

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : SVB Br. No. : 43

Mileage : 150 M 13 ch Sheet 3 of 10



Photo No. 3 : 000+00 Portal Full Profile Up & Down, Bridgnorth Portal, Stonework, overgrown with vegetation and saplings, area 50sq.m.



Photo No. 4 : 000+00 Portal Full Profile Up & Down, Bridgnorth Portal, Stonework, overgrown with vegetation and saplings, area 50sq.m.

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Photo No. 5 : 000+00 Portal Up, Bridgnorth Portal, Wingwall/Retaining Wall, stonework, undermining with loose blocks, area 3sq.m.



Photo No. 6 : 000+00 to 000+05 Solum Up & Down, Rubble from blockwork portal seal repairs and litter on solum.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

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Photo No. 7 : 000+00 to 000+10 Sidewall Down, Brickwork, offensive graffiti.



Photo No. 8 : 000+00 to 025+11 Solum Up & Down, Typical views showing recent example of paint cans, pens and litter left in the tunnel.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

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

Mileage : **150 M 13 ch** Sheet 6 of 10



Photo No. 9 : 000+00 to 025+11 Solum Up & Down, Typical views showing recent example of paint cans, pens and litter left in the tunnel.

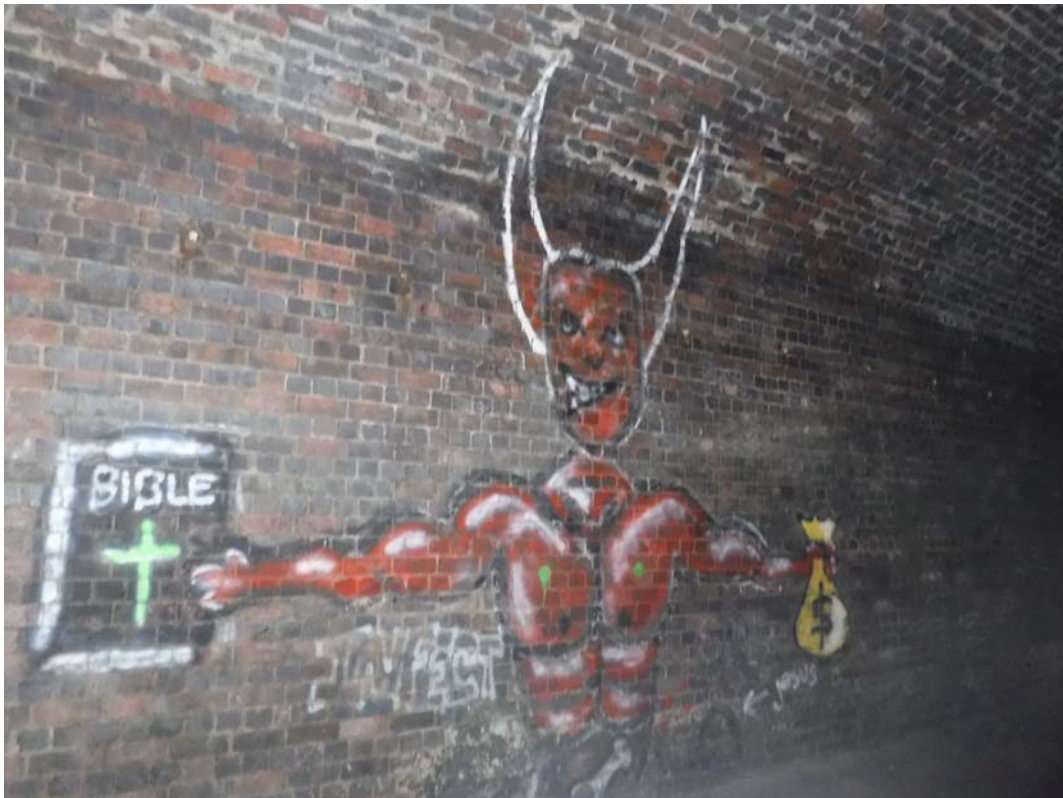


Photo No. 10 : 011+19 Sidewall Down, Brickwork, typical view showing recent example of graffiti in the tunnel.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

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Photo No. 11 : 013+00 to 021+00 Sidewall Up, Typical views showing more tablet markers recently defaced by trespassers.



Photo No. 12 : 013+00 to 021+00 Sidewall Up, Typical views showing more tablet markers recently defaced by trespassers.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
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ELR : SVB Br. No. : 43

Mileage : 150 M 13 ch Sheet 8 of 10



Photo No. 13 : 013+00 to 021+00 Sidewall Up, Typical views showing more tablet markers recently defaced by trespassers.

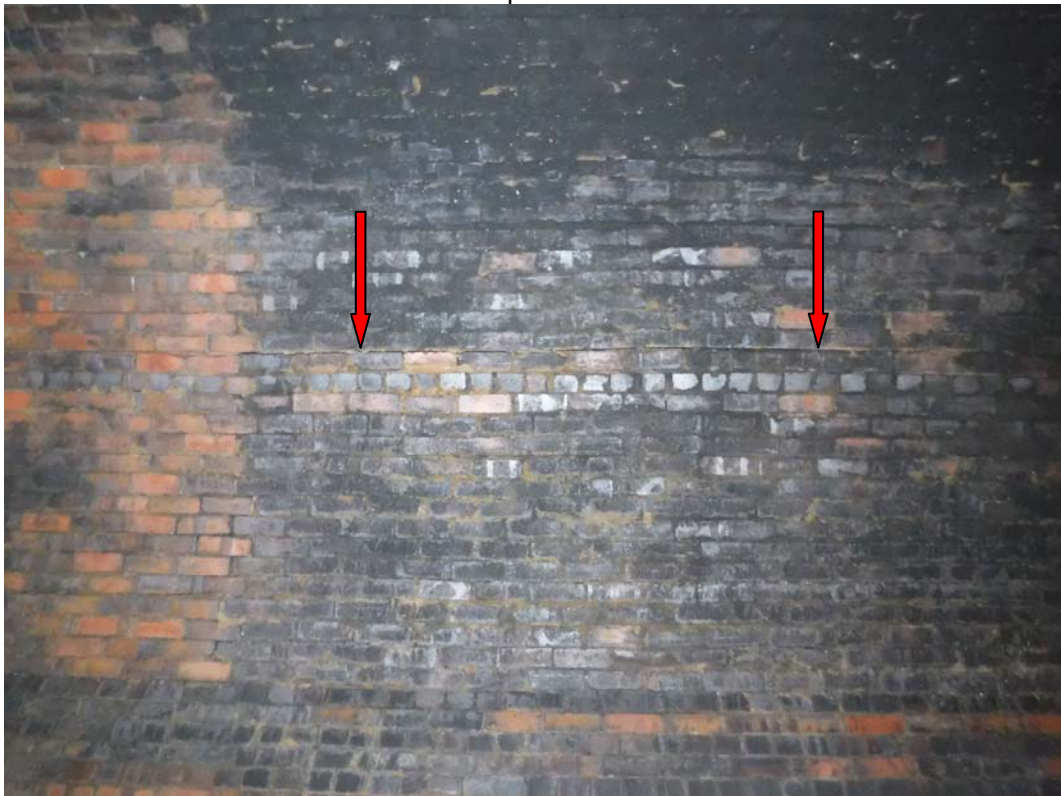


Photo No. 14 : 021+11 to 022+11 Haunch Up & Down, Brickwork, multiple longitudinal bedding fractures, max. width 3mm.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : SVB Br. No. : 43

Mileage : 150 M 13 ch Sheet 9 of 10

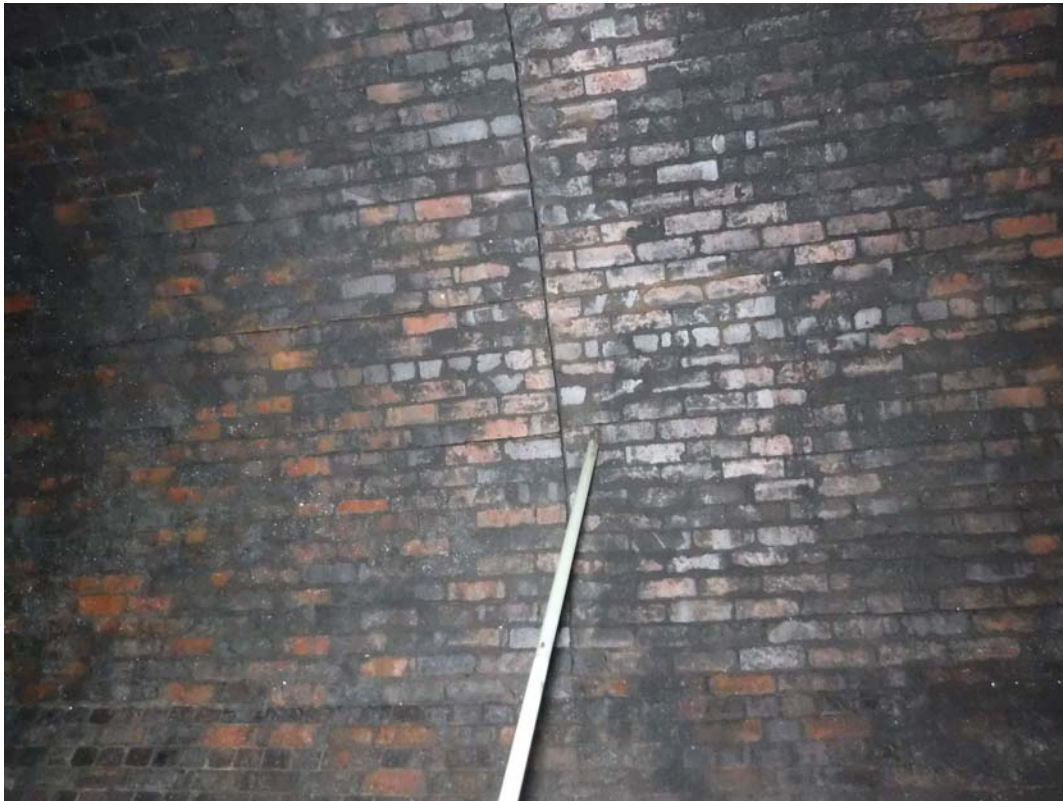


Photo No. 15 : 022+14 to 023+19 Haunch Up, Brickwork, multiple longitudinal bedding fractures, max. width 3mm.



Photo No. 16 : 025+11 Linley Halt Portal, Up & Down, Presthope Portal, oiling padlock.

**TUNNEL EXAMINATION REPORT
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ELR : SVB Br. No. : 43

Mileage : 150 M 13 ch Sheet 10 of 10



Photo No. 17 : 025+11 Linley Halt Portal, Up & Down, Presthope Portal, oiling hinges.



Photo No. 18 : 025+11 Linley Halt Portal, Up & Down, Brickwork, overgrown with vegetation above stringcourse, area 15sq.m.

Balfour Beatty Rail, Manchester
Caerau (Cymmer) Tunnel
ELR: BAL/10m17ch **Examined: 05/02/2019**

Balfour Beatty Rail, Manchester

Detailed Examination Report for

Caerau (Cymmer) Tunnel

ELR: BAL/10m17ch

Examined: 05/02/2019

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

Balfour Beatty Rail : Tunnel Examination Report

NAME: Caerau (Cymmer) Tunnel

BETWEEN: Bridgend and Abergwynfi

START MILEAGE: 10m 17ch

LENGTH: 1611yds

REFERENCE: BAL/10m17ch

EXAMINED BY: Jackson & Dunbar Safety Divers

METHOD: Foot/Poles

DATE OF EXAMINATION: 05/02/2019

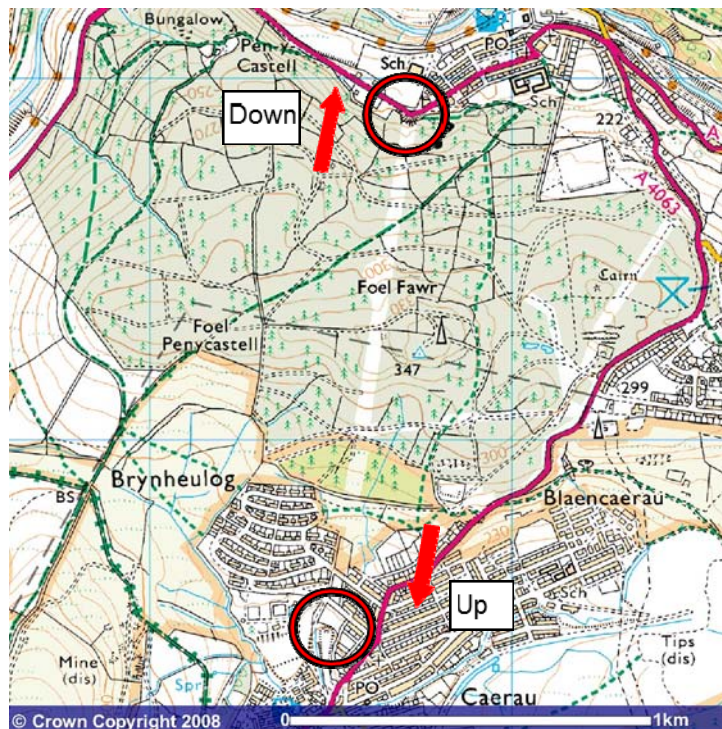
LAST EXAMINATION DATE: 26/02/2018

MARKERS AT: 22yds throughout the tunnel.

CONSTRUCTION: Stone South Portal with a stonework & brickwork lining.

O.S. Ref.: South Portal SS 855 945

O.S. Ref.: North Portal SS 856 959



Balfour Beatty Rail, Manchester**Caerau (Cymmer) Tunnel****ELR: BAL/10m17ch****Examined: 05/02/2019**

Location	Defect	Action	
000+00 Portal Down	South Portal, Wingwall, stonework, copings missing, full length, with loose blocks below, area 8sq.m.	1	Recommend that copings and loose blocks be replaced, Priority 1; work to be completed by 05/02/2020.
000+00 Portal Up	South Portal, Wingwall, stonework, copings missing, full length, with loose blocks below, area 8sq.m.	2	Recommend that copings and loose blocks be replaced, Priority 1; work to be completed by 05/02/2020.
000+00 Portal Up & Down	South Portal, stonework, vegetation, area 15sq.m.	3	Recommend that vegetation be removed, Priority 1; work to be completed by 05/02/2020.
000+00 Portal Up & Down	South Portal, Steel door is becoming heavily corroded and holed to base.	4	New door fitted, but old door left inside tunnel at 000+15. Recommend door be removed from tunnel and recycled off-site, Priority 1; work to be completed by 05/02/2020.
000+00 to 073+05 Refuge Up & Down	Several refuges have windows to the rear walls throughout the tunnel.		
000+00 to 073+05 Full Profile Up & Down	Soot, area 11300sq.m., medium.		
000+00 to 020+00 Full Profile Up & Down	Construction Stonework.		
000+00 to 001+05 Sidewalls & Haunches Up & Down	Stonework, moss and vegetation, area 80sq.m.		
000+00 to 03+00 Solum Up & Down	Boulders and debris underfoot making access difficult.	5	Recommend remove rubble and debris, Priority 1; work to be completed by 05/02/2020.
000+00 to 007+17 Full Profile Up & Down	Stonework, wet and damp, area 500sq.m.		
000+00 to 018+00 Sidewalls & Haunches Up & Down	Stonework, perished mortar, depth 50mm, area 3600sq.m., damp/wet, light.		Recommend mechanical pointing, Priority 3; work to be completed by 05/02/2022.
000+00 to 038+20 Solum Up & Down	Water, mud, silt and ochre to solum with a stream flowing nearly ½ mile long from the South Portal to an open catch-pit at 038+20, max. depth 300mm.	6	Recommend complete the track drainage mtce/repair works, Priority 1; work to be completed by 05/02/2020.

Balfour Beatty Rail, Manchester**Caerau (Cymmer) Tunnel****ELR: BAL/10m17ch****Examined: 05/02/2019**

Location	Defect	Action
000+13 Refuge Up	Brickwork, Arch, spalled and friable, depth 50mm, area 1sq.m., wet.	
001+16 Refuge Up	Brickwork, Arch, soft & friable, spalled, depth 50mm, area 0.75sq.m., damp.	
001+18 Sidewall Down	Stonework, wet with ochre deposits, area 2sq.m.	
002+11 Sidewall Up	Corroded 10¼ MP.	
003+03 Refuge Down	Brickwork, Arch, soft & friable, spalled, depth 25mm, area 0.75sq.m., wet.	
005+00 to 006+00 Sidewall Down	Stonework, wet with ochre deposits, area 60sq.m., medium.	
005+12 Haunch Down	Stonework, running water & ochre.	
010+00 to 015+04 Full Profile Up & Down	Stonework, wet and damp, area 800sq.m.	
010+02 Refuge Up	Brickwork, Arch, spalled and missing bricks, depth 100mm, area 1.5sq.m.	7 Recommend brickwork be replaced, Priority 1; work be completed by 05/02/2020.
011+16 Refuge Up	Brickwork, Arch, spalling, depth 75mm, area 1sq.m., damp, light.	8 Recommend brickwork be replaced, Priority 1; work be completed by 05/02/2020.
016+07 Refuge Up	Brickwork, Arch, hollow, area 1m.sq, with missing bricks, depth 100mm, area 0.25sq.m., medium.	9 Recommend brickwork be replaced, Priority 1; work be completed by 05/02/2020.
016+18 Haunch Up	Stonework, running water and ochre deposits, area 1sq.m.	
016+18 Sidewall & Haunch Down	Stonework, 2No. downpipes fitted to Haunch with running water. Possible Hidden Shaft.	10 Recommend investigate location for the presence of a hidden shaft, Priority 1; work to be completed by 05/02/2020.
016+00 to 017+12 Crown Up & Down	Stonework, wet/damp, area 120sq.m.	
019+13 to 022+02 Full Profile Up & Down	Stonework/brickwork, wet/damp, area 700sq.m.	
020+00 to 048+13 Full Profile Up & Down	Construction Brickwork.	

Balfour Beatty Rail, Manchester
Caerau (Cymmer) Tunnel
ELR: BAL/10m17ch
Examined: 05/02/2019

Location	Defect	Action
022+16 Sidewall Up	Corroded 10½ MP.	
026+04 Refuge Up	Brickwork, Arch, spalled, depth 50mm, area 0.25sq.m., damp.	
026+19 Refuge Down	Brickwork, vertical fractures to both quoins, width 3mm, length 1.5m. Several are new. New data fitted, dated 24/02/2016, intact.	
027+00 to 032+11 Full Profile Up & Down	Brickwork, wet, area 1440sq.m.	
029+15 Crown & Haunch Up & Down	Brickwork, several coreholes, wet with running water, area 20sq.m.	
035+09 to 036+00 Full Profile Up & Down	Brickwork, damp, area 200sq.m.	
036+00 to 037+19 Full Profile Up & Down	Brickwork, wet/damp, area 400sq.m., light.	
036+06 Sidewall & Low Haunch Down	Brickwork, soft and wet, spalling, depth 25mm, area 6sq.m.	
038+20 Solum	Stream flowing nearly ½mile long from the South Portal to an open catch-pit at 038+20.	11 Recommend complete the track drainage mtce/repair works, Priority 1; work to be completed by 05/02/2020.
042+04 Refuge Up	Brickwork, multiple hairline cracks and fractures, max. width 2mm. Spalling, depth 25mm, area 3sq.m., light.	
042+13 to 043+20 Low Haunch Up & Down	Brickwork, longitudinal cracking, width 1mm, length 27m. Various bricks crushed and spalled to downside, depth 25mm, area 3sq.m.	12 Recommend profile be monitored at annual intervals.
043+17 Solum	Open Catch-pit to six-foot blocked, new flooding from 040+15 to 050+11 flowing northwards.	13 Recommend complete the track drainage mtce/repair works, Priority 1; work to be completed by 05/02/2020.
042+18 Sidewall Up	rau) MP.	
044+01 Sidewall & Refuge Arch Down	Brickwork, spalled, depth 25mm, area 2sq.m.	

Balfour Beatty Rail, Manchester**Caerau (Cymmer) Tunnel****ELR: BAL/10m17ch****Examined: 05/02/2019**

Location	Defect	Action
045+05 Haunch Up & Down	Brickwork, spalling, depth 50mm, area 2sq.m. Shelling removed from lining during the examination.	
046+00 to 048+20 Sidewall & Haunches Up & Down	Brickwork, bulging 75mm with random vertical and longitudinal fractures, max. width 1mm, hollow, area 20sq.m.	14 Recommend profile be monitored at annual intervals.
046+10 Refuge Down	Brickwork, spalling, depth 100mm, area 2sq.m., vertical fractures, length 1.6m to both Quoins, hollow.	15 Recommend brickwork be replaced, Priority 1; work be completed by 05/02/2020.
047+14 Refuge Down	Brickwork, Quoins, vertical fractures, length 1m, hollow.	Recommend brickwork be replaced, Priority 3; work be completed by 05/02/2022.
048+13 to 050+07 Full Profile Up & Down	Construction Stonework.	
049+02 to 050+14 Full Profile Up & Down	Stonework and Brickwork, wet/damp, area 210sq.m.	
049+11 to 050+11 Sidewall & Low Haunches Up & Down	Stonework, perished mortar, depth 75mm, area 80sq.m., wet, medium.	Recommend mechanical pointing, Priority 3; work to be completed by 05/02/2022.
050+07 to 053+10 Full Profile Up & Down	Construction Sidewalls Stonework and Arch Brickwork.	
053+10 to 073+05 Full Profile Up & Down	Construction Stonework.	
054+00 to 057+13 Full Profile Up & Down	Stonework, wet/damp, area 700sq.m.	
056+12 Sidewall Down	Stonework, ochre deposits & running water, area 2sq.m.	
058+11 to 059+15 Full Profile Up & Down	Stonework, wet/damp in large patches throughout, area 250sq.m., light.	
061+19 to 062+00 Solum Down	2No. trial pits.	16 Recommend complete the track drainage mtce/repair works, Priority 1; work to be completed by 05/02/2020.
063+00 Sidewall Up	Remains of corroded 11 MP.	

Balfour Beatty Rail, Manchester**Caerau (Cymmer) Tunnel****ELR: BAL/10m17ch****Examined: 05/02/2019**

Location	Defect	Action	
063+10 Solum	Open catch-pit to six-foot with water welling up from inside. New cover fitted but displaced/ill-fitting.	17	Recommend catch-pit cover be replaced with appropriate type of cover, Priority 1; work be completed by 05/02/2019.
066+15 to 073+05 Full Profile Up & Down	Stonework, wet/damp with ochre deposits and stalactites.		
070+10 Sidewall Down	Brickwork, old repaired lining, spalling and hollow, depth 100mm, area 0.5sq.m.		Recommend brickwork be replaced, Priority 3; work be completed by 05/02/2022.
072+00 to 072+15 Solum Up & Down	Mud and flooding, depth 3".	18	Recommend complete the track drainage mtce/repair works, Priority 1; work to be completed by 05/02/2020.
073+05 Portal Up & Down	View of blocked up North Portal from inside tunnel.	19	
073+05 Portal Location	North Portal, road running above portal.	20	

Balfour Beatty Rail, Manchester

Caerau (Cymmer) Tunnel

ELR: BAL/10m17ch Examined: 05/02/2019

NOTES

1. Access route to structure: Via small footpath off Protheroe Street, Caerau.
2. Site issues and impediments to carrying out repairs, DE's or other works: The tunnel is a confined space with access from south portal only.
3. Safety divers were used as pathfinders to gain safe entry through the mud and water throughout the tunnel. The track drainage is starting to silt up again.

STE2 STE6

Chartered Engineer:

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 : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 1 of 13



SOUTH PORTAL



AREA OF NORTH PORTAL

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 2 of 13



Photo No.1 : 000+00 Portal Down, South Portal, Wingwall, stonework, copings missing, full length, with loose blocks below, area 8sq.m.



Photo No.2 : 000+00 Portal Up, South Portal, Wingwall, stonework, copings missing, full length, with loose blocks below, area 8sq.m.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 3 of 13



Photo No.3 : 000+00 Portal Up & Down, South Portal, stonework, vegetation, area 15sq.m.



Photo No.4 : 000+00 Portal Up & Down, South Portal, Steel door is becoming heavily corroded and holed to base.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 4 of 13



Photo No.5 : 000+00 to 03+00 Solum Up & Down, Boulders and debris underfoot making access difficult.



Photo No.6 : 000+00 to 03+00 Solum Up & Down, Boulders and debris underfoot making access difficult.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 5 of 13



Photo No.7 : 010+02 Refuge Up, Brickwork, Arch, spalled and missing bricks, depth 100mm, area 1.5sq.m.



Photo No.8 : 011+16 Refuge Up, Brickwork, Arch, spalling, depth 75mm, area 1sq.m., damp, light.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 6 of 13



Photo No.9 : 016+07 Refuge Up, Brickwork, Arch, hollow, area 1m.sq, with missing bricks, depth 100mm, area 0.25sq.m., medium.



Photo No.10 : 016+18 Sidewall & Haunch Down, Stonework, 2No. downpipes fitted to Haunch with running water. Possible Hidden Shaft.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 7 of 13



Photo No.11 : 038+20 Solum, Stream flowing nearly 1/2 mile long from the South Portal to an open catch-pit at 038+20.

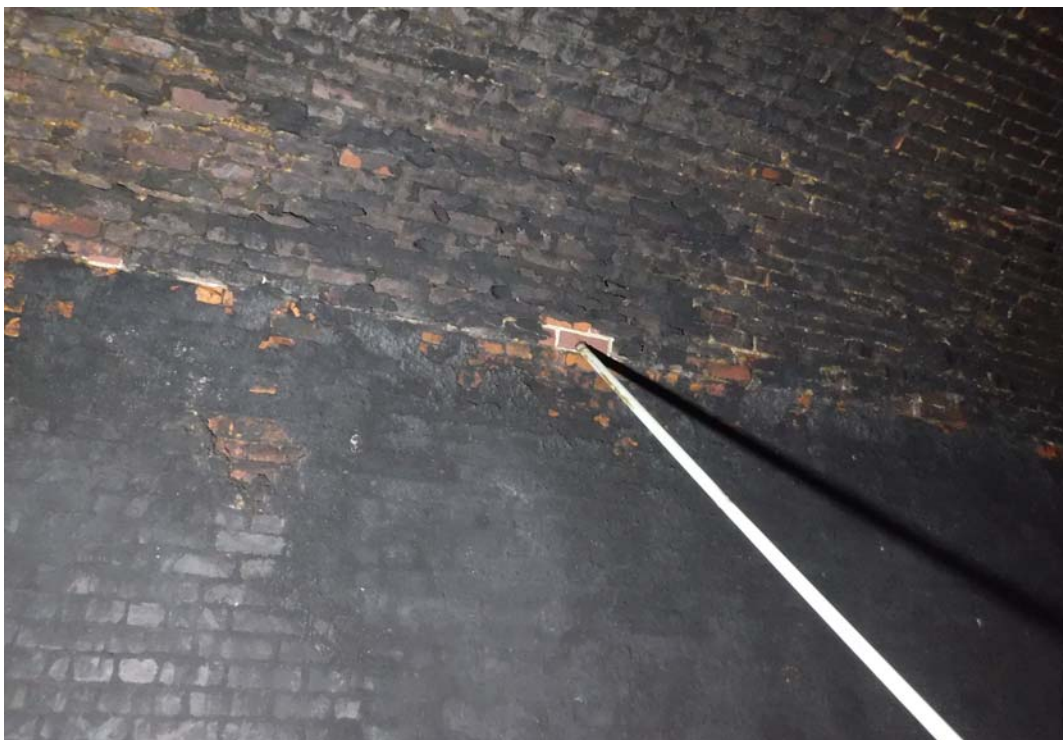


Photo No.12 : 042+13 to 043+20 Low Haunch Up & Down, Brickwork, longitudinal cracking, width 1mm, length 27m. Various bricks crushed and spalled to downside, depth 25mm, area 3sq.m.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 8 of 13



Photo No.13 : 043+17 Solum, Open Catch-pit to six-foot blocked, new flooding from 040+15 to 050+11 flowing northwards.



Photo No.14 : 046+00 to 048+20 Sidewall & Haunches Up & Down, Brickwork, bulging 75mm with random vertical and longitudinal fractures, max. width 1mm, hollow, area 20sq.m.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 9 of 13



Photo No.15 : 046+10 Refuge Down, Brickwork, spalling, depth 100mm, area 2sq.m., vertical fractures, length 1.6m to both Quoins, hollow.



Photo No.16 : 061+19 to 062+00 Solum Down, 2No. trial pits.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 10 of 13



Photo No.17 : 042+063+10 Solum, Open catch-pit to six-foot with water welling up from inside. New cover fitted but displaced/ill-fitting.



Photo No.18 : 072+00 to 072+15 Solum Up & Down, Mud and flooding, depth 3".

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 11 of 13



Photo No.19 : 073+05 Portal Up & Down, View of blocked up North Portal from inside tunnel.



Photo No.20 : 073+05 Portal Location, North Portal, road running above portal.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 12 of 13



Allotments carried by the southern end of the tunnel (looking northwards).



Allotments carried by the southern end of the tunnel (looking southwards towards Caerau).

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR : BAL Br. No. : 10M 17ch

Mileage : 10 M 17 ch Sheet 13 of 13



Road carried by the southern end of the tunnel.



Line of tunnel under higher ground (looking northwards towards Cymmer).

Balfour Beatty Rail, Manchester

Pen-Cae-Drain Tunnel

ELR: VON/28m 65ch

Examined: 30/07/2019

Balfour Beatty Rail, Manchester

Detailed Examination Report for

Pen-Cae-Drain Tunnel

ELR: VON/28m 65ch

Examined: 30/07/2019

Structures Examinations

Balfour Beatty Rail

Chaddock Lane

Worsley

Manchester

M28 1XW

Balfour Beatty Rail : Tunnel Examination Report

NAME: Pen-Cae-Drain Tunnel

BETWEEN: Pontypool and Neath

START MILEAGE: 28m 65ch

LENGTH: 535yds

REFERENCE: VON/28m65ch

EXAMINED BY: Jackson

METHOD: Foot/Poles

DATE OF EXAMINATION: 30/07/2019

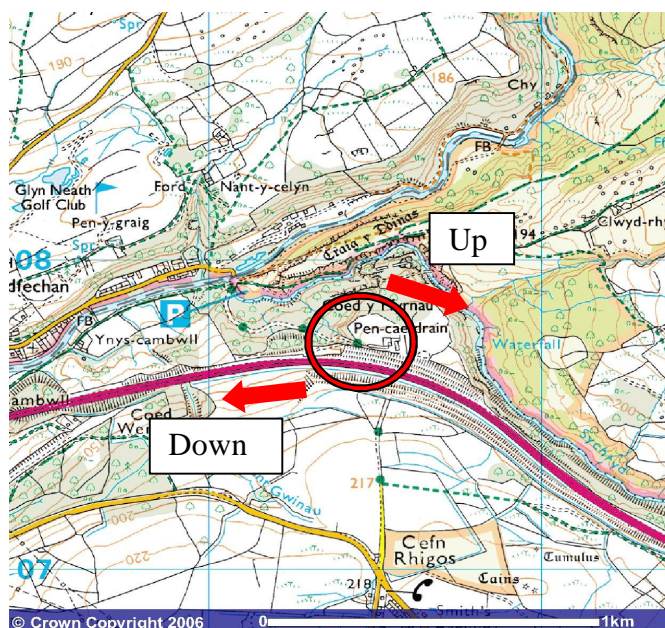
LAST EXAMINATION DATE: 30/07/2018

MARKERS AT: 22yds throughout the tunnel.

CONSTRUCTION: Neath Portal stonework, arch stonework/brickwork and sidewalls stonework. Pontypool Portal sealed with earth.

O.S. Ref.: Neath Portal SN 914 078

O.S. Ref.: Pontypool Portal Sealed



Balfour Beatty Rail, Manchester**Pen-Cae-Drain Tunnel****ELR: VON/28m 65ch****Examined: 30/07/2019**

Location	Defect		Action
065+00 Portal Up & Down	Pontypool Portal, infilled, voussoirs visible to the top of the mound.	1	
065+00 to 009+07 Full Profile Up & Down	Stonework, damp/wet and soot, area 8000sq.m., medium.		
065+00 to 009+07 Full Profile Up & Down	Stonework, boyot holes & occasional missing blocks throughout.		
067+06 Low Crown Up	Brickwork, spalling and wet, depth 50mm, area 6sq.m., sparse.		
067+06 Low Crown Up	Brickwork, spalling and wet, depth 50mm, area 6sq.m., sparse.		
067+14 High Haunch Up	Brickwork, spalling and wet, depth 75mm, area 4sq.m., sparse.		
068+06 Low Crown Down	Brickwork, spalling and wet, depth 75mm, area 5sq.m., light.		
068+12 Refuge Up	Brickwork, Arch, spalling, depth 50mm, area 1sq.m.		
069+06 to 069+17 Crown Up & Down	Brickwork, spalling, depth 75mm, area 35sq.m., light.		Recommend brickwork be replaced, Priority 2; work to be completed by 30/07/2021.
069+20 Refuge Up	Brickwork, Arch, hollow, area 0.5sq.m. Stonework, Neath Quoin missing/loose blocks, area 1sq.m.	2	Recommend repair stonework, Priority 1; work to be completed by 30/07/2020.
070+16 to 071+20 Crown Up & Down	Brickwork, spalling and wet, depth 75mm, area 90sq.m., light.		Recommend brickwork be replaced, Priority 3; work to be completed by 30/07/2022.
072+06 Sidewall Up	Side gallery with daylight showing to end of adit, roof is poorly supported and natural rock roof is friable so entry was not gained. No daylight could be seen at this examination.	3 & 4	Recommend roof of adit be supported to allow safe entry, Priority 1; work to be completed by 30/07/2020.
073+01 to 073+08 Crown Up & Down	Brickwork, spalling and wet, depth 50mm, area 100sq.m., light.		
073+13 to 074+06 Crown & Haunch Up & Down	Brickwork, spalling and wet, depth 50mm, area 80sq.m., light.		
074+00 to 078+00 Crown & Haunch Up & Down	Brickwork/Stonework, wet, area 800sq.m.		

Balfour Beatty Rail, Manchester**Pen-Cae-Drain Tunnel****ELR: VON/28m 65ch****Examined: 30/07/2019**

Location	Defect	Action
075+19 Refuge Up	Brickwork, Arch, spalling and damp, depth 50mm, area 0.5sq.m.	
076+00 Crown Down	Brickwork, wet/damp, hollow, area 1sq.m.	
076+05 to 076+13 Crown & Haunch Up & Down	Brickwork, spalling and wet, depth 50mm, area 40sq.m., medium.	
076+10 High Haunch Up	Brickwork, spalling, depth 100mm, area 1sq.m., hollow, spalled bricks removed at this examination, hollow, area 4sq.m., wet.	5 Recommend brickwork be replaced, Priority 1; work to be completed by 30/07/2020.
077+18 to 078+07 Crown Up & Down	Brickwork, spalling and damp/wet, depth 75mm, area 40sq.m., light.	Recommend brickwork be replaced, Priority 3; work to be completed by 30/07/2022.
078+15 Crown Up & Down	Brickwork, spalling and wet/damp, depth 2", area 15sq.m.	
079+11 to 000+04 Crown Up & Down	Brickwork, spalling and wet, depth 50mm, area 40sq.m., light.	
000+01 Refuge Up	Brickwork, Arch, spalling, depth 75mm, area 0.5sq.m.	Recommend brickwork be replaced, Priority 2; work to be completed by 30/07/2021.
000+12 Crown Down	Brickwork, spalling, depth 1", area 1sq.m., hollow, spalled bricks removed at this examination.	
000+14 Refuge Up	Brickwork, Arch, spalling, depth 100mm, area 1sq.m.	6 Recommend brickwork be replaced, Priority 1; work to be completed by 30/07/2020.
000+16 Sidewall Up	Stonework, open joints and wet, depth 100mm, area 2sq.m., sparse.	
001+08 Refuge Up	Brickwork, Arch, spalling, depth 100mm, area 0.5sq.m.	7 Recommend brickwork be replaced, Priority 1; work to be completed by 30/07/2020.
002+11 to 003+11 Sidewall Up	Stonework, open joints and wet, depth 75mm, area 60sq.m., sparse.	
002+13 Refuge Up	Brickwork, arch, spalling, depth 75mm, area 0.5sq.m., damp.	Recommend brickwork be replaced, Priority 2; work to be completed by 30/07/2021.

Balfour Beatty Rail, Manchester**Pen-Cae-Drain Tunnel****ELR: VON/28m 65ch****Examined: 30/07/2019**

Location	Defect	Action
002+13 Crown Up & Down	Brickwork, spalling and wet/damp, depth 2", area 16sq.m., medium. Hollow on the upside, area 1sq.m.	
002+21 Crown Down	Brickwork, spalling, depth 50mm, area 1sq.m., medium.	
003+06 Refuge Up	Brickwork, Neath Arch, spalling/missing, depth 100mm, area 0.5sq.m.	8 Recommend brickwork be replaced, Priority 1; work to be completed by 30/07/2020.
005+21 Refuge Up	Brickwork, Neath Arch, spalling and damp, depth 50mm, area 0.25sq.m.	
006+10 Refuge Up	Brickwork, Neath Arch, spalling/missing and damp, depth 100mm, area 0.5sq.m.	9 Recommend brickwork be replaced, Priority 1; work to be completed by 30/07/2020.
006+20 to 007+06 Crown Up & Down	Brickwork, spalling, depth 2", area 40sq.m., wet.	
007+00 High Haunch Down	Brickwork, wet, hollow, area 2sq.m.	
008+11 to 009+07 Full Profile Up & Down	Stonework, open joints and wet, depth 4", area 250sq.m., light.	Recommend repoint masonry, Priority 3; work to be completed by 30/07/2022.
008+11 to 009+07 Sidewall Up & Down	Stonework, vegetation, area 100sq.m., light	
008+20 to 009+07 Solum Up & Down	Flooding and mud to solum, depth 300mm (less extent at this examination).	10 Recommend standing water and mud be removed and water controlled, Priority 1; work to be completed by 30/07/2020.
009+07 Portal Up & Down	Neath Portal, oiling gate padlock.	11
009+07 Portal Up & Down	Neath Portal, oiling hinges.	12
009+07 Portal Up & Down	Neath Portal, fall hazard from parapet.	13 Recommend erect fence, Priority 1; work to be completed by 30/07/2020.
009+07 Portal Down	Neath Portal, Stonework, Parapet, open joints, depth 75mm, area 10sq.m. Tree root damage to parapet with displaced and missing blocks.	14 Recommend tree roots be removed and stonework repaired, Priority 1; work to be completed by 30/07/2020.

Balfour Beatty Rail, Manchester

Pen-Cae-Drain Tunnel

ELR: VON/28m 65ch

Examined:

NOTES

1. Access route to structure: Via old track bed to the north of the A465 at Pontneddfecham.
2. Site issues and impediments to carrying out repairs, DE's or other works: The tunnel is a confined space with access from the Neath Portal only, the Pontypool Portal being filled. Adit cannot be examined due to nature of roof support and condition.
3. Quality of photos in report may be impaired because of fog throughout the tunnel.

STE2 STE6

Chartered Engineer:

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**

ELR: **VON** Br. No.: **28m 65ch**

Mileage: **28 M 65 ch** Sheet 1 of 8



PONTYPOOL PORTAL



NEATH PORTAL

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: VON Br. No.: 28m 65ch

Mileage: 28 M 65 ch Sheet 2 of 8



Photo No.1: 065+00 Portal Up & Down, Pontypool Portal, infilled, voussoirs visible to the top of the mound.



Photo No.2: 069+20 Refuge Up, Brickwork, Arch, hollow, area 0.5sq.m. Stonework, Neath Quoin missing/loose blocks, area 1sq.m.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: VON Br. No.: 28m 65ch

Mileage: 28 M 65 ch Sheet 3 of 8



Photo No.3: 072+06 Sidewall Up, Side gallery, locked security gate.



Photo No.4: 072+06 Sidewall Up, Side gallery with daylight showing to end of adit, roof is poorly supported and natural rock roof is friable so entry was not gained. No daylight could be seen at this examination.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **VON** Br. No.: **28m 65ch**

Mileage: **28 M 65 ch** Sheet 4 of 8



Photo No.5: 076+10 High Haunch Up, Brickwork, spalling, depth 100mm, area 1sq.m., hollow, spalled bricks removed at this examination, hollow, area 4sq.m., wet.



Photo No.6: 000+14 Refuge Up, Brickwork, Arch, spalling, depth 100mm, area 1sq.m.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: VON Br. No.: 28m 65ch

Mileage: 28 M 65 ch Sheet 5 of 8



Photo No.7: 001+08 Refuge Up, Brickwork, Arch, spalling, depth 100mm, area 0.5sq.m.



Photo No.8: 003+06 Refuge Up, Brickwork, Neath Arch, spalling/missing, depth 100mm, area 0.5sq.m.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR: VON Br. No.: 28m 65ch

Mileage: 28 M 65 ch Sheet 6 of 8



Photo No.9: 006+10 Refuge Up, Brickwork, Neath Arch, spalling/missing and damp, depth 100mm, area 0.5sq.m.



Photo No.10: 008+20 to 009+07 Solum Up & Down, Flooding and mud to solum, depth 300mm (less extent at this examination).

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR: VON Br. No.: 28m 65ch

Mileage: 28 M 65 ch Sheet 7 of 8



Photo No.11: 009+07 Portal Up & Down, Neath Portal, oiling gate padlock.



Photo No.12: 009+07 Portal Up & Down, Neath Portal, oiling hinges.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: VON Br. No.: 28m 65ch

Mileage: 28 M 65 ch Sheet 8 of 8



Photo No.13: 009+07 Portal Up & Down, Neath Portal, fall hazard from parapet.



Photo No.14: 009+07 Portal Up & Down, Neath Portal, Stonework, Parapet, open joints, depth 75mm, area 10sq.m.
Tree root damage to parapet with displaced and missing blocks.

Balfour Beatty Rail, Manchester
Penar Tunnel
ELR:HRD2/4m 42ch Examined:14/10/2019

Balfour Beatty Rail, Manchester
Detailed Examination Report for
Penar Tunnel

ELR: HRD2/4m 42ch Examined: 14/10/2019

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

Balfour Beatty Rail : Tunnel Examination Report

NAME: Penar Tunnel

BETWEEN: Halls Road Junction and Penar Junction

START MILEAGE: 04m 42ch

LENGTH: 240yds

REFERENCE: HRD2/4m 42ch

EXAMINED BY: Jackson & Newark

METHOD: Foot/Poles

DATE OF EXAMINATION: 14/10/2019

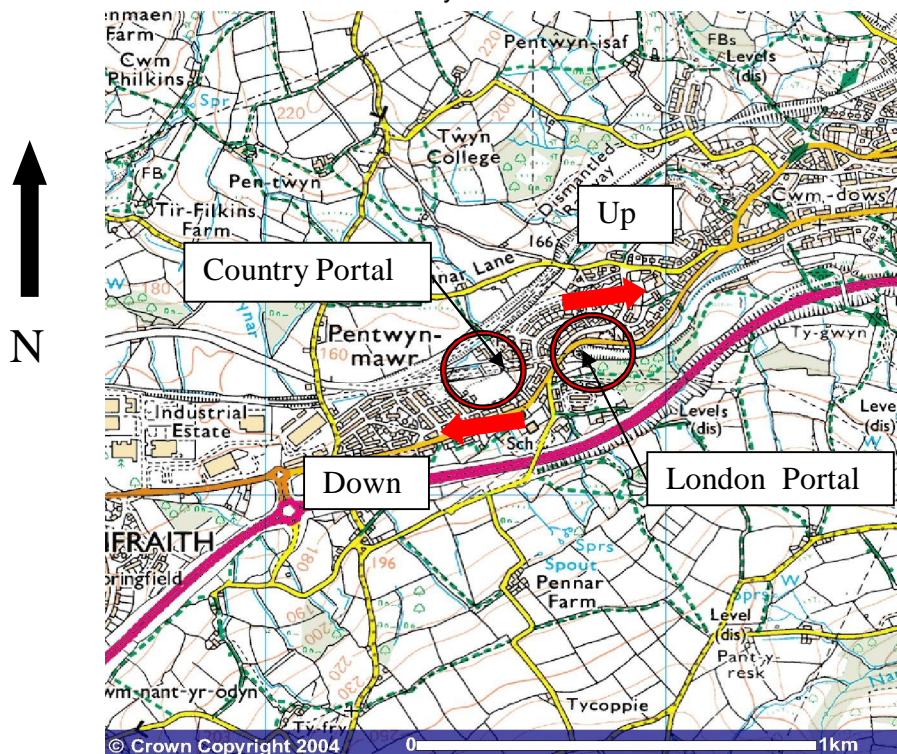
LAST EXAMINATION DATE: 31/07/2018

MARKERS AT: 22yds throughout the tunnel.


CONSTRUCTION: Stonework London Portal, brickwork/stonework Country Portal, brickwork arch and stonework, brickwork & natural rock sidewalls.

O.S. Ref.: London Portal ST 198 964

O.S. Ref.: Country Portal ST 196 963



Balfour Beatty Rail, Manchester
Penar Tunnel
ELR:HRD2/4m 42ch Examined:14/10/2019

Location	Defect	Action	
000+00 Portal Up	London Portal, Face Rings, brickwork, Old standing, open joints, depth 50mm, area 1sq.m., light.		
000+00 Portal Up & Down	London Portal, Stonework, no safety fence fitted to top of Parapet, this is a fall hazard.	1	Fence erected since last examination. 
000+00 Portal Up & Down	London Portal, new debris from flood piled against security gates.	2	Recommend remove debris, Priority 1; work to be completed by 14/10/2020.
000+00 Portal Up & Down	London Portal, oiling gate padlock.	3	
000+00 Portal Up & Down	London Portal, oiling gate hinges.	4	
000+00 to 010+20 Solum Up & Down	New stream flowing throughout the length of the tunnel eastwards from outside Country Portal to outside London Portal. Flooding and mud, max. depth 8" at the London end.	5	Recommend unblock drainage and remove mud, Priority 1; work to be completed by 14/10/2020.
000+00 to 002+06 Full Profile Up & Down	Stonework Sidewalls, Brickwork Arch, damp, area 500sq.m., medium.		
000+01 Haunch Up	Rear of voussoirs, circumferential fracture, length 2m, width 1mm, old standing.		
001+06 to 001+20 Full Profile Up & Down	Brickwork/stonework, wet, area 180sq.m.		
002+11 Crown & Haunch Up	Construction joint, damp, area 4sq.m.		
002+20 Low Haunch Up & Down	Brickwork, spalling, depth 50mm, area 4sq.m., damp.		
003+01 Sidewall Down	Stonework, base, weep hole, water washing fines onto solum and diffusing eastwards.	6 & 7	Recommend monitor ingress of fines at the annual examination.
003+06 to 005+15 Crown & Haunch Up & Down	Brickwork, wet/damp, area 400sq.m.		

Balfour Beatty Rail, Manchester
Penar Tunnel
ELR:HRD2/4m 42ch Examined:14/10/2019

Location	Defect	Action	
003+11 Haunch Up & Down	Brickwork, damp, spalling, depth 25mm, area 20sq.m., light.		
004+02 Refuge Up	Brickwork, arch, spalling depth 50mm, area 0.5sq.m., damp.		
004+15 Solum Up & Down	Open catch-pit to six-foot, trip hazard.	8	Recommend catch-pit be repaired, Priority 1; work to be completed by 14/10/2020.
004+20 to 006+00 Crown Up & Down	Brickwork, damp, area 80sq.m.		
005+15 Solum Up & Down	Open catch-pit to six-foot, trip hazard.	9	Recommend catch-pit be repaired, Priority 1; work to be completed by 14/10/2020.
006+00 to 007+10 Full Profile Up & Down	Brickwork, spalling, depth 25mm, wet/damp, area 300sq.m.		
006+11 to 007+05 Full Profile Up & Down	Brickwork, wet/damp, area 200sq.m.		
006+17 to 007+07 Sidewall Up & Down	Brickwork, spalling, depth 75mm, area 50sq.m., damp.		Recommend brickwork be replaced, Priority 3; work to be completed by 14/10/2022.
007+09 Refuge Down	Brickwork, arch, spalling, depth 50mm, area 1sq.m., light.		
007+11 to 010+20 Full Profile Up & Down	Brickwork, damp/wet, area 1000sq.m., medium.		
008+11 Crown Down	Brickwork, hollow, area 1sq.m., damp.		
008+18 Solum Up & Down	Open catch-pit to six-foot, trip hazard.	10	Recommend catch-pit be repaired, Priority 1; work to be completed by 14/10/2020.
008+20 to 010+20 Sidewall Up & Down	Brickwork, spalling and wet, depth 50mm, area 200sq.m., light.		
009+11 Sidewall Up	Brickwork, spalling, depth 100mm, area 0.5sq.m.	11	Recommend brickwork be replaced, Priority 1; work to be completed by 14/10/2020.

Balfour Beatty Rail, Manchester
Penar Tunnel
ELR:HRD2/4m 42ch Examined:14/10/2019

Location	Defect		Action
009+18 Solum Up & Down	Open catch-pit to six-foot, trip hazard.	12	Recommend catch-pit be repaired, Priority 1; work to be completed by 14/10/2020.
009+21 to 010+20 Low Haunch Up & Down	Brickwork, spalling and wet, depth 50mm, area 60sq.m., sparse.		
010+03 Sidewall Up	Brickwork, spalling, depth 125mm, area 3sq.m., light.	13	Recommend brickwork be replaced, Priority 1; work to be completed by 14/10/2020.
010+06 Refuge Up	Country Quoin, brickwork, spalling, wet and hollow, depth 200mm, area 1sq.m., medium.	14	Recommend brickwork be replaced, Priority 1; work to be completed by 14/10/2020.
010+07 Sidewall Up	Brickwork, spalling and wet, depth 120mm, area 2sq.m., medium.	15	Recommend brickwork be replaced, Priority 1; work to be completed by 14/10/2020.
010+12 Sidewall Up	Brickwork, spalling, wet and hollow with loose bricks, depth 200mm, area 1sq.m., medium.	16	Recommend brickwork be replaced, Priority 1; work to be completed by 14/10/2020.
010+12 Solum Up & Down	Rubbish and debris scattered throughout solum at the end of the tunnel.	17	Recommend rubbish and debris be removed, Priority 1; work to be completed by 14/10/2020.
010+19 Haunch Up	Brickwork, circumferential fracture, length 2m, width 15mm. Old standing.		Recommend fracture be pointed to enable visual monitoring, Priority 3; work to be completed by 06/05/2019.
010+19 Full Profile Down	Brickwork, circumferential fracture, length 5m, width 15mm. Old standing.		Recommend fracture be pointed to enable visual monitoring, Priority 3; work to be completed by 06/05/2019.
010+20 Portal Up & Down	Country Portal, oiling gate padlock.	18	
010+20 Portal Up & Down	Country Portal, oiling gate hinges.	19	
010+20 Portal Down	Country Portal, gap under gates allowing trespass.	20	Recommend concrete footing be extended beneath whole length of security fence/gates, Priority 1; work to be completed by 14/10/2020.

Balfour Beatty Rail, Manchester**Penar Tunnel****ELR:HRD2/4m 42ch Examined:14/10/2019**

Location		Defect	Action	
010+20 Portal Down	Country Portal, vandalised top of paling.		21	Recommend paling be repaired and reinforced, Priority 1; work to be completed by 14/10/2020.
010+20 Portal Up	Country Portal, Stonework, 2m long section of copings missing.		22	Recommend copings be replaced, Priority 1; work to be completed by 14/10/2020.
010+20 Portal Up & Down	Country Portal, Brickwork, open joints, depth 50mm, area 8sq.m., light.			

Balfour Beatty Rail, Manchester

Penar Tunnel

ELR:HRD2/4m 42ch Examined:14/10/2019

NOTES

1. Access route to structure: From minor road at Pentwyn-Mawr.
2. Site issues and impediments to carrying out repairs, DE's or other works: Steep cutting approaches.

STE2 STE6

Chartered Engineer:

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**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 1 of 13



LONDON PORTAL



COUNTRY PORTAL

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 2 of 13



Photo No.1: London Portal, Stonework, no safety fence fitted to top of Parapet, this is a fall hazard. Fence erected since last examination.



Photo No.2: London Portal, new debris from flood piled against security gates.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 3 of 13



Photo No.3: London Portal, oiling gate padlock.



Photo No.4: London Portal, oiling gate hinges.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 4 of 13

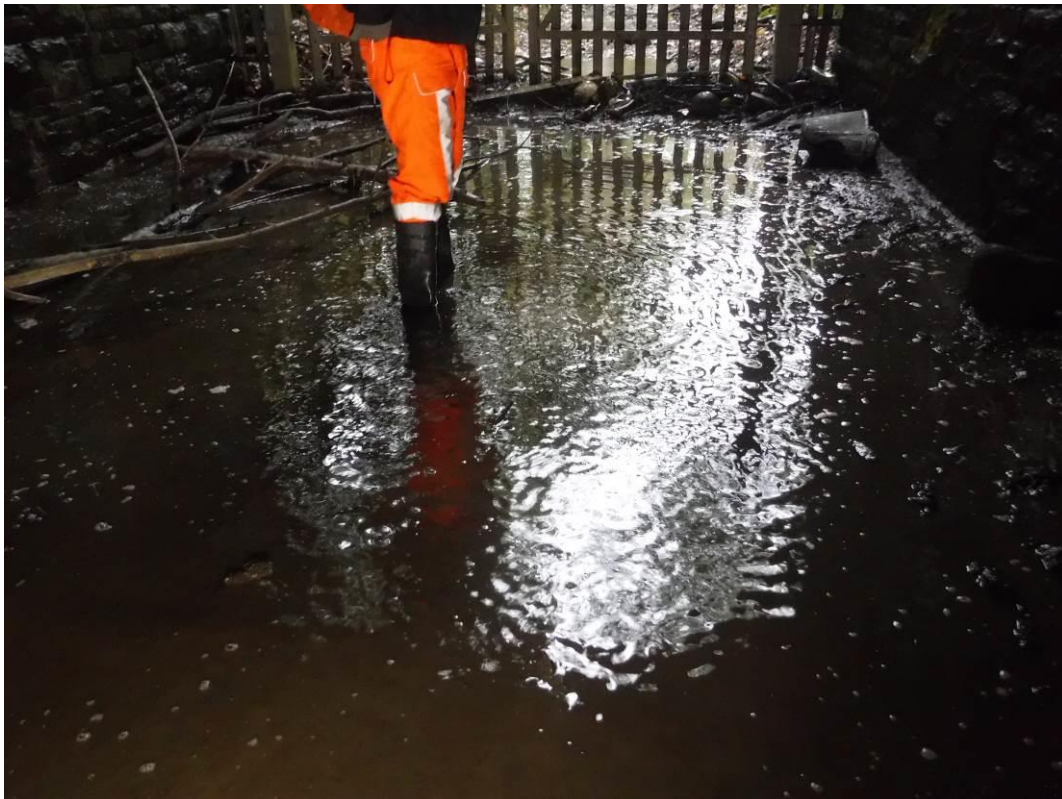


Photo No.5: 000+00 to 010+20 Solum Up & Down, New stream flowing throughout the length of the tunnel eastwards from outside Country Portal to outside London Portal. Flooding and mud, max. depth 8" at the London end.



Photo No.6: 003+01 Sidewall Down, Stonework, base, weep hole, water washing fines onto solum and diffusing eastwards.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 5 of 13



Photo No.7: 003+01 Sidewall Down, Stonework, base, weep hole, water washing fines onto solum and diffusing eastwards.



Photo No.8: 004+15 Solum Up & Down, Open catch-pit to six-foot, trip hazard.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 6 of 13



Photo No.9: 005+15 Solum Up & Down, Open catch-pit to six-foot, trip hazard.



Photo No.10: 008+18 Solum Up & Down, Open catch-pit to six-foot, trip hazard.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 7 of 13



Photo No.11: 009+11 Sidewall Up, Brickwork, spalling, depth 100mm, area 0.5sq.m.



Photo No.12: 009+18 Solum Up & Down, Open catch-pit to six-foot, trip hazard.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 8 of 13



Photo No.13: 010+03 Sidewall Up, Brickwork, spalling, depth 125mm, area 3sq.m., light.



Photo No.14: 010+06 Refuge Up, Country Quoin, brickwork, spalling, wet and hollow, depth 200mm, area 1sq.m., medium.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 9 of 13



Photo No.15: 010+07 Sidewall Up, Brickwork, spalling and wet, depth 120mm, area 2sq.m., medium.

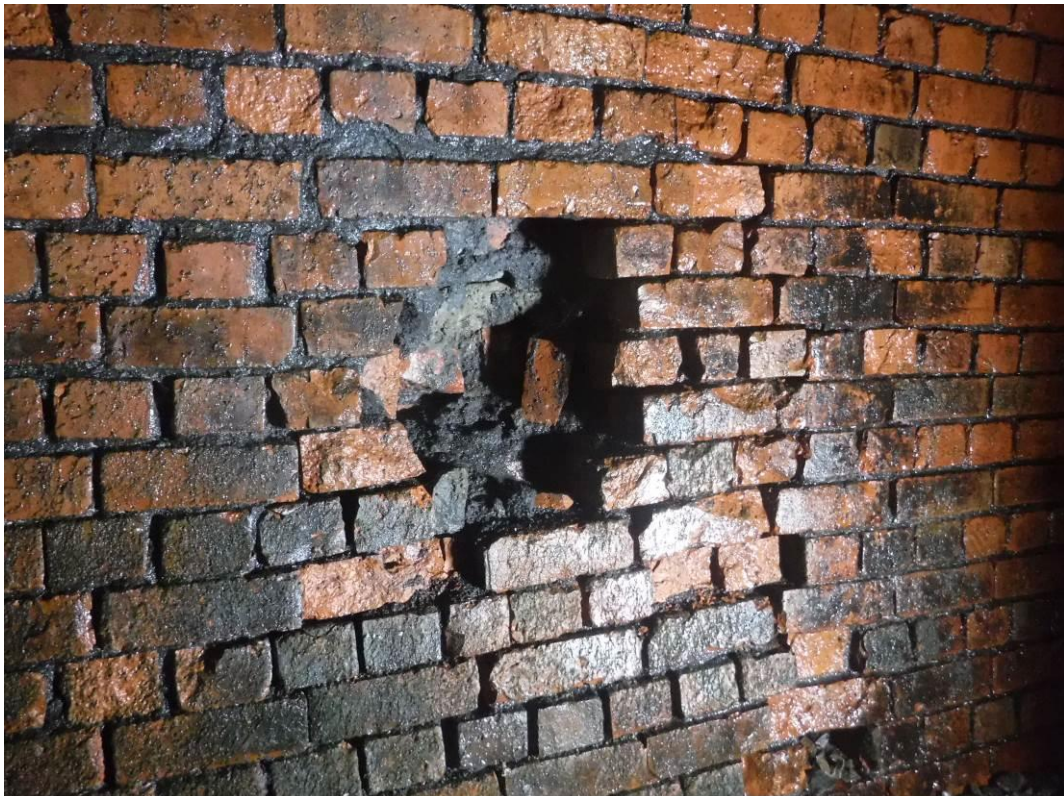


Photo No.16: 010+12 Sidewall Up, Brickwork, spalling, wet and hollow with loose bricks, depth 200mm, area 1sq.m., medium.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 10 of 13



Photo No.17: 010+12 Solum Up & Down, Rubbish and debris scattered throughout solum at the end of the tunnel.



Photo No.18: 010+20 Portal Up & Down, Country Portal, oiling gate padlock.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 11 of 13



Photo No.19: 010+20 Portal Up & Down, Country Portal, oiling gate hinges.



Photo No.20: 010+20 Portal Down, Country Portal, gap under gates allowing trespass.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

Balfour Beatty
Rail

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 12 of 13



Photo No.21: 010+20 Portal Down, Country Portal, vandalised top of paling.



Photo No.22: 010+20 Portal Up, Country Portal, Stonework, 2m long section of copings missing.

**TUNNEL EXAMINATION REPORT
PHOTOGRAPHS OF STRUCTURE**

ELR: **HRD2** Br. No.: **4m 42ch**

Mileage: **4 M 42 ch** Sheet 13 of 13



Photo No.23: One of the roads carried by the tunnel.

Highways Agency - Historical Railways Estate.

Detailed Tunnel Examination Report

ELR : ETK

ROUTE : Etruria to Kidsgrove. (Potteries Loop Line.)

Sheet 1 of 7

COBRIDGE.		Examination Date :	Defects requiring action before the next exam. and/or significant deterioration since the last examination (write "None." where applicable).
Tunnel		03/03/2014	Risk Assessment – the examination was carried out in accordance with the risk assessments in Appendix L of the Generic Method Statement for the Examination of Structures. Access Route to Structure – Park on road adjacent to the Bridge at the O.S.Ref: Site Issues and Impediments to carrying out repairs, DE's or other works – Tunnel in-filled and buried at both ends no section visible. Date of Last Examination – 18/03/2013. Structure Examined within 12 months? – Yes. Reason for Exceeding 12 months interval – N/A.
Tunnel No. :	18	No. of Spans :	
Mileage :	Not on Record	1	
O. S. Ref. :	SJ 878 487		
I certify that I have carried out a Detailed Examination of this structure, which appears to be in a satisfactory condition except where recorded in this report. Examined by :			

GENERAL VIEW



Recommendations :

None.

Signed :

STE2/STE6 Examining Engineer: P A Jackson BEng (Hons) MBA CEng MICE MIAM

Detailed Tunnel Examination Report

(Continuation Sheet)

Line : . Etruria to Kidsgrove. (Potteries Loop Line.)	Structure Identifier : ETK/18 In-Filled. No part of structure visible.
---	--

Remarks (Refer to parts by name)

Sheet 2 of 7

Severe Defects – None.

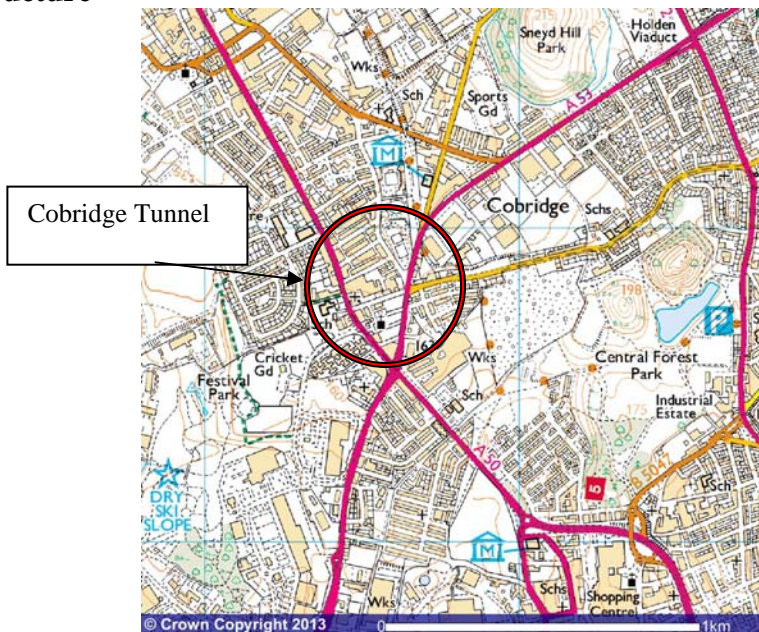
New Defects – None

Changes to Existing Defects since Last Examination –None.

Changes to the Use of the Structure since Last Examination – None.

Repair / Maintenance Work that appears to have been carried out since Last Examination – None.

Orientation of Structure –



Use of Structure – None.

Condition of Approach Fencing and Risk to the Public – None.

Are Fenced-off Portals Secure? – Buried.

Nature of Vandalism and/or Trespass – None.

If 'No' what measures taken – None required.

New Padlock(s) Fitted to Access Gates / Doors during this Examination – None required.

Detailed Tunnel Examination Report**(Continuation Sheet)**

Line : Etruria to Kidsgrove. (Potteries Loop Line.)	Structure Identifier : ETK/18 In-Filled. No part of structure visible.
---	---

Remarks (Refer to parts by name)**Sheet 3 of 7****Photo No.1 : Line of tunnel to the South end. Approx position of Portal.****Photo No.2 : Approx line of tunnel to the South end.****Photo No.3 : Approx line of tunnel from the South to the North end.****Photo No.4 : Approx line of tunnel from the South to the North end.****Photo No.5 : Approx line of tunnel from the South to the North end.****Photo No.6 : Approx line of tunnel from the South to the North end.****Photo No.7 : Approx line of tunnel from the South to the North end.****Photo No.8 : Approx position of the North End Portal.**