ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

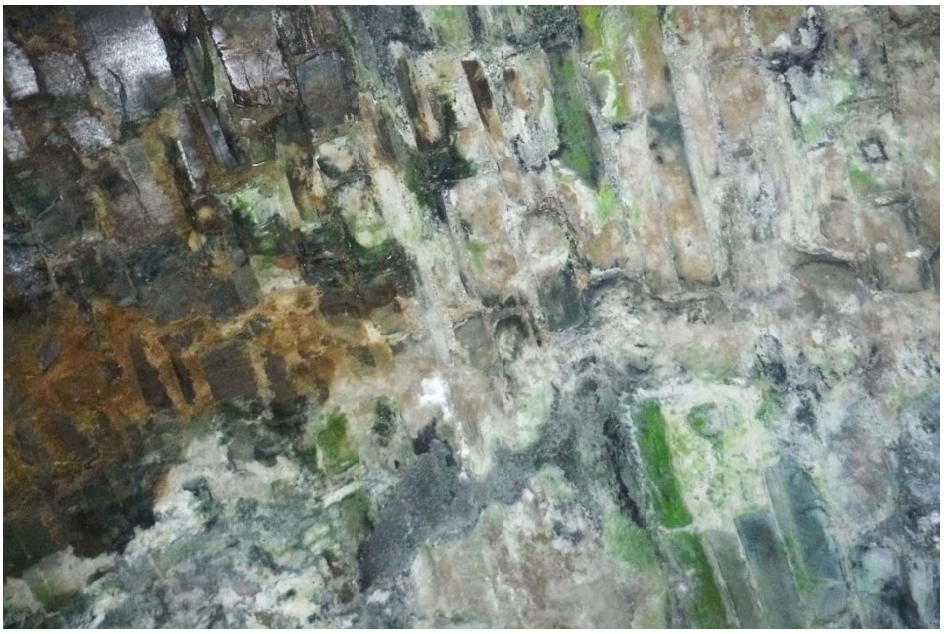
Photographs of structure

Photograph no 11: F6mm 2.5m long 150mm from Country end portal

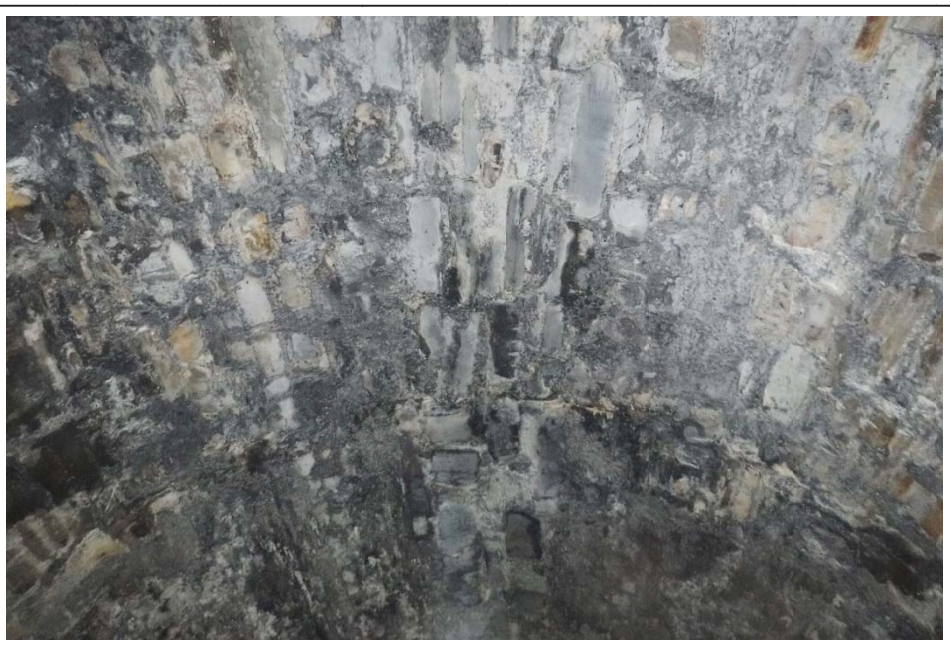
Photograph no 12: Spalling 450 x 300 x 125mm at DS haunch at 1.25ch

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure



Photograph no 13: F2 at crown at 1.25ch



Photograph no 14: Crown at 0.5ch
Good

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure

Photograph no 15: UL sidewall
Bulging 75 x **1**.5m high 1.0m above G/L

Photograph no 16: London end Dulverton portal

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure

Photograph no 17: UL wingwall

Photograph no 18: DL wingwall

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure

Photograph no 19: UL wingwall
Widespread and long-standing spalling throughout up to 50mm deep max
Total area affected approximately 10m^2

Photograph no 20: LE headwall
Moss growth and overhanging vegetation cover approximately 90% of the headwall

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure

Photograph no 21: LE headwall
DS spandrel repaired in 2012 remains in good condition where seen

Photograph no 22: LE headwall
Long-standing spalling to 100mm at DL sidewall quoin 900mm above GL

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure

Photograph no 23: Formation is found very muddy with standing water to LE of barrel

Photograph no 24: CE headwall
Horizontal fracture one course below DS stringer, 1.2m long, open 5mm and pushing 10mm

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure

Photograph no 25: The structure carries the single unclassified carriageway "Oldway Road"

Photograph no 26: Roadside fencing to rear of LE portal below

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

Photographs of structure

Photograph no 27: Roadside fencing to rear of CE portal below

Photograph no 28: The structure carries the single unclassified carriageway "Oldway Road"

ELR:	BLE	**Structure No:**	**Mileage:** 187m 64ch	**Examination date:**	14/11/17
Route:	Barnstaple Branch Line			**OS ref:**	SS 871 261
Name:	East Anstey Tunnel			**Type:**	Tunnel

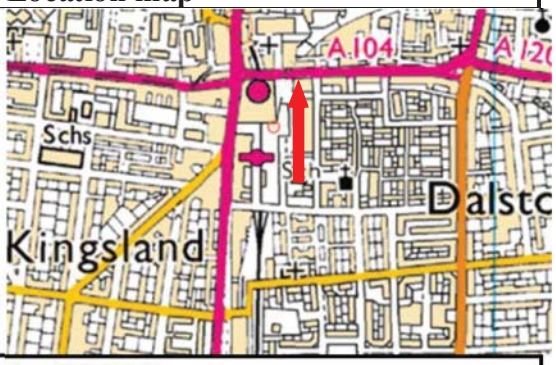
Photographs of structure

Photograph no 29: Single fence element displaced beyond UC embankment
(May not be HE (HRE) liability)

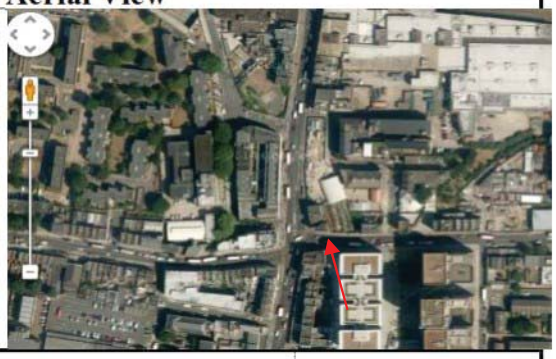
ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

General view of structure: manhole entrance at LE

Location map



Aerial View



A **Detailed Examination** of this structure has been carried out to establish the condition, identify the nature, severity and extent of defects, ascertain the rate of deterioration by reference to the previous examination reports and identify the scope, extent and urgency of any remedial actions required to ensure the continued safety and long-term integrity of the structure.

Examiner: R.G. Storey **Signed:**

Date: 26/03/19

Access Hazards:

Both ends of the tunnel are infilled.
Entry via manhole and tripod/ winch from the London end, which is the south end. Full confined space rescue team required for all examinations.

Recommendations:

Replace missing brickwork to US sidewall below jack arch 20 - P2 £750.

Cut out and replace spalled areas of jack arches 8(DS), 9(US), 9(DS), 15(DS) - P2 £2.5k.

Repoint deep open joints to jack arches 8(DS) and 17(DS) - P3 £500.

Signed by Examining Engineer: Richard [redacted] +01'00'

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Name of Part :	G-good F-fair P-poor	Remarks (Refer to parts by name)
Main Girders	**F**	**GENERAL NOTES**
Cross Girders	**F**	Access to the London (southern) end of the tunnel is gained via a manhole to the south of Dalston Road (A140) **(cover photo)**. The CE portal remains infilled **(P39&40)**.
Rail Bearers	**-**	
Floor	**-**	
Rivets & Bolts	**F**	The examination was undertaken with the assistance of a confined space rescue team.
Arch Face Rings	**-**	The feature of the CE portal is the sole visible part of the element and is located within a café garden.
Soffit	**F**	
Spandrels	**-**	
Abutments	**G**	**MAIN GIRDERS**
Piers	**-**	**L/End: - girder No1** no longer visible due to permanent formwork.
Buttresses	**-**	**No2** partially obscured by permanent formwork; remains in fair condition where exposed.
Wing & Retaining Walls	**-**	
Pointing	**F**	**CROSS GIRDERS**
Parapets & Pilasters	**-**	**L/End:- girder Nos1 & 2** no longer visible
Columns & Cylinders	**F**	**Nos 3-6**: - generally found in fair condition with moderate corrosion to exposed areas, lamination to 5mm **(P1, P2)**.
Trestles & Crossheads	**G**	
Bedstones & Cills	**G**	**JACK ARCHES**
Bearings	**-**	**L/End:-** Nos 4-7 have been demolished with load now supported by permanent formwork which was found wet throughout but found in a good condition **(P1-4)**.
Ballast plates/Boards	**-**	
Longitudinal timbers	**-**	**Nos 1-3** replaced with permanent formwork spanning from bottom flanges of main girders 2 & 3**(P1-4).** This area is partly obscured by debris and new concrete support
Waterproofing	**P**	
Drainage	**-**	
Gutters & Downpipes	**-**	
Handrails and Fencing	**-**	
Painting	**P**	
Track/Road Condition	**-**	
Foundation	**N/E**	
Vegetation	**G**	
Bridge Number/ Mileage	**F**	

TICK AS APPROPRIATE		**Notes/Comments:**
Change of Construction		
Weight Restriction Plates		
Inaccessible Parts	**X**	Foundations not examined No signs of foundation failure noted
Tell Tales		
Plumbing Points		

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Examiner Comments on Structure condition

MAIN INNER GIRDERS AND JACK ARCHES

Girder No3: metal beam (510mm deep, 410wide). Moderate surface corrosion to all exposed faces. Girder found wet throughout **(P5)**: surface corrosion removed in places for examination.

Jack arch No8: 3m² open joints to 70 mm max to DS **(P6)** and 50mm max to US **(P7)**. DS area is found with spalled bricks to 50mm max **(P8)**.

Girder No4: metal beam (460mm wide), wet, with water dripping throughout **(P9)** and lamination to 8mm and moderate corrosion. Significant areas of delamination, to 2-3mm, noted **(P10)**.

Girder No5 6 & 7: metal beams 460mm wide; moderate corrosion and saturated throughout the exposed bottom flanges **(P11)**

10m space between girders No7 & 8:- Original soffit of wrought iron girders protected with reinforced concrete render which has failed in isolated pockets, exposing pockets of original main girders **(P13).** Fresh loose material noted to DS bottom flange **(P12)**.Strengthening timbers or old formwork runs parallel to sidewalls on DS **(P14).** Render generally in poor condition throughout and loose in places **(P15)**.

Girder No8: metal beam (510mm wide), generally in fair condition, saturated with moderate surface corrosion **(P18)**. Small area of lamination removed to CE bottom flange **(P19)**

Jack Arch No9: spalling to 75mm 1m² on US **(P20)** spalling to 100mm over 7.5m^2 to DS **(P16, P17)**

GirderNo9: metal beam (510mm wide) generally in fair condition. Wetness and surface corrosion with lamination to 5mm locally removed to DS **(P21)**

Jack Arch No10: isolated spalled bricks to 15mm with open joints to 50mm.

Girder No10: metal beam (510mm wide) generally in fair condition. Wet throughout and surface corrosion lamination to 2mm **(P21)**

Jack Arch No11: isolated spalled bricks to 15mm and joint loss to 30mm

Girder No11: metal beam (510mm wide): generally fair condition. Wet throughout with water dripping in places, moderate surface corrosion **(P21)**

Jack Arch No12: generally good condition with pointing loss to 20mm.

Girder No12: metal beam (510mm wide): generally in fair condition. Wet throughout with lamination to 2mm removed from US bearing area **(P22)**

Jack Arch No13: generally found good, damp only

Girder No13: metal beam (510mm wide), generally in fair condition. Wetness. And moderate surface corrosion.

Jack Arch No14: generally found good with odd deep joints to 60mm to centre

Girder No14: metal beam (510mm wide) generally in fair condition. Moderate surface corrosion and wet throughout with water dripping **(P23)**. Small patches of corrosion removed. Delamination to 8mm to DS at bearing.

Jack Arch No15: Loss of section above D/Side sidewall: 4No bricks missing. Further fresh minor spalling noted adjacent with local area of brickwork drummy and very soft over 0.5m^2 area **(P24)**

Isolated spalling also noted around column support with associated open joints both to 30mm deep max

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Examiner Comments on Structure condition

Girder No15: metal beam (510mm wide) moderate wetness and lamination to 15mm with no further lamination removed **(P25)** 2.9m from DS wall, girder No15 is supported by a vertical column (column 1 – **P26**) total size 150mm x200mm formed from welded steel channel sections. Top of the column connects to the girder with a top plate measuring 260mm x 320mm x 20mm. The flanges of the girder are also supported by 4No tension bolts fixed trough the jack arches. The diameter of the bolt is 50mm. All bolt heads base plates and column are wet with water dripping from bolt heads **(P27)**. Bolt shanks are exposed at LE and moderately corroded by 2-5mm **(P29)**. Support shows surface corrosion **(P30)** with local de-lamination
Fracture/depression to bottom flange is visible to L/End and shows no change **(P28)**.

Column is vertical, generally in good condition with light surface corrosion and paint loss.

Jack Arch No16: 1No missing brick to UL above sidewall but firm to hammer **(P31).** 2m² open joints to 25mm. Area adjacent to column supports also wet

Girder No16: metal beam (510mm wide) wet with water dripping especially around support.
3.7m from D/Side wall, the girder is supported by a vertical column (column 2 – **P32**) total size 150mm x 200mm fabricated from welded steel channel sections. Top of column connects to girder with top plate 260mm x 320mm x 20mm. 2No bullhead sections also support the flanges of the girder **(P33).** The girder is found wet with water dripping. Bullhead supports show moderate corrosion and lamination to 5mm particularly to outer edges. The column is vertical and in good condition **(P36)**. Gap (between plates) noted at support shows no change **(P34, P35).** Lamination to girder on DS to 2mm.

Jack Arch No17: generally in fair condition. Patch of open joints 0.5m² to 25mm and isolated spalling to 20mm, both to D/Side **(P37)**

Girder No17: metal beam (510mm wide) generally in fair condition. Wet with moderate corrosion to 2mm.

Jack Arch No18: generally found in good condition and damp with open joints to 10mm.

Girder No18: metal beam (510mm wide). Generally in fair condition. Moderate surface corrosion to 2mm at US bearing, wet throughout.

Jack Arch No19: generally found in good condition with isolated spalling to 15mm.

Girder No19: metal beam generally in fair condition with water dripping to centre and wet throughout. Moderate surface corrosion and small loss of section D/Side L/End showing no change.

Jack Arch No20: generally found in good condition with small patches of soft brickwork especially at US and water dripping at centre **(P38)**.

Girder No20: metal beam (510mm wide) generally found fair with pockets of lamination to 2mm.

Jack Arch No21: generally found in good condition with damp patches. Section of surface spalling noted to DS to 10mm.

Girder No21: metal beam (510mm wide) generally found in fair condition with moderate corrosion.

Jack Arch No22: generally found in good condition.

Girder No22: metal beam (510mm wide) generally found in fair condition. Surface scaling

VISUAL INSPECTION ONLY AFTER GIRDER No22

In-fill at C/End to full height prevents tactile inspection past girder No22 **(P39)**. Rough brickwork has been installed to top of infill to retain garden to rear **(P40)**.

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Examiner Comments on Structure condition

Jack Arch No23: appears in good condition.

Girder No23: appears in moderate condition with surface scaling.

Jack Arch No24: appears in good condition.

GirderNo24: appears in moderate condition with surface scaling.

Jack Arch No25: appears in good condition.

Girder No25: appears in moderate condition with surface scaling.

Jack Arch No26: appears in good condition.

Girder No26: appears in moderate condition with surface scaling

PADSTONES
All padstones are found in good condition and firm to hammer with isolated patches of wetness the sole defect.

SIDEWALLS
Generally in good condition except where noted below
U/SIDE
Below Jack Arch No20: (to UC of Girder 19) area of loss of section and loose brickwork to 140mm deep x 600mm high x 250mm wide **(P41)** with local area around padstone wet with water dripping **(P42)**
Below Jack Arches No16 & 17: hollow 1m² to area above padstone.
Below Jack Arch No9: hollow 0.5m² to L/End in padstone area with spalling to 10mm with adjacent area hollow

D/SIDE

Below Jack Arch No21: spalling 10mm to 0.1m² near padstone.
Below Jack Arch No19: hollow 0.1m² adjacent to padstone.
Below Jack Arch No8: hollow and dull brickwork over 10m² below padstone to girder No8. 4m from girder No8 towards L/End: hollow 2m² to centre of sidewall then isolated hollow (2m² total) up to girder No7.

REFUGES
3No refuges found throughout tunnel. Joint loss to face ring on Refuge No3 (below US girder 18) to 0.5m² to 20mm **(P43)**
Minor spalling at LE to 20mm max.
Refuge 2 (below DS girder 10): good condition **(P44)**
Refuge 1 (below US girder 7): partially infilled by new concrete wall support **(P46)**

DRAINAGE
Manhole cover 7m to LE of girder 8 remains in place: foul smell emanating from area locally **(P45)**

BAROMETER READINGS

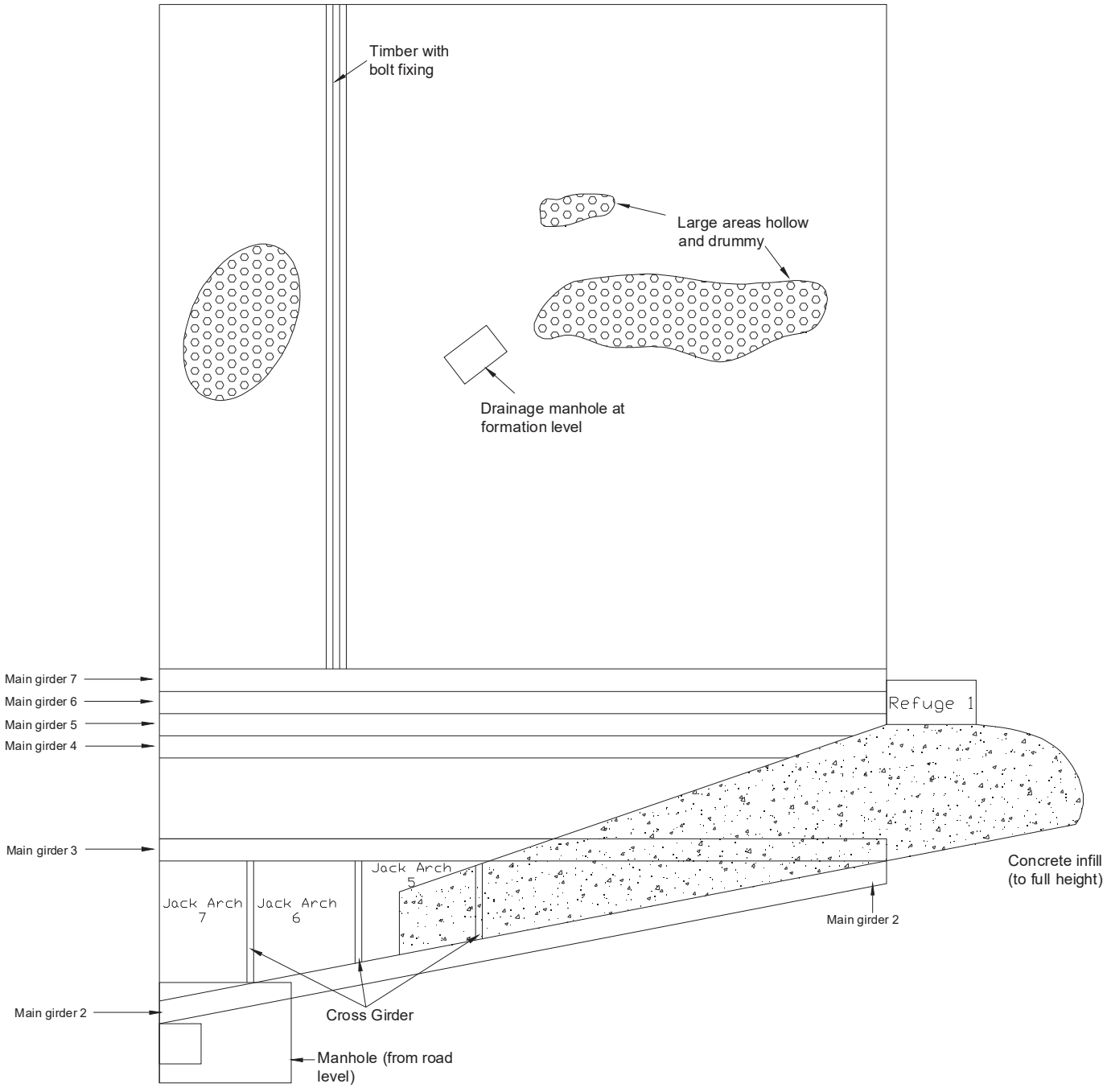
CE – road level	1032.2mb
CE – formation level	1032.1mb
Centre – formation level	1032.2mb
LE – road level	1032.2mb
LE – formation level	1032.2mb

GAS READINGS

O_2 levels varied from 19.6 to 20.8% throughout the period of the examination.
H_2S – zero
CO – zero
CH_4 – zero
CO_2 – not measured

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Examiner Comments on Structure condition



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Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
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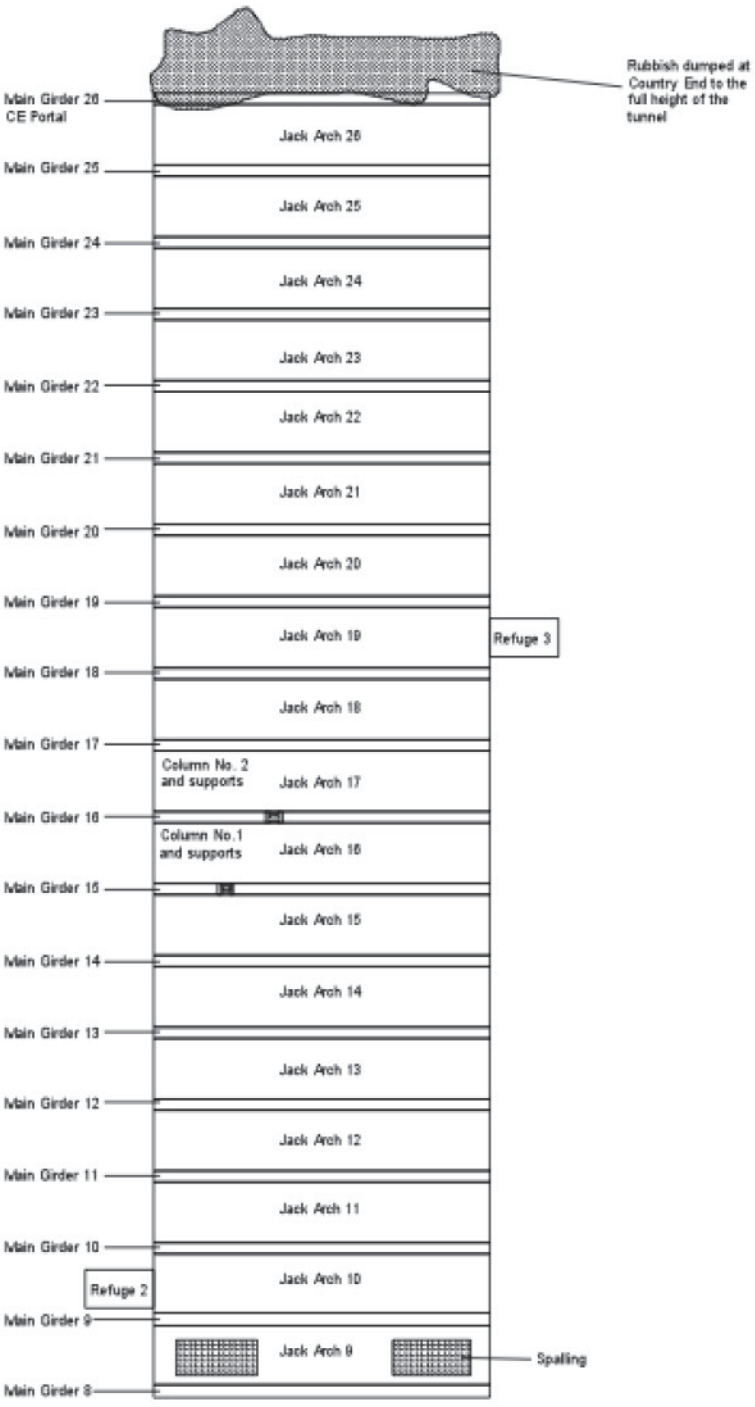
Examiner Comments on Structure condition



ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 1: Cross girder and permanent formwork wet throughout (CG 5 shown)

Photograph no 2: LE of cross girder 6 and main girder 2 wet throughout

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 3: Cross girders 6 and 7 and main girder 2 facing towards DL

Photograph no 4: remainder of jack arch with wet main girder 3 to rear

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

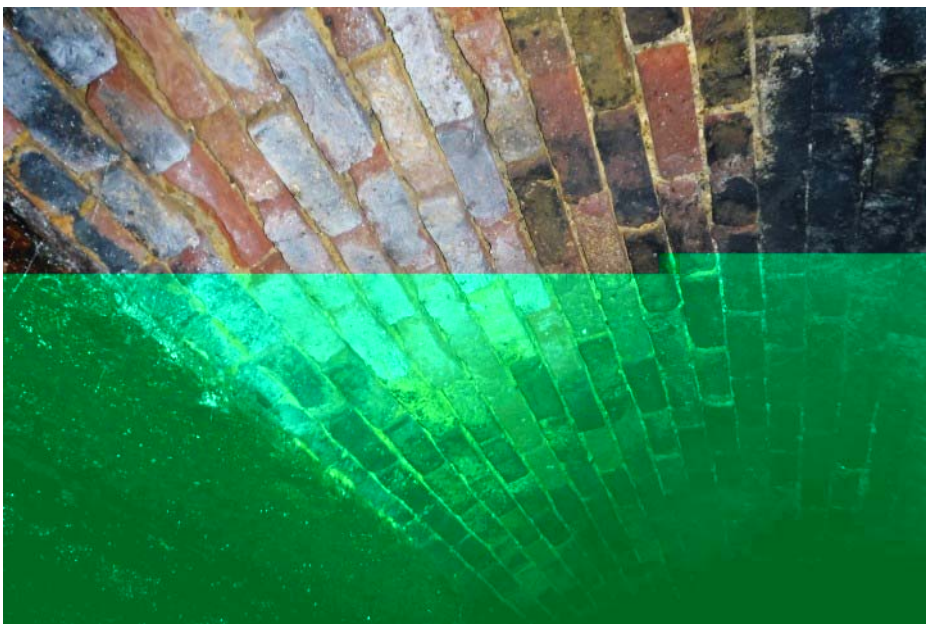
Photograph no 5: Main inner girder No3
Moderate surface corrosion to all exposed faces. Girder found wet throughout

Photograph no 6: Jack arch No8
3m² open joints to 110 mm max to DS

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 7: Jack arch No8
3m² open joints to 50mm max to US



Photograph no 8: Jack arch No8
DS area is found with spalled bricks to 50mm max

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 9: Girders No4-7: metal beams (460mm wide), wet, with water dripping throughout

Photograph no 10: Girder No4: metal beam (460mm wide)
Lamination to 8mm and moderate corrosion. Significant areas of delamination, to 2-3mm, remain

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 11: Girder No4-7: metal beams 460mm wide
Moderate corrosion and saturated throughout

Photograph no 12: 10m space between girders No7 & 8
Fresh loose material noted to DS bottom flange

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 13: 10m space between girders No7 & 8
Original soffit of wrought iron girders protected with reinforced concrete render which has failed in isolated pockets, exposing pockets of original main girders

Photograph no 14: 10m space between girders No7 & 8
Heavily decayed strengthening timbers or old formwork runs parallel to sidewalls on DS

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 15: 10m space between girders No7 & 8
Render generally in poor condition throughout and loose in places with large quantities removed

Photograph no 16: Jack Arch No9: spalling to 100mm over 7.5m^2 to DS
with whole DS hollow

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

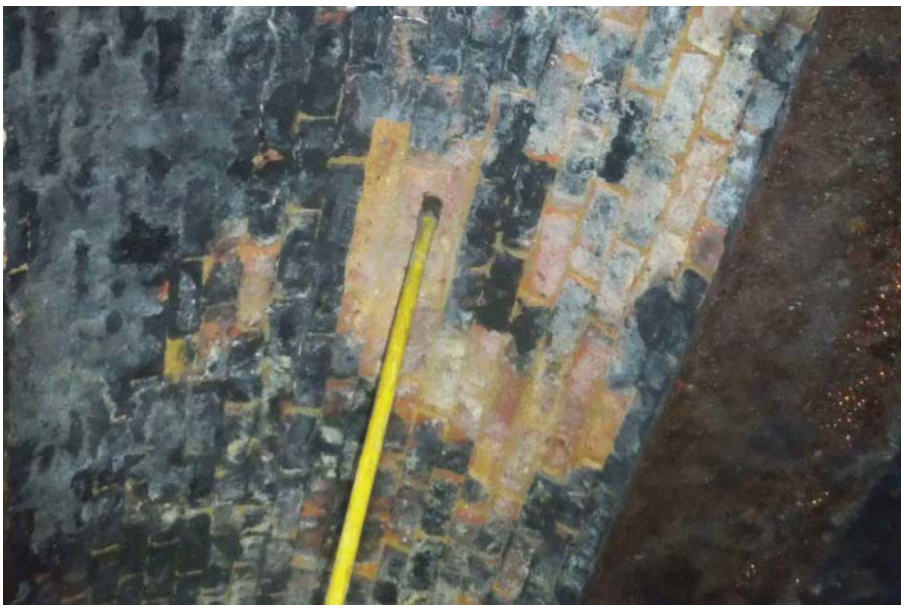
Photograph no 17: Jack Arch No9: spalling to 100mm over 7.5m^2 to DS

Photograph no 18: Girder No8: metal beam (510mm wide), generally in fair condition, saturated with moderate surface corrosion
Lamination approx 1mm removed over area of 0.25m^2

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 19: Girder No8: metal beam (510mm wide
Small area of lamination removed to CE bottom flange



Photograph no 20: Jack Arch No9: spalling to 75mm 1m² on US

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

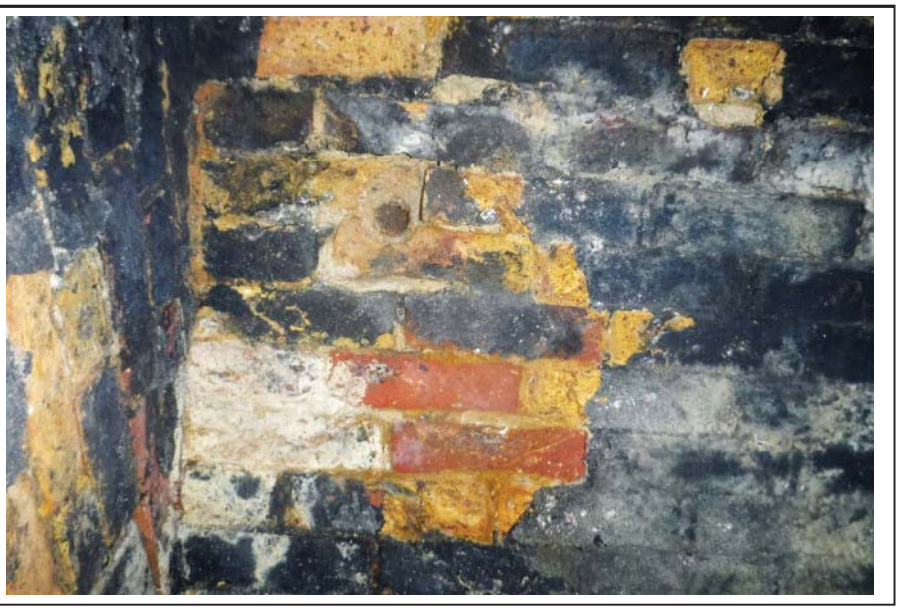
Photograph no 21: GirdersNo9-11: metal beams (510mm wide) generally in fair condition
Wetness and surface corrosion with lamination to 5mm locally removed to DS

Photograph no 22: Girder No12: metal beam (510mm wide): generally in fair condition
Wet throughout with lamination to 2mm removed from US bearing area

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 23: Girder No14 wet throughout



Photograph no 24: Jack Arch No15: Loss of section above D/Side sidewall: 4No bricks missing
Further fresh minor spalling noted adjacent with local area of brickwork drummy
and very soft over 0.5m^2 area

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 25: Girder No15: metal beam (510mm wide)
No further loss noted

Photograph no 26: Girder No15: metal beam (510mm wide)
2.9m from DS wall, girder No15 is supported by a vertical column (column 1)

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 27: Girder No15: metal beam (510mm wide)
All bolt heads base plates and column are wet with water dripping from bolt heads

Photograph no 28: Girder No15: metal beam (510mm wide)
Fracture/ depression to bottom flange is visible to L/End

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 29: Girder No15: Bolt shanks are exposed at LE and moderately corroded by 2-5mm

Photograph no 30: Girder No15: metal beam (510mm wide)
Support shows surface corrosion

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 31: Jack Arch No16: 1No missing brick to UL above sidewall but firm to hammer

Photograph no 32: 3.7m from D/Side wall
The girder is supported by a vertical column (column 2)

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 33: Jack Arch No16: 2No bullhead sections also support the flanges of the girder

Photograph no 34: Jack Arch No16: Gap (between plates) noted at support shows no change

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Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

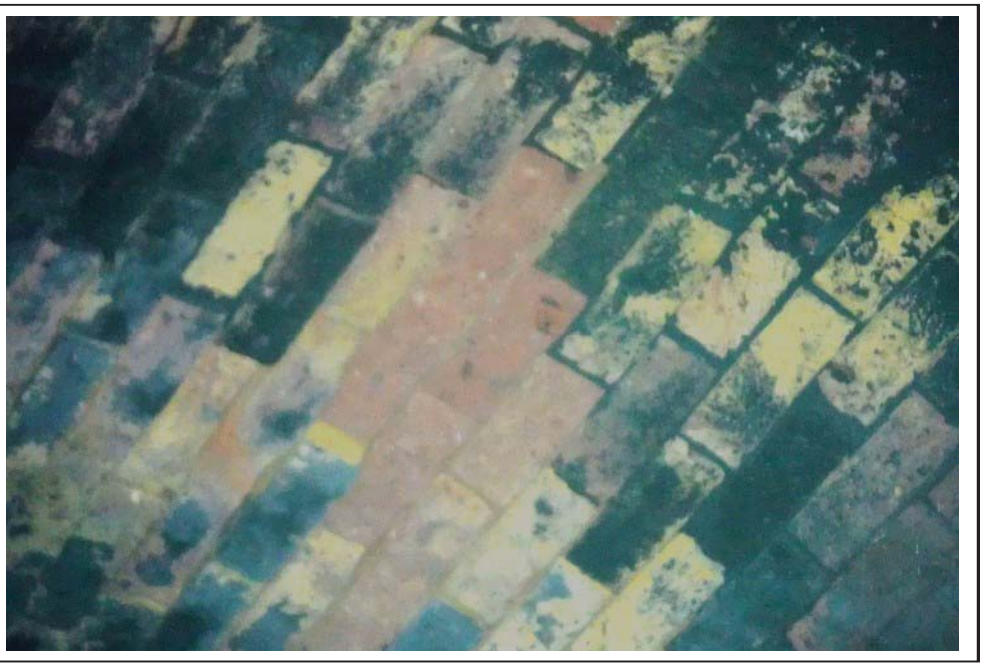
Photograph no 35: Jack Arch No16: Gap (between plates) noted at support shows no change

Photograph no 36: Jack Arch No16: The column is vertical and in good condition

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 37: Jack Arch No17: Patch of open joints 0.5m² to 25mm and isolated spalling to 20mm, both to D/Side



Photograph no 38: Jack Arch No20: small patches of soft brickwork especially at US and water dripping at centre

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 39: In-fill at C/End to full height prevents tactile inspection past girder No22

Photograph no 40: The CE portal remains infilled
Rough brickwork installed to rear shows no visible change

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 41: Sidewall U/side below Jack Arch No20 (to UC of Girder 19)
area of loss of section and loose brickwork to 140mm deep x 600mm high x 250mm wide

Photograph no 42: Sidewall U/side below Jack Arch No20: (to UC of Girder 19)
local area around padstone wet with water dripping

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no 43: Joint loss to face ring on Refuge No3 (below US girder 18) to 0.5m² to 20mm

Photograph no 44: Refuge 2 (below DS girder 10): good condition

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no.45: Manhole cover 7m to LE of girder 8 remains in place
Foul smell emanating from area locally

Photograph no.46: Refuge 1 (below US girder 7): partially infilled by new concrete wall support

ELR:	BOK1	**Structure No:** 283	**Mileage:**	**Examination date:**	26/03/19
Route:	Broad Street to Dalston West Junction			**OS ref:**	TQ 336 847
Name:	Dalston Lane			**Type:**	Tunnel

Photographs of structure

Photograph no.47: View towards CE portal along tunnel line

Balfour Beatty Rail, Manchester

Detailed Examination Report for

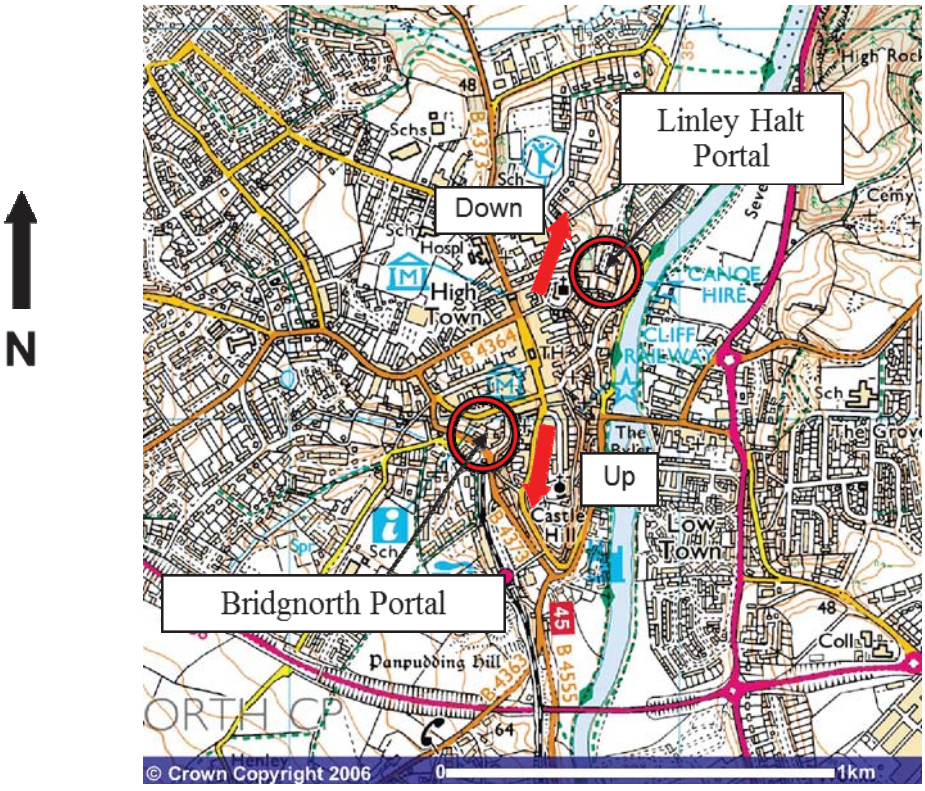
Bridgnorth Tunnel

ELR: SVB/43 Examined: 29/11/2018

Structures Examinations
Balfour Beatty Rail
Chaddock Lane
Worsley
Manchester
M28 1XW

Balfour Beatty Rail : Tunnel Examination Report

NAME:	Bridgnorth Tunnel
BETWEEN:	Severn Valley Branch
START MILEAGE:	150m 08ch
LENGTH:	561yds
REFERENCE:	SVB/43
EXAMINED BY:	Jackson & Bowley
METHOD:	Foot/Poles
DATE OF EXAMINATION:	29/11/2018
LAST EXAMINATION DATE:	16/11/2017
MARKERS AT:	22yds throughout the tunnel.
CONSTRUCTION:	Stone southern portal, brick northern portal and a brick arch.
O.S. Ref.:	Bridgnorth Portal SO 715 929
O.S. Ref.:	Linley Halt Portal SO 718 933



Balfour Beatty Rail, Manchester
Bridgnorth Tunnel
ELR:SVB/43 **Examined:29/11/2018**

Location	Defect		Action
000+00 Portal Full Profile Up & Down	Bridgnorth Portal, View to the inside of the sealed portal.	**1**	
000+00 Portal Full Profile Up & Down	Bridgnorth Portal, Stonework, overgrown with vegetation and saplings, area 50sq.m.	**2, 3 & 4**	Recommend remove vegetation and saplings, Priority 1; work to be completed by 29/11/2019.
000+00 Portal Full Profile Up & Down	Bridgnorth Portal, Spandrel, stonework, spalling, depth 25mm, area 20sq.m., sparse.		
000+00 Portal Up	Bridgnorth Portal, Wingwall/Retaining Wall, stonework, undermining with loose blocks, area 3sq.m.	**5**	Recommend rebuild stonework, Priority 1; work to be completed by 29/11/2019.
000+00 to 000+05 Solum Up & Down	Rubble from blockwork portal seal repairs and litter on solum.	**6**	Recommend remove rubble & rubbish, Priority 1; work to be completed by 29/11/2019.
000+00 to 000+10 Sidewall Down	Brickwork, offensive graffiti.	**7**	Recommend remove graffiti, Priority 1; work to be completed by 29/11/2019.
000+00 to 025+11 Solum Up & Down	Typical views showing recent example of paint cans, pens and litter left in the tunnel.	**8 & 9**	
000+10 Full Profile Up & Down	Brickwork, lining steps in 8" to the north.		
002+04 Sidewall Up	Brickwork, lining steps in 4" to the north.		
003+15 to 004+10 Crown & Haunch Up & Down	Brickwork, Damp and staining, area 120sq.m., medium.		
004+11 Sidewall Up	Brickwork, lining steps out 2"to the north.		
005+08 Crown Up & Down	Brickwork, lining steps up by 2" to the north.		
006+21 Sidewall Down	Brickwork, lining steps in 3" to the north.		
007+03 Full Profile Up & Down	Brickwork, staining, area 16sq.m.		
008+17 Full Profile Down	Brickwork, staining, area 8sq.m.		

Balfour Beatty Rail, Manchester
Bridgnorth Tunnel
ELR:SVB/43 **Examined:29/11/2018**

Location	Defect	Action
010+00 Crown & Haunches Up & Down	Brickwork, lining steps up by 3" to the north.	
010+18 to 011+14 Full Profile Up & Down	Brickwork, damp/wet, area 200sq.m. **Dry on this examination.**	
011+08 Haunch Up	Brickwork, damp, area 6sq.m.	
011+19 Sidewall Down	Brickwork, typical view showing recent example of graffiti in the tunnel.	**10**
013+00 to 021+00 Sidewall Up	Typical views showing more tablet markers recently defaced by trespassers.	**11, 12 & 13**
014+21 Crown & Haunch Up & Down	Brickwork, lining steps up 1" to the north.	
015+00 to 015+08 Full Profile Up & Down	Brickwork, damp, deposits, area 100sq.m.	
015+20 Full Profile Up	Brickwork, damp, area 10sq.m.	
016+03 Full Profile Up & Down	Brickwork, damp, soot, area 20sq.m.	
016+10 Sidewall Down	Brickwork, spalling, depth 25mm, area 1sq.m., sparse.	
016+11 Crown & Haunches Up & Down	Brickwork, lining steps down by 8" to the north.	
016+15 Full Profile Down	Brickwork, damp, soot, area 12sq.m.	
016+18 Sidewall Up	Brickwork, spalling, depth 50mm, area 4sq.m., light.	
016+18 to 017+06 Full Profile Up & Down	Brickwork, damp/wet, soot, area 80sq.m. **Dry on this examination.**	
018+08 Full Profile Down	Brickwork, damp, soot, area 10sq.m.	
018+21 Crown & Haunch Up & Down	Brickwork, lining steps up 3" to the north.	

Balfour Beatty Rail, Manchester
Bridgnorth Tunnel
ELR:SVB/43 **Examined:29/11/2018**

Location	Defect		Action
019+11 Full Profile Up	Brickwork, damp, soot, area 10sq.m. **Dry on this examination.**		
021+11 to 022+11 Haunch Up & Down	Brickwork, multiple longitudinal bedding fractures, max. width 3mm.	**14**	Recommend monitor at annual examinations, Priority 1; work to be completed by 29/11/2019.
022+11 to 025+11 Full Profile Up & Down	Brickwork, damp and soot, area 750sq.m.		
022+11 Crown & Haunch Up & Down	Brickwork, lining steps down 4" to the north.		
022+14 to 023+19 Haunch Up	Brickwork, multiple longitudinal bedding fractures, max. width 3mm.	**15**	Recommend monitor at annual examinations, Priority 1; work to be completed by 29/11/2019.
022+17 Crown Up & Down	Brickwork, hollow, area 0.25sq.m.		
023+03 Crown & Haunch Up & Down	Brickwork, lining steps down 3" to the north.		
023+19 Crown & Haunch Up & Down	Brickwork, lining steps down 3" to the north.		
024+14 Full Profile Up & Down	Brickwork, lining steps up 8", down sidewall steps out 2ft. To the north, up sidewall steps out 3ft. To the north.		
024+17 Sidewall Down	Brickwork, top, spalling, depth 100mm, area 0.5sq.m.		Recommend replace brickwork, Priority 3; work to be completed by 29/11/2021.
025+11 Portal Up & Down	Linley Halt Portal, oiling padlock.	**16**	
025+11 Portal Up & Down	Linley Halt Portal, oiling hinges.	**17**	
025+11 Portal Up & Down	Linley Halt Portal, Brickwork, overgrown with vegetation above stringcourse, area 15sq.m.	**18**	Recommend remove vegetation, Priority 1; work to be completed by 29/11/2019.

Balfour Beatty Rail, Manchester
Bridgnorth Tunnel

ELR:SVB/43 **Examined:29/11/2018**

NOTES

1. Access route to structure: Via park by side of river along the track bed.

2. Site issues and impediments to carrying out repairs, DE's or other works: The tunnel is sealed at the Bridgnorth Portal.

3. Reportedly the line was opened in 1862, closed in 1963 and a hidden shaft is in the vicinity of the town hall.

STE6
Examiner:

STE2 STE6
Chartered Engineer:

Balfour Beatty Rail, Manchester
Bridgnorth Tunnel
ELR:SVB/43 Examined:29/11/2018

Definitions

The following definitions and conventions were used in producing this report.

1.Description of Defects.

Defects have been described both in terms of their area and their proportion within that area. For example an area of spalled brickwork might be described as:-

Brickwork, spalling, depth 100mm, area 25m², medium.

In this example the spalling extends over a total area of 25m² and is of medium proportion of that area.

Proportional terms are defined below:-

Sparse - less than 10% of the area.

Light - between 10% and <35% of the area.

Medium - between 35% and <75% of the area.

Proportions of 75% and above are not qualified in any way.

2. Water Ingress.

Water percolation has been categorised as:-

Damp - discolouration of the surface, moist to touch but not dripping.

Wet - drops falling regularly.

Running - a continuous trickle of water.

Pressured - a jet of water.

3. Vegetation, Shrubs, Saplings and Trees.

Flora has been categorised as follows:-

Trees - number of trees and trunk girths.

Saplings - number of saplings.

Shrubs - area of shrubs.

Vegetation - area of plants, for e.g. brambles, ivy, etc.

TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE

Balfour Beatty Rail

ELR : **SVB** Br. No. : **43**

Mileage : **150 M 13 ch** **Sheet 1 of 10**

BRIDGNORTH PORTAL : SO 715 929

LINLEY HALT PORTAL: SO 718 933

Photo No. 1 : 000+00 Portal Full Profile Up & Down, Bridgnorth Portal, View to the inside of the sealed portal.

Photo No. 2 : 000+00 Portal Full Profile Up & Down, Bridgnorth Portal, Stonework, overgrown with vegetation and saplings, area 50sq.m.