 HOCHTIEF MURPHY Joint Venture		C310 THAMES TUNNEL REPORT			
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev	1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)				

ORIGINATOR COMPANY NAME	Hochtief Murphy JV
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CMDL: C09.006

REVISION	DOCUMENT APPROVAL / REVISION RECORD DETAILS	DATE
1.0	Issued for CRL Acceptance	10/04/2015


Stakeholder (.....^{DLR}.....) review required? Yes No

This document has been reviewed by [redacted] in the capacity of ^{PFE} [redacted] for coordination, compliance, integration, and acceptance as a safe system of work, output, control, sequence. This document is acceptable for transmittal to ^{DLR} [redacted] for no objection to the works being executed as described.

Sign: [redacted] Name: [redacted] Date: 11/5/15


Review by Stakeholder (if required): *NOTE, REFER ASSOCIATED LONO FOR DLR ACCEPTANCE.*

Stakeholder organization	Job Title	Name	Signature	Date	Acceptance

	Crossrail Review and Acceptance Decal	
This decal is to be used for submitted documents requiring acceptance by Crossrail.		
[redacted]	Code 1.	Accepted. Work May Proceed
<input type="checkbox"/>	Code 2.	Not Accepted. Revise and resubmit. Work may proceed subject to incorporation of changes indicated
<input type="checkbox"/>	Code 3.	Not Accepted. Revise and resubmit. Work may not proceed
<input type="checkbox"/>	Code 4.	Received for information only. Receipt is confirmed
Reviewed/Accepted by:(signature)	[redacted]	
Print Name	[redacted]	
Position:	[redacted]	Date: 28/4/15
<small>Acceptance by Crossrail does not relieve the designer/supplier from full compliance with their contractual obligations and does not constitute Crossrail approval of design, details, calculations, analyses, test methods or materials developed or selected by the designer/supplier</small>		


PREPARED BY: HMJV Instrumentation & Monitoring Engineer Print: [redacted] Sign: [redacted] Date: 10/04/2015	REVIEWED BY: HMJV Monitoring Manager Print: [redacted] Sign: [redacted] Date: 10/04/2015
REVIEWED BY: HMJV Technical & Risk Manager Print: [redacted] Sign: [redacted] Date: 10/04/2015	APPROVED BY: HMJV Project Director Print: [redacted] Sign: [redacted] Date: 10/04/2015

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		C310 THAMES TUNNEL REPORT			
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev	1.0
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DISTRIBUTION LIST	HARD COPY REQUIRED? (If 'Yes' type the number of copies required, if 'No' leave blank)
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Temporary Works Manager	
Quality Manager	
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Chief Surveyor	
Planning Manager	
Crossrail Limited	


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 HOCHTIEF MURPHY Joint Venture		C310 THAMES TUNNEL REPORT			
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TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)				

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2.0	Reference Documents
3.0	Observation
4.0	Summary
5.0	Appendices

Learning Legacy Document

		C310 THAMES TUNNEL REPORT			
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev	1.0
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1.0 INTRODUCTION

The purpose of this report is to close-out the monitoring that was installed to capture potential movement within the relevant section of the DLR Down and Up Tunnels North of Woolwich Arsenal DRL Station, which could have potentially derived from the C310 Tunnelling works.

A comprehensive pre-tunnelling condition survey was carried out on the 21.October 2012.

In a joint manner HMJV, Crossrail, DLR and C122 carried out a post-tunnelling condition survey on the 17th January 2015 which was agreed to close-out the monitoring and eliminate the requirement for C310 to carry out any further condition survey, subject to no new defects being identified that could be understood to be in relation to the TBM tunnelling operations.

2.0 REFERENCE DOCUMENTS

- MPCGM
C310-HTM-Z-STP-CR148-50058 Rev.15.0
- Communication Condition Survey 21/10/2012
C310-CCM-00511
- Method Statement - Condition Survey of Docklands Light Rail (DLR)
C310-HTM-R-GMS-CR148-50003 Rev. 2.0
- Monitoring Close Out Report
C310-XRL-C-RGN-CR146-50001
- M&W Specification KX10 – Instrumentation & Monitoring
C122-OVE-Z4-RSP-CR001-00007 Rev. 7.0


3.0 OBSERVATIONS

The following overview illustrates the jointly and agreed defect observations made in both the DLR Down and Up Tunnels on the post-C310 tunnelling works condition survey carried out on the 17th January 2015. It is to be noted that observed defects listed below, were previously unmarked.

The reason for the defects observed being unmarked is that on the pre-tunnelling condition survey there were issues making the scaffold tower work and it was not possible to reach the tunnel shoulders and crown areas.


Although the crown and shoulder areas of tunnel couldn't be marked, the defects in the crown and shoulder areas were still identified on the Damage Inspection Report sheets for the individual ring.

The agreed approach for the post-tunnelling conditions survey was identifying the unmarked defects and then taking the records from the pre-tunnelling condition survey and comparing them to the post-tunnelling condition survey, to see whether there are any differences. The results are shown in table below. The direct comparison for each location is illustrated in the appendices.

		C310 THAMES TUNNEL REPORT			
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev	1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)				

DLR Down Tunnel (Southbound):

Ring No.	Appendix	Observation	Photo no.	Pre construction Survey Observations	
964	B	Spalling in tunnel crown	DLR Photo01	Same Observation made 21/10/2012	See Damage Inspection Report (A.1 & J)
	C	Spalling in tunnel shoulder - east	DLR Photo02	Same Observation made 21/10/2012	
971	D	Watermark and spalling in tunnel crown	DLR Photo03	Same Observation made 21/10/2012	See Damage Inspection Report (C.1 & A.1)
978	E	Watermark and spalling in tunnel crown	DLR Photo04	Same Observation made 21/10/2012	See Damage Inspection Report (B.2)
980	F	Spalling in tunnel shoulder - east	DLR Photo05	Same Observation made 21/10/2012	See Damage Inspection Report (B.1/2)
981	G	Spalling in tunnel shoulder - east	DLR Photo06	Same Observation made 21/10/2012	See Damage Inspection Report (B.1 & B.2)
983	H	Spalling in tunnel crown	DLR Photo07	Same Observation made 21/10/2012	See Damage Inspection Report (B.2)
985	I	Spalling in tunnel shoulder - west	DLR Photo08	Same Observation made 21/10/2012	See Damage Inspection Report (B.1 & B.2)
986	J	Spalling in tunnel shoulder - west	DLR Photo09	Same Observation made 21/10/2012	See Damage Inspection Report
987	K	Spalling in tunnel shoulder - west	DLR Photo10	Same Observation made 21/10/2012	See Damage Inspection Report (Cracks)
990	L	Wet / damp patch in tunnel crown	DLR Photo11	Same Observation made 21/10/2012	See Damage Inspection Report (D.1/2)

		C310 THAMES TUNNEL REPORT			
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DLR Up Tunnel (Northbound):

Ring No.	Appendix	Observation	Photo no.	Pre construction Survey Observations	
951	M	Spalling in tunnel crown	DLR Photo12	Same Observation made 21/10/2012	See Damage Inspection Report (B.1/2)
956 957	N	Wet / damp patch observed between ring joint in tunnel crown	DLR Photo13	Same Observation made 21/10/2012	See Damage Inspection Report (D.1)
964 965	O	Wet / damp patch observed between ring joint in tunnel crown	DLR Photo14	Same Observation made 21/10/2012	See Damage Inspection Report (D)
969	P	Spalling in tunnel shoulder - west	DLR Photo15	Same Observation made 21/10/2012	See Damage Inspection Report (B)

4.0 SUMMARY

In summary:

- all the previously unmarked defects had been identified in the pre-C310 tunnelling condition survey and
- there do not appear to be new or immediate discernible defects


To both the DLR Down and DLR Up Tunnels which could be associated with the C310 Tunnelling operations. The previous pre-C310 tunnelling condition survey was thorough and had clearly marked and identified all visually identifiable defects.

The Monitoring data collected prior, during and post tunnelling works show negligible movement, which substantiate the visual findings of the post-C310 tunnelling condition survey.

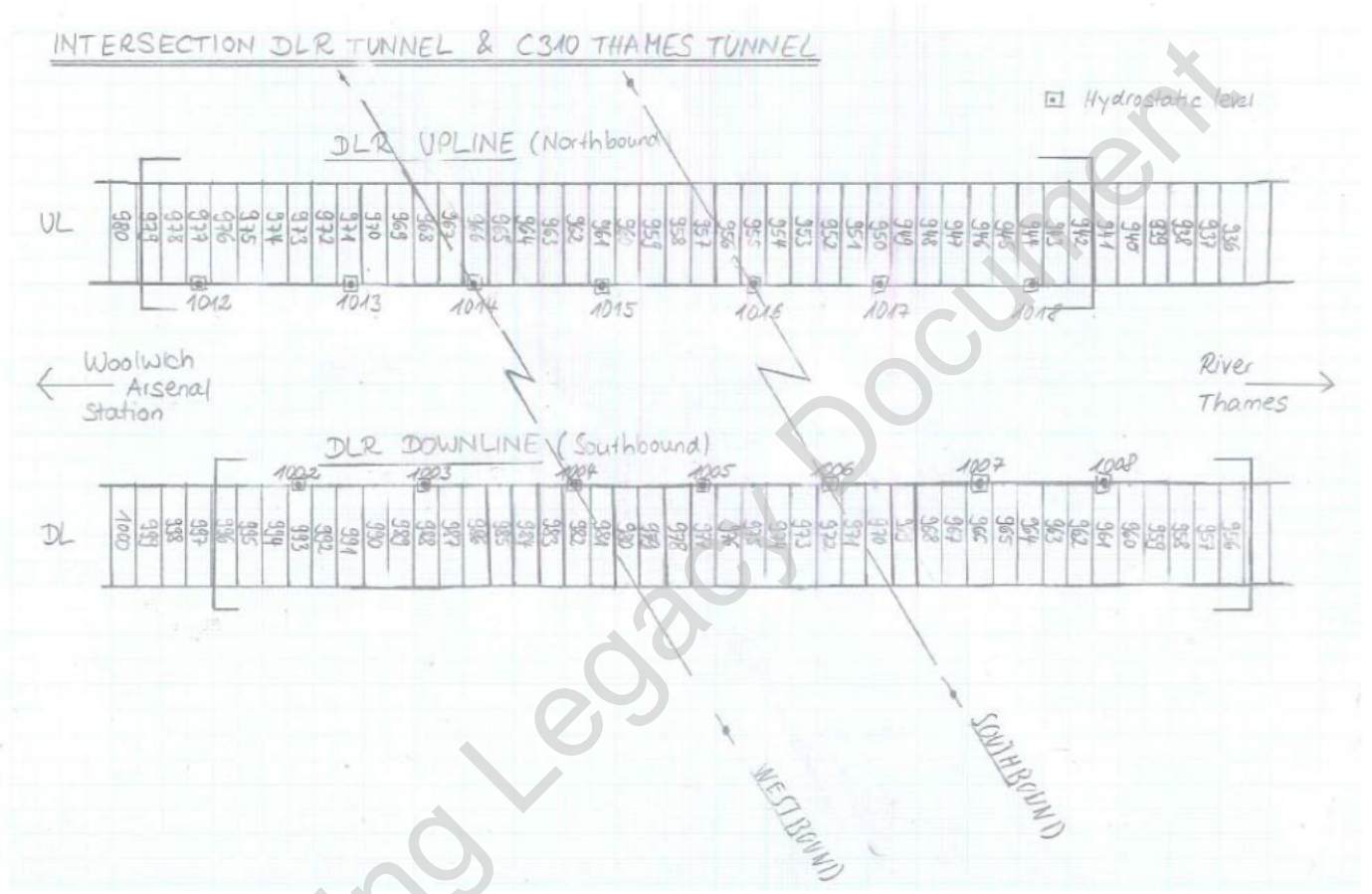
Hence HMJV seek acceptance from Crossrail to hereby close-out the monitoring and confirm that no further monitoring and condition survey work in the DLR Up and Down Tunnels is required by C310.

5.0 APPENDICES

- Appendix A Overview sketch of DRL Tunnels Up & Down Line
- Appendix B-P Direct Comparison Pre-condition Survey documentation with post- work condition survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
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APPENDIX A Overview sketch of DRL Tunnels Up & Down Line



		<h1>C310 THAMES TUNNEL REPORT</h1>		
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APPENDIX B Ring 964

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel					
Prepared By: [REDACTED]		Reviewed By: [REDACTED]					
DATE: 21/10/2012	Name of Investigator: [REDACTED]	HMJV Supervisor: [REDACTED]	CRL Supervisor: [REDACTED]				
<input type="checkbox"/> Northbound tunnel (UPLINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)	Ring Number: 964	Classification damage type:		Note: 1 - circumferential joint 2 - radial joint			
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift	Ring Type: Trapezoidal Ring as per drawing	<ul style="list-style-type: none"> ■ A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints ■ B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints ■ C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints ■ D. 1 / 2 : Leakage trough circumferential joints / radial joints ■ E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints ■ F. : Permanent bolting damaged/lost or in bad condition between all radial joints ■ G. : Grout coming out of the joints ■ H. : Packing with circumferential joints ■ I. : Condition of the joint (sealed I. 1 ; open I. 2) ■ J. : Microfracture damage ■ K. 1 / 2 : Damp areas 					
Adjacent Ring Number: 965							
Current View Ring No: 964							
Adjacent Ring Number: 963							
No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation
				HMJV	CRL	DLR	
1	964	I. 1	Sealed joint				<input type="checkbox"/>
2	964	A. 1	Minor spalling				<input type="checkbox"/>
3	964	A. 1	Minor spalling at grout plug				<input type="checkbox"/>
4	964	J.	Grout plug repair				<input type="checkbox"/>
5	964	C. 1	Minor cracks				<input type="checkbox"/>

Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX C Ring 964

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																									
Prepared By: [Redacted]	Reviewed By: [Redacted]	DAIE: 21/10/2012	Name of Investigator: [Redacted]	HMJV Supervisor: [Redacted]	CRL Supervisor: [Redacted]																						
<input type="checkbox"/> Northbound tunnel (UPLINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)	Ring Number: 964	Classification damage type:		Note: 1. circumferential joint 2. radial joint																							
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift	Ring Type: Trapezoidal Ring as per drawing	<table border="0"> <tr><td style="width: 10px;">A. 1/2</td><td style="width: 10px;">: Minor spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="width: 10px;">B. 1/2</td><td style="width: 10px;">: Major spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="width: 10px;">C. 1/2</td><td style="width: 10px;">: Cracks with concrete mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="width: 10px;">D. 1/2</td><td style="width: 10px;">: Leakage trough circumferential joints / radial joints</td></tr> <tr><td style="width: 10px;">E. 1/2</td><td style="width: 10px;">: Hollow sounding areas mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="width: 10px;">F.</td><td style="width: 10px;">: Permanent bolting damaged/lost or in bad condition between all radial joints</td></tr> <tr><td style="width: 10px;">G.</td><td style="width: 10px;">: Grout coming out of the joints</td></tr> <tr><td style="width: 10px;">H.</td><td style="width: 10px;">: Packing with circumferential joints</td></tr> <tr><td style="width: 10px;">I.</td><td style="width: 10px;">: Condition of the joint (sealed I.1 ; open I.2)</td></tr> <tr><td style="width: 10px;">J.</td><td style="width: 10px;">: Miscellaneous damage</td></tr> <tr><td style="width: 10px;">K. 1/2</td><td style="width: 10px;">: Damp area</td></tr> </table>		A. 1/2	: Minor spalling damage close to circumferential joints / radial joints	B. 1/2	: Major spalling damage close to circumferential joints / radial joints	C. 1/2	: Cracks with concrete mainly in the area of circumferential joints / radial joints	D. 1/2	: Leakage trough circumferential joints / radial joints	E. 1/2	: Hollow sounding areas mainly in the area of circumferential joints / radial joints	F.	: Permanent bolting damaged/lost or in bad condition between all radial joints	G.	: Grout coming out of the joints	H.	: Packing with circumferential joints	I.	: Condition of the joint (sealed I.1 ; open I.2)	J.	: Miscellaneous damage	K. 1/2	: Damp area		
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H.	: Packing with circumferential joints																										
I.	: Condition of the joint (sealed I.1 ; open I.2)																										
J.	: Miscellaneous damage																										
K. 1/2	: Damp area																										
Adjacent Ring Number: 965																											
Adjacent Ring Number: 963																											
		Witness (Signature)		Photo Documentation																							
No.	Ring Number	TYPE	Description	HMJV	CRL	DLR	Check																				
1	964	A1	Sealed joint				<input type="checkbox"/>																				
2	964	A. 1	Minor spalling				<input type="checkbox"/>	Refer to: IMG_3725																			
3	964	A. 1	Minor spalling at grout plug				<input type="checkbox"/>	Refer to: IMG_3723																			
4	964	J.	Grout plug repair				<input type="checkbox"/>	Refer to: IMG_3719																			
5	964	C. 1	Minor cracks				<input type="checkbox"/>	Refer to: IMG_3721																			
							<input type="checkbox"/>	Refer to: IMG_3720																			
							<input type="checkbox"/>	Refer to: IMG_3724																			
							<input type="checkbox"/>	Refer to: IMG_3722																			

Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX D Ring 971

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel				
Prepared By: [Redacted]	Reviewed By: [Redacted]	UAT: 21/10/2012	Name of Investigator: [Redacted]	HMJV Supervisor: [Redacted]		
<input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)	Ring Number: 971	Classification damage type: <ul style="list-style-type: none"> A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints D. 1 / 2 : Leakage through circumferential joints / radial joints E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints F. : Permanent bolting damage/loss or in best condition behaviour at radial joints G. : Grout coming out of the joints H. : Packing with circumferential joints I. : Condition of the joint (sealed 1, 1; open 1, 2) J. : Miscellaneous damage K. 1 : Damp area 				
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift	Ring Type: Triperoidal Ring as per drawing	Adiacent Ring Number: 972 Current View Ring No: 971 Adiacent Ring Number: 970				
	No.	Ring Number	TYPE	Description	Witness (Signature)	Photo Documentation
	1	971	A.1	Minor spalling	HMJV	<input type="checkbox"/>
	2	971	C.1/2	Cracks within the joint		<input type="checkbox"/>
	3	971	D.1	Leakage		<input type="checkbox"/>
	4	971	E.	Hollow sounding		<input type="checkbox"/>
	5	971	K.	Damp area		<input type="checkbox"/>
						<input type="checkbox"/> Check Refer to: IMG_3770 Refer to: IMG_3774 Refer to: IMG_3767 Refer to: IMG_3775 Refer to: IMG_3768 Refer to: IMG_3768 Refer to: IMG_3773

Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
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TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX E Ring 978

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																															
Prepared By: [Redacted]		Reviewed By: [Redacted]																																																															
UA 1: 21/10/2012 Name of Investigator: [Redacted] HMJV Supervisor: [Redacted] CRL Supervisor: [Redacted]																																																																	
<input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)		Ring Number: 978 Ring Type: Trapezoidal Ring as per drawing		Classification damage type: <ul style="list-style-type: none"> ■ A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints ■ B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints ■ C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints ■ D. 1 / 2 : Leakage trough circumferential joints / radial joints ■ E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints ■ F. : Permanent bedding damaged/loss or in bad condition between all radial joints ■ G. : Grout coming out of the joints ■ H. : Packing with circumferential joints ■ L. : Condition of the joint (sealed 1, 1; open 1, 2) ■ J. : Miscellaneous damage ■ K. 1 : Damp area 																																																													
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input type="checkbox"/> night shift																																																																	
Adjacent Ring Number: 977 Current View Ring No: 978 Adjacent Ring Number: 979		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Ring Number</th> <th>TYPE</th> <th>Description</th> <th>HMJV</th> <th>Witness (Signature)</th> <th>CRL</th> <th>DLR</th> <th>Check</th> <th>Photo Documentation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>978</td> <td>H.</td> <td>Packing</td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>Refer to: IMG 451</td> </tr> <tr> <td>2</td> <td>978</td> <td>E.V2</td> <td>Hollow sounding</td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>Refer to: IMG 438 Refer to: IMG 490 Refer to: IMG 444</td> </tr> <tr> <td>3</td> <td>978</td> <td>B.V2</td> <td>Major spalling</td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>Refer to: IMG 452 Refer to: IMG 443</td> </tr> <tr> <td>4</td> <td>978</td> <td>J.</td> <td>Steel fibers coming out</td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>Refer to: IMG 449 Refer to: IMG 474</td> </tr> <tr> <td>5</td> <td>978</td> <td>C.</td> <td>Cracks</td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>Refer to: IMG 450</td> </tr> </tbody> </table>				No.	Ring Number	TYPE	Description	HMJV	Witness (Signature)	CRL	DLR	Check	Photo Documentation	1	978	H.	Packing					<input type="checkbox"/>	Refer to: IMG 451	2	978	E.V2	Hollow sounding					<input type="checkbox"/>	Refer to: IMG 438 Refer to: IMG 490 Refer to: IMG 444	3	978	B.V2	Major spalling					<input type="checkbox"/>	Refer to: IMG 452 Refer to: IMG 443	4	978	J.	Steel fibers coming out					<input type="checkbox"/>	Refer to: IMG 449 Refer to: IMG 474	5	978	C.	Cracks					<input type="checkbox"/>	Refer to: IMG 450
No.	Ring Number	TYPE	Description	HMJV	Witness (Signature)	CRL	DLR	Check	Photo Documentation																																																								
1	978	H.	Packing					<input type="checkbox"/>	Refer to: IMG 451																																																								
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3	978	B.V2	Major spalling					<input type="checkbox"/>	Refer to: IMG 452 Refer to: IMG 443																																																								
4	978	J.	Steel fibers coming out					<input type="checkbox"/>	Refer to: IMG 449 Refer to: IMG 474																																																								
5	978	C.	Cracks					<input type="checkbox"/>	Refer to: IMG 450																																																								

Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
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APPENDIX F Ring 980

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																	
Prepared By: [Redacted]	Reviewed By: [Redacted]	HMJV Supervisor: [Redacted]	CRL Supervisor: [Redacted]																																																
Date: 21/10/2012 Name of Investigator: [Redacted]	Ring Number: 980 Ring Type: Trapezoidal Ring as per drawing	Classification damage type: <table style="font-size: small;"> <tr><td style="background-color: red;">A. 1 / 2</td><td>: Minor spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="background-color: orange;">B. 1 / 2</td><td>: Major spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="background-color: yellow;">C. 1 / 2</td><td>: Cracks within concrete mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="background-color: lightgreen;">D. 1 / 2</td><td>: Leakage trough circumferential joints / radial joints</td></tr> <tr><td style="background-color: lightblue;">E. 1 / 2</td><td>: Hollow sounding areas mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="background-color: blue;">F.</td><td>: Permanent bolting damaged/lost or in bad condition (all over all radial joints)</td></tr> <tr><td style="background-color: darkblue;">G.</td><td>: Grout coming out of the joints</td></tr> <tr><td style="background-color: purple;">H.</td><td>: Packing with circumferential joints</td></tr> <tr><td style="background-color: black;">I.</td><td>: Condition of the joint (sealed I. 1 ; open I. 2)</td></tr> <tr><td style="background-color: brown;">J.</td><td>: Miscellaneous damage</td></tr> <tr><td style="background-color: grey;">K. 1</td><td>: Damp area</td></tr> </table>			A. 1 / 2	: Minor spalling damage close to circumferential joints / radial joints	B. 1 / 2	: Major spalling damage close to circumferential joints / radial joints	C. 1 / 2	: Cracks within concrete mainly in the area of circumferential joints / radial joints	D. 1 / 2	: Leakage trough circumferential joints / radial joints	E. 1 / 2	: Hollow sounding areas mainly in the area of circumferential joints / radial joints	F.	: Permanent bolting damaged/lost or in bad condition (all over all radial joints)	G.	: Grout coming out of the joints	H.	: Packing with circumferential joints	I.	: Condition of the joint (sealed I. 1 ; open I. 2)	J.	: Miscellaneous damage	K. 1	: Damp area																									
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I.	: Condition of the joint (sealed I. 1 ; open I. 2)																																																		
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K. 1	: Damp area																																																		
<input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)	Note: CRL overpassing DLR Tunnel																																																		
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input type="checkbox"/> night shift	Adiacem Ring Number: 979 Current View Ring No: 980 Adiacem Ring Number: 981	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">No.</th> <th rowspan="2">Ring Number</th> <th rowspan="2">TYPE</th> <th rowspan="2">Description</th> <th colspan="3">Witness (Signature)</th> <th rowspan="2">Photo Documentation</th> </tr> <tr> <th>HMJV</th> <th>CRL</th> <th>DLR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>980</td> <td>H.</td> <td>Packing, 9.4mm</td> <td></td> <td></td> <td></td> <td rowspan="5" style="vertical-align: top;"> Check <input type="checkbox"/> Refer to: MG_488 Refer to: MG_448 Refer to: MG_500 Refer to: MG_426 Refer to: MG_472 </td> </tr> <tr> <td>2</td> <td>980</td> <td>J.</td> <td>Taliskin grease coming out of joint</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>980</td> <td>B.1/2</td> <td>Major spalling</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>980</td> <td>D.</td> <td>Leakage</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>980</td> <td>J.</td> <td>Damage</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation	HMJV	CRL	DLR	1	980	H.	Packing, 9.4mm				Check <input type="checkbox"/> Refer to: MG_488 Refer to: MG_448 Refer to: MG_500 Refer to: MG_426 Refer to: MG_472	2	980	J.	Taliskin grease coming out of joint				3	980	B.1/2	Major spalling				4	980	D.	Leakage				5	980	J.	Damage			
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Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX G Ring 981

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																																																			
Prepared by: [Redacted] Reviewed by: [Redacted]		Name of Investigator: [Redacted] HMJV Supervisor: [Redacted] CRL Supervisor: [Redacted]		UA 11: 21/10/2012																																																																																	
<input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)		Ring Number: 981		Classification damage type:																																																																																	
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift		Ring Type: Taperoidal Ring as per drawing		<table border="0"> <tr><td style="width: 10px; height: 10px; background-color: red;"></td><td>A. 1 / 2</td><td>: Minor spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: orange;"></td><td>B. 1 / 2</td><td>: Major spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: yellow;"></td><td>C. 1 / 2</td><td>: Cracks within concrete mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: lightgreen;"></td><td>D. 1 / 2</td><td>: Leakage through circumferential joints / radial joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: green;"></td><td>E. 1 / 2</td><td>: Hollow sounding areas mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: cyan;"></td><td>F.</td><td>: Permanent bolting damaged/lost or in bad condition between all radial joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: blue;"></td><td>G.</td><td>: Grout coming out of the joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: darkblue;"></td><td>H.</td><td>: Packing with circumferential joints</td></tr> <tr><td style="width: 10px; height: 10px; background-color: purple;"></td><td>I.</td><td>: Condition of the joint (sealed L 1 ; open L 2)</td></tr> <tr><td style="width: 10px; height: 10px; background-color: black;"></td><td>J.</td><td>: Miscellaneous damage</td></tr> <tr><td style="width: 10px; height: 10px; background-color: grey;"></td><td>K. 1</td><td>: Damp area</td></tr> </table>			A. 1 / 2	: Minor spalling damage close to circumferential joints / radial joints		B. 1 / 2	: Major spalling damage close to circumferential joints / radial joints		C. 1 / 2	: Cracks within concrete mainly in the area of circumferential joints / radial joints		D. 1 / 2	: Leakage through circumferential joints / radial joints		E. 1 / 2	: Hollow sounding areas mainly in the area of circumferential joints / radial joints		F.	: Permanent bolting damaged/lost or in bad condition between all radial joints		G.	: Grout coming out of the joints		H.	: Packing with circumferential joints		I.	: Condition of the joint (sealed L 1 ; open L 2)		J.	: Miscellaneous damage		K. 1	: Damp area																																															
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1	981	A.1/2	Hollow Sounding				<input type="checkbox"/>																																																																														
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Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX H Ring 983

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																					
Prepared By: [Redacted]		Reviewed By: [Redacted]																																					
LA 11: 21/10/2012	Name of Investigator: [Redacted]	HMJV Supervisor: [Redacted]	CRL Supervisor: [Redacted]																																				
<input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)	Ring Number: 983	Classification damage type:																																					
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift	Ring Type: Trapezoidal Ring as per drawing	<table border="0"> <tr> <td style="width: 15px; height: 10px; background-color: red;"></td> <td>A. 1 / 2</td> <td>: Minor spalling damage close to circumferential joints / radial joints</td> <td rowspan="13" style="font-size: small; vertical-align: top;"> Note: 1: circumferential joint 2: radial joint </td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: orange;"></td> <td>B. 1 / 2</td> <td>: Major spalling damage close to circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: yellow;"></td> <td>C. 1 / 2</td> <td>: Cracks within concrete mainly in the areas of circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: lightgreen;"></td> <td>D. 1 / 2</td> <td>: Leakage through circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: lightblue;"></td> <td>E. 1 / 2</td> <td>: Hollow sounding areas mainly in the areas of circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: blue;"></td> <td>F.</td> <td>: Permanent bolting damaged/lose or in bad condition between all radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: darkblue;"></td> <td>G.</td> <td>: Grout coming out of the joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: purple;"></td> <td>H.</td> <td>: Packing with circumferential joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: darkpurple;"></td> <td>I.</td> <td>: Condition of the joint (sealed L 1; open L 2)</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: black;"></td> <td>J.</td> <td>: Miscellaneous damage</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: grey;"></td> <td>K. 1</td> <td>: Damp areas</td> </tr> </table>					A. 1 / 2	: Minor spalling damage close to circumferential joints / radial joints	Note: 1: circumferential joint 2: radial joint		B. 1 / 2	: Major spalling damage close to circumferential joints / radial joints		C. 1 / 2	: Cracks within concrete mainly in the areas of circumferential joints / radial joints		D. 1 / 2	: Leakage through circumferential joints / radial joints		E. 1 / 2	: Hollow sounding areas mainly in the areas of circumferential joints / radial joints		F.	: Permanent bolting damaged/lose or in bad condition between all radial joints		G.	: Grout coming out of the joints		H.	: Packing with circumferential joints		I.	: Condition of the joint (sealed L 1; open L 2)		J.	: Miscellaneous damage		K. 1	: Damp areas
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Adjacent Ring Number: 982																																							
Current View Ring No: 983																																							
Adjacent Ring Number: 984																																							
No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation																																
1	980	C.1/2	Cracks	HMJV	CRL	DLR	<input type="checkbox"/>																																
2	980	H.	Packing in entire ring				<input type="checkbox"/>																																
3	980	D.1/2	Leakage				<input type="checkbox"/>																																
4	980	J.	Remediate edge- Repaired corner				<input type="checkbox"/>																																
5	980	J.	Repaired area				<input type="checkbox"/>																																
6	980	E.1	Hollow sounding				<input type="checkbox"/>																																
7	980	B.2	Major spalling				<input type="checkbox"/>																																
8							<input type="checkbox"/>																																

Refer to: MG_469
Refer to: MG_478
Refer to: MG_485
Refer to: MG_499
Refer to: MG_433

Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX I Ring 985

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																							
Prepared By: [Redacted]	Reviewed By: [Redacted]	HMJV Supervisor: [Redacted]	CRL Supervisor: [Redacted]																																																						
Date: 21/10/2012 Name of Investigator: [Redacted]	Ring Number: 985 Ring Type: Trapezoidal Ring as per drawing	Classification damage type: <ul style="list-style-type: none"> ■ A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints ■ B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints ■ C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints ■ D. 1 / 2 : Leakage trough circumferential joints / radial joints ■ E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints ■ F. : Permanent bedding damage/loss or in bad condition (between all radial joints) ■ G. : Grout coming out of the joints ■ H. : Packing with circumferential joints ■ I. : Condition of the joint (assess I. 1 ; open I. 2) ■ J. : Miscellaneous damage ■ K. 1 : Damp area 																																																							
<input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)		Adjacent Ring Number: 984 Current View Ring No: 985 Adjacent Ring Number: 986																																																							
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift																																																									
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No.	Ring Number					TYPE	Description	Witness (Signature)			Check	Photo Documentation																																													
		HMJV	CRL	DLR																																																					
1	985	B.1/2	Major spalling				<input type="checkbox"/>	Refer to: MG_483 Refer to: MG_487 Refer to: MG_482 Refer to: MG_431																																																	
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3	985	D.1/2	Leakage				<input type="checkbox"/>																																																		
4	985	J.	Erector hole filled				<input type="checkbox"/>																																																		
5							<input type="checkbox"/>																																																		

Post-Condition Survey

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX J Ring 986

Pre-Condition Survey

HOCHTIEF MURPHY Joint Venture

DAMAGE INSPECTION REPORT
 C310 Thames Tunnel
 Condition Survey DLR Tunnel

Prepared By: [redacted] Reviewed By: [redacted]

LA 1: 21/10/2012 Name of Investigator: [redacted] HMJV Supervisor: [redacted] CRL Supervisor: [redacted]

Northbound tunnel (UP LINE)
 Southbound tunnel (DOWN LINE)

Ring Number: 986
 Ring Type: Trapezoidal Ring as per drawing

Classification damage type:

A. 1 / 2	Minor spalling damage close to circumferential joints / radial joints
B. 1 / 2	Major spalling damage close to circumferential joints / radial joints
C. 1 / 2	Cracks within concrete mainly in the area of circumferential joints / radial joints
D. 1 / 2	Leakage through circumferential joints / radial joints
E. 1 / 2	Hollow sounding areas mainly in the area of circumferential joints / radial joints
F.	Permanent bolting damaged/lost or in bad condition between all radial joints
G.	Grout coming out of the joints
H.	Packing with circumferential joints
L.	Condition of the joint (swaled L. 1; open L. 2)
J.	Miscellaneous damage
K. 1	Damp areas

Adjacent Ring Number: 985

Current View Ring No: 986

Adjacent Ring Number: 987

No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation
				HMJV	CRL	DLR	
1	986	A.1/2	Leakage				Refer to: MG 481 Refer to: MG 488 Refer to: MG 487
2	986	J.	Grease coming out				
3	986	E.Y2	Hollow sounding				
4	986	C.1	Cracks				
5	986	A.1	Minor spalling				
6	986	J.	Bolt holes				
7	986	J.	Steel fibers+Spalling				
8							

Post-Condition Survey

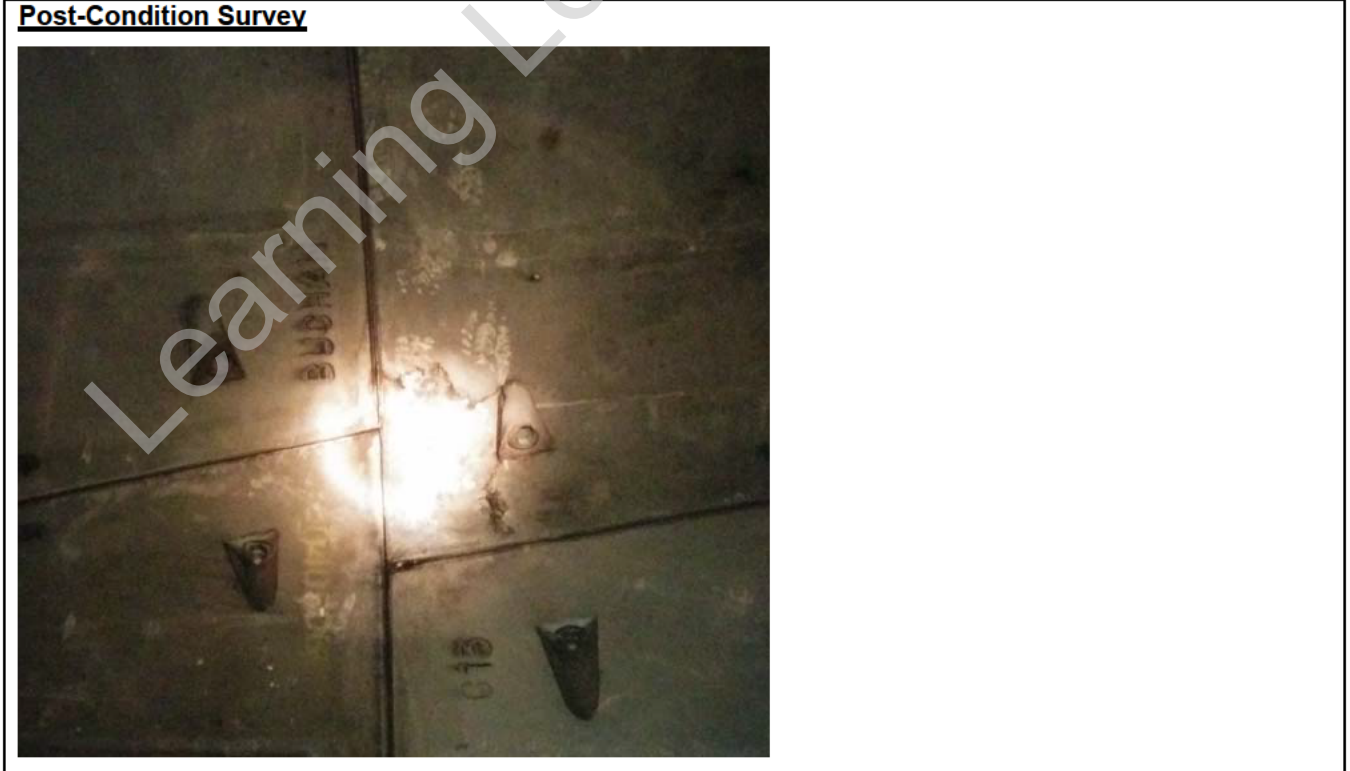
		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX K Ring 987

Pre-Condition Survey

Zoom out (Ctrl+Minus)

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																																
Prepared By:	Reviewed By:	HMJV Supervisor:	CRL Supervisor:																																																															
LA 1: 21/10/2012 <input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)	Name of Investigator: _____ Ring Number: 987 Ring Type: Trapezoidal Ring as per drawing	Classification damage type: <ul style="list-style-type: none"> A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints D. 1 / 2 : Leakage through circumferential joints / radial joints E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints F. : Permanent bolting damaged/lost or in bad condition between all radial joints G. : Grout coming out of the joints H. : Packing with circumferential joints I. : Condition of the joint (sealed 1.1 ; open 1.2) J. : Miscellaneous damage K. 1 : Damp area 																																																																
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input type="checkbox"/> night shift																																																																		
Adjacent Ring Number: 988	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">No.</th> <th rowspan="2">Ring Number</th> <th rowspan="2">TYPE</th> <th rowspan="2">Description</th> <th colspan="3">Witness (Signature)</th> <th rowspan="2">Photo Documentation</th> </tr> <tr> <th>HMJV</th> <th>CRL</th> <th>DLR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>987</td> <td>A.1</td> <td>Cracks</td> <td></td> <td></td> <td></td> <td rowspan="7" style="vertical-align: top; text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Refer to: MG. 495 Refer to: MG. 496 Refer to: MG. 499 Refer to: MG. 497 </td> </tr> <tr> <td>2</td> <td>987</td> <td>E.1/2</td> <td>Hollow sounding</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>987</td> <td>D.1/2</td> <td>Leakage</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>987</td> <td>A.1</td> <td>Minor spalling</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>987</td> <td>J.</td> <td>Tailskin grease coming out</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>987</td> <td>B.1</td> <td>Major spalling</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation	HMJV	CRL	DLR	1	987	A.1	Cracks				<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Refer to: MG. 495 Refer to: MG. 496 Refer to: MG. 499 Refer to: MG. 497	2	987	E.1/2	Hollow sounding				3	987	D.1/2	Leakage				4	987	A.1	Minor spalling				5	987	J.	Tailskin grease coming out				6	987	B.1	Major spalling				7						
No.	Ring Number	TYPE	Description	Witness (Signature)						Photo Documentation																																																								
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		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX L Ring 990

Pre-Condition Survey

Zoom out (Ctrl+Minus)

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																																		
Prepared By: [Redacted]	Reviewed By: [Redacted]	LA It: 21/10/2012	Name of Investigator: [Redacted]	HMJV Supervisor: [Redacted] CRL Supervisor: [Redacted]																																																																
<input type="checkbox"/> Northbound tunnel (UP LINE) <input checked="" type="checkbox"/> Southbound tunnel (DOWN LINE)	Ring Number: 990	Classification damage type: <ul style="list-style-type: none"> A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints D. 1 / 2 : Leakage through circumferential joints / radial joints E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints F. : Permanent bolting damaged/lost or in bad condition between all radial joints G. : Grout coming out of the joints H. : Packing with circumferential joints L. : Condition of the joint (sealed L: 1 : open L: 2) J. : Miscellaneous damage K. 1 : Damp area 																																																																		
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input type="checkbox"/> night shift	Ring Type: Taperoidal Ring as per drawing																																																																			
Adjacent Ring Number: 999	Current View Ring No: 990	Adjacent Ring Number: 991																																																																		
<table border="1"> <thead> <tr> <th>No.</th> <th>Ring Number</th> <th>TYPE</th> <th>Description</th> <th colspan="3">Witness (Signature)</th> <th>Photo Documentation</th> </tr> <tr> <th colspan="4"></th> <th>HMJV</th> <th>CRL</th> <th>DLR</th> <th>Check</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>990</td> <td>D.1/2</td> <td>Leakage</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>2</td> <td>990</td> <td>J.</td> <td>Tailskin grease</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>3</td> <td>990</td> <td>H.</td> <td>Packing</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>4</td> <td>990</td> <td>E.1</td> <td>Hollow sounding</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>5</td> <td>990</td> <td>J.</td> <td>Bolt holes</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>6</td> <td>990</td> <td>C.1/2</td> <td>Cracks</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>		No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation					HMJV	CRL	DLR	Check	1	990	D.1/2	Leakage				<input type="checkbox"/>	2	990	J.	Tailskin grease				<input type="checkbox"/>	3	990	H.	Packing				<input type="checkbox"/>	4	990	E.1	Hollow sounding				<input type="checkbox"/>	5	990	J.	Bolt holes				<input type="checkbox"/>	6	990	C.1/2	Cracks				<input type="checkbox"/>	Refer to: IMG_496 Refer to: IMG_479 Refer to: IMG_483 Refer to: IMG_494		
No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation																																																													
				HMJV	CRL	DLR	Check																																																													
1	990	D.1/2	Leakage				<input type="checkbox"/>																																																													
2	990	J.	Tailskin grease				<input type="checkbox"/>																																																													
3	990	H.	Packing				<input type="checkbox"/>																																																													
4	990	E.1	Hollow sounding				<input type="checkbox"/>																																																													
5	990	J.	Bolt holes				<input type="checkbox"/>																																																													
6	990	C.1/2	Cracks				<input type="checkbox"/>																																																													

Post-Condition Survey

APPENDIX M Ring 951

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																																										
Prepared By: [REDACTED]	Reviewed By: [REDACTED]	HMJV Supervisor: [REDACTED]	CRL Supervisor: [REDACTED]																																																																									
Date: 21/10/2012 Name of Investigator: [REDACTED]	Ring Number: 951 Ring Type: Trapezoidal Ring as per drawing	Classification damage type: <table style="font-size: small;"> <tr><td style="background-color: red;">A. 1/2</td><td>: Minor spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="background-color: orange;">B. 1/2</td><td>: Major spalling damage close to circumferential joints / radial joints</td></tr> <tr><td style="background-color: yellow;">C. 1/2</td><td>: Cracks within concrete mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="background-color: lightgreen;">D. 1/2</td><td>: Leakage through circumferential joints / radial joints</td></tr> <tr><td style="background-color: lightblue;">E. 1/2</td><td>: Hollow sounding areas mainly in the area of circumferential joints / radial joints</td></tr> <tr><td style="background-color: lightgrey;">F.</td><td>: Permanent bedding damaged/loose or in bad condition between all radial joints</td></tr> <tr><td style="background-color: grey;">G.</td><td>: Grout coming out of the joints</td></tr> <tr><td style="background-color: darkgrey;">H.</td><td>: Packing with circumferential joints</td></tr> <tr><td style="background-color: black;">L.</td><td>: Condition of the joint (sealed: 1; open L:2)</td></tr> <tr><td style="background-color: blue;">J.</td><td>: Miscellaneous damage</td></tr> <tr><td style="background-color: yellow;">K. 1</td><td>: Damp areas</td></tr> </table>			A. 1/2	: Minor spalling damage close to circumferential joints / radial joints	B. 1/2	: Major spalling damage close to circumferential joints / radial joints	C. 1/2	: Cracks within concrete mainly in the area of circumferential joints / radial joints	D. 1/2	: Leakage through circumferential joints / radial joints	E. 1/2	: Hollow sounding areas mainly in the area of circumferential joints / radial joints	F.	: Permanent bedding damaged/loose or in bad condition between all radial joints	G.	: Grout coming out of the joints	H.	: Packing with circumferential joints	L.	: Condition of the joint (sealed: 1; open L:2)	J.	: Miscellaneous damage	K. 1	: Damp areas																																																		
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<input checked="" type="checkbox"/> Northbound tunnel (UP LINE) <input type="checkbox"/> Southbound tunnel (DOWN LINE)	<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift	Note: 1. All joints sealed + corked																																																																										
Adjacent Ring Number: 950 Current View Ring No: 951 Adjacent Ring Number: 952																																																																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Ring Number</th> <th>TYPE</th> <th>Description</th> <th colspan="3">Witness (Signature)</th> <th>Photo Documentation</th> </tr> <tr> <th colspan="4"></th> <th>HMJV</th> <th>CRL</th> <th>DLR</th> <th>Check</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>951</td> <td>J.</td> <td>All joints sealed + corked</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>2</td> <td>951</td> <td>E.1</td> <td>Hollow sounding</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>3</td> <td>951</td> <td>D.1</td> <td>Leakage</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>4</td> <td>951</td> <td>A.1</td> <td>Minor spalling</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>5</td> <td>951</td> <td>J.</td> <td>Resin coming through bolt hole</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>6</td> <td>951</td> <td>C.1</td> <td>Cracks</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>7</td> <td>951</td> <td>B.1</td> <td>Major spalling (Ring building)</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>		No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation					HMJV	CRL	DLR	Check	1	951	J.	All joints sealed + corked				<input type="checkbox"/>	2	951	E.1	Hollow sounding				<input type="checkbox"/>	3	951	D.1	Leakage				<input type="checkbox"/>	4	951	A.1	Minor spalling				<input type="checkbox"/>	5	951	J.	Resin coming through bolt hole				<input type="checkbox"/>	6	951	C.1	Cracks				<input type="checkbox"/>	7	951	B.1	Major spalling (Ring building)				<input type="checkbox"/>	Refer to: MG_522 Refer to: MG_511		
No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation																																																																					
				HMJV	CRL	DLR	Check																																																																					
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5	951	J.	Resin coming through bolt hole				<input type="checkbox"/>																																																																					
6	951	C.1	Cracks				<input type="checkbox"/>																																																																					
7	951	B.1	Major spalling (Ring building)				<input type="checkbox"/>																																																																					

Post-Condition Survey



		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

APPENDIX N Ring 956/957

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																										
Prepared By: [redacted]	Reviewed By: [redacted]	Name of Investigator: [redacted]	HMJV Supervisor: [redacted]	CRL Supervisor: [redacted]																																								
<input checked="" type="checkbox"/> Northbound tunnel (UP LINE) <input type="checkbox"/> Southbound tunnel (DOWN LINE)	Ring Number: 956	Classification damage type:																																										
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift	Ring Type: Trapezoidal Ring as per drawing	<ul style="list-style-type: none"> ■ A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints ■ B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints ■ C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints ■ D. 1 / 2 : Leakage through circumferential joints / radial joints ■ E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints ■ F. : Permanent bolting damaged/lose or in bad condition between all radial joints ■ G. : Grout coming out of the joints ■ H. : Packing with circumferential joints ■ L. : Condition of the joint (sealed 1, 1; open 1, 2) ■ J. : Miscellaneous damage ■ K. 1 : Damp area 																																										
Adjacent Ring Number: 955	<p>Note: 1. All joints sealed + corked</p>																																											
Current View Ring No: 956																																												
Adjacent Ring Number: 957																																												
<table border="1"> <thead> <tr> <th>No.</th> <th>Ring Number</th> <th>TYPE</th> <th>Description</th> <th colspan="3">Witness (Signature)</th> <th>Photo Documentation</th> </tr> <tr> <th colspan="4"></th> <th>HMJV</th> <th>CRL</th> <th>DLR</th> <th>Check</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>956</td> <td>J.</td> <td>All joints sealed + corked</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>2</td> <td>956</td> <td>J.</td> <td>2 resin holes</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>3</td> <td>956</td> <td>D.1</td> <td>Leakage with stalactite</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>		No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation					HMJV	CRL	DLR	Check	1	956	J.	All joints sealed + corked				<input type="checkbox"/>	2	956	J.	2 resin holes				<input type="checkbox"/>	3	956	D.1	Leakage with stalactite				<input type="checkbox"/>			
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2	956	J.	2 resin holes				<input type="checkbox"/>																																					
3	956	D.1	Leakage with stalactite				<input type="checkbox"/>																																					
					Refer to: IMG_535 Refer to: IMG_528 Refer to: IMG_538																																							

Post-Condition Survey

APPENDIX O Ring 964 / 695

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																																																										
Prepared By: [Redacted]	Reviewed By: [Redacted]	HMJV Supervisor: [Redacted]	CRL Supervisor: [Redacted]																																																																																									
Date: 21/10/2012 Name of Investigator: [Redacted]	Ring Number: 964 Ring Type: Trapezoidal Ring as per drawing	Classification damage type: <ul style="list-style-type: none"> ■ A. 1 / 2 : Minor spalling damage close to circumferential joints / radial joints ■ B. 1 / 2 : Major spalling damage close to circumferential joints / radial joints ■ C. 1 / 2 : Cracks within concrete mainly in the area of circumferential joints / radial joints ■ D. 1 / 2 : Leakage through circumferential joints / radial joints ■ E. 1 / 2 : Hollow sounding areas mainly in the area of circumferential joints / radial joints ■ F. : Permanent bedding damaged/lose or in bad condition between all radial joints ■ G. : Grout coming out of the joints ■ H. : Packing with circumferential joints ■ I. : Condition of the joint (sealed 1, 1; open 1, 2) ■ J. : Miscellaneous damage ■ K. 1 : Damp area 		Note: 1- circumferential joint 2- radial joint																																																																																								
<input checked="" type="checkbox"/> Northbound tunnel (UP LINE) <input type="checkbox"/> Southbound tunnel (DOWN LINE)	<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input checked="" type="checkbox"/> night shift	Note: 1. All joints sealed																																																																																										
Adjacent Ring Number: 963 Current View Ring No: 964 Adjacent Ring Number: 965																																																																																												
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No.	Ring Number	TYPE	Description	Witness (Signature)			Photo Documentation																																																																																					
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1	964	D.	Leakage				<input type="checkbox"/>																																																																																					
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7	964	C.1+J.	Cracks+Repaired patch				<input type="checkbox"/>																																																																																					
8	964	J.	Calcification				<input type="checkbox"/>																																																																																					
9	964	J.	Unfilled holes				<input type="checkbox"/>																																																																																					

Post-Condition Survey



APPENDIX P

Ring 969

		<h1>C310 THAMES TUNNEL REPORT</h1>		
EMPLOYER	CROSSRAIL	eB NO	C310-HTM-C-RGN-CR148-50027	Rev 1.0
TITLE	Close-Out Report for DLR-Tunnels (DLR Asset DLR/12 Woolwich Tunnels)			

Pre-Condition Survey

		DAMAGE INSPECTION REPORT C310 Thames Tunnel Condition Survey DLR Tunnel																																																																											
Prepared by:	Reviewed by:	HMJV Supervisor:	CRL Supervisor:																																																																										
LA It: 21/10/2012	Name of Investigator:																																																																												
<input type="checkbox"/> Northbound tunnel (UP LINE) <input type="checkbox"/> Southbound tunnel (DOWN LINE)	Ring Number: 999	Classification damage type:																																																																											
<input type="checkbox"/> day shift <input type="checkbox"/> afternoon shift <input type="checkbox"/> night shift	Ring Type: Taperoidal Ring as per drawing	<table border="0"> <tr> <td style="width: 15px; height: 10px; background-color: red;"></td> <td>A. 1 / 2</td> <td>: Minor spalling damage close to circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: orange;"></td> <td>B. 1 / 2</td> <td>: Major spalling damage close to circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: yellow;"></td> <td>C. 1 / 2</td> <td>: Cracks within concrete mainly in the area of circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: lightgreen;"></td> <td>D. 1 / 2</td> <td>: Leakage through circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: lightblue;"></td> <td>E. 1 / 2</td> <td>: Hollow sounding areas mainly in the area of circumferential joints / radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: blue;"></td> <td>F.</td> <td>: Permanent bedding damaged/loss or in bad condition between all radial joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: darkblue;"></td> <td>G.</td> <td>: Grout coming out of the joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: cyan;"></td> <td>H.</td> <td>: Packing with circumferential joints</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: green;"></td> <td>I.</td> <td>: Condition of the joint (sealed 1, 1; open 1, 2)</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: lightyellow;"></td> <td>J.</td> <td>: Miscellaneous damage</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: yellow;"></td> <td>K. 1</td> <td>: Damp area</td> </tr> </table>					A. 1 / 2	: Minor spalling damage close to circumferential joints / radial joints		B. 1 / 2	: Major spalling damage close to circumferential joints / radial joints		C. 1 / 2	: Cracks within concrete mainly in the area of circumferential joints / radial joints		D. 1 / 2	: Leakage through circumferential joints / radial joints		E. 1 / 2	: Hollow sounding areas mainly in the area of circumferential joints / radial joints		F.	: Permanent bedding damaged/loss or in bad condition between all radial joints		G.	: Grout coming out of the joints		H.	: Packing with circumferential joints		I.	: Condition of the joint (sealed 1, 1; open 1, 2)		J.	: Miscellaneous damage		K. 1	: Damp area																																							
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Post-Condition Survey

