

**TUNNEL EXAMINATION REPORT  
PHOTOGRAPHS OF STRUCTURE**

ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 1 of 15



**SOUTH EAST PORTAL SS 838 908**



**NORTH WEST PORTAL SS 832 915**



**TUNNEL EXAMINATION REPORT  
PHOTOGRAPHS OF STRUCTURE**

ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 2 of 15



**Photo No. 1:** Southeast Portal, brickwork, 5 brick arch ring to voussoirs area has open joints and running water, depth 200mm, area 4sq.m.



**Photo No. 2:** Southeast Portal, Wingwall, Pilaster, missing and loose bricks, area 2sq.m



**TUNNEL EXAMINATION REPORT  
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ELR : PTP Br. No. : 00

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**Photo No. 3:** Southeast Portal, Wingwall, Pilaster, missing and loose bricks, area 2sq.m



**Photo No. 4:** Southeast Portal, Wingwall, brickwork, open joints, depth 75mm, area 6sq.m., medium, with loose copings and bricks below for 8 metres in length.



**TUNNEL EXAMINATION REPORT  
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**Photo No. 5:** Southeast Portal, Buttress, tree growing girth 150mm.



**Photo No. 6:** Southeast Portal, Oiling hinges.



**TUNNEL EXAMINATION REPORT  
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**Photo No. 7:** Southeast Portal, Oiling padlock.



**Photo No. 8:** 000+00 to 028+00 Solum Up & Down, Standing water and mud to solum, max. depth 600mm.



**TUNNEL EXAMINATION REPORT  
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**Photo No. 9:** 001+30 Refuge Up, Brickwork, NW quoin, spalling, depth 200mm, area 0.5sq.m.



**Photo No. 10:** 028+40 Solum, Old signalling equipment.



**TUNNEL EXAMINATION REPORT  
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**Photo No. 11:** 035+16 to 038+45 Full Profile Up & Down, Steel segmental lining to tunnel, this is heavily corroded with missing and corroded bolts with large amounts of detritus to solum.



**Photo No. 12:** 035+16 to 038+45 Full Profile Up & Down, Steel segmental lining to tunnel, this is heavily corroded with missing and corroded bolts with large amounts of detritus to solum.



**TUNNEL EXAMINATION REPORT  
PHOTOGRAPHS OF STRUCTURE**

ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 8 of 15



**Photo No. 13:** 035+16 to 038+45 Full Profile Up & Down, Steel segmental lining to tunnel, this is heavily corroded with missing and corroded bolts with large amounts of detritus to solum.



**Photo No. 14:** 041+10 to 041+23 Full Profile Up & Down, 4No. Bullhead rail arch supports with timber laggings fitted to lining these are heavily corroded and leaning. They appear to be supporting a calcite covered bulge, max. depth 50mm.



**TUNNEL EXAMINATION REPORT  
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**Photo No. 15:** 042+00 to 043+40 Crown & Haunches Up & Down, Brickwork, Bulging to haunches, hollow and pinching to the crown with spalling, depth 25mm, area 10sq.m., sparse. New longitudinal cracking along the crown, length 5m, width hairline (042+30 to 042+45).



**Photo No. 16:** 048+00 to 048+15 Sidewall & Solum Up, Ochre deposits to solum, depth 700mm, area 14sq.m.



**TUNNEL EXAMINATION REPORT  
PHOTOGRAPHS OF STRUCTURE**

ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 10 of 15



**Photo No. 17:** 055+06 to 060+36 Full Profile Up & Down, Solum, stream and mud, depth 300mm. Both inside and on approach to tunnel.



**Photo No. 18:** 057+03 Solum Down, Old signalling equipment.



**TUNNEL EXAMINATION REPORT  
PHOTOGRAPHS OF STRUCTURE**

ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 11 of 15



**Photo No. 19:** 059+35 to 60+36 Solum Up & Down, Rubble and debris piled to solum.



**Photo No. 20:** Northwest Portal, Oiling hinges



**TUNNEL EXAMINATION REPORT  
PHOTOGRAPHS OF STRUCTURE**

ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 12 of 15



**Photo No. 21:** Northwest Portal, Oiling padlock.



**Photo No. 22:** 060+36 Portal Up, Northwest Portal, Brickwork, Pilaster, capstone and brickwork missing



**TUNNEL EXAMINATION REPORT  
PHOTOGRAPHS OF STRUCTURE**

ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 13 of 15



**Photo No. 23:** 060+36 Portal Down, Northwest Portal, Brickwork, Pilaster, capstone and brickwork missing.



**Photo No. 24:** 060+36 Portal Up, Northwest Portal, Wingwall, Brickwork, loose copings and loose & missing bricks below, area 8sq.m.



**TUNNEL EXAMINATION REPORT  
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ELR : PTP Br. No. : 00

Mileage : 05 M 08 Ch Sheet 14 of 15



**Photo No. 25:** 060+36 Portal Up & Down, Northwest Portal, Brickwork, String course oversailing by a max. of 25mm over 8m in length.



**Photo No. 26:** 060+36 Portal Up & Down, Northwest Portal, brickwork, 8 courses of parapet missing and loose bricks, area 2sq.m.



**TUNNEL EXAMINATION REPORT  
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Mileage : 05 M 08 Ch Sheet 15 of 15

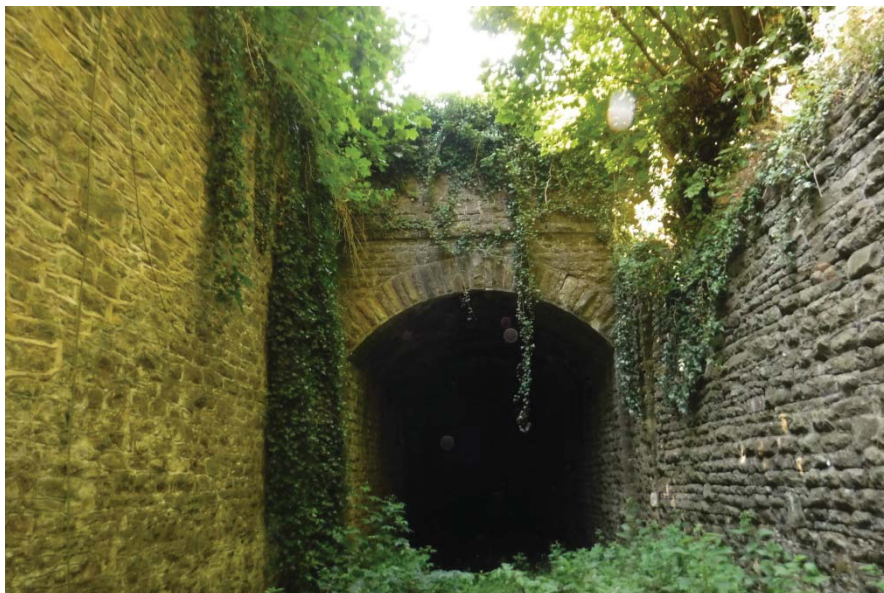


**Photo No. 27:** 060+36 Portal Up & Down, Northwest Portal, Level with the newel posts, Hole to solum just outside portal with running water, probably track drainage.

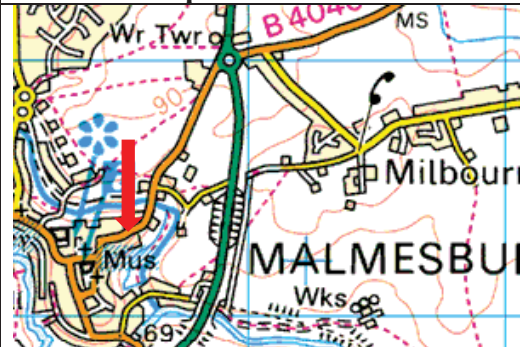


<b>ELR:</b>	MAL	<b>Structure No:</b>	<b>Mileage:</b> 93m 01ch	<b>Examination date:</b> 12/07/18
<b>Route:</b>	Malmesbury to Dauntsey			<b>OS ref:</b> ST 936 873
<b>Name:</b>	Malmesbury			<b>Type:</b> Tunnel

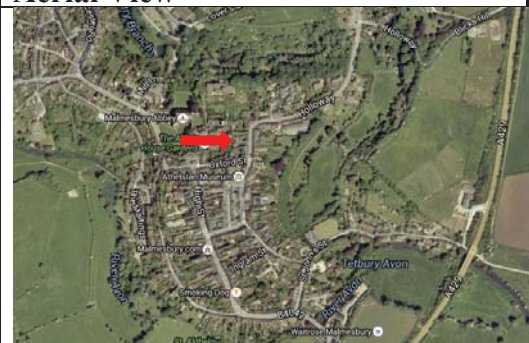
### General view of structure: LE portal



### 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:** 12/07/18



### Access Hazards:

See General comments.

### Recommendations:

No action required.

**Signed by Examining Engineer:**



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<b>Type of construction</b>	Malmesbury tunnel is a 550mm thick segmental masonry arch barrel supported by masonry sidewalls with associated masonry spandrels, headwalls and wing walls. A single track tunnel of approximately 96m length, supporting public highway and private lands, the London end is defined as the Dauntsey / South East end.
<b>No. of sections</b>	Section of the tunnel is in-filled for 38m. 9 x ½ch at 10m and 1 at 6m
<b>Details of shafts</b>	None
<b>Details of manholes and drains</b>	No drains were noted. A down-pipe is noted through the crown at 2ch (P.17).

*General Comments:*

The L/End is accessed via St Joseph's Catholic School whose grounds adjoin old formation. The rear of the headwall is inaccessible due to private gardens. Gates fitted with a standard lock are installed to LE approach (P.21). The formation within to LE tunnel section is found with fly tipping (garden waste). The CE of the barrel was withdrawn from the examination schedule in 2015.

*Walkover survey*

The area above the tunnel is generally in private gardens and inaccessible. However, the rear of the LE headwall could previously be viewed over a high wooden fence but is found fully covered with ivy growth (P.22). The road over the tunnel (B4040) is found in good condition over the tunnel line (P.23).

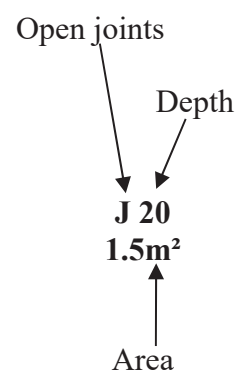
<b>Pressure readings</b>		<b>Gases</b>	
LE portal	1010.5mb	O <sub>2</sub>	20.9%
Centre (from LE)	1010.6mb	H <sub>2</sub> S	1ppm
		CO	Zero
		CH <sub>4</sub>	3ppm

<b>Examined By:</b>	Appointees Engineer	R.G. Storey	<b>Date of exam</b>
	Appointees Examiner	T. Jarrett	12/7/18

**Symbols Used in Tunnel Diagram:**

<b>BWK</b>	Brickwork	<b>W</b>	Wetness
<b>CJ</b>	Construction Joint	<b>WD</b>	Water dripping
<b>R</b>	Refuge	<b>WR</b>	Water running
<b>S</b>	Spalling	<b>FL</b>	Flattening of Arch
<b>F</b>	Fracture	<b>B</b>	Bulging
<b>J</b>	Open Joints	<b>STLG</b>	Stalactites
<b>H</b>	Hollow/Drummy	<b>CLCT</b>	Calcite Growth
<b>ST</b>	Soot Deposits	<b>L</b>	Leaching

**Example**









<b>ELR:</b>	MAL	<b>Structure No:</b>		<b>Mileage:</b>	93m 01ch	<b>Examination date:</b>	12/07/18
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<b>Name:</b>	Malmesbury					<b>Type:</b>	Tunnel

<b>Notes:</b>							
<b>Malmesbury</b> <b>MAL 93m 01ch</b>							
<b>London end portal (cover photo)</b>							
<b>Downside Wingwall</b> Previously noted area of missing masonry 1.5m from the portal, and 4.5m above existing ground level, approximately 300mm deep with 1m <sup>2</sup> loose area of masonry surrounding (P1). Defect is now largely obscured by ivy growth with vegetation overhanging top of wingwall (P.2). The C/End of wingwall (near portal) is heavily overgrown with ivy (P.4). Section of loose masonry 10m from portal noted at 1.6m above G/L (P3). Area above has long-standing bulging which has been pointed in – found generally good but with odd sections slightly loose (P5).							
<b>Headwall</b> Isolated open joints present throughout the headwall up to 100mm deep in places over a total area of approximately 0.75m <sup>2</sup> (P8). Light vegetation overhangs the parapet throughout its length (P.9). Spandrels are in good condition (P10) (DL). Single voussoir to UL spalled to 50mm locally (P11) Stepped joint fracture to UL buttress (1.36m long) runs from mitre over 4no courses open to 4mm with joint loss following fracture line. Area slightly displaced (P12)							
<b>Upside Wingwall</b> Widespread deep open joints, generally 100mm, but up to 280mm locally, total area approximately 50m <sup>2</sup> . Individual stones move to hammer (P.6). 1.5m from portal, long-standing area of masonry loss approximately 0.2m <sup>2</sup> up to 400mm deep with adjacent stones below loose to hammer (P.7) Isolated spalling of individual stones to depth of 50mm							



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	<i>Sidewall</i>	<i>Haunch</i>	<i>Crown</i>	<i>Haunch</i>	<i>Sidewall</i>	
<b>London End</b>						
0	WS	WS S 20 0.2m <sup>2</sup>	WS S 50 0.1m <sup>2</sup> Isol. S120 (P13)	WS S 30 0.2m <sup>2</sup>	WS	0
	G	G	G	G	G	
1	WS DL quoin refuge now repaired in brickwork to good standard (P14, P15)	WS Isol. loose stone (P19)	WS throughout crown	WS	H 2m <sup>2</sup>	1
	WD	WS	WS	WS	G	
2		W	100mm Ø down pipe (P17)	W		2 R
Diaphragm wall (P18)						

DC quoin now  
repaired to good  
standard (P20) but  
open joint remains  
above repair (P16)



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*Photographs of structure*



Photograph no 1: DL wingwall

Previously noted area of missing masonry 15m from the portal, and 4.5m above existing ground level, approximately 300mm deep with 1m<sup>2</sup> loose area of masonry surrounding



Photograph no 2: DL wingwall

Ivy growth now largely obscures long standing defects to top of wingwall

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*Photographs of structure*



Photograph no 3: DL wingwall  
Section of loose masonry 10m from portal noted at 1.6m above G/L

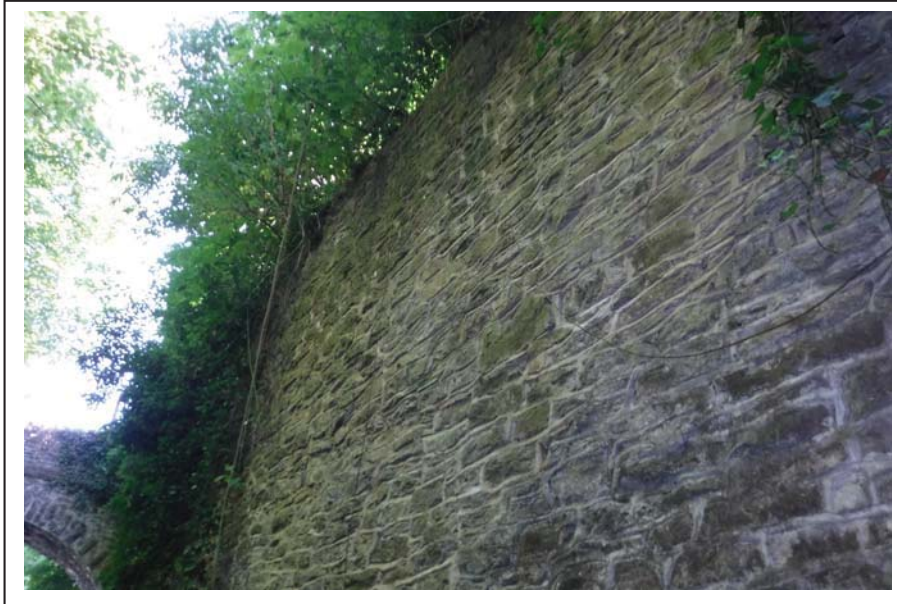


Photograph no 4: DL wingwall  
The C/End of wingwall (near portal) is heavily overgrown with ivy

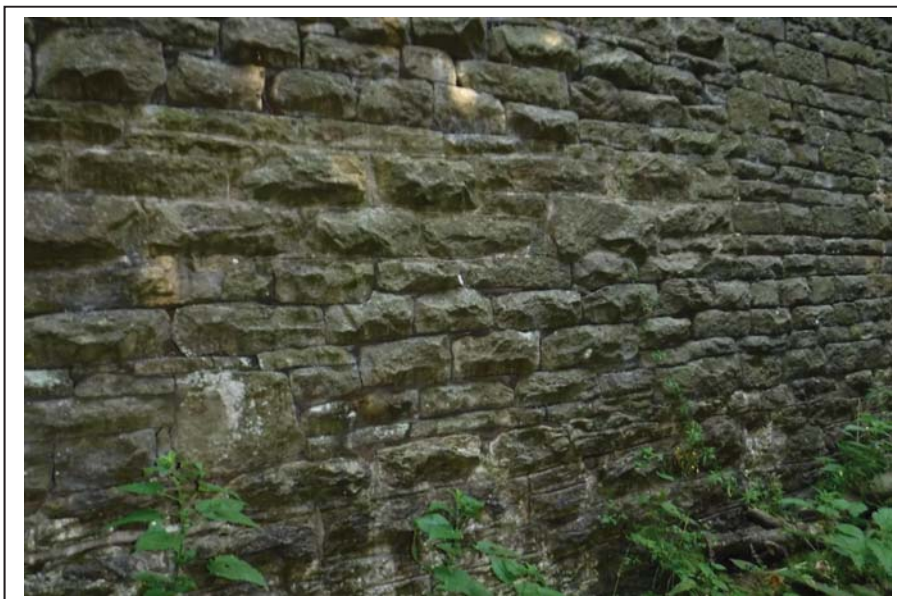


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*Photographs of structure*



Photograph no 5: DL wingwall  
Area above has long-standing bulging which has been pointed in  
Found generally good but with odd sections slightly loose



Photograph no 6: UL wingwall  
Individual stones move to hammer

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<b>Name:</b>	Malmesbury					<b>Type:</b>	Tunnel

*Photographs of structure*



Photograph no 7: UL wingwall  
1.5m from portal, long-standing area of masonry loss approximately 0.2m<sup>2</sup> up to 400mm deep  
with adjacent stones below loose to hammer

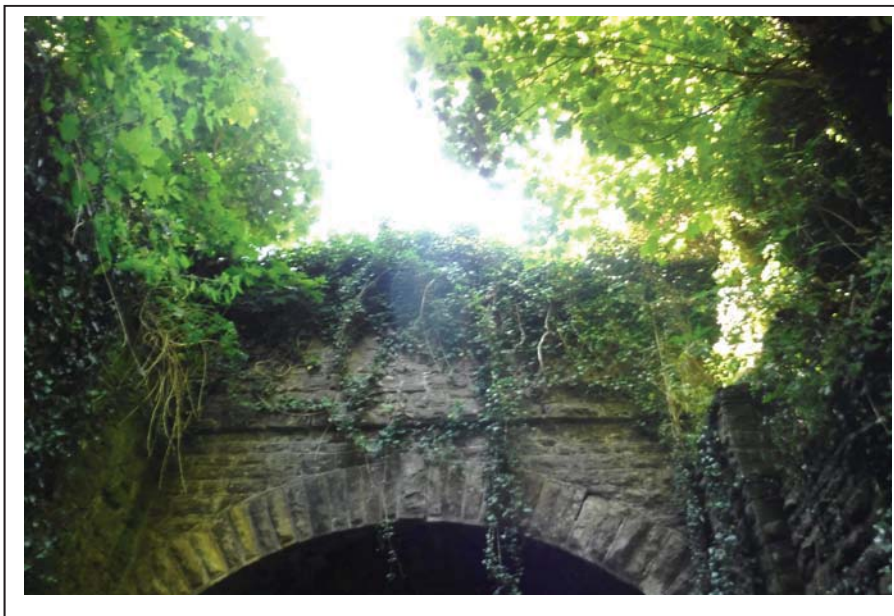


Photograph no 8: LE headwall  
Isolated open joints present throughout the headwall up to 100mm deep in places over a total area of  
approximately 0.75m<sup>2</sup>



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*Photographs of structure*



Photograph no 9: LE headwall  
Light vegetation overhangs the parapet throughout its length



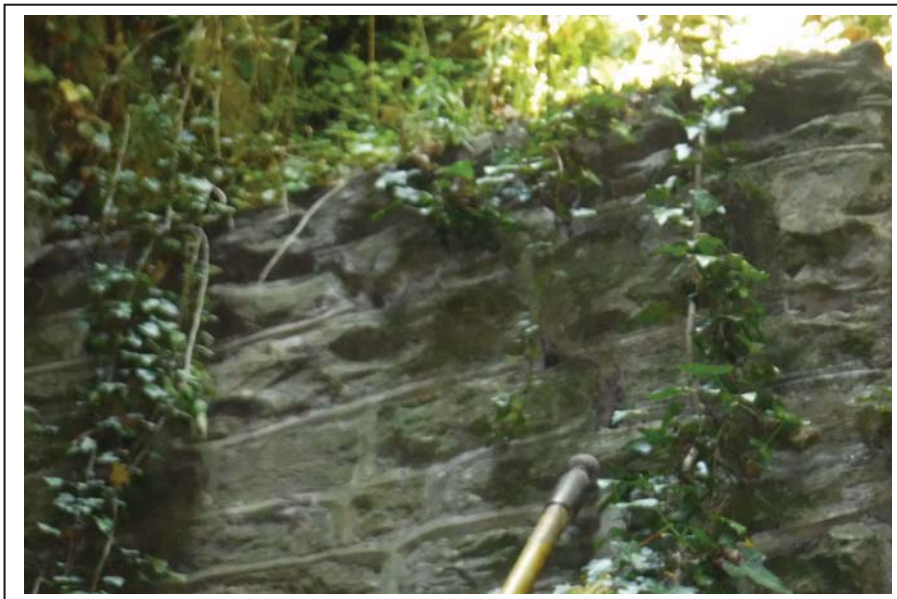
Photograph no 10: DL spandrel in good condition

<b>ELR:</b>	MAL	<b>Structure No:</b>		<b>Mileage:</b>	93m 01ch	<b>Examination date:</b>	12/07/18
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*Photographs of structure*



Photograph no 11: LE headwall  
Single voussoir to UL spalled to 50mm locally



Photograph no 12: Stepped joint fracture to UL buttress (1.36m long) runs from mitre over 4no courses open to 4mm with joint loss following fracture line  
Area slightly displaced



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*Photographs of structure*



Photograph no 13: LE crown at 0.5ch  
Isolated spalling to 120mm



Photograph no 14: DL quoin refuge now repaired in brickwork to good standard

<b>ELR:</b>	MAL	<b>Structure No:</b>		<b>Mileage:</b>	93m 01ch	<b>Examination date:</b>	12/07/18
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*Photographs of structure*



Photograph no 15: As photo 14



Photograph no 16: DC quoin now repaired to good standard but open joint remains above repair



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*Photographs of structure*



Photograph no 17: 100mm Ø down pipe at CE crown



Photograph no 18: Diaphragm wall at 2.75c from LE: wall marks limit of examination

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*Photographs of structure*



Photograph no 19: Loose stone to UL haunch at 1.75ch



Photograph no 20: DC quoin now repaired to good standard



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*Photographs of structure*



Photograph no 21: Gates fitted with a standard lock are installed to LE approach



Photograph no 22: Rear of the LE headwall could previously be viewed over a high wooden fence but is found fully covered with ivy growth

<b>ELR:</b>	MAL	<b>Structure No:</b>		<b>Mileage:</b>	93m 01ch	<b>Examination date:</b>	12/07/18
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*Photographs of structure*



Photograph no 23: The road over the tunnel (B4040) is found in good condition over the tunnel line



Balfour Beatty Rail, Manchester  
Merthyr (Abernant) Tunnel  
ELR:MER/3m 37ch

Examined:20-24/08/2018



**Balfour Beatty Rail, Manchester**

**Detailed Examination Report for**

**Merthyr (Abernant) Tunnel**

**ELR: MER/3m 37ch**

**Examined: 20-24/08/2018**

**Structures Examinations**

**Balfour Beatty Rail**

**Chaddock Lane**

**Worsley**

**Manchester**

**M28 1XW**

## Balfour Beatty Rail : Tunnel Examination Report

**NAME:** Merthyr (Abernant) Tunnel

**BETWEEN:** Merthyr Tydfil and Hirwaun

**START MILEAGE:** 03m 37ch

**LENGTH:** 2506 yds

**REFERENCE:** MER/3m 37ch

**EXAMINED BY:** Jackson & Newark Plant & Labour by Hammond Ltd  
DEFRA Licensed Ecologist, (Bat Specialist): Jason Ball

**METHOD:** Foot/Poles/MEWP

**DATE OF EXAMINATION:** 20-24/08/2018

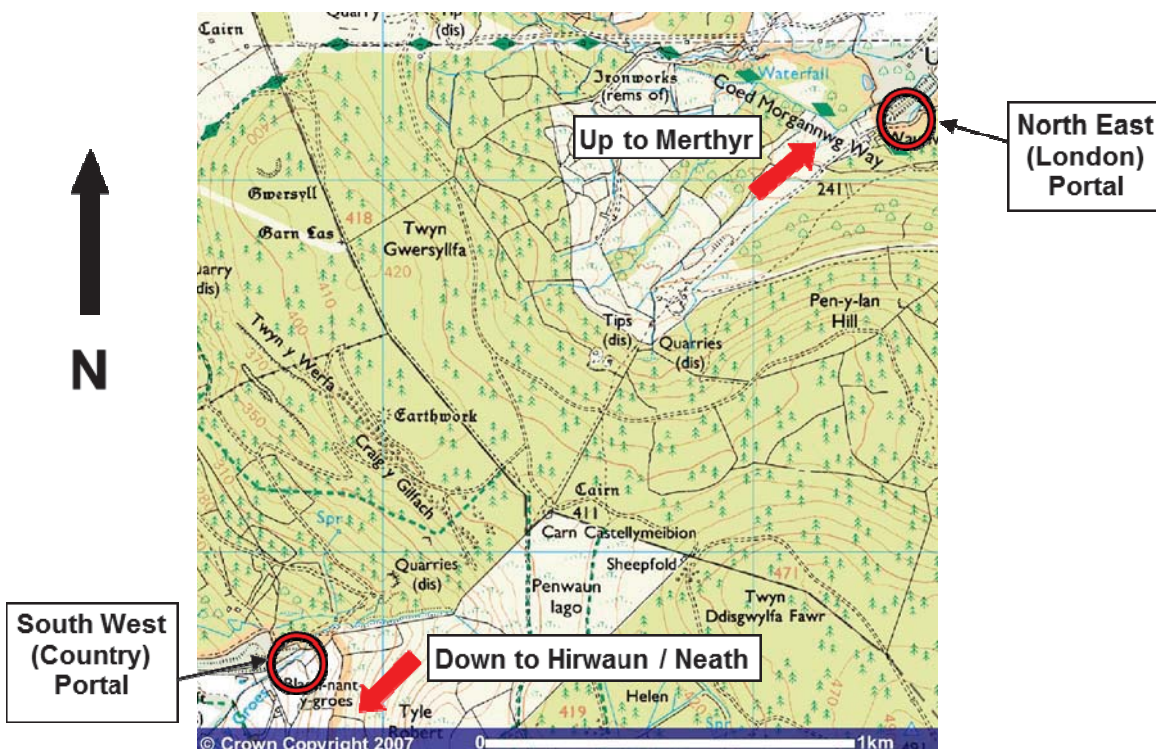
**LAST EXAMINATION DATE:** 01/03/2018

**MARKERS AT:** 1ch centres along down sidewall, zero at SW Portal

**CONSTRUCTION:** SW Portal stonework with max. 7-ring brick re-lining visible in arch ring apex.  
NE Portal stonework with 6-ring brick arch ring, buttress each side to rock cutting (no wing-walls). Profile of the lining as detailed in the report.

**O.S. Ref.:** North East Portal SO 043 041

**O.S. Ref.:** South West Portal SO 027 027





Location	Defect		Action
000+00 Portal Up & Down	Southwest Portal, New steel cladding fixed to gate and fence with anti-vandal paint. No access to padlock from inside tunnel.	<b>1</b>	Recommend access be made to padlock from inside tunnel, Priority 1; work to be completed by 24/08/2019.
000+00 Portal Up & Down	Southwest Portal, Stonework, Vegetation. BEFORE WORKS.	<b>2, 3 &amp; 4</b>	Vegetation removed during the examination.
000+00 Portal Up & Down	Southwest Portal, Stonework, Vegetation. BEFORE WORKS - Ecological examination.	<b>5, 6 &amp; 7</b>	Vegetation removed during the examination.
000+00 Portal Up & Down	Southwest Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.	<b>8 to 13</b>	Vegetation removed during the examination.
000+00 Portal Up & Down	Southwest Portal, Stonework, Vegetation. AFTER WORKS - only moss & lichens remain on stonework.	<b>14, 15 &amp; 16</b>	Vegetation removed during the examination.
000+00 Portal Down	Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 100mm, area 10sq.m., light. 8" high half-round copings are missing in upper half of wingwall, length 8yds. Remaining copings in lower half of wingwall lifted 75mm by roots. Evidence of a chute behind top of wingwall not visible due to dense vegetation.	<b>17 to 21</b>	Recommend tree stumps & roots be removed, top of wingwall cleared of vegetation (and unblock chute if found), missing copings replaced and loose blocks repaired, Priority 1; work to be completed by 24/08/2019.
000+00 Portal Up	Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 75mm, area 10sq.m., light. 8" high half-round copings are missing in upper half of wingwall, length 9yds. Large stump near top of wingwall sprouting saplings. Large tree fallen within 4ft. of top of wingwall. Tree growing behind top of wingwall approx. at mid-point, girth 12". Evidence of a chute behind top of wingwall not visible due to dense vegetation.	<b>22, 23 &amp; 24</b>	Recommend trees, tree stumps & roots be removed, top of wingwall cleared of vegetation (and unblock chute if found), missing copings replaced and loose blocks repaired, Priority 1; work to be completed by 24/08/2019.
000+00 Portal Down	Southwest Portal, Stonework, 8" high half-round copings are missing at end of spandrel, length 3ft and copings displaced by tree roots.	<b>25</b>	Recommend remove stumps & roots, rebed copings and replace missing copings, Priority 1; work to be completed by 24/08/2019.
000+00 Portal Up & Down	Southwest Portal, Stonework, 8" high half-round copings are missing above the arch, length 6yds.	<b>26</b>	Recommend replace missing copings, Priority 1; work to be completed by 24/08/2019.

Location	Defect		Action
000+00 Portal Up	Southwest Portal, Stonework, 8" high half-round copings are missing at end of spandrel, length 4ft.	<b>27</b>	Recommend replace missing copings, Priority 1; work to be completed by 24/08/2019.
000+00 Portal Up	Southwest Portal, Stonework, circumferential open joint to rear of voussoirs, length 1m, max. depth 75mm.	<b>28</b>	Recommend hand point, Priority 3; work to be completed by 24/08/2021.
000+00 Portal Up & Down	Southwest Portal, Stonework, build up of rotting vegetation detritus adding load to the rear of the spandrel and hiding the buried drainage channel (if built).	<b>29</b>	Recommend remove load (and unblock drainage channel if found), Priority 1; work to be completed by 24/08/2019.
000+00 Portal Up & Down	Southwest Portal, Post & wire fence set back approx. 7ft. from top of portal. Top wire missing.	<b>30 &amp; 31</b>	Recommend repair fence, Priority 1; work to be completed by 24/08/2019.
000+00 Portal Up	Southwest Portal, Security, again found vandalised at this examination with razor-wire moved aside to aid trespass over the top of the fence. Razor-wire was pushed back across gap during this examination.	<b>32</b>	Recommend re-secure razor-wire and fortify top of fence, Priority 1; work to be completed by 24/08/2019.
000+00 Portal Up & Down	Southwest Portal, oiling hinges.	<b>33</b>	
000+00 Portal Up & Down	Southwest Portal, oiling padlock.	<b>34</b>	
000+00 to 113+20 Full Profile Up & Down	Needle/boyot holes are visible throughout the tunnel.		
000+00 to 113+20 Full Profile Up & Down	General views of detailed examination operations.	<b>35 to 38</b>	
000+00 to 001+12 Crown & Haunch Up & Down	Arch relined in brickwork (archaic) and then recently strengthened with sprayed concrete sometime during the period Jun.2012 and Jul.2013.	<b>39 &amp; 40</b>	
000+00 to 001+12 Crown & Haunch Up & Down	Shotcrete, random multi-directional hairline cracks.		
000+00 to 001+12 Sidewalls Up & Down	Relined in brickwork (archaic) and then strengthened with 3 or 4course brickwork buttresses, height c.8ft (archaic).	<b>41</b>	
000+06 Low Haunch Up	4" dia. pipe in new shotcrete, water dripping onto brickwork sidewall, damp/moss, area 4sq.m.		



Location	Defect	Action
000+09 Mid Haunch Up	3/4" dia. pipe in new shotcrete, water dripping.	
000+11 Crown Up & Down	3/4" dia. pipe in new shotcrete at apex, downpipe to down cess, water dripping.	
001+00 to 001+05 Crown & Haunch Up & Down	Railway irons, 3No. old ribs bearing on top of sidewalls still visible under shotcrete, circumferential fractures in shotcrete on bottom flanges, hollow.	<b>42 &amp; 43</b> Recommend remove shotcrete from ribs, Priority 1; work to be completed by 24/08/2019.
001+12 to 007+09 Full Profile Up & Down	Change in profile. Arch relined by a further 5course brickwork at apex with stonework fill to haunches (archaic). Sidewalls relined by a further 3course brickwork and stonework fill to bases (archaic). Arch and sidewalls are now a continuous profile.	<b>44</b>
001+12 to 007+09 Full Profile Up & Down	Brickwork, damp/wet, deposits, soot, stalactites, area 1500sq.m., light.	
001+12 to 021+02 Crown & Haunches Up & Down	Brickwork, shelling, loose/hanging, area 2000sq.m., medium (photo taken at ch.11 shows a typical view of condition).	<b>45</b> Recommend remove shelling down to firm brickwork and patch repair where necessary, Priority 1; work to be completed by 24/08/2019.
001+13 to 004+13 Haunch Down	Brickwork, Multiple Longitudinal, Circumferential and step fractures, width 10mm. Old standing. Repaired / pointed recently pre-2015. Intact.	
001+18 to 002+20 Sidewalls Up & Down	Timber baulk framework is rotten with some laid to solum and appears to be offering no support to the lining behind.	<b>46</b> Recommend Timbers be removed with a view to checking stability of sidewalls and carry out repairs, Priority 1; work to be completed by 24/08/2019.
002+12 High Haunch Up	Brickwork, 1No. brick missing.	Recommend repair brickwork, Priority 3; work to be completed by 24/08/2021.
003+08 Crown Down	Brickwork, spalling, depth 25mm, area 1sq.m., shelling removed during the examination.	<b>47</b> Recommend repair brickwork, Priority 3; work to be completed by 24/08/2021.
004+16 Crown Up & Down	Brickwork, spalling, depth 50-75mm, area 1sq.m., medium, shelling removed during the examination.	<b>48</b> Recommend repair brickwork, Priority 1; work to be completed by 24/08/2019.
004+17 to 006+00 Full Profile Up & Down	Brickwork, multiple random fractures, max. width 10mm, old standing.	Some defects have been repaired / pointed pre-2015. Intact.
005+06 Full Profile Up	Brickwork, circumferential fracture, max. width 3mm, length 7m, wet, old standing.	

Location	Defect	Action	
005+20 Low Haunch Down	Brickwork, spalling, depth 25mm, area 1sq.m., damp/deposits.		
006+00 Full Profile Up & Down	Brickwork, circumferential fracture, max. width 2mm, length 14m, wet, old standing.		
007+09 to 010+04 Full Profile Up & Down	Change in profile. Possibly original lining at opening of line or 1st relining in yellow brickwork (archaic). The reduced bore to the SW shows 6 to 8course brickwork on edge with stonework infill behind haunches and sidewalls. Refuges reveal a further red brick arch supporting stonework and a natural rock rear face.	<b>49, 50 &amp; 51</b>	
007+09 to 010+04 Full Profile Up & Down	Brickwork, damp, deposits, soot, stalactites, area 640sq.m., light.		
007+09 to 010+05 Sidewalls Up & Down	Brickwork, occasional bricks missing to sidewalls.		
008+08 Sidewall Up	Old brick works cabin.	<b>52</b>	
009+01 to 009+11 Crown Up & Down	Brickwork, perished mortar / open joints, depth 25mm, area 20sq.m., damp/wet, stalactites, soot, medium.		
009+11 to 009+18 Crown & Haunch Down	Brickwork, spalling, depth 50-75mm, area 30sq.m., shelling removed during the examination.	<b>53</b>	Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.
009+13 Sidewall Down	Brickwork, hollow, area 16sq.m.		
009+19 Sidewall Up	Brickwork, hollow, shelling/spalling, depth 50mm, area 9sq.m.		
010+00 Crown Up & Down	Brickwork, spalling, depth 50mm, area 1sq.m., spalling removed during the examination.		
010+02 Refuge Down	Brickwork, circumferential fractures inside quoins & arch returns, width 2mm, length 8m, hollow, area 2sq.m.		Recommend repair brickwork, Priority 2; work to be completed by 24/08/2020.
010+02 Sidewall Up	Old brick works cabin.	<b>54</b>	
010+04 Crown Down	Brickwork, spalling, depth 50mm, area 0.5sq.m., large section of hanging spalling removed during the examination.	<b>55 &amp; 56</b>	Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.



Location	Defect	Action
010+04 to 113+20 Full Profile Up & Down	Significant change in profile. Double track bore reduces to single track bore from ch.010+04 to the NE Portal.	57
010+04 to 010+16 Full Profile Up & Down	Brickwork sidewall, height 4ft., stonework above to mid haunch level, brickwork high haunches and crown.	58
010+04 to 013+06 Crown Up & Down	Brickwork, spalling, depth 50mm, area 400sq.m., medium, spalling removed during the examination.	
010+04 to 025+00 Full Profile Up & Down	Stonework/Brickwork, soot, area 4000sq.m., sparse.	
010+12 Sidewall Down	1m high section in brickwork, weak/friable bricks, spalling 75mm, area 5sq.m., medium.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
010+12 High Haunch Down	Old concrete patch repair, hollow / potentially loose, area 2sq.m.	59 Recommend cut out concrete and rebuild with brickwork, Priority 1; work to be completed by 24/08/2019.
010+14 Sidewall Up	Brickwork, spalling, depth 75mm, area 5sq.m.	60 Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.
010+16 to 012+09 Sidewalls Up & Down	Stonework.	
010+17 Crown Up & Down	Brickwork, window, 750mm x 350mm x depth 1.7m. Old standing. 5course brickwork supporting random stones, rotten timbers and natural rock.	
010+17 Sidewall Up	Stonework, window.	
011+05 Crown Up & Down	Brickwork, shelling, depth 25mm, area 4sq.m.	
011+17 Crown Up & Down	Brickwork, window, 400mm x 700mm x depth 800mm. Old standing. 6course brickwork supporting natural rock.	
012+08 Sidewall Down	Stonework, vertical fracture, length 3m, width max. 4mm, old standing.	
012+09 to 016+08 Full Profile Up & Down	Various sections repaired with brickwork. Some sections of natural rock faces.	61
012+10 Sidewall Down	Brickwork, vertical fracture, length 3m, width 3mm, old standing.	
012+11 to 013+02 Sidewalls Up & Down	Brickwork, numerous vertical fractures, height 3m, max. width 3mm. Some pointed pre-2015, intact.	

Location	Defect	Action
012+14 Refuge Up	Brickwork, spalling to rear wall, depth 25mm, area 1sq.m.	
013+03 Refuge Down	Brickwork, spalling to base of rear wall, depth 50mm, area 1sq.m.	
013+03 Crown & Haunch Down	Brickwork, spalling, depth 75-100mm, area 2sq.m.	<b>62</b> Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.
013+11 Refuge Up	Brickwork, shelling to rear wall, depth 25mm, area 1sq.m.	
013+11 Crown Up & Down	Brickwork, window, 750mm x 450mm x depth 600mm. Old standing. 5course brickwork supporting old timbers.	
013+16 Sidewall Down	Brickwork, hollow, area 6sq.m.	
013+19 to 014+05 Crown & Haunches Up & Down	Brickwork, spalling, depth 25mm, area 60sq.m., medium.	
013+21 Low Haunch Down	Stonework, window.	
014+09 Crown & Haunches up & Down	Brickwork, open construction joint, width 180mm, length 8m, depth 600mm.	
015+00 Sidewall Up	Brickwork, infill hollow, area 15sq.m.	
015+18 Sidewall Down	Stonework, open construction joint, width 100mm, height 2.5m, depth 500mm.	
016+07 Sidewall Up	Stonework, open construction joint, width 100mm, height 2m, depth 500mm.	
016+08 Crown & Haunch Up & Down	Brickwork, open construction joint, length 8m, width 100mm, depth 600mm.	
016+08 to 021+02 Full Profile Up & Down	Brickwork with some 6ft. high sections of stonework sidewalls.	<b>63</b>
017+04 Crown Up & Down	Brickwork, shelling/spalling, depth 50mm, area 8sq.m., medium.	
018+02 Refuge Down	Brickwork, shelling/spalling to rear wall, depth 25mm, area 1sq.m.	



Location	Defect	Action
018+15 Crown Up & Down	Brickwork, running water / wet, area 80sq.m., medium, holes to crown. Hidden shaft plate to down sidewall.	
018+21 Cess Down	Open catch-pit.	64 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
019+01 Cess Up	Open catch-pit.	65 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
019+10 to 020+00 Sidewalls Up & Down	Stonework.	
019+12 to 021+02 Crown & Haunch Up & Down	Change in profile. Step in arch at ch.019+12 where bore reduces by 2.5courses brickwork on edge at apex from this point towards the NE.	66
019+12 Refuge Down	Brickwork, shelling/spalling to rear wall, depth 50mm, area 2sq.m.	
019+13 Cess Up	Open catch-pit.	67 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
020+14 Cess Up	Open catch-pit.	68 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
021+02 Crown & Haunch Up & Down	Brickwork, open construction joint, width 100mm, length 12m, depth 500mm.	
021+02 to 025+00 Sidewalls & Haunch Down	Change in profile. Lining steps out at ch.021+02 by max. 2courses brickwork at base of sidewall from this point towards the NE.	69
021+02 to 025+00 Full Profile Up & Down	Principally stonework sidewalls up to mid haunch level and brickwork arch with sections repaired in brickwork and natural rock sections.	
021+15 Cess Up	Open catch-pit.	70 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
021+21 Sidewall Down	Brickwork, cavity to lining, depth 600mm, length 2m, width 150mm.	
021+21 to 022+01 Sidewall Up	Natural rock to base, spalled and undermined, max. depth 300mm.	
022+11 Sidewall Up	Natural rock, spalled, depth 200mm, area 7sq.m.	
022+16 Sidewall Up	Brickwork, cavity to lining either side of rock, depth 700mm, length 2.5m, width 200mm.	

Location	Defect		Action
022+16 Sidewall Down	Natural rock.		
022+16 Cess Up	Open catch-pit.	<b>71</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
023+03 Sidewall Down	As-built, incomplete tie-in between stone sidewall and brick refuge, void, height 2m, depth 1/2m, width 4".		
023+04 Refuge Down	Brickwork, Cracking to both quoins and arch, length 1m, width 1mm and hollow area 1sq.m.		Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
024+00 Refuge Down	NE quoin, brickwork, external vertical fracture, height 750mm, width 1mm, damp.		
023+14 Cess Up	Open catch-pit.	<b>72</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
024+00 to 026+00 Sidewalls Up & Down	Stonework.		
024+16 Cess Up	Open catch-pit.	<b>73</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
025+00 to 026+05 Full Profile Up & Down	New corrugated galvanised steel tube fitted to support lining under a possible hidden shaft. Built sometime during the period Jul.2013 to Aug.2014.	<b>74, 75 &amp; 76</b>	
026+05 Full Profile Up & Down	Arch changes to a horseshoe shape.		
026+05 to 043+09 Full Profile Up & Down	Principally stonework sidewalls up to mid haunch level and brickwork arch with sections repaired in brickwork and natural rock sections.		
026+05 to 029+09 Full Profile Up & Down	Brickwork, damp/wet, soot, deposits, stalactites, area 1000sq.m.		
026+06 Refuge Down	Fall hazard due to ramp sloped up to invert of new tube.	<b>77</b>	Recommend ground level of refuge be graded to solum ramp, Priority 1; work to be completed by 24/08/2019.
026+10 Sidewall Down	Brickwork, perished mortar, wet, depth 25mm, area 6sq.m., soot.		
026+11 Full Profile Up & Down	Arch steps in 100mm, bore narrows towards NE, open construction joint.	<b>78</b>	
026+15 Cess Up	Open catch-pit (see photo 78).	<b>78</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.



Location	Defect		Action
026+15 Mid Haunch Up	Brickwork, open construction joint, bricks missing.		
027+02 Full Profile Up & Down	Arch steps out 100mm, bore increases towards NE, open construction joint.	<b>79</b>	
027+16 Cess Up	Open catch-pit.	<b>80</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
028+21 Cess Up	Open catch-pit.	<b>81</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
029+09 Crown & Haunch Up & Down	Arch steps up 2m, bore increases towards NE.	<b>82</b>	
029+09 to 030+15 Crown Up & Down	Brickwork, shelling/spalling, depth 50mm, area 150sq.m., shelling removed during examination.		
029+15 Sidewall Up	Brickwork, open construction joint, length 4m, width 100mm, depth 200mm.		
030+15 Crown & Haunch Up & Down	Arch steps down 2m, bore decreases towards NE.	<b>83</b>	
029+15 Cess Up	Open catch-pit.	<b>84</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
030+12 Refuge Down	Vertical fracture to NE Quoin, length 1m, width 1mm, old standing.		
030+17 Sidewall Up	Old cabin built behind Refuge, old bullhead rail used as lintels for entrance are heavily corroded.	<b>85</b>	Recommend prepare surface & protect lintels, Priority 1; work to be completed by 24/08/2019.
031+12 Refuge Up	Brickwork, rail sleeper lintel supports brick arch, timber section to rear rotten and hanging.	<b>86</b>	Recommend that lintel be replaced, Priority 1; work to be completed by 24/08/2019.
031+14 Cess Up	Open catch-pit.	<b>87</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
032+15 Cess Up	Open catch-pit.	<b>88</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
032+18 Crown Up & Down	Brickwork, shelling/spalling, depth 50-75mm, area 2sq.m., medium.		Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
033+00 Haunch Up	Brickwork, vertical fracture, length 4m, width 1mm, old standing. Missing bricks, depth 100mm, area 0.5sq.m.		Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.

Location	Defect	Action
033+02 High Haunch & Crown Up & Down	Brickwork, open construction joint, length 10m, old standing.	
033+02 Low Haunch Up	Brickwork, hanging bricks removed during the examination, area 1/4sq.m.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
033+04 High Haunch & Crown Up & Down	Brickwork, open construction joint, length 10m, old standing.	
033+09 Crown & Haunch Up & Down	Brickwork, arch steps up 600mm, bore increases towards NE.	89
033+15 Cess Up	Open catch-pit.	90 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
033+20 Crown Down	Brickwork, spalling, depth 50mm, area 1/2sq.m.	
034+00 Sidewall Down	Natural rock, weathered and fragments laid on solum.	
034+05 Sidewall Down	Cavity to top, 500mm x 200mm x depth 450mm, old standing.	
034+06 Sidewall Up	Brickwork, open construction joint, length 3m, width 100mm.	
034+12 Sidewall Down	Cavity to top, 1.5m x 200mm x depth 450mm, old standing.	
034+16 Cess Up	Open catch-pit.	91 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
035+17 Cess Up	Open catch-pit.	92 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
037+11 to 038+02 Full Profile Down	Brickwork, damp/wet, soot, area 80sq.m.	
037+17 to 038+02 Sidewall Down	Brickwork, perished mortar and damp, depth 50mm, area 14sq.m.	
037+18 Cess Up	Open catch-pit.	93 Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
038+05 Crown Up & Down	Brickwork, window, 1ft. x 2ft. x depth 800mm, 5course brickwork supporting stonework and natural rock.	
038+06 Crown Up	Brickwork, damp/wet, soot, area 1sq.m.	



Location	Defect		Action
038+15 Cess Up	Open catch-pit.	<b>94</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
040+00 to 063+00 Full Profile Up & Down	Brickwork/Stonework, damp/wet, soot, deposits, stalactites, area 6000sq.m., medium.		
040+10 Sidewall Down	Brickwork, perished mortar and damp, depth 25mm, area 4sq.m.		
040+14 Sidewall Down	Brickwork, perished mortar and damp, depth 25mm, area 6sq.m., medium.		
041+00 to 41+06 Sidewall Down	Brickwork, perished mortar and wet, depth 25mm, area 20sq.m., medium.		
042+04 to 042+16 Sidewalls Up & Down	Stonework.		
042+21 Cess Up	Open catch-pit.	<b>95</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
041+20 to 042+17 Crown & Haunch Down	Brickwork, wet/damp, area 120sq.m., soot.		
042+07 Sidewall & Haunch Down	Stonework and Brickwork, wet, area 15sq.m.		
043+09 to 063+21 Full Profile Up & Down	Brickwork arch & stonework/brickwork sidewalls.		
043+11 to 044+05 Sidewall Down	Stonework, mortar perished and damp, depth 75mm, area 32sq.m.		
043+17 Cess Up	Open catch-pit.	<b>96</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
044+00 Refuge Up	Brickwork, rear wall, hollow, area 2sq.m. Arch, NE springer, spalling, depth 50mm, area 1/4sq.m.		
044+00 to 046+05 Crown Up & Down	Brickwork, wet/damp, area 80sq.m. Perished mortar, depth 25mm, shelling removed during the examination, sparse.		
044+13 Refuge Down	Brickwork, circumferential fractures inside quoins, width 2mm, length 3m, wet, hollow. Arch, perished mortar, depth 50mm, area 1/2sq.m.		Recommend repair brickwork, Priority 3; work to be completed by 24/08/2021.
045+08 to 045+12 Sidewalls Up & Down	Stonework, mortar perished, depth 50mm, area 16sq.m., medium.		

Location	Defect		Action
045+03 Refuge Up	Brickwork, quoins and arch, multiple cracks, wet, perished mortar, depth 50mm, area 1sq.m.		Recommend repair brickwork, Priority 3; work to be completed by 24/08/2021.
045+15 Cess Up	Open catch-pit.	97	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
045+18 to 046+16 Sidewalls Up & Down	Stonework, mortar perished, depth 25mm, area 6sq.m., medium.		
045+20 Refuge Down	Brickwork, vertical fracture to inside of quoins and around arch, length 2m, width 5mm. Perished mortar, depth 50mm, area 1/2sq.m.		Recommend Brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
046+08 Sidewall Down	Brickwork, cavity at tie-in with stonework, depth 200mm, area 0.5sq.m.		
046+11 Refuge Up	Brickwork, arch, spalling, depth 25mm, area 1/4sq.m., damp.		
046+15 Cess Up	Open catch-pit.	98	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
047+01 Crown Down	Brickwork, spalling, depth 50mm, area 1sq.m., medium.		
047+04 Low Haunch Down	Stonework, window.		
047+11 to 049+00 Sidewall Down	Stonework, perished mortar, depth 25mm, area 80sq.m.		
047+11 to 049+05 Crown & Haunches Up & Down	Brickwork, wet, area 400sq.m.		
047+15 Cess Up	Open catch-pit.	99	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
047+16 to 049+00 Sidewall Up	Stonework, perished mortar, depth 25mm, area 50sq.m., wet with deposits, sparse.		
048+17 Cess Up	Open catch-pit.	100	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
049+02 Cess Down	Open catch-pit.	101	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
052+17 Cess Up	Open catch-pit.	102	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.



Location	Defect		Action
050+16 Cess Up	Open catch-pit.	<b>103</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
051+00 Crown Up & Down	Brickwork, spalling, depth 25mm, area 0.5sq.m.		
051+17 Low Haunch Down	Brickwork, spalling, depth 50mm, area 1/2sq.m.		
052+09 Crown Up & Down	Brickwork, spalling, depth 25mm, area 1sq.m.		
052+20 to 053+10 Sidewall Down	Brickwork, perished mortar and damp, depth 25mm, area 8sq.m., medium.		
053+14 Sidewall Up	Brickwork, perished mortar and damp, depth 25mm, area 2sq.m., medium.		
053+14 Mid Haunch Up	Brickwork, spalling, depth 25mm, area 1/2sq.m., damp, soot.		
054+04 Sidewall Up & Down	Stonework.		
054+17 Cess Up	Open catch-pit.	<b>104</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
055+13 Crown Up & Down	Brickwork, spalling, depth 50mm, area 20sq.m., light, damp.		Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
055+16 Cess Up	Open catch-pit.	<b>105</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
056+09 Crown Up & Down	Brickwork, spalling, depth 50mm, area 2sq.m., damp.		
056+18 Cess Up	Open catch-pit and substantially blocked.	<b>106</b>	Recommend catch-pit cover be replaced and drainage cleared, Priority 1; work to be completed by 24/08/2019.
057+18 Sidewall Down	Brickwork, cavity, 2.3m x 300mm x depth 1m, old standing.		
058+06 Sidewall Down	Brickwork, cavity, 2m x 300mm x depth 1.2m, old standing.		
058+07 Refuge Up	Small platelayers' cabin to rear, this has been cleared and painted white, with signs of recent trespass. Small shrine to rear and white cross painted to opposite tunnel wall with additional shrine.		

Location	Defect		Action
058+07 Solum Up	Rubbish and litter thrown/accumulated on solum.	<b>107</b>	Recommend rubbish be removed, Priority 1; work to be completed by 24/08/2019.
058+18 Cess Up	Open catch-pit and partially blocked, water flowing towards NE.	<b>108</b>	Recommend catch-pit cover be replaced and drainage cleared, Priority 1; work to be completed by 24/08/2019.
058+20 Sidewall Up	Stonework, perished mortar and damp, depth 50mm, area 4sq.m., medium.		
059+03 Sidewall Up	Brickwork, cavity, 2.2m x 200mm x depth 600mm, old standing.		
059+17 Cess Up	Open catch-pit.	<b>109</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
060+03 Sidewall Down	Stonework/Brickwork, cavity at construction joint, height 2m, width 200mm, depth 500mm.		
060+16 Cess Up	Open catch-pit.	<b>110</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
061+15 Cess Up	Open catch-pit.	<b>111</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
061+17 Sidewall Down	Stonework, wet with perished mortar, depth 50mm, area 2sq.m., medium.		
062+13 Sidewall Up	Brickwork, open construction joint, length 3m, width 400mm, depth 600mm, old standing.		Area has been repaired/ pointed recently pre-2015. Intact.
062+16 Cess Up	Open catch-pit.	<b>112</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
063+01 Refuge Up	Brickwork, arch return, circumferential fracture, width 4mm, length 1m, damp.		
063+21 to 065+13 Full Profile Up & Down	Brickwork arch & stonework sidewalls.		
064+17 Cess Up	Open catch-pit.	<b>113</b>	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
065+11 Refuge Up	Brickwork, arch return, circumferential fracture, width 2mm, length 1m, damp.		
065+13 to 066+21 Full Profile Up & Down	Stonework up sidewall, brickwork arch & stonework bearing on natural rock sidewalls.		



Location	Defect		Action
065+13 Cess Up	Open catch-pit.	114	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
066+13 Cess Up	Open catch-pit.	115	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
066+21 to 076+11 Full Profile Up & Down	Stonework sidewalls up to mid haunch or low haunch levels (fluctuating), brickwork arch.		
067+00 Sidewall Down	Tablet marker ripped off wall, remains of plate not evident on nearby solum.	116	Recommend replace tablet marker, Priority 1; work to be completed by 24/08/2019.
067+12 Cess Up	Open catch-pit.	117	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
067+21 Refuge Down	Brickwork, rear wall, shelling/spalling, depth 50mm, area 1sq.m.		
068+17 Cess Up	Open catch-pit.	118	Recommend catch-pit cover be replaced, Priority 1; work to be completed by 24/08/2019.
068+18 Refuge Up	Brickwork, arch return, circumferential fracture, width 3mm, length 1m, damp.		
069+17 Haunch Up	Brickwork, spalling, depth 50mm , area 4sq.m.		
069+18 Cess Up	Open catch-pit.	119	New cover fitted sometime during the period Sep.2016 to Feb.2018.
070+00 to 070+11 Haunch Up	Brickwork, spalling, depth 50mm , area 11sq.m.		
070+18 Cess Up	Open catch-pit.		New cover fitted sometime during the period Sep.2016 to Feb.2018.
071+14 Cess Up	Open catch-pit, blocked and flooded.		New cover fitted and presumably drainage unblocked sometime during the period Sep.2016 to Feb.2018.
072+15 Cess Up	Open catch-pit.	120	New cover fitted sometime during the period Sep.2016 to Feb.2018. Plus new opening in 4ft. has also had cover fitted at same time creating a trip hazard. Recommend revisit to complete the work, Priority 1; work to be completed by 24/08/2019.
073+10 Sidewall & Haunch Up	Stonework/brickwork, perished mortar, depth 50mm, area 10sq.m., medium.		

Location	Defect	Action
073+16 to 073+20 Full Profile Up & Down	Additional concrete arch to lining, built off additional brick buttresses to haunches and sidewalls, running water to arch, Hidden Shaft Plate fitted to down sidewall.	5No. new drainage pans with downpipes fitted plus track drainage repairs carried out sometime during the period Sep.2016 to Feb.2018.
075+00 to 076+00 Crown & Haunch Down	Brickwork, profile undulates.	
075+00 to 076+00 Crown Up & Down	Brickwork, spalling, depth 50mm, area 1/2sq.m.	
076+10 Refuge Up	Brickwork, rear wall, shelling/spalling, depth 50mm, area 0.5sq.m.	
076+11 to 077+06 Full Profile Up & Down	Stonework sidewalls, brickwork arch.	
076+12 Crown Up & Down	Brickwork, shelling/spalling, depth 75mm, area 3sq.m., shelling removed during the examination.	Recommend brickwork be replaced, Priority 2; work to be completed by 24/08/2020.
076+15 to 078+05 Crown Up & Down	Brickwork, shelling/spalling, depth 25mm, area 10sq.m., sparse, shelling removed during the examination.	
076+17 Crown Up & Down	Brickwork, shelling/spalling, depth 50mm, area 1sq.m., shelling removed during the examination.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
077+06 to 078+20 Full Profile Up & Down	Stonework lining, brickwork crown.	
077+09 Crown Up & Down	Brickwork, shelling/spalling, depth 50mm, area 3sq.m., shelling removed during the examination.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
077+18 Refuge Up	Brickwork, rear wall, shelling/spalling, depth 50mm, area 0.5sq.m.	
078+20 to 085+07 Full Profile Up & Down	Stonework sidewalls, brickwork arch.	
078+21 High Haunch Up	Brickwork, spalling, depth 25mm, area 1/2sq.m., damp.	
079+00 Cess Up	Open catch-pit.	New cover fitted sometime during the period Sep.2016 to Feb.2018.
079+06 Crown Up & Down	Brickwork, shelling/spalling, depth 50mm, area 1sq.m., sparse, shelling removed during the examination.	



Location	Defect	Action
079+12 Crown Up & Down	Brickwork, spalling, depth 50mm, area 2sq.m., light.	
080+02 Cess Up	Open catch-pit.	<b>121</b> New cover fitted sometime during the period Sep.2016 to Feb.2018 but repair has created a consequential hazard as cess span of cover is unsupported. Recommend revisit to complete the work, Priority 1; work to be completed by 24/08/2019.
082+05 Refuge Down	Brickwork, base of rear wall, shelling/spalling, depth 50mm, area 1sq.m.	
082+07 Refuge Up	Brickwork arch & stonework quoins, NE arch & quoin, circumferential fracture, width 3mm, length 1m.	
080+07 to 080+19 Crown Up & Down	Brickwork, spalling, depth 75mm, area 60sq.m., light.	<b>122</b> Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.
082+20 Cess Down	Open catch-pit.	<b>123</b> New cover fitted sometime during the period Sep.2016 to Feb.2018 but catch-pit rings & debris is a trip hazard. Recommend revisit to complete the work, Priority 1; work to be completed by 24/08/2019.
083+11 Mid Haunch Up	Brickwork/stonework, spalling, depth 75mm, area 1/4sq.m.	
083+14 Refuge Up & Down	Brickwork, rear wall, shelling/spalling, depth 50mm, area 2sq.m.	
084+01 Full Profile Up & Down	Stonework, wet with running water, area 32sq.m., Hidden Shaft Plate to down sidewall.	
084+02 Cess Up & Down	Open catch-pit.	New hopper with downpipe fitted plus track drainage repairs carried out sometime during the period Sep.2016 to Feb.2018.
084+07 High Haunch Up	Brickwork, spalling, depth 50mm, area 1sq.m., wet.	
084+12 Crown Up & Down	Brickwork, window, 600mm x 380mm x depth 600mm, old standing. Brickwork supporting natural rock.	
084+17 to 085+11 Crown Up & Down	Brickwork, spalling and hollow, depth 100mm, area 34sq.m., sparse.	<b>124</b> Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.

Location	Defect		Action
084+19 Refuge Up	Brickwork, arch, hollow with 5No. half bricks missing and some loose bricks, perished mortar, depth 75mm, area 1sq.m.	<b>125</b>	Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.
085+07 to 086+11 Full Profile Up & Down	Stonework sidewalls, brickwork above mid haunch level.		
085+21 High Haunch Up	Brickwork, missing bricks, area 0.5sq.m.		
086+11 to 089+06 Full Profile Up & Down	Stonework sidewalls, brickwork arch.		
087+05 Crown Down	Brickwork, spalling, depth 50mm, area 6sq.m., light.		Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
087+16 Crown & Haunch Up & Down	Brickwork, open construction joint.		
089+01 Refuge Up	Brickwork, arch, circumferential fractures, length 2m, width 3mm, friable/weak.		
089+06 to 092+09 Full Profile Up & Down	Brickwork arch, stonework/brickwork sidewalls.		
089+06 Refuge Down	Natural rock to rear has collapsed and run through to cess.	<b>126</b>	Recommend debris from rear of refuge be removed and rock behind and above be stabilised, Priority 1; work to be completed by 24/08/2019.
090+10 Mid Haunch Up	Brickwork, spalling, depth 25mm, area 1sq.m.		
090+16 Sidewall Up	Stonework, open construction joint, cavity, depth 1/2m, height 2m.		
091+16 Sidewall Down	Brickwork, perished mortar, depth 75mm, area 10sq.m., medium, damp.		
092+09 to 094+01 Full Profile Up & Down	Brickwork arch, natural rock sidewalls with stonework/brickwork bonny-facing.		Recommend mechanical pointing, Priority 3; work to be completed by 24/08/2021.
092+11 Cess Down	Open catch-pit.		
093+08 High Haunch Up	Brickwork, shelling/spalling, depth 25mm, area 1sq.m., shelling removed during the examination.		
093+08 to 095+08 Sidewall Down	Brickwork, hollow, area 80sq.m.		

New cover fitted sometime during the period Sep.2016 to Feb.2018.



Location	Defect	Action
094+01 to 094+19 Full Profile Up & Down	Brickwork.	
095+12 to 096+12 Full Profile Up & Down	Change in profile. Arch steps in at ch.095+12 by 2courses brickwork in the haunches from this point towards the NE. Straight sidewalls and a semi-circular arch.	
094+19 to 095+12 Full Profile Up & Down	Brickwork lining, stonework low haunch down bearing on a band of natural rock.	
095+12 to 096+12 Full Profile Up & Down	Stonework sidewalls, brickwork arch. Straight vertical sidewalls and a semi-circular arch.	
095+14 Haunch & Sidewall Down	Ochre and wet, area 4sq.m.	
096+00 Sidewalls Up & Down	Brickwork, buttresses collapsing with rotten timber bearers on top and numerous loose bricks, area 10sq.m. This appears to be supporting nothing. Hidden Shaft Plate to down sidewall.	<b>127</b> Recommend brickwork be secured to tunnel lining or removed, Priority 1; work to be completed by 24/08/2019.
096+01 Haunches Up & Down	Brickwork, wet with running water and ochre, area 10sq.m.	
096+05 Cess Down	Large open catch-pit.	New cover fitted sometime during the period Sep.2016 to Feb.2018.
096+12 to 101+09 Full Profile Up & Down	Change in profile. Arch steps out at ch.096+12 by 2courses brickwork in the haunches from this point towards the NE.	
096+12 to 101+09 Full Profile Up & Down	Brickwork. Straight inclined sidewalls and a semi-elliptical arch.	
097+04 Refuge Up	Brickwork, rear wall, shelling/spalling, depth 25mm, area 1sq.m.	
097+11 Refuge Down	Brickwork, rear wall, shelling/spalling, depth 25mm, area 1sq.m.	
098+06 Refuge Up	Brickwork, arch return, numerous fractures, max. width 2mm, face shattered. Vertical fracture in sidewall above, width 1mm, length 1m, old standing.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
098+21 Crown Down	Brickwork, spalling, depth 50mm, area 1/2sq.m., damp.	

Location	Defect	Action
101+09 to 102+13 Full Profile Up & Down	Change in profile. Arch steps down at ch.101+09 by 9" at the apex (to zero at the top of sidewalls) from this point towards the NE.	
101+09 to 102+13 Full Profile Up & Down	Brickwork.	
101+09 Crown Up & Down	Brickwork, cavity at open construction joint, length 6m, width 100mm, depth 700mm. Missing brickwork in apex, area 1sq.m., damp.	
101+10 Crown Down	Timbers embedded in lining, rotting and becoming soft, wet/damp.	
101+10 Low Haunch Up	Brickwork, spalling, depth 25mm, area 1/2sq.m.	
101+10 to 101+15 Sidewalls Up & Down	Brickwork, hollow, area 20sq.m.	
101+11 to 102+00 Crown & Haunch Up & Down	Brickwork, spalling, depth 25mm, area 60sq.m.	
101+17 Refuge Down	Brickwork, rear wall, shelling/spalling, depth 25mm, area 1sq.m.	
101+18 Sidewall Up	Brickwork, spalling, depth 50mm, area 4sq.m., light.	
101+21 Sidewall Down	Brickwork, spalling, depth 100mm, area 4sq.m.	<b>128</b> Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.
102+01 Sidewall Down	Brickwork, spalling to corner of support brickwork, depth 200mm, area 1sq.m. with a 5m long diagonal fracture, width 3mm.	<b>129 &amp; 130</b> Recommend brickwork be replaced, Priority 1; work to be completed by 24/08/2019.
102+05 to 102+17 Sidewall Up	Brickwork, shelling/spalling and hollow, depth 50mm, area 35sq.m.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
102+08 Crown Up & Down	Brickwork, window, 750mm x 380mm x depth 600mm, old standing. 4course brickwork supporting a brick soffit.	
102+11 Crown & Haunch Up & Down	Brickwork, construction joint cavity, steps up 200mm.	



Location	Defect	Action
102+13 to 105+12 Full Profile Up & Down	Change in profile. Arch steps up at ch.102+13 by 9" at the apex (to zero at the top of sidewalls) from this point towards the NE.	
102+13 to 105+12 Full Profile Up & Down	Brickwork arch bearing on natural rock sidewalls with occasional stonework bonny-facing and brickwork buttresses.	
102+18 Crown Down	Brickwork, spalling, depth 50mm, area 1sq.m.	
102+18 Haunch Up	Brickwork, spalling, depth 25mm, area 1sq.m.	
103+04 to 104+00 Sidewall Up	Brickwork, base, shelling/spalling and hollow, depth 50mm, area 20sq.m., light.	
104+10 to 105+00 Sidewall Up & Down	Natural rock sidewall.	
104+14 High Haunch Down	Brickwork, spalling, depth 50mm, area 1sq.m., medium, damp.	
105+02 Cess Down	Open catch-pit.	New cover fitted sometime during the period Sep.2016 to Feb.2018.
105+11 Haunch Down	Brickwork, spalling, depth 25mm, area 2sq.m., damp.	
105+12 to 106+01 Full Profile Up & Down	Change in profile. Bore narrows at ch.105+12 by 2ft. at the base of sidewalls (zero at the apex) from this point towards the NE.	
105+12 to 106+01 Full Profile Up & Down	Brickwork.	
106+01 to 107+05 Full Profile Up & Down	Change in profile. Arch steps down at ch.106+01 by 9" at the apex (to zero at the top of sidewalls) from this point towards the NE.	
106+01 to 107+05 Full Profile Up & Down	Stonework sidewalls, brickwork arch.	
106+16 Crown & Haunch Up & Down	Brickwork, open construction joint.	
106+17 Sidewall Down	Wooden lintel to top, rotting.	
107+00 to 113+20 Cess Up & Down	New chambers and covers built sometime during the period Sep.2016 to Feb.2018.	

Location	Defect	Action
107+05 to 113+20 Full Profile Up & Down	Change in profile. Open construction joint. Arch steps down at ch.107+05 by 1ft. at the apex from this point towards the NE Portal.	
107+05 to 113+20 Full Profile Up & Down	A mix of stonework & brickwork as repair interventions carried out to sections over the decades.	
107+16 Sidewall Down	Hidden Shaft Plate.	
107+17 to 108+03 Full Profile Up & Down	Brickwork, wet and ochre deposits, area 40sq.m., medium.	
110+02 to 110+11 Crown & Haunch Up & Down	Brickwork/stonework, spalling, depth 50mm, area 50sq.m., light, damp.	
110+09 to 110+13 Full Profile Up & Down	Stonework/brickwork, wet with ochre and calcite, area 40sq.m.	
111+00 to 113+20 Crown & Haunch Up & Down	Irregular profile.	
111+19 to 112+13 Crown & Haunch Up & Down	Brickwork/stonework, spalling, depth 75mm, area 90sq.m., damp/wet, deposits.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
112+13 to 113+21 Crown & Haunch Up & Down	Brickwork/stonework, spalling and wet, max. depth 75mm, area 165sq.m., medium, damp.	
112+21 Refuge Down	Brickwork, Arch and SW quoin, spalling, depth 50mm area 1sq.m., medium, wet.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
113+06 to 113+20 Sidewalls Up & Down	Stonework, open joints, depth 150mm, area 56sq.m., sparse.	
113+10 Low Haunch Down	Brickwork, spalling and wet, depth 75mm, area 4sq.m., light.	Recommend brickwork be replaced, Priority 3; work to be completed by 24/08/2021.
113+14 Crown & Haunch Up & Down	Brickwork, circumferential fracture, length 6m, width 10mm, old standing.	Area has been repaired/ pointed recently pre-2015. Intact.
113+16 to 113+18 High Haunch Up	3No. new hoppers with downpipes fitted sometime during the period Sep.2016 to Feb.2018. No water exiting bottom of downpipes during this examination.	

Location	Defect	Action
113+16 to 113+20 Crown & Haunch Up & Down	Brickwork, circumferential step fractures, less than 1No. brick course deep, area 20sq.m., medium.	Fractures repaired sometime during the period Sep.2016 to Feb.2018. Intact.
113+20 Portal Up & Down	Northeast Portal, oiling hinges.	<b>131</b>
113+20 Portal Up & Down	Northeast Portal, oiling padlock.	<b>132</b>
113+20 Portal Up	Northeast Portal, Stonework, buttress return, vertical fracture, length 1m, width 5mm, old standing.	
113+20 Portal Down	Northeast Portal, Stonework, parapet stringcourse, tree stump growing, girth 500mm.	<b>133</b> Recommend tree stump and roots be removed, Priority 1; work to be completed by 24/08/2019.
113+20 Portal Up	Northeast Portal, Stonework, end of parapet, tree stump growing, girth 1.5m.	<b>134</b> Recommend tree stump and roots be removed, Priority 1; work to be completed by 24/08/2019. <b>&amp;</b> <b>135</b>
113+20 Portal Down	Northeast Portal, Stonework, end of parapet, c.3No. blocks missing.	<b>136</b> Recommend stonework be replaced, Priority 1; work to be completed by 24/08/2019.
113+20 Portal Up	Northeast Portal, Stonework, end of parapet, c.5No. blocks missing.	<b>137</b> Recommend stonework be replaced, Priority 1; work to be completed by 24/08/2019.
113+20 Portal Down	Northeast Portal, Stonework, parapet, tree stump behind coping.	<b>138</b> Recommend tree stump and roots be removed, Priority 1; work to be completed by 24/08/2019.
113+20 Portal Up & Down	Northeast Portal, Stonework, parapet coping pushing forward c.6". Tree stumps behind coping. Build up of rotting vegetation detritus adding load to the rear of the parapet and hiding the buried drainage channel (if built).	<b>139,</b> Recommend remove load (and unblock drainage channel if found) and rest upper stonework, Priority 1; work to be completed by 24/08/2019. <b>140</b> <b>&amp;</b> <b>141</b>
113+20 Portal Up & Down	Northeast Portal, Stonework, loose blocks and open joints, depth 3" to 12" where blocks not tight or pointed, area 40sq.m., light.	<b>142</b> Recommend re-setting blocks and hand pointing, Priority 1; work to be completed by 24/08/2019. <b>&amp;</b> <b>143</b>
113+20 Portal Down	Northeast Portal, Brickwork, 6course ring face, 10 o'clock, weathered, area 1sq.m.	Recommend cosmetic repair - cut out & replace, Priority 3; work to be completed by 24/08/2021.
113+20 Portal Up & Down	Northeast Portal, Stonework, Vegetation. BEFORE WORKS.	<b>144,</b> Vegetation removed during the examination. <b>145</b> <b>&amp;</b> <b>146</b>
113+20 Portal Up & Down	Northeast Portal, Stonework, Vegetation. BEFORE WORKS - Ecological examination.	<b>147</b> Vegetation removed during the examination.



Location	Defect		Action
113+20 Portal Up & Down	Northeast Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.	<b>148, 149 &amp; 150</b>	Vegetation removed during the examination.
113+20 Portal Up & Down	Northeast Portal, Stonework, Vegetation. AFTER WORKS - only moss & lichens remain on stonework.	<b>151, 152 &amp; 153</b>	Vegetation removed during the examination.
114+05 Cess Down	Catch-pit blocked and water surcharging onto solum. Stream flows to NE along upside cess.	<b>154 &amp; 155</b>	Recommend unblock track drainage, Priority 1; work to be completed by 24/08/2019.

## NOTES

1. Access route to structure: Via solum from either end of tunnel.
2. Site issues and impediments to carrying out repairs, DE's or other works: The tunnel is a confined space. Designated bat tunnel. Portal security is regularly vandalised by trespassers. The construction shafts are hidden throughout the length of the tunnel.

Tunnel Engineer:  
STE2 STE6 BEng(Hons) MBA CEng MICE MIAM

## 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 25m<sup>2</sup>, medium.

In this example the spalling extends over a total area of 25m<sup>2</sup> 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.



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**SOUTH/WEST PORTAL (SO 027 027).**



**NORTH/EAST PORTAL (SO 044 041).**

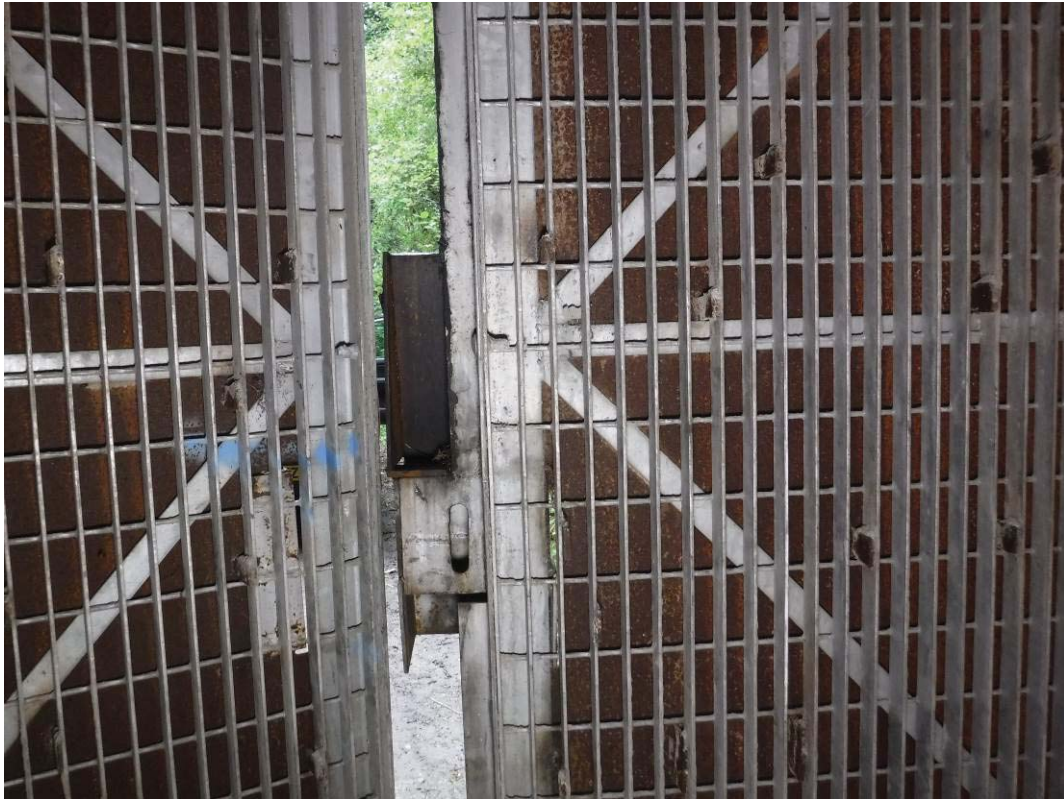


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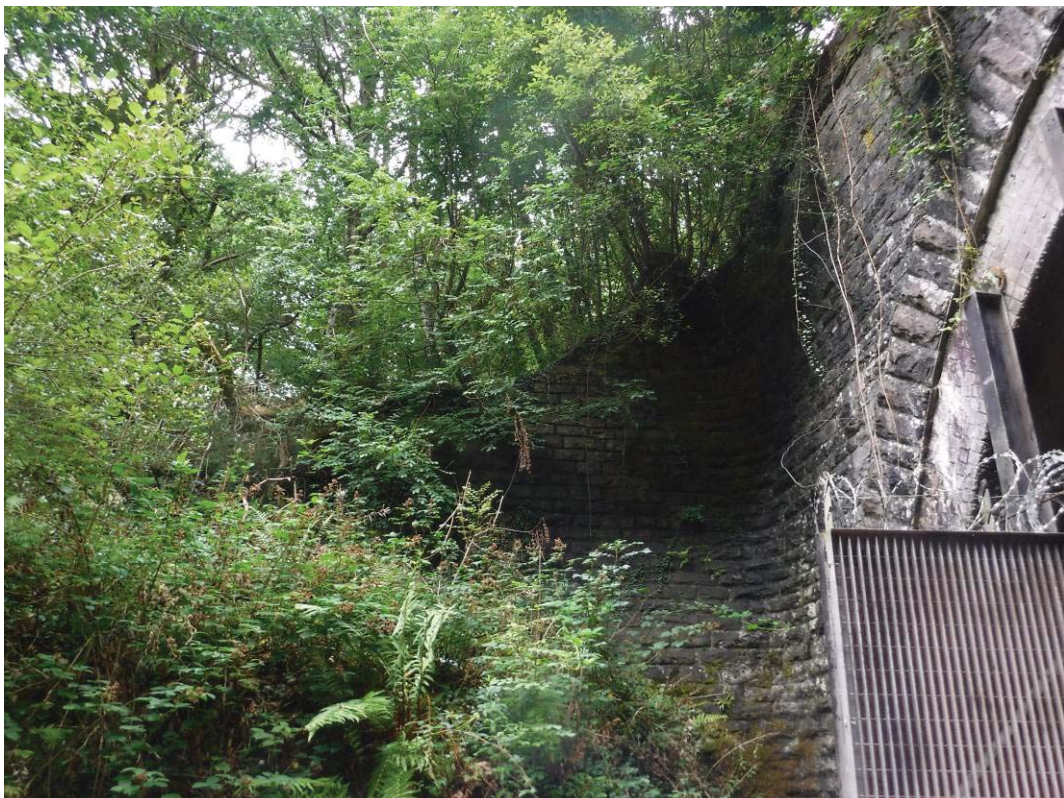
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**Photo No.1:** Southwest Portal, New steel cladding fixed to gate and fence with anti-vandal paint. No access to padlock from inside tunnel.



**Photo No.2:** Southwest Portal, Stonework, Vegetation. BEFORE WORKS.



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**Photo No.3:** Southwest Portal, Stonework, Vegetation. BEFORE WORKS.



**Photo No.4:** Southwest Portal, Stonework, Vegetation. BEFORE WORKS.



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**Photo No.5:** Southwest Portal, Stonework, Vegetation. BEFORE WORKS - Ecological examination.



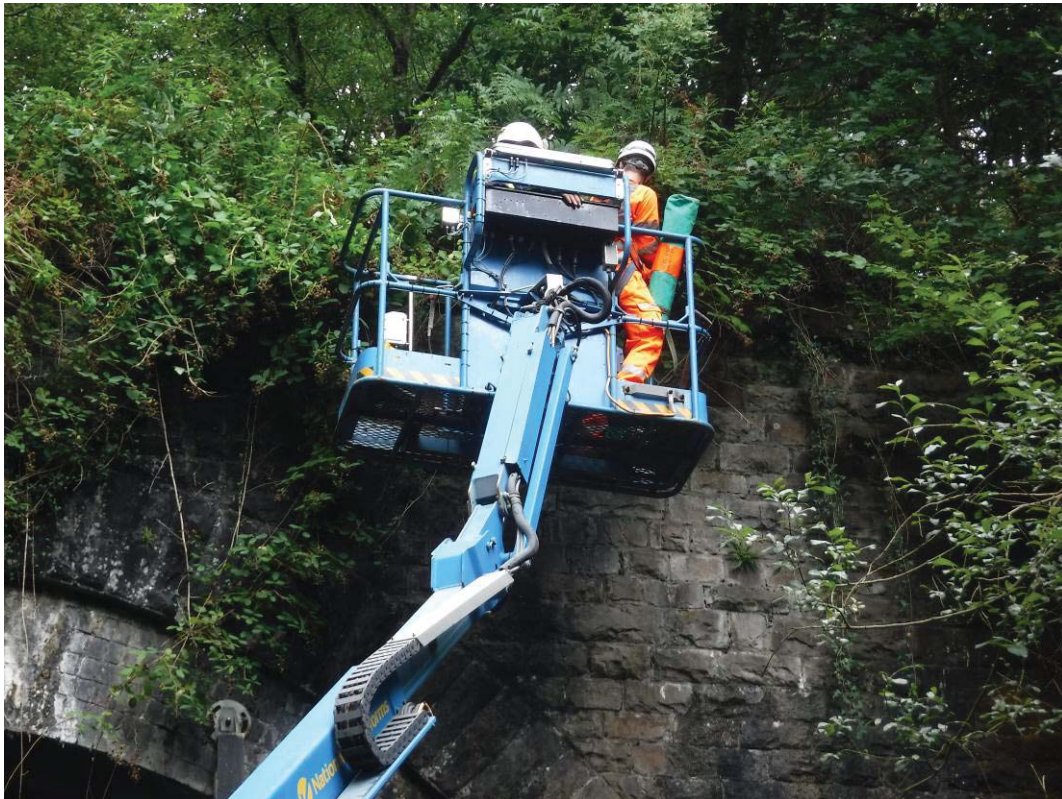
**Photo No.6:** Southwest Portal, Stonework, Vegetation. BEFORE WORKS - Ecological examination.



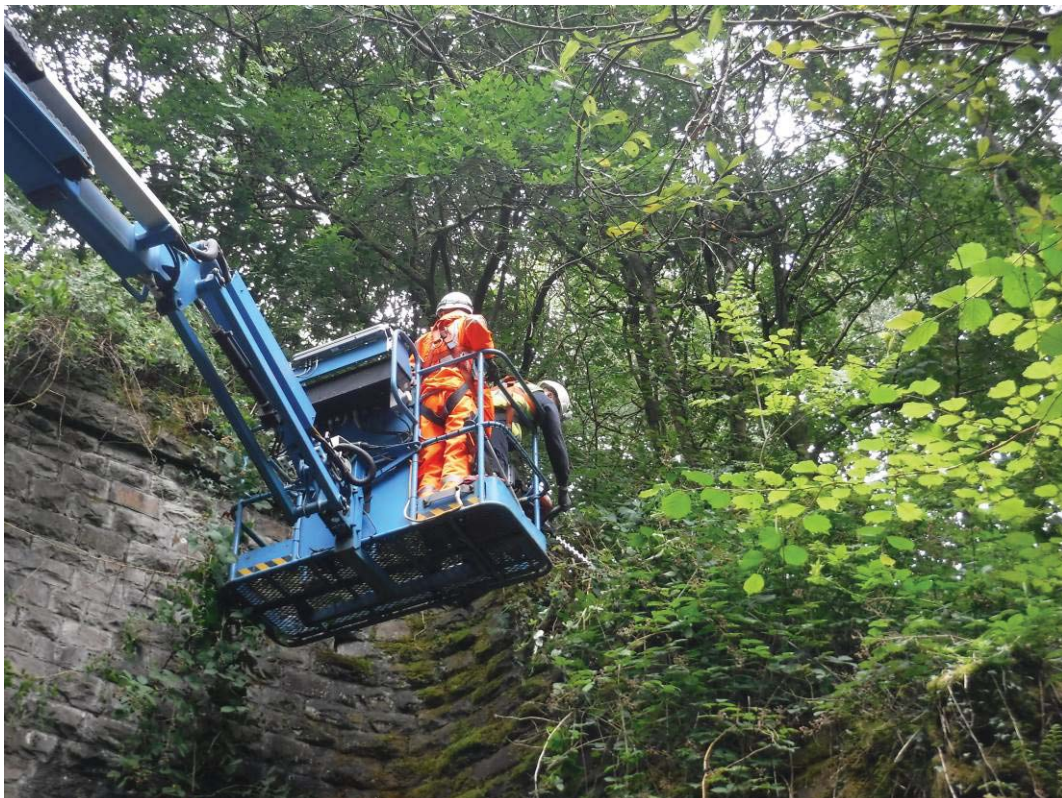
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**Photo No.7:** Southwest Portal, Stonework, Vegetation. BEFORE WORKS - Ecological examination.



**Photo No.8:** Southwest Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.



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**Photo No.9:** Southwest Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.



**Photo No.10:** Southwest Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.



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**Photo No.11:** Southwest Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.



**Photo No.12:** Southwest Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.



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**Photo No.13:** Southwest Portal, Stonework, Vegetation. DURING WORKS - Removing vegetation.



**Photo No.14:** Southwest Portal, Stonework, Vegetation. AFTER WORKS - only moss & lichens remain on stonework.



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**Photo No.15:** Southwest Portal, Stonework, Vegetation. AFTER WORKS - only moss & lichens remain on stonework.



**Photo No.16:** Southwest Portal, Stonework, Vegetation. AFTER WORKS - only moss & lichens remain on stonework.



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**Photo No.17:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 100m.



**Photo No.18:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 100m.



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**Photo No.19:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 100m.



**Photo No.20:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 100m.



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**Photo No.21:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 100m.



**Photo No.22:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 75mm, area 10sq.m.



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**Photo No.23:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 75mm, area 10sq.m.



**Photo No.24:** Southwest Portal, Wingwall, trees were removed before 2015 leaving saplings, stumps, tree roots and displaced copings. Loose blocks and open joints, depth 75mm, area 10sq.m.



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**Photo No.25:** Southwest Portal, Stonework, 8" high half-round copings are missing at end of spandrel, length 3ft and copings displaced by tree roots.



**Photo No.26:** Southwest Portal, Stonework, 8" high half-round copings are missing above the arch, length 6yds.



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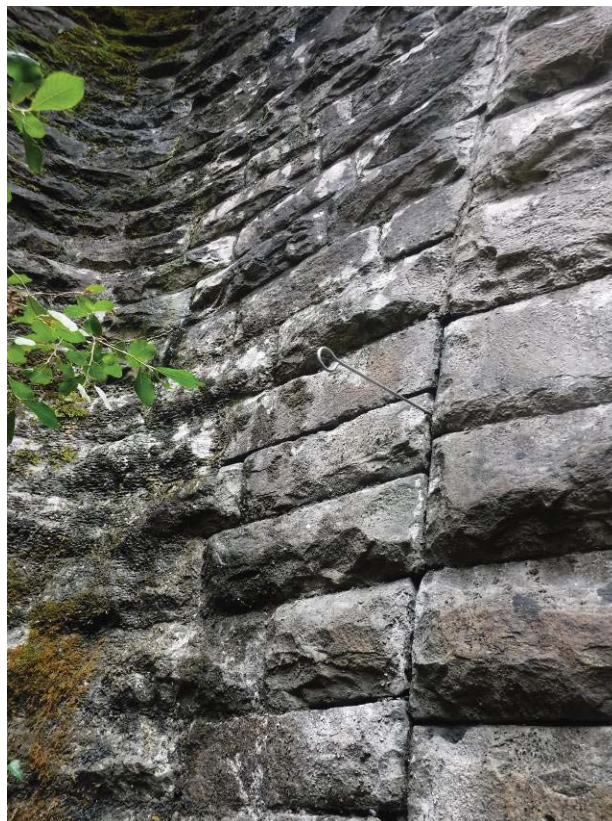
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**Photo No.27:** Southwest Portal, Stonework, 8" high half-round copings are missing at end of spandrel, length 4ft.



**Photo No.28:** Southwest Portal, Stonework, circumferential open joint to rear of voussoirs, length 1m, max. depth 75mm.



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**Photo No.29:** Southwest Portal, Stonework, build up of rotting vegetation detritus adding load to the rear of the spandrel and hiding the buried drainage channel. (if built).



**Photo No.30:** Southwest Portal, Post & wire fence set back approx. 7ft. from top of portal. Top wire missing.



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**Photo No.31:** Southwest Portal, Post & wire fence set back approx. 7ft. from top of portal. Top wire missing.



**Photo No.32:** Southwest Portal, Security, again found vandalised at this examination.



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**Photo No.33:** Southwest Portal, oiling hinges.



**Photo No.34:** Southwest Portal, oiling padlock.



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**Photo No.35:** General views of detailed examination operations.



**Photo No.36:** General views of detailed examination operations.

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**Photo No.37:** General views of detailed examination operations.



**Photo No.38:** General views of detailed examination operations.



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**Photo No.39:** 000+00 to 001+12 Crown & Haunch Up & Down, Arch relined in brickwork (archaic) and then recently strengthened with sprayed concrete.



**Photo No.40:** 000+00 to 001+12 Crown & Haunch Up & Down, Arch relined in brickwork (archaic) and then recently strengthened with sprayed concrete.

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**Photo No.41:** 000+00 to 001+12 Sidewalls Up & Down, Relined in brickwork (archaic) and then strengthened with 3 or 4 course brickwork buttresses, height c.8ft (archaic).



**Photo No.42:** 001+00 to 001+05 Crown & Haunch Up & Down, Railway irons, 3No. old ribs bearing on top of sidewalls still visible under shotcrete, circumferential fractures in shotcrete on bottom flanges, hollow.



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**Photo No.43:** 001+00 to 001+05 Crown & Haunch Up & Down, Railway irons, 3No. old ribs bearing on top of sidewalls still visible under shotcrete, circumferential fractures in shotcrete on bottom flanges, hollow.



**Photo No.44:** 001+12 to 007+09 Full Profile Up & Down, Change in profile. Arch relined by a further 5course brickwork.

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**Photo No.45:** 001+12 to 021+02 Crown & Haunches Up & Down, Brickwork, shelling, loose/hanging, area 2000sq.m., medium (photo taken at ch.11 shows a typical view of condition).



**Photo No.46:** 001+18 to 002+20 Sidewalls Up & Down, Timber baulk framework is rotten with some laid to solum and appears to be offering no support to the lining behind.



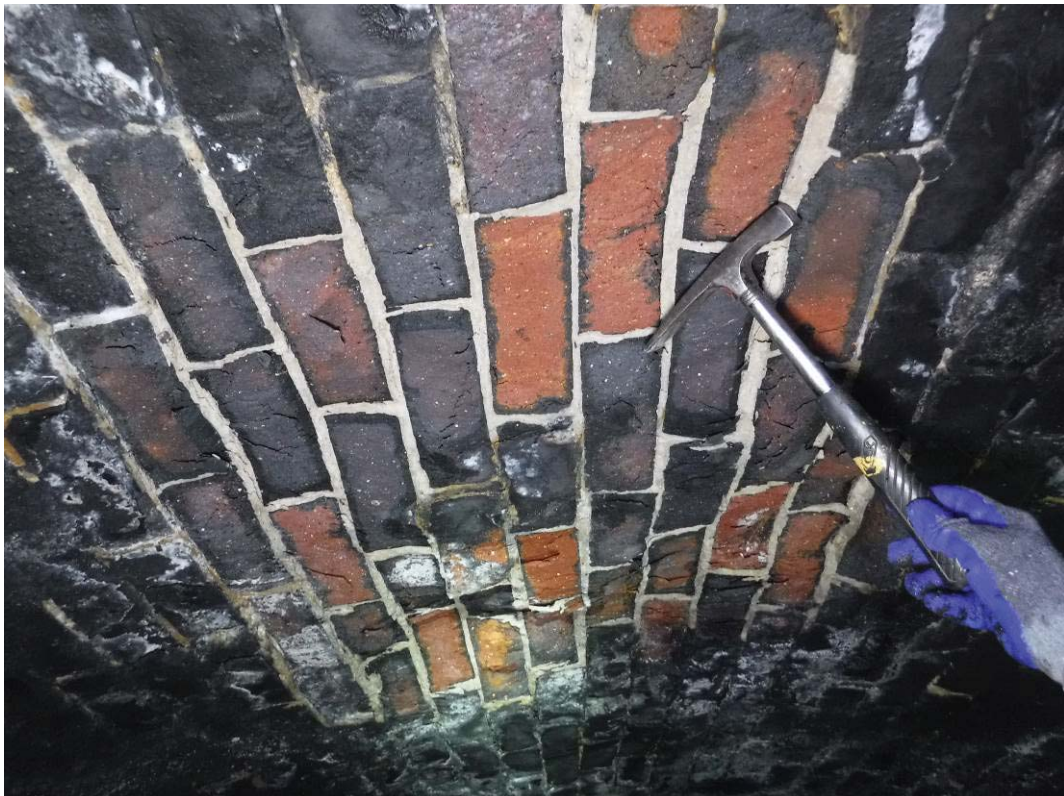
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**Photo No.47:** 003+08 Crown Down, Brickwork, spalling, depth 25mm, area 1sq.m., shelling removed during the examination.



**Photo No.48:** 004+16 Crown Up & Down, Brickwork, spalling, depth 50-75mm, area 1sq.m., medium, shelling removed during the examination.



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**Photo No.49:** 007+09 to 010+04 Full Profile Up & Down, Change in profile. Possibly original lining at opening of line or 1st relining in yellow brickwork (archaic).



**Photo No.50:** 007+09 to 010+04 Full Profile Up & Down, Change in profile. Possibly original lining at opening of line or 1st relining in yellow brickwork (archaic).



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**Photo No.51:** 007+09 to 010+04 Full Profile Up & Down, Change in profile. Possibly original lining at opening of line or 1st relining in yellow brickwork (archaic).



**Photo No.52:** 008+08 Sidewall Up, Old brick works cabin.



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**Photo No.53:** 009+11 to 009+18 Crown & Haunch Down, Brickwork, spalling, depth 50-75mm, area 30sq.m., shelling removed during the examination.



**Photo No.54:** 010+02 Sidewall Up, Old brick works cabin.



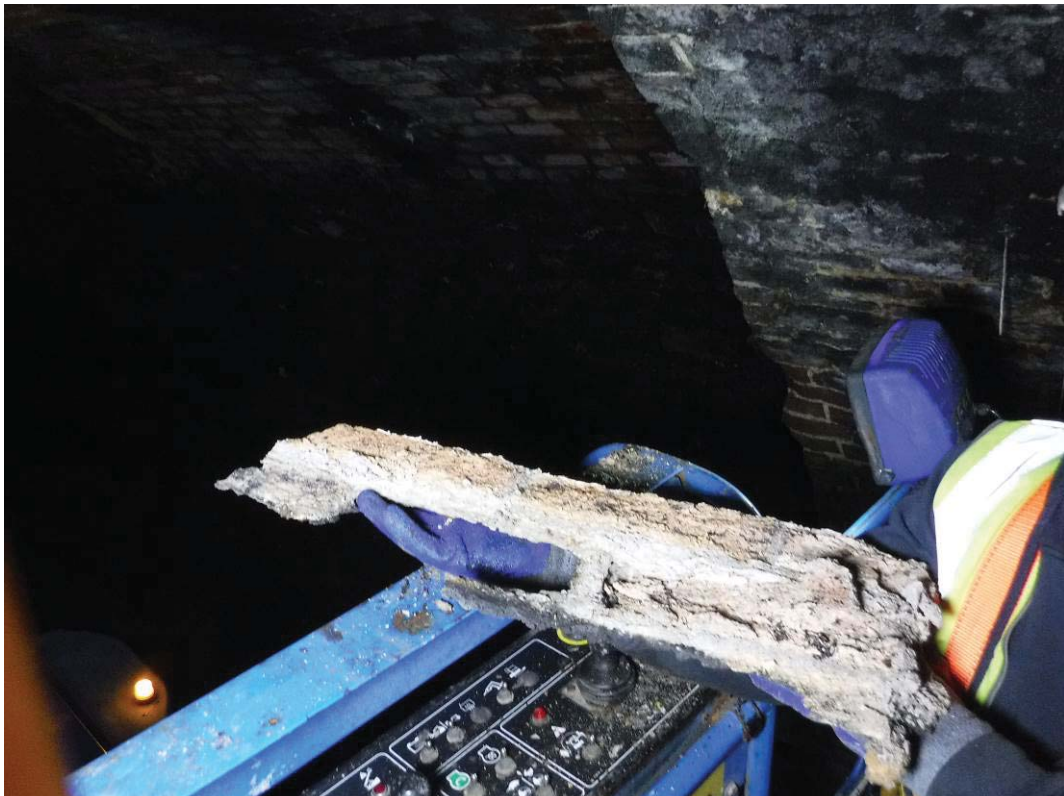
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**Photo No.55:** 010+04 Crown Down, Brickwork, spalling, depth 50mm, area 0.5sq.m., large section of hanging spalling removed during the examination.



**Photo No.56:** 010+04 Crown Down, Brickwork, spalling, depth 50mm, area 0.5sq.m., large section of hanging spalling removed during the examination.



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**Photo No.57:** 010+04 to 113+20 Full Profile Up & Down, Significant change in profile. Double track bore reduces to single track bore from ch.010+04 to the NE Portal.



**Photo No.58:** 010+04 to 010+16 Full Profile Up & Down, Brickwork sidewall, height 4ft., stonework above to mid haunch level, brickwork high haunches and crown.



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**Photo No.59:** 010+12 High Haunch Down, Old concrete patch repair, hollow / potentially loose, area 2sq.m.



**Photo No.60:** 010+14 Sidewall Up, Brickwork, spalling, depth 75mm, area 5sq.m.



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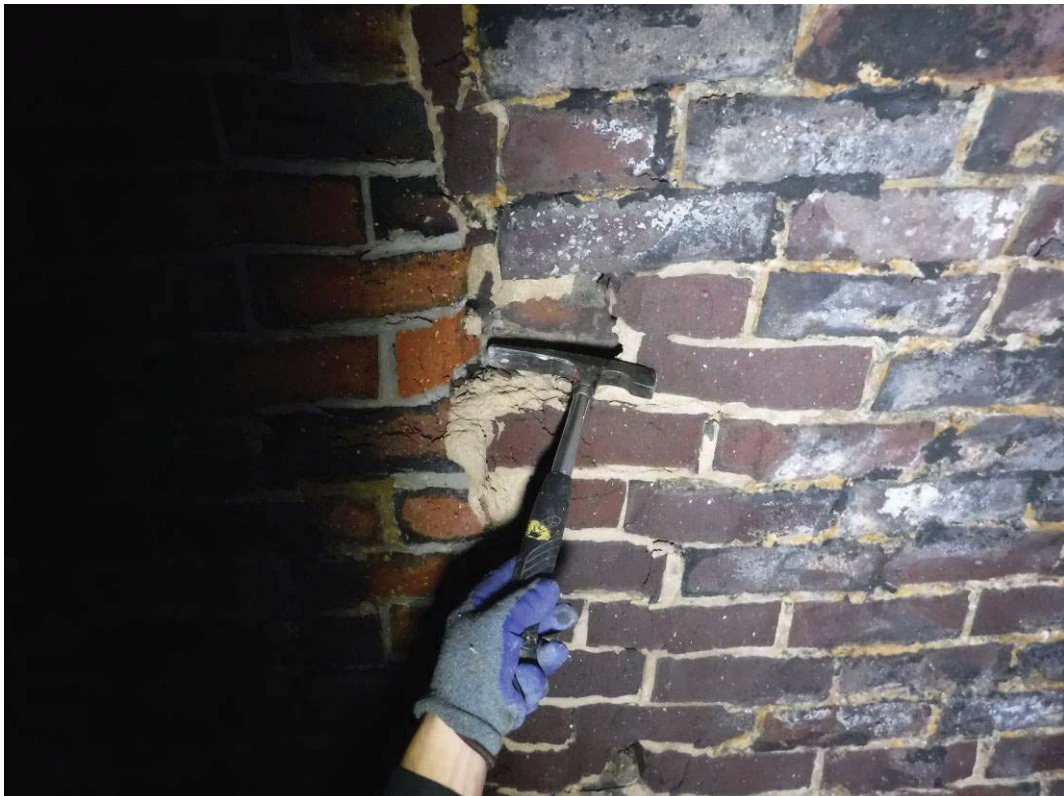
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**Photo No.61:** 012+09 to 016+08 Full Profile Up & Down, Various sections repaired with brickwork. Some sections of natural rock faces.



**Photo No.62:** 013+03 Crown & Haunch Down, Brickwork, spalling, depth 75-100mm, area 2sq.m.



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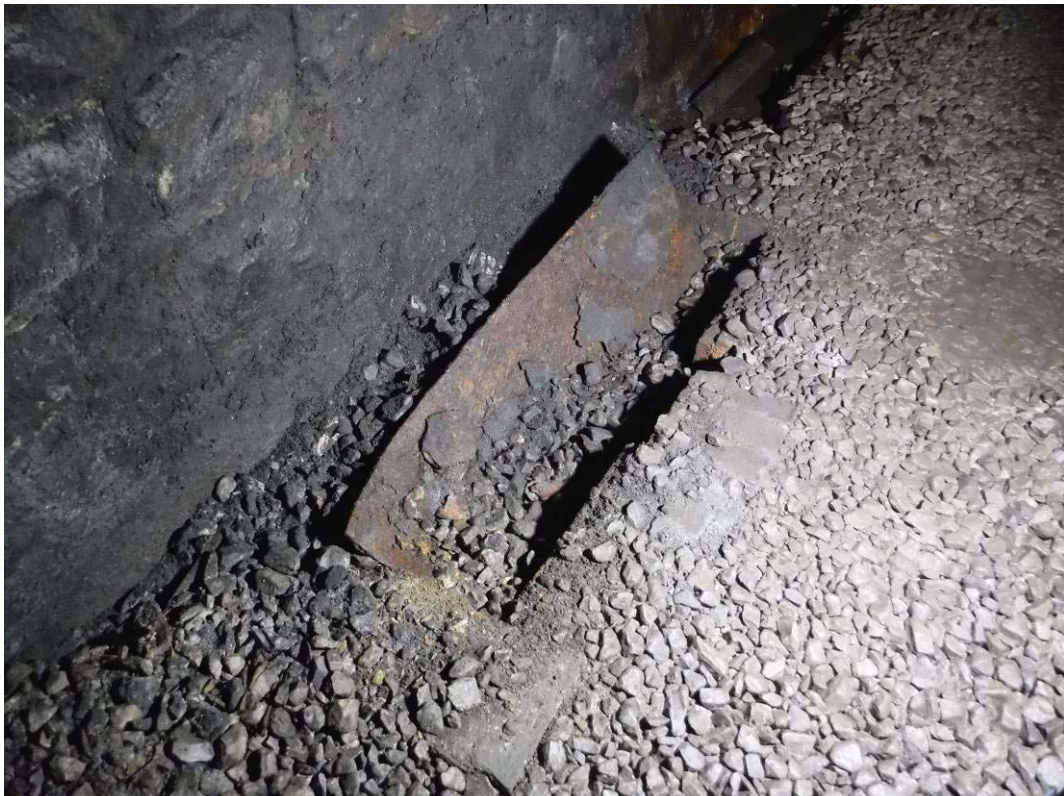
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**Photo No.63:** 016+08 to 021+02 Full Profile Up & Down, Brickwork with some 6ft. high sections of stonework sidewalls.



**Photo No.64:** 018+21 Cess Down, Open catch-pit.



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**Photo No.65:** 019+01 Cess Up, Open catch-pit.



**Photo No.66:** 019+12 to 021+02 Crown & Haunch Up & Down, Change in profile. Step in arch at ch.019+12 where bore reduces by 2.5courses brickwork on edge at apex from this point towards the NE.



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**Photo No.67:** 019+13 Cess Up, Open catch-pit.



**Photo No.68:** 020+14 Cess Up, Open catch-pit.



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**Photo No.69:** 021+02 to 025+00 Sidewalls & Haunch Down,. Change in profile. Lining steps out at ch.021+02 by max. 2courses brickwork at base of sidewall from this point towards the NE.



**Photo No.70:** 021+15 Cess Up, Open catch-pit.



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**Photo No.71:** 022+16 Cess Up, Open catch-pit.



**Photo No.72:** 023+14 Cess Up, Open catch-pit.



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**Photo No.73:** 024+16 Cess Up, Open catch-pit.



**Photo No.74:** 025+00 to 026+05 Full Profile Up & Down, New corrugated galvanised steel tube fitted to support lining under a possible hidden shaft.



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**Photo No.75:** 025+00 to 026+05 Full Profile Up & Down, New corrugated galvanised steel tube fitted to support lining under a possible hidden shaft.



**Photo No.76:** 025+00 to 026+05 Full Profile Up & Down, New corrugated galvanised steel tube fitted to support lining under a possible hidden shaft.



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**Photo No.77:** 026+06 Refuge Down, Fall hazard due to ramp sloped up to invert of new tube.



**Photo No.78:** 026+11 Full Profile Up & Down, Arch steps in 100mm, bore narrows towards NE, open construction joint. 026+15 Cess Up, Open catch-pit.