Attachment 4.1 Structures Bearing Shelf Maintenance Frequency

Table 4.1.1 Structures Bearing Shelf Maintenance Frequency

Route	Structure	Structure Name	Inspection/ Cleaning Frequency
A1	A1 145	BIEL O/B	Check/clean annually and additionally as required
A1	A1 162	RIVER TYNE	Check/clean annually and additionally as required
A1	A1 185	HADDINGTON W I/C O/B	Check/clean annually and additionally as required
A1	A1 197	GREENDYKES FARM O/B	Check/clean annually and additionally as required
A1	A1 20	EYE WATER	Check/clean annually and additionally as required
A1	A1 205	BANKTON I/C O/B	Check/clean annually and additionally as required
A1	A1 220	JOHNNY COPE'S RD O/B	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A1	A1 230	DOLPHINGSTONE O/B	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A1	A1 238 F	WALLYFORD F/B	Check/clean annually and additionally as required
A1	A1 241	SALTERS ROAD O/B	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A1	A1 25	AYTON CASTLE O/B	Check/clean annually and additionally as required
A1	A1 251	CARBERRY ROAD O/B	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI

A1	A1 271	OLD CRAIGHALL I/C E	Check/clean annually and additionally as required
A1	A1 281	OLD CRAIGHALL I/C W	Check/clean annually and additionally as required
A1	A1 39	PENMANSHIEL NEW RAIL	Thin rubber strip bearing - check / clean during 6 yearly PI
A1	A1 5	MARYFIELD O/B	Check/clean annually and additionally as required
A1	A1 51	TOWER NEW	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A1	A1 61	COVE RAIL	Thin rubber strip bearing - check / clean during 6 yearly PI
A1	A1 71	DUNGLASS NEW	Check/clean annually and additionally as required
A1	A1 90	SKATERAW RAIL	Thin rubber strip bearing - check / clean during 6 yearly PI
A6091	A6091 10	GALAFOOT	Check/clean annually and additionally as required
A6091	A6091 20	BROOMILEES O/B	Check/clean annually and additionally as required
A6091	A6091 30	CHIEFSWOOD ROAD	Check/clean annually and additionally as required
A6091	A6091 40	DINGLETON ROAD	Check/clean annually and additionally as required
A68	A68 100	TOWNFOOT	Check/clean annually and additionally as required
A68	A68 161	NEWTOWN GLEN	Check/clean annually and additionally as required
A68	A68 180	DRYGRANGE	Check/clean annually and additionally as required

A68	A68 220	EARLSTON	Check/clean annually and additionally as required
A68	A68 240	GALADEAN	Check/clean annually and additionally as required
A68	A68 280	ANNFIELD	Thin rubber strip bearing - check / clean during 6 yearly PI
A68	A68 450	RIVER ESK	Check/clean annually and additionally as required
A68	A68 71	NEW ABBEY	Check/clean annually and additionally as required
A7	A7 155	BINKS	Check/clean annually and additionally as required
A7	A7 160	ARMSTRONG	Check/clean annually and additionally as required
A7	A7 20	TINNISHALL FARM O/B	Check/clean annually and additionally as required
A7	A7 260	ETTRICKFOOT	Check/clean annually and additionally as required
A7	A7 30	PRIORSLYNN FARM O/B	Check/clean annually and additionally as required
A702	A702 10	CLYDES NEW (WANDEL)	Check/clean annually and additionally as required
A702	A702 40	LAMINGTON	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A702	A702 5	DUNEATONFOOT	Check/clean annually and additionally as required
A702	A702 50 F	COULTER F/B	Check/clean annually and additionally as required
A702	A702 60	CADGERS NEW	Check/clean annually and additionally as required

A720	A720 10	MONKTON LODGE O/B	Check/clean annually and additionally as required
A720	A720 110	BONALY BURN	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A720	A720 120	BONALY ROAD O/B	Check/clean annually and additionally as required
A720	A720 130	TORPHIN ROAD O/B	Check/clean annually and additionally as required
A720	A720 140	WOODHALL ROAD	Thin rubber strip bearing - check / clean during 6 yearly PI
A720	A720 150	WATER OF LEITH	Check/clean annually and additionally as required
A720	A720 160	LANARK ROAD O/B	Thin rubber strip bearing - check / clean during 6 yearly PI
A720	A720 170	CURRIEMUIR	Thin rubber strip bearing - check / clean during 6 yearly PI
A720	A720 180 F	WESTBURN F/B	Check/clean annually and additionally as required
A720	A720 200	WESTBURN O/B	Thin rubber strip bearing - check / clean during 6 yearly PI
A720	A720 210	CALDER RD I/C S O/B	Check/clean annually and additionally as required
A720	A720 230	E HERMISTON AQUEDUCT	Check/clean annually and additionally as required
A720	A720 30	GILMERTON ROAD O/B	Check/clean annually and additionally as required
A720	A720 40	LASSWADE ROAD	Abutment at height, check / clean at 6 yearly PI
A720	A720 50	MINERAL RAIL	Check/clean annually and additionally as required

A720	A720 60	STRAITON ROAD	Check/clean annually and additionally as required
A720	A720 70	BIGGAR ROAD I/C O/B	Check/clean annually and additionally as required
A720	A720 80	SWANSTON ROAD O/B	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A720	A720 90	DREGHORN SPUR O/B	Check/clean annually and additionally as required
A84	A84S 5	CRAIGFORTH I/C O/B	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI
A876	A876 50	CLACKMANNANSHIRE	Check/clean annually and additionally as required
A90	A90 15	Ferry Toll Railway Tunnel	Check/clean annually and additionally as required
A90	A90 40	Dunfermline Wynd Bridge	Check/clean annually and additionally as required
A92	A92S 2	HALBEATH NORTH U/B	Check/clean annually and additionally as required
A92	A92S 5	HALBEATH SOUTH U/B	Check/clean annually and additionally as required
A985	A985 1	KINCARDINE	Check/clean annually and additionally as required
A985	A985 20	BLUTHER BURN	Check/clean annually and additionally as required
A985	A985 40	CAIRNEYHILL RAIL	Check/clean annually and additionally as required
M8	M8 1-1 40	NB SLIP O/B	Bank seats to be checked/ cleaned annually and as required. Piers at height to be cleaned during 6 yearly PI

M8	M8 1-1 50	GOGAR ROAD O/B	Check/clean annually and additionally as required
M8	M8 1-2 13	HERMISTON ROAD O/B	One bank seat can be checked / cleaned annually and as required. Far bank seat and piers at height during 6 yearly PI
M8	M8 1-2 28	RANSFIELD ROAD O/B	One bank seat can be checked / cleaned annually and as required. Far bank seat and piers at height during 6 yearly PI
M8	M8 1-2 53	FREELANDS ROAD O/B	Abutment at height, check / clean at 6 yearly PI
M8	M8 1-2 70	BAIRD ROAD O/B	Abutment at height, check / clean at 6 yearly PI
M8	M8 2-2 10	W/B SLIP	Abutment at height, check / clean at 6 yearly PI
M8	M8 2-2 30	N/B SLIP	Check/clean annually and additionally as required
M8	M8 2-3 20	NEWBRIDGE-CLIFTON RD	Abutment at height, check / clean at 6 yearly PI
M8	M8 2-3 30	RIVER ALMOND	Check/clean annually and additionally as required
M8	M8 2-3 45	BURNSIDE-MUIREND O/B	Check/clean annually and additionally as required
M8	M8 2-3 60	DRUMSHORELAND STN RD	Abutment at height, check / clean at 6 yearly PI
M8	M8 2-3 85	UPHALL STATION ROAD	Abutment at height, check / clean at 6 yearly PI
M8	M8 3-3 30	LIVINGSTON ROAD O/B	Abutment at height, check / clean at 6 yearly PI
M8	M8 3-4 40	DEANS ROAD O/B	Abutment at height, check / clean at 6 yearly PI

M8	M8 3-4 55	EDIN-BATHGATE RAIL	Thin rubber strip bearing - check / clean during 6 yearly PI
M8	M8 3-4 60	STARLAW ROAD O/B	Check/clean annually and additionally as required
M8	M8 3-4 80	B792 O/B	Check/clean annually and additionally as required
M8	M8 3-4 F26	DECHMOUNT HOUSE F/B	Check/clean annually and additionally as required
M8	M8 3-4 F71	SOUTH INCH F/B	Check/clean annually and additionally as required
M8	M8 3-4 F86	RIDDOCHILL F/B	Check/clean annually and additionally as required
M8	M8 4-4 10	EAST WHITBURN EAST	Inaccessible strip bearing
M8	M8 4-4 20	EAST WHITBURN WEST	Inaccessible strip bearing
M8	M8 4-5 22	A706 U/B	Inaccessible strip bearing
M8	M8 4-5 5	RIVER ALMOND	Inaccessible strip bearing
M8	M8 4-5 65	B718 O/B	Check/clean annually and additionally as required
M8	M8 4-5 76	BLAIRMUCKHILL O/B	Check/clean annually and additionally as required
M8	M8 4-5 90	FORRESTDYKE	Check/clean annually and additionally as required
M8	M8 5-5 10	SHOTTS ROAD I/C O/B	Check/clean annually and additionally as required
M8	M8 5-6 20	DEWSHILL O/B	Check/clean annually and additionally as required
M8	M8 5-6 40	DUNTILLAND O/B	Check/clean annually and additionally as required

M8	M8 5-6 60	BOGFOOT O/B	Check/clean annually and additionally as required
M8	M8S 1-1 30	FAIRVIEW SLIP RAIL	Check/clean annually and additionally as required
M8	M8S 1-1 60	SOUTH GYLE SLIP O/B	Check/clean annually and additionally as required
M8	M8S 2-2 20	NB SLIP OVER WB SLIP	Check/clean annually and additionally as required
M8	M8S 2-3 21	NEWBR-CLIFTON RD SLP	Check/clean annually and additionally as required
M8	M8S 2-3 5	B7030	Check/clean annually and additionally as required
M8	M8S 3-3 20	SLIP OVER M8 O/B	Inaccessible strip bearing
M8	M8S 3-3 40	LIVINGSTON ROAD SLIP	Inaccessible strip bearing
M8	M8S 3-3 F60	KNIGHTSRIDGE F/B	Inaccessible strip bearing
M80	M80 7-8 40	BANKNOCK	Inaccessible strip bearing
M80	M80 8-8 10	BANKHEAD SLIP ROAD	Inaccessible strip bearing
M80	M80 8-9 10	DROVE ROAD O/B	Inaccessible strip bearing
M80	M80 8-9 20	CUTHELTON GREEN O/B	Inaccessible strip bearing
M80	M80 8-9 25	MYOTHILL ROAD	Check/clean annually and additionally as required
M80	M80 8-9 27	STONEYWOOD RAIL	Check/clean annually and additionally as required
M80	M80 8-9 29	FANKERTON ROAD	Check/clean annually and additionally as required
M80	M80 8-9 35	BARNEGO ROAD O/B	Check/clean annually and additionally as required

M80	M80 8-9 5	BANKHEAD FARM ROAD	Check/clean annually and additionally as required
M80	M80 8-9 65	NORTHFIELD ROAD	Check/clean annually and additionally as required
M80	M80 8-9 75	EASTERTON O/B	Check/clean annually and additionally as required
M80	M80 8-9 85	AUCHENBOWIE HOUSE	Check/clean annually and additionally as required
M80	M80 8-9 90	AUCHENBOWIE ROAD	Inaccessible strip bearing
M80	M80 9-9 10	SNABHEAD	Check/clean annually and additionally as required
M80	M80 9-9 20	HERDSBRAE	Check/clean annually and additionally as required
M823	M823S 0-0 10	M90 SB - A823M WB SR	Check/clean annually and additionally as required
M823	M823S 0-0 20	M90 NB - A823M WB SR	Check/clean annually and additionally as required
M876	M876 1-2 10	DENOVAN ROAD	Inaccessible strip bearing
M876	M876 1-2 5	RIVER CARRON	Check/clean annually and additionally as required
M876	M876 1-2 95	ACCOMMODATION O/B	Inaccessible strip bearing
M876	M876 2-8 10	GLENBERVIE O/B	Inaccessible strip bearing
M876	M876 2-8 30	SOUTH INCHES RAIL	Inaccessible strip bearing
M876	M876 2-8 45	NORTH INCHES O/B	Inaccessible strip bearing
M876	M876 7-3 80	LETHAM O/B	Check/clean annually and additionally as required
M876	M876S 2-2 10	NORTH BROOMAGE O/B	Check/clean annually and additionally as required

M9	M9 0-1 50	ALMOND	Check/clean annually and additionally as required
M9	M9 0-1 F21	NEWBRIDGE	Check/clean annually and additionally as required
M9	M9 10-11 30	LECROPT O/B	Check/clean annually and additionally as required
M9	M9 10-11 5	FORTH	Inaccessible strip bearing
M9	M9 10-11 65	KNOCKHILL	Inaccessible strip bearing
M9	M9 1-2 25	MURIEHALL O/B	Check/clean annually and additionally as required
M9	M9 1-2 30	WINCHBURGH LOOP RAIL	Check/clean annually and additionally as required
M9	M9 1-2 50	DUNTARVIE CASTLE	Check/clean annually and additionally as required
M9	M9 1-2 65	PRIESTINCH O/B	Check/clean annually and additionally as required
M9	M9 2-2 10	PHILPSTOUN	Check/clean annually and additionally as required
M9	M9 2-3 45	PARDOVAN O/B	Check/clean annually and additionally as required
M9	M9 3-3 10	BURGHMUIR O/B	Check/clean annually and additionally as required
M9	M9 3-4 15	BONSYDE	Check/clean annually and additionally as required
M9	M9 3-4 20	BONNYTOUN O/B	Check/clean annually and additionally as required
M9	M9 3-4 40	LOCH HOUSE O/B	Check/clean annually and additionally as required
M9	M9 3-4 50	MILL ROAD O/B	Check/clean annually and additionally as required

M9	M9 3-4 55	RIVER AVON	Check/clean annually and additionally as required
M9	M9 4-4 10	LATHALLAN SOUTH O/B	Inaccessible strip bearing
M9	M9 4-5 65	KIRK ENTRY O/B	Check/clean annually and additionally as required
M9	M9 5-5 10	CADGERS BRAE SOUTH	Check/clean annually and additionally as required
M9	M9 5-5 20	CADGERS BRAE NORTH	Check/clean annually and additionally as required
M9	M9 5-6 80	FOULDUBS RAIL	Check/clean annually and additionally as required
M9	M9 6-6 10	EARLSGATE SOUTH	Check/clean annually and additionally as required
M9	M9 6-6 20	EARLSGATE NORTH	Check/clean annually and additionally as required
M9	M9 6-7 25	CARRON	Check/clean annually and additionally as required
M9	M9 6-7 50	WESTERTON O/B	Check/clean annually and additionally as required
M9	M9 6-7 75	KIRKTON O/B	Check/clean annually and additionally as required
M9	M9 6-7 90	LONGDYKE O/B	Check/clean annually and additionally as required
M9	M9 7-8 75	SO ALLOA ROAD O/B	Check/clean annually and additionally as required
M9	M9 8-8 10	HILL O/B	Check/clean annually and additionally as required
M9	M9 8-9 30	POWSWOOD RAIL	Inaccessible strip bearing
M9	M9 8-9 60	PLEAN	Inaccessible strip bearing

M9	M9 9-10 15	NEWLINE 2 SOUTH O/B	Inaccessible strip bearing
M9	M9 9-10 16	NEWLINE 1 NORTH O/B	Inaccessible strip bearing
M9	M9 9-10 35	NEWPARK FARM PATH	Check/clean annually and additionally as required
M9	M9 9-10 40	COXITHILL O/B	Check/clean annually and additionally as required
M9	M9 9-10 55	TORBREX O/B	Check/clean annually and additionally as required
M9	M9 9-10 63	BIRKHILL O/B	Check/clean annually and additionally as required
M9	M9 9-10 75	DUMBARTON ROAD O/B	Check/clean annually and additionally as required
M9	M9 9-10 F65	CAMBUSBARRON F/B	Check/clean annually and additionally as required
M9	M9 9-9 10	PIRNHALL EAST O/B	Check/clean annually and additionally as required
M9	M9 9-9 20	PIRNHALL WEST O/B	Check/clean annually and additionally as required
M9	M9S 7-7 10	KINNAIRD	Check/clean annually and additionally as required
M90	M90 0-1 35	New B800 Bridge (ESQ04)	Bearing shelves to be inspected/cleaned annually and as required. Piers at height to be inspected/cleaned at 6-yearly PI
M90	M90 0-1 80	Ferrytoll Viaduct (FT01)	Check/clean annually and additionally as required
M90	M90 0-1 85	Ferrytoll Gyratory South (FT04)	Check/clean annually and additionally as required
M90	M90 0-1 90	Ferrytoll Gyratory North (FT03)	Check/clean annually and additionally as required

M90	M90 2-2 10	M90 OVER A823M/RAIL	Check/clean annually and additionally as required
M90	M90 2-3 40	DULOCH O/B	Inspect/clean at 6-yearly PI
M90	M90 3-3 F5	Halbeath I/C FB	Bearing shelves to be inspected/cleaned annually and as required. Piers at height to be inspected/cleaned at 6-yearly PI
M90	M90S 0-1 20	Ferrytoll Railway West (FT09)	Check/clean annually and additionally as required
M90	M90S 3-3 30	A92 Link	Bearing shelves to be inspected/cleaned annually and as required. Piers at height to be inspected/cleaned at 6-yearly PI
M9S	M9S 1-1 10	KIRKLISTON SPUR S/B	Bearing shelves to be inspected/cleaned annually and as required. Piers at height to be inspected/cleaned at 6-yearly PI
M9S	M9S 1-1 11	Kirkliston Spur N/B	Check/clean annually and additionally as required
M9S	M9S 1-1 40	Newmains East	Inspect/clean at 6-yearly PI
M9S	M9S 1-1 41	Newmains Road O/Bridge West	Check/clean annually and additionally as required
M9S	M9S 1-1 50	Humbie Rail	Inspect/clean at 6-yearly PI
M9S	M9S 1-1 70	MILTON FARM ROAD O/B	Check/clean annually and additionally as required
M9S	M9S 1-1 90	SCOTSTOUN I/C	Check/clean annually and additionally as required

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Attachment 4.2 Structures Maintenance Schedule Pro Forma Example

Table 4.2.1 Structures Maintenance Schedule Revision Status

	Name	Organisation	Signature	Date
Prepared By				
Checked By				
Authorised By				

Revision	Date	Revision Details	Checked	Authorised

Controlled Document Holder	
Ref	Name of Holder
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Table 4.2.2 Structures Maintenance Activity Code, Specification & Activities

Activity Code	Specification	Maintenance Activities
RCM 1	6110AR 6112AR 6117AR	Substructure and Superstructure - Vegetation/debris/bird dropping removal and disposal, checking/tightening/replacing of bolts to parapets (to include making good local damage to protective systems).
RCM 2	6110AR 6111AR	Expansion Joints - Cleaning out debris/vegetation/sediment from joints and drainage associated with joint, checking/tightening of bolts securing the joint, checking neoprene or elatomeric material for splitting or detachment, checking cover plates and nosing
RCM 3	6110AR 6112AR	Drainage Systems - Removal of obstructions/vegetation which could reduce capacity of the system, cleaning drainage holes, channels, pipes, drainage outlet manholes, weep pipes. Checking operation of flap valves and greasing if required.
RCM 4	6110AR 6113AR	Parapets and Pedestrian Protection -Checking / tightening / replacing of bolts. Cleaning hollow section drain holes. Removal of debris/vegetation/bird droppings. Checking freedom of parapet expansion joint.
RCM 5	6110AR 6114AR	Bearings and Bearing Shelves - Removal of debris/vegetation/bird droppings. Checking freedom of movement of bearings. Cleaning where appropriate greasing of accessible mating surfaces.
RCM 6	6110AR 6111AR 6112AR 6113AR	Structures Over or Conveying Watercourses - As above and including - Removal of debris encrustations/greasing/lubrication of all fittings (in

	6114AR 6115AR 6117AR	accordance with maintenance manual). Removal and disposal of debris and silt to ensure free flow of water.
RCM 7	6110AR 6116AR 6117AR	Sign Gantries and High Mast Lighting - Holding down assemblies and fixings including cladding to be checked/tightened/cleaned/greased (to include making good local damage to protective systems and replacement of bolts where required). Checking box type structures are water-tight and report leaks & bird entry issues.
RCM 8	6110AR 6117AR	Non-structural Items - Movable parts to be cleaned and greased. Holding down assemblies and fixings including cladding to be checked/tightened (to include making good local damage to protective systems).
RCM 9	6110AR 6112AR 6113AR 6114AR 6115AR 6117AR 6118AR	Underpasses and Culverts used by Pedestrians - Cleaning of ramps, light fittings, ceilings and soffits, mirrors and handrails. Removal of vegetation/sediment on or adjacent to structure which could have a detrimental effect on the function of the structure. Vegetation/debris/bird dropping removal and disposal. Drainage system/gulleys/grates/channels cleared to maintain efficient operation.
RCM 10	6110AR 6112AR 6113AR	Retaining Walls - Removal of vegetation on or adjacent to structure which could have a detrimental effect on the function of the structure.

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Table 4.2.3 Structures Maintenance Route, Structures & Completions

Route	Structure		Maintenance Activity Codes										Complete on	Signature	Checked on Site	Comments
	Reference No	Name	RCM1	RCM2	RCM3	RCM4	RCM5	RCM6	RCM7	RCM8	RCM9	RCM10				

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Table 4.2.4 Structures Maintenance Route, Structures & Progress

	Structures			Maintenance Activities			
Route	Total Quantity	Quantity Complete	% Reminaing	Total Quantity	Quantity Complete	% Reminaing	Comments
	100	50	50%	100	50	50%	
Totals	100	50	50%	100	50	50%	

Attachment 4.3 List of Structures Requiring Principal Inspections

Table 4.3.1 List of Structures Requiring Principal Inspections

Structure		
Reference No.	Name	Year
A1 124	BIEL WATER	2020
A1 124 W0	NORTH BELTON & BIEL	2020
A1 124 W1	NORTH BELTON & BIEL	2020
A1 135 W0	HEDDERWICK	2020
A1 145	BIEL O/B	2020
A1 145 C40	BIEL MILL U/P	2020
A1 155	TRAPRAIN U/P	2020
A1 162 H951V	951 TYNE BRIDGE CCTV	2020
A1 164	OVERHAILES U/P	2020
A1 166	BEANSTON	2020
A1 168	SANDY'S MILL U/P	2020
A1 170	ABBEY MAINS U/P	2020
A1 71 W70	BILSDEAN 1	2020
A1 71 W71	BILSDEAN 2	2020
A6091 10	GALAFOOT	2020
A6091 20	BROOMILEES O/B	2020
A6091 20 C50	DARNICK U/P	2020
A6091 28 F	COATBURN F/B	2020
A6091 30	CHIEFSWOOD ROAD	2020
A6091 30 F	HUNTLYBURN F/B	2020
A6091 40	DINGLETON ROAD	2020

A6091 40 C5	MALTHOUSE BURN	2020
A6091 40 W10	PRIORSWOOD WALL	2020
A6091 50	BANK ROAD U/P	2020
A6091 60	HASELDEAN ROAD	2020
A6091 60 G80	Traffic Scotland VMS L2	2020
A6091S 50 W5	BANK ROAD	2020
A68 10 W90	LINTALEE	2020
A68 180 G10	Traffic Scotland VMS L4	2020
A68 250 G80	Traffic Scotland VMS L6	2020
A68 50 C50	HOWDEN BURN	2020
A68 50 W30	MILL	2020
A7 0 G80	Traffic Scotland VMS L7	2020
A7 130 W30	EWESLEES	2020
A7 260 G15	Traffic Scotland VMS L5	2020
A7 60 C90	SKIPPERSCLEUGH	2020
A7 70	SKIPPERS	2020
A7 70 C80	WHITESHIELS	2020
A7 70 W10	KILNCLEUCH	2020
A7 70 W5	SKIPPERS	2020
A7 80 C80	SORBIE	2020
A720 110	BONALY BURN	2020
A720 120	BONALY ROAD O/B	2020
A720 130	TORPHIN ROAD O/B	2020
A720 160	LANARK ROAD O/B	2020
A720 160 W5	WALL 1 (62.3M)	2020
A720 180 F	WESTBURN F/B	2020
A720 20	NEWTON FARM U/P	2020

A720 200	WESTBURN O/B	2020
A720 200 C80	LONG HERMISTON	2020
A720 210	CALDER RD I/C S O/B	2020
A720 220	CALDER RD I/C N O/B	2020
A720 230	E HERMISTON AQUEDUCT	2020
A720S 160 W3	WALL 4 (91M)	2020
A90 100 W5	Crib Wall beneath Dunfermline Wynd	2020
A985 10	WOODHEAD FARM	2020
A985 20	BLUTHER BURN	2020
A985 30	DRUMFIN	2020
A985 5 W31	EAST LODGE	2020
M8 3-3 H10V	PO39 (CAM171)	2020
M8 3-4 55	EDIN-BATHGATE RAIL	2020
M8 3-4 H60V	PO40 (CAM168)	2020
M8 3-4 H95V	PO42 (CAM 166)	2020
M8 4-5 22	A706 U/B	2020
M8 4-5 H10V	PO41 (CAM165)	2020
M8 5-5 H10V	PO44 (CAM160)	2020
M8 5-6 W30	DEWSHILL	2020
M80 8-8 C5	CULVERT	2020
M80 8-9 C42	CULVERT	2020
M80 9-9 10	SNABHEAD	2020
M80 9-9 20	HERDSBRAE	2020
M823S 0-0 20	M90 NB - A823M WB SR	2020
M823S 0-0 30	M90 SB - A823M WB SR	2020
M876 0-0 W5	BANKHEAD (WEST)	2020

M876 0-0 W6	BANKHEAD (EAST)	2020
M876 0-1 20	DENNYLOANHEAD	2020
M876 0-1 45	DROVE LOAN	2020
M876 0-1 W0	DENNYLOANHEAD (WALL)	2020
M876 0-1 W45	WALL	2020
M876 0-1 W50	WALL	2020
M876 0-1 W55	WALL	2020
M876 1-1 10	A833 U/B	2020
M876 2-8 C70	CULVERT	2020
M876S 2-2 C10	CULVERT	2020
M8S 1-1 10	GOGAR GREEN U/P	2020
M8S 1-1 20	GOGAR BURN/REDHEUGHS	2020
M9 0-0 W10	WALL TO PUMPING STN	2020
M9 3-4 70	SANDYFORD	2020
M9 3-4 75	BO'NESS BRANCH RAIL	2020
M9 4-4 10	LATHALLAN SOUTH O/B	2020
M9 4-4 20	LATHALLAN NORTH O/B	2020
M9 4-5 65	KIRK ENTRY O/B	2020
M9 4-5 C30	GILSTON BURN	2020
M9 5-5 10	CADGERS BRAE SOUTH	2020
M9 5-5 20	CADGERS BRAE NORTH	2020
M9 6-7 75	KIRKTON O/B	2020
M9 6-7 90	LONGDYKE O/B	2020
M9 6-7 C95	KINNAIRD	2020
M9 7-7 C10	CULVERT	2020
M9 8-8 C10	CULVERT	2020
M9 8-9 C30	CULVERT	2020

M90 2-2 10	M90 OVER A823M/RAIL	2020
M90 3-3 F5	HALBEATH INTCHGE F/B	2020
M9S 1-1 10	KIRKLISTON SPUR S/B	2020
M9S 1-1 60	HUMBIE UNDERPASS	2020
M9S 1-1 70	MILTON FARM ROAD O/B	2020
M9S 1-1 80	DOLPHINGTON BURN	2020
REDACTED	**REDACTED**	2020
M9S 1-1 90	SCOTSTOUN I/C	2020
M9S 1-1 H10V	CCTV Camera	2020
M9S 7-7 10	KINNAIRD	2020
A1 0 H10V	Lamberton	2021
A1 110 G34	VMS/M9 DUNBAR	2021
A1 162	RIVER TYNE	2021
A1 172	STEVENSON ROAD O/B	2021
A1 178 G5	VMS M10 HADDINGTON	2021
A1 210 W75	BANKTON	2021
A1 251 W33	ESK	2021
A1 40 W95	TOWER FARM LA	2021
A1 5 G6	VMS/M8 N LAMBERTON	2021
A1 61 C45	COVE U/P	2021
A68 180	DRYGRANGE	2021
A68 210	MEIKLE LINN	2021
A68 260	WASHINGBURN	2021
A68 260 C10	HARRYBURN	2021
A68 260 C31	NEWMILLS	2021
A68 260 C70	WISELAWMILL	2021
A68 270	CARFRAEMILL	2021

A68 280	ANNFIELD	2021
A68 290	HEADSHAW	2021
A68 290 C15	RED BRAE	2021
A68 450 G50	VMS/M12 A68N S Of Salters Rd JCT	2021
A7 10	WOODSLEE U/P	2021
A7 221 W60	COMMERCIAL ROAD 1	2021
A7 221 W90	COMMERCIAL ROAD 3	2021
A7 221 W96	COMMERCIAL ROAD 4	2021
A7 30 W60	ENTHORN FARM	2021
A702 55 C0	WOODNEUK	2021
A702 60 C55	BIGGARSHIELS	2021
A720 0 H217V	217 OLD CRAIGHALL	2021
A720 10	MONKTON LODGE O/B	2021
A720 10 G8	VMS/M A720W 1500m S of Calder R-a-B	2021
A720 150 H211V	211 BABERTON CCTV	2021
A720 170 G68	VMS/M11 A720W E of Millerhill Jct	2021
A720 20 H215V	215 GILMERTON JN	2021
A720 20 H216V	216 SHERRIFHALL CCTV	2021
A720 210 G10	VMS/M2 CALDER	2021
A720 210 H210V	210 CALDER CCTV	2021
A720 230 H209V	209 HERMISTON GAIT	2021
A720 25	A720 Border's Rail Bridge	2021
A720 26 G45	VMS/M6 E-BOUND	2021
A720 26 G45	VMS/M6 E-BOUND	2021
A720 60	STRAITON ROAD	2021

A720 60 C75	PENTLAND BURN	2021
A720 60 H214V	214 STRAITON JN CCTV	2021
A720 63	BROOMHILL BURN	2021
A720 67	SWANSTON EAST	2021
A720 70	BIGGAR ROAD I/C O/B	2021
A720 70 H213V	213 LOTHIANBURN CCTV	2021
A720 70 W2	BIGGAR	2021
A720 80 H212V	212 DREGHORN CCTV	2021
A8 0 G10	VMS/M1 GOGAR R/A	2021
A84S 5	CRAIGFORTH I/C O/B	2021
A90 100 H319V	319 FRB AT F.TOLL	2021
A90 4 G50	Gantry G03	2021
A90 6	Echline North	2021
A90 6 G66	VMS3	2021
A90 7 F	Plaza Footbridge	2021
A90 8	Subway to Plaza	2021
A90 9 W5	North Sub-station Retaining Wall	2021
A921 0 G20	VMS/J2 A921	2021
A977 0 G10	VMS/Z N OF GARTARRY	2021
A985 1 H20V	952 KINCARDINE WEST	2021
M8 1-2 G40	Traffic Scotland - VMS 05	2021
M8 1-2 G65	Traffic Scotland VMS 04	2021
M8 1-2 H202V	202 RANSFIELD ROAD	2021
M8 1-2 H203V	203 RODDINGLAW	2021
M8 1-2 H204V	204 BAIRD ROAD	2021
M8 1-2 H205V	205 CLAYLANDS	2021
M8 2-3 20	NEWBRIDGE-CLIFTON RD	2021

M8 2-3 30	RIVER ALMOND	2021
M8 2-3 C65	ROMAN CAMP	2021
M8 2-3 C95	HOUSTON MAINS	2021
M8 2-3 H206V	206 LOUP O LEES	2021
M8 3-4 F26	DECHMOUNT HOUSE F/B	2021
M8 3-4 F71	SOUTH INCH F/B	2021
M8 3-4 F86	RIDDOCHILL F/B	2021
M8 3-4 G80	VMS/O6 WHITBURN	2021
M8 4-5 55	HOWBURN CULVERTS	2021
M8 4-5 C41	HARE MOSS	2021
M8 5-6 51	Shotts Burn	2021
M8 5-6 G95	VMS NEWHOUSE	2021
M823 0-0 50	ACCOMMODATION O/B	2021
M823 0-0 G10	VMS/J4 A823E	2021
M823S 0-0 10	M90 SB - A823M WB SR	2021
M8S 2-3 21	NEWBR-CLIFTON RD SLP	2021
M9 0-1 F21	NEWBRIDGE	2021
M9 10-11 30	LECROPT O/B	2021
M9 10-11 5	FORTH	2021
M9 10-11 65	KNOCKHILL	2021
M9 10-11 W90	POND COTTAGE	2021
M9 1-1 H207V	207 NEWBRIDGE	2021
M9 1-1 H208V	208 NEWBRIDGE RND	2021
M9 1-2 50	DUNTARVIE CASTLE	2021
M9 1-2 90	GALLOWSCROOK	2021
M9 2-2 10	PHILPSTOUN	2021
M9 3-4 85	AVONBANK FARM O/B	2021

M9 5-6 C30	BEANCROSS ROAD W/M	2021
M9 7-8 G30	SIGN GANTRY 2	2021
M9 7-8 G60	SIGN GANTRY 3	2021
M9 7-8 G90	SIGN GANTRY 4	2021
M9 9-10 16	NEWLINE 1 NORTH O/B	2021
M9 9-10 27	CHARTERSHALL NEW	2021
M9 9-10 30	BANNOCKBURN	2021
M9 9-10 35	NEWPARK FARM PATH	2021
M9 9-10 40	COXITHILL O/B	2021
M9 9-10 55	TORBREX O/B	2021
M9 9-10 63	BIRKHILL O/B	2021
M9 9-10 75	DUMBARTON ROAD O/B	2021
M9 9-10 C85	EDGE CULVERT	2021
M9 9-10 F65	CAMBUSBARRON F/B	2021
M9 9-9 10	PIRNHALL EAST O/B	2021
M9 9-9 20	PIRNHALL WEST O/B	2021
M90 0-1 50	Sth Queensferry Gyratory North (ESQ02) or Queensferry Junction North Bridge	2021
M90 0-1 55	Sth Queensferry Gyratory South (ESQ03) or Queensferry Junction South Bridge	2021
M90 0-1 80	Ferrytoll Viaduct (FT01)	2021
M90 0-1 85	Ferrytoll Gyratory South (FT04)	2021
M90 0-1 90	Ferrytoll Gyratory North (FT03)	2021
M90 0-1 G34	ITS and Sign Gantry 432S (G30)	2021
M90 0-1 G41	ITS and Sign Gantry 305N (G05)	2021
M90 0-1 G42	ITS and Sign Gantry 304N (G04)	2021

M90 0-1 G51	ITS and Sign Gantry 429S (G27)	2021
M90 0-1 G52	ITS and Sign Gantry 309N (G07)	2021
M90 0-1 G56	ITS Gantry 310N (G08) and G25	2021
M90 0-1 G57	ITS and Sign Gantry 426S (G26)	2021
M90 0-1 G71	ITS and Sign Gantry 422S (G23)	2021
M90 0-1 G74	ITS and Sign Gantry 314N (G11)	2021
M90 0-1 G80	ITS and Sign Gantry 316N (G12)	2021
M90 0-1 G83	ITS and Sign Gantry 317N (G13) and G19	2021
M90 0-1 G87	ITS and Sign Gantry 318N (G14) and G18	2021
M90 0-1 G90	ITS and Sign Gantry 319N (G15)	2021
M90 0-1 G94	ITS and Sign Gantry 416S (G17)	2021
M90 0-1 G95	ITS and Sign Gantry 321N (G16)	2021
M90 0-1 W1	B800 Retaining Wall	2021
M90 0-1 W91	A90 Southbound Diverge Retaining Wall	2021
M90 1-1 G11	VMS/J5 A921W E OF J1	2021
M90 1-1 G19	VMS/J1 A921W E OF J1	2021
M90 1-1 W10	ADMIRALTY(SE)	2021
M90 1-1 W20	ADMIRALTY(NW)	2021
M90 2-2 H322V	322 J2 MASTERTON	2021
M90 2-3 G42	VMS/H1 HALBEATH	2021
M90 2-3 G43	VMS/H HALBEATH SOUTH	2021
M90 2-3 H323	323 MIDDLEBANK	2021
M90 2-3 H324V	324 B916 OVERPASS	2021
M90 2-3 H325V	325 S OF J2A DULOCH	2021
M90 2-3 H326V	326 DULOCH ON RAMP	2021

A1 20	EYE WATER	2022
A1 25	AYTON CASTLE O/B	2022
A1 25 C40	EAST RESTON MILL	2022
A1 28	LEMINGTON U/P	2022
A1 28 C5	HOUNDWOOD LODGE	2022
A1 30	HARELAWSIDE	2022
A1 39 C10	PEASE BURN	2022
A1 5	MARYFIELD O/B	2022
A1 51	TOWER NEW	2022
A1 51 C55	HAZELDEAN NEW	2022
A1 61	COVE RAIL	2022
A1 71	DUNGLASS NEW	2022
A68 165 G50	Traffic Scotland VMS L1	2022
A68 210 C10	LITTLE LINN	2022
A68 240 C15	KITTY PLANTATION	2022
A68 260 C45	LEADERHAUGH 2	2022
A68 260 G1	VMS/L9 A697 GREENLAW	2022
A68 290 C85	SOUTRA HILL CVT	2022
A68 290 C90	SOUTRA OLD TOLL CVT	2022
A68 320 W45	HOPE	2022
A68 370 G3	VMS/L10 A7 MIDDLETON	2022
A7 10 C10	BOUGHLIN BURN	2022
A7 221	ALBERT	2022
A7 30 C50	BRAIDRIDLAND BURN	2022
A7 30 C70	HAG BURN	2022
A7 70 W6	TOLSON'S WALL	2022
A7 70 W7	TOLSON'S WALL NORTH	2022

A702 100 C5	AMAZONDEAN CVT	2022
A702 105	NINE MILE BURN	2022
A702 20	CLYDES RAIL	2022
A702 30 W65	HARTSIDE	2022
A702 40 W90	COULTER	2022
A702 5	DUNEATONFOOT	2022
A702 70 W1	CANDYMILL COTTAGE	2022
A720 150	WATER OF LEITH	2022
A720 170	CURRIEMUIR	2022
A720 70 C50	SWANSTON WEST	2022
A90 0 G11	VMS - Clermiston	2022
A90 100 H321V	321 S J1 ADMIRALTY	2022
A904 0 H310V	310 S OF FRB ECHLINE	2022
A92S 2	HALBEATH NORTH U/B	2022
A92S 5	HALBEATH SOUTH U/B	2022
A985 40 C5	CAIRNEYHILL	2022
A985 40 C70	WAULKMILL	2022
M8 1-1 40	NB SLIP O/B	2022
M8 1-1 50	GOGAR ROAD O/B	2022
M8 1-1 G10	GANTRY 1	2022
M8 1-1 G20	GANTRY 2	2022
M8 1-2 13	HERMISTON ROAD O/B	2022
M8 1-2 24	GOGAR BURN	2022
M8 1-2 28	RANSFIELD ROAD O/B	2022
M8 1-2 53	FREELANDS ROAD O/B	2022
M8 1-2 70	BAIRD ROAD O/B	2022
M8 2-2 30	N/B SLIP	2022

M8 2-3 45	BURNSIDE-MUIREND O/B	2022
M8 2-3 85	UPHALL STATION ROAD	2022
M8 3-4 60	STARLAW ROAD O/B	2022
M8 3-4 C75	EASTER INCH MOSS CVT	2022
M8 4-4 20	EAST WHITBURN WEST	2022
M8 4-5 32	WHITBURN INTERCHANGE	2022
M8 4-5 36	SCRAGGY	2022
M8 4-5 38	ALMOND TWIN ARMCOS	2022
M8 4-5 65	B718 O/B	2022
M8 4-5 76	BLAIRMUCKHILL O/B	2022
M8 4-5 C25	TIPPETHILL	2022
M8 4-5 C58	GREENRIGG	2022
M8 4-5 C75	HOW BURN 2	2022
M8 4-5 C90	HOWBURN 1	2022
M8 5-5 10	SHOTTS ROAD I/C O/B	2022
M80 7-8 40	BANKNOCK	2022
M80 7-8 G20	Sign Gantry 1- New	2022
M80 7-8 G90	SIGN GANTRY 2	2022
M80 8-8 10	BANKHEAD SLIP ROAD	2022
M80 8-9 10	DROVE ROAD O/B	2022
M80 8-9 20	CUTHELTON GREEN O/B	2022
M80 8-9 23	CASTLEBURN	2022
M80 8-9 25	MYOTHILL ROAD	2022
M80 8-9 27	STONEYWOOD RAIL	2022
M80 8-9 29	FANKERTON ROAD	2022
M80 8-9 32	CARRON	2022
M80 8-9 35	BARNEGO ROAD O/B	2022

M80 8-9 45	AVON BURN	2022
M80 8-9 5	BANKHEAD FARM ROAD	2022
M80 8-9 65	NORTHFIELD ROAD	2022
M80 8-9 66	NORTHFIELD ROAD CULV	2022
M80 8-9 68	NORTHFIELD S	2022
M80 8-9 70	NORTHFIELD N	2022
M80 8-9 75	EASTERTON O/B	2022
M80 8-9 85	AUCHENBOWIE HOUSE	2022
M80 8-9 90	AUCHENBOWIE ROAD	2022
M80 8-9 C15	LITTLE DENNY BURN	2022
M80 8-9 C73	EASTERTON FARM	2022
M80 8-9 C85	AUCHINBOWIE MAINS CU	2022
M80 8-9 C95	CULVERT	2022
M80 8-9 W10	BANKHEAD (WALL)	2022
M80 8-9 W20	CUTHELTON WALL	2022
M80 8-9 W40	BARNEGO ROAD WALL	2022
M823S 0-0 W10	S/B SLIP ROAD	2022
M8S 1-1 30	FAIRVIEW SLIP RAIL	2022
M8S 1-1 60	SOUTH GYLE SLIP O/B	2022
M8S 1-1 70	ECB SOUTH SLIP O/B	2022
M8S 1-1 80	ECB NORTH SLIP O/B	2022
M8S 1-1 90	UNION CANAL AQUEDUCT	2022
M8S 1-1 G30	GANTRY 3	2022
M8S 1-1 G40	GANTRY 4	2022
M8S 2-2 20	NB SLIP OVER WB SLIP	2022
M8S 2-3 5	B7030	2022
M8S 3-3 10	BATHGATE SLIP RAIL	2022

M8S 3-3 20	SLIP OVER M8 O/B	2022
M8S 3-3 40	LIVINGSTON ROAD SLIP	2022
M8S 3-3 F60	KNIGHTSRIDGE F/B	2022
M9 0-1 50	ALMOND	2022
M9 10-11 C35	CULVERT	2022
M9 1-2 25	MURIEHALL O/B	2022
M9 1-2 30	WINCHBURGH LOOP RAIL	2022
M9 1-2 65	PRIESTINCH O/B	2022
M9 1-2 80	CRAIGTON	2022
M9 1-2 C10	CHARLES	2022
M9 2-3 45	PARDOVAN O/B	2022
M9 3-3 10	BURGHMUIR O/B	2022
M9 3-4 15	BONSYDE	2022
M9 3-4 20	BONNYTOUN O/B	2022
M9 3-4 40	LOCH HOUSE O/B	2022
M9 3-4 50	MILL ROAD O/B	2022
M9 5-5 C5	CADGERS BRAE W/M	2022
M9 5-6 C60	THISTLE AVENUE W/M	2022
M9 6-6 C5	EARLS GATE W/M	2022
M9 6-7 25	CARRON	2022
M9 6-7 C23	GLENSBURGH W/M	2022
M9 6-7 C35	YONDERHAUGH W/M	2022
M9 6-7 G44	VMS/W2 M9 J7	2022
M9 8-9 G22	VMS/W3 M9 J87	2022
M9 9-10 C90	CULVERT	2022
M90 3-3 W10	HALBEATH (SE)	2022
M90 3-3 W20	HALBEATH (NW)	2022

M9S 1-1 50	HUMBIE RAIL	2022
M9S 9-10 C95	PIPE MALARKY	2022
A1 115	EWEFORD U/P	2023
A1 175	HADDINGTON E I/C	2023
A1 178	ABERLADY ROAD O/B	2023
A1 181	ALDERSTON O/B	2023
A1 183	RAILWAY WALK U/P	2023
A1 185	HADDINGTON W I/C O/B	2023
A1 188	HUNTINGTON ROAD O/B	2023
A1 191	TRABROUN ROAD O/B	2023
A1 195	GLADSMUIR I/C O/B	2023
A1 197	GREENDYKES FARM O/B	2023
A1 200	BLINDWELLS FARM U/P	2023
A1 205	BANKTON I/C O/B	2023
A1 210	MEADOWMILL U/P	2023
A1 238 F	WALLYFORD F/B	2023
A68 200	PACKMANS	2023
A68 290 C30	SOUTRA SHEEP CREEP	2023
A68 290 C5	WINDYCLEUCH	2023
A68 290 C95	MATTHEWSON CVT	2023
A68 300	SOUTRA TUNNEL	2023
A68 310	JUNIPERLEA	2023
A68 320	FALA TUNNEL	2023
A68 320 W40	CRICHTON DEAN	2023
A7 140	HORN	2023
A7 155	BINKS	2023
A7 160	ARMSTRONG	2023

A7 160 C70	DOVECOT	2023
A7 170	GLEDNEST	2023
A7 180	TEINDSIDE	2023
A7 180 C60	HARWOOD SIKE	2023
A7 180 C95	VALES	2023
A7 190	NEWMILL	2023
A7 200	BRANXHOLM CASTLE	2023
A7 210	BRANXHOLM	2023
A7 210 W50	DUNK	2023
A7 230 C30	NEWTON	2023
A7 240	ASHKIRK	2023
A7 240 C15	DRYDEN SOUTH	2023
A7 240 C20	DRYDEN FIELD	2023
A7 260 C45	NETHERBARNS	2023
A7 260 G65	Traffic Scotland VMS L3	2023
A7 70 W14	RIVER ESK	2023
A702 120 W90	HILLEND	2023
A702 120 W95	HILLEND 1	2023
A702 60	CADGERS NEW	2023
A702 60 W95	BACKSHIELS 2	2023
A720 100	DREGHORN U/P	2023
A720 130 G70	VMS/M3 W-BOUND	2023
A720 30	GILMERTON ROAD O/B	2023
A720 40	LASSWADE ROAD	2023
A720 50	MINERAL RAIL	2023
A720 80	SWANSTON ROAD O/B	2023
A720 90	DREGHORN SPUR O/B	2023

A90 15	Ferry Toll Railway Tunnel	2023
A90 3	Standingstanes Underbridge	2023
A90 4	Dalmeny Railway Bridge	2023
A90 40	Dunfermline Wynd Bridge	2023
A92S 9 G10	Fife ITS Gantry 20F 93980	2023
M8 5-6 20	DEWSHILL O/B	2023
M8 5-6 40	DUNTILLAND O/B	2023
M8 5-6 60	BOGFOOT O/B	2023
M8 5-6 70	LONGACRE	2023
M8 5-6 72	LANGSIDE	2023
M823 1-1 G60	Fife ITS Gantry 03F 92980	2023
M876 2-8 10	GLENBERVIE O/B	2023
M876 2-8 25	GLENBERVIE ESTATE	2023
M876 2-8 30	SOUTH INCHES RAIL	2023
M876 2-8 45	NORTH INCHES O/B	2023
M876 2-8 C45	CULVERT	2023
M876 2-8 C65	CULVERT	2023
M876 2-8 C85	CULVERT	2023
M876 7-3 80	LETHAM O/B	2023
M876 7-3 C30	CULVERT	2023
M876 7-3 C35	CULVERT	2023
M876 7-3 C40	CULVERT	2023
M876 7-3 C45	CULVERT	2023
M876S 2-2 10	NORTH BROOMAGE O/B	2023
M9 0-1 G25	Gantry 01J 89010	2023
M9 0-1 G70	Gantry 02J 89020 89990	2023
M9 0-1 G80	VMS V03J	2023

M9 0-1 G95	Gantry 04J 89030 89980	2023
M9 10-11 C15	CULVERT	2023
M9 10-11 C55	CULVERT	2023
M9 10-11 C65	CULVERT	2023
M9 1-1 G10	Gantry 05J 89970	2023
M9 1-2 G10	Gantry 17J 89950	2023
M9 1-2 G35	Gantry 09J 89930	2023
M9 2-3 G41	VMS/N3 BURGHMUIR	2023
M9 7-8 75	SO ALLOA ROAD O/B	2023
M9 8-8 10	HILL O/B	2023
M9 8-9 15	TOR BURN	2023
M9 8-9 20	ROSEHILL	2023
M9 8-9 30	POWSWOOD RAIL	2023
M9 8-9 35	CUSHAN QUARTER	2023
M9 8-9 6	KERSEBROOK	2023
M9 8-9 60	PLEAN	2023
M9 8-9 8	POW BURN	2023
M9 8-9 C13	BOGEND BURN	2023
M9 8-9 C20	ROSEHILL (1)	2023
M9 8-9 C25	POWSWOOD	2023
M9 8-9 C45	SEWAGE WORKS	2023
M9 8-9 C78	ROADHEAD FARM	2023
M9 8-9 C80	CULVERT	2023
M9 8-9 C90	BLOODY FOLD	2023
M9 9-10 15	NEWLINE 2 SOUTH O/B	2023
M9 9-10 76	Dumbarton Road W/M Culvert	2023
M9 9-10 C5	CULVERT	2023

M90 0-0 G10	Gantry 10J 90010	2023
M90 0-0 G20	Gantry 11J 90990	2023
M90 0-1 G30	Gantry 13J 90030 90980	2023
M90 0-1 G40	VMS V14J	2023
M90 0-1 G5	Gantry 12J 90020	2023
M90 0-1 G50	Gantry 15J 90040 90970	2023
M90 0-1 G70	Gantry 16J 90050 90960	2023
M90 1-1 G15	Fife ITS Gantry 05F 92990	2023
M90 1-2 G35	Fife ITS Gantry 01F 90200 90810	2023
M90 1-2 G45	Fife ITS Gantry 02F	2023
M90 2-2 G10	Fife ITS Gantry 06F (90220)	2023
M90 2-2 G20	Fife ITS Gantry 07F 90790	2023
M90 2-2 G25	Fife ITS Gantry 08F	2023
M90 2-2 G5	Fife ITS Gantry 04F 90800	2023
M90 2-3 G10	Fife ITS Gantry 11F 90240 90760	2023
M90 2-3 G20	Fife ITS Gantry 14F 90250 90750	2023
M90 2-3 G50	Fife ITS Gantry 10F 90230 90770	2023
M90 2-3 G65	Fife TIS Gantry 15F	2023
M90 2-3 G75	Fife ITS Gantry 16F 90270 90730	2023
M90 2-3 G95	Fife ITS Gantry 17F 90280 90720	2023
M90S 0-1 20	Ferrytoll Railway West (FT09)	2023
M90S 1-1 C10	New Swine Burn Culvert	2023
M90S 3-3 G50	Fife ITS Gantry 18F 93990	2023
M9S 10-10 C10	CRAIGFORTH SLIP	2023
M9S 1-1 11	Kirkliston Spur N/B	2023
M9S 1-1 40	NEWMAINS EAST	2023
M9S 1-1 41	Newmains Road O/Bridge West	2023

A1 100	FORD ARMCO	2024
A1 110	SPOTT BURN ARMCO	2024
A1 220	JOHNNY COPE'S RD O/B	2024
A1 230	DOLPHINGSTONE O/B	2024
A1 241	SALTERS ROAD O/B	2024
A1 251	CARBERRY ROAD O/B	2024
A1 251 G50	VMS/M5 W-BOUND	2024
A1 261	RIVER ESK	2024
A1 271	OLD CRAIGHALL I/C E	2024
A1 28 C39	HOUNDWOOD U/P	2024
A1 281	OLD CRAIGHALL I/C W	2024
A1 39	PENMANSHIEL NEW RAIL	2024
A1 41	SYPHON	2024
A1 71 C40	BILSDEAN TUNNEL	2024
A1 80	THORNTONLOCH	2024
A1 90	SKATERAW RAIL	2024
A6091 50 W95	HASELDEAN WALL	2024
A68 260 F	Washingburn Footbridge	2024
A68 330	LOTHIAN	2024
A7 150 W30	FROSTLIE BURN	2024
A7 240 W95	Selkirk Wall - Previously Unrecorded	2024
A7 70 W30	Langholm South Wall (Townfoot)	2024
A7 80	FACTORY	2024
A702 10	CLYDES NEW (WANDEL)	2024
A702 100	CARLOPS	2024
A702 30	WANDEL BURN	2024

A702 30 C10	WOODEND	2024
A702 30 C60	HARTSIDE	2024
A702 40	LAMINGTON	2024
A702 50	COULTER	2024
A702 50 F	COULTER F/B	2024
A702 70 C75	TARTH	2024
A702 80	WESTWATER	2024
A702 9	CLYDES OLD	2024
A702 90	LYNE	2024
A702 90 C45	HAZLIEBURN	2024
A876 15	HAUGHS O AIRTH O/B	2024
A876 15 H50V	HIGGINS NEUK CCTV	2024
A876 50 C80	KENNETPANS C7	2024
A876 65	CARSE ROAD O/B	2024
A876 65 C35	BROOMKNOWE C13	2024
A876 85	BROADCARSE FARM U/P	2024
A876 95	KINCARDINE RAIL	2024
A876 95 G99	KILBAGIE GANTRY	2024
A876 95 H99V	KILBAGIE CCTV 02	2024
A90 0 G1	VMS/K2 A90N DALMENY	2024
A985 40	CAIRNEYHILL RAIL	2024
M8 1-2 G12	VMS 03 NADICS	2024
M80 7-8 G65	VMS W1 NADICS	2024
M80 8-9 C60	CULVERT	2024
M80 8-9 C63	CULVERT	2024
M80 8-9 C64	CULVERT	2024
M823S 0-0 40	A823M EB - M90 SB SR	2024

M876 1-2 10	DENOVAN ROAD	2024
M876 1-2 5	RIVER CARRON	2024
M876 1-2 W50	GABION REVETMENT	2024
M876 1-2 W51	GABION REVETMENT	2024
M876 1-2 W75	GABION REVETMENT	2024
M876 1-2 W76	GABION REVETMENT	2024
M876 2-2 C30	CULVERT	2024
M876 3-3 10	BOWTREES	2024
M876 7-3 C25	CULVERT	2024
M876 7-7 C10	CULVERT	2024
M876 8-8 C10	CULVERT	2024
M876 8-8 C20	CULVERT	2024
M876S 2-2 C20	CULVERT	2024
M9 0-0 10	NEWBRIDGE SOUTH O/B	2024
M9 0-0 30	NEWBRIDGE NORTH O/B	2024
M9 10-11 C45	CULVERT	2024
M9 1-1 C75	Niddry Burn Culvert	2024
M9 1-2 7	OVERTON ROAD	2024
M9 1-2 G20	Gantry 07J 89940	2024
M9 1-2 G25	VMS V08J	2024
M9 1-2 G5	Gantry 06J 89960	2024
M9 2-3 G40	VMS - Southbound Carriageway	2024
M9 3-4 55	RIVER AVON	2024
M9 4-5 W70	KIRK ENTRY WALL	2024
M9 6-7 24	M9 Kelpies (Helix) Canal	2024
M9 6-7 C90	CULVERT	2024
M9 7-8 C70	CULVERT	2024

M9 8-9 C19	ROSEHILL (2)	2024
M9 8-9 C40	CUSHENQUARTER	2024
M9 8-9 C5	CULVERT	2024
M9 8-9 C75	PLEANBANK WOOD	2024
M9 9-10 C20	FOOT O' GREEN	2024
REDACTED	**REDACTED**	2024
REDACTED	**REDACTED**	2024
REDACTED	**REDACTED**	2024
M90 1-1 10	ADMIRALTY SOUTH	2024
M90 1-1 20	ADMIRALTY NORTH	2024
M90 1-2 30	BRANKHOLM BURN	2024
M90 2-2 20	C67 O/B	2024
M90 2-3 40	DULOCH O/B	2024
M90 2-3 60	CALAIS MUIR O/B	2024
A68 10	CAMPTOWN	2025
A68 100	TOWNFOOT	2025
A68 110	STATION	2025
A68 120	HARDEN BURN	2025
A68 130 C75	LONGNEWTON TOLL	2025
A68 130 C90	ST BOSWELLS C-POND	2025
A68 150	HOLMES	2025
A68 161	NEWTOWN GLEN	2025
A68 165	NEWTOWN GLEN U/P	2025
A68 168	SPROUSTON U/P	2025
A68 168 C10	SPROUSTON GLEN	2025
A68 30	FERNIEHIRST	2025
A68 390	FORDEL MAINS O/B	2025

A68 40	HUNDALEE	2025
A68 400	BELLYFORD UNDERPASS - ST10	2025
A68 400 C1	BELLYFORD	2025
A68 410	LANGSIDE O/B	2025
A68 420	SMEATON CYCLEPATH	2025
A68 420 C40	SMEATON BURN	2025
A68 430	SALTERS ROAD O/B	2025
A68 440	HOME FARM	2025
A68 450	RIVER ESK	2025
A68 50	INCHBONNY	2025
A68 71	NEW ABBEY	2025
A68 90	CANONGATE U/P	2025
A68S 20	BLACK BURN	2025
A7 100	STAPLECLEUCH	2025
A7 110	BUSH	2025
A7 121	FIDDLETON	2025
A7 130	EWESLEES NEW	2025
A7 130 W60	Mosspaul Retaining Wall	2025
A7 40 C10	Docken Beck Culvert	2025
A7 40 C20	Irvine Burn Culvert	2025
A7 55	Old Irvine U/P	2025
A7 60 C10	Ashy Sike Culvert	2025
A7 90	KIRKTON	2025
A702 5 G5	Traffic Scotland VMS P1	2025
A720 15	NEWTON I/C	2025
A720 30 G80	VMS STRAITON	2025
A876 15 G10	VMS01 HAUGHS O AIRTH	2025

A876 50	CLACKMANNANSHIRE	2025
A90 5	Echline South	2025
M8 4-5 20	WHITBURN WORKS A/C	2025
M8 4-5 5	RIVER ALMOND	2025
M8 4-5 F71	HARTHILL NEW F/B	2025
M8 4-5 G60	Traffic Scotland VMS O	2025
M876 1-2 95	ACCOMMODATION O/B	2025
M9 5-6 20	GRANGEBURN	2025
M9 5-6 65	PRIMROSE U/P	2025
M9 6-6 10	EARLSGATE SOUTH	2025
M9 6-6 20	EARLSGATE NORTH	2025
M9 9-10 G95	VMS CRAIGHOUSE	2025
M90S 3-3 30	A92 LINK U/B	2025
A90 9	Forth Road Bridge	N/A
M90 0-1 G33	VMS1	N/A
M90 0-1 G36	VMS2	N/A
A1 5 S90	Road Traffic Sign	
A1 115 S80	Road Traffic Sign	
A1 170 S100	Road Traffic Sign	
A1 172 S20	Road Traffic Sign	
A1 175 S70	Road Traffic Sign	
A1 178 S50	Road Traffic Sign	
A1 178 S80	Road Traffic Sign	
A1 181 S40	Road Traffic Sign	
A1 200 S80	Road Traffic Sign	
A68 330 S80	Road Traffic Sign	
A68 410 S100	Road Traffic Sign	

A68 440 S20	Road Traffic Sign
A68 450 S60	Road Traffic Sign
A702 0 S25	Road Traffic Sign
A720 10 S20	Road Traffic Sign
A720 10 S80	Road Traffic Sign
A720 25 S5	Road Traffic Sign
A720 25 S10	Road Traffic Sign
A720 80 S10	Road Traffic Sign
A720 210 S10	Road Traffic Sign
A720 220 S40	Road Traffic Sign
A720 230 S40	Road Traffic Sign
A876 15 S20	Road Traffic Sign
A876 15 S30	Road Traffic Sign
A876 15 S40	Road Traffic Sign
A876 15 S45	Road Traffic Sign
A876 15 S90	Road Traffic Sign
A876 65 S100	Road Traffic Sign
M8 1-2 S20	Road Traffic Sign
M8 1-2 S70	Road Traffic Sign
M8 1-2 S100	Road Traffic Sign
M8 2-3 S20	Road Traffic Sign
M8 2-3 S30	Road Traffic Sign
M8 2-3 S100	Road Traffic Sign
M8 3-3A S100	Road Traffic Sign
M8 3A-4 S20	Road Traffic Sign
M8 3A-4 S90	Road Traffic Sign
M8 4-4A S100	Road Traffic Sign

M8 4A-5 S10	Road Traffic Sign
M8 4A-5 S40	Road Traffic Sign
M8 4A-5 S80	Road Traffic Sign
M8 4A-5 S90	Road Traffic Sign
M8 4A-5 S100	Road Traffic Sign
M8 5-6 S10	Road Traffic Sign
M8 5-6 S30	Road Traffic Sign
M8 5-6 S70	Road Traffic Sign
M8 5-6 S75	Road Traffic Sign
M8 5-6 S77	Road Traffic Sign
M8 5-6 S80	Road Traffic Sign
M8 5-6 S90	Road Traffic Sign
M8S 1-1 30 S50	Road Traffic Sign
M9 0-1 S60	Road Traffic Sign
M9 0-1 S80	Road Traffic Sign
M9 1-2 G25	Road Traffic Sign
M9 1-2 G25	Road Traffic Sign
M9 1-2 S10	Road Traffic Sign
M9 2-3 S35	Road Traffic Sign
M9 2-3 S70	Road Traffic Sign
M9 2-3 S90	Road Traffic Sign
M9 3-4 S40	Road Traffic Sign
M9 3-4 S90	Road Traffic Sign
M9 4-5 S30	Road Traffic Sign
M9 4-5 S55	Road Traffic Sign
M9 4-5 S60	Road Traffic Sign
M9 6-7 S5	Road Traffic Sign

M9 6-7 S30	Road Traffic Sign
M9 6-7 S35	Road Traffic Sign
M9 8-9 S90	Road Traffic Sign
M9 9-9 S10	Road Traffic Sign
M9 9-9 S20	Road Traffic Sign
M9 9-10 S20	Road Traffic Sign
M9 9-10 S20	Road Traffic Sign
M9 9-10 S30	Road Traffic Sign
M9 9-10 S35	Road Traffic Sign
M9 9-10 S90	Road Traffic Sign
M9 10-11 S10	Road Traffic Sign
M9 10-11 S20	Road Traffic Sign
M9 10-11 S25	Road Traffic Sign
M9 10-11 S90	Road Traffic Sign
M876 7-3 S70	Road Traffic Sign
M876 7-3 S85	Road Traffic Sign

Table 4.3.2 Summary of Structures Requiring Principal Inspections Per Year

Structure Type		2020	2021	2022	2023	2024	2025	2026	2027
Particular Requirements *									
Bridges		59	58	83	69	46	41	59	58
Footbridges		4	6	1	2	2	1	4	6
Culverts		17	17	38	39	26	8	17	17
Retaining Walls		24	17	13	13	9	1	24	17
Gantries		5	46	14	34	9	5	5	46
High Mast Lights		7	24	2		2		7	24
Road Traffic Signs									
Totals	-	116	168	151	157	94	56	116	168

Notes

1. For supplementary information on bridges with particular requirements, refer to Schedule 2 Section 3.

2. Further information on the Structures listed within this table is held within the structures management function of the Integrated Roads Information System and the information room.

3. The numbers of Structures may be altered during the course of this Contract at the Director's discretion.

4. All Structures with particular requirements lie within the Principal Inspection programme, except where specifically excluded by their own maintenance manual as noted in Schedule 2 Section 3.

Attachment 4.4 List of Structures Over, Carrying or adjacent to Water Courses That Have Level 1 and Level 2 Scour Assessments

Table 4.4.1 Structures Over, Carrying or Adjacent to Water Courses, Results of Level 1 and Level 2 Scour Assessments

Struct Ref	Name	Risk Rating	Level 1/ Level 2 Assessment
A1 100	FORD ARMCO	5	Level 1
A1 110	SPOTT BURN ARMCO	5	Level 1
A1 124	BIEL WATER	5	Level 1
A1 135	HEDDERWICK BURN	5	Level 1
A1 162	RIVER TYNE	5	Level 1
A1 20	EYE WATER	5	Level 1
A1 261	RIVER ESK	5	Level 1
A1 30	HARELAWSIDE	5	Level 1
A1 41	SYPHON	5	Level 1
A1 51	Tower New	1	Level 2
A1 71	DUNGLASS NEW	5	Level 1
A1 80	THORNTONLOCH	5	Level 1
A6091 10	GALAFOOT	3	Level 2
A68 10	CAMPTOWN	5	Level 1
A68 100	TOWNFOOT	5	Level 1
A68 110	STATION	5	Level 1
A68 120	HARDEN BURN	5	Level 1
A68 130	ANCRUM	3	Level 2
A68 140	CLATTERDEAN	5	Level 1
A68 150	HOLMES	5	Level 1
A68 161	NEWTOWN GLEN	5	Level 1
A68 180	DRYGRANGE	5	Level 1
A68 200	Packmans	5	Level 1
A68 220	EARLSTON	5	Level 1
A68 230	BIRKENSIDE TOLL	5	Level 1
A68 240	GALADEAN	5	Level 1
A68 240 C65	Milsie Burn	5	Level 1
A68 260 C45	Lederhaugh No 2	5	Level 1
A68 250	STONYFORD	5	Level 1
A68 260	WASHINGBURN	5	Level 1
A68 270	CARFRAEMILL	5	Level 1
A68 280	ANNFIELD	5	Level 1
A68 30	FERNIEHIRST	3	Level 2
A68 300	SOUTRA TUNNEL	5	Level 1
A68 310	JUNIPERLEA	5	Level 1
A68 320	FALA TUNNEL	5	Level 1

A68 330	LOTHIAN	5	Level 1
A68 40	HUNDALEE	5	Level 1
A68 50	INCHBONNY	3	Level 2
A68 71	NEW ABBEY	5	Level 1
A68S 20	BLACK BURN	5	Level 1
A7 100	STAPLECLEUCH	5	Level 1
A7 110	BUSH	5	Level 1
A7 130 W60	Mosspaul RW	5	Level 1
A7 130	EWESLEES NEW	5	Level 1
A7 140	HORN	5	Level 1
A7 150	FAWHOPE	3	Level 2
A7 155	BINKS	5	Level 1
A7 160	ARMSTRONG	3	Level 2
A7 170	GLEDNEST	5	Level 1
A7 180	TEINDSIDE	5	Level 1
A7 180 C95	Vales	4	Level 2
A7 190	NEWMILL	5	Level 1
A7 200	BRANXHOLM CASTLE	5	Level 1
A7 210	BRANXHOLM	3	Level 2
A7 221	ALBERT	5	Level 1
A7 221 W60	Commercial Road No 1	2	Level 2
A7 221 W80	Commercial Road No 2	2	Level 2
A7 221 W90	Commercial Road No 3	2	Level 2
A7 221 W96	Commercia Road No 4	2	Level 2
A7 240	ASHKIRK	5	Level 1
A7 240 C17	Dryden	5	Level 1
A7 240 C24	Dryden North	5	Level 1
A7 250	SHAWBURN TOLL	5	Level 1
A7 260	ETTRICKFOOT	5	Level 1
A7 70	SKIPPERS	5	Level 1
A7 80	FACTORY	3	Level 2
A7 90	KIRKTON	5	Level 1
A702 10	CLYDES NEW (WANDEL)	5	Level 1
A702 100 C5	Amazondean	5	Level 1
A702 100	CARLOPS	5	Level 1
A702 105	Nine Mile Burn	3	Level 2
A702 110	BRAIDWOOD	5	Level 1
A702 120	FLOTTERSTONE NEW	5	Level 1
A702 30	WANDEL BURN	5	Level 1

A702 40	LAMINGTON	5	Level 1
A702 5	DUNEATONFOOT	5	Level 1
A702 50	COULTER	5	Level 1
A702 60	CADGERS NEW	4	Level 2
A702 60 W90	Backshields No 1	3	Level 2
A702 70	CANDY	4	Level 2
A702 80	WESTWATER	3	Level 2
A702 9	CLYDES OLD	5	Level 1
A702 90	LYNE	5	Level 1
A720 110	BONALY BURN	5	Level 1
A720 150	WATER OF LEITH	5	Level 1
A720 63	BROOMHILL BURN	5	Level 1
A720 67	SWANSTON EAST	5	Level 1
A985 20	BLUTHER BURN	5	Level 1
M8 1-2 24	GOGAR BURN	5	Level 1
M8 2-3 30	RIVER ALMOND	5	Level 1
M8 4-5 5	RIVER ALMOND	5	Level 1
M80 8-9 23	CASTLEBURN	5	Level 1
M80 8-9 32	CARRON	5	Level 1
M80 8-9 45	AVON BURN	5	Level 1
M80 8-9 68	NORTHFIELD S	4	Level 2
M80 8-9 70	NORTHFIELD N	3	Level 2
M876 1-2 5	RIVER CARRON	1	Level 2
M8S 1-1 20	GOGAR BURN/REDHEUGHS	5	Level 1
M9 0-1 50	ALMOND	5	Level 1
M9 10-11 5	FORTH	2	Level 2
M9 3-4 55	RIVER AVON	5	Level 1
M9 5-6 20	GRANGEBURN	5	Level 1
M9 6-7 25	CARRON	5	Level 1
M9 8-9 15	TOR BURN	5	Level 1
M9 8-9 6	KERSEBROOK	5	Level 1
M9 8-9 8	POW BURN	5	Level 1
M9 9-10 30	BANNOCKBURN	5	Level 1
M90 1-2 30	BRANKHOLM BURN	5	Level 1
A1 25 C40	East Reston Mill	5	Level 1
A68 240 C35	New Blainslie	5	Level 1
A7 230 C30	Newton	5	Level 1
M9 9-10 C85	Edge	5	Level 1

M80 8-9 C73	Easterton Farm	5	Level 1
A1 10 C50	Hill Burn	5	Level 1
A1 110	Spott Burn	5	Level 1
A1 39 C10	Pease Burn	5	Level 1
A1 51 C55	Hazeldean New	5	Level 1
A6091 28 F	Coatburn FB	5	Level 1
A6091 30	Chiefswood Road	5	Level 1
A6091 30 F	Huntlyburn FB	5	Level 1
A6091 40 C5	Malthouse Burn	5	Level 1
A68 168 C10	Spouston Glen	5	Level 1
A68 190	Howdlers	5	Level 1
A68 20	Blackburn	5	Level 1
A68 210	Meikle Linn	5	Level 1
A68 210 C10	Little Linn	5	Level 1
A68 240 C10	Cuddyhall Dean	5	Level 1
A68 249 C15	Kitty Plantation	5	Level 1
A68 240 C75	Milsieburn	5	Level 1
A68 260 C10	Harryburn	5	Level 1
A68 260 C31	New Mills	5	Level 1
A68 260 C45	Leaderhaugh No 2	5	Level 1
A68 260 C70	Wiselaw Mill	5	Level 1
A68 260 F	Washington FB	5	Level 1
A68 290 C5	Windycleugh	5	Level 1
A68 290 C15	Red Brae	5	Level 1
A68 290 C85	Soutra Hill	5	Level 1
A68 290 C90	Soutra Old Toll	5	Level 1
A68 400 C1	Bellyford	5	Level 1
A68 420 C40	Smeaton Burn	5	Level 1
A68 50 C50	Howden Burn	5	Level 1
A7 10 C10	Boughlin Burn	5	Level 1
A7 121	Fiddleton	5	Level 1
A7 130 W30	Ewelees Wall	5	Level 1
A7 160 C70	Dovecot	5	Level 1

A7 180 C60	Harwood Sike	5	Level 1
A7 210 W50	Dunk	5	Level 1
A7 240 C15	Dryden South	5	Level 1
A7 240 C17	Dryden South	5	Level 1
A7 240 C20	Dryden Field	5	Level 1
A7 240 C25	Dryden North	5	Level 1
A7 240 C50	Big Wood	5	Level 1
A7 240 C60	Common Burn	5	Level 1
A7 260 C45	Netherbarns	5	Level 1
A7 30 C50	Braidridland Burn	5	Level 1
A7 30 C70	Hag Burn	5	Level 1
A7 40 C10	Docken Beck	5	Level 1
A7 40 C20	Irvine Burn	5	Level 1
A7 60 C10	Ashy Sike	5	Level 1
A7 60 C90	Skipperscleugh	5	Level 1
A7 70 C80	Whiteshiels	5	Level 1
A7 80 C80	Sorbie	5	Level 1
A702 120 F	Flotterstone Old	5	Level 1
A702 30 C10	Woodend	5	Level 1
A702 30 C60	Hartside	5	Level 1
A702 40 W90	Coulter	5	Level 1
A702 50 F	Coulter FB	5	Level 1
A702 55 C0	Woodneuk	5	Level 1
A702 60 C55	Biggarshiels	5	Level 1
A702 70 C75	Tarth	5	Level 1
A702 90	Lyne	5	Level 1
A702 90 C45	Hazlieburn	5	Level 1
A720 200 C80	Long Hermiston	5	Level 1
A720 230	E Hermiston Viaduct	5	Level 1
A720 70 C50	Swanston West	5	Level 1
A8 50	North Calder	5	Level 1
A876 50 C80	Kennetpans C7	5	Level 1
A876 65 C35	Broomknowe C13	5	Level 1

A985 40 C5	Cairneyhill	5	Level 1
A985 40 C70	Waulkmill	5	Level 1
M8 1-2 C55	Freelands	5	Level 1
M8 2-3 50	Union Canal	5	Level 1
M8 2-3 C65	Roman Camp	5	Level 1
M8 2-3 C95	Housten Main	5	Level 1
M8 3-4 C75	Easter Inch Moss	5	Level 1
M8 4-5 36	Scraggy	5	Level 1
M8 4-5 38	Almond Twin Armco	5	Level 1
M8 4-5 5	M8 over River Almond	5	Level 1
M8 4-5 55	Howburn Culverts	5	Level 1
M8 4-5 C25	Tippethill	5	Level 1
M8 4-5 C41	Hare Moss	5	Level 1
M8 4-5 C50	Kerr Culvert	5	Level 1
M8 4-5 C58	Greenrigg	5	Level 1
M8 4-5 C75	How Burn 2	5	Level 1
M8 4-5 C90	How Burn 1	5	Level 1
M8 5-6 51	Shotts Burn	5	Level 1
M8 5-6 72	Langside	5	Level 1
M80 8-8 C5	Culvert	5	Level 1
M80 8-9 C15	Little Denny Burn	5	Level 1
M80 8-9 C42	Culvert	5	Level 1
M80 8-9 C60	Culvert	5	Level 1
M80 8-9 C63	Culvert	5	Level 1
M80 8-9 C64	Culvert	5	Level 1
M80 8-9 C85	Auchinbowie Mains	5	Level 1
M80 8-9 C895	Culvert	5	Level 1
M876 2-2 C30	Culvert	5	Level 1
M876 2-8 C30	Culvert	5	Level 1
M876 2-8 C40	Culvert	5	Level 1
M876 2-8 C45	Culvert	5	Level 1
M876 2-8 C50	Culvert	5	Level 1
M876 2-8 C60	Culvert	5	Level 1

M876 2-8 C65	Culvert	5	Level 1
M876 2-8 C70	Culvert	5	Level 1
M876 2-8 C85	Culvert	5	Level 1
M876 7-3 C25	Culvert	5	Level 1
M876 7-3 C30	Culvert	5	Level 1
M876 7-3 C35	Culvert	5	Level 1
M876 7-3 C40	Culvert	5	Level 1
M876 7-3 C45	Culvert	5	Level 1
M876 7-7 C10	Culvert	5	Level 1
M876 8-8 C10	Culvert	5	Level 1
M876 8-8 C20	Culvert	5	Level 1
M876S 2-2 C10	Culvert	5	Level 1
M876S 2-2 C20	Culvert	5	Level 1
M9 10-11 C35	Culvert	5	Level 1
M9 1-2 C10	Charles	5	Level 1
M9 4-5 C30	Gilston Burn	5	Level 1
M9 6-7 C95	Kinnaird	5	Level 1
M9 7-7 C10	Culvert	5	Level 1
M9 8-8 C10	Culvert	5	Level 1
M9 8-9 C13	Bogard Burn	5	Level 1
M9 8-9 C20	Rosehill	5	Level 1
M9 8-9 C25	Powswood	5	Level 1
M9 8-9 C45	Sewage Works	5	Level 1
M9 8-9 C5	Culvert	5	Level 1
M9 8-9 C75	Pleanbank Wood	5	Level 1
M9 8-9 C78	Roadhead Farm	5	Level 1
M9 8-9 C80	Culvert	5	Level 1
M9 8-9 C90	Bloody Fold	5	Level 1
M9 9-10 C85	Malarky	5	Level 1
M9 9-10 C90	Culvert	5	Level 1
M9 9-10 C95	Malarky Pipe	5	Level 1
M9S10-10 C10	Craigforth Slip	5	Level 1

Attachment 4.5 List of Structures Over, Carrying or Adjacent to Water Courses That Have Been Subject to Level 2 Scour Assessments

Table 4.5.1 Structures Over, Carrying Water or Adjacent to Water Courses Subject to Level 2 Scour Assessments

Struct Ref	Name	Risk Rating	Level 1/ Level 2 Assessment
A1 51	Tower New	1	Level 2
A6091 10	GALAFOOT	3	Level 2
A68 130	ANCRUM	3	Level 2
A68 30	FERNIEHIRST	3	Level 2
A68 50	INCHBONNY	3	Level 2
A7 150	FAWHOPE	3	Level 2
A7 160	ARMSTRONG	3	Level 2
A7 180 C95	Vales	4	Level 2
A7 210	BRANXHOLM	3	Level 2
A7 221 W60	Commercial Road No 1	2	Level 2
A7 221 W80	Commercial Road No 2	2	Level 2
A7 221 W90	Commercial Road No 3	2	Level 2
A7 221 W96	Commercia Road No 4	2	Level 2
A7 80	FACTORY	3	Level 2
A702 105	Nine Mile Burn	3	Level 2
A702 60	CADGERS NEW	4	Level 2
A702 60 W90	Backshields No 1	3	Level 2
A702 70	CANDY	4	Level 2
A702 80	WESTWATER	3	Level 2
M80 8-9 68	NORTHFIELD S	4	Level 2
M80 8-9 70	NORTHFIELD N	3	Level 2
M876 1-2 5	RIVER CARRON	1	Level 2
M9 10-11 5	FORTH	2	Level 2

Attachment 4.6 List of agreements with third Parties That Affect Existing and Future Management, Maintenance & Replacement of Structures

Table 4.6.1 Agreements with third Parties That Affect Structures

Structure			
Reference No.	Name	Agreement reference	3rd Party
A90 4	Dalmeny Railway Bridge		Network Rail
A90 9	Forth Road Bridge		British Telecom
A90 9	Forth Road Bridge		Vodafone
A90 9	Forth Road Bridge		Coastguard – radio equipment at South Tower
REDACTED	**REDACTED**		**REDACTED**
REDACTED	**REDACTED**		**REDACTED**
REDACTED	**REDACTED**		**REDACTED**
REDACTED	**REDACTED**		**REDACTED**
REDACTED	**REDACTED**		**REDACTED**
M90 2-2	M90 over A823M/Rail		Network Rail
A1 10	HENDERSONS RAIL O/B		Railtrack
A1 120	BELTONFORD RAIL O/B		Railtrack
A8 90	BRAEHEAD RAIL O/B		Railtrack
A68 370	SHERIFFHALL		Midlothian
A80 50	GLEN RAIL		M80 DBFO
A720 190	WESTBURN RAIL O/B		Railtrack
M8S 2-3 7	HILLWOOD RAIL O/B		Railtrack
M8 2-3 35	BIRDSMILL RAIL O/B		Railtrack

M8S 3-3 10	S/ BATHGATE RAIL		Network Rail
M80 8-9 27	STONEYWOOD RAIL		TBC

Notes:

1. All Structures above carry the Trunk Road over or under an operational railway line, except the BR U/B 24 Disused structure. This Structure carries the Trunk Road over a non-operational railway line.

2. The bridge agreements for the Structures are held by the Director.

Attachment 4.7 List of Structures Subject to Assessment and Upgrading of Vehicle Parapets to CS461 Assessment and upgrading of in-service parapets

Attachment 4.7 Structures Subject to Assessment and Upgrading of Vehicle Parapets

Structure		
Reference No.	Name	Comments
A1 110	SPOTT BURN ARMCO	
A1 41	SYPHON	
A1 10 C50	HILLBURN	
A1 100	FORD ARMCO	
A1 115	EWEFORD U/P	
A1 124	BIEL WATER	
A1 124 W0	NORTH BELTON & BIEL	
A1 124 W1	NORTH BELTON & BIEL	
A1 126	NORTH BELTON U/P	
A1 135	HEDDERWICK	
A1 135 W0	HEDDERWICK BURN	
A1 145 C40	BIEL MILL U/P	
A1 164	OVERHAILES U/P	
A1 183	RAILWAY WALK U/P	
A1 200	BLINDWELLS FARM U/P	
A1 210	MEADOWMILL U/P	
A1 210 W75	BANKTON	
A1 25 C40	EAST RESTON MILL	
A1 251 W33	ESK	
A1 28 C39	HOUNDWOOD U/P	
A1 28 C5	HOUNDWOOD LODGE	
A1 39 C10	PEASE BURN	

A1 40 W95	TOWER FARM LA	
A1 51 C55	HAZELDEAN NEW	
A1 51 W95	COVE WALL RB	
A1 61 C45	COVE U/P	
A1 71 C40	BILSDEAN TUNNEL	
A1 71 W70	BILSDEAN 1	
A1 71 W71	BILSDEAN 2	
A6091 50 W95	HASELDEAN WALL	
A6091 20 C50	DARNICK U/P	
A6091 40 C5	MALTHOUSE BURN	
A6091 40 W10	PRIORSWOOD WALL	
A6091S 50 W5	BANK ROAD	
A68 10 W90	LINTALEE	
A68 130 C75	LONGNEWTON TOLL	
A68 130 C90	ST BOSWELLS C-POND	
A68 140	CLATTERDEAN	VRS upgraded 2018
A68 168 C10	SPROUSTON GLEN	
A68 200	PACKMANS	
A68 210	MEIKLE LINN	
A68 210 C10	LITTLE LINN	
A68 230	BIRKENSIDE TOLL	
A68 240 C10	CUDDYHALL DEAN	
A68 240 C15	KITTY PLANTATION	
A68 240 C35	NEW BLAINSLIE	
A68 240 C75	MILSIE BURN	
A68 250	STONYFORD	
A68 260 C10	HARRYBURN	

A68 260 C31	NEWMILLS	
A68 260 C45	LEADERHAUGH 2	
A68 260 C70	WISELAWMILL	
A68 290 C15	RED BRAE	
A68 290 C30	SOUTRA SHEEP CREEP	
A68 290 C5	WINDYCLEUCH	
A68 290 C85	SOUTRA HILL CVT	
A68 290 C90	SOUTRA OLD TOLL CVT	
A68 290 C95	MATTHEWSON CVT	
A68 300	SOUTRA TUNNEL	VRS upgraded 2018
A68 320	FALA TUNNEL	
A68 320 W40	CRICHTON DEAN	
A68 320 W45	HOPE	
A68 400	BELLYFORD UNDERPASS - ST10	
A68 400 C1	BELLYFORD	
A68 420 C40	SMEATON BURN	
A68 440	HOME FARM	
A68 50 C50	HOWDEN BURN	
A68 50 W30	MILL	
A7 10	WOODSLEE U/P	
A7 10 C10	BOUGHLIN BURN	
A7 130 W30	EWESLEES	
A7 130 W60	Mosspaul Retaining Wall	
A7 140	HORN	
A7 150 W30	FROSTLIE BURN	
A7 155	BINKS	

A7 160 C70	DOVECOT	
A7 180 C60	HARWOOD SIKE	
A7 180 C95	VALES	
A7 210 W50	DUNK	
A7 221 W60	COMMERCIAL ROAD 1	
A7 221 W80	COMMERCIAL ROAD 2	
A7 221 W90	COMMERCIAL ROAD 3	
A7 221 W96	COMMERCIAL ROAD 4	
A7 230 C30	NEWTON	
A7 240	ASHKIRK	
A7 240 C15	DRYDEN SOUTH	
A7 240 C17	DRYDEN	
A7 240 C20	DRYDEN FIELD	
A7 240 C25	DRYDEN NORTH	
A7 240 C50	BIG WOOD	
A7 240 C60	COMMON BURN	
A7 250 W10	SHAWBURN	
A7 260 C45	NETHERBARNS	
A7 30 C50	BRAIDRIDLAND BURN	
A7 30 C70	HAG BURN	
A7 30 W60	ENTHORN FARM	
A7 40 C10	DOCKEN BECK CULVERT	
A7 40 C20	IRVINE BURN CULVERT	
A7 60 C10	ASHY SIKE CULVERT	
A7 60 C90	SKIPPERSCLEUGH	
A7 70 C80	WHITESHIELS	
A7 70 W10	KILNCLEUCH	

A7 70 W14	RIVER ESK	
A7 70 W30	LANGHOLM SOUTH WALL (TOWNFOOT)	
A7 70 W5	SKIPPERS	
A7 70 W6	TOLSON'S WALL	
A7 70 W7	TOLSON'S WALL NORTH	
A7 80 C80	SORBIE	
A702 100 C5	AMAZONDEAN CVT	
A702 100 W10	PATIESHILL	
A702 105	NINE MILE BURN	
A702 110 W50	COATES	
A702 110 W55	CUIKEN	
A702 110 W75	MARCHWELL	
A702 110 W95	TURNHOUSE	
A702 120 W90	HILLEND	
A702 120 W95	HILLEND 1	
A702 30 C10	WOODEND	
A702 30 C60	HARTSIDE	
A702 30 W10	WOODEND	
A702 30 W65	HARTSIDE	
A702 40 W90	COULTER	
A702 55 C0	WOODNEUK	
A702 60 C55	BIGGARSHIELS	
A702 60 W90	BACKSHIELS 1	
A702 60 W95	BACKSHIELS 2	
A702 70 C5	BROWNSBANK CC	
A702 70 C75	TARTH	

A702 70 W1	CANDYMILL COTTAGE	
A702 70 W60	BROOMYLAW	
A702 90 C45	HAZLIEBURN	
A720 15	NEWTON I/C	
A720 160 W5	WALL 1 (62.3M)	
A720 20	NEWTON FARM U/P	
A720 200 C80	LONG HERMISTON	
A720 230	E HERMISTON AQUEDUCT	
A720 60 C75	PENTLAND BURN	
A720 63	BROOMHILL BURN	
A720 67	SWANSTON EAST	
A720 70 C50	SWANSTON WEST	
A720 70 W2	BIGGAR	
A720S 160 W3	WALL 4 (91M)	
A8 70 W10	A8 S/R DRUMPARK WEST	
A84S 5	CRAIGFORTH I/C O/B	
A876 50 C80	KENNETPANS C7	
A876 65 C35	BROOMKNOWE C13	
A876 95 C40	KILBAGIE CULVERT C21	
A90 4+B8:E2490	Dunfermline Wynd	Was identified as high risk in 2017 review but detailed investigation recommended no work was necessary - N1 containment adequate (<50mph)
A90 5	Echline South	Was identified as high risk in 2017 review but detailed investigation recommended no work was necessary - N1

		containment adequate (<50mph)
A90 6	Echline North	Was identified as high risk in 2017 review but detailed investigation recommended no work was necessary - N1 containment adequate (<50mph)
A92S 2	HALBEATH NORTH U/B	
A92S 5	HALBEATH SOUTH U/B	
A985 10	WOODHEAD FARM	
A985 30	DRUMFIN	
A985 40 C5	CAIRNEYHILL	
A985 40 C70	WAULKMILL	
A985 5 W31	EAST LODGE	
M8 1-2 C55	FREELANDS	
M8 2-3 20	NEWBRIDGE-CLIFTON RD	Parapet Replaced In 2018
M8 2-3 50	UNION CANAL	
M8 2-3 C65	ROMAN CAMP	
M8 2-3 C80	CAMPS JTN SUBWAY	
M8 2-3 C95	HOUSTON MAINS	
M8 3-3 C50	KNIGHTSRIDGE SUBWAY	
M8 3-4 C75	EASTER INCH MOSS CVT	
M8 4-5 32	WHITBURN INTERCHANGE	
M8 4-5 36	SCRAGGY	
M8 4-5 38	ALMOND TWIN ARMCOS	
M8 4-5 55	HOWBURN CULVERTS	
M8 4-5 C25	TIPPETHILL	

M8 4-5 C41	HARE MOSS	
M8 4-5 C50	KERR CULVERT	
M8 4-5 C58	GREENRIGG	
M8 4-5 C75	HOW BURN 2	
M8 4-5 C90	HOWBURN 1	
M8 5-6 51	Shotts Burn	
M8 5-6 72	LANGSIDE	
M8 5-6 W30	DEWSHILL	
M80 8-8 10	BANKHEAD SLIP ROAD	Parapet Replaced In 2018
M80 8-8 C5	CULVERT	
M80 8-9 10	DROVE ROAD O/B	
M80 8-9 20	CUTHELTON GREEN O/B	
M80 8-9 23	CASTLEBURN	
M80 8-9 27	STONEYWOOD RAIL	
M80 8-9 29	FANKERTON ROAD	
M80 8-9 32	CARRON	
M80 8-9 35	BARNEGO ROAD O/B	
M80 8-9 5	BANKHEAD FARM ROAD	
M80 8-9 66	NORTHFIELD ROAD CULV	
M80 8-9 68	NORTHFIELD S	
M80 8-9 70	NORTHFIELD N	
M80 8-9 75	EASTERTON O/B	
M80 8-9 85	AUCHENBOWIE HOUSE	
M80 8-9 90	AUCHENBOWIE ROAD	
M80 8-9 C15	LITTLE DENNY BURN	
M80 8-9 C42	CULVERT	
M80 8-9 C60	CULVERT	

M80 8-9 C63	CULVERT	
M80 8-9 C64	CULVERT	
M80 8-9 C73	EASTERTON FARM	
M80 8-9 C85	AUCHINBOWIE MAINS CU	
M80 8-9 C95	CULVERT	
M80 8-9 W10	BANKHEAD (WALL)	
M80 8-9 W20	CUTHELTON WALL	
M80 8-9 W40	BARNEGO ROAD WALL	
M876 0-0 W5	BANKHEAD (WEST)	
M876 0-0 W6	BANKHEAD (EAST)	
M876 0-1 W0	DENNYLOANHEAD (WALL)	
M876 0-1 W45	WALL	
M876 0-1 W50	WALL	
M876 0-1 W55	WALL	
M876 1-2 W50	GABION REVETMENT	
M876 1-2 W51	GABION REVETMENT	
M876 1-2 W75	GABION REVETMENT	
M876 1-2 W76	GABION REVETMENT	
M876 2-2 C30	CULVERT	
M876 2-8 C30	CULVERT	
M876 2-8 C40	CULVERT	
M876 2-8 C45	CULVERT	
M876 2-8 C50	CULVERT	
M876 2-8 C60	CULVERT	
M876 2-8 C65	CULVERT	
M876 2-8 C70	CULVERT	
M876 2-8 C85	CULVERT	

M876 7-3 C25	CULVERT	
M876 7-3 C30	CULVERT	
M876 7-3 C35	CULVERT	
M876 7-3 C40	CULVERT	
M876 7-3 C45	CULVERT	
M876 7-3 C80	BOWTREES W C1	
M876 7-7 C10	CULVERT	
M876 8-8 C10	CULVERT	
M876 8-8 C20	CULVERT	
M876S 2-2 C10	CULVERT	
M876S 2-2 C20	CULVERT	
M8S 1-1 10	GOGAR GREEN U/P	
M8S 1-1 20	GOGAR BURN/REDHEUGHS	
M8S 1-1 90	UNION CANAL AQUEDUCT	
M9 0-0 W10	WALL TO PUMPING STN	
M9 0-1 C75	NIDDRY BURN CVT	
M9 0-1 F21	NEWBRIDGE	
M9 10-11 C15	CULVERT	
M9 10-11 C35	CULVERT	
M9 10-11 C45	CULVERT	
M9 10-11 C55	CULVERT	
M9 10-11 C65	CULVERT	
M9 10-11 W90	POND COTTAGE	
M9 1-1 40	NEW MAINS ROAD OVERBRIDGE	
M9 1-1 C75	NIDDRY BURN CVT	
M9 1-2 C10	CHARLES	

M9 1-2 C40	SWINEBURN CVT	
M9 3-4 70	SANDYFORD	
M9 3-4 75	BO'NESS BRANCH RAIL	
M9 3-4 85	AVONBANK FARM O/B	
M9 4-5 C30	GILSTON BURN	
M9 4-5 W70	KIRK ENTRY WALL	
M9 5-5 C5	CADGERS BRAE W/M	
M9 5-6 20	GRANGEBURN	
M9 5-6 65	PRIMROSE U/P	
M9 5-6 C30	BEANCROSS ROAD W/M	
M9 5-6 C60	THISTLE AVENUE W/M	
M9 6-6 C5	EARLS GATE W/M	
M9 6-7 C23	GLENSBURGH W/M	
M9 6-7 C35	YONDERHAUGH W/M	
M9 6-7 C90	CULVERT	
M9 6-7 C95	KINNAIRD	
M9 7-7 C10	CULVERT	
M9 7-8 C70	CULVERT	
M9 8-8 C10	CULVERT	
M9 8-9 15	TOR BURN	
M9 8-9 6	KERSEBROOK	
M9 8-9 8	POW BURN	
M9 8-9 C13	BOGEND BURN	
M9 8-9 C19	ROSEHILL (2)	
M9 8-9 C20	ROSEHILL (1)	
M9 8-9 C25	POWSWOOD	
M9 8-9 C30	CULVERT	

M9 8-9 C40	CUSHENQUARTER	
M9 8-9 C45	SEWAGE WORKS	
M9 8-9 C5	CULVERT	
M9 8-9 C75	PLEANBANK WOOD	
M9 8-9 C78	ROADHEAD FARM	
M9 8-9 C80	CULVERT	
M9 8-9 C90	BLOODY FOLD	
M9 9-10 27	CHARTERSHALL NEW	
M9 9-10 30	BANNOCKBURN	
M9 9-10 76	DUMBARTON ROAD W/M CULVERT	
M9 9-10 C20	FOOT O' GREEN	
M9 9-10 C5	CULVERT	
M9 9-10 C85	EDGE CULVERT	
M9 9-10 C90	CULVERT	
M9S 10-10 C10	CRAIGFORTH SLIP	
M9S 1-1 95	A8000 OVERBRIDGE	

Attachment 4.8 List of Structures to Identification of 'Particularly at Risk' Supports to CS453 The assessment of highway bridge supports

Attachment 4.8 Structures to Identification of 'Particularly at Risk' Supports

Structure		
Reference No.	Name	Group
M8 3-3 20	SLIP OVER M8	1a
M8 3-3 30	LIVINGSTON ROAD O/B	1a
A1 230	DOLPHINGSTONE O/B	2
A1 25	AYTON CASTLE O/B	2
A1 251	CARBERRY ROAD O/B	2
A720 120	BONALY ROAD O/B	2
A720 130	TORPHIN ROAD O/B	2
A720 160	LANARK ROAD O/B	2
A720 200	WESTBURN O/B	2
A720 80	SWANSTON ROAD O/B	2
A720 90	DREGHORN SPUR O/B	2
M8 3-4 80	B792 O/B	2
M8 3-4 F25	DECHMOUNT HOUSE F/B	2
M8 3-4 F70	SOUTH INCH F/B	2
M8 3-4 F85	RIDDOCHILL F/B	2
M8 4-4 10	Whitburn East	2
M8 4-4 20	Whitburn West	2
M8 5-5 10	SHOTTS ROAD I/C O/B	2
M8 5-6 40	DUNTILLAND O/B	2
M8S 3-3 40	Livingston Road Slip	2
M9 10-11 30	LECROPT O/B	2
M9 1-2 65	PRIESTINCH O/B	2

M9 2-3 45	PARDOVAN O/B	2
M9 3-3 10	BURGHMUIR O/B	2
M9 3-4 20	BONNYTOUN O/B	2
M9 3-4 50	MILL ROAD O/B	2
M9 4-4 10	LATHALLAN SOUTH O/B	2
M9 4-4 20	LATHALLAN NORTH O/B	2
M9 4-5 65	KIRK ENTRY O/B	2
M9 6-7 75	KIRKTON O/B	2
M9 9-10 55	TORBREX O/B	2
M9 9-10 75	DUMBARTON ROAD O/B	2
M9 9-10 F65	CAMBUSBARRON F/B	2
A1 220	JOHNNY COPE'S RD O/B	3
A7 20	TINNISHALL FARM O/B	3
A7 30	PRIORSLYNN FARM O/B	3
A720 10	MONKTON LODGE O/B	3
A720 210	CALDER RD I/C S O/B	3
A720 220	CALDER RD I/C N O/B	3
A720 230	E HERMISTON AQUEDUCT	3
A720 30	GILMERTON ROAD O/B	3
A720 70	BIGGAR ROAD I/C O/B	3
M876 2-8 45	NORTH INCHES O/B	3
M876 7-3 80	LETHAM O/B	3
M9 1-2 25	MURIEHALL O/B	3
M9 3-4 40	LOCH HOUSE O/B	3
M9 6-6 10	Earlsgate South	3
M9 6-6 20	Earlsgate North	3
M9 7-8 75	SO ALLOA ROAD O/B	3

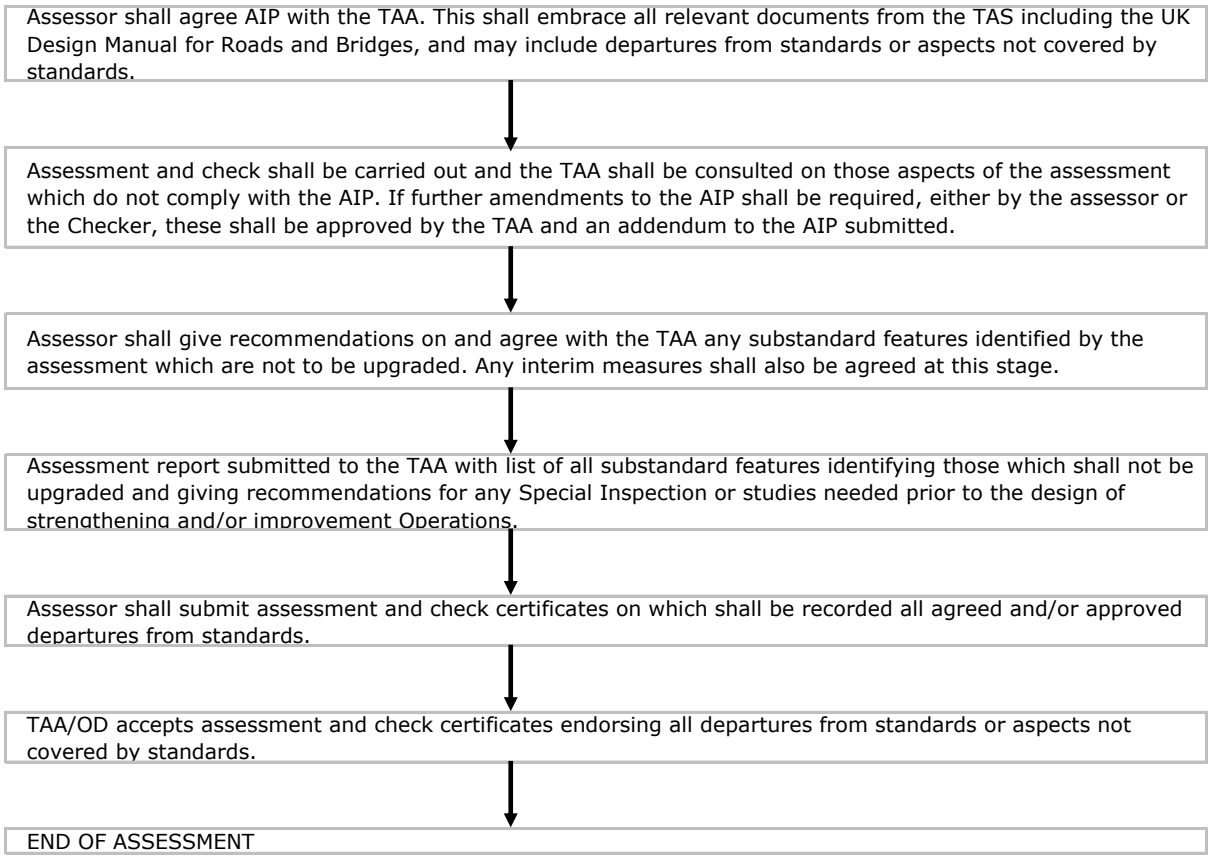
M9 8-8 10	HILL O/B	3
M9 9-9 10	PIRNHALL EAST O/B	3
M9S 1-1 10	Kirkliston Spur S/B	3
A1 145	BIEL O/B	3
A1 172	STEVENSON ROAD O/B	3
A1 178	ABERLADY ROAD O/B	3
A1 181	ALDERSTON O/B	3
A1 185	HADDINGTON W I/C O/B	3
A1 188	HUNTINGTON ROAD O/B	3
A1 191	TRABROUN ROAD O/B	3
A1 195	GLADSMUIR I/C O/B	3
A1 197	GREENDYKES FARM O/B	3
A1 205	BANKTON I/C O/B	3
A1 238 F	WALLYFORD F/B	3
A1 241	SALTERS ROAD O/B	3
A1 5	MARYFIELD O/B	3
A6091 20	BROOMILEES O/B	3
A68 390	FORDEL MAINS O/B	3
A68 410	LANGSIDE O/B	3
A68 430	SALTERS ROAD O/B	3
A68 440	HOME FARM	3
A720 15	NEWTON I/C	3
A720 180 F	WESTBURN F/B	3
A720 60	Straiton Road	3
A8 100	BRAEHEAD FARM O/B	3
A8 30	NEWHOUSE O/B	3
A8 35	EUROCENTRAL O/B	3

A8 60	SHAWHEAD I/C O/B	3
A876 15	HAUGHS O AIRTH O/B	3
A90 9	Forth Road Bridge (Towers)	
M8 1-1 40	NB SLIP O/B	3
M8 1-1 50	GOGAR ROAD O/B	1b
M8 1-2 13	HERMISTON ROAD O/B	1b
M8 1-2 28	RANSFIELD ROAD O/B	1b
M8 1-2 53	FREELANDS ROAD O/B	3
M8 1-2 70	BAIRD ROAD O/B	1a
M8 2-3 45	BURNSIDE-MUIREND O/B	2
M8 3-4 40	DEANS ROAD O/B	3
M8 3-4 60	STARLAW ROAD O/B	3
M8 4-5 34	COWHILL O/B	2
M8 4-5 65	B718 O/B	2
M8 4-5 76	BLAIRMUCKHILL O/B	2
M8 4-5 F71	HARTHILL NEW F/B	3
M8 5-6 20	DEWSHILL O/B	3
M8 5-6 60	BOGFOOT O/B	3
M8 6-6 10	A73 East	1a
M8 6-6 20	A73 West	1a
M80 5-9 10	DROVE ROAD O/B	3
M80 5-9 20	CUTHELTON GREEN O/B	3
M80 5-9 35	BARNEGO ROAD O/B	3
M80 5-9 75	EASTERTON O/B	3
M80 5-9 85	AUCHENBOWIE HOUSE	3
M876 1-2 95	ACCOMMODATION O/B	3
M876 2-8 10	GLENBERVIE O/B	3

M8S 1-1 60	SOUTH GYLE SLIP O/B	3
M8S 1-1 70	ECB SOUTH SLIP O/B	3
M8S 1-1 80	ECB NORTH SLIP O/B	3
M8S 2-3 7	HILLWOOD RAIL O/B	3
M8S 3-3 20	Slip Over M8	
M8S 3-3 F60	KNIGHTSRIDGE F/B	3
M9 0-0 10	NEWBRIDGE SOUTH O/B	3
M9 0-0 30	NEWBRIDGE NORTH O/B	3
M9 0-0 F20	NEWBRIDGE F/B	3
M9 6-7 50	WESTERTON O/B	3
M9 6-7 90	LONGDYKE O/B	3
M9 9-10 15	NEWLINE 2 SOUTH O/B	3
M9 9-10 16	NEWLINE 1 NORTH O/B	3
M9 9-10 35	NEWPARK FARM PATH	3
M9 9-10 40	COXITHILL O/B	2
M9 9-10 63	BIRKHILL O/B	2
M9 9-9 20	PIRNHALL WEST O/B	3

Attachment 4.9 Technical Approval Procedures for Assessment of Structures in Scotland

Table 4.9.1 Technical Approval of Structures in Scotland



Notes

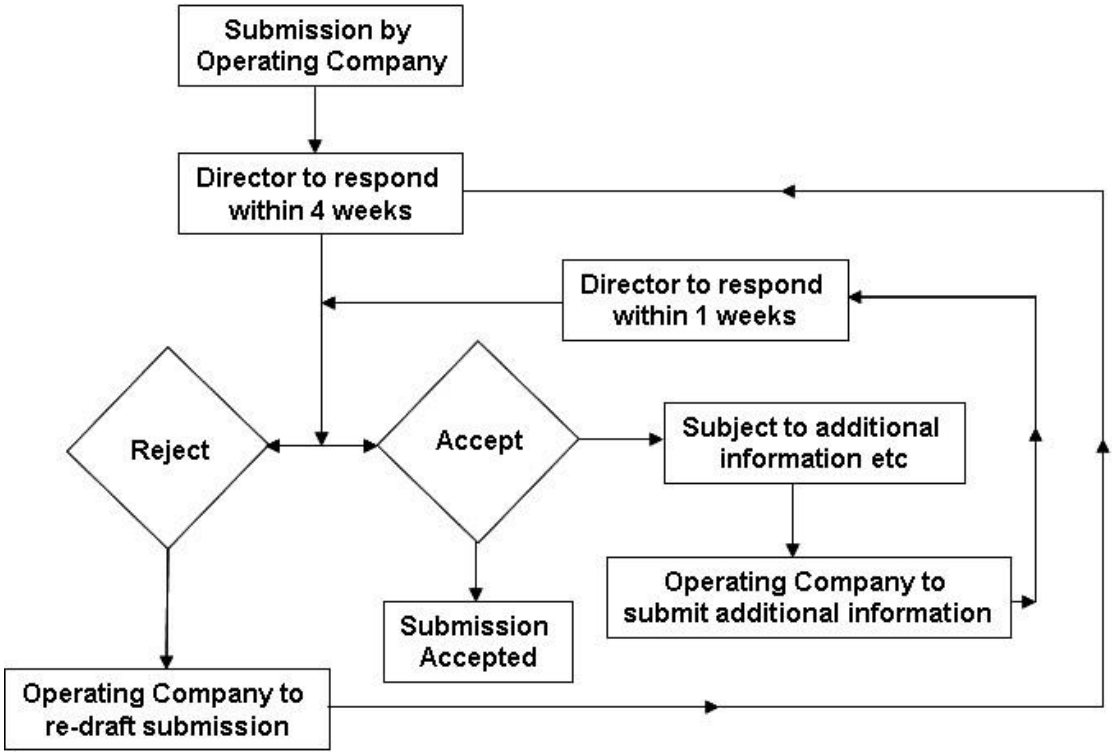
Assessment includes:

1. Load carrying capacity of deck and substructure
2. Parapets
3. Pier impact resistance
4. Safety fencing
5. Visibility
6. Vertical and Horizontal Clearances
7. Central reserve, carriageway, footway, and verge provision
8. Scour risk
9. All other aspects relative to the AIP
10. For strengthening and or improvement works, Technical Approval procedures shall be the same as for new Structures.

Abbreviations:

TAA = Technical Approval Authority
TAS = Technical Approval Schedule
AIP = Approval in Principle
OD = Overseeing Department

Figure 4.9.1.A – Flow Chart for Departures from Standard or Aspects not Covered by Standards



Attachment 4.10 List of Sub-Standard Structures with Structural Assessments in Progress

Table 4.10.1 Sub Standard with Structural Assessments in Progress

Structure		
Reference No.	Name	Date
M90 1-1 10	Admiralty South	M90 1-1 10
M90 1-1 20	Admiralty North	M90 1-1 20
M823S 0-0 30	M90 SB - A823M WB SR	M823S 0-0 30
A90 9	Forth Road Bridge	A90 9
A90 9	Forth Road Bridge	A90 9
A90 9	Forth Road Bridge	A90 9
A90 9	Forth Road Bridge	A90 9

Attachment 4.11 List of Sub-Standard Structures

Table 4.11.1 Sub-Standard Structures

Structure		
Reference No.	Name	Details
M90 1-1 10	Admiralty South	
M90 1-1 20	Admiralty North	
M823S 0-0 30	M90 SB - A823M WB SR	
M90 2-3 40	Duloch O/B	
A90 9	Forth Road Bridge	
A985 40	Cairneyhill Rail	
M8 3-4 60	STARLAW ROAD O/B	

Attachment 4.12 List of Structures with Known Defects Requiring Monitoring that are Sub-Standard

Table 4.12.1 Structures with Known Defects Requiring Monitoring that are Sub-Standard

Structure		Monitoring				
Reference No.	Name	Measures	Class	Interval	Details	Comment
		(Forma/Other)	(BD 79/06)			
M90 1-1 10	Admiralty South	Barrier	None	None	Weak edge beam	Monitor at GI & PI
M90 1-1 20	Admiralty North	Barrier	None	None	Weak edge beam	Monitor at GI & PI
M823S 0-0 30	M90 SB – A823M WB SB	Barrier	None	None	Weak edge beam	Monitor at GI & PI
A90 9	Forth Road Bridge	Monitoring	Varies	Varies	Various elements – refer to Risk Priority (RPN) calculation and Inspection Frequencies in current Criticality and Vulnerability Ratings referred to in Attachment 4.16 Documents for Structures with Particular Requirements	Refer to Forth Road Bridge Engineering Manual
A90 9	Forth Road Bridge	Main Cable Internal Inspections	Non-standard	5 yearly	FRB Main Cable	Refer to Forth Road Bridge Engineering Manual
A985 40	Cairneyhill Rail	Barrier	None	None	Weak edge beam	Monitor at GI & PI reactive safety inspection
M8 3-4 60	Starlaw Road O/B	Barrier	None	None	Weak edge beam	Monitor at GI & PI and reactive safety inspection

Attachment 4.13 List of Structures with Known Defects Requiring Monitoring that are Not Sub-Standard

Table 4.13.1 Structures with Known Defects Requiring Monitoring that are Not Sub-Standard

Structure		Monitoring				Comment
Reference No.	Name	Measures	Class	Interval	Details	
		(Formal/ Other)	(BD79/ 06)			
A68 50 W30	Mill Wall, Jedburgh	None	2	6 months	Line and Level Survey	Monitor
A985 1	Kincardine Bridge	None	2	Fortnightly	Laser Monitoring of Targets	Monitoring of level of SPV and Temporary Proppring System via established targets until reconstruction works in 2021

Scottish Trunk Road Network Management Contract
South East Unit

Attachment 4.14 Strengthening & Replacement Programme for the Sub-Standard Structures

Table 4.14.1 Strengthening & Replacement Programme for the Sub-Standard Structures

Structure		Year of strengthening & replacement									
Reference No.	Name	2019	2020	2021	2022	2023	2024	2025	2026	2027	Comments
A90 9	Forth Road Bridge										
A90 9	Forth Road Bridge										
A90 9	Forth Road Bridge										
A90 9	Forth Road Bridge										
A90 9	Forth Road Bridge										
A90 9	Forth Road Bridge										

Notes

1. The Proposed Year of Works is subject to the availability of funding and may change at the discretion of the Director.

Attachment 4.15 Structures with Particular Requirements

4.15.1. Structures with Particular Requirements

The Structures listed within the table below have particular requirements which the Operating Company shall carry out in addition to those duties set down in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures. These requirements shall be read in conjunction with the bridge maintenance and operations manuals in the attachments following this section.

Table 4.15.1.A – Structures on the Trunk Road

Structure Reference Number	Structure Name
A985 10	Kincardine Bridge
A876 50	Clackmannanshire Bridge
A90 9	Forth Road Bridge
M90 0-1 68	Queensferry Crossing
REDACTED	**REDACTED**
REDACTED	**REDACTED**
REDACTED	**REDACTED**
REDACTED	**REDACTED**
M90 0-1 W1	B800 Retaining Wall

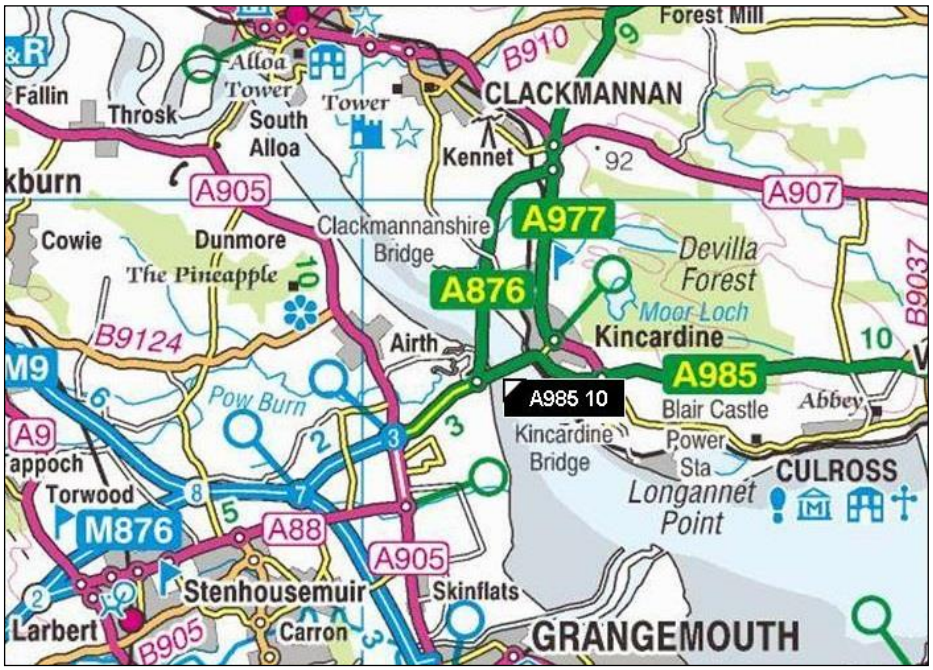
4.15.2. Kincardine Bridge

Constructed in 1936 this structure as shown in Figure 4.15.1.A and whose location is denoted within Figure 4.15.1.B has an overall length of 822 metres and carries four lanes of the A985 over the Firth of Forth at Kincardine.

4.15.3. The structure, now listed, has 28 spans comprising different forms of both reinforced concrete and steel girder construction supported on concrete piers. The original 111 metre swing span is now permanently locked. Below this span timber jetties project from the swing piers and remain in place. On the southern approach there is a piled viaduct 81 metres in length with additional steel propping inserted beneath the deck for support.

Figure 4.15.1.A – A985 10 Kincardine Bridge

Figure 4.15.1.B – Kincardine Bridge Location



4.15.4. Requirements for the A985 10 Kincardine Bridge

Kincardine Bridge includes the whole installation comprising the bridge, engine room and control rooms. The engine room and control rooms are preserved as a museum. Inspection and maintenance of the engine room and control rooms including plant, tools, equipment and materials shall be undertaken by the Operating Company who shall also provide assistance with visits by interested parties. All visits by outside parties shall require prior written consent by the Director.

4.15.5. The Operating Company shall carry out inspections, maintenance and the operations of Kincardine Bridge as specified in the Interim Maintenance Strategy Report. Copies shall upon request be provided by the Director.

4.15.6. Varioguard safety barriers have been installed over the full length of Kincardine Bridge to protect substandard footpaths and parapets. The Operating Company shall be responsible for maintenance of the Varioguard, including cleaning of the gap between the barrier and the footpath kerb.

4.15.7. A refurbishment scheme had been planned by Transport Scotland Major Transport Infrastructure Projects to remove the existing varioguard barrier, install a permanent vehicle restraint system, replace the existing bearings, re-waterproof and re-surface the bridge, and the demolition and replacement of the substandard piled viaduct section. Due to other priorities, the Major Transport Infrastructure Projects scheme has been put on hold indefinitely and these essential maintenance works are to be taken forward by the Operating Company as a series of 'As of rights' and Works Contracts.

In addition to the requirements of Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures the Operating Company is advised that the year in which the first inspection shall be due shall be as referred to in attachment 4.3.

4.15.8. During The Mobilisation Period, the Operating Company shall review the historical Kincardine Bridge Maintenance Database and historical drawings. The Operating Company shall identify if there are gaps of information and notify the director.
The Operating Company shall complete a review and ensure all the inventory, drawings and documents are present and advise if it is available in the original software format no later than 30 days prior to Commencement of Service Date. The Operating Company shall ensure all information was passed over by the former Operating Company and notify the Director of any issues.

The Operating Company shall upload all the relevant documentation onto APMS within 6 months of the Commencement of Service Date. The Operating Company shall update all relevant documentation and drawings after all major works on the bridge.

4.15.9. Kincardine Bridge 3D Model

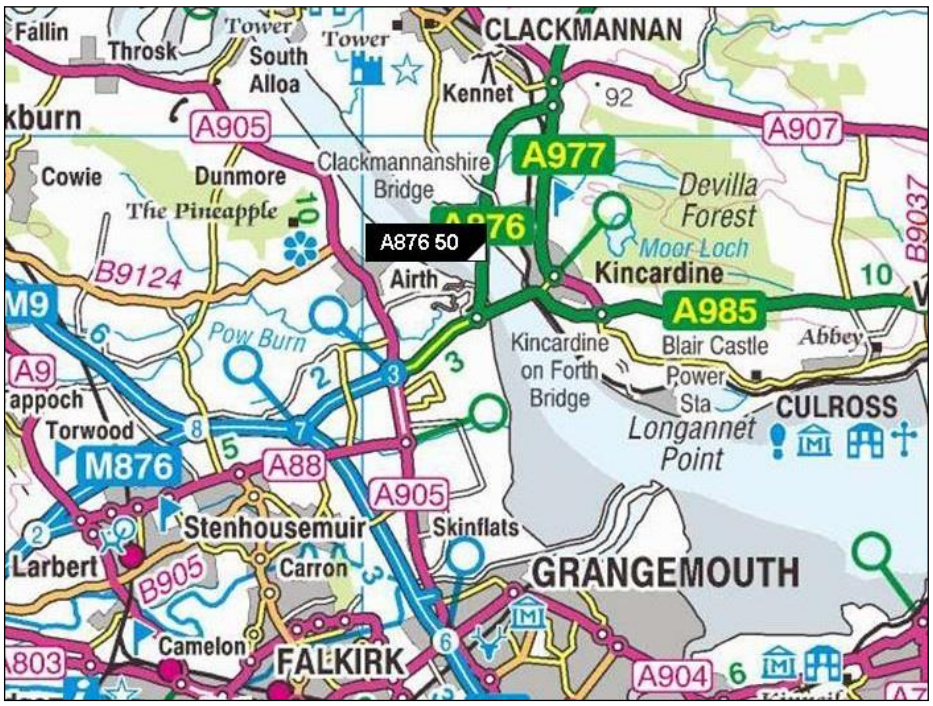
During Mobilisation Period, the Operating Company shall, subject to an Order, ensure the development of a 3D bridge model and procure the software required to run the model. The Operating Company shall ensure that this model is updated to reflect all major works on the Kincardine Bridge to Service End Date.

4.15.10. Clackmannanshire Bridge

Constructed in 2008 this structure as shown in Figure 3.1.1.A and whose location is denoted within Figure 3.1.1.B carries the A876 across the Firth of Forth and is a 26 span structure with an overall span of 1200 metres. This structure carries three lanes in a two plus one format with one lane northbound and two lanes southbound. The width between the kerbs is 13 metres with raised verges north and southbound. There is also a combined 2.5 metres wide cycleway and footpath on the western verge. The prestressed concrete box girder deck is supported on concrete columns with concrete end abutments.

Figure 4.15.8.A - A876 50 Clackmannanshire Bridge

Figure 4.15.8.B - Clackmannanshire Bridge Location



4.15.11. Requirements for the A876 50 Clackmannanshire Bridge

4.15.12. The Operating Company is advised that a Scottish Power high voltage power line spans the River Forth, part of which crosses the Clackmannanshire Bridge on the North side. A temporary structure is available for use during routine and emergency maintenance of the power lines, this is to provide protection to road users on the structure from the effects of a falling conductor or earth wire. Any planned maintenance works that are to be carried out to the structure should reviewed due to close proximity of the power lines and make any special requirements.

4.15.13. In addition to the requirements of Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures the Operating Company is advised that the year in which the first inspection shall be due shall be as referred to in attachment 4.3.

4.15.14. During The Mobilisation Period, the Operating Company shall review the historical Clackmannanshire Bridge Maintenance Database and historical drawings. The Operating Company shall identify if there are gaps of information and notify the director.

The Operating Company shall complete a review and ensure all the inventory, drawings and documents are present and advise if it is available in the original software format no later than 30 days prior to Commencement of Service Date.

The Operating Company shall ensure all information was passed over by the former Operating Company and notify the Director of any issues.

The Operating Company shall upload all the relevant documentation onto APMS within 6 months of the Commencement of Service Date. The Operating Company shall update all relevant documentation and drawings after all major works on the bridge.

4.15.15. Clackmannanshire Bridge 3D Model

The Operating Company shall, subject to an Order, ensure the development of a 3D bridge model and purchase the licence required for the software to run the model. The Operating Company shall ensure that this model is updated after all major works on the Clackmannanshire Bridge to Service End Date.

4.15.16. A90 9 Forth Road Bridge

Completed in 1964, this suspension bridge shown in Figure 2.1.1.A and whose location is denoted within Figure 2.1.1.B has a length of 2513 metres including the approach viaducts and carries four lanes of the A90 over the Firth of Forth. There is a separate footway and cycle track on either side.

4.15.17. The bridge, now a Category A listed Structure, has a central span of 1006m between its two main towers. The side spans, which carry the deck to the side towers, are each 408m long, and are flanked by approach viaducts.

4.15.18. The steel orthotropic deck is supported on steel stringer beams that span between large steel cross girders spaced at 9,144mm centres. These cross girders are supported by two longitudinal stiffening trusses which, in turn, hang from the 610mm diameter main cables. Linking the stiffening trusses to the main cables are 192 sets of wire rope hangers at 18.29 metre centres varying in length from 2.5m at mid span to 90m adjacent to the main towers.

4.15.19. The main towers extend 156m above mean high water level and the sag of the cables between the towers is approximately 91m; that is, the sag is 1 /11th of the span. The clearance to navigation at mid span is approximately 44 metres above mean high water springs without underdeck gantries.

4.15.20. At the side towers the supporting cables turn downwards towards the anchorages which are, essentially, wedges constructed by tunnelling into the rock.

Figure 4.15.16.A – Forth Road Bridge

Figure 4.15.16.B – Forth Road Bridge Location

This map has been produced using Ordnance Survey Data (c) 2019 - Licence Number 100046668
This map can only be used as part of their NMC Operating Company Contracts
by selected tenderers or the appointed contractor

signed for and on behalf of The Scottish Ministers

by ……..…….

on …..……

at ……..……

…….……

Authorised Signatory

signed for and on behalf of

by

……...…… ……..…

Director/Company Secretary/

on ……..……

Authorised Signatory*

at ……..…..

4.15.21. Particular Requirements for The Forth Road Bridge

4.15.22. The Forth Road Bridge Engineering Manual

The *Forth Road Bridge Engineering Manual* contains the requirements for the inspection and maintenance of the Forth Road Bridge. Written originally as a standalone document, any directions within it that appear to conflict with the requirements of the Contract shall be raised with the Director in writing for determination within two weeks of discovery. The *Forth Road Bridge Engineering Manual* also provides design and historical maintenance information on the Forth Road Bridge. The Operating Company shall review and update this information along with information within APMS until the Service End Date in accordance with the procedure described in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures.

4.15.23. Forth Road Bridge Maintenance Procedures

During The Mobilisation Period, the Operating Company shall develop procedures in the Management System for the inspection, operation and maintenance of the Forth Road Bridge. Historical procedures associated with Forth Road Bridge inspection, operation and maintenance shall be reviewed and assessed in the course of producing the new procedures. The Operating Company shall submit these to the Director for written consent no later than 60 Days prior to Commencement of Service Date.

4.15.24. The Operating Company shall undertake the inspection, operation and maintenance of the Forth Road Bridge in accordance with the procedures consented to in writing by the Director.

4.15.25. The Forth *Road Bridge Engineering Manual* includes operational and health and safety statements, sometimes expressed as requirements. In developing its own procedures, the Operating Company shall assess the suitability of each statement in light of its own responsibilities under health and safety Legislation. The manual shall be reviewed and updated by the Operating Company as described in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures.

4.15.26. In addition to the requirements of Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures, the Operating Company shall undertake the inspection, survey and maintenance of the structural elements of the Forth Road Bridge from Commencement of Service Date until the Service End Date including as a minimum:

(i) Main Cable, clamps and handstrand equipment,

(ii) Towers,

(iii) Suspended truss,
(iv) Main span orthotropic deck panels,
(v) Side span composite concrete deck,
(vi) Truss-to-tower pendel link bearings,
(vii) Cable anchorages,
(viii) Truss End Link (Truss end bearings),
(ix) Side Tower Rocker Bearings,
(x) Splay Saddles,
(xi) Hangers and assemblies,
(xii) Deck half joints on the truss,
(xiii) Deck end trimmers,
(xiv) Tower Expansion joints (Demag),
(xv) Approach viaduct box girders and concrete decks,
(xvi) Viaduct piers, bearings and movement joints,
(xvii) North Viaduct comb-type expansion joint,
(xviii) South Viaduct comb-type expansion joint,
(xix) Barriers/ parapets,
(xx) Ship impact cofferdams protecting main piers,
(xxi) Access Systems (gantries), and
(xxii) Access walkways.

4.15.27. The Operating Company shall undertake the inspection, survey and maintenance of the non-structural elements on the Forth Road Bridge from Commencement of Service Date until the Service End Date including as a minimum:

(i) Deck drainage steelwork,
(ii) Steel balustrades and fences,
(iii) De-humidification system inside towers,
(iv) De-humidification system inside anchorages,
(v) Main cable de-humidification system including neoprene wrapping,
(vi) Main cable acoustic monitoring equipment,
(vii) Structural Health Monitoring System,
(viii) Lifts inside towers,
(ix) CCTV cameras,
(x) Security systems,
(xi) Aviation/ navigation warning lights, and
(xii) All other mechanical and electrical systems.

4.15.28. Structural Assessment

The Forth Road Bridge is subject to a 2-yearly Bridge Specific Assessment Live Load pursuant to *BD50/92*. The Operating Company shall submit a schedule for the proposed continued execution of these assessments to the Director for written consent a minimum of 30 days prior to Commencement of Service Date. Subject to an Order, the Operating Company shall undertake a Bridge Specific Assessment Live Load determination. Where a Bridge Specific Assessment Live Load is needed, contemporary data from the calibrated weigh-in-motion system shall be required.

4.15.29. Inspection Frequencies

The detailed inspection regime contained within the *Forth Road Bridge Engineering Manual* requires inspections of specific elements to be undertaken at different frequencies from the intervals stated in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures. Where described in the *Forth Road Bridge Engineering Manual*, the minimum frequency of inspections shall be determined using a criticality and vulnerability assessment in accordance with the *Forth Road Bridge Engineering Manual* and paragraph 4.15.31 of this Part. In addition the minimum frequency of Programmed Special Inspections is as described in the *Register of Programmed Special Inspections for the Forth Road Bridge.* The Operating Company shall continuously review these assessments and the elements forming part of the Programmed Special Inspections as a part of its inspection planning activity and any changes to the planned inspection programmes and frequencies shall be submitted to the Director for his written consent as a part of the annual inspection reporting process.

4.15.30. Elements not specifically identified in the Forth Road Bridge Engineering Manual or criticality and vulnerability assessment shall be subject to inspection requirements in accordance with the requirements of *Transport Scotland Interim Amendment No 33*, BD63 and the *Transport Scotland Inspection Manual – Principal Inspection of Trunk Road Structures and Location System*.

4.15.31. Inspections on Forth Road Bridge

(i) The maximum intervals for element inspections are determined by a criticality and vulnerability ratings procedure using the method described in the *Forth Road Bridge Engineering Manual*,

(ii) Owing to the difficulty of access to many areas of the Forth Road Bridge and large viewing distances involved, inspections that would ordinarily be categorised as General Inspections in *BD63* and so requiring only Visual

Inspection shall be executed to a Close Visual Inspection standard in accordance with the requirements for Principal Inspections to save repeated visits,

(iii) At least one full Principal Inspection of all elements shall be completed within four years and nine months of Commencement of Service Date. Where the period from Commencement of Service Date to Service End Date extends beyond six years, the subsequent Principal Inspections shall be undertaken in accordance with the inspection programme as defined in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures and within the maximum time periods between scheduled inspections. The schedule of Principal Inspections shall be subject to the written consent of the Director,

(iv) During The Mobilisation Period, the Operating Company shall review inspection schedules and prioritise the elements selected for inspection to ensure that maximum required inspection intervals are not exceeded,

(v) For the Forth Road Bridge, Principal Inspection reports shall be submitted in each Annual Period a minimum of 30 days prior to the review of the structures maintenance schedule as defined in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures for the sets of structural parts inspected in the preceding period. The first such submission shall take place no earlier than five months after and no later than 11 months after Commencement of Service Date,

(vi) Historic times and intervals of the inspection of structural elements have been recorded in the Forth Road Bridge Maintenance Database, and

(vii) The Operating Company shall carry out Programmed Special Inspections as required by the *Forth Road Bridge Engineering Manual* and the *Register of Programmed Special Inspections for the Forth Road Bridge*.

4.15.32. Positional Surveys

The Operating Company shall produce a Principal Inspection survey procedure for the Forth Road Bridge and submit it to the Director for written consent no later than Commencement of Service Date. Surveys shall be scheduled with Principal Inspections using conventional optical survey methods. These may be combined with relevant, verified and datum-referenced records provided checks are made by the Operating Company. The surveys shall measure and record:

(i) Horizontal alignment and levels of the viaduct spans at pier and midspan locations,

(ii) Pier and tower foundation and abutment levels and transverse tilts,

(iii) Navigational clearances at the bridge midspan and corners of the navigational envelope,

(iv) Longitudinal and transverse verticality of the towers,

(v) Longitudinal verticality of the piers,

(vi) Gaps at the tower, side tower and viaduct expansion joints, and

(vii) Mean effective temperatures of each deck girder or deck box for the survey period.

(viii) Verticality values shall be absolute and gravity-referenced.

4.15.33. The Operating Company shall ensure that all structural baseline measurements and positions are established for long-term monitoring and be repeatably referable to permanent datum benchmarks for horizontal position and level by taking at least two independent sets of measurements to an accuracy of 2mm.

4.15.34. The first positional survey shall be completed to establish the reference data set no later than 12 months after Commencement of Service Date and repeated thereafter to coincide with the completion of each Principal Inspection cycle.

4.15.35. The Forth Road Bridge Main Cable

Prior to Operations Commencement of Service Date, the main cable has been subject to a series of intrusive inspections carried out by independent specialists in order to assess its internal condition in accordance with the United States guidance document *National Cooperative Highway Research Program Report 543*. The Operating Company shall review the findings of such previous inspections including as a minimum the recommended time periods for further inspections.

4.15.36. The Operating Company shall review the monthly reports produced for the acoustic monitoring system. No more than 180 days after Commencement of Service Date the Operating Company shall propose dates for further intrusive inspections to the Director for his written consent. Subject to an Order, the Operating Company shall facilitate the execution of further main cable inspections.

4.15.37. The Operating Company shall continuously monitor the results from the Forth Road Bridge main cable acoustic monitoring system from Commencement of Service Date until the Service End Date. The Operating Company shall review the monthly reports produced by the contractor responsible for the acoustic monitoring system from Commencement of Service Date until the end of the contractor's monitoring and

reporting service period. Thereafter the Operating Company shall produce monthly reports in the same format and within the same timescales as those produced by the contractor responsible for the acoustic monitoring system. The Operating Company shall produce an interpretative report in a format to be agreed with the Director every six months from Commencement of Service Date summarising the findings of the monitoring and reporting and shall submit the report to the Director. Any anomaly that might give cause for concern regarding the apparent behaviour of the main cable or the acoustic monitoring system shall be reported to the Director in writing within 30 days of the emergence of said anomaly.

4.15.38. Prior to the end of the contractor's monitoring and reporting service period for the acoustic monitoring system the Operating Company shall obtain all archived and backup data stored by the contractor and thereafter shall store this data together with all additional data generated by the system on suitable durable storage media, APMS or Structural Health Monitoring database until Service End Date. At Service End Date, all data and all rights therein shall be assigned by the Operating Company unconditionally to the Director.

4.15.39. The Operating Company shall be responsible for the on-site maintenance of the acoustic monitoring system in accordance with the requirements of the performance specification from Commencement of Service Date until the Service End Date.

4.15.40. Mechanical, Electrical & Plumbing Installations (Forth Road Bridge)

The Operating Company shall be responsible for the inspection, operation, maintenance and certification of all mechanical, electrical and plumbing installations in accordance with the requirements of the Forth Road Bridge Engineering Manual from Commencement of Service Date until the Service End Date. If inspection and maintenance requirements are not adequately covered in the Forth Road Bridge Engineering Manual, manufacturer's recommendations and Legislation shall be adhered to.

4.15.41. The sub-systems forming part of the mechanical, electrical and plumbing systems shall include as a minimum:

(i) Power systems and electrical installations including navigation, aircraft obstruction and display lights and internal lighting to the towers and viaducts,

(ii) Access Systems,

(iii) Anemometers and weather stations,

(iv) CCTV cameras, Tower camera, variable message signs and traffic signalling equipment,

(v) Dehumidification systems for the main cables, tower top and saddles,

(vi) Dehumidification systems for the anchorages,

(vii) Structural Health Monitoring Systems,

(viii) Weigh in motion system – maintenance and calibration,

(ix) Roadway Icelerts,

(x) Roadside emergency (crisis) telephone system,

(xi) Plumbing systems, and

(xii) Any other systems set out in the *Forth Road Bridge Engineering Manual*.

4.15.42. Details of the above systems are set out in the *Forth Road Bridge Engineering Manual*. The Operating Company shall develop procedures and schedules for the operation, maintenance and inspection of all mechanical, electrical and plumbing equipment and shall submit these to the Director for written consent a minimum of 30 Days prior to Commencement of Service Date. The procedures shall include details of any proposed specialists and subcontractors required.

4.15.43. Inspection and maintenance intervals and summary duties shall be carried out as stated in the *Forth Road Bridge Engineering Manual* and shall follow manufacturer's recommendations and Legislation.

4.15.44. Access Systems (Forth Road Bridge)

In addition to the requirements of Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures, the Operating Company shall be responsible for the inspection, operation, maintenance, storage and servicing (including mechanical and electrical installations) of all Access Systems on the Forth Road Bridge from Commencement of Service Date until the Service End Date and with the exception of the systems listed in Attachment 4.17 of this Appendix, these Access Systems shall remain certified for use at all times regardless of whether they are used or not. Access Systems not required to be kept certified shall be kept in secure, sheltered, and enclosed storage facilities. Subject to an Order the Operating Company shall dispose of any Access Systems which will not be required, the value being credited to Scottish Ministers.

4.15.45. During The Mobilisation Period, the Operating Company shall develop procedures for the inspection, operation and maintenance of all Access Systems and shall submit

these to the Director for his consent a minimum of 30 Days prior to Commencement of Service Date. Inspection, operation and maintenance requirements shall comply with the recommendations set out in the *Forth Road Bridge Engineering Manual.*

4.15.46. The Operating Company shall provide secure sheltered and enclosed storage facilities within the Unit for all Access System equipment not in use on the Forth Road Bridge.

4.15.47. The following types of Access System equipment together with any further Access Systems commissioned prior to the Service End Date shall be maintained and kept in working order at all times:

(i) Underdeck access gantries – Suspension Bridge,

There are two underdeck gantries serving the main bridge suspended structure, one for the sidespans and one for the main span.

(ii) Underdeck access gantries – Approach Viaducts,

There are two underdeck access gantries, one for each Approach Viaduct; each comprises three sections – two 'wing' gantries that are suspended below the outer cantilevers and a central suspended section that hangs from each and bridges between them.

(iii) Tower platforms and cradles,

There are two access systems from the towers, one is a full wrap-around 'Beeche' system that was developed for complete overpainting of the towers; this was operated in conjunction with a dropped object canopy. The second system is an 'Alta' self-winched system comprised of several modular components configurable to suit different inspection and light maintenance activities with only one or two separate cradles usable at a time.

All are suspended from lifting beams at the tower top portal level.

(iv) Main Cable Gantries,

There are three types – two for Forth Road Bridge main cable intrusive inspection, two for cable band bolt replacement and one for hanger replacement. Gantries shall be maintained such that access and functionality for all of these activities shall be retained at all times.

(v) Hanger access cradles,

There are two man-riding type self-winching 'Tirak' cradles used for hanger painting and inspection.

(vi) Suspended span underdeck access system – Suspension Bridge,

This system has to be maintained and tested and components certified as fit for use.

(vii) Tower Lifts,

There are a total of two internal tower lifts, operating in the south east and north west legs.

4.15.48. Access Walkways, Ladders, Stairs and Platforms

All access walkways, ladders, stairs and platforms shall be inspected, maintained and kept safe and continuously operable by the Operating Company from Commencement of Service Date until the Service End Date in accordance with the requirements of the *Forth Road Bridge Engineering Manual* and Legislation.

4.15.49. Spare Parts Stocks and Spare Parts Inventory

A required spare parts inventory is referred to in the Forth Road Bridge Engineering Manual. These required spare parts shall be separately identified within the list of equipment, materials, plant and spares owned by Scottish Ministers and made available for use under this Contract which is required by Schedule 3 - Contract Management, Section 3 - Offices, Depots & Other Infrastructure including Plant & Technology to be provided to the Director no later than 30 days prior to Commencement of Service Date. The Operating Company shall continuously maintain and update the spare parts inventory for the Forth Road Bridge in accordance with the requirements of Schedule 3 - Contract Management, Section 3 - Offices, Depots & Other Infrastructure including Plant & Technology.

4.15.50. Inspection Records and Defects Management Database

During The Mobilisation Period, the Operating Company shall review the historical Forth Road Bridge Bridge Maintenance Database and historical drawings. The Operating Company shall identify if there are gaps of information and notify the director.

The Operating Company shall complete a review and ensure all the inventory, drawings and documents are present and advise if it is available in the original software format no later than 30 days prior to Commencement of Service Date.

The Operating Company shall ensure all information was passed over by the former Operating Company and notify the Director of any issues.

The Operating Company shall maintain and update the drawing to reflect new works and upload all the relevant documentation onto APMS within 6 months of the Commencement of Service Date

4.15.51. APMS will be able to work with a Structural Health Monitoring database Thereafter, Principal Inspection, General Inspection and Special Inspections data, Defect monitoring and repair activity for the Forth Road Bridge shall be logged in APMS. The system shall also be configured to serve a processed set of queries required to generate data reports for APMS. As a minimum, the system shall have equivalent functionality to the historical Forth Road Bridge Defect and Repair Management Database and shall include the storage of detailed photographs, documents including H&S documentation, historical projects and up to date as-built drawings.

4.15.52. Structural Condition Indices

A scoring system shall be developed by the Operating Company to produce composite monitoring indicators for tracking the long-term condition of all structural elements on the Forth Road Bridge. The scoring system shall be submitted to the Director for his written consent no later than six months after Commencement of Service Date. The Operating Company shall update all composite indicators in the scoring system consented to by the Director at the end of the first Annual Period and thereafter in each Annual Period and in each Annual Period shall submit a report to the Director. The report shall as a minimum provide a summary of the results, changes in the composite indicators over the Period, the reasons for these changes and recommendations for addressing any deterioration in condition.

4.15.53. Forth Road Bridge Structural Analysis Models

During The Mobilisation Period, the Operating Company shall procure the software required to run the structural analysis models developed by others for the assessment of the Forth Road Bridge. Subject to an Order, the Operating Company shall update the structural analysis models to reflect any changes to the Structure or undertake any analysis required. The Operating Company shall maintain the software licences from Commencement of Service Date until the Service End Date and the Operating Company shall grant a licence on an irrevocable and unconditional basis to the

Scottish Ministers for use of the analysis models from Commencement of Service Date. At Service End Date, the analysis models and all rights therein shall be assigned by the Operating Company unconditionally to the Director and upload onto APMS.

4.15.54. Forth Road Bridge 3D Model

The Operating Company shall, subject to an Order, ensure the development of a 3D bridge model and purchase the licence required for the software to run the model. The Operating Company shall ensure that this model is updated after all major works on the Forth Road Bridge to Service End Date.

4.15.55. Security of the Forth Road Bridge

The Operating Company shall be responsible for ensuring the security of the Forth Road Bridge from Commencement of Service Date to the Service End Date. During The Mobilisation Period the Operating Company shall review any historic policies and procedures and shall develop a Security Patrol Plan. The Security Patrol Plan shall be submitted to the Director for his written consent a minimum of 30 days prior to Commencement of Service Date. The Security Patrol Plan shall, as a minimum, include procedures for:

(i) Continuously monitoring all closed circuit television cameras,

(ii) Monitoring all alarms and intruder detection systems,

(iii) Undertaking security patrols by vehicle including routine patrols and patrols in response to an incident, and

(iv) Operating a permit system for the control of access to all non public areas of the bridge including the internal areas of the towers and anchorages.

The Operating Company's responsibilities shall, as a minimum, include for guarding against acts of terrorism, malicious damage and structural damage and preventing unauthorised access to the Forth Road Bridge at all times.

The Operating Company shall undertake all monitoring and carry out driven security patrols on a continuous basis 24 hours per day with a minimum of 4 patrols, seven days per week during each Annual Period.

4.15.56. Cathodic Protection

The Operating Company shall be responsible for the operation, monitoring and maintenance of all cathodic protection systems in operation on the approach viaduct piers and the ship protection to the main piers of the Forth Road Bridge in accordance with the operation and maintenance manuals from Commencement of Service Date

until Service End Date. The Operating Company shall undertake monthly functional checks of the systems to ensure that the system is functioning correctly and quarterly performance assessments to ensure that the performance criteria as set out in the operation and maintenance manuals are being met. These checks and assessments shall be undertaken by remote monitoring and the performance assessments shall include the recommendation and implementation of any changes required to the systems. Inspections of the systems including ground based cabinets, remote monitoring and control enclosures and the cathodic protection system including anodes and the concrete being protected shall be undertaken annually.

The Operating Company shall produce annual inspection reports and reports summarising the performance of each cathodic protection system in the period and shall submit these reports to the Director. The Operating Company shall administer the suppliers' warranties and raise the matter of continuation of warranties with the Director in writing no later than 90 days before the expiry of each.

4.15.57. Operation of the Forth Road Bridge Structural Health Monitoring System

The Operating Company shall be responsible for the monitoring, inspection, operation and maintenance of the Structural Health Monitoring System. The Operating Company shall develop procedures for the monitoring, inspection, operation and maintenance of the structural health monitoring system and shall submit these to the Director for his written consent 30 Days prior to Commencement of Service Date. The procedures shall be developed with the objective of ensuring that the system has the capability to capture critical or rare events at all times.

4.15.58. Structural Health Monitoring System Routine Tasks

The Structural Health Monitoring System routine tasks shall include as a minimum development of procedures for and execution of the following:

(i) Structural Health Monitoring System inspection and maintenance,

(ii) Operational monitoring,

(iii) Logging and keeping records of Structural Health Monitoring System maintenance,

(iv) Assessment of system performance,

(v) Data management – archiving and warehousing,

(vi) Annual checks on data retrieval of randomly selected warehoused data,

(vii) Trigger level refinement and acquisition adjustment, and

(viii) Optimising stored data volumes.

4.15.59. Operational Monitoring

The Operating Company shall use the Structural Health Monitoring System for certain operational aspects. These shall include as a minimum:

(i) Windspeed monitoring,

(ii) Overweight vehicle detection and assessment,

(iii) Navigational clearance monitoring,

(iv) Winter Service and extreme weather monitoring, and

(v) Meteorological monitoring.

4.15.60. Alert Procedures

During Mobilisation Period, the Operating Company shall develop procedures for reacting to all structural alerts generated by the Structural Health Monitoring System and for providing reports on structural status and shall submit these procedures to the Director for his written consent no later than 60 Days after the Commencement of Service Date. These procedures shall cover aspects including as a minimum change in geometry combined with the results of close visual inspections of parts identified

for inspection in advance with relevance to the type and location of the source of the alert.

These procedures shall cover the method and scope of physical inspection required in response to an alert, the required response times and the reporting requirements and report distribution for each event type.

4.15.61. Field Measurements Associated with Principal Inspection

Equipment for field measurement of response will be supplied by the Director as a part of the Structural Health Monitoring System following system commissioning The field measurements shall record and their associated reports shall present analyses of:

(i) Changes to substructure and stay natural frequencies,

(ii) Changes to static and quasi-static geometry measured through the permanent system and conventional survey methods, and

(iii) The possible or established causes of each of the above.

The field measurement reports shall be included in the annual interpretative report submission and at the completion of the full Principal Inspection cycle.

4.15.62. Structural Health Monitoring System Reporting Requirements

The system will produce report sets at different intervals designed to meet different aims. The format, number and distribution list for these reports shall be agreed with the Director at least 30 days prior to Commencement of Service Date . The Operating Company shall distribute this information to the lists of recipients as consented to by the Director in writing. These reports comprise:

(i) Annual Interpretative Reports,

The Operating Company shall produce annual interpretative reports and submit these to the Director no later than 60 days after the end of each Annual Period.

The interpretive reports shall summarise the data gathered for each sensor type over the period, the interpretation of the data including any trends or results which are not as expected together with any recommendations for extended data analysis required

to support any maintenance recommendations along with recommendations for monitoring in the forthcoming year.

(ii) Routine Structural Health Monitoring System Reports,

The Operating Company shall produce routine quarterly reports of system data that summarise the main processed data sets and any monitoring issues identified on subjects for monitoring. These reports shall be submitted to the Director for his review a maximum of 30 days after the end of each quarter in the Annual Period.

These quarterly reports shall include results in standardised forms reporting on:

(a) Statistical data of all channels (such as means and standard deviations),

(b) Resampled low resolution time histories,

(c) Structure geometrical and positional information,

(d) Natural Frequencies of identified components,

(e) Event summaries and timelines,

(f) System status reports, including storage status, and

(g) Activity summary (such as which inspections or measurement campaigns have been carried out in the reporting period).

These reports shall also contain information on data availability in accordance with the Structural Health Monitoring System Performance Indicators and system repair response times.

(iii) Special Reports,

The Operating Company shall produce a report on each extreme event including weather and loading events, where trigger levels are exceeded or other incidents that arise from Structural Health Monitoring System monitoring. These reports shall include a description of the event, a summary of the results from the Structural Health Monitoring System, any Special Inspections or structural checks undertaken and the conclusions from the findings of the investigation and review. The Operating Company shall submit the report to the Director for his review within 10 days of each event occurring.

(iv) Sensor Classification for Performance Measurement,

Class A components shall include the main acquisition backbone and primary acquisition storage; the live and backed up data sets; response and tilt measurement

subsystem; primary wind and selected strain measurement subsystems data set and any system part that affects data captured of rare events.

Class B: are those subsystems not in Class A.

A channel classification schedule shall be submitted to the Director for consent no later than 30 days prior to Commencement of Service Date .

The Operating Company shall report the failure of an embedded or unreachable component to the Director. Subject to an Order, the Operating Company shall replace any embedded component.

(v) Structural Health Monitoring System Faults and Faulty Component Replacement,

The Operating Company shall monitor and report on any faults to any sensor, associated cabling or signalling system to the Director within 3 days of their detection. Subject to an Order, the Operating Company shall repair faults or replace components within the time periods stated in the Order.

(vi) Spares for the Structural Health Monitoring System,

During Mobilisation Period , the Operating Company shall compile an inventory of spare parts that have been supplied as part of the Structural Health Monitoring System and not more than 30 Days following Commencement of Service Date the Operating Company shall submit this inventory to the Director. The Operating Company shall be responsible for cataloguing, maintaining and updating the spares listed in the Structural Health Monitoring System Operations and Maintenance Manual from Commencement of Service Date until the Service End Date. The Operating Company shall only use spare parts from the inventory in the operation and maintenance of the Forth Road Bridge Structural Health Monitoring System. A full complement of spare parts as listed in the inventory shall be handed over to the incoming operating company at the Service End Date.

4.15.63. Supervisory Control and Data Acquisition System Routine Tasks

The procedures for the monitoring, operation and maintenance of the Supervisory Control and Data Acquisition system shall include the following as a minimum:

(i) Supervisory Control and Data Acquisition system,

(ii) Inspection and maintenance,

(iii) Inspection and maintenance of mechanical, electrical and plumbing systems whether associated with the Supervisory Control And Data Acquisition system or not,

(iv) Continuous operational monitoring,

(v) Responding to warnings and indicators including response time for responding to and dealing with faults,

(vi) Logging and keeping records of Supervisory Control and Data Acquisition system maintenance,

(vii) Assessment of Supervisory Control and Data Acquisition system performance,

(viii) Data management – archiving and warehousing, and

(ix) Maintenance and cataloguing of spares listed in the Supervisory Control and Data Acquisition System Operations and Maintenance Manual throughout the Contract Period.

4.15.64. Fixing of Supervisory Control And Data Acquisition Faults and Faulty Component Replacement

The Operating Company shall monitor and report on any faults to any part of the Supervisory Control and Data Acquisition system to the Director within three days of their detection. Subject to an Order, the Operating Company shall repair faults or replace components within the time periods stated in the Order save where such need for repair arises from the Operating Company not complying with its obligations in this Part in which case the cost of such repair and or replacement shall be borne by the Operating Company.

4.15.65. Structural Health Monitoring System and Supervisory Control and Data Acquisition Training

During Mobilisation Period and in the period following Commencement of Service Date the Operating Company shall ensure that all the required suitably qualified staff

attend the training provided by the Director in connection with the Structural Health Monitoring system and Supervisory Control and Data Acquisition system.

4.15.66. M90 0-1 68 Queensferry Crossing

The Queensferry Crossing is shown in Figures 4.15.52.A and 4.15.52.B and the location is denoted within Figure 4.15.52.C. The completion and handover date is scheduled for Autumn 2019. The Queensferry Crossing has an overall length of 2638m metres including the approach viaducts and carry four lanes and two running hard shoulders of the M90 over the Firth of Forth. Traffic is sheltered from high winds by the windshields present on each edge of the crossing.

4.15.67. Refer to Figure 4.15.52.B; the cable-stayed bridge comprises two main central spans of 650m each between the three towers. The single boxes of the sidespans have lengths of 366m (S) and 354.4m (N), each with an additional pier tying down the span at approximately its one-third point. The southern approach viaduct comprises seven spans. The northern approach viaduct comprises a single span.

4.15.68. The bridge deck on the cable supported spans comprises a trapezoidal steel box girder with a composite reinforced concrete slab which is post-tensioned transversely. The southern approach viaduct consists of twin continuous steel box girders with composite reinforced concrete slab and with bearing supports on the piers.

4.15.69. In the zone between the southern approach viaduct and the cable-stayed bridge a transition section is employed such that the twin steel box girders of the approach spans are merged into the single steel box girder.

4.15.70. The mono-towers each comprise a reinforced concrete box. Each tower incorporates steel cable anchorages cast into the upper sections. The twin planes of cables emanating from each tower are anchored along the central corridor of the bridge deck between the two carriageways.

4.15.71. The viaducts are supported on a family of V-shaped piers. Each pier leg consists of a hollow rectangular concrete section.

4.15.72. Each of the towers is supported on a reinforced concrete foundation with each foundation either bearing directly on rock or mass concrete upfill bearing on rock.

4.15.73. The central tower foundation is buried underneath a covering of re-constituted material. All other foundations within the tidal zone are submerged.

4.15.74. The deck will be continuous from abutment to abutment with no intermediate movement joints. A movement joint will be provided at each abutment and the only point of longitudinal fixity of the deck is at the central tower.

Figure 4.15.52.A – Queensferry Crossing

Figure 4.15.52.B – Queensferry Crossing Elevation

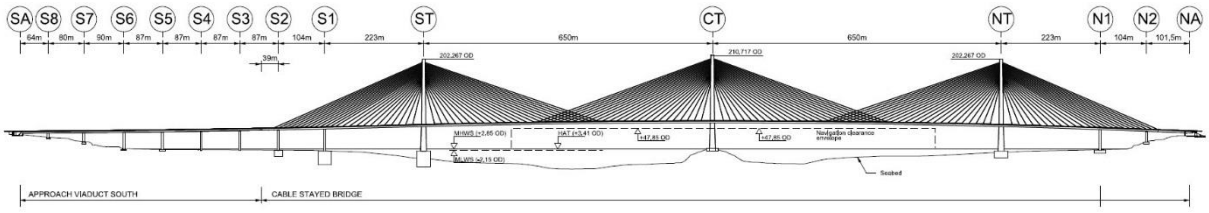


Figure 4.15.52.C – Queensferry Crossing Location

4.15.75. Particular Requirements for M90 0-1 68 Queensferry Crossing

4.15.76. The Queensferry Crossing Inspection and Maintenance Manual

The *Queensferry Crossing Inspection and Maintenance Manual* contains the requirements for inspection, operation and maintenance of the Queensferry Crossing; it has been written as a standalone document; any directions within it that appear to conflict with the requirements of this Contract, shall be raised with the Director in writing for determination within two weeks of discovery.

4.15.77. Maintenance Procedures

During the Mobilisation Period, the Operating Company shall develop procedures in the Management System for the inspection, operation and maintenance of the Queensferry Crossing and shall submit these to the Director for his written consent a minimum of 30 Days prior to Commencement of Service Date. The Operating Company shall undertake the inspection, operation and maintenance of the Queensferry Crossing in accordance with the procedures consented to by the Director.

4.15.78. The *Queensferry Crossing Inspection & Maintenance Manua*l also includes operational and health and safety statements, sometimes expressed as requirements; when developing its own procedures, the Operating Company shall assess the suitability of each statement in light of its own responsibilities under health and safety Legislation. The manual shall be reviewed and updated by the Operating Company as described in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures.

4.15.79. Structural Elements

In addition to the requirements of Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures, The Operating Company shall undertake the inspection, survey and maintenance of all structural elements of the Queensferry Crossing from Commencement of Service Date until the Service End Date including as a minimum:

(i) Towers,

(ii) Decks,

(iii) Abutments,

(iv) Substations,

(v) Piers and associated pad foundations, cofferdams and caissons,

(vi) Stay Cables, tie-downs and assemblies,

(vii) Deck stay anchorages,

(viii) Tower stay anchorages,

(ix) Tower lateral bearings,

(x) Abutment movement joints,

(xi) Viaduct and abutment bearings,

(xii) Sign gantries,

(xiii) Parapets/ barriers,

(xiv) Wind shields, and

(xv) Noise barriers.

4.15.80. Non-Structural Elements

The Operating Company shall be responsible for the inspection, operation and maintenance of all non-structural elements from Commencement of Service Date until the Service End Date including as a minimum:

(i) Deck drainage system,

(ii) Steel balustrades and fences,

(iii) Scour protection,

(iv) De-humidification system inside the deck boxes and towers,

(v) Supervisory control and data acquisition system,

(vi) Structural health monitoring system,

(vii) CCTV cameras,

(viii) Aviation and navigation warning lights,

(ix) Architectural lighting,

(x) Other mechanical and electrical equipment,

(xi) Fixtures and fittings within the abutment and substations.

4.15.81. Structural Assessment

The Queensferry Crossing is subject to a 2-yearly Bridge Specific Assessment Live Load pursuant to BD50/92. The Operating Company shall submit a schedule for the proposed continued execution of these assessments to the Director for written consent a minimum of 30 days prior to

Commencement of Service Date. Subject to an Order, the Operating Company shall undertake a Bridge Specific Assessment Live Load determination. Where a Bridge Specific Assessment Live Load is needed, contemporary data from the calibrated weigh-in-motion system shall be required.

4.15.82. Inspection Frequencies

The Operating Company shall note that a detailed inspection regime as outlined within the *Queensferry Crossing Inspection and Maintenance Manual* for the Queensferry Crossing shall require General Inspections of specific elements to be undertaken at different frequencies from the maximum two yearly interval stated in paragraph 3.3.1 of Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures. Where described in the manual, the frequency of inspection shall be determined using a criticality and vulnerability assessment in accordance with the *Queensferry Crossing Inspection and Maintenance Manual* and paragraph 3.2.8 of this Part. The Operating Company shall continuously review these assessments as a part of its inspection planning activity and any changes to the planned inspection programmes and frequencies shall be submitted to the Director for his written consent as a part of the annual inspection reporting process.

4.15.83. Elements not covered by the Queensferry Crossing Inspection and Maintenance Manual or criticality and vulnerability assessment shall be subject to inspections in accordance with the requirements of *Transport Scotland Interim Amendment No 33*, *BD63* and the *Transport Scotland Inspection Manual – Principal Inspection of Trunk Road Structures and Location System*.

4.15.84. Inspections on Queensferry Crossing

The intervals for element General Inspections are determined by a criticality and vulnerability ratings procedure using the method described in the *Queensferry Crossing Inspection and Maintenance Manual,*

4.15.85. At least one full Principal Inspection of the Queensferry Crossing shall be completed 90 days prior to the expiry of the Queensferry Crossing defects notification period or 90 days prior to the Initial Service End Date, whichever occurs first. Where the Commencement of Service Date to Service End Date duration extends beyond six years, the subsequent Principal Inspections shall be undertaken in accordance with the inspection programme as defined in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures and within the maximum time periods between

scheduled inspections. The schedule of Principal Inspections shall be subject to the written consent of the Director,

4.15.86. Subject to an Order, the Operating Company shall undertake an inspection of the Queensferry Crossing following Commencement of Service Date. The inspection shall take the form of a General Inspection and shall include but not be limited to structural elements, carriageway, drainage, movement joints, mechanical, electrical, hydraulic and plumbing systems and all access equipment and facilities. The inspection Records shall be uploaded to APMS for the Queensferry Crossing and the structures management function of the Integrated Roads Information System in accordance with the requirements of this Part and Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures, and

4.15.87. For the Queensferry Crossing, Principal and General Inspection reports shall be submitted in each Annual Period a minimum of 30 days prior to the review of the structures maintenance schedule as defined in Schedule 2 - Scope, Section 4 - Inspection and Maintenance - Structures for the sets of structural parts inspected in the preceding period. The first such submission shall take place no earlier than five months after and no later than 11 months after the Commencement of Service Date.

4.15.88. Positional Surveys

The Operating Company shall produce a Principal Inspection survey procedure for the Queensferry Crossing and submit it to the Director for written consent no later than the Commencement of Service Date. Surveys shall be scheduled with Principal Inspections using conventional optical survey methods. These may be combined with relevant, verified and datum-referenced information from the Structural Health Monitoring System and the Queensferry Crossing construction records provided that checks are undertaken by the Operating Company, the surveys shall measure and record:

4.15.89. Horizontal alignment and levels of the bridge and viaduct spans at pier and midspan locations,

(i) Pier and tower foundation and abutment levels and transverse tilts,
(ii) Navigational clearances at the bridge midspans and corners of the navigational envelopes,
(iii) Longitudinal and transverse verticality of the towers,
(iv) Longitudinal verticality of the piers,
(v) Gaps at the abutment expansion joints, and
(vi) Mean effective temperatures of the deck box throughout the survey period.

(vii) Verticality values shall be absolute and gravity-referenced.

4.15.90. The Operating Company shall ensure that all structural baseline measurements and positions are established for long-term monitoring and be repeatedly referable to permanent datum benchmarks for horizontal position and level by taking at least two independent sets of measurements to an accuracy of 2mm.

4.15.91. The first positional survey shall be completed to establish the reference data set no later than 12 months after Commencement of Service Date and repeated thereafter to coincide with the completion of each Principal Inspection cycle.

4.15.92. Mechanical & Electrical and Plumbing Installations (Queensferry Crossing)

The Operating Company shall be responsible for the inspection, operation, maintenance and certification of all mechanical, electrical and plumbing installations in accordance with the requirements of the *Queensferry Crossing Inspection and Maintenance Manual* from Commencement of Service Date until the Service End Date. If inspection and maintenance requirements are not adequately covered in the *Queensferry Crossing Inspection and Maintenance Manual,* manufacturer's recommendations and Legislation shall be adhered to.

4.15.93. The sub-systems forming part of the mechanical, electrical and plumbing systems include those listed in Table 3.2.1 and shall include as a minimum:

(i) Power systems generally including substations, standby generators and backup supplies (uninterruptable and essential power) at each abutment,

(ii) Electrical installations include marine navigation, aircraft obstruction and architectural display lights and internal lighting to the entire crossing,

(iii) Security systems, CCTV cameras, communications and the fire protection system,

(iv) Dehumidification systems for the deck boxes, and tower voids,

(v) Weigh in Motion (WIM) system – including calibration,

(vi) Structural Health Monitoring System,

(vii) SCADA System and associated subsystems, and

(viii) Intelligent transport system gantries, which are a part of the Traffic Scotland Equipment.

4.15.94. Having reviewed the *Queensferry Crossing Inspection and Maintenance Manual*, the Operating Company shall develop procedures and schedules for the maintenance,

inspection, operation and monitoring of all mechanical, electrical and plumbing equipment all pursuant to manufacturers' recommendations and submit them to the Director for written consent not later than 60 days prior to Commencement of Service Date.

4.15.95. Access Systems (Queensferry Crossing)

The Operating Company shall be responsible for the inspection, operation, maintenance, storage and servicing (including mechanical and electrical installations) of all Access Systems on the Queensferry Crossing from Commencement of Service Date until Service End Date and shall ensure that all Access Systems including any Access System held in storage shall remain certified for use at all times. During the Mobilisation Period, the Operating Company shall develop procedures for the inspection, operation and maintenance of the Access Systems and shall submit these to the Director for his written consent a minimum of 30 days prior to Commencement of Service Date. Inspection and maintenance requirements shall comply with the recommendations set out in the manuals for each system called up in the *Queensferry Crossing Inspection and Maintenance Manual.*

4.15.96. The following types of Access Systems shall be maintained and kept in certification at all times:

Underdeck access gantries,

There are two pairs of underdeck gantries serving the main bridge suspended Structure and a total of two gantries capable of serving the north and south approach spans.

Tower cradles,

There are four tower cradles, two to access the tower corners and two to access the arc-faces.

Stay Cable Gantries,

There are two stay cable access gantries.

Deck Shuttles,

There are two deck shuttles running on overhead rails that run inside the deck boxes for the full length of the Crossing. One is housed next to each abutment.

Tower Lifts,

There are a total of three internal tower lifts, one operating in each tower. Type: rack and pinion.

Piers,

All rope access anchor points.

4.15.97. All Access Systems shall be maintained by the Operating Company in accordance with the inspection and maintenance manuals relevant to each Access System such that access and full functionality for their intended use shall be retained at all times.

4.15.98. The Operating Company shall provide secure, sheltered and enclosed storage facilities for all Access Systems not in use on the Queensferry Crossing.

4.15.99. The Operating Company shall send representatives to witness the testing and the commissioning of the Access Systems both on and off site sufficient to enable staff to operate and maintain the systems safely and effectively.

(i) Access Walkways, Ladders, Stairs and Platforms

All access walkways, ladders, stairs and platforms shall be inspected, maintained and kept safe and continuously operable by the Operating Company from Commencement of Service Date until the Service End Date in accordance with the *Queensferry Crossing Inspection and Maintenance Manual* and Legislation.

(ii) Spare Parts Inventory

A required spare parts inventory is referred to in the *Queensferry Crossing Inspection and Maintenance Manual*. These required spare parts shall be separately identified within the list of equipment, materials, plant and spares made available for use under this Contract which is required by Schedule 3 - Contract Management, Section 3 - Offices, Depots & Other Infrastructure including Plant & Technology to be provided to the Director no later than 30 days after Commencement of Service Date. The Operating Company shall continuously store all the spare parts and shall maintain and update the spare parts inventory for the Queensferry Crossing in accordance with the requirements of Schedule 3 - Contract Management, Section 3 - Offices, Depots & Other Infrastructure including Plant & Technology.

4.15.100. Detailed Inspection Records and the Defects and Repair Management Database

During The Mobilisation Period, the Operating Company shall review all of the information handed over as part of this structure. The Operating Company will ensure APMS is fully populated with all relevant documentation and as built drawings. APMS will be used as the main and only Defects and repair management database for the management of all inspection and Defect management information for the Queensferry Crossing. The Operating Company shall review and ensure all the inventory, drawings and documents are present and up to date no later than 30 days prior to Commencement of Service Date. The Operating Company shall ensure all information was passed over by the formerOperating Company and notify the Director of any issues.The database shall be used by the Operating Company for the issue and management of work packages for repair actions and monitoring until the Service End Date. The system shall be accessible to the Director, the Performance Audit Group and any other parties appointed by the Director. The database shall be retained by the Director for use by successor operating companies.

4.15.101. APMS will be able to work with a Structural Health Monitoring database Thereafter, Principal Inspection, General Inspection and Special Inspections data, Defect monitoring and repair activity for the Queensferry Crossing shall be logged in APMS. The system shall also be configured to serve a processed set of queries required to generate data reports for APMS. As a minimum, the system shall have equivalent functionality to the historical Forth Road Bridge Defect and Repair Management Database and shall include the storage of detailed photographs, documents including H&S documentation, historical projects and up to date as-built drawings.

4.15.102. It shall include as a minimum the following features:

(i) Detailed inventory with the Queensferry Crossing as-built drawings and the project archive documents all populated within the database,

(ii) Compatibility with the component referencing system, inspection rating system and defect classification and rating system and bridge referencing system (as defined in the *Queensferry Crossing Inspection and Maintenance Manual*),

(iii) Structural element level data retrieval,

(iv) Search by location code, and

(v) Defect and repair tracking with linking to repair Records and safe working procedures, method statements and weld procedures and preparation of Operations.

(vi) Search function to enable fast searchability of the detailed documentation and drawings

(vii) Typical element resolution will be to the level of individual bracings or stiffeners but not welds or bolts unless particularly substantial. Fabrications or composite entities shall be subdivided to pre-assembly elements or facets according to how they may be adequately represented on inspection pro formas.

(viii) The Operating Company shall continually use, update and licence the database and other associated software until the Service End Date.

4.15.103. Structural Condition Indices

A scoring system shall be developed by APMS showing composite monitoring indicators for tracking the long-term condition of structural elements on the Queensferry Crossing. The Operating Company shall update all composite indicators in the scoring system consented to by the Director at the end of the first Annual Period following Commencement of Service Date and thereafter in each Annual Period. In each Annual Period the Operating Company shall submit a report to the Director. The report shall as a minimum provide a summary of the results, changes in the composite indicators over the Period, the reasons for these changes and recommendations for addressing any deterioration in condition.

4.15.104. Operation of the Queensferry Crossing Structural Health Monitoring System

The Operating Company shall be responsible for the monitoring, inspection, operation and maintenance of the Structural Health Monitoring System in accordance with the details of the *Employer's Delivery Team Memorandum - Operation and Maintenance of the Queensferry Crossing Structural Health Monitoring System* and the Operation and Maintenance Manual for the Structural Health Monitoring System. The Operating Company shall develop procedures for the monitoring, inspection, operation and maintenance of the structural health monitoring system and shall submit these to the Director for his written consent 30 Days prior to Commencement of Service Date. The procedures shall be developed with the objective of ensuring that the system has the capability to capture critical or rare events at all times. The Operating Company shall record the occurrence of faults and problems with the Structural Health Monitoring System during the Queensferry Crossing defects notification period.

4.15.105. Structural Health Monitoring System Routine Tasks

The Structural Health Monitoring System routine tasks shall include as a minimum development of procedures for and execution of the following:

(i) Structural Health Monitoring System inspection and maintenance,

(ii) Operational monitoring,

(iii) Logging and keeping records of Structural Health Monitoring System maintenance,

(iv) Assessment of system performance,

(v) Data management – archiving and warehousing,

(vi) Annual checks on data retrieval of randomly selected warehoused data,

(vii) Trigger level refinement and acquisition adjustment, and

(viii) Optimising stored data volumes.

(ix) Operational Monitoring

4.15.106. The Operating Company shall use the Structural Health Monitoring System for certain operational aspects. These shall include as a minimum:

(i) Windspeed monitoring,

(ii) Overweight vehicle detection and assessment,

(iii) Navigational clearance monitoring,

(iv) Winter Service and extreme weather monitoring, and

(v) Meteorological monitoring.

4.15.107. Refinement of Structural Health Monitoring System Configuration

Following the first Winter Service Period after Commencement of Service Date, the Operating Company shall review the triggering criteria for the Structural Health Monitoring System. The Operating Company shall submit a report detailing the findings of this review to the Director no more than 30 days after the first Winter Service Period following Commencement of Service Date. This report may include proposals for the development and refinement of the triggering criteria.

Subject to an Order, the Operating Company shall modify the triggering criteria for the Structural Health Monitoring System.

4.15.108. Alert Procedures

During The Mobilisation Period, the Operating Company shall develop procedures for reacting to all structural alerts generated by the Structural Health Monitoring System and for providing reports on structural status and shall submit these procedures to the Director for his written consent no later than 60 Days after Commencement of Service Date. These procedures shall cover aspects including as a minimum change in geometry combined with the results of close visual inspections of parts identified for inspection in advance with relevance to the type and location of the source of the alert.

These procedures shall cover the method and scope of physical inspection required in response to an alert, the required response times and the reporting requirements and report distribution for each event type.

4.15.109. Field Measurements Associated with Principal Inspection

Equipment for field measurement of response will be supplied by the Director as a part of the Structural Health Monitoring System following system commissioning

The Operating Company shall be responsible for undertaking field measurements as a part of every Principal Inspection of the Queensferry Crossing in accordance with the Employer's Delivery Team Memorandum Operation and Maintenance of the Queensferry Crossing Structural Health Monitoring System Operation and the Operation and Maintenance Manual for the Structural Health Monitoring System. The field measurements shall record and their associated reports shall present analyses of:

(i) Changes to substructure and stay natural frequencies,
(ii) Changes to static and quasi-static geometry measured through the permanent system and conventional survey methods, and
(iii) The possible or established causes of each of the above.

The field measurement reports shall be included in the Principal Inspection submission at the completion of the full Principal Inspection cycle.

4.15.110. Structural Health Monitoring System Reporting Requirements

The system will produce report sets at different intervals designed to meet different aims. The format, number and distribution list for these reports shall be agreed with the Director at least 30 days prior to Commencement of Service Date. The Operating Company shall distribute this information to the lists of recipients as consented to by the Director in writing. These reports comprise:

(i) Annual Interpretative Reports,

The Operating Company shall produce annual interpretative reports and submit these to the Director no later than 60 days after the end of each Annual Period.

The interpretive reports shall summarise the data gathered for each sensor type over the period, the interpretation of the data including any trends or results which are not as expected together with any recommendations for

extended data analysis required to support any maintenance recommendations along with recommendations for monitoring in the forthcoming year.

(i) Routine Structural Health Monitoring System Reports,

The Operating Company shall produce routine quarterly reports of system data that summarise the main processed data sets and any monitoring issues identified on subjects for monitoring. These reports shall be submitted to the Director for his review a maximum of 30 days after the end of each quarter in the Annual Period.

These quarterly reports shall include results in standardised forms reporting on:

(i) Statistical data of all channels (such as means and standard deviations),
(ii) Resampled low resolution time histories,
(iii) Structure geometrical and positional information,
(iv) Natural Frequencies of identified components,
(v) Event summaries and timelines,
(vi) System status reports, including storage status, and
(vii) Activity summary (such as which inspections or measurement campaigns have been carried out in the reporting period).

These reports shall also contain information on data availability in accordance with the Structural Health Monitoring System Performance Indicators and system repair response times.

(i) Special Reports,

The Operating Company shall produce a report on each extreme event including weather and loading events, where trigger levels are exceeded or other incidents that arise from Structural Health Monitoring System monitoring. These reports shall include a description of the event, a summary of the results from the Structural Health Monitoring System, any Special Inspections or structural checks undertaken and the conclusions from the findings of the investigation and review. The Operating Company shall submit the report to the Director for his review within 10 days of each event occurring.

(ii) Sensor Classification for Performance Measurement,

Class A components shall include the main acquisition backbone and primary acquisition storage; the live and backed up data sets; response and tilt measurement subsystem; primary wind and selected strain measurement subsystems; embedded strain sensor cabling and signal conditioning system: live traffic measurement systems and data set and any system part that affects data captured of rare events.

Class B: are those subsystems not in Class A.

A channel classification schedule shall be submitted to the Director for consent no later than 30 days prior to Commencement of Service Date.

The Operating Company shall report the failure of an embedded or unreachable component to the Director. Subject to an Order, the Operating Company shall replace any embedded component.

(iii) Structural Health Monitoring System Faults and Faulty Component Replacement,

The Operating Company shall monitor and report on any faults to any sensor, associated cabling or signalling system to the Director within 3 days of their detection. Subject to an Order, the Operating Company shall repair faults or replace components within the time periods stated in the Order.

(iv) Spares for the Structural Health Monitoring System,

During The Mobilisation Period, the Operating Company shall compile an inventory of spare parts that have been supplied as part of the Structural Health Monitoring System and not more than 30 Days following Commencement of Service Date the Operating Company shall submit this inventory to the Director. The Operating Company shall be responsible for cataloguing, maintaining and updating the spares listed in the Structural Health Monitoring System Operations and Maintenance Manual from Commencement of Service Date until the Service End Date. The Operating Company shall only use spare parts from the inventory in the operation and maintenance of the Queensferry Crossing Structural Health Monitoring System. A full complement of spare parts as listed in the inventory shall be handed over to the incoming operating company at the Service End Date.

and,

(v) As-Built Geometry of the Queensferry Crossing,

During the Mobilisation Period, the Operating Company shall review the as-built geometrical information produced from the construction of the Queensferry Crossing in order to be familiar with the information and how it relates to the baseline values in the Structural Health Monitoring System database for ongoing monitoring and the production of quarterly and annual reports to the Director. This includes the navigational clearance and data on stay relaxation.

During The Mobilisation Period, the Operating Company shall review the historical Queensferry Crossing Database and historical drawings. The Operating Company shall identify if there are gaps of information and notify the director.

The Operating Company shall complete a review and ensure all the inventory, drawings and documents are present and advise if it is available in the original software format no later than 30 days prior to Commencement of Service Date. The Operating Company shall ensure all information was passed over by the former Operating Company and notify the Director of any issues.

The Operating Company shall upload all the relevant documentation onto APMS within 6 months of the Commencement of Service Date. The Operating Company shall update all relevant documentation and drawings after all major works on the bridge.

4.15.111. Operation of the Queensferry Crossing Supervisory Control and Data Acquisition Systems

The Supervisory Control and Data Acquisition system monitors and controls mechanical, electrical and plumbing systems on the Queensferry Crossing. The Operating Company shall monitor, operate and maintain the Supervisory Control and Data Acquisition system in accordance with the requirements of the Operation and Maintenance Manuals for the Supervisory Control and Data Acquisition System from Commencement of Service Date until the Service End Date.

4.15.112. The Operating Company shall develop procedures for the monitoring, operation and maintenance of the Supervisory Control and Data Acquisition system and shall submit these to the Director for his written consent 30 Days prior to Commencement of Service Date. These procedures shall be developed with the objective of ensuring that the system is operational and effective at all times and shall include proposals

for monitoring the system 24 hours per day, seven days per week during the Annual Period and the maximum time periods for reacting to warnings, alarms or alerts identified by the system and the identification and replacement of faulty parts.

Table 3.2.1 – Mechanical, Electrical and Plumbing Systems Summary

MEP SCADA Subsystems
Dehumidification systems
Water cleansing system
Security systems (CCTV/Access/Intrusion)
All lighting systems
Fire detection system
Lifts, including Tower Lifts
ITS Power Monitoring
Structural Health Monitoring System
Power Supply systems
Electrical Distribution System
Electrical Distribution System (LV)
UPS and EPS Distribution Systems
Building Management System
CCTV Systems
Server rack

4.15.113. Supervisory Control and Data Acquisition System Routine Tasks

The procedures for the monitoring, operation and maintenance of the Supervisory Control and Data Acquisition system shall include the following as a minimum:

(i) Supervisory Control and Data Acquisition system,

(ii) Inspection and maintenance,

(iii) Inspection and maintenance of mechanical, electrical and plumbing systems whether associated with the Supervisory Control And Data Acquisition system or not,

(iv) Continuous operational monitoring,

(v) Responding to warnings and indicators including response time for responding to and dealing with faults,

(vi) Logging and keeping records of Supervisory Control and Data Acquisition system maintenance,

(vii) Assessment of Supervisory Control and Data Acquisition system performance,

(viii) Data management – archiving and warehousing, and Maintenance and cataloguing of spares listed in the Supervisory Control and Data Acquisition System Operations and Maintenance Manual throughout the Contract Period.

4.15.114. Fixing of Supervisory Control And Data Acquisition Faults and Faulty Component Replacement

The Operating Company shall monitor and report on any faults to any part of the Supervisory Control and Data Acquisition system to the Director within three days of their detection. Subject to an Order, the Operating Company shall repair faults or replace components within the time periods stated in the Order save where such need for repair arises from the Operating Company not complying with its obligations in this Part in which case the cost of such repair and or replacement shall be borne by the Operating Company.

4.15.115. Structural Health Monitoring System and Supervisory Control and Data Acquisition Training

During The Mobilisation Period and in the period following Commencement of Service Date the Operating Company shall ensure that all the required suitably qualified staff attend the training provided by the Director in connection with the Structural Health Monitoring system and Supervisory Control and Data Acquisition system.

4.15.116. Software for Structural Analysis Models

Prior to the end of the Mobilisation Period, the Operating Company shall have the required software licence to view the structural analysis models of the Queensferry Crossing and undertake any analysis required. Subject to an

Order, the Operating Company shall develop structural analysis models of the Queensferry Crossing and carry out structural analysis of the bridge. The Operating Company shall, subject to an Order, update the models to reflect any changes to the structure. The Operating Company shall maintain the software licences from Commencement of Service Date until Contract End Date. The models will be owned by the Scottish Ministers, but the Operating Company will be granted use of the analysis models from Commencement of Service Date. At Service End Date, the analysis models and all rights therein shall be assigned by the Operating Company unconditionally to the Director.

4.15.117. Queensferry Crossing 3D Model

4.15.118. The Operating Company shall, subject to an Order, ensure the development of a 3D bridge model and purchase the licence required for the software to run the model. The Operating Company shall ensure that this model is updated after all major works on the Queensferry Crossing to Service End Date.

4.15.119. Queensferry Crossing Security

The Operating Company shall be responsible for ensuring the security of the Queensferry Crossing from Commencement of Service Date to the Service End Date.

During The Mobilisation Period the Operating Company shall update the Security Patrol Plan to take account of the Network and shall submit the Security Patrol Plan to the Director for his written consent a minimum of 30 days prior to Commencement of Service Date. The updated Security Patrol Plan shall, as a minimum, include procedures with respect to the Network for:

(i) Continuously monitoring all closed circuit television cameras,

(ii) Monitoring all alarms and intruder detection systems,

(iii) Undertaking security patrols by vehicle including routine patrols and patrols in response to an incident, and

(iv) Operating a permit system for the control of access to all non public areas of the bridge including the internal areas of the towers and deck boxes.

4.15.120. The Operating Companies responsibilities shall, as a minimum, include guarding against acts of terrorism, malicious damage and structural damage and preventing unauthorised access to the Queensferry Crossing at all times.

The Operating Company shall undertake all monitoring and carry out driven security patrols on a continuous basis 24 hours per day with a minimum of 4 patrols, seven days per week during the Annual Period.

4.15.121. **-------REDACTED--------**

Figure 4.15.92.A –----------REDACTED----------

REDACTED

signed for and on behalf of The Scottish Ministers

by ……..…….

on …..…… December ……

at ……

…….…….
Authorised Signatory

signed for and on behalf of

by

……...……

on ……

……..…
Director/Company Secretary/
Authorised Signatory*

at ……

Figure 4.15.92.B – --------REDACTED----------

REDACTED

Figure 4.15.92.A – ----------REDACTED----------

REDACTED

4.15.122. **REDACTED**

[----------**REDACTE**D----------

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4.15.123. **REDACTED**

Figure 5.1.1.A – ----------REDACTED ----------

REDACTED

4.15.124. **REDACTED**

[----------**REDACTED** ----------

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4.15.125. **REDACTED**

[----------**REDACTED** ----------

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signed for and on behalf of The Scottish Ministers

by ……..……..

on …..…… December ……

at ……

……..……..

Authorised Signatory

signed for and on behalf of

by ……..……

on ……

at ……

……..…

Director/Company Secretary/ Authorised Signatory

Attachment 4.16 Documents for Structures with Particular Requirements

Table 4.16.1 Forth Bridge Document Register

Item	Drawing title
1	Forth Road Bridge Engineering Manual
2	FETA historical Forth Road Bridge inspection schedules and maintenance routines.
	· General Operatives Work Detail
	· Electrical 10 Year Plan
	· Maintenance Plan
	· Electrical Integrated Plan
	· Schedule of Routines
	· Electrical Maintenance Schedule
	· Engineering Maintenance Schedule
	· Schedule of Inspections
	· Joiners Maintenance Schedule
	· Grade IV Maintenance Schedule
	· Mechanic Maintenance Schedule
	· Painters Maintenance Schedule

	· Riggers Maintenance Schedule
	· Appendix 1 – Vulnerability and Criticality Assessment
	· Criticality Vulnerability Inspection Programme
	Register of Programmed Special Inspections for the Forth Road Bridge

Table 4.16.2 M90 Queensferry Crossing Document Register

Item	Drawing title
1	Queensferry Crossing Inspection and Maintenance Manual.
2	
3	
4	
5	
6	

Table 4.16.3 Clackmannanshire Document Register

Item	Drawing title
1	Operations Manual
2	Design Drawings

Table 4.16.4 Kincardine Bridge Document Register

Item	Drawing title
1	Interim Management Strategy, January 2002
2	Kincardine Pumping Station O&M Manual

Table 4.16.5 REDACTED

Item	Drawing title
1	Operations & Maintenance Manual - **REDACTED**
2	Operations & Maintenance Manual - **REDACTED**
3	Operations & Maintenance Manual - **REDACTED**
4	Operations & Maintenance Manual - **REDACTED**

Table 4.16.6 Other Document Register

Item	Drawing title
1	Forth Replacement Crossing Project Operational & Maintenance Manual: Structure Esq11 – B800 Retaining Wall
2	Newbridge Pumping Station O&M Manual
3	Bowerhouse Pump Maintenance Manual

Attachment 4.17 Structures with Bridge Access Gantries and or Runway Beams

Table 4.17.1 - Structures with Bridge Access Gantries and or Runway Beams

Structure		Access Gantry	Runway Beams	Comments
Reference No.	**Name**			
A90 9	Forth Road Bridge	Yes	Yes	Different systems use runway beams on the Approach Viaducts and Suspended Structure
A90 9	Forth Road Bridge	Yes	Yes	Different systems use runway beams on the Approach Viaducts and Suspended Structure
M90 0-1 68	Queensferry Crossing	Yes	Yes	Underdeck gantries and deck shuttles both have runway beams

Table 4.17.2 Structures with Bridge Access Gantries and or Runway Beams To Be Certified At All Times

Structure		Access Gantry	Runway Beams	Comments
Reference No.	Name			
A90 9	Forth Road Bridge	Yes	Yes	
M90 0-1 68	Queensferry Crossing	Yes	Yes	Note this certification requirement refers to all Access Systems on the Principal Crossings unless otherwise agreed in writing with the Director.

Note

1. All gantries and or runway beams should be certified if they are to be used and have not previously been used for 12 months.

Table 4.17.2 Forth Road Bridge– List of Access Systems Exempt from Full-Time Certification

Forth Road Bridge
"Beeche" Tower Painting Cradle System
Hanger Replacement Gantry from 1990 Strengthening Works
Main Cable Inspection Gantries

Attachment 4.18 List of Bridges with Signed Low Headroom

Table 4.18.1 List of Bridges with Signed Low Headroom

Structure		Actual Minimum Headroom	Additional Comments
Reference No.	**Name**		
M8 2-3 60	DRUMSHORELAND STN RD	Actual minimum headroom - 3.81	Three headroom signs on both sides. Headroom signed in both metric and imperial. The minimum headroom measured during the investigation was 3.81m and the signed minimum headroom is 3.7m. The present signing is therefore appropriate however there is lack of advanced warning sign.
M8 2-3 85	UPHALL STATION ROAD	Actual minimum headroom - 4.68	Three headroom signs on both sides. Headroom signed in both metric and imperial. Structure spans a non-Truck Road (Council Route). The minimum headroom measured during the investigation was 4.68m and the signed minimum headroom is 4.5m. The present signing is therefore appropriate however there is lack of advanced warning sign.
M8 4-5 20	WHITBURN WORKS A/C	Actual minimum headroom - 4.39	No signing either side
M8 4-5 90	FORRESTDYKE	Actual minimum headroom - 4.98	Headroom signed on one post in the verge on both sides. Headroom signed in both metric and imperial

M9 1-2 90	GALLOWSCROOK	Actual minimum headroom - 3.57	Lack of advanced warning sign. New signs should be erected on both sides of the bridge. The indicated minimum headroom should be 3.50m, 11'6''. Structure spans an Accommodation Access or Private Road. Signed on one side only. Imperial measurement only indicated

Table 4.18.2 List of Bridges with Known Low Headroom with Sign Installation in Progress

Structure		Actual Minimum	Additional
Reference No.	**Name**	**Headroom**	**Comments**
A1 115	EWEFORD U/P	4.28	No signing either side
A1 170	ABBEY MAINS U/P	4.27	No signing either side
A1 210	MEADOWMILL U/P	2.64	No signing either side
A1 28	LEMINGTON U/P	4.57	No signing either side
A1 71	DUNGLASS NEW	3.38	No signing either side
A68 165	NEWTOWN GLEN U/P	2.92	No signing either side
A68 168	SPROUSTON U/P	4.43	No signing either side
A68 400	BELLYFORD UNDERPASS	3.7	No signing either side
A68 420	SMEATON CYCLEPATH	2.81	No signing either side
A7 10	WOODSLEE U/P	4.55	No signing either side
A720 100	DREGHORN U/P	4.11	No signing either side
A876 85	BROADCARSE FARM U/P	4.29	No signing either side
A985 10	WOODHEAD FARM	4.96	No signing either side
A985 30	DRUMFIN	4.46	No signing either side

M8S 1-1 10	GOGAR GREEN U/P	4.23	No signing either side
M9 0-1 G80	SIGN GANTRY	-	No signing either side
M9 1-2 G10	SIGN GANTRY	-	No signing either side
M9 1-2 G25	SIGN GANTRY	-	No signing either side
M9 1-2 G35	SIGN GANTRY	-	No signing either side
M9 1-2 G5	SIGN GANTRY	-	No signing either side
M9 3-4 85	AVONBANK FARM O/B	5.03	No signing either side
M9 8-9 35	Cushenquarter Bridge	4.3	No signing either side
M9 8-9 6	KERSEBROOK	3.27	No signing either side

Attachment 4.19 List of Structures Subject to Bridge Strikes Since 2008

Table 4.19.1 Structures Subject to Bridge Strikes

Structure			
Reference No.	Name	Damage Description	Date
A720 210	Calder Rd I/C S O/B	Damaged parapet mesh	20 February 2008
M876 2-2 10	North Broomage O/B	Damaged parapet rails	11 March 2008
M8 4-5 22	A706 U/B	Superficial scraping, no new structural damage	08 November 2008
M9 1-2 65	Priestinch Bridge	Superficial scraping, no structural damage	15 January 2010
		HGV travelling southbound - scrapes to soffit and chip to deck edge.	04 May 2016
		Conveyor boom of planer struck edge beam. Minor scrapes to concrete. Amet contractor.	04 July 2018
M80 8-9 65	Northfield Road	Bridge struck from below by lorry with Hiab / Crane attachment. Edge of concrete deck and BACO 3000 parapet damaged. No exposed concrete but parapet has 3 sheared rails and 1 sheared post. N/B direction. Minor concrete repairs and replacement of damaged members	28 March 2011

M8 3-4 80	B792 Bridge	Damaged beams on W/B above lane 1. Repairs to Bottom Flange	07 November 2011
		Straw Bales Impacted edge beam - no damage. Scraping to the underside of the beams, signs of impact at historic damaged areas above lane 1. 1st beam RHS and 2nd last beam LHS impacted. No change to the areas of historic impact.	12 September 2012
		Shed load of straw westbound. No new damage visible.	03 June 2015
		Vehicle carrying straw bales westbound. No new damage visible.	01 February 2018
		Minor damage to two beams - vehicle didn't stop.	30 October 2018
M9 6-7 50	Westerton	N/B direction struck by overheight vehicle carrying excavator. Over lane 1, causing spalling to the edge beam and cracking through to service bay.	18 October 2013
		Minor cosmetic damage from O/H vehicle	08 June 2014
M9 0-1 50	Almond	Struck by plant on low loader - significant damage to out steel beam. Minor damage to other beams and concrete deck edge.	04 September 2014

A6091 20	Broomilees O/B	Bottom flange of edge beam struck exposing 3No. (?) prestressing tendons.	04 November 2014
M8 2-3 45	Burnside Muirend O/B	HGV travelling Eastbound, struck soffit and back doors of trailer dislodged onto the carriageway. Minor scraping to soffit.	08 June 2016
M90 1-1 10	Admiralty South	Minor chip and scraping of concrete	31 August 2018

Attachment 4.20: Bridge Strike Form

Operating Company:

Unit:

Route:

Structure:

Structure Name:

Date:

Provide data from the following fields from the contract control and management function of the Asset Performance Management System:

1	Unique damage identifier
2	Route number
3	Date and time of the Incident
4	Source of this information
5	Date and time Operating Company became aware of Incident
6	Location, link, section, chain age & Ordinance Survey grid reference
7	Structural reference number
8	Type and extent of damage
9	Cause of damage
10	Are proceedings being taken by Police Scotland
11	Date emergency work was carried out

12	Who carried out emergency work
13	Weather conditions
14	Any other relevant information

Attachment 4.21 Structures Removed from the Unit

Table 4.21.1 List of Structures Removed from the Unit

Structure Reference Number	Structure Name	Date Removed from the Unit
Intentionally Blank		

Attachment 4.22 Structures Added to the Unit

Table 4.22.1 List of Structures Added to the Unit

Structure Reference Number	Structure Name	Date Added to Unit
Sign Gantry/Signal Gantry		
M8 5-6 G76	SVMS6 (M8 westbound, east of Junction 6 (Newhouse))	15/11/2021