General) for details on reflective boards and signs.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.5	Cables and conduit are undamaged and secure.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.6	Check that if the signals are fitted with 50-watt Quartz Halogen lamps, the road traffic light signal backboard is fitted with a red/white border. White only and red/white border backboards shall not be mixed together at the same crossing.	YO	YN	ZO	ZN	Aux 1	Aux 2

7. Audible Warnings

7.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
7.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
7.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN

7.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.	YO	YN	ZO	ZN

8. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

8.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
8.2	Check that the hood is securely fitted and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2
8.3	If a sun screen is fitted, check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

9. Telephone System

The majority of installations usually have two emergency phones and an LCU phone. There are also some installations that have 'lay-by' phones because of the road conditions. The crossing section order will state the telephone system that is required at the crossing.

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	
4	
5	
6	
7	

		Telephone Identity (see Grid)						
9.1	Check the telephone and cord is undamaged.	1	2	3	4	5	6	7
9.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3	4	5	6	7
9.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	1	2	3	4	5	6	7
9.4	Check that the correct crossing name is stated on any telephone labels and signs.	1	2	3	4	5	6	7
9.5	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	1	2	3	4	5	6	7
9.6	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	1	2	3	4	5	6	7
9.7	On emergency telephones, check that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and check that the recipient uses the correct procedures for the call.	1	2	3	4	5	6	7

Public Telephone Numbers	**Checked**

9.8	Ring the monitoring point and check that the call is received correctly. Ask the monitoring point to ring back.	1	2	3	4	5	6	7

9.9	Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whitely PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' During this period transmission and reception of speech is not possible.	1	2	3	4	5	6	7
9.10	If lay-by and/or pedestal telephones are fitted Check that there is a ring differential at the monitoring point between them and the emergency telephones.	1	2	3	4	5	6	7
9.11	Check that if a lay-by or pedestal telephone is in use a call from the emergency telephone is still received correctly at the monitoring point	1	2	3	4	5	6	7
9.12	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly. Whitely PETS systems will indicate a fault at the monitoring point.	1	2	3	4	5	6	7
9.13	If a block switch is fitted Check that when operated 9.8 to 9.12 operate correct at the alternative monitoring point.							
9.14	Check that at the normal monitoring point any audible devices do not sound.							
9.15	Repeat 9.13 to 9.14 for any other alternative monitoring points.							
9.16	If an absent switch is fitted to the telephone system operate it and Check that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch is back to normal operation and check that a normal emergence call is received.							
9.17	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 9.8 to 9.16. Switch the mains power to the telephone system back on.							

10. Barrier Proving

Check that a cut-out is provided in the motor contactors before proceeding with 10.2 to 10.4.

The booms can be lowered and raised by local control or train simulation.

10.1	Turn the mains power off.		
	Allow the booms to lower. Restrain the tip of one of the booms then allow the barriers to rise.		
10.2	Check that the motor cut-out for the restrained boom operates within 25 seconds. This time relates to a SPX Contactor only, if a different contactor is fitted refer to site diagrams and report to Section Manager.	Y	Z
10.3	Release the boom and check that the motor cuts in again within 3 minutes and the boom fully rises.	Y	Z
10.4	Repeat 10.2 and 10.3 for each of the other booms.		
10.5	Allow the booms to lower. Disconnect the Up KR link in the equipment room/location from one of the booms. Allow the booms to rise.	Y	Z
10.6	Check that the red flashing road lights signals have extinguished when the booms reach 45° from the horizontal.	Y	Z
10.7	Check that the road signals re-illuminate 6 seconds after the booms have started to rise.	Y	Z
10.8	Reconnect the Up KR link and check that the road signals extinguish.	Y	Z
10.9	Repeat 10.7 to 10.8 for the other boom.		

11. Red Flashing Road Traffic Light Signal Proving

The booms shall be lowered and raised by train simulation.

Some early installations only require one red road light to be working on each side to allow the booms to rise. (RECR modifications have not been carried out).

Check the diagrams for circuit design. Report any of these crossings to the S&T Maintenance Engineer.

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

	Signal number	**Signal Identitication**
	Aux 1	
	Aux 2	

11.1	Simulate a train striking in and allow the booms to lower. Check that all the red road signals are illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Aux 2
11.2	Measure the rate of flashing (Between 70 and 90 flashes per minute).			**FPM**			

11.3	Disconnect the left and right lamps on one of the light units by slipping the links in the equipment room/loc	YO	YN	ZO	ZN	Aux 1	Aux 2
11.4	Operate the exit function and remove the train simulation. Check that the booms remain lowered.	YO	YN	ZO	ZN	Aux 1	Aux 2
11.5	Re-connect the right hand lamp and Check that the booms raise.	YO	YN	ZO	ZN	Aux 1	Aux 2
11.6	Disconnect again the right hand lamp and simulate a train striking in. Check that approximately 2 seconds after the amber lights extinguish the booms begin to lower.	YO	YN	ZO	ZN	Aux 1	Aux 2
11.7	Operate the exit function and remove the train simulation. Check that the booms remain lowered.	YO	YN	ZO	ZN	Aux 1	Aux 2
11.8	Re-connect the left hand lamp and check that the booms raise. Re- connect the right hand lamp	YO	YN	ZO	ZN	Aux 1	Aux 2
11.9	Repeat 11.1 to 11.8 for the other red road signal units. The flashes per minute rate only requires to be measured on one light unit.						

12. Local Control Sequence

12.1	Operate the LCU to the LOWER position and check the following:	
12.2	All the amber road signals illuminate, and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	
12.3	After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red flashing road signals start to flash.	
12.4	After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower.	
12.5	The booms take 6 to 8 seconds to reach the fully lowered position.	
12.6	Red road lights and any pedestrian lights continue to be illuminated. Audible warnings continue to sound depending on design (check diagrams).	
12.7	Operate the LCU to the RAISE position and check the following:	
12.8	The booms begin to rise.	
12.9	The red road lights extinguish, the lineside headlights extinguish and the audible warnings cease before the booms have reached 45° from the horizontal.	
12.10	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.	
12.11	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.	

12.12	Operate the LCU to the LOWER position, allow the lowering sequence to take place and then operate the LCU switch to the AUTO position. Check that the lowering sequence is as 12.2 to 12.6 and the raise sequence is as 12.8 to 12.11. On modern installations the switch can be put straight to the auto position, which will cause the booms to perform a lowering sequence then rise. Check the diagrams for the correct mode of operation applicable to the crossing.	
12.13	Close and lock the LCU door.	

13. Automatic Control Sequence

- Check in the crossing control tables for any special controls that affect the automatic control sequence.
- On early designs of crossings ATC and Strike in treadle reverse proving is required in the automatic sequence and the crossing sequence will start as soon as the strike in treadles are operated. Check the diagrams.
- Where the word EXIT occurs, the strike out treadle shall be operated.
- On single lines or where bi-directional controls exist, the leaving track circuit shall also be operated.
- Where directional proving controls exists the bi-directional strike out treadle shall also be operated in the correct sequence.

13.1	Simulate an approaching train by shunting a controlling track circuit and or treadle operation. Observe the following:				
13.2	On double lines 10 seconds elapse before the crossing sequence commences. On single lines the sequence starts immediately.	Up	Up X	Dn	Dn X
13.3	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Up	Up X	Dn	Dn X
13.4	After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red flashing road signals start to flash.	Up	Up X	Dn	Dn X
13.5	After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower.	Up	Up X	Dn	Dn X
13.6	The boom lamps illuminate at approximately 80° from the horizontal. Check the sighting of the boom lamps.				

13.7	The booms take 6 to 8 seconds to reach the fully lowered position.	Up	Up X	Dn	Dn X
13.8	Red road lights and any pedestrian lights continue to be illuminated and flash alternately with the road lights. Audible warnings may continue to sound depending on design (check diagrams).	Up	Up X	Dn	Dn X
	Operate the exit function and remove the train simulation. Observe the following:				
13.9	The booms begin to rise.	Up	Up X	Dn	Dn X
13.10	The red road lights and crossing headlights extinguish and the audible warnings cease when the booms have reached approximately 45° from the horizontal.	Up	Up X	Dn	Dn X
13.11	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.	Up	Up X	Dn	Dn X
13.12	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.	Up	Up X	Dn	Dn X
13.13	Repeat steps 13.1 to 13.12 for the opposite direction on a single line and the other direction on double lines.	Up	Up X	Dn	Dn X

14. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

14.1	Simulate a train striking in on line one as per 13.1.	Up	Dn
	Simulate a second train striking in on line two. Observe the following:		
14.2	The booms remain lowered.	Up	Dn
14.3	The road lights and any pedestrian lights continue to flash.	Up	Dn
14.4	The audible warning rate where designed to sound when booms are lowered continues at the normal rate (check diagrams).	Up	Dn
	Operate the exit function and remove the simulation on line one. Observe the following:		
14.5	The booms remain lowered.	Up	Dn
14.6	The road lights and any pedestrian lights continue to flash.	Up	Dn
14.7	The audible warning rate where designed to sound when booms are lowered changes to the increased rate (check diagrams)	Up	Dn
14.8	Operate the exit function and remove the simulation on line two. Observe that the sequence is the same as described in 13.8 to 13.11.	Up	Dn
14.9	Repeat steps 14.1 to 14.8 for a train striking in on line two first and a second train striking in on line one.		

14.10	Turn Mains Power on	

15. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

15.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	**Result**

16. Strike in Track Circuit Resetting

Is This Section Applicable to the Crossing Under Test?	Yes	No

Direction	TC Name	Time (seconds)
Up		
Up X		
Dn		
Dn X		

16.1	Make up the track circuit and start timing with a stopwatch from the time the track circuit is re-connected. Check that the booms remain lowered				
16.2	Simulate an approaching train by shunting a controlling track circuit. Observe that the barrier lowering sequence is correct.	Up	Up X	Dn	Dn X
16.3	Observe that after 120 seconds the booms rise. If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down.				

17. Leaving Track Circuit Resetting

Is This Section Applicable to the Crossing Under Test?	Yes	No

NOTE: *Check the diagrams to find if these controls are fitted to the crossing.*

The booms shall be operated by train simulation.

Record the actual times in the grid below.

Direction	Entrance TC	Exit TC	Time (seconds)
Up			
Up X			
Dn			
Dn X			

17.1	Simulate a train striking in by dropping a controlling track circuit, observe that the boom lowering sequence is correct	Up	Up X	Dn	Dn X
17.2	Drop the leaving track circuit, operate the exit function and make up the controlling track circuit. Check that the leaving track circuit remains dropped.	Up	Up X	Dn	Dn X
17.3	Observe that a boom raising sequence takes place when the controlling track circuit is made up, start timing with a stopwatch as soon as the booms start to rise.	Up	Up X	Dn	Dn X
17.4	Observe that after 130 seconds on double lines or 120 seconds on single lines a boom lowering sequence takes place	Up	Up X	Dn	Dn X
17.5	Re-connect the leaving track circuit and observe that after 120 seconds a boom raising sequence takes place. If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down	Up	Up X	Dn	Dn X

18. Speed Discriminator

Is This Section Applicable to the Crossing Under Test?	Yes	No

18.1	Check (if fitted) that the speed discriminator synchronous motor timer times correctly.	Up	Dn
18.2	Record the time up and down (in seconds).		

Direction	Time
Up	
Dn	

19. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test.

19.1	Check and identify the distance of track circuits and treadles as specified on the signalling plan. Record the design and actual dimensions.

Line	Design Measurement	Actual Measurement

20. Indications (Needle Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test?	Yes	No

It may be convenient to combine this with Section 9 - Telephone systems

A competent person (not the Signaller) is required at the monitoring point(s) to observe the indications

20.1	Check that the indicator is in the barriers raised / power on position.	
20.2	Simulate a train striking in and observe that the indicator moves to the no legend (barriers working) position.	
20.3	Remove the train simulation and operate the exit function, observe that the indication returns to the barriers raised / power on position.	
20.4	Open the local control operator's door, if door proving is fitted observe that the indicator moves to the no legend (barriers working) position.	
20.5	Otherwise operate the local control buttons to raise, lower and hand in turn and observe that the indicator moves to and remains in the no legend (barriers working) position.	
20.6	Return the local control unit to the auto position and close and lock the operator's door, observe that the indicator returns to the barriers raised / power on position.	
20.7	Simulate a train striking in and observe that the indicator moves to the no legend (barriers working) position.	
20.8	Check that after 240 seconds on double lines or 180 seconds on single lines the audible alarm sounds and it can be silenced.	
20.9	Remove the train simulation and operate the exit function. Observe that the indication returns to the barriers raised / power on position and the audible alarm sounds and it can be silenced.	

20.10	Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). Observe that for each fuse the indicator moves to the barriers raised / power off position.	
20.11	Check that the audible alarm sounds and can be silenced.	
20.12	When each fuse is replaced observe that the indicator returns to the barriers raised / power on position.	
20.13	Check that the audible alarm sounds and can be silenced.	
20.14	Check (where provided) that the monitoring point test switches operate.	
20.15	If an Absent switch is provided, switch to the absent position and check that the indicator moves to the no legend (barriers working) position, the audible alarms devices do not sound and the level crossing protecting functions (block/signal) are effective.	
20.16	If a block switch is provided, switch to the alternative monitoring point and Check that at the normal monitoring point the indicator moves to the no legend (barriers working) position and the audible alarms devices do not sound. At the alternative monitoring point repeat 20.1 to 20.14.	

21. Indications (Lamp Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test?	Yes	No

It may be convenient to combine this with Section 9 - Telephone systems.

A competent person (not the Signaller) is required at the monitoring point(s) to observe the indications.

The barrier indications are normally White for barriers raised, barriers working and power on. For barriers failed and standby in use they are normally Red.

21.1	Check that the indications show barriers raised and power on.	
21.2	Simulate a train striking in and observe the barriers raised indication extinguishes, the barriers working indication illuminates and the power on indication remains illuminated.	
21.3	Operate the exit function and remove the train simulation, observe that the barriers working indication extinguishes, the barriers raised indication illuminates and the power on indication remains illuminated.	
21.4	Open the LCU unit door and observe that the barriers raised indication extinguishes, the barriers working indication illuminates and the power on indication remains illuminated.	
21.5	Check that with each position of the switch (Raise, Lower/Hand and Auto) the barriers raised indication remains extinguished and the barriers working indication remains illuminated.	

21.6	Return the switch to the auto position, and close and lock the door. Observe that the barriers raised indication illuminates, the barriers working indication extinguishes and the power on indication remains illuminated.	

21.7	Unlock in turn each of the BR standard 843 barrier pedestal unit operator's doors (rear) and observe that the barriers raised indication extinguishes and the barriers working indication illuminates when unlocked and illuminates again when locked. The power on indication will remain illuminated.	
21.8	Operate in turn each exit treadle (or freddy) and observe that the barriers raised indication extinguishes and the barriers working indication illuminates when the treadle is not proving normal (or freddy activated) and returns to barriers raised illuminated, barriers working extinguished again when normal proving is regained (or freddy de-activated). The power on indication will remain illuminated.	
21.9	Simulate a train striking in and observe that the barrier raised indicator extinguishes and the barriers working indicator illuminates.	
21.10	Check that after 240 seconds on double lines or 180 seconds on single lines the barriers working indicator extinguishes, the barriers failed indication illuminates and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated.	
21.11	Remove the train simulation and operate the exit function, observe that the barriers failed indication extinguishes, the barriers raised indication illuminates, and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated.	
21.12	Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). Observe that for each fuse the power on indication extinguishes and the standby in use indication illuminates.	
21.13	Check that the audible alarm sounds and can be silenced. When each fuse is replaced observe that the standby in use indication extinguishes and the power on indication illuminates.	
21.14	Check that the audible alarm sounds and can be silenced. The barriers raised indication will remain illuminated.	
21.15	Check (where provided) that the monitoring point test switches operate.	
21.16	If an Absent switch is provided, switch to the absent position and check that all the indications extinguish, the audible alarms devices do not sound and the level crossing protecting functions (block/signal) are effective.	
21.17	If a block switch is provided, switch to the alternative monitoring point and check that at the normal monitoring point all the indications are extinguished and the audible alarms devices do not sound. At the alternative monitoring point repeat 21.1 to 21.16.	

22. Power Supplies and Batteries

22.1	Carry out NR/SMS/PartB/Test/051 (Busbar Earth Test) or NR/SMS/PartB/Test/053 (ELD Function Test).	
22.2	Carry out NR/SMS/PartB/Test/052 (Dynamic Earth Tests) – Level Crosing Barriers.	

Power Supply Identification

APPENDIX A - Circuit Controller Band Settings

Band	**Made Between**
DN KR	0° and 4°
HJPR	42° and 90°#
MR	0° and 83°
UP KR	81° and 90°

#: The HJPR band on early installations may be set to make sooner than 42°. Check the diagrams for the required setting for the installation you are testing.

NOTE: *It is important to obtain the over-lap between the UP KR band making and the MR band breaking. This is to ensure that if a boom drops slightly it will drive up again before the red road signals operate.*

END

LEVEL CROSSING TESTING

AUTOMATIC HALF BARRIER CROSSING (RCM)

NR/SMS/LX70-1

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This test plan is in addition to NR/SMS/PartC/LC20 Services A & B'. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in 'crossing defects'.

It does not cover AHBC installations controlled by HXP-3 crossing processors and those not maintained using NR/ROSE/LC maintenance standard.

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Barrier and Machine BR Spec. 843

	Check the following on the barrier pedestal unit:		
1.1	Lower the barriers on the local control and leave the LCU switch in the Lower/Hand position.	Y	Z
1.2	Check that the boom can be lifted by hand to the fully raised position.	Y	Z
1.3	Measure by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on 'hand' operation. Adjust if necessary (Appendix A).	Y	Z

2. Local and Manual Control BR Spec. 843

2.1	Open the local control unit door. Check when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.		
2.2	Operate the control switch to the lower position and Observe the following items:		
2.3	Open the operator's door (rear) of Y pedestal. Check that if the audible warnings are designed to continue to operate when the booms are fully lowered they are silenced.		
	Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
2.4	The boom does not lower between pumping strokes.	Y	Z
2.5	The red flashing road signals are illuminated.	Y	Z
2.6	The audible warnings remain silent.	Y	Z
2.7	Open the operator's door (rear) of Z pedestal. Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
2.8	The boom does not lower between pumping strokes.	Y	Z
2.9	The red flashing road signals stay illuminated until the Z boom is above 80° from the horizontal.	Y	Z
2.10	The audible warnings remain silent.	Y	Z
2.11	On Y pedestal lift the pump handle and allow the boom to fall sufficiently to illuminate the red flashing road signals.	Y	Z
2.12	Release the pump handle and check that the boom movement is arrested.	Y	Z
2.13	Check that the audible warnings are silent. Pump the boom to the raised position.	Y	Z
2.14	Observe that the red flashing road signals are extinguished when the boom is above 45° from the horizontal.	Y	Z
2.15	Repeat 2.11 to 2.14 for Z pedestal.		

2.16	On Y pedestal lift the pump handle and allow the boom to fully lower	Y	Z
2.17	Check that the operator's door cannot be closed and locked unless the pump handle is in the stowed position.	Y	Z
2.18	Check that the guide pin is seated in the bottom of the guide slot when the pump handle is fully stowed.	Y	Z
2.19	Check that the spiral pin is not bent and the spiral pin guide is not worn or does not have a 'step'.	Y	Z
2.20	Close and fully lock the operator's door ensuring that the audible warnings remain silent. When locking the operators' door check that the key is turned a further 90° clockwise then back again to the removal position to correctly operate the door proving micro switch.	Y	Z
2.21	Repeat 2.16 to 2.20 for Z pedestal ensuring that when the operator's door is fully locked the audible warnings (if designed to operate when the booms are lowered) begin to sound.		
	Operate the switch in the local control unit to the raise position and Observe the following:		
2.22	Both booms rise together.	Y	Z
2.23	The red road lights extinguish and the audible warnings cease before the booms have reached 45° from the horizontal.		
2.24	Operate the switch to the lower position and wait for the boom to be in the fully lowered		
2.25	Operate the switch to the auto position and Observe the sequence of events occur as listed in 2.22 to 2.24. On modern installations the switch can be put straight to the auto position, which will cause the booms to perform a lowering sequence then rise. Check the diagrams for the correct mode of operation applicable to the crossing.		
2.26	Close and lock the local control unit door.		

3. Telephone System

Different types of telephones systems are fitted to AHBC's. Older installations at BR standard Mk1crossings usually have two pedestal phones, two emergency phones, and two 'lay-by' phones.

If the crossing has had 'section 66' modifications the two 'lay-by' telephones are replaced with signs instructing the public to use the phones at the crossing.

Newer installations (BR Spec. 843) usually have two emergency phones and a LCU phone. There are also 'hybrid' installations, which can be a mixture of the two types.

The crossing section order will state the telephone system that is required at the crossing.

Identify telephones at the installation under test in the grid:

No.	Telephone Identity
1	
2	
3	
4	

		Telephone Identity (see Grid)			
3.1	Check the telephone and cord is undamaged.	1	2	3	4
3.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3	4
3.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	1	2	3	4
3.4	Check that the correct crossing name is stated on any telephone labels and signs.	1	2	3	4
3.5	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	1	2	3	4
3.6	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	1	2	3	4

3.7	On emergency telephones, check that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and check that the recipient uses the correct procedures for the call.	1	2	3	4
Public Telephone Numbers					
3.8	Ring the monitoring point and check that the call is received correctly. Ask the monitoring point to ring back.	1	2	3	4
3.9	Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whitely PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' During this period transmission and reception of speech is not possible.	1	2	3	4
3.10	If lay-by and/or pedestal telephones are fitted check that there is a ring differential at the monitoring point between them and the emergency telephones.	1	2	3	4
3.11	Check that if a lay-by or pedestal telephone is in use a call from the emergency telephone is still received correctly at the monitoring point	1	2	3	4
3.12	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly. Whitely PETS systems will indicate a fault at the monitoring point.	1	2	3	4
3.13	If a block switch is fitted check that when operated 3.8 to 3.12 operate correct at the alternative monitoring point.				
3.14	Check that at the normal monitoring point any audible devices do not sound.				
3.15	Repeat 3.13 to 3.14 for any other alternative monitoring points.				
3.16	If an absent switch is fitted to the telephone system operate it and check that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch is back to normal operation and check that a normal emergence call is received.				
3.17	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 3.8 to 3.16. Switch the mains power to the telephone system back on.				

4. Barrier Proving

Check that a cut-out is provided in the motor contactors before proceeding with 4.2 to 4.4.

The booms can be lowered and raised by local control or train simulation.

4.1	Turn the mains power off.		
4.2	Allow the booms to lower.		
4.3	Disconnect the Up KR link in the equipment room/location from one of the booms.	Y	Z
4.4	Turn the LCU Switch to raise, allow the booms to rise.		
4.5	Check that the red flashing road lights signals have extinguished when the booms reach 45° from the horizontal.	Y	Z
4.6	Check that the road signals re-illuminate 6 seconds after the booms have started to rise.	Y	Z
4.7	Reconnect the Up KR link and check that the road signals extinguish.	Y	Z
4.8	Repeat 4.2 to 4.7 for the other boom.		

5. Red Flashing Road Traffic Light Signal Proving

The booms shall be lowered and raised by train simulation.

Some early installations only require one red road light to be working on each side to allow the booms to rise. (RECR modifications have not been carried out)

Check the diagrams for circuit design. Report any of these crossings to the S&T Maintenance Engineer.

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

	Signal number	**Signal Identitication**
	Aux 1	
	Aux 2	

5.1	Simulate a train striking in and allow the booms to lower. Check that all the red road signals are illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Aux 2
5.2	Measure the rate of flashing (Between 70 and 90 flashes per minute).			**FPM**			

5.3	Disconnect the left and right lamps on one of the light units by slipping the links in the equipment room/loc	YO	YN	ZO	ZN	Aux 1	Aux 2
5.4	Operate the exit function and remove the train simulation. Check that the booms remain lowered.	YO	YN	ZO	ZN	Aux 1	Aux 2
5.5	Re-connect the right hand lamp and check that the booms raise.	YO	YN	ZO	ZN	Aux 1	Aux 2
5.6	Disconnect again the right hand lamp and simulate a train striking in. Check that approximately 2 seconds after the amber lights extinguish the booms begin to lower.	YO	YN	ZO	ZN	Aux 1	Aux 2
5.7	Operate the exit function and remove the train simulation. Check that the booms remain lowered.	YO	YN	ZO	ZN	Aux 1	Aux 2
5.8	Re-connect the left hand lamp and check that the booms raise. Re- connect the right hand lamp	YO	YN	ZO	ZN	Aux 1	Aux 2
5.9	Repeat 5.1 to 5.8 for the other red road signal units. The flashes per minute rate only requires to be measured on one light unit.						
5.10	Reconnect the Mains Power.						

6. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

6.1	Turn the Mains power On
6.2	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	Result

7. Strike in Track Circuit Resetting

Is This Section Applicable to the Crossing Under Test?	Yes	No

Direction	TC Name	Time (seconds)
Up		
Up X		
Dn		
Dn X		

		Up	Up X	Dn	Dn X
7.1	Simulate an approaching train by shunting a controlling track circuit. Observe that the barrier lowering sequence is correct.				
7.2	Make up the track circuit and start timing with a stopwatch from the time the track circuit is re-connected. Check that the booms remain lowered				
7.3	Observe that after 120 seconds the booms rise. If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down.				

8. Leaving Track Circuit Resetting

Is This Section Applicable to the Crossing Under Test?	Yes	No

Check the diagrams to find if these controls are fitted to the crossing.

The booms shall be operated by train simulation.

Record the actual times in the grid below.

Direction	Entrance TC	Exit TC	Time (seconds)
Up			
Up X			
Dn			
Dn X			

8.1	Simulate a train striking in by dropping a controlling track circuit, Observe that the boom lowering sequence is correct	Up	Up X	Dn	Dn X
8.2	Drop the leaving track circuit, operate the exit function and make up the controlling track circuit. Check that the leaving track circuit remains dropped.	Up	Up X	Dn	Dn X
8.3	Observe that a boom raising sequence takes place when the controlling track circuit is made up, start timing with a stopwatch as soon as the booms start to rise.	Up	Up X	Dn	Dn X
8.4	Observe that after 130 seconds on double lines or 120 seconds on single lines a boom lowering sequence takes place	Up	Up X	Dn	Dn X
8.5	Re-connect the leaving track circuit and Observe that after 120 seconds a boom raising sequence takes place. If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down	Up	Up X	Dn	Dn X

9. Speed Discriminator

Is This Section Applicable to the Crossing Under Test?	Yes	No

9.1	Check (if fitted) that the speed discriminator synchronous motor timer times correctly.	Up	Dn
9.2	Record the time up and down (in seconds).		

Direction	Time
Up	
Dn	

10. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test

10.1	Check and identify the distance of track circuits and treadles as specified on the signalling plan. Record the design and actual dimensions.

Line	Design Measurement	Actual Measurement

11. Indications (Needle Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test?	Yes	No

It may be convenient to combine this with Section 3 - Telephone systems.

A competent person (not the signaller) is required at the monitoring point(s) to observe the indications.

11.1	Check that the indicator is in the barriers raised / power on position.	
11.2	Simulate a train striking in and Observe that the indicator moves to the no legend (barriers working) position.	
11.3	Remove the train simulation and operate the exit function, Observe that the indication returns to the barriers raised / power on position.	
11.4	Open the local control operator's door, if door proving is fitted Observe that the indicator moves to the no legend (barriers working) position.	
11.5	Otherwise operate the local control buttons to raise, lower and hand in turn and Observe that the indicator moves to and remains in the no legend (barriers working) position.	
11.6	Return the local control unit to the auto position and close and lock the operator's door, Observe that the indicator returns to the barriers raised / power on position.	
11.7	Simulate a train striking in and Observe that the indicator moves to the no legend (barriers working) position.	

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11.8	Check that after 240 seconds on double lines or 180 seconds on single lines the audible alarm sounds and it can be silenced.	
11.9	Remove the train simulation and operate the exit function. Observe that the indication returns to the barriers raised / power on position and the audible alarm sounds and it can be silenced.	
11.10	Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). Observe that for each fuse the indicator moves to the barriers raised / power off position.	
11.11	Check that the audible alarm sounds and can be silenced.	
11.12	When each fuse is replaced Observe that the indicator returns to the barriers raised / power on position	
11.13	Check that the audible alarm sounds and can be silenced.	
11.14	Check (where provided) that the monitoring point test switches operate.	
11.15	If an Absent switch is provided, switch to the absent position and check that the indicator moves to the no legend (barriers working) position, the audible alarms devices do not sound and the level crossing protecting functions (block/signal) are effective.	
11.16	If a block switch is provided, switch to the alternative monitoring point and check that at the normal monitoring point the indicator moves to the no legend (barriers working) position and the audible alarms devices do not sound. At the alternative monitoring point repeat 11.1 to 11.14.	

12. Indications (Lamp Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test?	Yes	No

It may be convenient to combine this with Section 3 - Telephone systems

A competent person (not the signaller) is required at the monitoring point(s) to observe the indications

The barrier indications are normally White for barriers raised, barriers working and power on. For barriers failed and standby in use they are normally Red.

12.1	Check that the indications show barriers raised and power on.	
12.2	Simulate a train striking in and Observe the barriers raised indication extinguishes, the barriers working indication illuminates and the power on indication remains illuminated.	
12.3	Operate the exit function and remove the train simulation, Observe that the barriers working indication extinguishes, the barriers raised indication illuminates and the power on indication remains illuminated.	

12.4	Open the LCU unit door and Observe that the barriers raised indication extinguishes, the barriers working indication illuminates and the power on indication remains illuminated.	
12.5	Check that with each position of the switch (Raise, Lower/Hand and Auto) the barriers raised indication remains extinguished and the barriers working indication remains illuminated.	
12.6	Return the switch to the auto position, and close and lock the door. Observe that the barriers raised indication illuminates, the barriers working indication extinguishes and the power on indication remains illuminated.	
12.7	Unlock in turn each of the BR standard 843 barrier pedestal unit operator's doors (rear) and Observe that the barriers raised indication extinguishes and the barriers working indication illuminates when unlocked and illuminates again when locked. The power on indication will remain illuminated.	
12.8	Operate in turn each exit treadle (or freddy) and Observe that the barriers raised indication extinguishes and the barriers working indication illuminates when the treadle is not proving normal (or freddy activated) and returns to barriers raised illuminated, barriers working extinguished again when normal proving is regained (or freddy de-activated). The power on indication will remain illuminated.	
12.9	Simulate a train striking in and Observe that the barrier raised indicator extinguishes and the barriers working indicator illuminates.	
12.10	Check that after 240 seconds on double lines or 180 seconds on single lines the barriers working indicator extinguishes, the barriers failed indication illuminates and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated.	
12.11	Remove the train simulation and operate the exit function, Observe that the barriers failed indication extinguishes, the barriers raised indication illuminates, and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated.	
12.12	Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). Observe that for each fuse the power on indication extinguishes and the standby in use indication illuminates.	
12.13	Check that the audible alarm sounds and can be silenced. When each fuse is replaced Observe that the standby in use indication extinguishes and the power on indication illuminates.	
12.14	Check that the audible alarm sounds and can be silenced. The barriers raised indication will remain illuminated.	
12.15	Check (where provided) that the monitoring point test switches operate.	
12.16	If an Absent switch is provided, switch to the absent position and check that all the indications extinguish, the audible alarms devices do not sound and the level crossing protecting functions (block/signal) are effective.	

12.17	If a block switch is provided, switch to the alternative monitoring point and check that at the normal monitoring point all the indications are extinguished and the audible alarms devices do not sound. At the alternative monitoring point repeat 12.1 to 12.16.	

APPENDIX A - Circuit Controller Band Settings

Band	Made Between
DN KR	0° and 4°
HJPR	42° and 90°#
MR	0° and 83°
UP KR	81° and 90°

#: The HJPR band on early installations may be set to make sooner than 42°. Check the diagrams for the required setting for the installation you are testing.

NOTE: *It is important to obtain the over-lap between the UP KR band making and the MR band breaking. This is to ensure that if a boom drops slightly it will drive up again before the red road signals operate.*

END

LEVEL CROSSING TESTING

AUTOMATIC BARRIER CROSSING LOCALLY MONITORED (ABCL)

AND

AUTOMATIC FULL BARRIER CROSSING LOCALLY MONITORED (AFBCL)

NR/SMS/LX71

Uncontrolled copy once printed from its electronic source.

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GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10, NR/SMS/PartB/Test/071 and NR/SMS/PartB/Test/160 . It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/SG00 for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S)	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Barrier and Machine (BR Spec. 843)

2.1	Check the following on the barrier pedestal unit:	YN	YO	ZN	ZO
2.2	The pedestal is correctly aligned and stable.	YN	YO	ZN	ZO
2.3	The locks and hinges are undamaged.	YN	YO	ZN	ZO
2.4	With the boom in the raised position there is adequate clearance between the side arm/counter balance weights and the ground/base.	YN	YO	ZN	ZO
2.5	The main shaft to side arm fastenings. Check that there is not any excessive play in the keyway.	YN	YO	ZN	ZO
2.6	Lower the barriers on local control and leave the LCU switch in the Lower position. Open the front and rear doors of the pedestal units and fully extend the manual pump handle. Pump the booms to the fully raised position and Observe they remain raised.	YN	YO	ZN	ZO
2.7	On each barrier in turn raise the pump handle until the boom begins to lower. Check that the pump handle roll pin has not reached an alignment where its top is above the bottom edge of the handle guide slot. Allow the boom to fully lower and Check the following:	YN	YO	ZN	ZO
2.8	The boom takes 6 to 8 seconds to lower.	YN	YO	ZN	ZO

2.9	The boom is damped during the last 10° to 15° of movement.	YN	YO	ZN	ZO
2.10	The boom is horizontal when fully lowered.	YN	YO	ZN	ZO
2.11	The boom is the correct length.	YN	YO	ZN	ZO
	Design	YN	YO	ZN	ZO
	Actual	YN	YO	ZN	ZO
2.12	Condition of the boom.	YN	YO	ZN	ZO
2.13	The security of the boom.	YN	YO	ZN	ZO
2.14	The boom fixing bolt ‘E’ clips are undamaged and the whole shear bolt assembly has had grease applied.	YN	YO	ZN	ZO
2.15	The reflective strips are undamaged, clean and are in the correct position.	YN	YO	ZN	ZO
2.16	The boom lamps, hoods, brackets, and fastenings are undamaged, free from corrosion and correctly aligned.	YN	YO	ZN	ZO
2.17	The boom wiring, plugs, clamps, and terminations are undamaged.	YN	YO	ZN	ZO
2.18	(If Fitted) the strainer wire, support bracket and fastenings are effective.	YN	YO	ZN	ZO
	Check the height of the boom from the road surface.				
2.19	Top of barrier at the centre of the road (0.9m Minimum).	YN	YO	ZN	ZO
2.20	Underside of barrier at any point (1m Maximum).	YN	YO	ZN	ZO
2.21	Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device the tip weight by using the following method:				
	• At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.				
	• Connect the weight measuring device to the tip end of the boom.				
	• Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.				

Boom Length	Tip Weight
3.6m to 4.1m	7.6Kg
4.6m to 9.1m	6.1Kg

2.22	Check that the boom can be lifted by hand to the fully raised position.	YN	YO	ZN	ZO
2.23	Check the interior of the pedestal for water ingress and contamination. Clean as necessary.	YN	YO	ZN	ZO

	Check the following on the hydraulic pack assembly:				
2.24	The pack fastenings.	YN	YO	ZN	ZO
2.25	The top and bottom pack trunnion block mountings and lock washers.	YN	YO	ZN	ZO
2.26	Bolts through the trunnion to the operating lever are the correct length and spiral pins are fitted correctly.	YN	YO	ZN	ZO
2.27	The ram adjusting screw and lock washer. Do not adjust the screw.	YN	YO	ZN	ZO
2.28	The auto/manual valve is set in the auto position and the split pin and seal are intact.	YN	YO	ZN	ZO
2.29	The wiring and terminations to the pack. The movement of the pack can cause the B24 feed wire to break internal strands, disconnect the wires to check for this type of damage.	YN	YO	ZN	ZO
2.30	The fluid level is correct. Just visible in the filter strainer or to the max mark on the indicator.	YN	YO	ZN	ZO
2.31	The motor brushes. They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.	YN	YO	ZN	ZO
2.32	The motor commutator (where accessible). It shall be undamaged and a light coffee colour.	YN	YO	ZN	ZO
2.33	Record the pack details (Mk and serial number). Check that the pack is of the correct type for an ABCL (coloured blue).				

	Unit	Mk	Serial Number

2.34	Check that the shock absorber plunger cannot be depressed more than 3mm by finger pressure.	YN	YO	ZN	ZO
2.35	Check the up and down stop block striker pads. Replace if worn.	YN	YO	ZN	ZO
	Unfasten the lid of the circuit controller and Check the following items:				
2.36	The spindle and control arm are lubricated and free from wear. Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.	YN	YO	ZN	ZO

	Terminations and wiring.				
2.37	Contact fingers. Replace any fingers that are worn or have lost their spring tension.	YN	YO	ZN	ZO
2.38	Bands. Check they are clean and not worn (copper dust in the bottom of the casting) If worn the complete controller shall be renewed.	YN	YO	ZN	ZO
2.39	Measure by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on 'hand' operation. Adjust if necessary (Appendix A).	YN	YO	ZN	ZO
2.40	Close and fasten the circuit controller. Check if any adjustments have been carried out that all the terminations have been correctly tightened.	YN	YO	ZN	ZO
2.41	Check the circuit controller cam, cam slot and roller assembly.	YN	YO	ZN	ZO
2.42	Check the earth-bonding strip is secure and undamaged.	YN	YO	ZN	ZO
2.43	Check the main shaft bearings and fastenings. Check that sufficient grease has been applied to the bearings	YN	YO	ZN	ZO
2.44	Check the bearing end cap seals are effective. Water ingress into the end caps can freeze and prevent the booms from lowering.	YN	YO	ZN	ZO
2.45	Check that the pedestal fixing bolts are all fitted and correctly tightened.	YN	YO	ZN	ZO
2.46	Check the operator's door (rear) micro switch assembly, fastenings and wires. Check that they are secure and undamaged.	YN	YO	ZN	ZO
2.47	Raise the boom by hand pumping, Check that the boom does not lower between pumping strokes.	YN	YO	ZN	ZO
2.48	Lower both the booms; stow the pump handles and close and lock the operator's doors (rear). Raise the boom under 'power' operation by switching the LCU to raise and Check the following:	YN	YO	ZN	ZO
2.49	The booms are between 80° and 85° when fully raised.	YN	YO	ZN	ZO
2.50	The booms do not excessively oscillate when they come to rest in the raised position.	YN	YO	ZN	ZO
2.51	The booms do not 'hunt' when fully raised. This is a sign of an internal fluid leak inside the hydraulic pack.	YN	YO	ZN	ZO
2.52	Close and lock the front pedestal door.	YN	YO	ZN	ZO

3. Local and Manual Control

3.1	Open the local control unit door. Check when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.	YN	YO	ZN	ZO
3.2	Operate the control switch to the lower position and Observe the following items:				
3.3	All the amber road signals illuminate, and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	YN	YO	ZN	ZO
3.4	After 3 seconds all the amber signals extinguish, and all the red flashing road signals start to flash.	YN	YO	ZN	ZO
3.5	The crossing headlights illuminate the crossing at the same time the red road lights commence to flash.	YN	YO	ZN	ZO
3.6	The DWL signals do not illuminate for any direction.	YN	YO	ZN	ZO
3.7	After approximately a further 4 seconds the booms commence to lower.	YN	YO	ZN	ZO
3.8	The booms take 6 to 8 seconds to reach the fully lowered position.	YN	YO	ZN	ZO
3.9	Red flashing road lights continue to be illuminated. Audible warnings continue to sound.	YN	YO	ZN	ZO

As this Test covers both Two and Four barrier crossings steps 3.10 to 3.35 are repeated and should be carried out for both sides of the crossing. If carrying out a Four barrier crossing both columns should be completed

3.10	Open the operator's door (rear) of Y pedestal. Check the audible warnings are silenced. Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
3.11	The boom does not lower between pumping strokes.	2	4
3.12	The red flashing road signals are illuminated.	2	4
3.13	The audible warnings remain silent.	2	4
3.14	Open the operator's door (rear) of Z pedestal. Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
3.15	The boom does not lower between pumping strokes.	2	4
3.16	The red flashing road signals stay illuminated until the Z boom is above 80° from the horizontal.	2	4
3.17	The audible warnings remain silent.	2	4
3.18	Operate the LCU control switch to the raise position and check that the red flashing road signals are extinguished.	2	4

3.19	On Y pedestal lift the pump handle and allow the boom to fall sufficiently to illuminate the red flashing road signals. Release the pump handle and Check that the boom movement is arrested.	2	4
3.20	Check that the audible warnings are silent. Pump the boom to the raised position.	2	4
3.21	Observe that the red flashing road signals are extinguished when the boom is above 80° from the horizontal.	2	4
3.22	On Z pedestal lift the pump handle and allow the boom to fall sufficiently to illuminate the red flashing road signals. Release the pump handle and Check that the boom movement is arrested.	2	4
3.23	Check that the audible warnings are silent. Pump the boom to the raised position.	2	4
3.24	Observe that the red flashing road signals are extinguished when the boom is above 80° from the horizontal.	2	4
3.25	Operate the LCU switch to the lower position.	2	4
3.26	On Y pedestal lift the pump handle and allow the boom to fully lower	2	4
3.27	Check that the operator's door cannot be closed and locked unless the pump handle is in the stowed position.	2	4
3.28	Check that the guide pin is seated in the bottom of the guide slot when the pump handle is fully stowed.	2	4
3.29	Check that the spiral pin is not bent, and the spiral pin guide is not worn or does not have a 'step'.	2	4
3.30	Close and fully lock the operator's door ensuring that the audible warnings remain silent.	2	4
	When locking the operators' door check that the key is turned a further 90° clockwise then back again to the removal position to correctly operate the door proving micro switch.		
3.31	On Z pedestal lift the pump handle and allow the boom to fully lower	2	4
3.32	Check that the operator's door cannot be closed and locked unless the pump handle is in the stowed position.	2	4
3.33	Check that the guide pin is seated in the bottom of the guide slot when the pump handle is fully stowed.	2	4
3.34	Check that the spiral pin is not bent, and the spiral pin guide is not worn or does not have a 'step'.	2	4
3.35	Close and fully lock the operator's door ensuring that the audible warnings remain silent.	2	4
	Operate the switch in the local control unit to the raise position and Observe the following:		
3.36	All booms rise together.		
3.37	The red road lights extinguish, and the audible warnings cease before the booms have reached 45° from the horizontal.		

3.38	Check that the guide on the inside of the local control unit door prevents the door being closed and locked unless the switch is in the auto position.	
3.39	Operate the switch to the auto position and Observe that a lowering sequence takes place and then the booms rise as listed in section 13.	
3.40	Close and lock the local control unit door.	

4. Road Traffic Light Signals

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

On each of the road traffic light signals Check the following items:

4.1	The signal structure is stable.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.2	The signal light units are undamaged, and the hoods are securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.3	The signal lenses are undamaged, clean and correctly orientated.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.4	Signs and notices attached to the signal post are undamaged, clean, and legible See NR/SMS/PartC/SG00 (Signals : General) for details on reflective boards and signs.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.5	Cables and conduit are undamaged and secure.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.6	Check that if the signals are fitted with 50-watt Quartz Halogen lamps the road traffic light signal backboard is fitted with a red/white border. White only and red/white border backboards shall not be mixed together at the same crossing.	YO	YN	ZO	ZN	Aux 1	Aux 2

5. Audible Warnings

5.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
5.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
5.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN
5.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.				

6. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

	Signal Number	Signal Identification
	Aux 1	
	Aux 2	

6.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
6.2	Check that the hood is securely fitted, and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2
6.3	If a sun screen is fitted Check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

7. Crossing Headlight Unit

7.1	Check that the structure is stable and securely fixed in the ground.	Y	Z
7.2	Check that the light unit is undamaged and correctly aligned.	Y	Z
7.3	Check that the lens is clean, and the hood is securely fixed.	Y	Z

8. Drivers Crossing Indicators (DRL/DWL) Signals

8.1	Check (with no trains approaching) that the flashing red signal (DRL) is clearly visible from the speed restriction board	UP	UP X	DN	DN X
8.2	Check that the structure is stable and securely fixed in the ground.	UP	UP X	DN	DN X
8.3	Check that the unit is undamaged, correctly aligned and sighted	UP	UP X	DN	DN X
8.4	Check that the lens(es) are clean and the hood(s) is/are securely fitted.	UP	UP X	DN	DN X
8.5	Check that all the LED's on the DRL unit are flashing	UP	UP X	DN	DN X

9. Lineside Notice Boards and Signs

9.1	Check that the sign is securely fixed to the post, the post is stable and securely fixed in the ground	UP	UP X	DN	DN X
9.2	Check that the sign is correctly aligned and sighted	UP	UP X	DN	DN X
9.3	Check that the sign is of the correct retro-reflective material (see 1.3)	UP	UP X	DN	DN X
9.4	Check that the sign is clean, and the legend is correct and legible. The site plan will give details on the correct information that shall be displayed.	UP	UP X	DN	DN X

10. Telephone System

The majority of installations usually have two emergency phones and an LCU phone. There are also some installations that have 'lay-by' phones because of the road conditions. The crossing section order will state the telephone system that is required at the crossing.

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	
4	
5	
6	
7	

		Telephone Identity (see Grid)						
10.1	Check the telephone and cord is undamaged.	1	2	3	4	5	6	7
10.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3	4	5	6	7
10.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone	1	2	3	4	5	6	7
10.4	Check that the correct crossing name is stated on any telephone labels and signs	1	2	3	4	5	6	7
10.5	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	1	2	3	4	5	6	7
10.6	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	1	2	3	4	5	6	7
10.7	On emergency telephones Check that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and Check that the recipient uses the correct procedures for the call.	1	2	3	4	5	6	7

Public Telephone Numbers

10.8	Ring the monitoring point and Check that the call is received correctly. Ask the monitoring point to ring back.	1	2	3	4	5	6	7

10.9	Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whitely PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' During this period transmission and reception of speech is not possible.	1	2	3	4	5	6	7
10.10	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly. Whitely PETS systems will indicate a fault at the monitoring point.	1	2	3	4	5	6	7
10.11	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 10.8 to 10.10. Switch the mains power to the telephone system back on.							

11. Barrier Proving

Check that a cut-out is provided in the motor contactors before proceeding with 11.1 to 11.5.

The booms can be lowered and raised by local control or train simulation.

11.1	Turn the mains power off.				
11.2	Allow the booms to lower. Restrain the tip of one of the booms then allow the barriers to rise.	YO	YN	ZO	ZN
11.3	Check that the motor cut-out for the restrained boom operates within 25 seconds. This time relates to a SPX Contactor only, if a different contactor is fitted refer to site diagrams and report to Section Manager.	YO	YN	ZO	ZN
11.4	Release the boom and check that the motor cuts in again within 3 minutes and the boom fully rises.	YO	YN	ZO	ZN
11.5	Repeat 11.1to 11.4 for each of the other booms.				

11.6	Allow the booms to lower. Disconnect the Up KR link in the equipment room/location from one of the booms. Allow the booms to rise.	YO	YN	ZO	ZN
11.7	Check that the red flashing road lights signals have extinguished when the booms reach 45° from the horizontal.	YO	YN	ZO	ZN
11.8	Check that the road signals re-illuminate 6 seconds after the booms have started to rise.	YO	YN	ZO	ZN
11.9	Reconnect the Up KR link and Check that the road signals extinguish.	YO	YN	ZO	ZN
11.10	Repeat 11.6 to 11.9 for each of the other booms.				
	Turn the mains power on.				

12. Driver's White Light (DWL) Signal Proving

The crossing shall be operated by train simulation. Check on the following tests that only the DWL for the direction in which the train simulation is applied operates

12.1	Simulate a train striking in and allow the crossing to operate. Check that all the red road signals are illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Au x 2
12.2	Measure the rate of flashing (Between 70 and 90 flashes per minute)			**FPM**			
12.3	Check that the DWL is illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Au x 2
12.4	Disconnect the left and right lamps on one of the light units by slipping the links in the equipment room/loc and Check that the DWL extinguishes and the DRL illuminates.	YO	YN	ZO	ZN	Aux 1	Au x 2
12.5	Re-connect the right-hand lamp and Check that the DRL extinguishes and the DWL illuminates.	YO	YN	ZO	ZN	Aux 1	Au x 2
12.6	Disconnect again the right-hand lamp and Check that the DWL extinguishes and the DRL illuminates.	YO	YN	ZO	ZN	Aux 1	Au x 2
12.7	Re-connect the left-hand lamp and Check that the DRL (if provided) extinguishes and the DWL illuminates.	YO	YN	ZO	ZN	Aux 1	Au x 2
12.8	Repeat 12.2 to 12.6 for all other light units.	YO	YN	ZO	ZN	Aux 1	Au x 2

12.9	Open the door of the LCU unit and Check that the DWL extinguishes and the DRL illuminates. Close and lock the door and Check that the DRL extinguishes and the DWL illuminates.	YO	YN	ZO	ZN
12.10	In turn open the operator's door (rear) of the Y and Z pedestals, Check that the DWL is extinguished and the DRL is illuminated as the door is opened	YO	YN	ZO	ZN
12.11	Check that the DRL is extinguished and the DWL is illuminated as each door is correctly closed and locked again.	YO	YN	ZO	ZN
12.12	Operate the exit function and remove the train simulation. If necessary, re-set the circuits to normalise the crossing controls.				

13. Local Control Sequence

13.1	Operate the LCU to the LOWER position and Check the following:	
13.2	All the amber road signals illuminate, and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	
13.3	After 3 seconds all the amber signals extinguish, and all the red road signals and any pedestrian lights start to flash.	
13.4	The crossing headlights illuminate the crossing at the time the red road lights commence to flash.	
13.5	The DWL do not illuminate.	
13.6	The DRL continue to flash.	
13.7	After approximately a further 4 seconds at older the booms commence to lower and the boom lamps illuminate.	
13.8	The booms take 6 to 8 seconds to reach the fully lowered position.	
13.9	Red road lights and any pedestrian lights continue to be illuminated. Audible warnings continue to sound.	
13.10	Operate the LCU to the RAISE position and Check the following:	
13.11	The booms begin to rise.	
13.12	The red road lights extinguish, the lineside headlights extinguish, and the audible warnings cease before the booms have reached 45° from the horizontal.	
13.13	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.	
13.14	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.	

13.15	Operate the switch to the auto position and Observe that a lowering sequence as listed in 13.1 to 13.9 takes place and then the booms raise as listed in 13.12 to 13.14.	
13.16	Close and lock the LCU door.	

14. Automatic Control Sequence

- Check in the crossing control tables for any special controls that affect the automatic control sequence.
- Where the word EXIT occurs the strike out treadle shall be operated.
- On single lines or where bi-directional controls exist the leaving track circuit shall also be operated.
- Where directional proving controls exists the bi-directional strike out treadle shall also be operated in the correct sequence.

14.1	Observe, with no train approaching all DRL are illuminated (flashing) and are visible from the speed restriction board.	Up	Up X	Dn	Dn X
14.2	Simulate an approaching train by shunting a controlling track circuit. Observe the following:	Up	Up X	Dn	Dn X
14.3	On double lines 10 seconds elapse before the crossing sequence commences. On single lines the sequence starts immediately.	Up	Up X	Dn	Dn X
14.4	All the amber road signals illuminate, and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Up	Up X	Dn	Dn X
14.5	After 3 seconds all the amber signals extinguish, and all the red road signals and any pedestrian lights start to flash	Up	Up X	Dn	Dn X
14.6	The crossing headlights illuminate the crossing at the time the red road lights commence to flash.	Up	Up X	Dn	Dn X
14.7	After approximately a further 4 seconds the booms commence to lower.	Up	Up X	Dn	Dn X
14.8	As the booms commence to lower the DRL extinguishes and the DWL commences to flash for the direction where the train simulation was applied. The DRL continues for the opposing directions.	Up	Up X	Dn	Dn X
14.9	The booms take 6 to 8 seconds to reach the fully lowered position.	Up	Up X	Dn	Dn X
14.10	The crossing headlights, red road lights and any pedestrian lights continue to be illuminated and audible warnings continue to sound.	Up	Up X	Dn	Dn X

14.11	Operate the exit function and remove the train simulation. Observe the following:	Up	Up X	Dn	Dn X
14.12	The booms begin to rise.	Up	Up X	Dn	Dn X
14.13	The DWL for the direction where the simulation was applied extinguishes and the DRL commences to flash.	Up	Up X	Dn	Dn X
14.14	The red road lights and crossing headlights extinguish and the audible warnings cease when the booms have reached approximately 45° from the horizontal.	Up	Up X	Dn	Dn X
14.15	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.	Up	Up X	Dn	Dn X
14.16	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.	Up	Up X	Dn	Dn X
14.17	Repeat steps 14.2 to 14.16 for the opposite direction on a single line and the other direction on double lines.	Up	Up X	Dn	Dn X

15. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

15.1	Simulate a train striking in on line one as per 14.2.	Up	Dn
15.2	Simulate a second train striking in on line two. Observe the following:	Up	Dn
15.3	The booms remain lowered.	Up	Dn
15.4	The road lights and any pedestrian lights continue to flash.	Up	Dn
15.5	The audible warning rate continues at the normal rate	Up	Dn
15.6	The crossing headlights continue to illuminate	Up	Dn
15.7	Operate the exit function and remove the simulation on line one. Observe the following:	Up	Dn
15.8	The booms remain lowered.	Up	Dn
15.9	The road lights and any pedestrian lights continue to flash.	Up	Dn
15.10	The audible warning rate changes to the increased rate.	Up	Dn
15.11	The crossing headlights continue to illuminate	Up	Dn
15.12	The DWL for the direction of the simulation on line one extinguishes and the DRL commences to flash.	Up	Dn
15.13	The DRL for the simulation on line two extinguishes and the DWL commences to flash.	Up	Dn

15.14	Operate the exit function and remove the simulation on line two. Observe that the sequence is the same as described in 14.3.	Up	Dn
15.15	Repeat steps 15.1 to 15.14 for a train striking in on line two first and a second train striking in on line one.	Up	Dn

16. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

16.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	Result

17. Track Circuit Timing

Direction	TC Name	DWL Extinguishes (Seconds)	Booms Rise (Seconds)

17.1	Simulate an approaching train by shunting a controlling track circuit.	Up	Up X	Dn	Dn X
17.2	Start timing with a stopwatch as soon as the red flashing road signals and the DWL for the direction in which the simulation was applied illuminate.	Up	Up X	Dn	Dn X
17.3	Check that after 180 seconds the DWL extinguishes and the DRL commences to flash.	Up	Up X	Dn	Dn X
17.4	Check that 30 seconds after the DWL extinguishes the barriers perform a raising sequence as in 17.12 to 17.16. The only exception will be that the DWL will already be extinguished and the DRL will be flashing.	Up	Up X	Dn	Dn X
17.5	Remove the train simulation and operate the exit function. Check that the crossing controls return to their normal state. If necessary, re-set the circuits.	Up	Up X	Dn	Dn X
17.6	Repeat 17.1 to 17.5 for all other directions where controls are provided	Up	Up X	Dn	Dn X

18. Drivers Plunger Unit

NOTE: *On some designs the DWL will not illuminate when the driver's plunger is operated after the crossing has timed out. The DRL will remain flashing. Check the control tables and diagrams for the crossing you are testing.*

18.1	Simulate an approaching train by shunting a controlling track circuit and allow the crossing to time out.	Up	Up X	Dn	Dn X
18.2	Check that the DWL extinguishes and the DRL commences to flash.	Up	Up X	Dn	Dn X
18.3	Open the door of the unit and operate the plunger. Check that the crossing sequence starts.	Up	Up X	Dn	Dn X
18.4	Check that DWL for the direction of the plunger operation illuminates (if designed to do so, see note at start of section).	Up	Up X	Dn	Dn X

18.5	Operate the exit function and remove the train simulation. Check that raising sequence takes place as listed in 14.12 to 14.16.	Up	Up X	Dn	Dn X
18.6	Check that the DWL extinguishes (if operating, see note at start of section) and the DRL commences (or continues) to flash.	Up	Up X	Dn	Dn X
18.7	If necessary, reset the circuits to normalise the crossing controls. Close and lock the door of the plunger unit.	Up	Up X	Dn	Dn X
18.8	Repeat 18.1 to 18.7 for all other driver's plunger units.	Up	Up X	Dn	Dn X

19. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test.

Line	Design Measurement	Actual Measurement

19.1	Check and identify the distance of track circuits and treadles as specified on the signalling plan. Record the design and actual dimensions	Up	Up X	Dn	Dn X

20. Power Supplies and Batteries

20.1	Carry out NR/SMS/PartB/Test/051 (Busbar Earth Test) or NR/SMS/PartB/Test/053 (ELD Function Test).	
20.2	Carry out NR/SMS/PartB/Test/052 (Dynamic Earth Tests) - Level Crossing Barriers.	

Power Supply Identification

APPENDIX A - Circuit Controller Band Settings

Band	Made Between
DN KR	0° and 4°
HJPR	42° and 90°
MR	0° and 83°
UP KR	81° and 90°

NOTE: *It is important to obtain the over-lap between the UP KR band making and the MR band breaking. This is to ensure that if a boom drops slightly it will drive up again before the red road signals operate.*

END

LEVEL CROSSING TESTING

AUTOMATIC OPEN CROSSING LOCALLY MONITORED

NR/SMS/LX72

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GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 Level Crossings Operational Sequences , NR/SMS/PartB/Test/070 - AHB Operational Sequence Test. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that the particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/PartC/SG00 (Signals : General) for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S).	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Local Control Unit

Is This Section Applicable to the Crossing Under Test?	Yes	No

2.1	Open the local control unit door. When unlocked Check that the key is retained in the lock and cannot be withdrawn unless the door is locked again.	
2.2	Operate the LCU to the on position, Check the road lights and audible warnings operate	
2.3	Check that the DWL do not illuminate.	
2.4	Operate the LCU to the off position, Check the road lights extinguish and audible warnings cease.	
2.5	Operate the LCU to on position, allow the sequence to complete then switch to the auto position. Observe the road lights extinguish and audible warnings cease. On modern installations the switch can be put straight to the auto position and the door locked. Check the diagrams for the correct mode of operation applicable to the crossing.	
2.6	Close and lock the LCU door. Check the door cannot be locked unless the switch is in the Auto position.	

3. Road Traffic Light Signals

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

	On each of the road traffic light signals check the following items:						
3.1	The signal structure is stable.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.2	The signal light units are undamaged and the hoods are securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.3	The signal lenses are undamaged, clean and correctly orientated.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.4	Signs and notices attached to the signal post are undamaged, clean, and legible. See NR/SMS/PartC/SG00 (Signals : General) for details on reflective boards and signs.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.5	Cables and conduit are undamaged and secure.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.6	Check that if the signals are fitted with 50-watt Quartz Halogen lamps, the road traffic light signal backboard is fitted with a red/white border. White only and red/white border backboards shall not be mixed together at the same crossing.	YO	YN	ZO	ZN	Aux 1	Aux 2

4. Audible Warnings

4.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
4.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
4.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN

4.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.	YO	YN	ZO	ZN

5. Another Train Coming Signs

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

5.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
5.2	Check that the hood is securely fitted and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2
5.3	If a sun screen is fitted, check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

6. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

6.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
6.2	Check that the hood is securely fitted and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2

6.3	If a sun screen is fitted, check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

7. Crossing Headlight Unit

7.1	Check that the structure is stable and securely fixed in the ground.	Y	Z
7.2	Check that the light unit is undamaged and correctly aligned.	Y	Z
7.3	Check that the lens is clean and the hood is securely fixed.	Y	Z

8. Drivers Crossing Indicators (DRL/DWL) Signals

8.1	Check (on DRL/DWL units) that the flashing red signal is clearly visible from the speed restriction board	YO	YN	ZO	ZN
8.2	Check that the structure is stable and securely fixed in the ground.	YO	YN	ZO	ZN
8.3	Check that the unit is undamaged, correctly aligned and sighted.	YO	YN	ZO	ZN
8.4	Check that the lens(es) are clean and the hood(s) is/are securely fitted.	YO	YN	ZO	ZN
8.5	Check (on DRL/DWL units) that all the LED's on the DRL unit are flashing.	YO	YN	ZO	ZN

9. Lineside Notice Boards and Signs

9.1	Check that the sign is securely fixed to the post, the post is stable and securely fixed in the ground.	YO	YN	ZO	ZN
9.2	Check that the sign is correctly aligned and sighted.	YO	YN	ZO	ZN
9.3	Check that the sign is of the correct retro-reflective material.	YO	YN	ZO	ZN
9.4	Check that the sign is clean and the legend is correct and legible. The site plan will give details on the correct information that shall be displayed.	YO	YN	ZO	ZN

10. Telephone System

Most AOCL installations do not have public access telephones provided. Usually there is only an information sign giving contact details.

Is This Section Applicable to the Crossing Under Test?	Yes	No

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	
4	

		Telephone Identity (see Grid)			
10.1	Check the telephone and cord is undamaged.	1	2	3	4
10.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3	4
10.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	1	2	3	4
10.4	Check that the correct crossing name is stated on any telephone labels and signs. The site plan will give information on the correct names that shall be displayed	1	2	3	4
10.5	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	1	2	3	4
10.6	Ring the monitoring point and Check that the call is received correctly. Ask the monitoring point to ring back.	1	2	3	4
10.7	Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' during this period transmission and reception of speech is not possible				
10.8	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 10.6 to 10.7. Switch the mains power to the telephone system back on.				

11. Public Telephone Numbers

11.1	Check the information on all the public information signs is correct and legible.	
11.2	Ring the ETD number given for the public to call in an emergency, Check that the recipient gives correct procedures for the call. The site plan will give information on the correct names/numbers that shall be displayed.	

Public Telephone Numbers

12. Red Flashing Road Traffic Light Signal Proving

The crossing shall be operated by train simulation.

Check on the following tests that only the DWL for the direction in which the train simulation is applied operates.

If the (DWL)CR/CSR is a slow to pick relay the DWL will not illuminate with only one red road light connected. Check the diagrams.

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

Signal number	**Signal Identitication**
Aux 1	
Aux 2	

12.1	Simulate a train striking in and allow the booms to lower. Check that all the red road signals are illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Aux 2
12.2	Measure the rate of flashing (Between 70 and 90 flashes per minute).			**FPM**			
12.3	Check that the DWL is flashing.	YO	YN	ZO	ZN	Aux 1	Aux 2

12.4	Disconnect the left and right lamps on one of the light units by slipping the links in the equipment room/loc Check that the DWL extinguishes and (if provided) the DRL illuminates.	YO	YN	ZO	ZN	Aux 1	Aux 2
12.5	Re-connect the right hand lamp Check that the DRL (if provided) extinguishes and the DWL illuminates	YO	YN	ZO	ZN	Aux 1	Aux 2
12.6	Disconnect again the right hand lamp and Check that the DWL extinguishes and the DRL (if provided) illuminates.	YO	YN	ZO	ZN	Aux 1	Aux 2
12.7	Re-connect the left hand lamp and Check that the DRL (if provided) extinguishes and the DWL illuminates	YO	YN	ZO	ZN	Aux 1	Aux 2
12.8	Re-connect the right hand lamp and repeat 12.3 to 12.7 for the other red road signal units. The flashes per minute rate only requires to be measured on one light unit.	YO	YN	ZO	ZN	Aux 1	Aux 2

13. Local Control Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

13.1	Operate the switch on the local control unit to the On position and Check the following items:	
13.2	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	
13.3	After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red flashing road signals start to flash and any pedestrian lights start to flash.	
13.4	The crossing headlights illuminate the crossing at the time the red road lights commence to flash.	
13.5	Check that the DWL do NOT illuminate.	
13.6	Operate the switch to the Off position and Check the following:	
13.7	The red flashing road signals, yodalarms and any pedestrian lights are extinguished.	
13.8	The crossing headlights are extinguished.	
13.9	Check that the guide on the inside of the local control unit door prevents the door being closed and locked unless the switch is in the auto position.	
13.10	Operate the switch to the On position and Observe that the sequence occurs as in 13.2 to 13.5, operate the switch to the Auto position and close and lock the door. Observe that all the crossing functions are extinguished.	

	On modern installations the switch can be put straight to the auto position and the door locked. Check the diagrams for the correct mode of operation applicable to the crossing.	

14. Automatic Control Sequence

- Check in the crossing control tables for any special controls that affect the automatic control sequence.
- Where the word EXIT occurs, the strike out treadle shall be operated.
- On single lines or where bi-directional controls exist, the leaving track circuit shall also be operated.
- Where directional proving controls exists the bi-directional strike out treadle shall also be operated in the correct sequence.

	Observe, with no train approaching, all DRL (if provided) are illuminated (flashing) and are visible from the speed restriction board				
14.1	Simulate an approaching train by shunting a controlling track circuit. Observe the following:	Up	Up X	Dn	Dn X
14.2	On double lines 10 seconds elapse before the crossing sequence commences. On single lines the sequence starts immediately.				
14.3	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Up	Up X	Dn	Dn X
14.4	After 3 seconds all the amber signals extinguish and all the red road signals and any pedestrian lights start to flash	Up	Up X	Dn	Dn X
14.5	The crossing headlights illuminate the crossing at the time the red road lights commence to flash	Up	Up X	Dn	Dn X
14.6	The DRL (if applicable) extinguishes and the DWL commences to flash for the direction where the train simulation was applied. The DRL (if applicable) continues for the opposing directions.	Up	Up X	Dn	Dn X
14.7	Operate the exit function and remove the train simulation. Observe the following	Up	Up X	Dn	Dn X
14.8	The road lights, any pedestrian lights, and audible warnings cease immediately.				
14.9	The DWL for the direction where the simulation was applied extinguishes	Up	Up X	Dn	Dn X
14.10	The DRL (if provided) commences to flash	Up	Up X	Dn	Dn X
14.11	Repeat steps 14.2 to 14.11 for the opposite direction on a single line and the other direction on double lines	Up	Up X	Dn	Dn X

15. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

15.1	Simulate a train striking in on line one as per 14.2				
15.2	Simulate a second train striking in on line two. Observe the following:				
15.3	The road lights and any pedestrian lights continue to flash.	Up	Up X	Dn	Dn X
15.4	The audible warning rate continues at the normal rate.	Up	Up X	Dn	Dn X
15.5	The crossing headlights continue to illuminate.	Up	Up X	Dn	Dn X
15.6	Operate the exit function and remove the simulation for the first train and Check the following:	Up	Up X	Dn	Dn X
15.7	The road lights and any pedestrian lights continue to flash.	Up	Up X	Dn	Dn X
15.8	The audible warning rate changes to the increased rate.	Up	Up X	Dn	Dn X
15.9	The ATC signs (if Illuminating) illuminate, flash and the words are correct.	Up	Up X	Dn	Dn X
15.10	The crossing headlights continue to illuminate.	Up	Up X	Dn	Dn X
15.11	The DWL for the direction of the simulation on line one extinguishes and the DRL (if applicable) commences to flash.	Up	Up X	Dn	Dn X
15.12	The DRL (if applicable) for the simulation on line two extinguishes and the DWL commences to flash.	Up	Up X	Dn	Dn X
15.13	Operate the exit function and remove the simulation on line two. Observe that the sequence is the same as described in 14.9 to 14.11.				
15.14	Repeat steps 15.1 to 15.13 for a train striking in on line two first and a second train striking in on line one.				

16. Track Circuit Timing

16.1	Simulate an approaching train by shunting a controlling track circuit.				
16.2	The DWL for the direction of the simulation on line one extinguishes and the DRL (if applicable) commences to flash.	Up	Up X	Dn	Dn X
16.3	Start timing with a stopwatch as soon as the red flashing road signals and the DWL for the direction in which the simulation was applied illuminate.	Up	Up X	Dn	Dn X
16.4	Check that after 180 seconds the DWL extinguishes and the DRL (if applicable) commences to flash.	Up	Up X	Dn	Dn X

16.5	Check that 30 seconds after the DWL extinguishes the red flashing road signals extinguish.	Up	Up X	Dn	Dn X
16.6	Remove the train simulation and operate the exit function. Check that the crossing controls return to there normal state. If necessary re-set the circuits.	Up	Up X	Dn	Dn X
16.7	Repeat 16.1 to 16.5 for all other directions where controls are provided. Record the results in the table below. If any adjustments have to be made to achieve these times, allow a period of time for the bi-metal strip in the timer to cool down.	Up	Up X	Dn	Dn X

Direction	TC Name	DWL Extinguishes (Seconds)	Red Road Signals Extinguishes (Seconds)
Up			
Up X			
Dn			
Dn X			

17. Drivers Plunger Unit

Is This Section Applicable to the Crossing Under Test?	Yes	No

These are normally fitted to modern installations.

NOTE: *On some designs the DWL will not illuminate when the drivers plunger is operated after the crossing has timed out. The DRL (if provided) will remain flashing. Check the control tables and diagrams for the crossing you are testing.*

17.1	Simulate an approaching train by shunting a controlling track circuit and allow the crossing to time out.	Up	Up X	Dn	Dn X
17.2	Open the door of the unit and operate the plunger. Check that the crossing sequence starts.	Up	Up X	Dn	Dn X
17.3	Check that DWL for the direction of the plunger operation illuminates (if designed to do so, see note at start of section).	Up	Up X	Dn	Dn X
17.4	Reset the circuits to normalise the crossing controls. Close and lock the door of the plunger unit.	Up	Up X	Dn	Dn X
17.5	Repeat 17.1 and 17.3 for all other driver's plunger units.	Up	Up X	Dn	Dn X

18. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

Check in the control tables for any special controls functions that are applicable to the crossing

18.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	Result

19. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test

19.1	Check and identify the distance of track circuits and treadles as specified on the signalling plan. Record the design and actual dimensions.

Line	Design Measurement	Actual Measurement

20. Power Supplies and Batteries

20.1	Simulate a train striking in and allow the crossing to operate.	
20.2	Check that the DWL for the direction in which the simulation was applied illuminates and (if applicable) the DRL extinguishes.	
20.3	Disconnect the mains power and Check that the DWL extinguishes and (if provided) the DRL illuminates.	
20.4	Reconnect the power and Check that the DWL illuminates and the DRL extinguishes.	
20.5	Remove the train simulation and operate the exit function.	
20.6	Check that the crossing controls return to there normal state.	
20.7	If necessary re-set the circuits	
20.8	Carry out NR/SMS/PartB/Test/051 (Busbar Earth Test) or NR/SMS/PartB/Test/053 (ELD Function Test).	
20.9	Carry out NR/SMS/PartB/Test/052 (Dynamic Earth Tests) - Level Crossing Barriers.	

Power Supply Identification

END

LEVEL CROSSING TESTING

AUTOMATIC OPEN CROSSING REMOTELY MONITORED

NR/SMS/LX73

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GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 and NR/SMS/PartB/Test/073 . It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/SG00 for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S)	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Local Control Unit

2.1	Open the local control unit door. Check when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.	
2.2	Operate the LCU to the on position, Check the road lights and audible warnings operate	
2.3	Operate the LCU to the off position, Check the road lights extinguish and audible warnings cease.	
2.4	Operate the LCU to on position, allow the sequence to complete then switch to the auto position. Observe the road lights extinguish and audible warnings cease.	
2.5	Close and lock the LCU door. Check the door cannot be locked unless the switch is in the Auto position.	

3. Road Traffic Light Signals

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

3.1	On each of the road traffic light signals check the following items:						
3.2	The signal structure is stable.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.3	The signal light units are undamaged and the hoods are securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.4	The signal lenses are undamaged, clean and correctly orientated.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.5	Signs and notices attached to the signal post are undamaged, clean, and legible See NR/SMS/SG00 for details on reflective boards and signs.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.6	Cables and conduit are undamaged and secure.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.7	Check that if the signals are fitted with 50-watt Quartz Halogen lamps the road traffic light signal backboard is fitted with a red/white border. White only and red/white border backboards shall not be mixed together at the same crossing.	YO	YN	ZO	ZN	Aux 1	Aux 2

4. Audible Warnings

4.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
4.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
4.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN
4.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to ‘skip’ the set controls on certain days, check this is not activated.				

5. Another Train Coming Signs

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

5.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
5.2	Check that the hood is securely fitted and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2
5.3	If a sun screen is fitted, check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

6. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

	Signal Number	Signal Identification
	Aux 1	
	Aux 2	

6.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
6.2	Check that the hood is securely fitted and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2
6.3	If a sun screen is fitted Check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

7. Telephone System

The majority of installations usually have two emergency phones and an LCU phone. There are also some installations that have ‘lay-by’ phones because of the road
conditions. The crossing section order will state the telephone system that is required at the crossing.

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	
4	

		Telephone Identity (see Grid)			
7.1	Check the telephone and cord is undamaged.	1	2	3	4
7.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3	4
7.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone	1	2	3	4
7.4	Check that the correct crossing name is stated on any telephone labels and signs. The site plan will give information on the correct names/numbers that shall be displayed.	1	2	3	4
7.5	If betalights are fitted Check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	1	2	3	4
7.6	On emergency telephones Check that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and Check that the recipient uses the correct procedures for the call.	1	2	3	4

Public Telephone Numbers	Checked

7.7	Ring the monitoring point and Check that the call is received correctly. Ask the monitoring point to ring back.	1	2	3	4
7.8	Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whitely PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' During this period transmission and reception of speech is not possible.	1	2	3	4
7.9	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly. Whitely PETS systems will indicate a fault at the monitoring point.	1	2	3	4
7.10	If a block switch is fitted Check that when operated 7.5 to 7.6 operate correct at the alternative monitoring point.	1	2	3	4
7.11	Check that at the normal monitoring point any audible devices do not sound	1	2	3	4
7.12	Repeat 7.7 for any other alternative monitoring points.	1	2	3	4
7.13	If an absent switch is fitted to the telephone system operate it and Check that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch back to normal operation and Check that a normal emergence call is received.	1	2	3	4
7.14	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 7.7 to 7.13. Switch the mains power to the telephone system back on.				

8. Red Flashing Road Traffic Light Signal Proving

The crossing shall be operated by train simulation. A competent person (not the signaller) is required at the monitoring point(s) to observe the indications.

If auxiliary road traffic light signals are fitted (in addition to YO,YN, ZO and ZN), list the additional signal identification below:

	Signal Number	Signal Identification
	Aux 1	
	Aux 2	

8.1	Turn the mains power off.						
8.2	Simulate a train striking in and allow the crossing to operate. Check that all the red road signals are illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Aux 2
8.3	Measure the rate of flashing (Between 70 and 90 flashes per minute)			**FPM**			
8.4	Disconnect the left and right lamps on one of the light units by slipping the links in the equipment room/loc and Check that the indication at the monitoring point shows failed/local control.	YO	YN	ZO	ZN	Aux 1	Aux 2
8.5	Re-connect the right-hand lamp and check that the indication at the monitoring point shows in order.	YO	YN	ZO	ZN	Aux 1	Aux 2
8.6	Disconnect again the right-hand lamp and Check that the indication at the monitoring point shows failed/local control.	YO	YN	ZO	ZN	Aux 1	Aux 2
8.7	Re-connect the left-hand lamp and check that the indication at the monitoring point shows in order.	YO	YN	ZO	ZN	Aux 1	Aux 2
8.8	Re-connect the right hand lamp and Repeat 8.2 to 8.7 for all other light units. The flashes per minute rate only requires to be measured on one light unit.	YO	YN	ZO	ZN	Aux 1	Aux 2

9. Another Train Coming Signal Proving

Is This Section Applicable to the Crossing Under Test?	Yes	No

	On double lines where this facility exists simulate a train striking in on line one, then simulate a train striking in on line two.	
9.1	Operate the exit function for the train on line one and Check that the red flashing road signals and any pedestrian signals and (if applicable) ATC signs are illuminated and flashing.	
9.2	On the flasher unit disconnect the strap ER1 to ER2 and Check that red flashing road signals and any pedestrian signals and (if applicable) ATC signs remain illuminated and are not flashing	
9.3	Check at the monitoring point that a failed/local control indication is received	
9.4	Reconnect the strap ER1 to ER2 on the flasher and Check that red flashing road signals and any pedestrian signals and (if applicable) ATC signs remain illuminated and flashing.	
9.5	Check at the monitoring point that an in-order indication is received.	

10. Local Control Sequence

	Operate the switch on the local control unit to the On position and check the following items:	
10.1	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	
10.2	After 3 seconds all the amber signals extinguish and all the red road signals and any pedestrian lights start to flash.	
10.3	Operate the switch to the Off position and check the following:	
10.4	The red flashing road signals, yodalarms and any pedestrian lights are extinguished.	
10.5	Check that the guide on the inside of the local control unit door prevents the door being closed and locked unless the switch is in the auto position.	
10.6	Operate the switch to the Auto position and close and lock the door. Check that the correct indication is received at the monitoring point.	

11. Automatic Control Sequence

- Check in the crossing control tables for any special controls that affect the automatic control sequence.
- Where the word EXIT occurs the strike out treadle shall be operated.
- On single lines or where bi-directional controls exist the leaving track circuit shall also be operated.
- Where directional proving controls exists the bi-directional strike out treadle shall also be operated in the correct sequence.

	Simulate an approaching train by shunting a controlling track circuit. Observe the following:				
11.1	On double lines 10 seconds elapse before the crossing sequence commences. On single lines the sequence starts immediately.	Up	Up X	Dn	Dn X
11.2	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Up	Up X	Dn	Dn X
11.3	After 3 seconds all the amber signals extinguish and all the red road signals and any pedestrian lights start to flash	Up	Up X	Dn	Dn X
11.4	Operate the exit function and remove the train simulation and Observe the road lights, any pedestrian lights and audible warnings cease immediately.	Up	Up X	Dn	Dn X
11.5	Repeat steps 11.1 to 11.5 for the opposite direction on a single line and the other direction on double lines.	Up	Up X	Dn	Dn X

12. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

	Simulate a train striking in on line one.		
	Simulate a second train striking in on line two. check the following:		
12.1	The road lights and any pedestrian lights continue to flash.	Up	Dn
12.2	The audible warning rate continues at the normal rate	Up	Dn
12.3	Operate the exit function and remove the simulation on line one. Observe the following:		
12.4	The road lights and any pedestrian lights continue to flash.	Up	Dn
12.5	The audible warning rate changes to the increased rate.	Up	Dn
12.6	The ATC signs (if Illuminating) illuminate, flash and the words are correct	Up	Dn
12.7	Operate the exit function and remove the simulation on line two. Observe the road lights, any pedestrian lights and audible warnings cease immediately.	Up	Dn
12.8	Repeat steps 12.1 to 12.7 for a train striking in on line two first and a second train striking in on line one.	Up	Dn

13. Strike In Track Circuit Resetting

	Simulate an approaching train by shunting a controlling track circuit.				
13.1	As soon as the red flashing road signals illuminate remove the train simulation and start timing with a stopwatch.	Up	Up X	Dn	Dn X
13.2	Check that after 120 seconds the red flashing road signals extinguish.				
13.3	Check that the crossing controls return to their normal state. If necessary, re-set the circuits				
13.4	Repeat 13.1 to 13.3 for all other directions where controls are provided. Record the results in the table below If any adjustments have to be made to achieve these times, allow a period of time for the bi-metal strip in the timer to cool down.				

Direction	TC Name	Red Road Light extinguishes (second)
Up		
UpX		
Dn		
DnX		

14. Exit Track Circuit Resetting

	Simulate an approaching train by shunting a controlling track circuit.				
14.1	When the red flashing road signals have illuminated, shunt the exit track circuit, operate the exit function and remove the shunt from the strike in track circuit. Leave the exit track circuit shunted	Up	Up X	Dn	Dn X
14.2	Observe that the red flashing road signals extinguish and start timing with a stopwatch as soon as this occurs				
14.3	Check that after 130 seconds on double lines or 120 seconds on single lines the crossing sequence commences as detailed in 14.1				
14.4	Remove the shunt from the exit track circuit and Check that the crossing controls return to their normal state after the strike in track circuit timing has completed				
14.5	Repeat 14.1 to 14.4 for all other directions where controls are provided. Record the results in the table below. If any adjustments have to be made to achieve these times, allow a period of time for the bi-metal strip in the timer to cool down.				

Direction	TC Name	Red Road Light extinguishes (second)
Up		
UpX		
Dn		
DnX		

15. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

15.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	Result

16. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test

16.1	Check and identify the distance of track circuits and treadles as specified on the signalling plan. Record the design and actual dimensions	Up	Up X	Dn	Dn X

Line	Design Measurement	Actual Measurement
Up		
Up X		
Dn		
Dn X		

17. Indications (Needle Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test?	Yes	No

It may be convenient to combine this with Section 7 Telephone systems

A competent person (not the signaller) is required at the monitoring point(s) to observe the indications.

17.1	Check that the indicator is in the in order/power on position.	
17.2	Simulate a train striking in and observe that the indicator moves to the no legend position.	
17.3	Remove the train simulation and operate the exit function, observe that the indication returns to the in order/power on position.	
17.4	Open the local control operator’s door observe that the indicator moves to the no legend position.	
17.5	Close and lock the operator’s door, observe that the indicator returns to the in order/power on position.	
17.6	Simulate a train striking in and observe that the indicator moves to the no legend position.	
17.7	Check that after 240 seconds on double lines or 180 seconds on single lines the audible alarm sounds and it can be silenced.	
17.8	Remove the train simulation and operate the exit function. Observe that the indication returns to the in order/power on position and the audible alarm sounds and it can be silenced.	
17.9	Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). Observe that for each fuse the indicator moves to the in order/power off position and Check that the audible alarm sounds and can be silenced.	
17.10	When each fuse is replaced Observe that the indicator returns to the barriers raised / power on position and Check that the audible alarm sounds and can be silenced.	
17.11	Check (where provided) that the monitoring point test switches operate.	

17.12	If an Absent switch is provided, switch to the absent position and Check that the indicator moves to the no legend position, the audible alarms devices do not sound, and the level crossing protecting functions (block/signal) are effective.	
17.13	If a block switch is provided, switch to the alternative monitoring point and Check that at the normal monitoring point the indicator moves to the no legend position and the audible alarms devices do not sound. At the alternative monitoring point repeat 17.1 to 17.12	

18. Indications (Lamp Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test?	Yes	No

It may be convenient to combine this with Section 7 Telephone systems

A competent person (not the signaller) is required at the monitoring point(s) to observe the indications.

18.1	Check that the indications show in order and power on.	
18.2	Simulate a train striking in and Observe the in order indication extinguishes and the power on indication remains illuminated.	
18.3	Operate the exit function and remove the train simulation, Observe that the in order indication illuminates and the power on indication remains illuminated.	
18.4	Open the LCU unit door and Observe that the in order indication extinguishes. Close and lock the door. Observe that the in order indication illuminates and the power on indication remains illuminated.	
18.5	Simulate a train striking in and Observe that the in order indicator extinguishes.	
18.6	Check that after 240 seconds on double lines or 180 seconds on single lines the failed/local control indication illuminates and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated	
18.7	Remove the train simulation and operate the exit function, Observe that the failed/local control indication extinguishes, the in order indication illuminates and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated.	
18.8	Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). Observe that for each fuse the power on indication extinguishes and the standby in use indication illuminates.	
18.9	Check that the audible alarm sounds and can be silenced.	
18.10	When each fuse is replaced Observe that the standby in use indication extinguishes and the power on indication illuminates.	
18.11	Check that the audible alarm sounds and can be silenced. The in-order indication will remain illuminated.	

18.12	Check (where provided) that the monitoring point test switches operate.	
18.13	If an Absent switch is provided, switch to the absent position and Check that all the indications extinguish, the audible alarms devices do not sound and the level crossing protecting functions (block/signal) are effective.	
18.14	If a block switch is provided, switch to the alternative monitoring point and Check that at the normal monitoring point all the indications are extinguished and the audible alarms devices do not sound. At the alternative monitoring point repeat 18.1 to 18.13	

19. Power Supplies and Batteries

19.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
19.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

END

LEVEL CROSSING TESTING

MINIATURE STOP LIGHT CROSSING (MINIATURE WARNING LIGHTS)

NR/SMS/LX74

Uncontrolled copy once printed from its electronic source.

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 and NR/SMS/PartB/Test/074 . It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/SG00 for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S)	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Red/Green Light Units

2.1	On each of the red/green light units check the following items:		
2.2	The light unit structure is stable.	Y	Z
2.3	The light unit is correctly aligned and the lights are clearly visible from the crossing entry point.	Y	Z
2.4	The light units are undamaged and the hoods are securely fitted.	Y	Z
2.5	The red and green lenses are undamaged and clean.	Y	Z
2.6	Signs and notices attached to the light unit post are undamaged, clean and legible.	Y	Z
2.7	Cables and conduit are undamaged and secure.	Y	Z

3. Gates

Is This Section Applicable to the Crossing Under Test?	Yes	No

3.1 C	Check that the gate and fixtures and fittings are undamaged and in good condition.	Y	Z
3.2	Check that the gatepost is stable and securely fixed into the ground.	Y	Z

3.3	Check that the gate locks or hooks are effective in both the open and closed positions.	Y	Z
3.4	Check that any red roundels or signs attached to the gate are undamaged, clean and legible. Signs and roundels shall be of class 1 retro-reflective material.	Y	Z
3.5	If wicket gates are provided, check they are undamaged, stable and in good condition.	Y	Z
3.6	Check that the gatepost is stable and securely fixed into the ground.	Y	Z
3.7	Check (if fitted) that the gate closing mechanism is effective.	Y	Z

4. Audible Warnings

Is This Section Applicable to the Crossing Under Test?	Yes	No

4.1 V	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	Y	Z
4.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary	Y	Z
4.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	Y	Z
4.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.	Y	Z

5. Telephone System

Is This Section Applicable to the Crossing Under Test?	Yes	No

5.1	Check the telephone and cord is undamaged and the correct labels and symbols are fitted inside and outside the case and they are legible.	Y	Z
5.2	Check that any associated signs are stable, undamaged and legible. Emergence telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	Y	Z
5.3	Check that the correct crossing name is stated on any telephone labels and signs.	Y	Z

5.4	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	Y	Z
5.5	If betalights are fitted Check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	Y	Z
5.6	On emergency telephones Check that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and Check the recipient gives correct procedures for the call.	Y	Z
5.7	Ring the monitoring point and Check that the call is received correctly. Ask the monitoring point to ring back and Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes', during this period transmission and reception of speech is not possible	Y	Z
5.8	Check that with one of the public access telephones left 'off the hook' calls on the other telephone can be made and received correctly. Whiteley PETS systems will indicate a fault at the monitoring point.	Y	Z
5.9	If an absent switch is fitted to the telephone system operate it and Check that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch back to normal operation and Check that a normal emergence call is received.	Y	Z
5.10	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 5.7 to 5.9. Switch the mains power to the telephone system back on	Y	Z

6. Red/Green Lamp Operation

6.1	With no trains approaching Check that the light units are showing a green light, operate either the replacement switch to 'red' or slip the test link and Observe that the light units are showing a red light. Operate the replacement switch to the 'auto' position or re-connect the test link and Observe that the light units are showing a green light.	

7. Local Control Sequence

- Check in the crossing control tables for any special controls that affect the automatic control sequence.
- Where the word EXIT occurs, the strike out treadle shall be operated.

	Simulate an approaching train by shunting a controlling track circuit. Observe the following:				
7.1	The green lamps on both light units extinguish and the red lamps illuminate.	Up	Up X	Dn	Dn X
7.2	The audible warnings (if provided) sound.	Up	Up X	Dn	Dn X
7.3	Operate the exit function and remove the train simulation. Observe the following:				
7.4	The red lamps on both light units extinguish and the green lamps illuminate.	Up	Up X	Dn	Dn X
7.5	The audible warnings (if provided) cease	Up	Up X	Dn	Dn X
7.6	Repeat steps 7.1 to 7.6 for all other directions where controls are provided.	Up	Up X	Dn	Dn X

8. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

	Simulate a train striking in on line one.				
	Simulate a second train striking in on line two. Check the following:				
	Operate the exit function and remove the simulation on line one. Observe the following:				
8.1	The green lamps on both light units stay extinguished and the red lamps stay illuminated	Up	Up X	Dn	Dn X
8.2	The audible warnings (if provided) changes to the increased rate.	Up	Up X	Dn	Dn X
8.3	Operate the exit function for the train simulation on line two and Observe the following.				
8.4	The red lamps on both light units extinguish and the green lamps illuminate.	Up	Up X	Dn	Dn X
8.5	The audible warnings (if provided) cease	Up	Up X	Dn	Dn X
8.6	Repeat steps 8.1 to 8.5 for all other directions where controls are provided.	Up	Up X	Dn	Dn X

9. Strike In Track Circuit Resetting

Is This Section Applicable to the Crossing Under Test?	Yes	No

9.10	Simulate an approaching train by shunting a controlling track circuit. Observe that the light units show a red light.	Up	Up X	Dn	Dn X
9.2	Make up the track circuit and start timing with a stopwatch from the time the track circuit is re-connected. Check that the red lights remain illuminated.	Up	Up X	Dn	Dn X
9.3	Observe that after 120 seconds the red lights are extinguished and the green lights illuminate. If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down.	Up	Up X	Dn	Dn X
9.4	Repeat 9.1 to 9.3 for all other directions where controls are provided. Record the results in the table below.	Up	Up X	Dn	Dn X

Direction	TC Name	Red Road Light extinguishes (second)
Up		
UpX		
Dn		
DnX		

10. Leaving Track Circuit Monitoring

Is This Section Applicable to the Crossing Under Test?	Yes	No

10.1	Simulate a train striking in by dropping a controlling track circuit, Observe that the red lights illuminate	Up	Up X	Dn	Dn X
10.2	Drop the leaving track circuit, operate the exit function and make up the controlling track circuit. Check that the leaving track circuit remains dropped.	Up	Up X	Dn	Dn X
10.3	Observe that the red lights are extinguished and the green lights illuminate. Start timing with a stopwatch as soon as the red lights are extinguished.	Up	Up X	Dn	Dn X
10.4	Observe that after 240 seconds the green lights extinguish and the red lights stay extinguished.	Up	Up X	Dn	Dn X
10.5	Re-connect the leaving track circuit and reset the control circuits. Check that the green lights illuminate. Record the time in the table.	Up	Up X	Dn	Dn X

Direction	TC Name	Red Road Light extinguishes (second)
Up		
UpX		
Dn		
DnX		

11. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

11.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	Result

12. Power Supplies and Batteries

12.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
12.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

END

LEVEL CROSSING TESTING

MANUALLY CONTROLLED BARRIERS (MCB)

NR/SMS/LX75

Uncontrolled copy once printed from its electronic source.

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 and NR/SMS/PartB/Test/075. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/PartC/SG00 for details on reflective boards and signs.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S).	
1.4	Check the condition of the road surface over the crossing.	
1.5	Check that the road markings between and including the stop lines are complete and visible.	
1.6	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.7	Check the condition and the security of any fencing around the barrier machines and (if provided) on the approach to equipment room or locations.	
1.8	Check (if provided) that any crossing illumination works correctly.	

2. Booms and Barrier Machines

2.1	Check when lowered under power operation the lock down feature on each barrier is effective. Resistance is felt when the barrier is lifted.	YN	YO	ZN	ZO
2.2	Check when on hand operation the booms can be lifted by hand to a fully raised position and can be retained in that position. Hand operation can be by using the machines pump handle or manually lifting the boom as appropriate to the machine type.	YN	YO	ZN	ZO
2.3	Check by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands or limit switches whilst raising the boom on 'hand' operation. Adjust if necessary (Appendix A). The inclinometer can be a stand-alone unit or the one built into the barrier pedestal (as long as it is undamaged)	YN	YO	ZN	ZO
2.4	Check (if provided) that the boom proving circuit is intact and operational. Beware of the (Barr)PR circuit being shorted out on individual booms.	YN	YO	ZN	ZO
2.5	Check when the booms are lowered that the boom skirting is undamaged and effective	YN	YO	ZN	ZO
2.6	Check on hydraulic barriers that the boom is damped during the last 10° to 15° of movement.	YN	YO	ZN	ZO

2.7	Check when the booms are fully raised that the skirting folds correctly. Replace any missing rods and replace/repair any broken bottom pieces	YN	YO	ZN	ZO
2.8	Check the alignment of each boom when they are lowered, check on two barrier installations they align correctly with the appropriate end post and on four barrier installations the two barrier ends align correctly. It shall not be possible for a person to get around the end of a boom	YN	YO	ZN	ZO
2.9	<u>Installations with BR843 barrier packs only</u> Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device the tip weight by using the following method:				
	• At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.				
	• Connect the weight measuring device to the tip end of the boom.				
	• Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.				

	Boom Length	Tip Weight
	3.6m to 4.1m	7.6Kg
	4.6m to 9.1m	6.1Kg

YO	YN	ZO	ZN

3. Road Traffic Light Signals

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

On each of the road traffic light signals Check the following items:

3.1	The signal structure is stable.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.2	The signal light units are undamaged and the hoods are securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.3	The signal lenses are undamaged, clean and correctly orientated.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.4	Signs and notices attached to the signal post are undamaged, clean, and legible See	YO	YN	ZO	ZN	Aux 1	Aux 2

	NR/SMS/SG00 for details on reflective boards and signs.						
3.5	Cables and conduit are undamaged and secure.	YO	YN	ZO	ZN	Aux 1	Aux 2
3.6	Check that if the signals are fitted with 50-watt Quartz Halogen lamps the road traffic light signal backboard is fitted with a red/white border. White only and red/white border backboards shall not be mixed together at the same crossing.	YO	YN	ZO	ZN	Aux 1	Aux 2

4. Audible Warnings

Is This Section Applicable to the Crossing Under Test?	Yes	No

4.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
4.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
4.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN
4.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to ‘skip’ the set controls on certain days, check this is not activated.				

5. Barrier Proving

Is This Section Applicable to the Crossing Under Test?	Yes	No

These tests are to be carried out under power operation

5.1	Prevent one of the booms from lowering then lower the remaining boom(s). Check that after 20 seconds a failed indication is received on the signallers control panel.	
5.2	Lower the still raised boom and Check that when it is fully lowered the failed indication is extinguished.	
5.3	Prevent one of the booms from rising then raise the remaining boom(s). Check that after 20 seconds a failed indication is received on the Signallers control panel.	

5.4	Lower the booms and then allow all the booms to rise. Check that the failed indication extinguishes when all the booms are fully lowered or when the raise button is operated. If these times are not achieved adjustment shall be made to the (Failed)JR. This is a pneumatic slow release relay therefore no 'cooling' time is required between adjustments	

(Failed)JR Timing (In Seconds)			
Before Adjustment		After Adjustment	

6. Red Flashing Road Traffic Light Signal Proving

Some early installations only require one red road light to be working on the Y or Z side before an indication is given of lamp failure. Check the diagrams for circuit design.

At TMOB the indications will be via the DCI, check the diagrams for the circuit design.

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

6.1	Lower the booms and check that all the red road signals are illuminated (flashing) and the red road light indications on the signaller's panel are illuminated.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.2	Measure the rate of flashing (Between 70 and 90 flashes per minute).			**FPM**			
6.3	Disconnect the left lamp on one of the Y side light units by slipping the link in the equipment room/loc. Check that the Y road light indication on the signaller's panel begins to flash.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.4	Disconnect the right lamp on the same light unit and check that the Y road light indication on the signaller's panel extinguishes.	YO	YN	ZO	ZN	Aux 1	Aux 2

6.5	Reconnect the left lamp on the light unit and check that the Y road light indication on the signaller's panel begins to flash.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.6	Reconnect the right-hand lamp and check that the Y road light indication is illuminated and not flashing.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.7	Repeat 6.3 to 6.6 for the other units on the Y side of the crossing and for the light units on the Z side of the crossing. When testing the Z road light units observe the Z road light indication on the signaller's panel	YO	YN	ZO	ZN	Aux 1	Aux 2

7. Barrier Operation Sequence (Not TMOB)

Is This Section Applicable to the Crossing Under Test?	Yes	No

	Press the lower button and Observe the following:	
7.1	All the Amber lights illuminate and show a steady light.	
7.2	The audible warnings (if fitted) sound when the amber lights illuminate and continue until all the booms have fully lowered	
7.3	After approximately 3 to 5 seconds the amber lights extinguish and all the red lights begin to flash	
7.4	After approximately 4 to 6 seconds after the red lights have started to flash the booms begin to lower	
7.5	At installations with four booms, Check the nearside booms (YN & ZN) lower first and are completely lowered before the offside booms (YO & ZO) began to lower	
7.6	The boom lights on each boom illuminate when the boom is approximately 80° from the horizontal	
7.7	Each boom takes between 6 to 10 seconds to completely lower. Check that the boom damping (if fitted) is effective when the boom is approximately 10° to 15° from the fully lowered position	
7.8	The audible warnings (if fitted) cease to sound when all the booms have fully lowered	
	Press the raise button and Observe the following:	
7.9	All the booms began to rise simultaneously and take 4 to 10 seconds to reach the fully raised position at between 83° and 85° from the horizontal	
7.10	The flashing red lights continue to show until the booms have reached a maximum of 45° from the horizontal	
7.11	The boom lights extinguish when all the booms have passed 80° from the horizontal	
7.12	Press the LOWER button and allow the sequence to continue until the nearside booms (YN & ZN) have started to lower then stop the lowering sequence (press the STOP button or release the LOWER button).	
7.13	Observe the boom movement is arrested. The flashing red lights and audible warnings (if fitted) continue to sound	

7.14	Press the LOWER button and Observe that the boom lower sequence continues.	
7.15	Repeat steps 7.12 to 7.14 for installations with four booms when the offside booms (ZO &YO) have started to lower	
	Press the RAISE button and allow the raise sequence to continue until the booms have started to rise and the flashing red lights have extinguished then stop the raising sequence (press the STOP button or press the LOWER button). Observe the following:	
7.16	All the booms movement is arrested.	
7.17	The audible warnings (if fitted) and amber lights commence to operate followed by the flashing red lights.	
	Operate either the RAISE or LOWER button and Observe the following:	
7.18	The RAISE button allows the booms to rise, extinguishing the amber/flashing red lights, and silencing the audible warnings (if fitted.)	
7.19	The LOWER button allows the boom to lower providing the amber and flashing red light periods have elapsed. At four barrier installations the nearside booms (YN & ZN) will lower first	

8. Crossing Clear Functions

NOTE: *Not installations with auto lower facilities.*

Is This Section Applicable to the Crossing Under Test?	Yes	No

8.1	Check when the booms are fully lowered that the protecting signals cannot be cleared until the crossing clear function has been operated.	
8.2	Check at CCTV-MB installations if auto raise is selected the picture on the monitor is extinguished when the crossing clear function is operated. Check if manual raise is selected the picture remains.	

9. Auto Lower Functions

Is This Section Applicable to the Crossing Under Test?	Yes	No

9.1	Check when the barriers are called to lower an audible warning (if provided) is given and a picture is called on the monitor.	
9.2	Check when the booms are fully lowered an audible warning (if provided) is given and the crossing clear indication flashes.	
9.3	Check when the crossing clear function is operated the protecting signals clear. If auto raise is selected Check that the picture on the monitor is extinguished.	

10. Track Circuits (CCTV-MB Installations Only)

Is This Section Applicable to the Crossing Under Test?	Yes	No

10.1	Shunt the approaching track circuits to the crossing and Observe that the amber road lights followed by the flashing red road lights illuminate and the audible warnings sound.	Up	Dn
10.2	Check that the sequence can be cancelled by pressing the raise button. At some installations, a full lowering sequence will have to be performed to normalise the controls.	Up	Dn

11. Installations Fitted with a Local Control Unit

Is This Section Applicable to the Crossing Under Test?	Yes	No

11.1	Open the door of the LCU, Check (if door proving is fitted) that the signaller's indications show failed otherwise switch to local control and Check that the signaller's indications show failed.	
11.2	Repeat steps 7.1 to 7.19 and Observe the following additional items at this location	
11.3	The Barriers Raised light (if provided) is not illuminated until local control is taken.	
11.4	The Barriers Lowered light (if provided) does not illuminate until all booms are fully lowered.	
11.5	At CCTV-MB installations no picture can be obtained on the monitors whilst the crossing is on local control.	
11.6	Return the crossing control back to the signaller. Check that the correct indications are obtained at the monitoring point. At some newer installations when giving local control back to the signaller the booms shall be in the lowered position. The signaller will then operate the booms to the raised position.	

12. Trainman Operated Barriers (TMOB)

Is This Section Applicable to the Crossing Under Test?	Yes	No

12.1	Check that the lowering sequence can only be initiated when the controlling track circuit is occupied, and the plunger is operated	
	Observe the following:	
12.2	All the Amber lights illuminate and show a steady light.	
12.3	The audible warnings (if fitted) sound when the amber lights illuminate and continue until all the booms have fully lowered	
12.4	After approximately 3 to 5 seconds the amber lights extinguish and all the red lights begin to flash	
12.5	After approximately 4 to 6 seconds after the red lights have started to flash the booms begin to lower.	

	At installations with four booms check the nearside booms (YN & ZN) lower first and are completely lowered before the offside booms (YO & ZO) began to lower.	
12.6	The boom lights on each boom illuminate when the boom is approximately 80° from the horizontal.	
12.7	Each boom takes between 6 to 10 seconds to completely lower. Check that boom damping (if fitted) is effective when the boom is approximately 10° to 15° from the fully lowered position.	
12.8	The audible warnings (if fitted) cease to sound when all the booms have fully lowered.	
12.9	Check the DCI (white light) operates only when all booms are fully lowered for the direction of the applied simulation.	
	Operate the exit function and Observe the following:	
12.10	All the booms begin to rise simultaneously and take 4 to 10 seconds to reach the fully raised position at between 83° and 85° from the horizontal.	
12.11	The flashing red lights continue to show until the booms have reached a maximum of 45° from the horizontal.	
12.12	The boom lights extinguish when all the booms have passed 80° from the horizontal.	
12.13	Check the DCI (white light) has extinguished.	

13. Power Supplies and Batteries

13.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
13.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

APPENDIX A - Circuit Controller Band Settings

Band	Made Between
DN KR	0° and 4°
HJPR	42° and 90°(#)
MR	0° and 83°
UP KR	81° and 90°

#: The HJPR band on early installations may be set to make sooner than 42°. Check the diagrams for the required setting for the installation you are testing.

NOTE: *It is important to obtain the over-lap between the UP KR band making and the MR band breaking. This is to ensure that if a boom drops slightly it will drive up again before the red road signals operate.*

On barrier units that use limit switches in place of circuit controllers, reference shall be made to the diagrams for the positions of the cams.

END

LEVEL CROSSING TESTING

ON CALL BARRIERS (OCB)

NR/SMS/LX76

Uncontrolled copy once printed from its electronic source.

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 and NR/SMS/PartB/Test/076. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Booms and Barrier Machines

OCB installations can have various types of barrier machines fitted, refer to the appropriate NR/SMS for the full service for the barrier machine.

1.1	Check (if provided) that the boom proving circuit is intact and operational	Y	Z
1.2	Check when the booms are lowered that the boom skirting is undamaged and effective	Y	Z
1.3	Check when the booms are fully raised that the skirting folds correctly. Replace any missing rods and replace/repair any broken bottom pieces.	Y	Z
1.4	<u>Installations with BR843 barrier packs only</u> Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device, the tip weight by using the following method:		
1.5	Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device the tip weight by using the following method:		
	• At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.		
	• Connect the weight measuring device to the tip end of the boom.		
	• Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.		

	Boom Length	Tip Weight
	3.6m to 4.1m	7.6Kg
	4.6m to 9.1m	6.1Kg

Y	Z

2. Audible Warnings

2.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
2.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
2.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN

2.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.	

3. Barrier Proving and Sequence Test

The booms can be lowered and raised by local control or train simulation.

	Operate the lower switch/button and Observe the following:		
3.1	The audible warnings sound.	Y	Z
3.2	The Booms commence to fall 8 to10 seconds after the audible warnings commence.	Y	Z
3.3	They are fully lowered in a further 8 to15 seconds.	Y	Z
3.4	The booms lights illuminate when the booms are approximately 80° from the horizontal.	Y	Z
3.5	The audible warnings continue to sound until both booms are fully lowered.	Y	Z
	Operate the raise switch/button and Observe the following:		
3.6	The booms commence to rise.	Y	Z
3.7	The boom lights extinguish when the booms have passed 80° from the horizontal.	Y	Z
3.8	The barrier cut-off is effective when the booms reach the fully raised position of between 83° and 85° from the horizontal.	Y	Z
3.9	The booms take 8 to 15 seconds to reach the fully raised position.	Y	Z
3.10	Operate the lower switch/button and wait until the boom begins to lower then operate the stop switch/button and Observe that the boom lowering movement is arrested.	Y	Z
3.11	Operate the raise switch/button and wait until the boom begins to rise then operate the stop switch/button and Observe the following:		
3.12	The boom raising movement is arrested.	Y	Z
3.13	The audible warnings sound if the booms have risen more than 5° from the horizontal	Y	Z
3.14	Lower the booms and operate the emergency plunger at each barrier. Observe the following:		
3.15	The audible warning sounds and the appropriate boom rises.	Y	Z
3.16	After a fixed period, the booms lower and the audible warning ceases to sound.	Y	Z
3.17	Disconnect the power supply and Observe the booms lower in 8 to 15 seconds	Y	Z

3.18	Insert the special Allen key in the socket on the clutch and check that the micro-switch motor isolating contacts are broken.	Y	Z
3.19	Push the boom up by hand to the fully raised position and check that it remains in the raised position when the Allen key is turned to lock the boom.	Y	Z
3.20	Unlock the boom and return it to the fully lowered position. Remove the Allen key.	Y	Z
3.21	Reconnect the power supply and operate the raise switch/button. Check that the boom is fully raised.	Y	Z

4. Power Supplies and Batteries

4.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
4.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

END

LEVEL CROSSING TESTING

EBI GATE 200
LEVEL CROSSING SYSTEM

NR/SMS/LX77

Uncontrolled copy once printed from its electronic source.

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 and NR/SMS/PartB/Test/082 – Part 6 & Part 7 It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
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SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check the condition and the sighting of any signs on the crossing approaches. See NR/SMS/SG00 for details on reflective boards and signs.	
1.3	Check the condition of the road surface over the crossing.	
1.4	Check that the road markings between and including the stop lines are complete and visible.	
1.5	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.6	Check the condition and the security of any fencing around the barrier machines and (if provided) on the approach to equipment room or locations.	
1.7	Check (if provided) the condition and security of any pedestrian guardrails.	
1.8	Check (if provided) the condition and security of any wicket gates	
1.9	Check (if provided) that any crossing illumination works correctly.	

Any defects found in 1.1 and 1.3 shall be reported to the appropriate council via the SM(S).

2. EBI Gate Posts

	On each of the EBI Gate Posts check the following items:		
2.1	The Post is stable and undamaged	M	S
2.2	Signs and notices attached to post are undamaged, clean and legible.	M	S
2.3	The red and green lenses are undamaged and clean.	M	S
2.4	Observe LED illumination (Red/Green) from road and or foot approaches.	M	S
2.5	Check the background for any relevant side lighting and /or any obstructions such as fencing or vegetation. (Consider viewing positions for all type of crossing users – i.e crossing user in a high farm style vehicle or pedestrian)	M	S
2.6	If the crossing is an On-Demand type, check the push buttons on each unit are not damaged	M	S
	Terminations and wiring.		
2.7	Check that there has been no water ingress into EBI Gate Posts	M	S
2.8	Cables and plug couplers are undamaged and secure.	M	S

3. Gates

Is This Section Applicable to the Crossing Under Test?	Yes	No

3.1	Check that the gate and fixtures and fittings are undamaged and in good condition.	M	S
3.2	Check that the gatepost is stable and securely fixed into the ground.	M	S
3.3	Check that the gate locks or hooks are effective in both the open and closed positions.	M	S
3.4	Check that any red roundels or signs attached to the gate are undamaged, clean and legible. Signs and roundels shall be of class 1 retro-reflective material.	M	S
3.5	If wicket gates are provided check, they are undamaged, stable and in good condition.	M	S
3.6	Check that the gatepost is stable and securely fixed into the ground.	M	S
3.7	Check (if fitted) that the gate closing mechanism is effective.	M	S

4. Telephone Systems

Different types of telephone systems are fitted to AHBCs. BR Spec. 843 installations usually have two emergency phones and an LCU phone. The crossing section order will state the telephone system that is required at the crossing.

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	
4	

		Telephone Identity (see Grid)			
4.1	Check the telephone and cord is undamaged.	1	2	3	4
4.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3	4
4.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones shall have the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	1	2	3	4

4.4	Check that the correct crossing name is stated on any telephone labels and signs	1	2	3	4
4.5	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	1	2	3	4
4.6	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephone units that the public have access to.	1	2	3	4
4.7	Ring the monitoring point and check that the call is received correctly. Ask the monitoring point to ring back	1	2	3	4
4.8	Check the telephone rings correctly. Check the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes'. During this period transmission and reception of speech is not possible.	1	2	3	4
4.9	If lay-by and/or pedestal telephones are fitted Check that there is a ring differential at the monitoring point between them and the emergency telephones.	1	2	3	4
4.10	Check that if a lay-by or pedestal telephone is in use a call from the emergency telephone is still received correctly at the monitoring point.	1	2	3	4
4.11	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly Whitely PETS systems will indicate a fault at the monitoring point.	1	2	3	4
4.12	Ring the ETD number given for the public to call in an emergency, Check that the recipient gives correct procedures for the call. The site plan will give information on the correct names/numbers that shall be displayed.				

Public Telephone Numbers	**Checked**

5. System Test

5.1	Power down the system by removing the supply fuse and power back up and wait until the ACB boards are displaying alternating – -109 - 209 (System Initialising)	M

Toggle the Test/Reset switch to "Test" position and release and observe the following sequence on master and slave post.

On Demand System Check

5.2	RED LED's illuminate	M	S
5.3	After 5 seconds with the RED LED's still illuminated the Audible Warning sounds	M	S
5.4	After a further 5 seconds with the RED LED's still illuminated the Second Train Coming Audible warning sounds	M	S
5.5	Hold the test switch for 5 seconds with the RED LED's still illuminated the GREEN LED's also Illuminate. briefly	M	S
5.6	'If fitted push the On Demand button" and release the GREEN aspect will flash once (which signifies the button is operating correctly).	M	S
5.7	Then both the RED and GREEN LED will extinguish	M	S
5.8	The system is now in Dark Mode awaiting initialisation. This requires the Test/Reset switch to be operated.	M	S

Automatic Configuration Test Sequence

5.9	RED LED's illuminate	M	S
5.10	After 5 seconds with the RED LED's still illuminated the Audible Warning sounds	M	S
5.11	After a further 5 seconds with the RED LED's still illuminated the Second Train Coming Audible warning sounds	M	S
5.12	Hold the test switch for 5 seconds the RED LED's still illuminated the GREEN LED's also Illuminate.	M	S
5.13	Both the RED and GREEN will extinguish	M	S
5.14	The system is now in Dark Mode awaiting initialisation. This requires the Test/Reset switch to be operated.	M	S

6. Observe or simulate a train in normal direction

	Press one of the "on Demand" buttons (If Provided) At locations where an "On Demand" system is fitted, the button shall be pressed to illuminate the Red/Green LEDs. The system will revert to energy saving mode after a period of 5 minutes.		
6.1	Observe both Green LED's are illuminated.	M	S
6.2	When the train strikes in or the first axle counter section is occupied by using the toggle switches on the Axle counter Evaluator Board (IMC)	M	
6.3	Observe the Green LED's extinguish and are replaced by Red LED's	M	S
6.4	Check the audible warning sound from both Posts	M	S

6.5	Check the Axle Counter Board (ACB) for the first section shows an axle count.	M	
6.6	When the train has completely traversed the 2nd axle counter head or has been counted out, Check the ACB has returned to zero.	M	
6.7	Observe the Red LED's extinguished and are replaced by Green LED's and the audible warning has ceased to sound.	M	S
6.8	Observe the count shown on the ACB first section has transferred to the ACB for the second section.	M	
6.9	If you are observing the passage of a real train, check the ACB counts back to zero as the train passes over the last axle counter head.	M	
6.10	If you have simulated the passage of a train, you should complete this passage by using the toggle switches on the third IMC card to count out the axles shown on the ACB card.	M	

7. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

Up Direction

7.1	Press the on-demand button (if provided). Simulate the passage of a train in the "Up" direction using the toggle switches on the Axle counter Evaluator Board (IMC). Occupying block sections 1 and 2.	M	
7.2	Simulate a second train striking in in the "Down" direction.	M	
7.3	Observe that the Slave Post Red LED stays illuminated.		S
7.4	Observe that the Master Post Red LED stays illuminated.	M	
7.5	Check the audible warning from the Slave Post changes to the Another Train Coming warning.		S
7.6	Check the audible warning from the Master Post changes to the Another Train Coming warning.	M	
7.7	Complete the "normal passage" sequence for the train simulated on the "Up"	M	
7.8	Complete the "normal passage" sequence for the train simulation on the "Down" line and that the LED's return to Green.	M	

Down Direction

7.9	Press the on-demand button (if provided). Simulate the passage of a train in the "Down" direction using the toggle switches on the Axle counter Evaluator Board (IMC). Occupying block sections 3 and 4.	M	
7.10	Simulate a second train striking in in the Up direction.	M	
7.11	Observe that the Slave Post Red LED stays illuminated.		S
7.12	Observe that the Master Post Red LED stays illuminated.	M	
7.13	Check the audible warning from the Slave Post changes to the Another Train Coming warning.		S
7.14	Check the audible warning from the Master Post changes to the Another Train Coming warning.	M	
7.15	Complete the "normal passage" sequence for the train simulation on the "Down" Line.	M	
7.16	Complete the "normal passage" sequence for the train simulation on the "Up" line and that the LED's return to Green.	M	

8. Normal Direction Strike In Monitoring

8.1	Press the "on Demand" button on the Master Post (If Provided)	M	
8.2	Observe Green LED's are illuminated on both Posts.	M	S
8.3	Simulate a train striking in in the normal direction by using the toggle switches on the Axle counter Evaluator Board (IMC).	M	
8.4	Check the Post LED's are now Red and the audible alarm is sounding.	M	S
8.5	Using a stopwatch measure the length of time the audible alarms sound and the Red LED are displayed. By default, this should be 300 seconds (5 minutes) +/- 15 seconds. This time is the default setting; however, site specific condition may vary this time. The timer continues for another 600 seconds before the ACB cards resets and displays -109 / -209. This will mean a total time recorded should be 900 seconds.	Seconds	
8.6	Observe that the Red LED's extinguish / audible warning silenced and the crossing reverts to Dark Mode. No Post LED's are displayed when the "On Demand" (If provided) is pressed	M	S
8.7	The system can be reset by either the passage of a train or the simulated of the passage of a train.	M	

9. Wrong Direction Strike In Monitoring

9.1	Press the “on Demand” button on the Master Post (If Provided).	M	
9.2	Observe Green LED’s are illuminated on both Posts.	M	S
9.3	Simulate a train striking in in the wrong direction by using the toggle switches on the Axle counter Evaluator Board (IMC).	M	
9.4	Check the Post LED’s are now Red and the audible alarm is sounding.	M	S
9.5	Using a stopwatch measure the length of time the audible alarms sound and the Red LED are displayed. By default, this should be 300 seconds (5 minutes) +/- 15 seconds. This time is the default setting; however, site specific condition may vary this time. The timer continues for another 600 seconds before the ACB cards resets and displays -109 / -209. This will mean a total time recorded should be 900 seconds.	Seconds	
9.6	Observe that the Red LED’s extinguish / audible warning silenced and the crossing reverts to Dark Mode. No Post LED’s are displayed when the “On Demand” (If provided) is pressed.	M	S
9.7	The system can be reset by either the passage of a train or the simulated of the passage of a train.	M	

10. Power Supplies and Batteries

The EBI Gate 200 Level crossing Systems power requirements are provided from an external location case therefore; any power supply testing will be completed at that location and not within the EBI Gate 200 Post.

However, there is a UPS Controller and Battery within the Master Post's upper section, this should be isolated from the external power supply before any power supply testing is carried out.

Power Supply Identification

END

LEVEL CROSSING TESTING

VAMOS
LEVEL CROSSING SYSTEM

NR/SMS/LX78

Published & Issued by: Network Rail, 2nd Floor, One Eversholt Street, London, NW1 2DN

GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 and NR/SMS/PartB/Test/159. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

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SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements (If Provide)

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check the condition and the sighting of any signs on the crossing approaches. See NR/SMS/SG00 - Section 28 for details on reflective boards and signs.	
1.3	Check the condition of the road surface over the crossing.	
1.4	Check that the road markings between and including the stop lines are complete and visible.	
1.5	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.6	Check the condition and the security of any fencing around the barrier machines and (if provided) on the approach to equipment room or locations.	
1.7	Check (if provided) the condition and security of any pedestrian guardrails.	
1.8	Check (if provided) the condition and security of any wicket gates	

Any defects found in 1.1 and 1.3 shall be reported to the appropriate council via the SM(S).

2. Indication Posts

NOTE: *For the purposes of identification the "Indication Post" closest to the system location is called Pole 1 and the stand alone Pole 2.*

	On each of the Indication Posts check the following items:		
2.1	The post is stable and undamaged and anti-rotation is working	1	2
2.2	The post is correctly aligned and the LED's Indications are clearly visible from the crossing decision point.	1	2
2.3	The red and green lenses are undamaged and clean.	1	2
2.4	If the crossing is an On-Demand type, check the touch buttons on each unit are not damaged.	1	2
2.5	Signs and notices attached to post are undamaged, clean and legible.	1	2
2.6	Cables and/or plug couplers are undamaged and secure and shows no damage to cables with door opening and closing	1	2

3. Gates

Is This Section Applicable to the Crossing Under Test?	Yes	No

3.1	Check that the gate and fixtures and fittings are undamaged and in good condition and pedestrian gates are self-closing	1	2

3.2	Check that the gatepost is stable and securely fixed into the ground	1	2
3.3	Check that the gate locks or hooks are effective in both the open and closed positions	1	2
3.4	Check that any red roundels or signs attached to the gate are undamaged, clean and legible. Signs and roundels shall be of class 1 retro-reflective material	1	2
3.5	If wicket gates are provided check, they are undamaged, stable and in good condition.	1	2
3.6	Check (if fitted) that the gate closing mechanism is effective	1	2

4. Telephone Systems (Use as Applicable)

4.1	Check the telephone and cord is undamaged.	1	2
4.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2
4.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones shall have the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	1	2
4.4	Check that the correct crossing name is stated on any telephone labels and signs.	1	2
4.5	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	1	2
4.6	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephone units that the public have access to.	1	2
4.7	On emergency telephones, check that an ETD number is given for the public to call in case they cannot contact the monitoring point.	1	2
4.8	Ring this number and check that the recipient gives correct procedures for the call.	1	2
4.9	Ring the monitoring point and check that the call is received correctly. Ask the monitoring point to ring back.	1	2
4.10	Check the telephone rings correctly. Check the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes'. During this period transmission and reception of speech is not possible.	1	2
4.11	If lay-by and/or pedestal telephones are fitted check that there is a ring differential at the monitoring point between them and the emergency telephones.	1	2

4.12	Check that if a lay-by or pedestal telephone is in use a call from the emergency telephone is still received correctly at the monitoring point.	1	2
4.13	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly Whitely PETS systems will indicate a fault at the monitoring point.	1	2

5. Cabinet

5.1	Check the cabinet securely mounted, undamaged and locked.	
5.2	Check for water ingress and other contaminates.	
5.3	Check cables and or plug couplers are undamaged and secure.	
5.4	Scroll through the Telemetry Module screens to check there is are no failure modes present, if one is note investigate and correct the issue.	
5.5	Check that the Green "DC ok" LED is illuminated on the 24v DC PULS supply unit and the green "Status" light on the Buffer Module are both lit.	
5.6	Check that both of the surge arrestors have green indications showing in the status windows.	

For each IMC board working from left to right carry out the following

ES1A

5.7	Check the "PWR" LED is lit.	
5.8	Record the system current for SYS1	
5.9	Record the system current for SYS2	

AS1B

5.10	Check the "PWR" LED is lit.	
5.11	Record the system current for SYS1	
5.12	Record the system current for SYS2	

ES1B (Use as Applicable)

5.13	Check the "PWR" LED is lit.	
5.14	Record the system current for SYS1	
5.15	Record the system current for SYS2	

ES2B (Use as Applicable)

5.16	Check the “PWR” LED is lit.	
5.17	Record the system current for SYS1	
5.18	Record the system current for SYS2	

AS2A (Use as Applicable)

5.19	Check the “PWR” LED is lit.	
5.20	Record the system current for SYS1	
5.21	Record the system current for SYS2	

ES2A (Use as Applicable)

5.22	Check the “PWR” LED is lit.	
5.23	Record the system current for SYS1	
5.24	Record the system current for SYS2	

6. User Instruction Signs

6.1	Check that user instruction signage is legible and secure.	1	2

7. Wheel Sensor Test (Detection Capability)

By observation of the passage of a train or simulation check that each sensor head is functioning correctly

Rail Sensor	Location / Unique identity	Checked	
		Passage of Train	Simulation
ES1A			
AS1B			
ES1B			
ES2B			
AS2A			
ES2A			

8. Operational Sequence Test - No Train

NOTE: *Check no train will enter the level crossing strike in area from any direction for the duration of test.*

8.1	With the system in “Standby Mode” (No red or green indicator LED lit) using a timing device Press/touch the “On-Demand” button on one of the indication posts and start timing.	1	2
8.2	Observe that the “On-Demand” blue LED is extinguished and goes to yellow whilst touching button, at the same time the green LEDs illuminate in both indication posts.	1	2
8.3	Check the green LED’s are extinguished after 5 minutes.	1	2
8.4	Check the crossing returns to “Standby Mode” and the “On – Demand” red LED’s are illuminated.	1	2

9. Operational Sequence Test - One Train

NOTE: *Check no train will enter the level crossing strike in area from any direction for the duration of test.*

9.1	With the system in “Standby Mode” (No red or green indicator LED lit) Press/touch the “On-Demand” button on one of the indication posts. Observe that the “On-Demand” blue LED is extinguished and goes to yellow whilst touching button, at the same time the green LEDs illuminate in both indication posts.	1	2
9.2	Simulate a train “striking in” on a strike in sensor head by operating the test switches on a Strike-in evaluator board (IMC).	1	2
9.3	Observe the green LEDs on both indicator posts are extinguished and that the red LED’s illuminate.	1	2
9.4	Confirm both the audible warnings sounders are working correctly.	1	2
9.5	Simulate a train “striking out” on a strike out sensor head on the same line as the “Strike in” sensor by operating the test switches on a Strike-out evaluator board (IMC).	1	2
9.6	After a short delay (3-6 seconds) observe the indicator post LED’s change from red to green.	1	2
9.7	Confirm the audible warning ceases.	1	2

10. Operational Sequence Test - Double Lines Second Train Approaching

NOTE: *Check no train will enter the level crossing strike in area from any direction for the duration of test.*

10.1	With the system in “Standby Mode” (No red or green indicator LED lit) Simulate a train “striking in” on a strike in sensor head by operating the test switches on a Strike-in evaluator board (IMC). Press/touch the “On-Demand” button on one of the indication posts. Observe that the “On-Demand” LED is extinguished, at the same time the red LEDs illuminate in both indication posts.	1	2
10.2	Simulate a train “striking in” on the first strike in sensor head mounted on 2nd line in the “opposite direction” to the first train by operating the test switches on a Strike-in evaluator board (IMC).	1	2
10.3	Confirm both audible warnings sounders DO NOT change to the second train approaching warning.	1	2
10.4	Check both indication posts continue to display a red LED.	1	2
10.5	Simulate a train “striking out” on first sensor by operating the test switches on a Strike-out evaluator board (IMC).	1	2
10.6	Check both audible warnings sounders NOW change to the second train approaching warning.	1	2
10.7	Check both indication posts continue to display a red LED and the warning continue to sound.	1	2
10.8	Simulate a train “striking out” on 2nd line by operating the test switches on a Strike-out evaluator board (IMC).	1	2
10.9	After a short delay (3-6 seconds) Observe the indicator post LED’s change from red to green.	1	2
10.10	Confirm the audible warning ceases	1	2
10.11	The “On-Demand” LED’s will remain extinguished until the crossing reverts to “Standby Mode”.	1	2

11. Power Supplies and Batteries

The Vamos Level crossing Systems power requirements are provided from an external location case therefore, any power supply testing will be done at that location and not within the Vamos System.

Note state of power supply and Buffer unit below.

Power Supply Identification

END

LEVEL CROSSING TESTING

FLEX
LEVEL CROSSING SYSTEM

NR/SMS/LX79

Uncontrolled copy once printed from its electronic source.

Published & Issued by: Network Rail, 2nd Floor, One Eversholt Street, London, NW1 2DN

GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10 (Level Crossings Operational Sequences) and NR/SMS/PartB/Test/161 (Flex – Operational Sequence Tests). It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that the particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required.
R: Found Incorrect, Rectified on Day of Test.
C: Correct.WW
N: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements (If Provide)

1.1	Check that the road markings are in accordance with the section order and plans if provided.	
1.2	Check the condition and the sighting of any signs on the crossing approaches. See NR/SMS/PartC/SG00 (Signals: General) for details on reflective boards and signs.	
1.3	Check the condition of the road surface over the crossing.	
1.4	Check that the road markings between and including the stop lines are complete and visible.	
1.5	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.6	Check the condition and the security of any fencing around the barrier machines and (if provided) on the approach to equipment room or locations.	
1.7	Check (if provided) the condition and security of any pedestrian guardrails.	
1.8	Check (if provided) the condition and security of any wicket gates.	

Any defects found in 1.1 and 1.3 shall be reported to the via the SM(S).

2. Indication Posts

NOTE: *For the purposes of identification the "Indication Posts"are called Pole 1 (closest to the system location case) and Pole 2 (is the standalone post).*

	On each of the Indication Posts check the following items:		
2.1	The post is stable and undamaged and Anti-Rotation working.	A	B
2.2	The post is correctly aligned and the LED's Indications are clearly visible from the crossing decision point and NOT towards the railway in the direction of travel.	A	B
2.3	The red and green lenses are undamaged and clean.	A	B
2.4	Signs and notices attached to post are undamaged, clean and legible.	A	B
2.5	Cables and/or plug couplers are undamaged and secure and shows on damage to cables with door opening and closing.	A	B

3. Gates

Is This Section Applicable to the Crossing Under Test?	Yes	No

3.1	Check that the gate and fixtures and fittings are undamaged and in good condition and that the does not stay open.	A	B

3.2	Check that the gatepost is stable and securely fixed into the ground.	A	B
3.3	Check that the gate locks or hooks are effective in both the open and closed positions.	A	B
3.4	Check that any red roundels or signs attached to the gate are undamaged, clean and legible. Signs and roundels shall be of class 1 retro-reflective material.	A	B
3.5	If wicket gates are provided check they are undamaged, stable and in good condition.	A	B
3.6	Check (if fitted) that the gate closing mechanism is effective.	A	B

4. **Telephone Systems** (Use as Applicable)

4.1	Check the telephone and cord is undamaged.	A	B
4.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	A	B
4.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones shall have the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	A	B
4.4	Check that the correct crossing name is stated on any telephone labels and signs.	A	B
4.5	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	A	B
4.6	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephone units that the public have access to.	A	B
4.7	On emergency telephones, check that an ETD number is given for the public to call in case they cannot contact the monitoring point.	A	B
4.8	Ring this number and check that the recipient gives correct procedures for the call.	A	B
4.9	Ring the monitoring point and check that the call is received correctly. Ask the monitoring point to ring back.	A	B
4.10	Check the telephone rings correctly. Check the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system ‘handshakes’. During this period, transmission and reception of speech is not possible.	A	B
4.11	If lay-by and/or pedestal telephones are fitted, check that there is a ring differential at the monitoring point between them and the emergency telephones.	A	B

4.12	Check that if a lay-by or pedestal telephone is in use a call from the emergency telephone is still received correctly at the monitoring point.	A	B
4.13	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly. Whitely PETS systems will indicate a fault at the monitoring point.	A	B

5. Cabinet

5.1	Check the cabinet is securely mounted, undamaged and locked.	
5.2	Check for water ingress and other contaminates.	
5.3	Check cables and or plug couplers are undamaged and secure.	
5.4	Scroll through the Flex life Telemetry Module screens to check there are no failure modes present. If one is, note investigate and correct the issue.	
5.5	Check that the Green "Operation" LED is illuminated on the 230VAC Akkutec Battery Charger unit and the green "Battery Voltage within" LED is lit.	
5.6	Check that both of the surge arrestors have green indications showing in the status windows.	

For each IMC board working from left to right carry out the following

ES1A

5.7	Check the "PWR" LED is lit.	
5.8	Record the system current for SYS1.	
5.9	Record the system current for SYS2.	

SSN1A (Use as Applicable)

5.10	Check the "PWR" LED is lit.	
5.11	Record the system current for SYS1.	
5.12	Record the system current for SYS2.	

AS1B (Use as Applicable)

5.13	Check the “PWR” LED is lit.	
5.14	Record the system current for SYS1.	
5.15	Record the system current for SYS2.	

ES1B (Use as Applicable)

5.16	Check the “PWR” LED is lit.	
5.17	Record the system current for SYS1.	
5.18	Record the system current for SYS2.	

ES2B (Use as Applicable)

5.19	Check the “PWR” LED is lit.	
5.20	Record the system current for SYS1.	
5.21	Record the system current for SYS2.	

SSN2B (Use as Applicable)

5.22	Check the “PWR” LED is lit.	
5.23	Record the system current for SYS1.	
5.24	Record the system current for SYS2.	

AS2A (Use as Applicable)

5.25	Check the “PWR” LED is lit.	
5.26	Record the system current for SYS1.	
5.27	Record the system current for SYS2.	

ES2A (Use as Applicable)

5.28	Check the “PWR” LED is lit.	
5.29	Record the system current for SYS1.	
5.30	Record the system current for SYS2.	

6. User Instruction Signs

6.1	Check that user instruction signage is legible and secure.	A	B

7. Wheel Sensor Test (Detection Capability)

By observation of the passage of a train or simulation check that each sensor head is functioning correctly

Rail Sensor	Location / Unique identity	Checked	
		Passage of Train	Simulation
ES1A			
SSN1A			
AS1B			
ES1B			
ES2B			
SNN2B			
AS2A			
ES2A			

8. Operational Sequence Test - One Train (With Interface Signal OFF)

NOTE: *Check no train will enter the level crossing strike in area from any direction for the duration of test.*

		Track 1	Track 2
8.1	Confirm any interface signals are showing “proceed”.	A	B
8.2	Simulate a train “striking in” on a strike in sensor head by operating the test switches on a Strike-in evaluator board (IMC).	A	B
8.3	Observe that the green LEDs on both indicator posts are extinguished and that the red LED’s illuminate.	A	B
8.4	Check both audible warnings sounders are working correctly.	A	B
8.5	Simulate a train “striking out” on a strike out sensor head on the same line as the “Strike in” sensor by operating the test switches on a Strike-out evaluator board (IMC).	A	B
8.6	After a short delay (3-6 seconds).	A	B
8.7	Observe the indicator post LED’s change from red to green.	A	B
8.8	Check the audible warning ceases.	A	B

9. Operational Sequence Test - Double Lines Second Train Approaching (With Interface Signal OFF)

NOTE: *Check no train will enter the level crossing strike in area from any direction for the duration of test.*

		Track 1	Track 2
9.1	Confirm any interface signals are showing “proceed”	A	B
9.2	Simulate a train “striking in” on a strike in sensor head by operating the test switches on a Strike-in evaluator board (IMC).	A	B
9.3	Observe that the the red LEDs illuminate in both indication posts. Check both audible warnings sounders sound and Green’s LEDs go Out”.	A	B
9.4	Simulate a train “striking in” on a strike in sensor head mounted on 2nd line in the “opposite direction” to the first train by operating the test switches on a Strike-in evaluator board (IMC).	A	B
9.5	Check both audible warnings sounders remain and do not change to the second train approaching warning.	A	B
9.6	Check both indication posts continue to display a red LED.	A	B
9.7	Simulate a train “striking out” on first sensor by operating the test switches on a Strike out evaluator boatd (IMC).	A	B
9.8	Check both audible warnings sounders, now change to the second train approaching warning.	A	B
9.9	Check both indication posts continue to display a red LED and the warning continues to sound.	A	B

9.10	Simulate a train “striking out” on 2nd line by operating the test switches on a Strike out evaluator board (IMC).	A	B
9.11	After a short delay (3-6 seconds).	A	B
9.12	Observe the indicator post LED’s change from red to green.	A	B
9.13	Check the audible warning ceases straight away.	A	B

10. Operational Sequence Test – One Train (With Interface Signal ON)

NOTE: *Check no train will enter the level crossing strike in area from any direction for the duration of test.*

		Track 1	Track 2
10.1	Confirm the interface signal is at red, and has been for greater than 2 minutes.	A	B
10.2	Simulate a train “striking in” on a strike in sensor head by operating the test switches on a Strike-in evaluator board (IMC).	A	B
10.3	Observe the green LEDs on both indicator posts remain lit.	A	B
10.4	Clear the interface signal.	A	B
10.5	Observe the green LEDS on both indicator posts are extinguished, and the red LEDS are illuminated.	A	B
10.6	Check both the audible warning sounds are working correctly.	A	B
10.7	Observe interface signal clears to proceed aspect after signal regulation time (if applied, check for in control tables).	A	B
10.8	Simulate a train “striking out” on a strike out sensor head on the same line as the “Strike in” sensor by operating the test switches on a Strike-out evaluator board (IMC).	A	B
10.9	After a short delay (3-6 seconds).	A	B
10.10	Observe the indicator post LED’s change from red to green.	A	B
10.11	Check the audible warning ceases straight away.	A	B

11. Power Supplies and Batteries

The Flex Level crossing Systems power requirements are provided via an Akkutec 230 VAC Battery Charger and 2 “Power save” Lead-acid batteries providing 24VDC to the Flex case.

11.1 Switch the battery charger off via it’s MCB.

11.2 Allow a few minutes for the cell voltages to stabilize before taking the readings and measure each individual cell voltage.

11.3 Measure all cells and record the lowest reading on the record card. Arrange for any cells below the minimum voltage to be replaced.

11.4 Measure and record the full battery voltage.

11.5 Connect the voltmeter across one cell. Switch the battery charger on. The cell voltage rises slightly above the nominal voltage.

This indicates that the charger is working.

11.6 Carry out voltage checks and ELD reading in power supply location

Power Supply Identification

END

LEVEL CROSSING TESTING

AUTOMATIC HALF BARRIER CROSSING

WITH LEVEL CROSSING PREDICTOR

NR/SMS/LX80

Uncontrolled copy once printed from its electronic source.

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This document has been produced as an alternative test plan to that provided in NR/SMS/PartD/LX70 to incorporate a number of necessary maintenance tasks that are specific to crossings controlled using Level Crossing Predictors (LCP). The scope of this document includes Westinghouse GCP3000 and Harmon HXP-3R and HXP-3R2 predictors.

Differences between the Westinghouse and Harmon Predictors that influence application of this Specification are detailed below:

Terminology:

Whilst the technology employed in both the Westinghouse and Harmon Level Crossing Predictors is similar, some functions are referred to differently. To avoid confusion, the following common terms shall be used throughout this document:

Term Used in this Document	Westinghouse Equivalent	Harmon Equivalent
Loop Impedance	EZ	RX
Ballast Condition	EX	Phase Angle

Disconnecting the Output of the Predictor

Westinghouse GCP3000

Remove the disconnection link labeled “(LCP) R Test Link”. To re-connect the output; put the link back in place.

Harmon HXP-3R and HXP-3R2

Place a high visibility wire strap across AAR terminals R1-1 and R2-1. To re-connect the output, remove the strap.

This test plan covers the requirements of NR/SMS/PartC/LC10 (Level Crossings Operational Sequences), NR/SMS/PartB/Test/080 (AHB Operational Sequence Test). It is for use of the person conducting the annual test of the level crossing and has relevant ‘tick boxes’ by each task so that the particular item of the test can be correctly recorded as per the index in “crossing defects”.

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary		
Name of Level Crossing:		
Level Crossing Type:		
Name of Monitoring Signal Box(es):		
Value of Loop Impedance on Arrival:	T1:	T2:
Value of Ballast Condition on Arrival:	T1:	T2:
Date of Full Test:		
Time Full Test Commenced:		
Time Full Test Completed:		
Tested By:		
Signature:		
Date of Signature:		
Grade and Title:		

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

- **X**: Found Incorrect, Action Required.
- **R**: Found Incorrect, Rectified on Day of Test.
- **C**: Correct.
- **N**: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/PartC/SG00 (Signals : General) for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S).	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Barrier and Machine

	Check the following on the barrier pedestal unit:		
2.1	The pedestal is correctly aligned and stable.	Y	Z
2.2	The locks and hinges are undamaged.	Y	Z
2.3	With the boom in the raised position there is adequate clearance between the side arm/counter balance weights and the ground/base.	Y	Z
2.4	The main shaft to side arm fastenings. Check that there is not any excessive play in the keyway.	Y	Z
2.5	Observe they remain raised.	Y	Z
2.6	Lower the barriers on local control and leave the LCU switch in the lower/hand position. Open the front and rear doors of the pedestal units and fully extend the manual pump handle. Pump the booms to the fully raised position and observe they remain raised.	Y	Z
2.7	On each barrier in turn raise the pump handle until the boom begins to lower. Check that the pump handle roll pin has not reached an alignment where its top is above the bottom edge of the handle guide slot.	Y	Z

	Allow the boom to fully lower and check the following:		
2.8	The boom takes 6 to 8 seconds to lower.	Y	Z
2.9	The boom is damped during the last 10° to 15° of movement.	Y	Z
2.10	The boom is horizontal when fully lowered.	Y	Z
2.11	The boom is the correct length.	Y	Z
	Design	Y	Z
	Actual	Y	Z
2.12	Condition of the boom.	Y	Z
2.13	The security of the boom.	Y	Z
2.14	The boom fixing bolt ‘E’ clips are undamaged and the whole shear bolt assembly has had grease applied.	Y	Z
2.15	The reflective strips are undamaged, clean and are in the correct position.	Y	Z
2.16	The boom lamps, hoods, brackets, and fastenings are undamaged, free from corrosion and correctly aligned.	Y	Z
2.17	The boom wiring, plugs, clamps, and terminations are undamaged.	Y	Z
2.18	(If Fitted) the strainer wire, support bracket and fastenings are effective.	Y	Z
	Check the height of the boom from the road surface.		
2.19	Top of barrier at the centre of the road (0.9m Minimum).	Y	Z
2.20	Underside of barrier at any point (1m Maximum).	Y	Z
2.21	Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device the tip weight by using the following method:	Y	Z
	• At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.		
	• Connect the weight measuring device to the tip end of the boom.		
	• Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.		

Boom Length	Tip Weight
3.6m to 4.1m	7.6Kg ±0.5Kg
4.6m to 9.1m	6.1Kg ±0.5Kg

2.22	Check that the boom can be lifted by hand to the fully raised position.	Y	Z
2.23	Check the interior of the pedestal for water ingress and contamination. Clean as necessary.	Y	Z
	Check the following on the hydraulic pack assembly:		
2.24	The pack fastenings.	Y	Z
2.25	The top and bottom pack trunnion block mountings and lock washers.	Y	Z
2.26	Bolts through the trunnion to the operating lever are the correct length and spiral pins are fitted correctly.	Y	Z
2.27	The ram adjusting screw and lock washer. Do not adjust the screw.	Y	Z
2.28	The auto/manual valve is set in the auto position and the split pin and seal are intact.	Y	Z
2.29	The split pin and seal are intact.	Y	Z
2.30	The wiring and terminations to the pack. The movement of the pack can cause the B24 feed wire to break internal strands, disconnect the wires to check for this type of damage.	Y	Z
2.31	The fluid level is correct. Just visible in the filter strainer or to the max mark on the indicator.	Y	Z
2.32	The motor brushes. They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.	Y	Z
2.33	The motor commutator (where accessible). It shall be undamaged and a light coffee colour.	Y	Z
2.34	Record the pack details (Mk and serial number).		

	Unit	Mk	Serial Number
	Y		
	Z		

2.35	Check that the shock absorber plunger cannot be depressed more than 3mm by finger pressure.	Y	Z
2.36	Check the up and down stop block striker pads. Replace if worn.	Y	Z
2.37	Unfasten the lid of the circuit controller and check the following items:		
2.38	The spindle and control arm are lubricated and free from wear. Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.	Y	Z
	Terminations and wiring.		

2.39	Contact fingers. Replace any fingers that are worn or have lost their spring tension.	Y	Z
2.40	Bands. Check they are clean and not worn (copper dust in the bottom of the casting). If worn the complete controller shall be renewed.	Y	Z
2.41	Measure by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on 'hand' operation. Adjust if necessary (Appendix A).	Y	Z
2.42	Close and fasten the circuit controller. Check if any adjustments have been carried out that all the terminations have been correctly tightened.	Y	Z
2.43	Check the circuit controller cam, cam slot and roller assembly.	Y	Z
2.44	Check the earth-bonding strip is secure and undamaged.	Y	Z
2.45	Check the main shaft bearings and fastenings. Check that sufficient grease has been applied to the bearings	Y	Z
2.46	Check the bearing end cap seals are effective. Water ingress into the end caps can freeze and prevent the booms from lowering.	Y	Z
2.47	Check that the pedestal fixing bolts are all fitted and correctly tightened.	Y	Z
2.48	Check the operator's door (rear) micro switch assembly, fastenings and wires. Check that they are secure and undamaged.	Y	Z
2.49	Raise the boom by hand pumping, Check that the boom does not lower between pumping strokes.	Y	Z
2.50	Lower both the booms; stow the pump handles and close and lock the operator's doors (rear). Raise the boom under 'power' operation by switching the LCU to raise and check the following:	Y	Z
2.51	The booms are between 80° and 85° when fully raised.	Y	Z
2.52	The booms do not excessively oscillate when they come to rest in the raised position.	Y	Z
2.53	The booms do not 'hunt' when fully raised. This is a sign of an internal fluid leak inside the hydraulic pack.	Y	Z
2.54	Close and lock the front pedestal door.	Y	Z

3. Local and Manual Control

	On the pedestal with the LCU unit, unlock the local control access door.		
3.1	Check when unlocked the key is retained in the lock and cannot be withdrawn unless the door is locked again.	Y	Z
3.2	Operate the control switch to the LOWER position and observe the following items:		
3.3	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Y	Z

--`,,`-`-`,,`,,`,`,,`---

3.4	After 3 seconds all the amber signals extinguish and all the red flashing road signals start to flash	Y	Z
3.5	After approximately a further 4 seconds the booms commence to lower.	Y	Z
3.6	The booms take 6 to 8 seconds to reach the fully lowered position.	Y	Z
3.7	Red flashing road lights continue to be illuminated. Audible warnings may continue to sound depending on design (check diagrams).	Y	Z
3.8	Disconnect the output of the Level Crossing Predictor and allow the booms to lower. Turn the local control switch to the HAND position.	Y	Z
3.9	Open the Z barrier machine operator's door, fully extend the hydraulic power unit manual pump handle and Check that the boom can be pumped to the raised position.	Y	Z
3.10	Check that the red flashing road traffic light signals are illuminated and the audible warnings are silent.	Y	Z
3.11	Open the Y barrier machine operator's door, fully extend the hydraulic power unit manual pump handle and check that the boom can be pumped to the raised position.	Y	Z
3.12	Lift the barrier hydraulic power unit pump handle slowly and allow the boom to fall sufficiently to illuminate the red flashing road traffic light signals and the release the pump handle. Check that the boom movement is arrested.	Y	Z
3.13	Check that the audible warnings are silent.	Y	Z
3.14	Check, by hand pumping, that the amber lights/red flashing road traffic light signals extinguish when the boom is at an angle of 81° above the horizontal.	Y	Z
3.15	Lift the pump handle and Check that the boom lowers in 6 to 8 seconds.	Y	Z
3.16	Check that the pump handle guide pin in seated at the bottom of the guide slot when the pump handle is in the stowed position.	Y	Z
3.17	Check that the barrier machine operator's door cannot be fully closed until the pump handle is in the stowed position.	Y	Z
3.18	Re-connect the output of the Level Crossing Predictor.	Y	Z
3.19	Lock the barrier machine operator's door and restore to AUTO WORKING.	Y	Z
3.20	Repeat tasks 3.8 to 3.19 for the other barrier machine.		
3.21	Operate the switch in the local control unit to the RAISE position and observe the following:		
3.22	Both booms rise together.	Y	Z
3.23	The red road lights extinguish and the audible warnings (depending on design) cease before the booms have reached 45 degrees from the horizontal.	Y	Z

3.24	Check that the guide on the inside of the local control unit door prevents the door being closed unless the switch is in the auto position.	Y	Z
3.25	Operate the switch to the LOWER position and observe that the sequence of events occurs as listed in 3.3 to 3.7.	Y	Z
3.26	Operate the switch to the AUTO position and observe the sequence of events occur as listed in 3.22 to 3.23. It may be possible for the LCU switch to be put straight to the AUTO position, which will cause the booms to perform a lowering sequence then rise. Check the diagrams for the correct mode of operation applicable to the crossing.	Y	Z
3.27	Close and lock the local control unit door.	Y	Z

4. Road Traffic Light Signals

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

	Signal Number	Signal Identification
	Aux 1	
	Aux 2	

	On each of the road traffic light signals check the following items:						
4.1	The signal structure is stable.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.2	The signal light units are undamaged and the hoods are securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.3	The signal lenses are undamaged, clean and correctly orientated.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.4	Signs and notices attached to the signal post are undamaged, clean, and legible. See NR/SMS/PartC/SG00 (Signals : General) for details on reflective boards and signs.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.5	Cables and conduit are undamaged and secure.	YO	YN	ZO	ZN	Aux 1	Aux 2

4.6	Check that if the signals are fitted with 50-watt Quartz Halogen lamps, the road traffic light signal backboard is fitted with a red/white border. White only and red/white border backboards shall not be mixed together at the same crossing.	YO	YN	ZO	ZN	Aux 1	Aux 2

5. Audible Warnings

5.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
5.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
5.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN
5.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to ‘skip’ the set controls on certain days, check this is not activated.	YO	YN	ZO	ZN

6. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	**Signal Identification**
Aux 1	
Aux 2	

6.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
6.2	Check that the hood is securely fitted and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2

6.3	If a sun screen is fitted, check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

7. Telephone System

Different types of telephone systems are fitted to AHBCs. BR Spec. 843 installations usually have two emergency phones and an LCU phone. The crossing section order will state the telephone system that is required at the crossing.

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	

		Telephone Identity (see Grid)		
7.1	Check the telephone and cord is undamaged.	1	2	3
7.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3
7.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	1	2	3
7.4	Check that the correct crossing name is stated on any telephone labels and signs.	1	2	3
7.5	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	1	2	3
7.6	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	1	2	3
7.7	On emergency telephones, check that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and check that the recipient uses the correct procedures for the call.	1	2	3

Public Telephone Numbers	Checked

7.8	Ring the monitoring point and check that the call is received correctly. Ask the monitoring point to ring back.	1	2	3
7.9	Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whitely PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' During this period transmission and reception of speech is not possible.	1	2	3
7.10	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly. Whitely PETS systems will indicate a fault at the monitoring point.	1	2	3
7.11	If a block switch is fitted Check that when operated 7.8 to 7.10 operate correct at the alternative monitoring point.			
7.12	Check that at the normal monitoring point any audible devices do not sound.			
7.13	Repeat 7.11 and 7.12 for any other alternative monitoring points.			
7.14	If an absent switch is fitted to the telephone system operate it and Check that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch is back to normal operation and Check that a normal emergence call is received.			
7.15	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 7.8 to 7.14. Switch the mains power to the telephone system back on.			

8. Barrier Proving

Check that a cut-out is provided in the motor contactors before proceeding with 8.2 to 8.4.

The booms can be lowered and raised by local control or train simulation.

8.1	Turn the mains power off.		
8.2	Allow the booms to lower. Restrain the tip of the Y boom then allow the barriers to rise.		
8.3	Check that the motor cut-out for the restrained boom operates within 25 seconds. This time relates to a SPX Contactor only, if a different contactor is fitted refer to site diagrams and report to Section Manager.	Y	Z

8.4	Release the boom and check that the motor cuts in again within 3 minutes and the boom fully rises.	Y	Z
8.5	Disconnect the output of the Level Crossing Predictor and allow the booms to lower.		
8.6	Restrain the tip of the Y boom from reaching the raised position (50° to 70°).		
8.7	Re-connect the output of the Level Crossing Predictor and wait for the crossing to re-set.		
8.8	Check that the red flashing road traffic light signals extinguish and that they re-illuminated 6 seconds the other begins to rise.		
8.9	Release the Y boom and allow it to reach the raised position.		
8.10	Repeat 8.1 to 8.9 for the Z boom.		

9. Red Flashing Road Traffic Light Signal Proving

The booms shall be lowered and raised by train simulation.

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

	Signal number	**Signal Identitication**
	Aux 1	
	Aux 2	

9.1	Disconnect the output of the Level Crossing Predictor and allow the booms to lower .	YO	YN	ZO	ZN	Aux 1	Aux 2
9.2	Measure the rate of flashing (Between 70 and 90 flashes per minute).			**FPM**			
9.3	Disconnect the left and right-lamps on one of the light units by slipping the links in the equipment room/loc	YO	YN	ZO	ZN	Aux 1	Aux 2
9.4	Re-connect the output of the Level Crossing Predictor and check that the booms remain lowered.	YO	YN	ZO	ZN	Aux 1	Aux 2
9.5	Re-connect the right-hand lamp and Check that the booms raise.	YO	YN	ZO	ZN	Aux 1	Aux 2
9.6	Disconnect again the right-hand lamp and Disconnect the output of the Level Crossing Predictor. Check that approximately 2 seconds after the amber lights extinguish the booms begin to lower.						

9.7	Re-connect the output of the Level Crossing Predictor and Check that the booms remain lowered.						
9.8	Re-connect the left-hand lamp and check that the booms rise. Re-connect the right-hand lamp						
9.9	Repeat 9.1 to 9.8 for the other red road signal units. The flashes per minute rate only requires to be measured on one light unit.						

10. Local Control Sequence

10.1	Operate the LCU to the LOWER position and check the following:	
10.2	All the amber road signals illuminate, and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	
10.3	After 3 seconds all the amber signals extinguish, and all the red road signals and any pedestrian lights start to flash.	
10.4	After approximately a further 4 seconds the booms commence to lower and the boom lamps illuminate.	
10.5	The booms take 6 to 8 seconds to reach the fully lowered position.	
10.6	Red road lights and any pedestrian lights continue to be illuminated. Audible warnings continue to sound depending on design (check diagrams).	
10.7	Operate the LCU to the RAISE position and check the following:	
10.8	The booms begin to rise.	
10.9	The red road lights extinguish, the lineside headlights extinguish and the audible warnings cease before the booms have reached 45° from the horizontal.	
10.10	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.	
10.11	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.	
10.12	Operate the LCU to the LOWER position, allow the lowering sequence to take place and then operate the LCU switch to the AUTO position. Check that the lowering sequence is as 10.2 to 10.6 and the raise sequence is as 10.8 to 10.11. On modern installations the switch can be put straight to the auto position, which will cause the booms to perform a lowering sequence then rise. Check the diagrams for the correct mode of operation applicable to the crossing.	

10.13	Close and lock the LCU door.	

11. Another Train Coming

The tasks in this section are concerned with observing the correct operation of the crossing in its "Constant Warning" mode and shall be carried out whilst observing the passage of a train through the crossing area.

If the frequency of timetabled train services during the test period is such that an extended delay exists between trains on both lines, arrangements shall be made for the completion of crossing sequence observations to be carried out on a subsequent visit.

11.1	Confirm with the Signal Box that the correct indications are being received whilst tasks 11.1 to 11.22 are being carried out.	Up	Up X	Dn	Dn X
11.2	Note the warning time and Check that this does not fall below the minimum as stated in the site set-up sheet, which forms part of the Circuit Diagrams.	**Minimum**		**Recorded**	
11.3	Observe if applicable on double lines that 10 seconds elapse before the amber lights illuminate and that the audible warnings sound immediately.				
11.4	Check the sighting of the amber lights.				
11.5	Observe that the sound of the audible warning devices can be heard within the crossing area and on the immediate approaches to the crossing.				
11.6	Observe that after approx. 3 seconds the amber lights extinguish and the red flashing road traffic light signals commence flashing.				
11.7	Observe that all red flashing road signals illuminate and that the audible warnings continue to sound.				
11.8	Observe the sighting of the red flashing road traffic light signals				
11.9	Observe that the barriers commence to lower 4 seconds after the red flashing road traffic light signals illuminate.				
11.10	Observe that when the barriers commence to lower, they each take between 6 and 8 seconds to reach the horizontal position.				
11.11	Observe that when the barriers are lowering, all the barrier boom lights illuminate at approx. 80° from the horizontal.				
11.12	Check the sighting of the barrier boom lights.				

11.13	Observe that the red flashing road traffic light signals are illuminated and that the audible warnings continue to sound.				

11.14	Observe that as the train proceeds towards the crossing, the Loop Impedance decreases. When the train reaches the crossing, the value of the Loop Impedance shall be 0				
11.15	Observe that the audible warning warble rate changes to the increased rate.				
11.16	Observe that after the last train has left the crossing, the barriers begin to rise.				
11.17	Observe that before the barriers have reached 45° above the horizontal, the red flashing road lights extinguish.				
11.18	Observe that that audible warning ceases to sound.				
11.19	Observe that after the barriers have reached approx. 80° above the horizontal, the barrier lights extinguish.				
11.20	Observe that after commencing to rise, the barriers reach their final position in not more that 6 seconds.				
11.21	Observe that when raised, the barriers are between 80° and 85° from the horizontal.				
11.22	Observe that as the train moves away from the crossing, the Loop Impedance returns to the value noted on page 2 of this addendum.				

12. 12. **Automatic Control Sequence** (Harmon HXP-3R and HXP-3R2 only)

Is This Section Applicable to the Crossing Under Test?		Yes	No
12.1	Place a hard wire strap across AAR terminal R1-1 and R2- 1 and observe that the AX1 LED has extinguished.	Up	Dn
12.2	Observe that Track 2 has gone into motion detect mode by confirming that the MD LED on the Track 2 TRM is flashing.	Up	Dn
12.3	Confirm that the letters “MD” are shown on the IDK display	Up	Dn
12.4	Remove the wire strap and observe that the AX1 becomes energised	Up	Dn
12.5	Place a hard wire strap across AAR terminal R1-1 and R2- 1 and observe that the AX2 LED has extinguished.	Up	Dn
12.6	Observe that Track 1 has gone into motion detect mode by confirming that the MD LED on the Track 1 TRM is flashing.	Up	Dn
12.7	Confirm that the letters “MD” are shown one the IDK display.	Up	Dn
12.8	Remove the wire strap and Observe that the AX2 becomes energised	Up	Dn

13. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

13.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	Result

14. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test.

14.1	Check and Record the approach length for both directions.specified on the signalling plan. Record the design and actual dimensions.

Line	Design Measurement	Actual Measurement
Up		
Dn		

14.2	Check and Record the island length. This shall be carried out on each line when more than one exists .
14.3	Note the exact position of the start and finish of areas where steel sleepers are present..

Line	Design Measurement	Actual Measurement
Up		
Dn		

Line	Start Mileage	Finish Mileage
Up		
Dn		

15. Indications and Audible Devices

Obtain confirmation of points/indications and alarms as detailed in this section from the Signal Box

15.1	Disconnect the output of the Level Crossing Predictor causing the booms to lower and Check that the indication extinguishes.	
15.2	Re-connect the output of the Level Crossing Predictor and Check that the BARRIERS RAISED POWER ON indication illuminates.	
15.3	Open the local control switch access door and operate the local control switch to the RAISE, LOWER and HAND positions, checking that the indications extinguish and remain extinguished	
	Access Door	
	Raise	
	Lower	
	Hand	

15.4	Restore the local control to the AUTO position, close and lock the access door and Check that the BARRIERS RAISED POWER ON indication illuminates	
15.5	Disconnect the output of the Level Crossing Predictor and Check that the FAILED/LOCAL CONTROL indication illuminates.	
15.6	Check that the audible alarm sounds after the prescribed period (no more than 240 seconds for double line or no more than180 seconds for single line) and that it can be silenced.	
15.7	Re-connect the output of the Level Crossing Predictor and Check that the audible alarm sounds when the booms are in the raised position and that the alarm can be silenced.	
15.8	Check that the BARRIERS RAISED POWER ON indication illuminates.	
15.9	Withdraw, in turn, the power supply fuses for the functions that are on the (PO) PR circuit. For each power supply disconnection Check that the BARRIERS RAISED POWER OFF indication is obtained the audible alarm sounds and that it can be silenced	
15.10	Check, after restoring the final power supply that the indicator returns to the BARRIERS RAISED POWER ON position, that the audible alarm sounds and that is can be silenced.	
15.11	Check where provided, that the Monitoring Signal Box test switches operate	

16. Power Supplies and Batteries

16.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
16.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

17. Motion Detect Test (Harmon HXP-3R and HXP-3R2 only)

Is This Section Applicable to the Crossing Under Test?	Yes	No

17.1	Place the STANDBY/AUTO/NORMAL switch on the Transfer Logic Module (TLM) in the NORMAL position.	
17.2	Place the CW/MD switch on the Relay Driver Module (RYD) in the MD position.	
17.3	Place a hard wire shunt on the track at the marker positioned at 90% of the approach from the crossing.	
17.4	Observe that a full crossing sequence occurs.	
17.5	Remove the hard wire shunt.	
17.6	Place the STANDBY/AUTO/NORMAL switch on the TLM in the STANDBY position.	
17.7	Repeat tasks 17.3 to 17.5.	
17.8	Temporarily place the STANDBY/AUTO/NORMAL switch on the Transfer Logic Module (TLM) in the Normal position before returning the switch to the AUTO position.	

18. Motion Detect Test (Westinghouse GCP3000 only)

Is This Section Applicable to the Crossing Under Test?	Yes	No

18.1	Place a hard wire shunt on the track at the marker positioned at 70% of the approach from the crossing	
18.2	Observe that a full crossing sequence occurs.	
18.3	Remove the hard wire shunt.	
18.4	Observe that the crossing does not reset for at least 120 seconds.	
18.5	Repeat tasks 18.1 to 18.5 for each approach (both right and wrong direction).	

19. Returning the Level Crossing Predictor to Service

19.1	Once all tasks have been completed, note the values of Loop Impedance and Ballast Condition and check to see that these are comparable to the values noted on page two of this addendum, remembering to give due consideration to any environmental changes which may have occurred since the reading was first taken.	

	T1	**T2**
Loop Impedance		
Ballast Condition		

APPENDIX A - Circuit Controller Band Settings

Band	**Made Between**
DN KR	0° and 4°
HJPR	42° and 90°
MR	0° and 83°
UP KR	81° and 90°

NOTE: *It is important to obtain the over-lap between the UP KR band making and the MR band breaking. This is to ensure that if a boom drops slightly it will drive up again before the red road signals operate.*

END

LEVEL CROSSING TESTING

MINIATURE STOP LIGHT CROSSING

USING A LEVEL CROSSING PREDICTOR

NR/SMS/LX81

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This document has been produced as an alternative test plan to that provided in NR/SMS/LX74 to incorporate a number of necessary maintenance tasks that are specific to crossings controlled using Level Crossing Predictors (LCP). The scope of this document includes Westinghouse GCP3000 and Harmon HXP-3R and HXP-3R2 predictors.

Differences between the Westinghouse and Harmon Predictors that influence application of this Specification are detailed below:

Terminology:

Whilst the technology employed in both the Westinghouse and Harmon Level Crossing Predictors is similar, some functions are referred to differently. To avoid confusion, the following common terms shall be used throughout this document:

Term Used in this Document	Westinghouse Equivalent	Harmon Equivalent
Loop Impedance	EZ	RX
Ballast Condition	EX	Phase Angle

Disconnecting the Output of the Predictor

Westinghouse GCP3000

Remove the disconnection link labeled “(LCP) R Test Link”. To re-connect the output; put the link back in place.

Harmon HXP-3R and HXP-3R2

Place a high visibility wire strap across AAR terminals R1-1 and R2-1. To re-connect the output, remove the strap.

This test plan covers the requirements of NR/SMS/PartC/LC10 (Level Crossings Operational Sequences), NR/SMS/PartB/Test/081 (MSL with Predictor Operational Sequence Test). It is for use of the person conducting the annual test of the level crossing and has relevant ‘tick boxes’ by each task so that the particular item of the test can be correctly recorded as per the index in “crossing defects”.

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

Assumptions have been made in this document about the nature of level crossing installations with which the modern Level Crossing Predictor will be associated.

It is considered highly unlikely that Level Crossing Predictor systems will be used with older variants of level crossing installations, for example those utilising SL35 type Miniature Warning Lights.

TEST SUMMARY

Test Summary		
Name of Level Crossing:		
Level Crossing Type:		
Name of Monitoring Signal Box(es):		
Value of Loop Impedance on Arrival:	T1:	T2:
Value of Ballast Condition on Arrival:	T1:	T2:
Date of Full Test:		
Time Full Test Commenced:		
Time Full Test Completed:		
Tested By:		
Signature:		
Date of Signature:		
Grade and Title:		

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

- **X**: Found Incorrect, Action Required.
- **R**: Found Incorrect, Rectified on Day of Test.
- **C**: Correct.
- **N**: Not Applicable to this Installation.

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/SG00 for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S)	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Red/Green Light Units

2.1	On each of the red/green light units Check the following items:		
2.2	The light unit structure is stable.	Y	Z
2.3	The light unit is correctly aligned and the lights are clearly visible from the crossing entry point.	Y	Z
2.4	The light units are undamaged and the hoods are securely fitted.	Y	Z
2.5	The red and green lenses are undamaged and clean.	Y	Z
2.6	Signs and notices attached to the light unit post are undamaged, clean and legible.	Y	Z
2.7	Cables and conduit are undamaged and secure.	Y	Z

3. Gates

Is This Section Applicable to the Crossing Under Test?	Yes	No

3.1	Check that the gate and fixtures and fittings are undamaged and in good condition.	Y	Z
3.2	Check that the gatepost is stable and securely fixed into the ground.	Y	Z

3.3	Check that the gate locks or hooks are effective in both the open and closed positions.	Y	Z
3.4	Check that any red roundels or signs attached to the gate are undamaged, clean and legible. Signs and roundels shall be of class 1 retro-reflective material.	Y	Z
3.5	If wicket gates are provided, check they are undamaged, stable and in good condition.	Y	Z
3.6	Check that the gatepost is stable and securely fixed into the ground.	Y	Z
3.7	Check (if fitted) that the gate closing mechanism is effective.	Y	Z

4. Audible Warnings

Is This Section Applicable to the Crossing Under Test?	Yes	No

4.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	Y	Z
4.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary	Y	Z
4.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	Y	Z
4.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.	Y	Z

5. Telephone System

Is This Section Applicable to the Crossing Under Test?	Yes	No

5.1	Check the telephone and cord is undamaged and the correct labels and symbols are fitted inside and outside the case and they are legible.	Y	Z
5.2	Check that any associated signs are stable, undamaged and legible. Emergence telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	Y	Z
5.3	Check that the correct crossing name is stated on any telephone labels and signs.	Y	Z

5.4	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	Y	Z
5.5	If betalights are fitted Check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	Y	Z
5.6	On emergency telephones Check that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and Check the recipient gives correct procedures for the call.	Y	Z
5.7	Ring the monitoring point and Check that the call is received correctly. Ask the monitoring point to ring back and Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes', during this period transmission and reception of speech is not possible	Y	Z
5.8	Check that with one of the public access telephones left 'off the hook' calls on the other telephone can be made and received correctly. Whiteley PETS systems will indicate a fault at the monitoring point.	Y	Z
5.9	If an absent switch is fitted to the telephone system operate it and Check that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch back to normal operation and Check that a normal emergence call is received.	Y	Z
5.10	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 5.7 to 5.9. Switch the mains power to the telephone system back on	Y	Z

6. Red/Green Lamp Operation

6.1	With no trains approaching Check that the light units are showing a green light, operate either the replacement switch to 'red' or slip the test link and Observe that the light units are showing a red light. Operate the replacement switch to the 'auto' position or re-connect the test link and Observe that the light units are showing a green light.	

7. Sequence Test

Check in the crossing control tables for any special controls that affect the automatic control sequence.

7.1	Place a short circuit on the track at the 50% marker. Observe the following:				
7.2	The green lamps on both light units extinguish and the red lamps illuminate.	Up	Up X	Dn	Dn X
7.3	The audible warnings (if provided) sound.	Up	Up X	Dn	Dn X
7.4	Remove the short circuit from the 50% marker and allow the crossing to reset. Observe the following:				
7.5	The red lamps on both light units extinguish and the green lamps illuminate.	Up	Up X	Dn	Dn X
7.6	The audible warnings (if provided) cease	Up	Up X	Dn	Dn X
7.7	Repeat steps 7.1 to 7.6 for all other directions where controls are provided.	Up	Up X	Dn	Dn X

8. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

8.1	Simulate a train striking in on line one by placing a short circuit on the track at the 50% marker				
8.2	Simulate a second train striking in on line two by placing a short circuit on the track at the 50% marker.				
8.3	Remove the short circuit from line one. Observe the following:				
8.4	The green lamps on both light units stay extinguished and the red lamps stay illuminated	Up	Up X	Dn	Dn X
8.5	Operate the exit function for the train simulation on line two and Observe the following.				
8.6	The red lamps on both light units extinguish and the green lamps illuminate.	Up	Up X	Dn	Dn X
8.7	The audible warnings (if provided) cease	Up	Up X	Dn	Dn X
8.8	Repeat steps 8.1 to 8.7 for all other directions where controls are provided.	Up	Up X	Dn	Dn X

9. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

9.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	Result

10. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test.

10.1	Check and Record the approach length for both directions.specified on the signalling plan. Record the design and actual dimensions.

Line	Design Measurement	Actual Measurement
Up		
Dn		

10.2	Check and Record the island length. This shall be carried out on each line when more than one exists .
10.3	Note the exact position of the start and finish of areas where steel sleepers are present..

Line	Design Measurement	Actual Measurement
Up		
Dn		

Line	Start Mileage	Finish Mileage
Up		
Dn		

11. Warning Sequence Reset

Is This Section Applicable to the Crossing Under Test?	Yes	No

11.1	Simulate a train striking in by placing a short circuit across the rails at the 50% marker, observe that the light units show a red light.	Up	Up X	Dn	Dn X
11.2	Remove the short circuit and start timing with a stopwatch from the time the track circuit is re- connected. Check that the red lights remain illuminated.	Up	Up X	Dn	Dn X
11.3	Observe that after 120 seconds the red lights are extinguished and the green lights illuminate.	Up	Up X	Dn	Dn X
11.4	Repeat 10.1 to 10.3 for all other directions where controls are provided. Record the results in the table below	Up	Up X	Dn	Dn X

Direction	Red Lamp Extinguishes (Seconds)
Up	
Up X	
Dn	
Dn X	

12. Power Supplies and Batteries

12.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
12.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

13. Motion Detect Test (Harmon HXP-3R and HXP-3R2 only)

Is This Section Applicable to the Crossing Under Test?	Yes	No

13.1	Place the STANDBY/AUTO/NORMAL switch on the Transfer Logic Module (TLM) in the NORMAL position.	
13.2	Place the CW/MD switch on the Relay Driver Module (RYD) in the MD position.	
13.3	Place a hard wire shunt on the track at the marker positioned at 90% of the approach from the crossing.	
13.4	Observe that a full crossing sequence occurs.	
13.5	Remove the hard wire shunt.	
13.6	Place the STANDBY/AUTO/NORMAL switch on the TLM in the STANDBY position.	
13.7	Repeat tasks 17.3 to 17.5.	
13.8	Temporarily place the STANDBY/AUTO/NORMAL switch on the Transfer Logic Module (TLM) in the Normal position before returning the switch to the AUTO position.	

14. Motion Detect Test (Westinghouse GCP3000 only)

Is This Section Applicable to the Crossing Under Test?	Yes	No

14.1	Place a hard wire shunt on the track at the marker positioned at 70% of the approach from the crossing	
14.2	Observe that a full crossing sequence occurs.	
14.3	Remove the hard wire shunt.	
14.4	Observe that the crossing does not reset for at least 120 seconds.	
14.5	Repeat tasks 18.1 to 18.5 for each approach (both right and wrong direction).	

15. Returning the Level Crossing Predictor to Service

15.1	Once all tasks have been completed, note the values of Loop Impedance and Ballast Condition and check to see that these are comparable to the values noted on page two of this addendum, remembering to give due consideration to any environmental changes which may have occurred since the reading was first taken.	

END

LEVEL CROSSING TESTING

AUTOMATIC OPEN CROSSING LOCALLY MONITORED + BARRIERS

NR/SMS/LX83

Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

GENERAL

This test plan covers the requirements of NR/SMS/PartC/LC10, NR/SMS/PartB/Test/083. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in "crossing defects".

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required
R: Found Incorrect, Rectified on Day of Test
C: Correct
N: Not Applicable to this Installation

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Road Arrangements

1.1	Check that the road markings are in accordance with the section order and plans.	
1.2	Check that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.	
1.3	Check the condition and the sighting of the road signs on the crossing approaches. See NR/SMS/SG00 for details on reflective boards and signs.	
1.4	Check (if provided) the condition and security of any pedestrian guardrails.	
	Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S)	
1.5	Check the condition of the road surface over the crossing.	
1.6	Check that the road markings between and including the stop lines are complete and visible.	
1.7	Check (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.	
1.8	Check (if provided) the condition and security of any wicket gates.	
1.9	Check the condition and the security of any fencing on the approach to equipment room or locations.	

2. Barrier and Machine (BR Spec. 843)

If no LCU is provided, the booms can be lowered and raised by train simulation, or disconnection/reconnection of the REPR (or equivalent) circuit in the barrier location.

	Check the following on the barrier pedestal unit:	Y	Z
2.1	The pedestal is correctly aligned and stable.	Y	Z
2.2	The locks and hinges are undamaged.	Y	Z
2.3	With the boom in the raised position there is adequate clearance between the side arm/counter balance weights and the ground/base.	Y	Z
2.4	The main shaft to side arm fastenings. Check that there is not any excessive play in the keyway.	Y	Z
2.5	Lower the barriers on local control and leave the LCU switch in the Lower position. Open the front and rear doors of the pedestal units and fully extend the manual pump handle. Pump the booms to the fully raised position and Observe they remain raised.	Y	Z
2.6	Y pedestal lift the pump handle and allow the boom to fall to approximately 45°. Release the pump handle and Check that the boom movement is arrested. The (UP)KR circuit will need to be disconnected to power the barrier release valve. Once the boom has started to lower, reconnect the (UP)KR circuit.	Y	Z

2.7	Operate the LCU switch to the off position. Check the road lights and audible warnings extinguish. Pump the boom to the raised position.		Y	Z
2.8	Observe that the boom lights are extinguished when the boom is above 80° from the horizontal. Operate the LCU switch to the On/Lower/Hand position.		Y	Z
2.9	Repeat 2.7 to 2.9 for Z pedestal		Y	Z
2.10	On each barrier in turn raise the pump handle until the boom begins to lower. Check that the pump handle roll pin has not reached an alignment where its top is above the bottom edge of the handle guide slot. Allow the boom to fully lower and Check the following: The (UP)KR circuit may need to be disconnected to power the barrier release valve		Y	Z
2.11	The boom takes 6 to 8 seconds to lower.		Y	Z
2.12	The boom is damped during the last 10° to 15° of movement.		Y	Z
2.13	The boom is horizontal when fully lowered.		Y	Z
2.14	The boom is the correct length.	Design	Y	Z
		Actual	Y	Z
2.15	Condition of the boom.		Y	Z
2.16	The security of the boom.		Y	Z
2.17	The boom fixing bolt ‘E’ clips are undamaged and the whole shear bolt assembly has had grease applied.		Y	Z
2.18	The reflective strips are undamaged, clean and are in the correct position.		Y	Z
2.19	The boom lamps, hoods, brackets, and fastenings are undamaged, free from corrosion and correctly aligned.		Y	Z
2.20	The boom wiring, plugs, clamps, and terminations are undamaged.		Y	Z
2.21	(If Fitted) the strainer wire, support bracket and fastenings are effective.		Y	Z
	Check the height of the boom from the road surface.			
2.22	Top of barrier at the centre of the road (0.9m Minimum).		Y	Z
2.23	Underside of barrier at any point (1m Maximum).		Y	Z
2.24	Check the counter balance weights are secure and are the correct weight by Measuring with a weight measuring device the tip weight by using the following method:			
	• At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.			
	• Connect the weight measuring device to the tip end of the boom.			

- Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.

Boom Length	Tip Weight
3.6m to 4.1m	7.6Kg
4.6m to 9.1m	6.1Kg

2.25	Check that the boom can be lifted by hand to the fully raised position.	Y	Z
2.26	Check the interior of the pedestal for water ingress and contamination. Clean as necessary.	Y	Z
	Check the following on the hydraulic pack assembly:	Y	Z
2.27	The pack fastenings.	Y	Z
2.28	The top and bottom pack trunnion block mountings and lock washers.	Y	Z
2.29	Bolts through the trunnion to the operating lever are the correct length and spiral pins are fitted correctly.	Y	Z
2.30	The ram adjusting screw and lock washer. Do not adjust the screw.	Y	Z
2.31	The auto/manual valve is set in the auto position and the split pin and seal are intact.	Y	Z
2.32	The wiring and terminations to the pack. The movement of the pack can cause the B24 feed wire to break internal strands, disconnect the wires to check for this type of damage.	Y	Z
2.33	The fluid level is correct. Just visible in the filter strainer or to the max mark on the indicator.	Y	Z
2.34	The motor brushes. They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.	Y	Z
2.35	The motor commutator (where accessible). It shall be undamaged and a light coffee colour.	Y	Z
2.36	Record the pack details (Mk and serial number). Check that the pack is of the correct type for an ABCL (coloured blue).		

Unit	Mk	Serial Number

2.37	Check that the shock absorber plunger cannot be depressed more than 3mm by finger pressure.	Y	Z

2.38	Check the up and down stop block striker pads. Replace if worn.	Y	Z
2.39	Unfasten the lid of the circuit controller and Check the following items:	Y	Z
2.40	The spindle and control arm are lubricated and free from wear. Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.	Y	Z
2.41	Terminations and wiring.	Y	Z
2.42	Contact fingers. Replace any fingers that are worn or have lost their spring tension.	Y	Z
2.43	Bands. Check they are clean and not worn (copper dust in the bottom of the casting) If worn the complete controller shall be renewed.	Y	Z
2.44	Measure by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on ‘hand’ operation. Adjust if necessary (Appendix A).	Y	Z
2.45	Close and fasten the circuit controller. Check if any adjustments have been carried out that all the terminations have been correctly tightened.	Y	Z
2.46	Check the circuit controller cam, cam slot and roller assembly.	Y	Z
2.47	Check the earth-bonding strip is secure and undamaged.	Y	Z
2.48	Check the main shaft bearings and fastenings. Check that sufficient grease has been applied to the bearings	Y	Z
2.49	Check the bearing end cap seals are effective. Water ingress into the end caps can freeze and prevent the booms from lowering.	Y	Z
2.50	Check that the pedestal fixing bolts are all fitted and correctly tightened.	Y	Z
2.51	Check the operator’s door (rear) micro switch assembly, fastenings and wires. Check that they are secure and undamaged.	Y	Z
2.52	Raise the boom by hand pumping, Check that the boom does not lower between pumping strokes. If necessary, reconnect the (UP)KR circuit.	Y	Z
2.53	Lower both the booms; stow the pump handles and close and lock the operator’s doors (rear). Raise the boom under ‘power’ operation by switching the LCU to off and Check the following: Check the barrier (CYC)SR if necessary, reset the circuits to normalise the crossing	Y	Z
2.54	The booms are between 80° and 85° when fully raised.	Y	Z
2.55	The booms do not excessively oscillate when they come to rest in the raised position.	Y	Z
2.56	The booms do not ‘hunt’ when fully raised. This is a sign of an internal fluid leak inside the hydraulic pack.	Y	Z

2.57	The boom lights stay illuminated until both booms are above 80° from the horizontal.	Y	Z
2.58	Check that the operator's door cannot be closed and locked unless the pump handle is in the stowed position	Y	Z
2.59	Check that the guide pin is seated in the bottom of the guide slot when the pump handle is fully stowed. Check that the spiral pin is not bent and the spiral pin guide is not worn or does not have a 'step'. Close and fully lock the operator's door. When locking the operators' door check that the key is turned a further 90° clockwise then back again to the removal position to correctly operate the door proving micro switch. Check the barrier (CYC)SR if necessary, reset the circuits to normalise the crossing.	Y	Z
2.60	Close and lock the front pedestal door.	Y	Z

3. Local Control Unit

Is This Section Applicable to the Crossing Under Test?	Yes	No

3.1	Open the local control unit door. Check when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.	Y	Z
3.2	Operate the control switch to the lower position and Observe the following items:		
3.3	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Y	Z
3.4	After 3 seconds all the amber signals extinguish and all the red flashing road signals start to flash.	Y	Z
3.5	The crossing headlights illuminate the crossing at the same time the red road lights commence to flash.	Y	Z
3.6	The DWL signals do not illuminate for any direction.	Y	Z
3.7	After approximately a further 4 seconds the booms commence to lower.	Y	Z
3.8	The booms take 6 to 8 seconds to reach the fully lowered position.	Y	Z
3.9	Red flashing road lights continue to be illuminated. Audible warnings continue to sound.	Y	Z
3.10	Open the operator's door (rear) of Y pedestal. Check the audible warnings are silenced. Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
3.11	The boom does not lower between pumping strokes.	Y	Z
3.12	The red flashing road signals and boom lights are illuminated	Y	Z

3.13	The audible warnings are sounding.	Y	Z
	Open the operator's door (rear) of Z pedestal. Extend the pump handle and hand pump the boom to the raised position. Observe the following items:		
3.14	The boom does not lower between pumping strokes.	Y	Z
3.15	The red flashing road signals stay illuminated until the Z boom is above 80° from the horizontal.	Y	Z
3.16	The audible warnings are continuing to sound.	Y	Z
3.17	Operate the LCU control switch to the off position and check that the red flashing road signals and audible warnings are extinguished	Y	Z
3.18	Operate the LCU switch to the on/lower/hand position.	Y	Z
3.19	On each pedestal lift the pump handle and allow the boom to fully lower. The (UP)KR circuit will need to be disconnected to power the barrier release valve. Once the boom has started to lower, reconnect the (UP)KR circuit.	Y	Z
3.20	Operate the switch in the local control unit to the off position and Observe the following: Check the barrier (CYC)SR if necessary, reset the circuits to normalise the crossing.	Y	Z
3.21	The audible warnings cease and both booms rise together.	Y	Z
3.22	The red road lights extinguish once the booms have started to rise.	Y	Z
3.23	Check that the guide on the inside of the local control unit door prevents the door being closed and locked unless the switch is in the auto position.	Y	Z
3.24	Operate the switch to the on/lower/hand position and Observe that a lowering sequence takes place, operate the switch to the Auto position, close and lock the local control unit door, and Observe that the booms rise as listed in section 15.	Y	Z

4. Road Traffic Light Signals

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

On each of the road traffic light signals Check the following items:

4.1	The signal structure is stable.	YO	YN	ZO	ZN	Aux 1	Aux 2

4.2	The signal light units are undamaged and the hoods are securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.3	The signal lenses are undamaged, clean and correctly orientated.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.4	Signs and notices attached to the signal post are undamaged, clean, and legible See NR/SMS/SG00 for details on reflective boards and signs.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.5	Cables and conduit are undamaged and secure.	YO	YN	ZO	ZN	Aux 1	Aux 2
4.6	Check that if the signals are fitted with 50-watt Quartz Halogen lamps the road traffic light signal backboard is fitted with a red/white border. White only and red/white border backboards shall not be mixed together at the same crossing.	YO	YN	ZO	ZN	Aux 1	Aux 2

5. Audible Warnings

5.1	Check that the audible warning device and any exposed cables and conduit are undamaged and secure. Check that the device is correctly aligned.	YO	YN	ZO	ZN
5.2	Check that there has been no water ingress into audible warning device. Rectify or replace as necessary.	YO	YN	ZO	ZN
5.3	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible warning device reduced because of local conditions, check the diagrams.	YO	YN	ZO	ZN
5.4	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.				

6. Another Train Coming Signs

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

Signal Number	Signal Identification
Aux 1	
Aux 2	

6.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.2	Check that the hood is securely fitted and the signal face is clean and undamaged.	YO	YN	ZO	ZN	Aux 1	Aux 2
6.3	If a sun screen is fitted Check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

7. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test?	Yes	No

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the additional signal identification below:

	Signal Number	Signal Identification
	Aux 1	
	Aux 2	

7.1	Check that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned	YO	YN	ZO	ZN	Aux 1	Aux 2
7.2	Check that the hood is securely fitted and the signal face is clean and undamaged	YO	YN	ZO	ZN	Aux 1	Aux 2
7.3	If a sun screen is fitted Check this is undamaged and securely fitted.	YO	YN	ZO	ZN	Aux 1	Aux 2

8. Crossing Headlight Unit

8.1	Check that the structure is stable and securely fixed in the ground.	Y	Z
8.2	Check that the light unit is undamaged and correctly aligned.	Y	Z
8.3	Check that the lens is clean and the hood is securely fixed.	Y	Z

9. Drivers Crossing Indicators (DRL/DWL) Signals

Earlier installations usually only have a driver's white light unit, more recent installations have a combined driver's red light and white light unit.

9.1	Check (on DRL/DWL units) that the flashing red signal is clearly visible from the speed restriction board.	UP	UP X	DN	DN X
9.2	Check that the structure is stable and securely fixed in the ground.	UP	UP X	DN	DN X
9.3	Check that the unit is undamaged, correctly aligned and sighted	UP	UP X	DN	DN X
9.4	Check that the lens(es) are clean and the hood(s) is/are securely fitted.	UP	UP X	DN	DN X
9.5	Check (on DRL/DWL units) that all the LED's on the DRL unit are flashing.	UP	UP X	DN	DN X

10. Lineside Notice Boards and Signs

10.1	Check that the sign is securely fixed to the post, the post is stable and securely fixed in the ground	UP	UP X	DN	DN X
10.2	Check that the sign is correctly aligned and sighted	UP	UP X	DN	DN X
10.3	Check that the sign is of the correct retro-reflective material (see 1.3)	UP	UP X	DN	DN X
10.4	Check that the sign is clean and the legend is correct and legible. The site plan will give details on the correct information that shall be displayed.	UP	UP X	DN	DN X

11. Telephone System

Most AOCL+B installations do not have public access telephones provided. Usually there is only an information sign giving contact details

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	
4	

		Telephone Identity (see Grid)			
11.1	Check the telephone and cord is undamaged.	1	2	3	4
11.2	Check the correct labels and symbols are fitted inside and outside the case and they are legible.	1	2	3	4
11.3	Check that any associated signs are stable, undamaged and legible. Emergency telephones require having the	1	2	3	4

	yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone				
11.4	Check that the correct crossing name is stated on any telephone labels and signs. The site plan will give information on the correct names/numbers that shall be displayed	1	2	3	4
11.5	If betalights are fitted Check they are lit. Betalights are usually fitted to older style telephones units that the public have access to.	1	2	3	4
11.6	Ring the monitoring point and Check that the call is received correctly. Ask the monitoring point to ring back.	1	2	3	4
11.7	Check the telephone rings correctly. Check that the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' during this period transmission and reception of speech is not possible	1	2	3	4
11.8	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 11.6 to 11.7. Switch the mains power to the telephone system back on.	1	2	3	4

12. Public Telephone Numbers

12.1	Check the information on all the public information signs is correct and legible.	
12.2	Ring the ETD number given for the public to call in an emergency, Check that the recipient gives correct procedures for the call. The site plan will give information on the correct names/numbers that shall be displayed.	

Public Telephone Numbers	Checked

13. Barrier Proving

The booms can be lowered and raised by local control or train simulation.

13.1	Turn the mains power off.					
13.2	Allow the booms to lower. Restrain the tip of one of the booms then allow the barriers to rise.	YO	YN	ZO	ZN	
13.3	Check that the motor cut-out for the restrained boom operates within 25 seconds. This time relates to a SPX Contactor only, if a different contactor is fitted refer to site diagrams and report to Section Manager.	YO	YN	ZO	ZN	
13.4	Release the boom and check that the motor cuts in again within 3 minutes and the boom fully rises.	YO	YN	ZO	ZN	
13.5	Repeat 13.1 to 13.4 for each of the other booms.					
	Turn the mains power on.					

14. Red Flashing Road Traffic Light and Drivers White Light (DWL) Signal Proving

The crossing shall be operated by train simulation. Check on the following tests that only the DWL for the direction in which the train simulation is applied operates.

If the (DWL)CR/CSR is a slow to pick relay the DWL will not illuminate with only one red road light connected. Check the diagrams

14.1	Simulate a train striking in and allow the crossing to operate. Check that all the red road signals are illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Aux 2
14.2	Measure the rate of flashing (Between 70 and 90 flashes per minute)			**FPM**			
14.3	Check that the DWL is illuminated (flashing).	YO	YN	ZO	ZN	Aux 1	Aux 2
14.4	Disconnect the left and right lamps on one of the light units by slipping the links in the equipment room/loc and Check that the DWL extinguishes and (if provided) the DRL illuminates.	YO	YN	ZO	ZN	Aux 1	Aux 2
14.5	Re-connect the right-hand lamp and Check that the DRL (if provided) extinguishes and the DWL illuminates.	YO	YN	ZO	ZN	Aux 1	Aux 2
14.6	Disconnect again the right hand lamp and Check that the DWL extinguishes and the DRL (if provided) illuminates .	YO	YN	ZO	ZN	Aux 1	Aux 2

14.7	Re-connect the left-hand lamp and Check that the DRL (if provided) extinguishes and the DWL illuminates.	YO	YN	ZO	ZN	Aux 1	Aux 2
14.8	Repeat 14.3 to 14.7 for all other light units.	YO	YN	ZO	ZN	Aux 1	Aux 2
14.9	Open the door of the LCU unit and Check that the DWL extinguishes and the DRL illuminates. Close and lock the door and Check that the DRL extinguishes and the DWL illuminates.						
14.10	In turn open the operator's door (rear) of the Y and Z pedestals, Check that the DWL is extinguished and the DRL is illuminated as the door is opened					Y	Z
14.11	Check that the DRL is extinguished and the DWL is illuminated as each door is correctly closed and locked again.					Y	Z
14.12	Operate the exit function and remove the train simulation. If necessary, re-set the circuits to normalise the crossing controls.						

15. Local Control Sequence

15.1	Operate the LCU to the LOWER position and Check the following:	
15.2	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	
15.3	After 3 seconds all the amber signals extinguish and all the red road signals and any pedestrian lights start to flash.	
15.4	The crossing headlights illuminate the crossing at the time the red road lights commence to flash.	
15.5	The DWL do not illuminate.	
15.6	The DRL continue to flash.	
15.7	After approximately a further 4 seconds at older the booms commence to lower and the boom lamps illuminate.	
15.8	The booms take 6 to 8 seconds to reach the fully lowered position.	
15.9	Red road lights and any pedestrian lights continue to be illuminated. Audible warnings continue to sound.	
15.10	Operate the LCU to the RAISE position and Check the following:	
15.11	The booms begin to rise.	
15.12	The lineside headlights extinguish and the audible warnings cease. The red road lights extinguish once the booms have started to rise.	
15.13	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.	
15.14	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.	

	Check the barrier (CYC)SR. if necessary, reset the circuits to normalise the crossing.	
15.15	Operate the switch to the auto position and Observe that a lowering sequence as listed in 15.1 to 15.9 takes place and then the booms raise as listed in 15.12 to 15.14.	

16. Automatic Control Sequence

- Check in the crossing control tables for any special controls that affect the automatic control sequence.
- Where the word EXIT occurs the strike out treadle shall be operated.
- On single lines or where bi-directional controls exist the leaving track circuit shall also be operated.
- Where directional proving controls exists the bi-directional strike out treadle shall also be operated in the correct sequence.

16.1	Observe, with no train approaching, all DRL (if provided) are illuminated (flashing) and are visible from the speed restriction board.	Up	Up X	Dn	Dn X
16.2	Simulate an approaching train by shunting a controlling track circuit. Observe the following:	Up	Up X	Dn	Dn X
16.3	On double lines 10 seconds elapse before the crossing sequence commences. On single lines the sequence starts immediately.	Up	Up X	Dn	Dn X
16.4	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).	Up	Up X	Dn	Dn X
16.5	After 3 seconds all the amber signals extinguish and all the red road signals and any pedestrian lights start to flash	Up	Up X	Dn	Dn X
16.6	The crossing headlights illuminate the crossing at the time the red road lights commence to flash.	Up	Up X	Dn	Dn X
16.7	After approximately a further 4 seconds the booms commence to lower.	Up	Up X	Dn	Dn X
16.8	As the booms commence to lower the DRL extinguishes and the DWL commences to flash for the direction where the train simulation was applied. The DRL continues for the opposing directions.	Up	Up X	Dn	Dn X
16.9	The booms take 6 to 8 seconds to reach the fully lowered position.	Up	Up X	Dn	Dn X

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16.10	The crossing headlights, red road lights and any pedestrian lights continue to be illuminated and audible warnings continue to sound.	Up	Up X	Dn	Dn X
16.11	Operate the exit function and remove the train simulation. Observe the following:	Up	Up X	Dn	Dn X
16.12	The booms begin to rise.	Up	Up X	Dn	Dn X
16.13	The DWL for the direction where the simulation was applied extinguishes and the DRL commences to flash.	Up	Up X	Dn	Dn X
16.14	The red road lights and crossing headlights extinguish and the audible warnings cease when the booms have reached approximately 45° from the horizontal.	Up	Up X	Dn	Dn X
16.15	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.	Up	Up X	Dn	Dn X
16.16	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.	Up	Up X	Dn	Dn X
16.17	Repeat steps 16.2 to 16.16 for the opposite direction on a single line and the other direction on double lines.	Up	Up X	Dn	Dn X

17. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?		Yes	No
17.1	Simulate a train striking in on line one.	Up	Dn
17.2	Simulate a second train striking in on line two. Observe the following:	Up	Dn
17.3	The booms remain lowered.	Up	Dn
17.4	The road lights and any pedestrian lights continue to flash.	Up	Dn
17.5	The audible warning rate continues at the normal rate	Up	Dn
17.6	The crossing headlights continue to illuminate	Up	Dn
17.7	Operate the exit function and remove the simulation on line one. Observe the following:	Up	Dn
17.8	The booms remain lowered.	Up	Dn
17.9	The road lights and any pedestrian lights continue to flash.	Up	Dn
17.10	The audible warning rate changes to the increased rate.	Up	Dn
17.11	The crossing headlights continue to illuminate	Up	Dn
17.12	The DWL for the direction of the simulation on line one extinguishes and the DRL commences to flash.	Up	Dn
17.13	The DRL for the simulation on line two extinguishes and the DWL commences to flash.	Up	Dn

17.14	Operate the exit function and remove the simulation on line two. Observe that the sequence.	Up	Dn
17.15	Repeat steps 17.1 to 17.14 for a train striking in on line two first and a second train striking in on line one.	Up	Dn

18. Track Circuit Timing

18.1	Simulate an approaching train by shunting a controlling track circuit.	Up	Up X	Dn	Dn X
18.2	Start timing with a stopwatch as soon as the red flashing road signals and the DWL for the direction in which the simulation was applied illuminate.	Up	Up X	Dn	Dn X
18.3	Check that after 180 seconds the DWL extinguishes and the DRL (if applicable) commences to flash.	Up	Up X	Dn	Dn X
18.4	Check that 30 seconds after the DWL extinguishes the barriers perform a raising sequence as in 16.12 to 16.16. The only exception will be that the DWL will already be extinguished and the DRL will be flashing.	Up	Up X	Dn	Dn X
18.5	Remove the train simulation and operate the exit function. Check that the crossing controls return to their normal state. If necessary, re-set the circuits.	Up	Up X	Dn	Dn X
18.6	Repeat 18.1 to 18.5 for all other directions where controls are provided Record the results in the table below. If any adjustments have to be made to achieve these times, allow a period of time for the bi-metal strip in the timer to cool down.	Up	Up X	Dn	Dn X

Direction	**TC Name**	**DWL Extinguishes (Seconds)**	**Booms Rise (Seconds)**

19. Drivers Plunger Unit

These are normally fitted to modern installations.

NOTE: *On some designs the DWL will not illuminate when the drivers plunger is operated after the crossing has timed out. The DRL (if provided) will remain flashing. Check the control tables and diagrams for the crossing you are testing.*

Is This Section Applicable to the Crossing Under Test?	Yes	No

19.1	Simulate an approaching train by shunting a controlling track circuit and allow the crossing to time out.	Up	Up X	Dn	Dn X
19.2	Check that the DWL extinguishes and the DRL commences to flash.	Up	Up X	Dn	Dn X
19.3	Open the door of the unit and operate the plunger. Check that the crossing sequence starts.	Up	Up X	Dn	Dn X
19.4	Check that DWL for the direction of the plunger operation illuminates (if designed to do so, see note at start of section)	Up	Up X	Dn	Dn X
19.5	Reset the circuits to normalise the crossing controls. Close and lock the door of the plunger unit	Up	Up X	Dn	Dn X
19.6	Repeat 19.1 and 19.5 for all other driver's plunger units.	Up	Up X	Dn	Dn X

20. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

Check in the control tables for any special controls functions that are applicable to the crossing.

20.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.	Up	Up X	Dn	Dn X

Function	Result

21. Line Dimensions

Is This Section Applicable to the Crossing Under Test?	Yes	No

Where track works have taken place since the pervious test

21.1	Check and identify the distance of track circuits and treadles as specified on the signalling plan. Record the design and actual dimensions	Up	Up X	Dn	Dn X

Line	Design Measurement	Actual Measurement

22. Power Supplies and Batteries

22.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
22.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

APPENDIX A - Circuit Controller Band Settings

Band	Made Between
DN KR	0° and 4°
HJPR	42° and 90°
MR	0° and 83°
UP KR	81° and 90°

NOTE: *It is important to obtain the over-lap between the UP KR band making and the MR band breaking. This is to ensure that if a boom drops slightly it will drive up again before the red road signals operate.*

END

LEVEL CROSSING TESTING

MINIATURE STOP LIGHT CROSSING (MSL)

(RELIABILITY CENTRED MAINTENANCE)

NR/SMS/LX94

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GENERAL

This test plan is the NR/SMS/PartC/LC15. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in 'crossing defects'.

a) The crossing ground plan.

b) The level crossing order.

c) The crossing control tables.

d) The signalling plan.

Missing documentation shall be listed as a defect.

TEST SUMMARY

Test Summary
Name of Level Crossing:
Level Crossing Type:
Name of Monitoring Signal Box(es):
Date of Full Test:
Time Full Test Commenced:
Time Full Test Completed:
Tested By:
Signature:
Date of Signature:
Grade and Title:

CROSSING DEFECTS

On the test plan each item shall be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required
R: Found Incorrect, Rectified on Day of Test
C: Correct
N: Not Applicable to this Installation

Any items found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all sites found incorrect and rectified on the day of the test (code letter R).

Description of Items Found Incorrect and Rectified

SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below items found incorrect and requiring action (code letter X).

Description of Items Found Incorrect and Requiring Action	Responsible Party (s)

1. Red /Green Light Unit

	On each of the Red / Green Light units check the following items:		
1.1	The post is stable and undamaged	Y	Z
1.2	The light unit is correctly aligned and the lights are clearly visible from the crossing entry point.	Y	Z
1.3	The light units are undamaged and the hoods are securely fitted.	Y	Z
1.4	The red and green lenses are undamaged and clean.	Y	Z
1.5	If the crossing is an On-Demand type, check the touch buttons on each unit are not damaged.	Y	Z
1.6	Signs and notices attached to post are undamaged, clean and legible.	Y	Z

2. Gates

Is This Section Applicable to the Crossing Under Test?	Yes	No

2.1	Check that any red roundels or signs attached to the gate are undamaged, clean and legible. Signs and roundels shall be of class 1 retro-reflective material	A	B

3. Audible Warnings

Is This Section Applicable to the Crossing Under Test?	Yes	No

3.1	Check that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. Some crossings have had the sound output of audible alarms reduced because of local conditions, check the diagrams.	A	B
3.2	Check (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct.	A	B

4. Telephone Systems

Is This Section Applicable to the Crossing Under Test?	Yes	No

4.1	Check the telephone and cord is undamaged.	A	B
4.2	Check that any associated signs are stable, undamaged and legible. Emergency telephones shall have the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.	A	B
4.3	Check that the correct crossing name is stated on any telephone labels and signs	A	B
4.4	Check that telephone numbers given on any sign are correct. The site plan will give information on the correct names/numbers that shall be displayed.	A	B
4.5	If betalights are fitted, check they are lit. Betalights are usually fitted to older style telephone units that the public have access to.	A	B
4.6	On emergency telephones, check that an ETD number is given for the public to call in case they cannot contact the monitoring point.	A	B
4.7	Ring this number and check that the recipient gives correct procedures for the call	A	B
4.8	Ring the monitoring point and check that the call is received correctly. Ask the monitoring point to ring back	A	B
4.9	Check the telephone rings correctly. Check the quality of speech and hearing is clear and not distorted. On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes'. During this period transmission and reception of speech is not possible.	A	B
4.10	If lay-by and/or pedestal telephones are fitted Check that there is a ring differential at the monitoring point between them and the emergency telephones	A	B
4.11	Check that with one of the emergency telephones left 'off the hook' calls on the other telephones can be made and received correctly Whitely PETS systems will indicate a fault at the monitoring point	A	B
4.12	If an absent switch is fitted to the telephone system operate it and check that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch back to normal operation and check that a normal emergence call is received.	A	B
4.13	Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing, repeat tasks 4.9 to 4.12. Switch the mains power to the telephone system back on.	A	B

5. Red / Green Lamp Operation

5.1	With no trains approaching check that the light units are showing a green light, operate either the replacement switch to 'red' or slip the test link and observe that the light units are showing a red light. Operate the replacement switch to the 'auto' position or re-connect the test link and Observe that the light units are showing a green light.	

6. Sequence Test

Check in the crossing control tables for any special controls that affect the automatic control sequence.

Where the word EXIT occurs, the strike out treadle shall be operated.

6.1	Simulate an approaching train by shunting a controlling track circuit.	Up	Up X	Dn	Dn X
	Observe the following:				
6.2	The green lamps on both light units extinguish and the red lamps illuminate.	Up	Up X	Dn	Dn X
6.3	The audible warnings (if provided) sound.	Up	Up X	Dn	Dn X
6.4	Operate the exit function and remove the train simulation.	Up	Up X	Dn	Dn X
	Observe the following:				
6.5	The red lamps on both light units extinguish and the green lamps illuminate.	Up	Up X	Dn	Dn X
6.6	The audible warnings (if provided) cease.	Up	Up X	Dn	Dn X

Repeat steps 6.1 to 6.6 for all other directions where controls are provided.

7. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

7.1	Simulate an approaching train as in 6.1 on line one.	Up	Up X	Dn	Dn X
7.2	Simulate a second train striking in on line two.	Up	Up X	Dn	Dn X
7.3	Operate the exit function for the train simulation on line one.	Up	Up X	Dn	Dn X

	Observe the following:				
7.4	The green lamps on both light units stay extinguished and the red lamps stay illuminated.	Up	Up X	Dn	Dn X
7.5	The audible warnings (if provided) changes to the increased rate.	Up	Up X	Dn	Dn X
7.6	Operate the exit function for the train simulation on line two and Observe that the sequence is as 6.5 to 6.6.	Up	Up X	Dn	Dn X

Repeat steps 7.1 to 7.6 for a train striking in on line two first and a second train striking in on line one.

8. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test?	Yes	No

8.1	Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). Record the function performed and its results.

Function	**Result**

9. Track Circuit Resetting Tests.

Is This Section Applicable to the Crossing Under Test?	Yes	No

9.1	Simulate a train striking in by dropping a controlling track circuit, observe that the light units show a red light.	Up	Up X	Dn	Dn X
9.2	Make up the track circuit and start timing with a stopwatch from the time the track circuit is re-connected. Check that the red lights remain illuminated.	Up	Up X	Dn	Dn X
9.3	Observe that after 120 seconds the red lights are extinguished and the green lights illuminate. If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down.	Up	Up X	Dn	Dn X

9.4	Repeat 9.1 to 9.3 for all other directions where controls are provided	Up	Up X	Dn	Dn X

Direction	TC Name	Red Road Light extinguishes (second)
Up		
UpX		
Dn		
DnX		

10. Leaving Track Circuit Monitoring.

Is This Section Applicable to the Crossing Under Test?	Yes	No

10.1	Simulate a train striking in by dropping a controlling track circuit, Observe that the red lights illuminate.	Up	Up X	Dn	Dn X
10.2	Drop the leaving track circuit, operate the exit function and make up the controlling track circuit. Check that the leaving track circuit remains dropped.	Up	Up X	Dn	Dn X
10.3	Observe that the red lights are extinguished and the green lights illuminate. Start timing with a stopwatch as soon as the red lights are extinguished.	Up	Up X	Dn	Dn X
10.4	Observe that after 240 seconds the green lights extinguish and the red lights stay extinguished.	Up	Up X	Dn	Dn X
10.5	Re-connect the leaving track circuit and reset the control circuits. Check that the green lights illuminate. Record the time in the table below.	Up	Up X	Dn	Dn X

Time in Seconds

11. Power Supplies and Batteries

11.1	Carry out NR/SMS/PartB/Test/051 - Busbar Earth Test or NR/SMS/PartB/Test/053 - ELD Function Test.	
11.2	Carry out NR/SMS/PartB/Test/052 - Dynamic Earth Tests (Level Crossing Barriers).	

Power Supply Identification

END