A350 Chippenham Bypass Dualling Phases 4 & 5 Organisation Chart

(DRAFT – SUBJECT TO CHANGE)

Wiltshire Council Cabinet
- Wiltshire Council Cabinet Members

Cabinet Member for Transport, Street Scene and Flooding [redacted]

Scrutiny and assurance
- Environment Select Committee

Place Performance and Outcomes Board
- Senior Leadership Team

Corporate Director for Place [redacted]

Capital Programme Manager

Section 151 Officer [redacted]

M4 Junction 17 Project Board
- SRO, PD, PM, Finance, AtkinsRéalis

Senior Responsible Owner [redacted]

Managing Director

Contractor PD

Contractor PM

Support Functions
- Legal
- Democratic services
- Safety and Welfare
- Utilities co-ordination
- Local Area Highway Manager
- Land access

Project Control
- Finance
- Programme
- Information Manager

Project Director [redacted]

Project Manager [redacted]

AtkinsRéalis PM / PD

Service Delivery Team
- Cost Manager
- Risk Manager
- Design Manager
- Communications Manager
- Streetworks
- Road Safety Audit & WCHRR Auditor & Reviewer

Contract Management / Site Supervision team
- NEC Manager [redacted]
- Supervisor [redacted]
- Assistant Supervisor / Clark of Work TBC

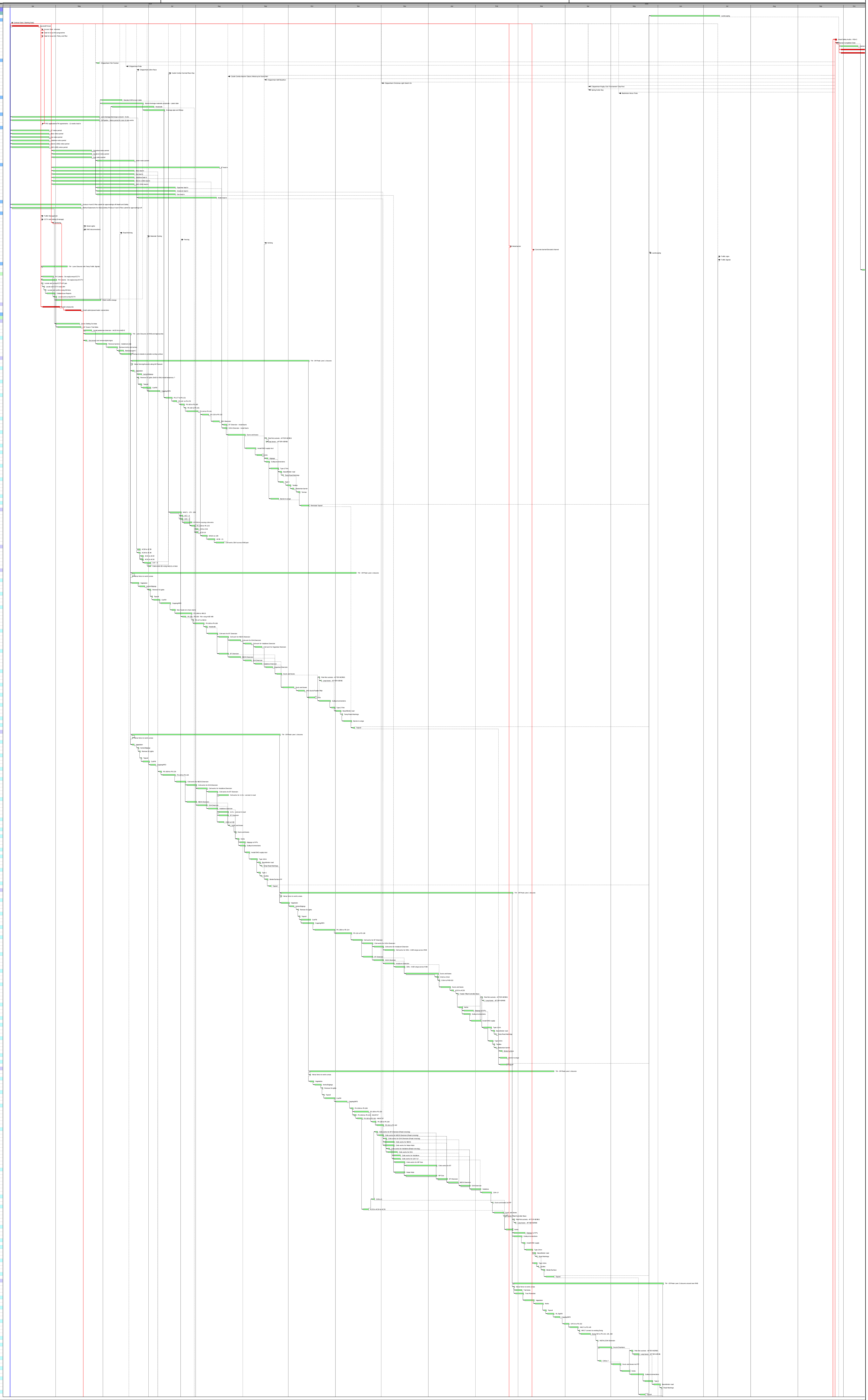
Wider contractor team (illustrative)
- Works Manager
- Commercial Manager
- Health, Safety & Wellbeing Manager
- Site Manager
- Quality Manager
- Design Manager
- Senior Quantity Surveyor
- Sustainability & Environmental Manager
- Stakeholder Manager
- Supply Chain Manager
- Social Value Manager
- BIM Co-ordinator

Support staff

Supply chain

A350 Chippenham Phases 4&5 Dualling

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float	Time Risk Allowance	Resource IDs
	A350 Chippenham Phases 4 and 5 Dualling-Tender	618	02-04-24	29-09-26	0		
	A350 Chippenham Phase 4 and 5	618	02-04-24	29-09-26	0		
MP12460	Landscaping	34	27-05-25	11-07-25	54		
	Milestones/Key Dates	618	02-04-24	29-09-26	0		
MP1091	Contract Date (Starting Date)	0	02-04-24*		0		
MP1101	Standstill Period	14	02-04-24	19-04-24	0		
MP1092	Access Date - all areas	0	22-04-24*		0		
MP1093	Date for issue first programme	0	22-04-24		0		
MP1094	Date for issue QA Policy and Plan	0	22-04-24		0		
MP10090	Road Safety Audits - RSA 3	2	25-09-25	26-09-25	0		
MP1104	Planned Completion Date	0		26-09-25	0		
MP1134	Maintenance Welfare for Client	10	29-09-25	10-10-25	10		
MP1144	Terminal Float	30	29-09-25	07-11-25	0		
MP1121	Defects liability period	247	29-09-25	29-09-26	0		
MP1124	Completion date-No date given in Contract Data – TBC	0		07-11-25*	0		
	Local Events - TBC (Look like 2023 dates)	232	28-05-24	07-05-25	101		
MP3110	Chippenham Folk Festival	2	28-05-24*	29-05-24	331		
MP3051	Chippenham Pride	0	17-06-24*		319		
MP3052	Chippenham 10km Race	0	24-06-24*		89		
MP3053	Castle Combe Carnival Race Day	0	15-07-24*		81		
MP3054	Castle Combe Autumn Classic /Motorcycle Grand Ntnl	0	23-08-24*		270		
MP3055	Chippenham Half Marathon	0	16-09-24*		255		
MP3056	Chippenham Christmas Light Switch On	0	02-12-24*		200		
MP3081	Chippenham Rugby Club Tournament 'Chip-Fest	0	17-04-25*		112		
MP3120	Spring Action Day	0	17-04-25*		112		
MP3071	Badminton Horse Trials	0	07-05-25*		101		
	Material Lead-ins	30	31-05-24	11-07-24	98		
MP1097	Standard MH's/cover slabs	10	31-05-24	13-06-24	118		
MP11811	Submit drainage materials proposals - Latest date	20	31-05-24	27-06-24	98		
MP1099	Headwalls	20	07-06-24	04-07-24	19		
MP1096	Drainage pipe and fittings	10	28-06-24	11-07-24	98		
	Consents	40	02-04-24	29-05-24	119		
MP1100	Land drainage discharge consent - 8 wks	40	02-04-24	29-05-24	119		
MP10870	Oil Pipeline - Notice period for start of slab works	40	02-04-24	29-05-24	15		
MP1105	TTRO applications/TM agreements - 12 weeks lead in	0		22-04-24*	0		
	Utility Notice	57	02-04-24	21-06-24	145		
MP10881	BT notice period	19	02-04-24	26-04-24	98		
MP11280	Neos notice period	19	02-04-24	26-04-24	20		
MP11300	Exa notice period	19	02-04-24	26-04-24	10		
MP11470	Vodafone notice period	19	02-04-24	26-04-24	52		
MP11530	Electric (SSE) notice period	19	02-04-24	26-04-24	133		
MP11690	DNO (SSE) notice period	19	02-04-24	26-04-24	101		
MP10890	Gigaclear notice period	19	29-04-24	24-05-24	119		
MP11450	Instalcom notice period	19	29-04-24	24-05-24	129		
MP11500	Gas notice period	19	29-04-24	24-05-24	164		
MP11520	Water notice period	19	28-05-24	21-06-24	140		
	Utility Lead-ins	78	29-04-24	16-08-24	143		
MP10882	BT lead in	78	29-04-24	16-08-24	98		
MP11290	Neos lead in	38	29-04-24	21-06-24	20		
MP11420	Exa lead in	38	29-04-24	21-06-24	10		
MP11480	Vodafone lead in	38	29-04-24	21-06-24	52		
MP11540	Electric (SSE) lead in	38	29-04-24	21-06-24	133		
MP11700	DNO (SSE) lead in	38	29-04-24	21-06-24	101		
MP11270	Gigaclear lead in	38	28-05-24	18-07-24	119		
MP11460	Instalcom lead in	38	28-05-24	18-07-24	129		
MP11510	Gas lead in	38	28-05-24	18-07-24	164		
MP11490	Water lead in	38	24-06-24	14-08-24	140		
	Health and Safety	33	02-04-24	17-05-24	103		
MP12440	Produce H and S Plan submit for approval/sign off.Health and Safety	33	02-04-24*	17-05-24	103		
MP12450	Method Statements for initial activities.Produce H and S Plan submit for approval/sign off	33	02-04-24*	17-05-24	20		
	Sub-contract Procurement - Earliest Dates Required on Site	303	22-04-24	11-07-25	27		
MP12480	Traffic Management	0	22-04-24		19		
MP12490	CCTV and Jetting (Drainage)	0	22-04-24		103		
MP12481	Surfacing	0	29-04-24		0		
MP12482	Street Lights	0	20-05-24		106		
MP12471	DNO disconnections	0	20-05-24		106		
MP12483	Road Marking	0	13-06-24		103		
MP12492	Materials Testing	0	01-07-24		101		
MP12520	Fencing	0	23-07-24		64		
MP12491	Kerbing	0	16-09-24		103		
MP12500	Metal barrier	0	24-02-25		0		
MP12510	Concrete barrier/Extruded channel	0	11-03-25		0		
MP12530	Landscaping	0	27-05-25		54		
MP12540	Traffic signs	0	11-07-25		27		
MP12550	Traffic Signals	0	11-07-25		27		
	Pre-works to inform final drainage design	377	22-04-24	24-10-25	10		
MP10850	TM - Lane Closures with Temp Traffic Signals	12	22-04-24	08-05-24	19		
MP12220	Remove compounds and cabins/demobilise	10	13-10-25	24-10-25	10		
	Survey Existing Drainage Assets	27	22-04-24	30-05-24	84		
MP1110	P4 Culverts - De-veg/surveys/CCTV	6	22-04-24	29-04-24	103		
MP1120	P5 Culverts - De-veg/surveys/CCTV	8	22-04-24	01-05-24	103		
MP1140	Locate and survey/CCTV/LP gas	1	22-04-24	22-04-24	19		
MP1150	Locate and CCTV exstg MH	1	23-04-24	23-04-24	19		
MP1160	Locate and confirm exstg MH links	1	24-04-24	24-04-24	19		
MP1111	Collate/Issue Reports	4	25-04-24	30-04-24	19		
MP1130	Locate and survey/CCTV	2	30-04-24	01-05-24	103		
MP1112	Client confirm design	20	01-05-24	30-05-24	19		
	Compounds and Site Set-Up	19	22-04-24	17-05-24	0		
MP10970	Install compounds	10	22-04-24	03-05-24	0		
MP10980	Install cabins/power/water connections	9	07-05-24	17-05-24	0		
	Phase 4 and 5 Construction	348	01-05-24	24-09-25	2		
	Phase 5 - Bumpers RAB	321	01-05-24	15-08-25	29		
	Enabling Works	34	01-05-24	19-06-24	103		
MP12230	Check Setting Out data	11	01-05-24	16-05-24	20		
MP3501	CAT Scans/ Trial Holes	11	02-05-24	17-05-24	103		CG
MP3502	Install pedestrian diversion - A420 W to A420 E	5	20-05-24	24-05-24	103		CG
MP3491	TM - Lane Closures on RAB and Approaches	22	20-05-24	19-06-24	19		
	Remove RAB Traffic Islands	22	20-05-24	19-06-24	103		
MP3483	Disconnect and remove lights/signs	2	20-05-24	21-05-24	106		
MP3485	Remove barriers - metal/concrete	5	28-05-24	03-06-24	103		CG
MP3486	Remove kerbs and tarmac	5	04-06-24	10-06-24	103		CG
MP3487	Reinstate type 1	4	11-06-24	14-06-24	103		CG
MP3488	Tarmac to islands to provide running surface	5	13-06-24	19-06-24	103		
	Works Area 1A - SB A350 into A420 East (Mt Pleasant)	82	20-06-24	14-10-24	98		
MP3499	TM - Off Peak Lane 1 closures	82	20-06-24	14-10-24	63		
MP11830	Heras fencing/Acoustic along Mt Pleasant	1	20-06-24	20-06-24	103		
	Site Clearance	5	20-06-24	26-06-24	103		
MP5290	Vegetation	2	20-06-24	21-06-24	103		CG
MP5300	Kerbs/Edgings	3	24-06-24	26-06-24	103		CG
MP8950	Remove St Lights (Ex02 to 05A) install temporary ?	1	24-06-24	24-06-24	101		CG
	Earthworks	10	25-06-24	08-07-24	101		
MP4821	Topsoil	2	25-06-24	26-06-24	101		EWG
MP5210	Cut/Fill	4	27-06-24	02-07-24	101		EWG
MP5230	Capping/NFD	6	01-07-24	08-07-24	101		EWG
	Drainage	21	12-07-24	09-08-24	98		
MP5480	P5-177 to P5-121	3	12-07-24	16-07-24	98		DrG
MP4045	P5-143 to P5-179	3	17-07-24	19-07-24	98		DrG
MP4047	P5-183 to P5-180	3	22-07-24	24-07-24	98		DrG
MP4048	P5-182 to P5-181	1	25-07-24	25-07-24	98		DrG
MP5530	P5-144 to P5-141	6	26-07-24	02-08-24	98		DrG
MP4143	P5-133 to P5-132	5	05-08-24	09-08-24	98		DrG
	Utilities	8	12-08-24	21-08-24	98		
MP8961	33kV diversion	5	12-08-24	16-08-24	98		CG
MP8970	BT Diversion - install ducts	3	19-08-24	21-08-24	98		CG
MP11560	GIGA Diversion - install ducts	3	19-08-24	21-08-24	98		CG
	Traffic Signals	17	22-08-24	16-09-24	109		
MP6120	Ducts and boxes	7	22-08-24	02-09-24	98		CG
MP6051	Pole Ret sockets - AFTER KERBS	1	16-09-24	16-09-24	109		CG
MP6232	Loop boxes - AFTER KERBS	1	16-09-24	16-09-24	109		CG
	Street Lights/Signs	5	03-09-24	09-09-24	98		
MP6212	Install DNO supply duct	5	03-09-24	09-09-24	98		CG
	Kerbs/Edgings	7	10-09-24	18-09-24	102		
MP8410	Kerbs	4	10-09-24	13-09-24	98		CG
MP8420	Edgings	2	16-09-24	17-09-24	103		CG
MP11640	Gulleys/connections	3	16-09-24	18-09-24	98		DrG
	Road	7	19-09-24	27-09-24	103		
MP11750	Type 1/Trim	4	19-09-24	24-09-24	98		CG
MP11730	Base/Binder road	2	25-09-24	26-09-24	103		
MP11740	Temp Road Markings	1	27-09-24	27-09-24	103		
	Footpaths	10	25-09-24	08-10-24	98		
MP6242	Type 1	3	25-09-24	27-09-24	98		CG
MP6252	Tactiles	3	30-09-24	02-10-24	98		CG
MP6253	Pedestrian barrier	2	03-10-24	04-10-24	98		CG
MP6262	Tarmac	2	07-10-24	08-10-24	98		
	RRS	4	19-09-24	24-09-24	108		
MP6272	Barrier to verge	4	19-09-24	24-09-24	108		
	Landscaping	4	09-10-24	14-10-24	98		
MP6282	Reinstate Topsoil	4	09-10-24	14-10-24	98		CG
	Road x-sings Northern part of New RAB - NIGHTS	26	15-07-24	19-08-24	273		
MP6364	MH171 - 170 - 169	6	15-07-24	22-07-24	81		DGN
MP6294	AC7 - 9	2	22-07-24	23-07-24	100		CGN
MP6295	AC5 - 4	2	22-07-24	23-07-24	100		CGN
MP6297	BT/GIGA crossing civil works	4	24-07-24	29-07-24	100		CGN
MP4042	P5-133A to P5-133	3	29-07-24	31-07-24	100		DGN
MP6362	CH3 to CH4	2	01-08-24	02-08-24	273		CGN
MP6298	AC20-19	2	01-08-24	02-08-24	273		CGN
MP6293	MH141 to 139	4	05-08-24	08-08-24	273		DGN
MP6366	AC36 - 21	3	09-08-24	13-08-24	273		CGN
MP6365	Civil works 33kV across RAB part	4	14-08-24	19-08-24	273		CGN
	Road x-sings Southern part of New RAB - NIGHTS	7	24-06-24	02-07-24	89		
MP4710	AC30 to AC39	2	24-06-24	25-06-24	89		CGN
MP4720	AC49 to AC48	2	24-06-24	25-06-24	89		CGN
MP4660	AC21 to AC22	2	26-06-24	27-06-24	89		CGN
MP4730	AC41 to AC43	2	26-06-24	27-06-24	89		CGN
MP4731	CH7 - 8	3	28-06-24	02-07-24	89		CGN
MP4732	Civils works Bt x-sing A420 E of RAB	2	01-07-24	02-07-24	89		CGN
	Works Area 1B - NB A350 into A420W	105	20-06-24	14-11-24	78		
MP3509	TM - Off Peak Lane 1 closures	105	20-06-24	14-11-24	78		
MP3510	Heras fence to works areas	1	20-06-24	20-06-24	78		CG
	Site Clearance	9	20-06-24	02-07-24	78		
MP5310	Vegetation	3	20-06-24	24-06-24	78		CG
MP8990	Kerbs/Edgings	4	25-06-24	28-06-24	78		CG
MP9000	Remove St Lights	2	01-07-24	02-07-24	78		CG
	Earthworks	9	03-07-24	15-07-24	78		
MP6971	Topsoil	1	03-07-24	03-07-24	78		EWG
MP8430	Cut/Fill	3	04-07-24	08-07-24	78		EWG
MP8440	Capping/NFD	5	09-07-24	15-07-24	78		EWG
	Drainage	18	16-07-24	08-08-24	78		
MP5740	New Swale incl check dams	3	16-07-24	18-07-24	78		DrG
MP5810	P5-148A to HW16	7	19-07-24	29-07-24	78		DrG
MP9010	P5-169 - P5-168 - Rd x-sing A420 WB	3	23-07-24	25-07-24	81		DrG
MP8450	P5-147 to HW15	1	30-07-24	30-07-24	78		DrG
MP10901	P5-168 to P5-166	5	31-07-24	06-08-24	78		DrG
MP8460	Headwalls	2	07-08-24	08-08-24	78		DrG
	Civils/Trenching/Ducting	25	09-08-24	13-09-24	78		
MP12710	Civil work for BT Diversion	5	09-08-24	15-08-24	78		
MP12720	Civil work for NEOS Diversion	5	16-08-24	22-08-24	78		
MP12730	Civil work for EXA Diversion	5	23-08-24	30-08-24	78		
MP12740	Civil work for Vodafone Diversion	5	02-09-24	06-09-24	78		
MP12750	Civil work for Gigaclear Diversion	5	09-09-24	13-09-24	78		
	Utilities	25	16-08-24	20-09-24	82		
MP8470	BT Diversion	5	16-08-24	22-08-24	98		
MP8471	NEOS Diversion	5	23-08-24	30-08-24	93		
MP8472	EXA Diversion	5	02-09-24	06-09-24	92		
MP8473	Vodafone Diversion	5	09-09-24	13-09-24	87		
MP8483	Gigaclear Diversion	5	16-09-24	20-09-24	78		
	Traffic Signals	22	23-09-24	22-10-24	85		
MP6140	Ducts and boxes	4	23-09-24	26-09-24	78		CG
MP6101	Pole Ret sockets - AFTER KERBS	1	21-10-24	21-10-24	85		CG
MP8930	Loop boxes - AFTER KERBS	1	22-10-24	22-10-24	85		CG
	Street Lights/Signs	11	27-09-24	11-10-24	78		
MP7051	Ducts and boxes	6	27-09-24	04-10-24	78		CG
MP8550	DNO ducts/Feeder Pillar	5	07-10-24	11-10-24	78		CG
	Kerbs/Edgings	11	14-10-24	28-10-24	78		
MP8520	Kerbs	5	14-10-24	18-10-24	78		CG
MP11630	Gulleys/connections	6	21-10-24	28-10-24	78		DrG
	Road	6	29-10-24	05-11-24	78		
MP9030	Type 1/Trim	3	29-10-24	31-10-24	78		CG
MP9050	Base/Binder road	2	01-11-24	04-11-24	78		
MP9060	Temp Road Markings	1	05-11-24	05-11-24	78		
	RRS	4	06-11-24	11-11-24	78		
MP11970	Barrier to verge	4	06-11-24	11-11-24	78		
	Landscaping	2	12-11-24	13-11-24	78		
MP9070	Topsoil	2	12-11-24	13-11-24	78		CG
	Works Area 1C - Bumpers Way Out/A350 SB	69	20-06-24	25-09-24	19		
MP3519	TM - Off Peak Lane 1 closures	69	20-06-24	25-09-24	19		
MP3520	Heras fence to works areas	1	20-06-24	20-06-24	23		CG
	Site Clearance	4	20-06-24	25-06-24	23		
MP5320	Vegetation	2	20-06-24	21-06-24	23		CG
MP9080	Kerbs/Edgings	1	24-06-24	24-06-24	23		CG
MP9090	Remove St Lights	1	25-06-24	25-06-24	23		CG
	Earthworks	8	26-06-24	05-07-24	23		
MP7021	Topsoil	1	26-06-24	26-06-24	23		EWG
MP8570	Cut/Fill	3	27-06-24	01-07-24	23		EWG
MP8580	Capping/NFD	4	02-07-24	05-07-24	23		EWG
	Drainage	9	08-07-24	18-07-24	23		
MP9100	P5-165A to P5-129	2	08-07-24	09-07-24	23		DGN
MP5840	P5-129 to P5-126	7	10-07-24	18-07-24	23		DrG
	Civils/Trenching/Ducting	25	19-07-24	22-08-24	23		
MP12760	Civil works for NEOS Diversion	5	19-07-24	25-07-24	23		
MP12770	Civil works for EXA Diversion	5	26-07-24	01-08-24	23		
MP12780	Civil works for Vodafone Diversion	5	02-08-24	08-08-24	23		
MP12790	Civil works for BT Diversion	5	09-08-24	15-08-24	23		
MP12800	Civil works for 11 Kv - connect in road	5	16-08-24	22-08-24	23		
	Utilities	20	26-07-24	22-08-24	25		
MP8600	NEOS Diversion	5	26-07-24	01-08-24	38		
MP8610	EXA Diversion	5	02-08-24	08-08-24	33		
MP8620	Vodafone Diversion	5	09-08-24	15-08-24	30		
MP8630	11 Kv - connect in road	5	16-08-24	22-08-24	23		
MP11570	BT Diversion	5	16-08-24	22-08-24	25		
	Street Lighting	6	16-08-24	23-08-24	23		
MP7032	CH15 to CH6	2	16-08-24	19-08-24	27		CGN
MP7061	Ducts and boxes	1	23-08-24	23-08-24	23		CG
	Traffic Signals	1	27-08-24	27-08-24	23		
MP6150	Ducts and boxes	1	27-08-24	27-08-24	23		CG
	Kerbs/Edgings	4	28-08-24	02-09-24	23		
MP8640	Kerbs	2	28-08-24	29-08-24	23		
MP8650	Edgings to F/P's	2	30-08-24	02-09-24	23		
MP11620	Gulleys/connections	2	30-08-24	02-09-24	23		DrG
	Street Lights/Signs	3	03-09-24	05-09-24	23		
MP8670	Install DNO supply duct	3	03-09-24	05-09-24	23		CG
	Roads	6	06-09-24	13-09-24	27		
MP11780	Type 1/trim	3	06-09-24	10-09-24	23		CG
MP11800	Base/binder road	2	11-09-24	12-09-24	24		
MP11820	Temp Road Markings	1	13-09-24	13-09-24	27		
	Footpath	5	11-09-24	17-09-24	23		
MP9120	Type 1	2	11-09-24	12-09-24	23		CG
MP9130	Tactiles	1	13-09-24	13-09-24	23		CG
MP9141	Binder/Surface FP	2	16-09-24	17-09-24	23		
	Landscaping	2	18-09-24	19-09-24	23		
MP9160	Topsoil	2	18-09-24	19-09-24	23		CG
	Works Area 2A - A420 EB into A350 NB	99	26-09-24	25-02-25	19		
MP11760	TM - Off Peak Lane 1 closures	99	26-09-24	25-02-25	19		
MP11840	Heras fence to works areas	1	26-09-24	26-09-24	21		
	Site Clearance	8	26-09-24	07-10-24	21		
MP5330	Vegetation	4	26-09-24	01-10-24	21		CG
MP9170	Kerbs/Edgings	3	02-10-24	04-10-24	21		CG
MP9180	Remove St Lights	1	07-10-24	07-10-24	21		CG
	Earthworks	8	08-10-24	17-10-24	21		
MP7031	Topsoil	1	08-10-24	08-10-24	21		EWG
MP8690	Cut/Fill	5	09-10-24	15-10-24	21		
MP8700	Capping/NFD	6	10-10-24	17-10-24	21		EWG
	Drainage	17	18-10-24	11-11-24	21		
MP5850	P5-139A to P5-134	10	18-10-24	31-10-24	21		DrG
MP5791	P5-131 to P5-130	7	01-11-24	11-11-24	21		DrG
	Civils/Trenching/Ducting	20	12-11-24	09-12-24	21		
MP12810	Civil works for BT Diversion	5	12-11-24	18-11-24	21		
MP12820	Civil works for GIGA Diversion	5	19-11-24	25-11-24	21		
MP12830	Civil works for Instalcom Diversion	5	26-11-24	02-12-24	21		
MP12840	Civil works for 33Kv - A420 verge across RAB	5	03-12-24	09-12-24	21		
	Utilities	20	19-11-24	16-12-24	28		
MP8710	BT Diversion	5	19-11-24	25-11-24	36		
MP8720	GIGA Diversion	5	26-11-24	02-12-24	31		
MP8730	Instalcom Diversion	5	03-12-24	09-12-24	33		
MP9200	33Kv - A420 verge across RAB	5	10-12-24	16-12-24	21		
	Street Lights/Signs	7	17-12-24	08-01-25	21		
MP7071	Ducts and boxes	6	17-12-24	07-01-25	21		CG
MP7022	CH13 to CH14	2	06-01-25	07-01-25	21		CGN
MP4124	CH14 to PH5-010	1	08-01-25	08-01-25	21		CG
	Traffic Signals	21	09-01-25	06-02-25	30		
MP6100	Ducts and boxes	5	09-01-25	15-01-25	21		CG
MP5960	AC52 to AC53	2	16-01-25	17-01-25	21		CG
MP6111	Feeder Pillar/Controller Base	1	20-01-25	20-01-25	21		CG
MP6121	Pole Ret sockets - AFTER KERBS	1	05-02-25	05-02-25	21		CG
MP6131	Loop boxes - AFTER KERBS	1	06-02-25	06-02-25	30		CG
	Kerbs/Edgings	8	21-01-25	30-01-25	27		
MP8740	Kerbs	3	21-01-25	23-01-25	21		
MP8750	Edgings to F/P's	5	24-01-25	30-01-25	27		
MP11610	Gulleys/connections	3	24-01-25	28-01-25	21		DrG
	Street Lights/Signs	5	29-01-25	04-02-25	21		
MP8770	Install DNO supply	5	29-01-25	04-02-25	21		CG
	Road	7	06-02-25	14-02-25	21		
MP11860	Type 1/trim	4	06-02-25	11-02-25	21		CG
MP11880	Base/binder road	2	12-02-25	13-02-25	21		
MP11890	Temp Road Markings	1	14-02-25	14-02-25	21		
	Footpath	7	10-02-25	18-02-25	24		
MP9220	Type 1/trim	3	10-02-25	12-02-25	21		CG
MP9230	Tactiles	1	13-02-25	13-02-25	21		CG
MP9231	Pedestrian barrier	1	14-02-25	14-02-25	21		CG
MP9240	Binder/surface	2	17-02-25	18-02-25	24		
	RRS	5	17-02-25	21-02-25	21		
MP11980	Barrier to verge	5	17-02-25	21-02-25	21		
	LANDSCAPING	5	17-02-25	21-02-25	21		
MP9260	Topsoil	5	17-02-25	21-02-25	21		CG
	Stage 2B - A420 WB into Bumpers Way	105	15-10-24	24-03-25	63		
MP11900	TM - Off Peak Lane 1 closures	105	15-10-24	24-03-25	63		
MP11910	Heras fence to works areas	1	15-10-24	15-10-24	63		CG
	Site Clearance	7	15-10-24	23-10-24	63		
MP5340	Vegetation	3	15-10-24	17-10-24	63		CG
MP9270	Kerbs/Edgings	3	18-10-24	22-10-24	63		CG
MP9280	Remove St Lights	1	23-10-24	23-10-24	63		CG
	Earthworks	12	24-10-24	08-11-24	63		
MP7041	Topsoil	1	24-10-24	24-10-24	63		EWG
MP8790	Cut/Fill	5	25-10-24	31-10-24	63		EWG
MP8800	Capping/NFD	6	01-11-24	08-11-24	63		EWG
	Drainage	16	11-11-24	02-12-24	63		
MP8810	P5-133A to P5-186	2	11-11-24	12-11-24	63		DGN
MP8820	P5-186 to P5-154	8	13-11-24	22-11-24	63		DrG
MP8830	P5-165A to P5-165 - NIGHTS?	2	13-11-24	14-11-24	68		DGN
MP8840	P5-165 to P5-164 - NIGHTS?	2	15-11-24	18-11-24	68		DGN
MP5820	P5-186 to P5-184	3	25-11-24	27-11-24	63		DrG
MP5830	P5-164 to P5-162	3	28-11-24	02-12-24	63		DrG
	Civils/Trenching/Ducting	19	27-11-24	06-01-25	84		
MP7803	Civils works for BT Diversion (Road crossing)	2	27-11-24	28-11-24	68		CGN
MP8851	Civils works for NEOS Diversion (Road crossing)	2	29-11-24	02-12-24	68		CGN
MP8861	Civils works for EXA Diversion (Road crossing)	2	03-12-24	04-12-24	68		CGN
MP12650	Civils works for NEOS	5	03-12-24	09-12-24	78		
MP12660	Civils works for Water Main	5	03-12-24	09-12-24	63		
MP8871	Civils works for Vodafone (Road crossing)	2	05-12-24	06-12-24	68		CGN
MP12690	Civils works for EXA	5	05-12-24	11-12-24	82		
MP12670	Civils works for Vodafone	5	09-12-24	13-12-24	85		
MP12680	Civils works for 11KV LV	5	09-12-24	13-12-24	90		
MP12700	Civils works for MP Gas	5	10-12-24	16-12-24	63		
MP12640	Civils works for BT	5	17-12-24	06-01-25	63		
	Utilities	36	10-12-24	11-02-25	63		
MP7801	Water Main	5	10-12-24	16-12-24	63		
MP7802	MP Gas	5	17-12-24	06-01-25	63		
MP8850	BT Diversion	5	07-01-25	13-01-25	63		
MP8860	NEOS Diversion	5	14-01-25	20-01-25	63		
MP8870	EXA Diversion	5	22-01-25	28-01-25	63		
MP9290	Vodafone	5	29-01-25	04-02-25	63		
MP9300	11Kv LV	5	05-02-25	11-02-25	63		
	Street Lighting	48	25-11-24	12-02-25	63		
MP7042	CH5 to 6	2	25-11-24	26-11-24	68		CGN
MP7081	Ducts and boxes incl FP	1	12-02-25	12-02-25	63		CG
	Traffic Signals	63	19-11-24	27-02-25	71		
MP6160	AC33 to AC34 to AC35	4	19-11-24	22-11-24	68		CGN
MP6110	Ducts and boxes	5	13-02-25	19-02-25	63		CG
MP8940	Feeder Pillar/Controller Base	1	20-02-25	20-02-25	63		CG
MP9370	Pole Ret sockets - AFTER KERBS	1	26-02-25	26-02-25	71		CG
MP6141	Loop boxes - AFTER KERBS	1	27-02-25	27-02-25	71		CG
	Kerbs/Edgings	9	21-02-25	05-03-25	66		
MP8880	Kerbs	3	21-02-25	25-02-25	63		
MP8890	Edgings to F/P's	6	26-02-25	05-03-25	66		
MP11600	Gulleys/connections	4	26-02-25	03-03-25	63		DrG
	Street Lights/Signs	2	04-03-25	05-03-25	63		
MP8910	Install DNO supply	2	04-03-25	05-03-25	63		CG
	Road	6	06-03-25	13-03-25	64		
MP11920	Type 1/trim	3	06-03-25	10-03-25	63		CG
MP11940	Base/binder road	2	11-03-25	12-03-25	63		
MP11950	Road Markings	1	13-03-25	13-03-25	64		
	Footpath	6	11-03-25	18-03-25	63		
MP9320	Type 1/trim	3	11-03-25	13-03-25	63		CG
MP9330	Tactiles	1	14-03-25	14-03-25	63		CG
MP9341	Binder/Surface	2	17-03-25	18-03-25	63		
	Landscaping	4	19-03-25	24-03-25	63		
MP9360	Topsoil	4	19-03-25	24-03-25	63		CG
	Centre of RAB	67	26-02-25	04-06-25	52		
MP11990	TM - Off Peak Lane 2 closures around new RAB	67	26-02-25	04-06-25	19		
MP12000	Heras fence to works areas	1	26-02-25	26-02-25	26		CG
MP12010	Trial holes	3	27-02-25	03-03-25	27		
MP12020	Tree Protection	4	27-02-25	04-03-25	26		CG
	Site Clearance	9	05-03-25	17-03-25	26		
MP5350	Vegetation	5	05-03-25	11-03-25	26		CG
MP9470	Kerbs	4	12-03-25	17-03-25	26		CG
	Earthworks	9	18-03-25	28-03-25	26		
MP9490	Topsoil	2	18-03-25	19-03-25	26		EWG
MP9380	RL Dig/Fill	3	20-03-25	24-03-25	26		EWG
MP9390	Capping/NFD	4	25-03-25	28-03-25	26		EWG
	Drainage	14	31-03-25	17-04-25	26		
MP9400	O/F14 to P5-152	4	31-03-25	03-04-25	26		DrG
MP9420	HW17 to P5-149	4	04-04-25	09-04-25	26		DrG
MP9430	HW17 connect to existing Exstg	1	10-04-25	10-04-25	26		DrG
MP9690	Exstg HW to P5-142, 145, 150	5	11-04-25	17-04-25	26		DrG
	Utilities	1	22-04-25	22-04-25	26		
MP7811	INSTALCOM Diversion	1	22-04-25	22-04-25	26		CG
	Traffic signals	18	23-04-25	19-05-25	26		
MP5930	Ducts/Chambers	7	23-04-25	01-05-25	26		CG
MP6380	Pole Ret sockets - AFTER KERBS	2	14-05-25	15-05-25	26		CG
MP6220	Loop boxes - AFTER KERBS	2	16-05-25	19-05-25	26		CG
	Street Lights/Signs	10	23-04-25	07-05-25	26		
MP7052	CH8 to 7	2	23-04-25	24-04-25	34		CGN
MP7091	Ducts and boxes incl FP	3	02-05-25	07-05-25	26		CG
	Kerbs/Edgings	11	08-05-25	22-05-25	53		
MP9600	Kerbs	4	08-05-25	13-05-25	26		
MP11590	Gulleys/connections	7	14-05-25	22-05-25	53		DrG
	Road	7	23-05-25	03-06-25	53		
MP11930	Type 1	3	23-05-25	28-05-25	53		CG
MP12040	Base/binder road	3	29-05-25	02-06-25	53		
MP11960	Road Markings	1	03-06-25	03-06-25	53		
	Landscaping	4	20-05-25	23-05-25	26		
MP9670	Topsoil	4	20-05-25	23-05-25	26		CG



Actual Work | Remaining Work | Actual Level of Effort
Critical Remaining Work | Remaining Level of Effort | ◆ Milestone

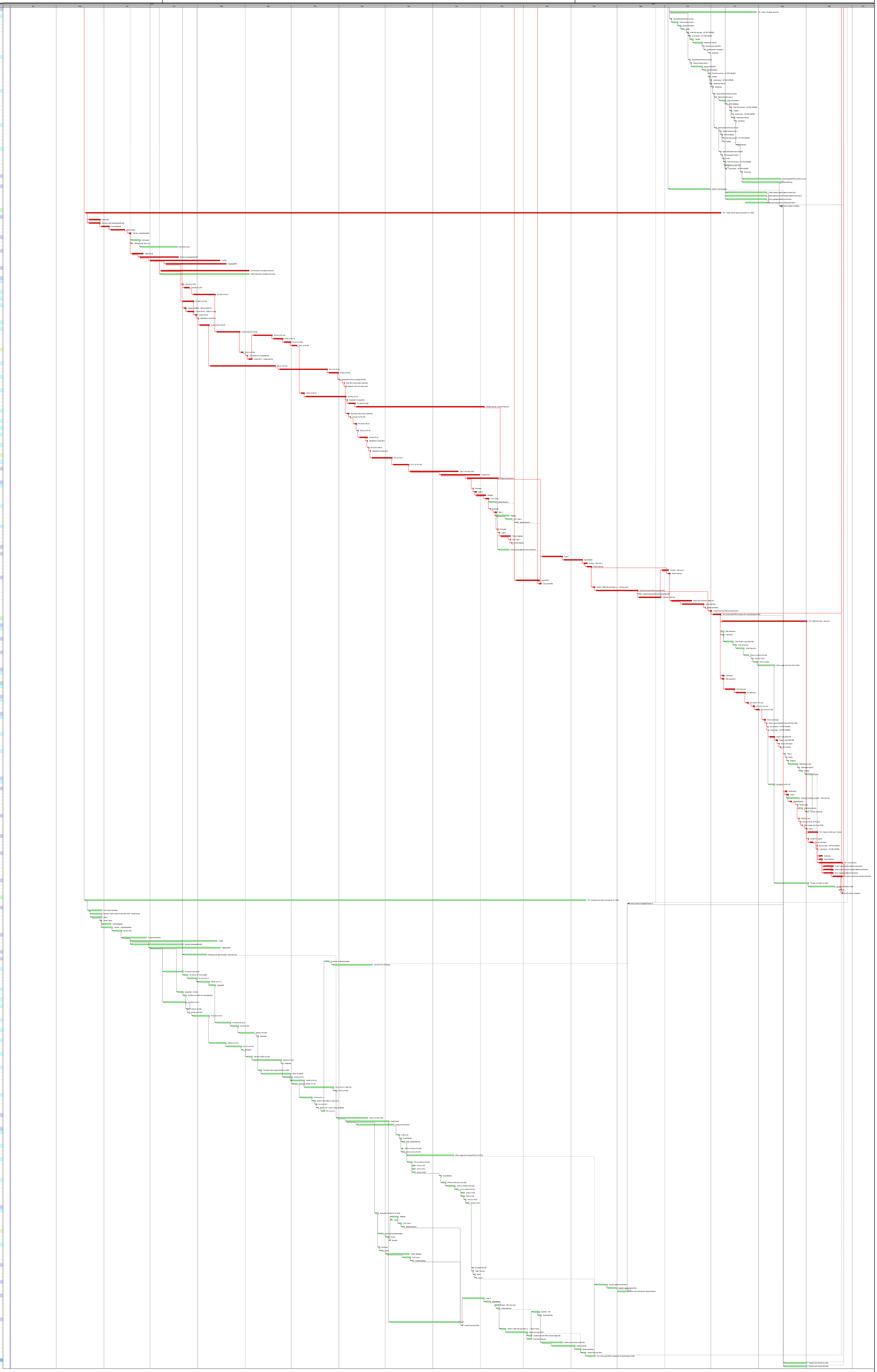
PROJECT NAME: A350 Chippenham Phases 4 and 5 Dualling-Tender

LAYOUT NAME: A350 - Tender - Layout 001
DATA DATE: 01-04-24
RUN DATE: 30-08-23 10:12

Date	Revision	Checked	Approved
30-08-23	Revision-01	RP	NC

A350 Chippenham Phases 4&5 Dualling

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float	Time Risk Allowance	Resource IDs
	Works in new islands	40	05-06-25	30-07-25	19		
MP5981	TM - Lane 1 off peak closures	40	05-06-25	30-07-25	19		
	A350 North of RAB	18	05-06-25	30-06-25	20		
MP5991	Sawcut/break/remove tarmac	1	05-06-25	05-06-25	20		CG
MP5992	Place/compact type 1	2	06-06-25	09-06-25	20		CG
MP5993	Ducts/Chambers	2	10-06-25	11-06-25	20		CG
MP11650	Kerbs	2	12-06-25	13-06-25	20		DrG
MP5994	Pole Ret sockets - AFTER KERBS	1	16-06-25	16-06-25	20		CG
MP9830	Loop boxes - AFTER KERBS	1	17-06-25	17-06-25	20		CG
MP9840	Tactiles	2	18-06-25	19-06-25	20		CG
MP9850	Pedestrian barrier	4	20-06-25	25-06-25	20		CG
MP12050	Extend concrete RRS	1	26-06-25	26-06-25	20		
MP12060	Metal barrier transitions	1	27-06-25	27-06-25	20		
MP12070	Surfacing	1	30-06-25	30-06-25	20		
	A420 West of RAB	12	17-06-25	02-07-25	19		
MP6001	Sawcut/break/remove tarmac	1	17-06-25	17-06-25	19		CG
MP9720	Place/compact type 1	1	18-06-25	18-06-25	19		CG
MP6002	Ducts/Chambers	5	19-06-25	25-06-25	19		CG
MP9730	Kerbs/edgings	2	26-06-25	27-06-25	19		CG
MP6003	Pole Ret sockets - AFTER KERBS	1	30-06-25	30-06-25	20		CG
MP9860	Tactiles	1	30-06-25	30-06-25	19		CG
MP6004	Loop boxes - AFTER KERBS	1	01-07-25	01-07-25	20		CG
MP9870	Pedestrian barrier	1	01-07-25	01-07-25	19		CG
MP12080	Surfacing	1	02-07-25	02-07-25	19		
	A420 East of RAB	11	03-07-25	17-07-25	19		
MP9740	Sawcut/break/remove tarmac	1	03-07-25	03-07-25	19		CG
MP9750	Place/compact type 1	1	04-07-25	04-07-25	19		CG
MP6012	Ducts/Chambers	4	07-07-25	10-07-25	19		CG
MP9760	Kerbs/edgings	1	11-07-25	11-07-25	19		CG
MP6013	Pole Ret sockets - AFTER KERBS	1	14-07-25	14-07-25	20		CG
MP9880	Tactiles	1	14-07-25	14-07-25	19		CG
MP6014	Loop boxes - AFTER KERBS	1	15-07-25	15-07-25	20		CG
MP9890	Pedestrian barrier	2	15-07-25	16-07-25	19		CG
MP9891	Surfacing	1	17-07-25	17-07-25	19		
	Bumpers Way IN and OUT	11	04-07-25	18-07-25	19		
MP9770	Sawcut/break/remove tarmac	1	04-07-25	04-07-25	25		CG
MP9780	Place/compact type 1	1	07-07-25	07-07-25	25		CG
MP9790	Kerbs/edgings	1	08-07-25	08-07-25	25		CG
MP9710	Pole Ret sockets - AFTER KERBS	1	09-07-25	09-07-25	25		CG
MP9900	Tactiles	1	09-07-25	09-07-25	25		CG
MP9901	Surfacing	1	18-07-25	18-07-25	19		
	A350 NB Island Jctn RAB	11	07-07-25	21-07-25	19		
MP9800	Sawcut/break/remove tarmac	1	07-07-25	07-07-25	25		CG
MP9810	Place/compact type 1	1	08-07-25	08-07-25	25		CG
MP9820	Kerbs	1	09-07-25	09-07-25	25		
MP6021	Pole Ret sockets - AFTER KERBS	1	10-07-25	10-07-25	25		CG
MP9920	Extend metal RRS	1	10-07-25	11-07-25	25		
MP6022	Loop boxes - AFTER KERBS	1	11-07-25	11-07-25	25		CG
MP9930	Surfacing	1	21-07-25	21-07-25	19		
	Final Surfacing to Bumpers RAB	19	22-07-25	15-08-25	19		
MP10070	Plane/regulate/final surface course	19	22-07-25	15-08-25	19		
MP12090	Road Marking	19	22-07-25	15-08-25	19		
	Finishing Works	53	04-06-25	15-08-25	19		
MP10001	Jet/CCTV all drainage	19	04-06-25	30-06-25	53		
MP9941	Traffic signals poles/cables/connections	18	11-07-25	06-08-25	27		
MP9942	Street Lights/columns/heads/cables/connections	19	11-07-25	06-08-25	27		
MP9943	Erect signage/cables/connections	18	11-07-25	06-08-25	27		
MP9951	Test and commission all electrical items	10	23-07-25	06-08-25	27		
MP10011	Works section complete	0		15-08-25	19		
	PHASE 5 - A350 Bumpers RAB to Chequers RAB	280	20-05-24	07-07-25	0		
MP1113	TM - Install narrow lanes and barrier on A350	280	20-05-24	07-07-25	0		
	Site Clearance	19	22-05-24	18-06-24	0		
MP9950	Trial Holes	5	22-05-24	29-05-24	0		CG
MP3041	Remove road markings/hatching	5	22-05-24	29-05-24	0		
MP1013	Kerbs/Edgings	4	30-05-24	04-06-24	0		CG
MP1014	Street Lights	6	05-06-24	14-06-24	0		CG
MP1015	Tarmac -roads/footpaths	2	17-06-24	18-06-24	0		CG
	Pipeline Protection Slab - Exon Ref 221350	22	19-06-24	18-07-24	1		
MP1035	Excavation	4	19-06-24	24-06-24	1		
MP1027	Setting out by Exon rep	1	19-06-24	19-06-24	1		
MP1045	Concrete works	18	25-06-24	18-07-24	1		
	Earthworks	44	19-06-24	19-08-24	0		
MP1012	Topsoil strip	6	19-06-24	26-06-24	0		EWG
MP3090	Remove drainage/backfill	20	24-06-24	19-07-24	0		EWG
MP1020	Cut/Fill	34	01-07-24	15-08-24	0		EWG
MP3260	Capping/NFD	28	11-07-24	19-08-24	0		EWG
	Utilities	41	08-07-24	03-09-24	10		
MP1055	EXA diversion including civil works	41	08-07-24	03-09-24	0	5	CG
MP1065	NEOS diversion including civil works	41	08-07-24	03-09-24	10	5	
	Drainage	130	22-07-24	03-02-25	0		
	Swales/Ditches incl Check dams	5	22-07-24	26-07-24	0		
MP4310	CH1125 to 1150	1	22-07-24	22-07-24	0		DrG
MP4320	CH1135 to 1225	4	23-07-24	26-07-24	0		DrG
	CH0 to 260 Verge Drain - NW7	11	29-07-24	12-08-24	0		
MP1022	P5-100 to P5-97	11	29-07-24	12-08-24	0		DrG
	CH428 to 480 Verge Drain - NW6	6	22-07-24	29-07-24	0		
MP1032	P5-96A to P5-95	6	22-07-24	29-07-24	0		DrG
	Culvert CH480 A350 x-sing	8	23-07-24	01-08-24	0		
MP1043	Replace MH6A - 1800 out/2100 in	2	23-07-24	24-07-24	0		DGN
MP1053	Culvert P5-02 - A350 rd x-sing	3	25-07-24	29-07-24	0		DGN
MP1063	Culvert P5-02	2	30-07-24	31-07-24	0		DrG
MP1073	Headwall in exstg ditch	1	01-08-24	01-08-24	0		DrG
	CH428 to 480 Verge Drain - NW5	5	02-08-24	08-08-24	0		
MP1042	Culvert HW to P5-93	5	02-08-24	08-08-24	0		DrG
	CH545 to 795 Verge Drain - NW4	38	13-08-24	04-10-24	0		
MP1052	Culvert HW/10 to P5-82	11	13-08-24	28-08-24	0	1	DrG
MP4370	P5-81 to P5-73A	9	06-09-24	18-09-24	0		DrG
MP4020	P5-81 to P5-78	5	19-09-24	25-09-24	0		DrG
MP3420	P5-91 to P5-89	3	26-09-24	30-09-24	0		DrG
MP3570	P5-87 to P5-85	4	01-10-24	04-10-24	0		DrG
	Farm Access X-sing - CH685 to 675	6	29-08-24	05-09-24	0		
MP3681	P5-82 to P5-81	2	29-08-24	30-08-24	0		DrG
MP4030	Connections to exstg ditches	1	02-09-24	02-09-24	0		DrG
MP4040	Install HW's - shape ditches	3	03-09-24	05-09-24	0		DrG
	CH800 to 1150 Verge Drain - NW3B	59	09-08-24	31-10-24	0		
MP4080	HW11 to P5-52	30	09-08-24	20-09-24	0	3	DrG
MP4150	P5-73 to P5-64	24	23-09-24	24-10-24	0	2	DrG
MP4090	P5-56 to P5-54	5	25-10-24	31-10-24	0		DrG
	Mammal X-sing	3	01-11-24	05-11-24	0		
MP4092	Excavate/connect to exstg/reinstate	1	01-11-24	01-11-24	0		DrG
MP4180	New NB x-sing culvert extension	1	04-11-24	04-11-24	0		DrG
MP4190	Bagwork HW and make good	1	05-11-24	05-11-24	0		DrG
	CH1155 to 1555 Verge Drain - NW3A	76	07-10-24	03-02-25	0		
MP4210	HW12 to P5-47	3	07-10-24	09-10-24	0		DrG
MP4230	P5-48 to P5-37	19	10-10-24	05-11-24	0	2	DrG
MP4350	Headwall in exstg ditch	1	06-11-24	06-11-24	0		DrG
MP4270	P5-38 to P5-30B	3	07-11-24	11-11-24	0		DrG
MP4340	P5-48 to P5-26 - Central Reserve	50	12-11-24	03-02-25	0	5	DrG
	Culvert Extension - P5-10	3	06-11-24	08-11-24	0		
MP4380	New NB x-sing culvert extension	2	06-11-24	07-11-24	0		DrG
MP4390	Connect to P5-25A	1	08-11-24	08-11-24	0		DrG
	Ch1565 to 1598 Verge Drain NW 2B	2	11-11-24	12-11-24	0		
MP4410	P5-25A to P5-24	2	11-11-24	12-11-24	0		DrG
	Ch1605 to 1680 Verge Drain NW 2A	1	13-11-24	13-11-24	0		
MP4360	HW13 to P5-20	1	13-11-24	13-11-24	0		DrG
	Culvert Extension CH1677	4	14-11-24	19-11-24	0		
MP4372	Culvert P5-11	4	14-11-24	19-11-24	0		DGN
MP4430	Headwall in exstg ditch	1	19-11-24	19-11-24	0		DrG
	CH1855 to 2130 Verge Drain - NW1	12	20-11-24	05-12-24	0		
MP4450	P5-21A to HW14	1	20-11-24	20-11-24	0		DrG
MP4520	Headwall in exstg ditch	1	21-11-24	21-11-24	0		DrG
	Central Reserve	10	22-11-24	05-12-24	0		
MP4510	P5-10 to P5-7	10	22-11-24	05-12-24	0		DrG
	Ch1950 to 2000 verge to CR and CR - NW1	7	06-12-24	16-12-24	0		
MP4580	P5-17 to P5-15A	7	06-12-24	16-12-24	0		DrG
	Kerbs	32	17-12-24	12-02-25	0		
MP11801	Type 1 for kerb race	14	17-12-24	17-01-25	0		CG
MP11811	Install kerbs	20	06-01-25	31-01-25	0		
MP10730	Gulleys/connections	15	23-01-25	12-02-25	0		DrG
	PROW's	22	27-01-25	25-02-25	11		
	EF path CH 1350 to 1615	12	27-01-25	11-02-25	19		
MP12240	Excavate	1	27-01-25	27-01-25	0		CG
MP12300	Type 1	2	28-01-25	29-01-25	0		CG
MP11682	Edgings	5	29-01-25	04-02-25	0		CG
MP11683	Trim Type 1	3	04-02-25	06-02-25	0		CG
MP11684	Binder/Surface	3	07-02-25	11-02-25	19		CG
	EF path CH -90 to 245	13	07-02-25	25-02-25	11		
MP12270	Excavate	1	07-02-25	07-02-25	0		CG
MP12310	Type 1	2	10-02-25	11-02-25	0		CG
MP11692	Edgings	7	11-02-25	19-02-25	11		
MP11693	Trim Type 1	4	18-02-25	21-02-25	11		CG
MP11694	Binder/Surface	2	24-02-25	25-02-25	11		
	TE path CH1615 to 1730	8	12-02-25	21-02-25	0		
MP12280	Excavate	1	12-02-25	12-02-25	0		CG
MP12320	Type 1	1	13-02-25	13-02-25	0		CG
MP11702	Timber Edgings	5	14-02-25	20-02-25	0		CG
MP11703	Trim Type 1	1	20-02-25	20-02-25	0		CG
MP11704	Gravel topping	1	21-02-25	21-02-25	0		CG
	Fencing	5	13-02-25	19-02-25	15		
MP10815	Fencing and gates to farm accesses	5	13-02-25	19-02-25	15		
	Surfacing	56	13-03-25	04-06-25	0		
MP11631	Type 1	10	13-03-25	26-03-25	0		CG
MP11641	Base/Binder	9	27-03-25	08-04-25	0		
MP11671	Surface - NB Lane 1	3	09-04-25	11-04-25	0		
MP11731	Road marking	2	11-04-25	14-04-25	0		
MP11661	Surface - NB Lane 2	3	30-05-25	03-06-25	0		
MP11741	Road marking	2	04-06-25	04-06-25	0		
	RRS/Extruded Channel	82	24-02-25	07-07-25	0		
MP11370	Metal RRS	12	24-02-25	11-03-25	0		
MP11400	Concrete RRS	2	11-03-25	12-03-25	0		
MP11401	Switch Traffic NB onto New Ln - 1 SB as exstg	2	15-04-25	16-04-25	0		
MP11430	Install Concrete RRS.Concrete RRS	17	17-04-25	14-05-25	0		
MP11451	Install Concrete RRS around bridge SB	2	15-05-25	16-05-25	12		
MP11771	Extruded Channel	10	15-05-25	29-05-25	0		
MP11472	Plane and resurface A350 SB	10	05-06-25	18-06-25	0		
MP11482	Road marking	11	12-06-25	26-06-25	0		
MP11410	Metal transitions	1	27-06-25	27-06-25	0		
MP11440	Install Concrete RRS.Concrete RRS	2	30-06-25	01-07-25	0		
MP12100	Tie In Concrete RRS at Cepen Pk S and Bumpers RAB	4	02-07-25	07-07-25	0		
	Phase 5 - A350 SB WORKS	56	08-07-25	24-09-25	0		
MP12120	TM - A350 SB Lane 1 closures	39	08-07-25	01-09-25	0		
	DRAKE CRSECENT	2	08-07-25	09-07-25	2		
	Enabling Works	2	08-07-25	09-07-25	2		
MP12021	Site clearance	2	08-07-25	09-07-25	2		CG
MP12031	Trial holes	2	08-07-25	09-07-25	2		
	A350 SB Verge	9	10-07-25	22-07-25	2		
MP6780	11KV Road x-sing A350 SB	4	10-07-25	15-07-25	2		CG
MP6770	11KV Diversion	2	16-07-25	17-07-25	2		CG
MP6760	11KV Diversion	3	18-07-25	22-07-25	2		CG
	Drake Crescent N to P026 to P032 S	14	23-07-25	11-08-25	2		
MP11220	FP01 to CH16 to P5-026	3	23-07-25	25-07-25	2		CG
MP11230	CH16 to CH17	1	28-07-25	28-07-25	2		CG
MP11330	CH17 to P032	3	29-07-25	31-07-25	2		CG
MP11150	DNO supply from EX-104 to P031	7	01-08-25	11-08-25	2		CG
	CEPEN PK S RAB & SANDOWN DRIVE	2	08-07-25	09-07-25	0		
	Enabling Works	2	08-07-25	09-07-25	0		
MP11791	Trial holes	2	08-07-25	09-07-25	0		CG
MP6763	Site clearance	2	08-07-25	09-07-25	0		
	A350 SB Verge	10	10-07-25	23-07-25	0		
	UTILITIES	10	10-07-25	23-07-25	0		
MP6730	FW Diversion	5	10-07-25	16-07-25	0		DrG
MP6740	BT diversion	5	17-07-25	23-07-25	0		CG
	Sandown Drive to A350 SB - verge - NW9	7	24-07-25	01-08-25	0		
	Drainage	7	24-07-25	01-08-25	0		
MP6530	P5-110A to P5-110	2	24-07-25	25-07-25	0		DrG
MP6540	P5-110 to P5-111	2	28-07-25	29-07-25	0		DrG
MP6550	P5-110 to P5-108	3	30-07-25	01-08-25	0		DrG
	Traffic Signals	22	04-08-25	03-09-25	3		
	A350 SB Verge	4	04-08-25	07-08-25	0		
MP6650	Ducts and boxes	2	04-08-25	05-08-25	0		CG
MP6670	Road x-sing Sandown Drive WB into A350	1	06-08-25	06-08-25	0		CG
MP6660	Ret sockets - AFTER KERBS	1	07-08-25	07-08-25	0		CG
MP6710	Loop boxes - AFTER KERBS	1	07-08-25	07-08-25	0		CG
	A350 NB Island	6	08-08-25	15-08-25	0		
MP6680	Road x-sing A350 SB	2	08-08-25	11-08-25	0		CGN
MP6690	Road x-sing A350 NB	2	12-08-25	13-08-25	0		CGN
MP6600	Ducts and boxes	1	14-08-25	14-08-25	0		CG
MP6610	Ret sockets	1	15-08-25	15-08-25	0		CG
	NB Island Construction	12	18-08-25	03-09-25	3		
MP12530	Type 1	1	18-08-25	18-08-25	3		CG
MP12560	Kerbs	1	19-08-25	19-08-25	3		
MP12570	Edgings	1	20-08-25	20-08-25	3		
MP12580	Maintenance bay	4	21-08-25	26-08-25	3		CG
MP12600	Pedestrian barrier	1	27-08-25	27-08-25	3		CG
MP12610	Tactiles	2	28-08-25	29-08-25	3		CG
MP12620	Surfacing	3	01-09-25	03-09-25	3		
	Central Reserve - A350 S of Cepen Pk RAB	2	08-08-25	11-08-25	4		
	Drainage	2	08-08-25	11-08-25	4		
MP6570	Ex MH102 to P5-107	2	08-08-25	11-08-25	4		CGN
	Construct SB FP to Crossing	11	18-08-25	02-09-25	4		
MP6790	Earthworks	2	18-08-25	19-08-25	0		CG
MP6800	Type 1	2	19-08-25	20-08-25	0		CG
MP6812	Fencing to bottom of batter - Post and rail	5	20-08-25	27-08-25	8		
MP6810	Kerbs/Edgings	2	21-08-25	22-08-25	0		CG
MP6820	Tactile slabs	1	26-08-25	26-08-25	0		CG
MP6830	Pedestrian barrier	3	27-08-25	29-08-25	3		CG
MP6840	Tarmac surfacing	2	01-09-25	02-09-25	3		
	Cepen Park RAB	9	27-08-25	08-09-25	0		
MP11310	FP05 to CH11	1	27-08-25	27-08-25	0		CG
MP11210	CH11 to CH12 To P5-053	1	28-08-25	28-08-25	0		CG
MP11320	DNO supply duct from FP05	1	29-08-25	29-08-25	0		CG
MP11130	Ducts	1	01-09-25	01-09-25	0		CG
MP11140	TM - Switch to NB Lane 1 closed	5	02-09-25	08-09-25	0		
	A350 NB Verge	5	02-09-25	08-09-25	0		
MP6571	Cont1/FF1 bases	1	02-09-25	02-09-25	0		CG
MP6580	Ducts and boxes	3	03-09-25	05-09-25	0		CG
MP6590	Ret sockets - AFTER KERBS	1	08-09-25	08-09-25	0		CG
MP6700	Loop boxes - AFTER KERBS	1	08-09-25	08-09-25	0		CG
	Finishing Works	12	09-09-25	24-09-25	0		
MP12161	Surfacing	3	09-09-25	11-09-25	0		
MP12162	Road Marking	3	09-09-25	11-09-25	0		
MP12180	TM - to suit works	12	09-09-25	24-09-25	0		
MP12170	Traffic signals poles/cables/connections	5	12-09-25	18-09-25	0		
MP9952	Street Lights/columns/heads/cables/connections	5	12-09-25	18-09-25	0		
MP9953	Erect signage/cables/connections	5	12-09-25	18-09-25	0		
MP9961	Test and commission all electrical items	5	18-09-25	24-09-25	0		
	A350 SB PROW's - Offline FP's	31	12-08-25	24-09-25	0		
MP11701	TE path CH 1645 to 1560	15	12-08-25	02-09-25	2		CG
MP11711	TE path CH1560 to 1360	13	03-09-25	19-09-25	2		CG
MP11781	Gate	1	22-09-25	22-09-25	2		
MP11821	Work section Complete	0		24-09-25	0		
	PHASE 4 - Chequers RAB to Lackham RAB	238	20-05-24	08-05-25	4		
MP1123	TM - Install narrow lanes and barrier on A350	222	20-05-24	10-04-25	4		
MP12210	Work section Complete Phase-4	0		08-05-25	4		
	Site Clearance.Site Clearance Incl A350 S of Lackham RAB	15	22-05-24	12-06-24	4		
MP9981	CAT Scan/Trial holes	6	22-05-24	30-05-24	4		CG
MP10570	Remove Traffic island N Lackham RAB - temp tarmac	4	24-05-24	30-05-24	4		CG
MP10580	Signs	4	24-05-24	30-05-24	4		CG
MP10590	Street Lights	1	30-05-24	30-05-24	4		CG
MP10190	Kerbs/Edgings	4	31-05-24	05-06-24	4		CG
MP10610	Tarmac - roads/footpaths	5	31-05-24	06-06-24	4		CG
MP10200	Barrier VRS	4	07-06-24	12-06-24	4		CG
	Earthworks	46	13-06-24	15-08-24	4		
MP10630	Topsoil strip.Kerbs	12	13-06-24	28-06-24	4	2	EWG
MP10640	Cut/fill	40	19-06-24	13-08-24	4		EWG
MP10631	Remove drainage/backfill	24	19-06-24	22-07-24	4		EWG
MP10660	Capping/NFD	34	01-07-24	15-08-24	4	4	EWG
	Fencing	11	23-07-24	06-08-24	64		
MP10670	Fencing to W side of swale - Post and rail	11	23-07-24	06-08-24	64		
	Drainage	97	10-07-24	22-11-24	110		
MP11170	Erosamat to ditches/swales	3	23-10-24	25-10-24	110		DrG
MP11529	Jet and CCTV drainage	20	28-10-24	22-11-24	110		
	CH10 to 230 Verge drain - NW7	24	10-07-24	12-08-24	4		
MP10210	Construct new swale	9	10-07-24	22-07-24	4		DrG
MP10220	P4-79A to P4-79 to HW01	3	23-07-24	25-07-24	4		DrG
MP10230	P4-79 to P4-77	4	26-07-24	31-07-24	4		DrG
MP10240	HW02 to P4-71	6	01-08-24	08-08-24	4		DrG
MP10250	Headwalls	2	09-08-24	12-08-24	4		DrG
	Road X-sing P4-56A (c/b/d 5) to P4-56A	4	19-07-24	24-07-24	110		
MP10270	Install MH - P4-56A	2	19-07-24	22-07-24	110		DGN
MP10280	P4-56A to P4-56A incl reinstatement	2	23-07-24	24-07-24	110		DGN
	CH500 to 630 Central Reserve - NW6	11	10-07-24	24-07-24	110		
MP10550	P4-61B to P4-57	11	10-07-24	24-07-24	110		DrG
	CH730 to 820 Central Reserve - NW6	11	25-07-24	08-08-24	110		
MP10530	P4-48A to P4-49A	1	25-07-24	25-07-24	110		DrG
MP11040	P4-56 to P4-54A	1	26-07-24	26-07-24	110		DrG
MP11050	P4-61B to P4-57	9	29-07-24	08-08-24	110		DrG
	CH635 to 725 Verge drain - NW5B	10	13-08-24	27-08-24	4		
MP10290	P4-56A (CR) to 51	8	13-08-24	22-08-24	4		DrG
MP10300	P4-53 to 53A	2	23-08-24	27-08-24	4		DrG
	CH730 to 820 Verge drain - NW5A	9	28-08-24	09-09-24	4		
MP10310	HW03 to P4-48A	8	28-08-24	06-09-24	4		DrG
MP10320	Headwall	1	09-09-24	09-09-24	4		DrG
	CH825 to 965 Verge drain - NW4	15	09-08-24	30-08-24	110		
MP10330	HW04 to P4-40	7	09-08-24	19-08-24	110		DrG
MP10350	P4-47 to P4-43	7	20-08-24	29-08-24	110		DrG
MP10340	Headwall	1	30-08-24	30-08-24	110		DrG
	CH980 to 1210 Verge drain - NW3/3B	18	02-09-24	25-09-24	110		
MP10360	Ditches CH875 to 1220	4	02-09-24	05-09-24	110		DrG
MP10370	HW05 to P4-33	13	06-09-24	24-09-24	110	1	DrG
MP10380	Headwall	1	25-09-24	25-09-24	110		DrG
	CH1230 to 1350 Verge drain - NW2	37	10-09-24	30-10-24	92		
MP10390	Construct new swale CH1220 to 1280	2	10-09-24	11-09-24	4		DrG
MP10990	HW07 to HW08	13	12-09-24	30-09-24	4	1	DrG
MP11030	P4-6A to P4-5	4	26-09-24	01-10-24	110		DrG
MP10410	HW06 to P4-19	7	01-10-24	09-10-24	4		DrG
MP11060	Headwalls HW06, 07, 08	3	02-10-24	04-10-24	110		DrG
MP11010	P4-13 to P4-7 (NW 2/1)	13	10-10-24	28-10-24	4	1	DrG
MP11020	P4-8 to P4-8B	2	29-10-24	30-10-24	4		DrG
	CH1560 to 1670 Verge drain - NW1A	12	07-10-24	22-10-24	110		
MP10480	P4-4A to P4-3	6	07-10-24	14-10-24	110		DrG
MP10490	Switch TM to allow x-sing works	2	15-10-24	16-10-24	110		DrG
MP10500	P4-3 to P4-2	1	17-10-24	17-10-24	110		DrG
MP10510	Switch TM - Lane 2 closure NB/SB	1	18-10-24	18-10-24	110		DrG
MP10520	P4-2 to P4-1	2	21-10-24	22-10-24	110		DrG
	Kerbs/Channels/Edgings	27	31-10-24	06-12-24	59		
MP10700	Type 1 for kerb race	14	31-10-24	19-11-24	4		CG
MP10710	Install kerbs	20	06-11-24	03-12-24	4		
MP10720	Gulleys/connections	18	13-11-24	06-12-24	59		CG
	Street Lights/Illuminated signs	25	09-12-24	24-01-25	62		
	A350 Island	5	09-12-24	13-12-24	70		
MP10750	CH9 to 10	2	09-12-24	10-12-24	59		CG
MP10430	Ducts/Boxes	1	11-12-24	11-12-24	59		CG
MP10440	DNO supply/NB duct	2	12-12-24	13-12-24	70		CG
	B4528 to Patterdown	14	12-12-24	14-01-25	70		
MP10760	FP02 to CH14 to P4-038	1	12-12-24	12-12-24	59		CG
MP10770	CH14 to 15 to P4-037	2	12-12-24	13-12-24	59		CG
MP10600	DNO supply from Showell Farm to FP02	12	16-12-24	14-01-25	70		CG
	A350 N of Southpoint RAB	6	16-12-24	06-01-25	59		
MP6125	FP1 to CH04 to P4-024	3	16-12-24	18-12-24	59		CG
MP6126	CH4 to CH3	2	19-12-24	20-12-24	59		CGN
MP6127	CH1 to CH2	2	19-12-24	20-12-24	59		CGN
MP6128	CH2 to CH13	2	19-12-24	20-12-24	59		CGN
MP6352	Ducts/Boxes	1	06-01-25	06-01-25	59		CG
	A350 Junction with Chequers RAB	14	07-01-25	24-01-25	59		
MP10810	FP03 to PH4-010 to P4-005	3	07-01-25	09-01-25	59		CG
MP10820	CH10 to CH09 to PH4-004	4	10-01-25	15-01-25	59		CGN
MP10830	CH7 to CH8 to P4-011	2	16-01-25	17-01-25	59		CGN
MP11000	CH8 to CH16	2	20-01-25	21-01-25	59		CGN
MP11070	CH5 to CH6	2	20-01-25	21-01-25	59		CGN
MP11080	CH11 to CH12	1	22-01-25	22-01-25	59		CGN
MP11090	CH16 to CH6	2	23-01-25	24-01-25	59		CG
	PROW from CH820 to 1515	19	25-11-24	19-12-24	4		
	EF path CH1365 to 1515 - 150m x 2.5m w	15	25-11-24	13-12-24	4		
MP12350	Excavate (include for ret wall)	2	25-11-24	26-11-24	4		CG
MP12370	Edgings	3	05-12-24	09-12-24	4		
MP12361	Type 1	1	05-12-24	05-12-24	4		CG
MP12380	Trim Type 1	2	10-12-24	11-12-24	4		CG
MP12390	Binder/Surface	2	12-12-24	13-12-24	4		
	Retaining Wall (28m)	6	27-11-24	04-12-24	4		
MP1235	Concrete foundation/slabs	3	27-11-24	29-11-24	4		CG
MP1235	Curing	2	02-12-24	03-12-24	4		
MP1235	Backfill	1	04-12-24	04-12-24	4		CG
	TE path CH 820 to 1365 - 545m x 2m w	17	27-11-24	19-12-24	4		
MP12400	Excavate	1	27-11-24	27-11-24	4		CG
MP12410	Type 1	2	28-11-24	29-11-24	4		CG
MP11712	Timber Edgings	11	02-12-24	16-12-24	4		CG
MP11713	Trim Type 1	3	13-12-24	17-12-24	4		CG
MP11714	Gravel topping	2	18-12-24	19-12-24	4		CG
	Island Reconstruction	3	27-01-25	29-01-25	59		
MP11513	Excavate tarmac	1	27-01-25	27-01-25	59		CG
MP11514	Type 1 top-up	1	27-01-25	27-01-25	59		CG
MP11515	Kerbs	1	28-01-25	28-01-25	59		CG
MP11516	Ducts	1	29-01-25	29-01-25	59		CG
	Finishing Works	13	17-04-25	08-05-25	4		
MP11517	Install st lights/connection/	4	17-04-25	24-04-25	4		
MP11518	Install ill. signs/connections	4	25-04-25	30-04-25	4		
MP11519	Test and commission electrical items	5	01-05-25	08-05-25	4		
	Surfacing	37	21-01-25	12-03-25	4		
MP11541	Type 1	10	21-01-25	03-02-25	4		CG
MP11551	Base/Binder	4	04-02-25	07-02-25	4		
MP11581	Surface - NB Lane only	3	10-02-25	12-02-25	4		
MP12001	Road Marking	2	12-02-25	13-02-25	4		
MP11571	Surface - SB	3	07-03-25	11-03-25	4		
MP12011	Road Marking	2	11-03-25	12-03-25	4		
	RRS	86	04-12-24	16-04-25	4		
MP11350	Metal	23	04-12-24	17-01-25	4		
MP11380	Install Concrete RRS	2	20-01-25	20-01-25	4		
MP11391	Switch Traffic NB onto New Ln - 1 SB as exstg	2	14-02-25	17-02-25	4		
MP11941	Install Concrete RRS	10	18-02-25	03-03-25	4		
MP11441	Install Concrete RRS around bridge SB	3	04-03-25	06-03-25	4		
MP11442	Extruded Channel	3	04-03-25	06-03-25	4		
MP11452	Plane and resurface A350 SB	10	13-03-25	26-03-25	4		
MP11462	Road marking	11	20-03-25	03-04-25	4		
MP11390	Metal transitions	2	04-04-25	07-04-25	4		
MP11991	Install Concrete RRS	3	08-04-25	10-04-25	4		
MP12200	Tie In Concrete RRS at Cepen Pk S and Bumpers RAB	4	11-04-25	16-04-25	4		
	Project Closeout	10	18-08-25	01-09-25	19		
MP12850	Prepare and submit as-builts	10	18-08-25	01-09-25	19		
MP12860	Prepare and submit H&S files	10	18-08-25	01-09-25	19		



Legend: Actual Work; Remaining Work; Actual Level of Effort; Critical Remaining Work; Remaining Level of Effort; ◆ Milestone

PROJECT NAME: A350 Chippenham Phases 4 and 5 Dualling-Tender

LAYOUT NAME: A350 - Tender - Layout 001
DATA DATE: 01-04-24
RUN DATE: 30-08-23 10:12

Date	Revision	Checked	Approved
30-08-23	Revision-01	RP	NC

ATKINS
Member of the SNC-Lavalin Group

Wiltshire Council

A350 Chippenham Bypass Improvements (Phase 4 & 5)

WC_A350-ATK-GEN-XX-DP-ZX-000004

Risk Management Plan

08/03/22

A1

Notice

This document and its contents have been prepared and are intended solely as information for Wiltshire Council Highway Term Consultancy contract and use in relation to the A350 Chippenham Bypass Improvements (Phase 4 &5). Wiltshire holds no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Document history

Revision	Suitability	Purpose description	Originated	Checked	Reviewed	Authorised	Date
C01	A1	First Issue	**TG**	**TF**	**TG**	**AM**	**08**/03/22

Contents

Tables

Figures

1. Introduction

Effective Risk Management is fundamental to successful project delivery and the management of uncertainty. It applies at all stages of project execution and is a fundamental part of project management.

The purpose of the Risk Management Plan, is to provide a management framework to ensure that levels of risk and uncertainty impacting the A350 Chippenham Bypass (Phase 4 & 5) are properly identified, reviewed and managed throughout the project lifecycle. The expectation is to create an environment and a context for pro-actively identifying and dealing with risks and issues. This includes prioritising and assessing risk so that the right resources can be applied in a timely manner for implementing mitigation plans to minimise risks or increase opportunities. This will include recording and communicating these risks, as well as the eventual close-out of specific risks and the project itself. It is written to interface with the Wiltshire Council Programme Risk Management Strategy, which defines the process for managing risk across the entire programme.

This document describes the methods for identifying, analysing, prioritising, and tracking risk drivers, developing Risk Mitigation Plans and planning for adequate resources to handle risk. Also, it assigns specific responsibilities for the management of risk and prescribes the documentation, monitoring, and report processes to be followed.

2. Project Description

The A350 provides an important strategic north-south link through Wiltshire. Ensuring that the A350 operates effectively is critical for unlocking housing and employment growth in Chippenham and the wider A350 Growth Zone as defined by Swindon and Wiltshire Local Enterprise Partnership.

High traffic volumes on the A350 Chippenham Bypass have resulted in delays and unpredictable journey times for road users for many years. Increasing traffic demand associated with housing and employment growth across the A350 Growth Zone is forecast to push existing congestion issues to unacceptable levels. This will be detrimental to the strategic role of the A350 Chippenham Bypass.

The delivery of each of Wiltshire's Major Road Network (MRN) schemes present a comprehensive programme to improve regional connectivity, with the need for future dualling having been envisaged in the 1990s.

The A350 Chippenham Bypass (Phase 4 & 5) MRN scheme will complete Wiltshire Council's aim to dual the entire Chippenham Bypass. It complements three preceding phases of dualling and junction improvements undertaken between 2014 and 2019.

This scheme is the final phase of works and will involve dualling the remaining stretches of the A350 Chippenham Bypass as well as increasing capacity at Bumpers and Lackham roundabouts.

A more detailed description of the scheme and the client objectives is provided in the Project Overview / Management Plan (WC_A350-ATK-GEN-XX-DP-ZM-000003).

3. Risk Management Overview

The benefits of having a Project Risk Management plan include:

- Assignment of clear roles and responsibilities within the project team for risk management.
- Enhanced team communication and commonality of approach.
- Assisting project managers to understand the potential risk exposure, to develop a focused treatment plan to reduce the likelihood of risks occurring or to mitigate the impacts and to understand confidence in achieving project targets.
- Understanding the resource constraints and time dependencies.
- Support the allocation of project contingency funds and sufficiency of management reserve.
- Increasing the value of the project investment through identification and exploitation of opportunities.

The fundamental approach adopted in applying risk management is that it should not be viewed as an add-on to the project management process but rather, must be embedded into the project management process.

3.1. Risk Definition

The current standard for the definition of risk according to ISO 31000:2018, is “effect of uncertainty on objectives” and the Institute of Risk Management (IRM) Definition is that “risk is a combination of an event and its consequence. Consequence can range from positive to negative”. Risks include both threats and opportunities, with negative and positive impacts on objectives as suggested by the IRM definition.

The purpose of Risk Management therefore is the creation and protection of value. It improves performance, encourages innovation, and supports the achievement of project objectives.

3.2. Issue Definition

An issue is a problem that currently impacts or is known will have an impact on the project and is being managed by the Project Team. Issues are identified and managed through the Issues Management process and should not be confused for Risks. The understanding of these definitions is very important. Risks have an element of uncertainty, issues do not.

4. Roles and Responsibilities

There are various staff resources and stakeholders involved in managing project risks; in some cases, one individual may perform multiple roles within the process. The Responsibility Matrix below provides a summary of the key responsibilities and documents required for robust programme risk management and the individuals responsible (R), accountable (A), consulted (C) and informed (I) in management and delivery. This Matrix should consider the programme roles and responsibilities as set out in Section the Wiltshire Council Programme Risk Management.

R – responsible **A – accountable** **C – consulted** **I – informed**	Wiltshire Council Project Manager	Project Director	Project Manager	Design Manager	Risk Manager	Technical Leads
Develop Risk Management Plan	I	A	C	C	R	C
Implement Risk Management Plan	I	A	I	I	R	I
Risk Identification	I	R	R	R	A	R
Develop and Manage Risk Register	I	C	A	C	R	C
Arrange Risk Workshops	I	A	C	I	R	I
Risk Reporting	I	C	A	C	R	C
Run the Quantitative Cost Risk Analysis	I	C	A	C	R	C

Table 4-1 - Risk Management Responsibility Matrix

4.1. Wiltshire Council Project Manager

The Wiltshire Council Project Manager is accountable to Executive for delivery of the scheme within defined constraints. They will be informed by the Atkins Project Manager of the risk profile of the project and key risks and assigned as Risk Owners and Action Owners where appropriate. They are also responsible for escalating risks appropriately to Wiltshire Council Senior Leadership Team as outlined in Table 6-2.

4.2. Atkins Project Director

The Project Director is accountable for ensuring that the Project Team is aware of the Risk Management Plan and requirements for Risk Management. The document should be reviewed and updated at least annually and at key project milestones. They are responsible for the approval of the document and have ultimate responsibility for the final decision on risk actions, including approving Risk Mitigation Plans and monitoring.

4.3. Atkins Project Manager

The Project Manager is responsible for implementing the risk management process on their project. The Project Manager is also responsible for ensuring threats and opportunities are captured both from within the project team as well as from external sources, such as supply chain (contractors), clients or regulatory bodies. The Project Manager is supported by a Risk Manager who provides advice, support, and guidance as necessary.

4.4. Risk Manager

The Risk Manager is responsible for:

- Writing the Risk Management Plan
- Leading the quantitative risk analysis activities

- Supporting the team developing risk mitigation and contingency strategies
- Supporting project risk identification activities
- Facilitating the identification of new risks and review of existing risks
- Facilitating the proposal of mitigation strategies and contingency or fall-back plans
- Providing advice on escalating risks and identification and review of top-scoring risks
- Facilitating project communication through the execution of the risk management process
- Ensuring that project risk owners are managing identified risks in accordance with this Risk Management Plan
- Training project staff in risk responsibilities as required
- Briefing staff on any changes to the risk management process
- Proposing process improvements to this Risk Management Plan and risk management processes

4.5. Project Team

Identification of project risks is the responsibility of everyone contributing to the Project. When a risk involves more than one design package, to ensure maximum control of risk, every effort is made to allocate the responsibility for risk control to the Discipline Technical Lead (DTLs) best placed to manage it. If appropriate, the other DTLs will be asked to define and implement the actions to mitigate the risk insofar as this reduces the overall risk to the Project.

The Project Team participates in the risk identification process and discusses risk monitoring and mitigation activities at risk workshops and team progress meetings. A new risk may be identified at any time by the Project Team members for inclusion in the risk register; the Risk Manager ensures risks are not duplicated.

4.6. Risk Owner

This Risk Management Plan requires that a Risk Owner is assigned to each risk. The Risk Owner is an individual who is considered best placed to manage a risk, such as the Project Manager or a DTL, and has the appropriate accountability and resource. Risk Owners are responsible for defining the risk treatment plan and for providing status reports. They are accountable for assigning Action Owners to treatment actions and ensuring agreed actions are progressed.

The Risk Owner shall be a member of the Project Team and is the person identified by the Project Manager as responsible for managing an allocated individual risk.

4.7. Action Owner

The Action Owner is an individual assigned by the Risk Owner who is responsible for implementing one or more risk treatment actions through to completion. In some cases, a single individual could act in more than one of the roles. For example, a Project Manager may be a Risk Owner and an Action Owner for certain risks. The Risk Owner must first accept ownership of the risk; then the Risk Owner defines the risk management strategy and agrees the actions and responsibilities with Action Owners to deliver this strategy.

5. Risk Management Process

The Risk Management process for the A350 Chippenham Bypass Improvements (Phase 4 & 5) project will follow that set out below in Figure 5-1.

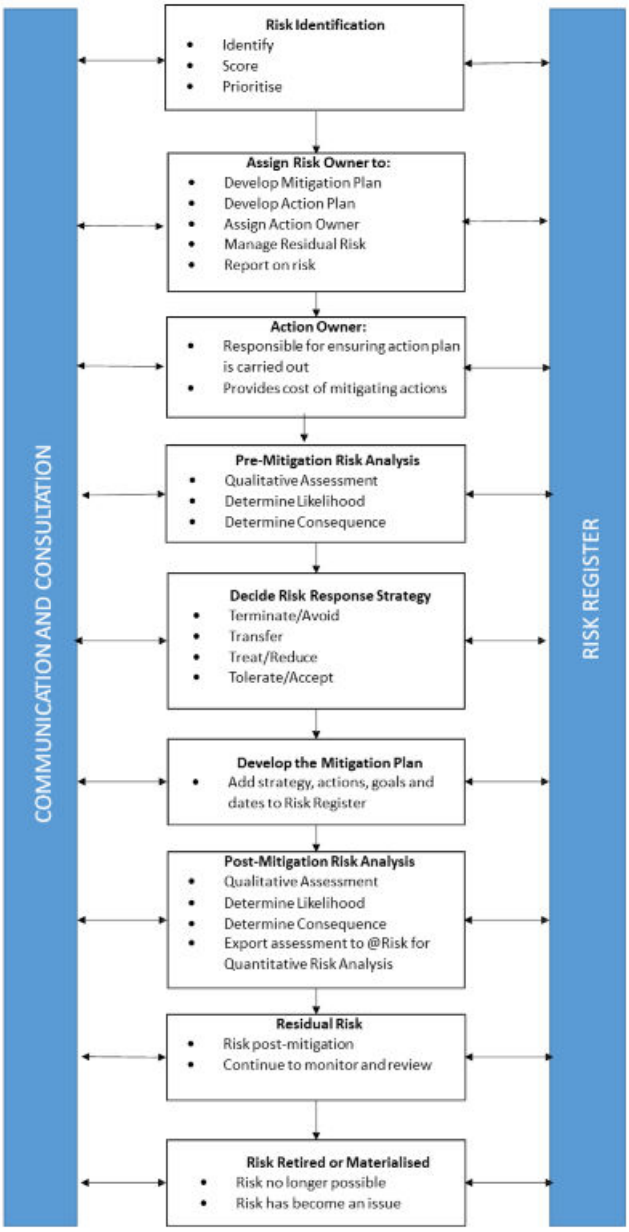


Figure 5-1 - Risk Management Process

5.1. Risk Identification

Risk identification is the process of examining the various project areas and each critical process to identify and document any associated potential risks. Throughout the project lifecycle, the Project Team shall continuously strive to identify new risks. This shall be accomplished through periodic and event-driven risk identification meetings. Nevertheless, all project staff are responsible for risk, and identification of risks should not be limited to risk specific workshops but also through other means, including one-to-one meetings, technical meetings, progress meetings and review of lessons learned from previous similar projects and programmes.

All risks (threats and opportunities) which are identified as having a potential impact on the project are evaluated and each risk is further identified by the following “Risk Type”:

- Political and Policy
- Economic and Financial
- Statutory Process and Legal
- Design and Technical
- Environmental
- Stakeholder
- Procurement
- Construction
- Operation and Maintenance

The above topics of risks fit well under “project” risk that can best be managed by the Project Team. However, other categories of risk, if identified and are part of the Risk Management mandate for this project may need to be addressed and added to the scope of Risk Management/Services on this project. Risk identification meetings are usually conducted as structured mind map sessions and will include the Project Team, representatives from Wiltshire Council and, where appropriate, representatives from third parties such as the preferred contractor. Each meeting will systematically work through all areas and phases of the project (or the specific area and phase identified for the meeting) to identify:

- New risks and potential causes.
- Preliminary review of mitigation strategies.
- Assign Risk Owner; and
- Identify exposure period.

5.2. Risk Analysis

The purpose of risk analysis is to understand the nature of a risk and its characteristics, including the likelihood of occurrence and the impact should a risk occur. Risk analysis involves a detailed consideration of risk sources, consequences, likelihood, events, scenarios and existing controls and their effectiveness. Other considerations include complexity and connectivity, time-related factors, the quality of the information used, the assumptions and exclusions made, any limitations of the techniques used and how they are executed.

Risk analysis can be qualitative or quantitative. In a qualitative analysis, definitions are assigned to risk impacts and probability in order of magnitude. The scheme shall use a ‘five by five’ matrix of five categories of probability and five categories of impact used to analyse a risk. These definitions are provided in Section 6.1 Table 6.

Quantitative analysis assigns values to individual risks, usually cost and time impacts, to run a risk simulation model and the potential impacts on cost and time of the risks identified by the Project Team. The process of carrying out this analysis is detailed in Section 8.

5.3. Risk Treatment

Risk treatment will identify clearly what can be done to reduce the threat, either to an acceptable level or to remove it completely; or increase the opportunity. The treatment of a threat is a means to prevent or reduce project overspend, delayed deliverables or reduced performance levels; it will promote activities that will help to avoid or reduce adverse impacts or the chance of these events happening. In contrast, the treatment of an opportunity will aim to improve the chances of realising the opportunity and maximising the cost saving, accelerated timescales or improved quality of the project output.

Once risks have been assessed, a Risk Treatment Plan must be prepared. A Treatment Plan establishes how the project will address the probability of a specific risk and the magnitude of its impacts. Treatments should be designed to mitigate or prevent the threat occurring, or enhance the positive impact of an opportunity.

The strategies available to manage threats are:

- TRANSFER: Transfer the threat to a third party to take ownership and responsibility, such as to an insurance company or escalate internally to a corporate entity outside the Project. Risk transference does not eliminate the threat.
- SHARE: Sharing the threat with third parties or supply chain contractors is a strategy to reduce the impact to the Project; the overriding principle will be to ensure that the parties who are best able to manage the risks do so.

- TOLERATE: Where control over the threat or mitigation will be disproportionate to the benefit gained or where no mitigation is possible, the only strategy will be to tolerate or accept the risk. However, some fall-back plans will be decided in advance to deal with the impacts, in case the risk occurs.
- TREAT: The most common strategy is to mitigate or treat the threat. Most risk mitigation strategies aim to reduce the risk impacts to acceptable levels or to reduce the probability that they will occur.
- TERMINATE: An action taken to completely avoid the risk and therefore to terminate it. Whilst it is the preferred method of threat treatment it is a less frequently used strategy, as few risks can be eliminated entirely.

The strategies available to manage opportunities are:

- EXPLOIT: take deliberate action to achieve maximum benefit from the opportunity.
- SHARE: take action to ensure the opportunity is shared, such as across projects, with supply chain or with other parts of Wiltshire Council.
- IGNORE: do nothing as the opportunity is too difficult or expensive to actively pursue.

The aim of risk treatment is to reduce the probability of a risk occurring or to reduce the level of impacts that could result if the risk occurs. There are three types of treatment or mitigation actions:

- ACTION - A physical task with a defined deliverable or outcome.
- CONTROL - On-going monitoring, stakeholder engage or procedure changes.
- FALLBACK ACTIONS - A set of actions which will be taken only if the risk happens.

The success of the actions taken will be monitored on a regular basis to check effectiveness. If the actions are not improving towards achieving the post-mitigated values, then alternative actions or strategies will be considered.

Each identified treatment action needs an Action Owner responsible for ensuring that the actions are executed to plan within the timescales or costs. The Action Owner reports progress of these actions to the Risk Owner.

5.4. Residual Risk

Residual risk or post treatment exposure is the anticipated risk that will remain after all reasonable and cost-effective treatment strategies have been implemented. Residual risks should be monitored periodically to reduce any potential exposure. Residual risks are part of the basis for contingency calculation.

5.5. Risk Retirement or Materialisation

Risks may be retired if and when the risk period is over and the risk has not occurred, or if the risk is mitigated to a point where the risk is eliminated or if it is determined by the Project Team that an identified risk is not considered a risk or is a duplicate of another risk. If a risk occurs, and cannot happen again, the risk will also be retired. If the risk may happen again during the lifecycle of the project, it will remain active.

The Project Team must effectively manage the impact should a risk occur. Specific plans may be prepared and implemented for those risks that materialize to reduce the impact. Lessons learned from each materialized risk will be reviewed and implemented accordingly.

Risks may be retired if and when the risk period is over and the risk has not occurred, or if the risk is mitigated to a point where the risk is eliminated or if it is determined by the Project Team that an identified risk is not considered a risk or is a duplicate of another risk. If a risk occurs, and cannot happen again, the risk will also be retired and transferred to the Issues Register. If the risk may happen again during the lifecycle of the project, it will remain active on both the Risk Register and Issues Register.

The Project Team must effectively manage the impact should a risk occur. Specific plans may be prepared and implemented for those risks that materialise to reduce the impact, often referred to as fallback plans. Lessons learned from each materialised risk will be reviewed and implemented accordingly.

6. Risk Management Strategy

6.1. Risk Evaluation

The A350 Chippenham Bypass Improvements (Phase 4 & 5) project will use the Risk Register to record the identification, description, treatment plans and analysis of risks. The Project Risk Register is stored on ProjectWise in: WC_MBP-ATK-GEN-XX-RK-ZM-000001.

The Risk Register uses automatic severity scoring once the risk probabilities and impacts are quantified, using the relevant banding levels (risk parameters). The only exceptions are performance or quality impacts, where suitable words for levels of impact are used for the Risk Owner to determine the qualitative score, then the qualitative score is input directly into the performance/quality impact level field, e.g. a 3 for medium level performance would indicate a significant criterion is not met.

The risk parameters set for qualitative analysis with the A350 Chippenham Bypass Project Risk Register scoring are shown in Table 6-1

				Impact Criteria					
Score Ref	Rank	Probability (%)		Cost Range (£)		Schedule Range (days)		Reputation	Project Performance
		Min	Max	Min	Max	Min	Max		
5	Very High	75	90	>1M		>90		Major national adverse media coverage.	Unable to deliver critical criteria.
4	High	50	75	500k	1M	60	90	Major local/minor national adverse media coverage.	Major impact on delivery of criteria.
3	Medium	25	50	250k	500k	30	60	Minor local adverse media coverage.	Partial delivery of criteria.
2	Low	10	25	100k	250k	14	30	Complaint trends.	Late or inconsistent delivery of criteria.
1	Very Low	1	10		100k		14	One off, limited complaints.	Negligible impact on criteria.

Table 6-1 - Risk Parameter Scoring

Risks are further evaluated using a scoring matrix or Probability Impact Diagram (PID), the highest risk impact score and the probability score is used to obtain a single value Risk Score for each risk. The risks, when reordered from high to low risk scores, ranks them in order of importance, or significance to the project.

The PID for the Risk Register to be used on the project is shown in Figure 6-1 and puts emphasis on the magnitude of the risk impacts rather than that of the probability. This is because it is more important to focus on managing a risk with a very low probability that could have a significant impact on the project objectives, than it would be for one with a very high probability and very low impacts. Therefore, the scoring mechanism skews the risk scores towards level of impact. The resulting risk scores in the matrix have no intrinsic meaning – they rank the risks so that the top risks are apparent to the Project Manager and Project Director for reporting.

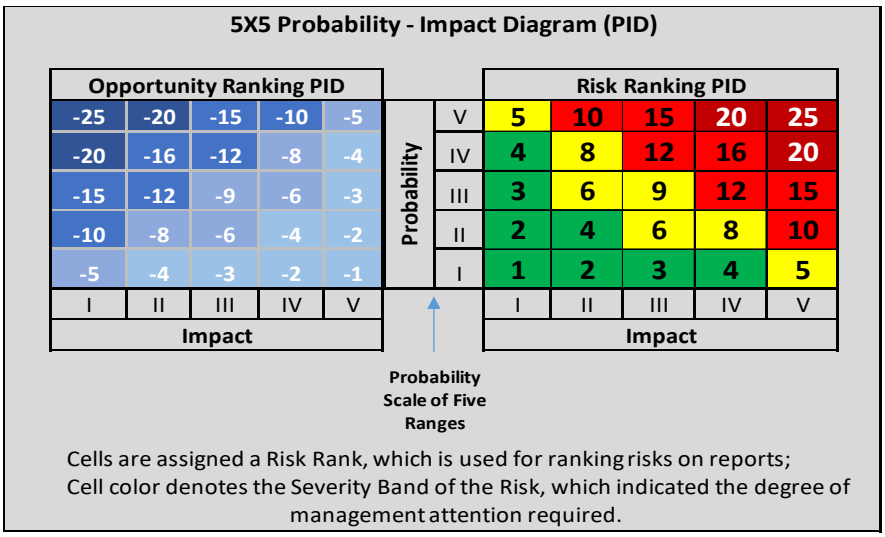


Figure 6-1 - 5x5 Probability Impact Diagram

Risk analysis (Section 5.2) provides an input to Risk Evaluation, to decisions on whether the risk needs to be treated and how, and on the most appropriate risk management strategy. The purpose of risk evaluation is to inform and support project decisions. The Project Team will need to consider whether additional actions are required to consider risk treatment options, undertake further analysis to understand the risk, maintain existing controls or reconsider objectives.

Decisions should take account of the wider context and the actual and perceived consequences to external and internal stakeholders. The outcome of the risk evaluation should be recorded, communicated, and validated using the Project Risk Register.

Table 6-2 provides an outline of the minimum actions required of the Project Manager based on the severity score derived from qualitative assessment. These actions include appropriate reporting and escalation of risks within both Wiltshire Council and Atkins.

Severity	Action
Very High	Escalate to Wiltshire Council Organisational Level.
	Escalate to Atkins Business Unit and agree on appropriate management with Business Head.
High	Escalate to Wiltshire Council and agree on appropriate management with Wiltshire Council Project Manager.
	Report to Atkins Business Unit.
Moderate	Manage at Project Level and report at Wiltshire Council Level.
Low	Manage and report at Project Level.

Table 6-2 - Actions prompted by severity level of individual risks

7. Risk Monitoring and Reporting

7.1. Risk Identification Reviews and Meetings

The identification, definition, analysis, and mitigation plans for risks will be captured in the Project Risk Register, which is managed by the Risk Manager. It is the responsibility of all those on the project to identify risks and notify the Risk Manager so that risks can be properly captured on the Risk Register.

The Project Risk Register will be discussed and updated on a monthly basis in a meeting between the Project Manager and the Risk Manager in order to ensure it is effectively maintained, reflects the current risk profile of the project and that actions are being tracked and carried out.

Risk Review Workshops will be carried out with Wiltshire Council and the project team at key hold points on the project to review and update the Risk Register as appropriate. As a minimum these workshops should be carried out on a quarterly basis, before proceeding to the next Project Stage and when key project decisions are required. As a minimum the following attendees should be at the Risk Review Workshop:

- Key Wiltshire Council Stakeholders
- Project Director
- Project Manager
- Design Manager
- Discipline Technical Leads
- Risk Manager

7.2. Risk Reporting

Reporting of risk should align with the Project requirements as defined in the Project Overview Plan WC_MBP-ATK-GEN-XX-DP-ZM-000010 and Quality Management Plan WC_MBP-ATK-GEN-XX-DP-ZX-000006 . As a minimum the top 5 risks and status of treatment actions should be reported to the Project Management through the monthly reporting cycle and the Project Risk Register issued to Wiltshire Council and the Project Team following review and update.

8. Quantitative Risk Analysis

Cost and schedule risk modelling is employed to ensure that the exposure to risk is understood; that the remaining contingency funds are expected to be sufficient to last to the end of the project; and to understand the confidence the project has in meeting delivery dates, including whether current plans are likely to be achieved or not.

When carrying out quantitative risk assessments, the opportunities are excluded from the modelling for risk contingency calculation. However, risk models can be re-run with opportunities included as a scenario. The results will indicate the benefits that could be achieved if these opportunities are implemented. It provides an incentive to develop and promote the most favourable opportunities to pursue, with necessary approvals.

The risk process for qualitative analysis (to develop the risk register) and quantitative risk modelling is shown in Figure 8-1below. It is a live, iterative process - the risks are reviewed regularly, the cost and schedule risk contingencies will be re-checked at key points in the project life cycle, or at the request of the Project Manager.

For the risks identified for quantitative analysis, the cost to implement the treatment strategy will be estimated wherever possible to establish the validity of the treatment costs. The Quantitative Cost Risk Analysis (QCRA) and Quantitative Schedule Risk Analysis (QSRA) results inform the Project Manager of the current level of confidence in achieving the budget, key dates, cost range and earliest and latest achievable dates.

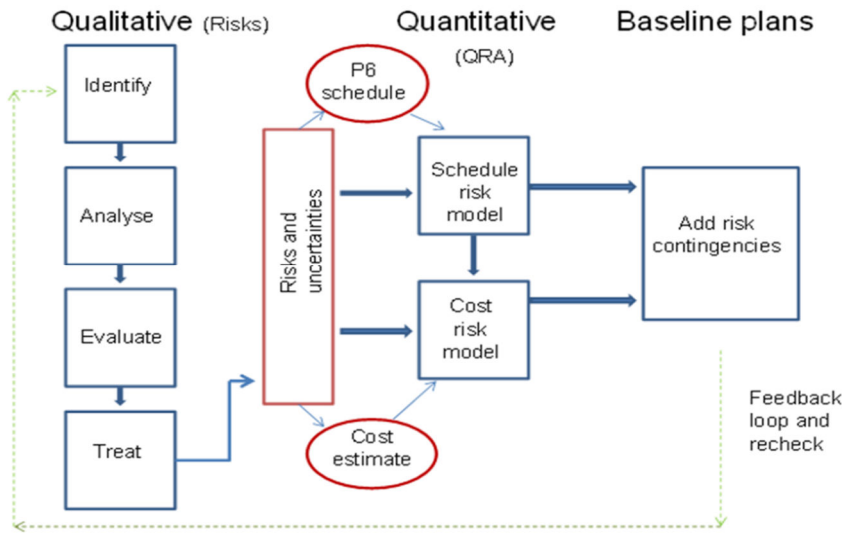


Figure 8-1 - Quantitative Risk Analysis

8.1. Quantitative Cost Risk Analysis (QCRA)

Quantitative Cost Risk Analysis (QCRA) to be undertaken at each Design Fix and as required by Traffic Economics team. The analysis uses two types of uncertainty as inputs into the model: estimating uncertainty and discrete risks. In order to analyse the impact of cost as a consequence of these two types of uncertainty the Risk Manager must work with the Project Manager and other members of the project delivery team to estimate the cost range of impacts for both the estimating uncertainty and discrete risks. The only difference in the inputs is that discrete risks relate to uncertain events which require a probability of occurrence to be estimated, whereas estimating uncertainty relates to the uncertainty associated with planned scope and has 100% probability.

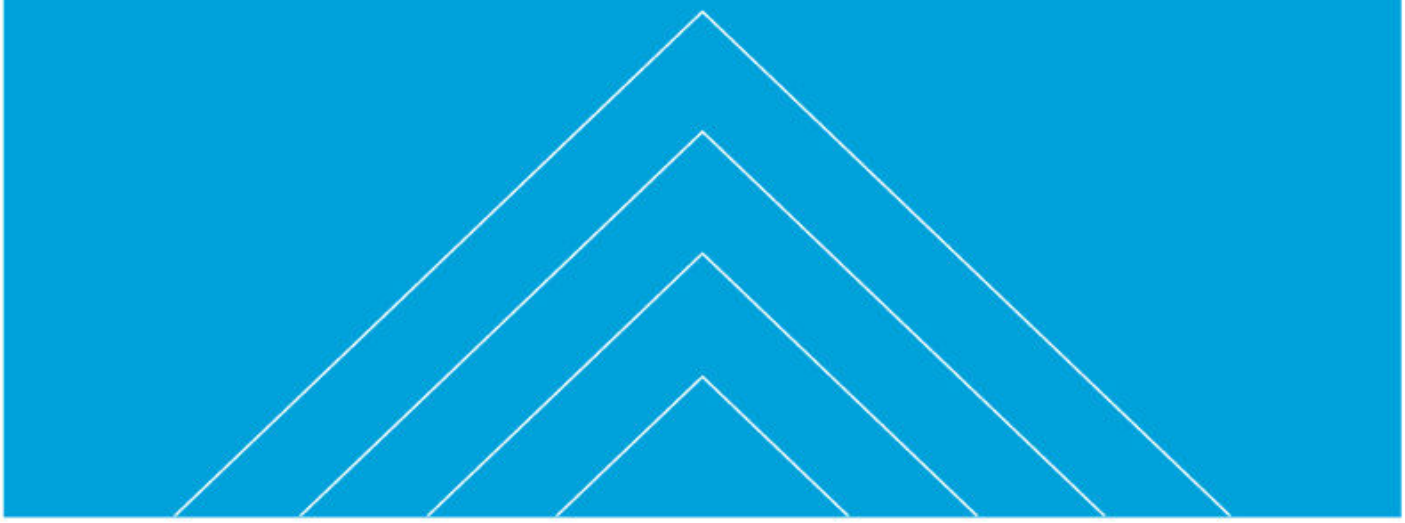
The results of the analysis show the level of confidence of achieving the planned project costs. It also identifies the individual discrete risks which could have the greatest impact on achieving project success, and the most significant cost uncertainty headings, via a Tornado graphical output. The P85 cost value will be used for internal Atkins risk cost reporting and Wiltshire Council Programme reporting purposes. P80 will be used for the financial case which is the outturn cost.

Appendix B shows a typical frequency distribution chart, presenting the range of total project costs with corresponding confidence levels (probabilities) and a cumulative curve. An example of a Tornado Graph showing the top cost influencers to total project costs is also shown. Tornado graphs can be displayed for estimating uncertainty, project risks or total project costs.

8.2. Quantitative Schedule Risk Analysis (QSRA)

Due to the relatively low complexity of the project it is not proposed to employ Quantitative Schedule Risk Analysis for delivery of the project. If delivery to programme is of particular concern to the Project Management Team, then this should be re-considered. Risk Analysis software is used to conduct schedule risk analysis, so the programme is to be produced in this software. This software uses the deterministic project schedule in Primavera P6 (with single values for activity durations and defined milestone delivery dates) as the starting point for schedule risk analyses.

Appendices



Appendix A. Sample Risk Register

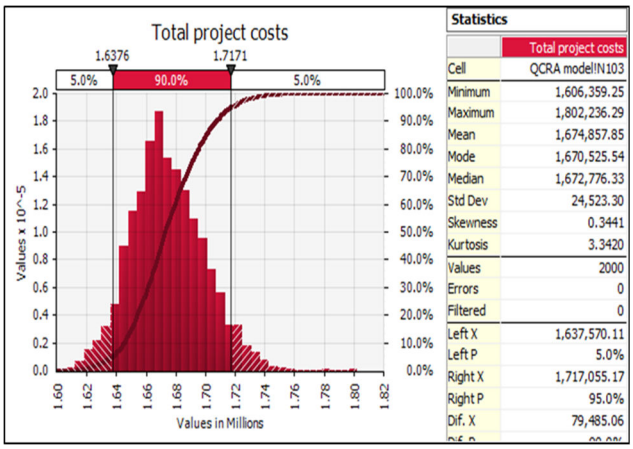
ATKINS FAITHFULL+GOULD

Project Name: SAMPLE TEMPLATE - PROJECT NAME , Review Date: ENTER DATE, Update Number: ENTER 1 FOR FIRST UPDATE

Spell Check

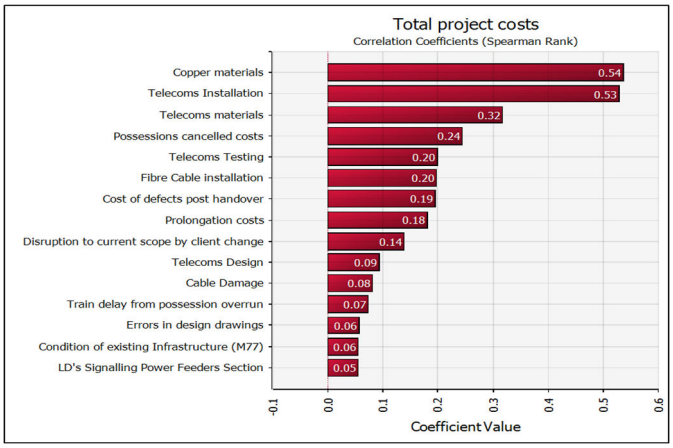
Index		Risk Information										Current - Qualitative				Treatment Plan		User Fields		
Order*	Risk Ranking*	Risk ID	Date Identified	Risk Status	Threat/Opportunity	Risk Title	Risk Description	Risk Type	Risk Source	Risk Owner	Prob	Cost	Schedule	Score*	Treat. Strategy	Treatment Plan	USER 1	USER 2	USER 8
1	7	R001	1-Dec-16	1-Open	Threat	Risk 1 - Discovering hazardous material more than estimate	During the survey, various areas have contaminations e.g. oil spill, mercury and lead	Technical	Construction	Dumrong O.	4 - High - 50%-75%	3 - Medium - 250K - 500K	4 - High - 2months - 3months	16	Accept	Treatment Plan Risk R1			2-Dec-12
2	30	R002	3-Dec-16	1-Open	Opportunity	Risk 2 - Potential Saving on Steel by Procure the steel earlier than plan	Client indicated that there could be fund available to pre-purchase the steel for the project. There are large amount of	Technical	General	Designer	5 - Very High - 75%-99%	5 - Very High - > 1M	1 - Very Low - < 2 weeks	25	Avoid	Treatment Plan Risk R2			
3	25	R003	4-Dec-16	1-Open	Threat	Risk 3 - Bid Price Higher than the Estimate	Due to the current market, there could be lack of competitiveness during bid period causing the bidders to	Market Factors	Market	Engineering	2 - Low - 10%-25%	5 - Very High - > 1M	4 - High - 2months - 3months	10	Reduce	Treatment Plan Risk R3	1		
4	8	R004	5-Dec-16	1-Open	Threat	Risk 4	Risk Description _ Risk 4	Market Factors	Design	Engineering	3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Transfer	Treatment Plan Risk R4			
5	9	R005	6-Dec-16	1-Open	Threat	Risk 5	Risk Description _ Risk 5	Commercial	Design	Owner	3 - Medium - 25%-50%	5 - Very High - > 1M	2 - Low - 2 weeks - 1 Month	15	Accept	Treatment Plan Risk R5			
6	10	R006	7-Dec-16	1-Open	Threat	Risk 6	Risk Description _ Risk 6	Staff / HR	Scope	Mike D.	3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept	Treatment Plan Risk R6			
7	11	R007	8-Dec-16	1-Open	Threat	Risk 7	Risk Description _ Risk 7	Reputational	General	Dumrong O.	3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Transfer	Treatment Plan Risk R7			
8	24	R008	9-Dec-16	1-Open	Threat	Risk 8	Risk Description _ Risk 8	Finance	Early Works	Owner	3 - Medium - 25%-50%	2 - Low - 100K - 250K	4 - High - 2months - 3months	12	Accept	Treatment Plan Risk R8	2		
9		R009	10-Dec-16	3-Closed - Merged	Threat	Risk 9	Risk Description _ Risk 9				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months		Accept		3		
10		R010	15-Feb-17	2-Closed - Retired	Threat	Risk 10	Risk Description _ Risk 10				5 - Very High - 75%-99%	1 - Very Low - <100K	1 - Very Low - < 2 weeks		Accept				
11		R011	16-Feb-17	5-Closed - Impacted	Threat	Risk 11	Risk Description _ Risk 11				5 - Very High - 75%-99%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month		Accept				
12	26	R012	17-Feb-17	1-Open	Threat	Risk 12	Risk Description _ Risk 12				5 - Very High - 75%-99%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	10	Accept				
13	27	R013	18-Feb-17	1-Open	Threat	Risk 13	Risk Description _ Risk 13				5 - Very High - 75%-99%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	10	Accept		4		
14	12	R014	19-Feb-17	1-Open	Threat	Risk 14	Risk Description _ Risk 14				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
15	13	R015	20-Feb-17	1-Open	Threat	Risk 15	Risk Description _ Risk 15				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
16	14	R016	21-Feb-17	1-Open	Threat	Risk 16	Risk Description _ Risk 16				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
17	15	R017	22-Feb-17	1-Open	Threat	Risk 17	Risk Description _ Risk 17				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
18	16	R018	23-Feb-17	1-Open	Threat	Risk 18	Risk Description _ Risk 18				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
19	17	R019	24-Feb-17	1-Open	Threat	Risk 19	Risk Description _ Risk 19				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
20	18	R020	25-Feb-17	1-Open	Threat	Risk 20	Risk Description _ Risk 20				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
21	19	R021	26-Feb-17	1-Open	Threat	Risk 21	Risk Description _ Risk 21				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
22	20	R022	27-Feb-17	1-Open	Threat	Risk 22	Risk Description _ Risk 22				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
23	21	R023	28-Feb-17	1-Open	Threat	Risk 23	Risk Description _ Risk 23				3 - Medium - 25%-50%	5 - Very High - > 1M	4 - High - 2months - 3months	15	Accept				
24	1	R024	1-Mar-17	1-Open	Threat	Risk 24	Risk Description _ Risk 24				5 - Very High - 75%-99%	2 - Low - 100K - 250K	4 - High - 2months - 3months	20	Accept				
25	2	R025	2-Mar-17	1-Open	Threat	Risk 25	Risk Description _ Risk 25				5 - Very High - 75%-99%	2 - Low - 100K - 250K	4 - High - 2months - 3months	20	Accept				
26	3	R026	3-Mar-17	1-Open	Threat	Risk 26	Risk Description _ Risk 26				5 - Very High - 75%-99%	2 - Low - 100K - 250K	4 - High - 2months - 3months	20	Accept				
27	4	R027	4-Mar-17	1-Open	Threat	Risk 27	Risk Description _ Risk 27				5 - Very High - 75%-99%	2 - Low - 100K - 250K	4 - High - 2months - 3months	20	Accept				
28	31	R028	5-Mar-17	1-Open	Opportunity	Risk 28	Risk Description _ Risk 28				5 - Very High - 75%-99%	5 - Very High - > 1M	4 - High - 2months - 3months	25	Accept				
29	22	R029	6-Mar-17	1-Open	Threat	Risk 29	Risk Description _ Risk 29				5 - Very High - 75%-99%	3 - Medium - 250K - 500K	2 - Low - 2 weeks - 1 Month	15	Accept				
30	28	R030	7-Mar-17	1-Open	Threat	Risk 30	Risk Description _ Risk 30				5 - Very High - 75%-99%	1 - Very Low - <100K	2 - Low - 2 weeks - 1 Month	10	Accept				
31	29	R031	8-Mar-17	1-Open	Threat	Risk 31	Risk Description _ Risk 31				5 - Very High - 75%-99%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	10	Accept				
32	23	R032	9-Mar-17	1-Open	Threat	Risk 32	Risk Description _ Risk 32				5 - Very High - 75%-99%	3 - Medium - 250K - 500K	2 - Low - 2 weeks - 1 Month	15	Accept				
33	5	R033	10-Mar-17	1-Open	Threat	Risk 33	Risk Description _ Risk 33				5 - Very High - 75%-99%	4 - High - 500K - 1M	4 - High - 2months - 3months	20	Accept				
34	6	R034	11-Mar-17	1-Open	Threat	Risk 34	Risk Description _ Risk 34				5 - Very High - 75%-99%	4 - High - 500K - 1M	3 - Medium - 1month - 2 months	20					

Appendix B. QCRA Outputs



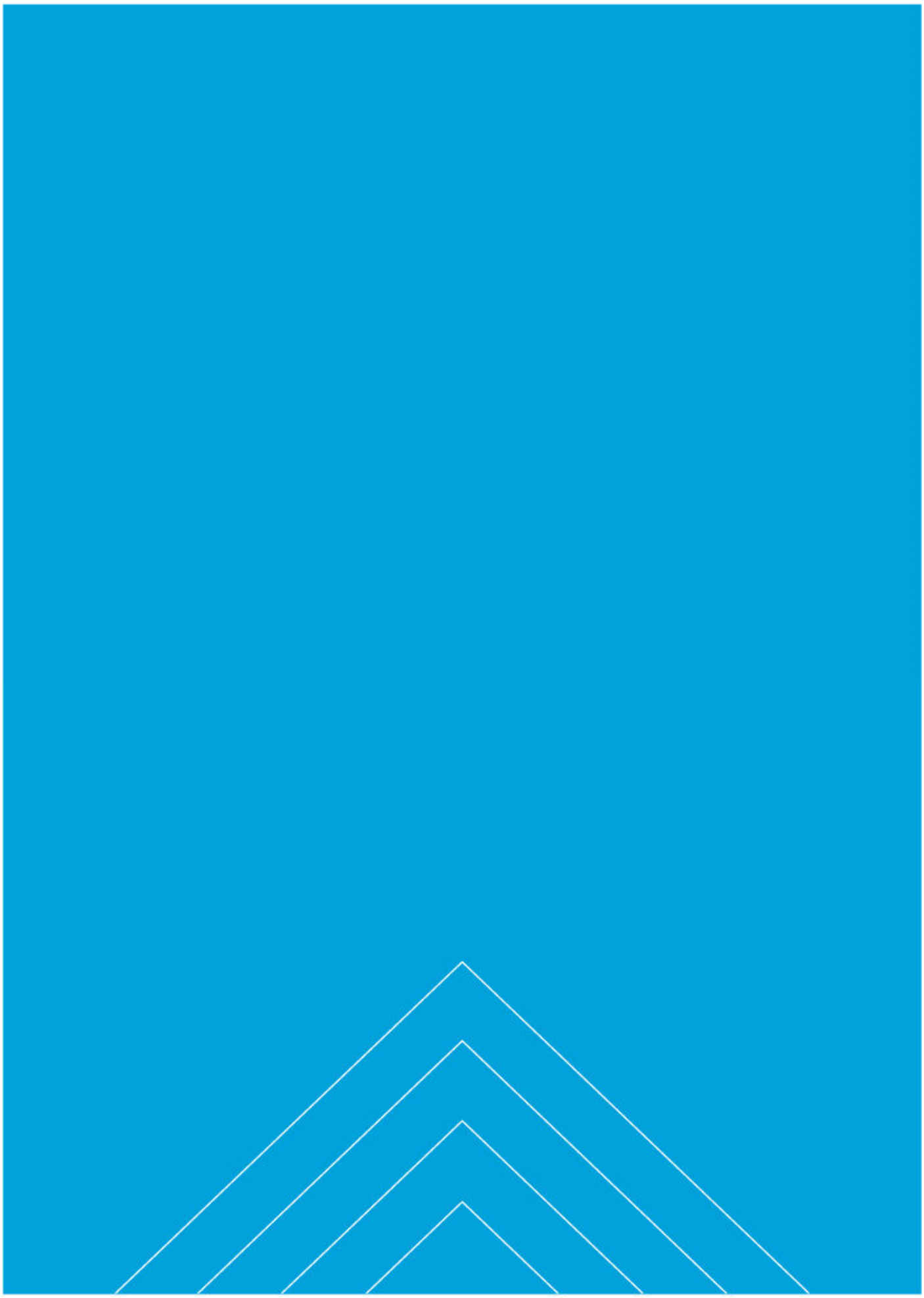
Total Project costs frequency and cumulative graph

A typical frequency distribution chart, presenting the range of total project costs with corresponding confidence levels (probabilities) and a cumulative curve.



Tornado graph of total project costs & risks

A typical example of a Tornado Graph showing the top cost influencers to total project costs. Tornado graphs can be displayed for estimating uncertainty, project risks or total project costs.



3rd Floor, County Gate,
County Way, Trowbridge BA14 7FJ

Order	Risk Ranking	Risk ID	Month Raised	Risk Status	Risk Title	Risk Type	Risk Owner	Cause	Risk Description	Effect	Note
2		LR G2	1-Jul-20	Open	Material dispsal classification/Contractor's disposal cost increase	Market Factors	[redacted]	Unforseen disposal of unaccepted material is needed.	Risk that disposal classification may vary from designated acceptable or U1A, Contractor disposal cost (rate) for offsite disposal for UA1B or U2 unacceptable material may be higher than the contract figure.	Additional costs to contract, limited delay	21/9 - Quoted costs for disposal within tender offers. Risk amended to classification
4		P5 U6	1-Jul-20	Open	"Abandoned" Oil Pipeline.	Technical	[redacted]	"Abandoned" Oil Pipeline clashes with proposed northbound carriageway.	"Abandoned" Oil Pipeline - Potential clash with proposed northbound carriage	Depth of pipe believed to be sufficient not to cause conflict (as U5, above). Risk is that pipe needs removal/gets breached and contaminated material needs removal.	13/9 - trial hole invest, unable to excavate as deep as it is. Requirements and design updated for protection of pipes, concrete slab on top. Has been included in tender and priced for. However this is in addition within the vacinity. Lower risk tof hitting pipe / changing design for the pipe.
5		P5 U4	1-Jul-20	Open	11kV services crossing and parallel to highway links	Technical	[redacted]	Diversion to services	There is a risk that 11kV services will intersect with highway links requiring diversions over and above allowances	High cost of service diversions and risk of delay to programme	13/9 - still valid, there are 4 sections of 11kv diversion, with costs included for diversions. This risk is for over and above what has been allowed for in the estimates etc. ongoing discussions re services.
7		P5 D1	1-Jul-20	Open	Nat Grid EHV Cable	Technical	[redacted]	Nat Grid EHV Cable above carriageway	Overhead Clearance to proposed Carriageway / 10m proximity limit to pylon.	National Grid drawings confirm there is no requirement to drop carriageway section and that proximity to pylon base minimum 10m.	13/9 - risk update - proximity to Ngrid has been addressed, approved by NG. Question by 33 kv cable, do not want it to be any closer to their pylon can be moved as long as within requirements. Any diversions will be lowered rather than moved.
8		LR D1	1-Jul-20	Open	Final Design Geometry	Technical	[redacted]	Detailed design requires additional lane/extends the carriageway works	Final Design Geometry revised by Detailed Design work	BoQ construction cost estimate proves insufficient; detailed design adds additional lane/extends carriageway works.	13/9 - dd complete, presented to wiltshire, with technical notes and layout endorsed and priced. May be minor changes required. Planning requirements, chippenham rugby football clu, access intmal roads, a350 access would change layout. Very unlikely to change, minor only.
9		G S2	1-Jul-20	Open	Invasive Plant Species	Environmental	[redacted]	Invasive species in proximity to proposed works	Invasive Plant Species may be found on site(Japanese Knotweed, Himalayan Balsam etc.)	Allow for disposal/on-site burial costs	13/9 - could reduce as completed surveys. Project team to confirm if the cost impact assessment is too high.
10		BR U4	1-Jul-20	Open	33kV service crossing scheme	Technical	[redacted]	33KV service crossing scheme	There is a risk of diversion Underground 33kV service crossing verges and kerbline north end/Bumpers roundabout (300mm approx.) and LV A420 W exit & A350 N-bnd stopline.	High cost of service diversions and risk of delay	13/9 - risk updated and reworded to clarify. Original risk: Underground 33kV service crossing verges and kerbline north end/Bumpers roundabout (300mm approx.) and LV A420 W exit & A350 N-bnd stopline.
11		BR U2	1-Jul-20	Open	Diversion of BT Services	Technical	[redacted]	BT Services diversion costs	Cost of BT Services proves to be insufficient in BoQ	Need and estimated cost of diversion included in BoQ proves insufficient	13/9 - cost of diversions included, however risks are over and above
12		BR D6	1-Jul-20	Open	Nat Grid EHV Cable Overhead Clearance	Technical	[redacted]	Nat Grid EHV Cable in proximity to carriageway	Nat Grid EHV Cable Overhead Clearance to proposed Carriageway / 5m proximity limit to pylon.	National Grid confirm that proximity to pylon base can be reduced to 5m (maintenance access only is required). Risk is that proximity decision at Bumpers Farm location is overturned.	13/9 - no objection letter from NG, risk minimal that we need to tweak design due to HV infrastructure.
13		BR D4	1-Jul-20	Open	Presence of contamination to existing road surface	Technical	[redacted]	Tar bound contamination of existing	Tar bound contaminated road planings (existing surface) E/O allowance	Presence of tar bound on site.	13/9 - payment investigation held late 2022, followed by chemical and other pavement testing. No contamination identified in tested material. There are gaps, so risk remains in-between
14		R66	28-Apr-22	Open	Existing underbridge form of construction is not a simple deep slab and does require a grillage analysis for assessment		[redacted]	Insufficient information on existing structure	There may be additional bridge assessment scope required	Additional cost / delay	13/9 - design finalised, impact on bridge is anticipated to be minimal
15		R65	28-Apr-22	Open	Network Rail require additional technical approval procedures for works at NR bridge		[redacted]	Works adjacent/under NR bridge	NR technical approval procedures enforced	Delay to design	13/9 - design stage BAPA signed off and paid by wiltshire, NR were involved and informed of design, acceptance in principal, subject to programme and RAMS by the contractor.
17		P5 G1	1-Jul-20	Open	Unforeseen Ground Conditions	Technical	[redacted]	Unforeseen Ground Conditions	Unforeseen Ground Conditions: Requires additional excavation, disposal off-site of U1A unacceptable arisings and import of capping	Additional costs and delay to project	14/09/23 - This is still and will continue to be a risk. Keep open.
19		P4 D2	1-Jul-20	Open	Drainage design	Technical	[redacted]	Drainage design falls short of requirements.	Drainage Design assumptions prove short of actual scheme requirements	Drainage element of construction costs prove insufficient	14/09/23 - Design has been completed and priced. Some changes will be required, but no delays or significant costs are expected (however may happen). Probability reduced from 20% to 9%
20		P4 D1	1-Jul-20	Open	Possible redesign of carriageway section	Technical	[redacted]	Headwall (N) too far.	Palisade Fence Rail Bridge Headwall (N) extends too far into carriageway affecting Highway geometry	Re-design carriageway cross section along this length	14/09/23 - The design has been completed, checked and priced. Probability that this risk will materialise is reduced from 25% to 9%. **Similar to Risk "LR-D1 (line 16)" - review after QCRA is completed in late September 2023**
33		LR U4	1-Jul-20	Open	Bumpers roundabout: medium pressure gas main in close proximity of works.	Technical	[redacted]	Gas main crossing scheme	Medium pressure Gas Main <3m of works or C2 wrong and conflicts works: (C2 indicates) running across eastern side of roundabout and crossing stopline on south side of roundabout.	Some 100m length in close proximity of works (C2 indicates no direct impact on alignment). Hand dig rate included in BoQ, under-estimate	13/9 - risk update: a350 road crossing, only one highlighted now, as gas main diversion. Trail holes, gpr havent discovered anymore. Ongoing risk remains
36		R64	28-Apr-22	Open	Existing structures - Missing as-built information for existing bridges that prevents details consideration of their capacities	Technical	[redacted]	Records not provided / unable to be provided by client.	Unknown bridge foundations may clash with current design.	Over design required / site investigations / departures / capturing residual risks	20/9 - reviewed 14/09/23 - Keep open. Probability and Time impact reduced because Drainage design has looked in to the potential clashes and made all that is currently possible to avoid them.
38		BR U1	1-Jul-20	Open	Mobile Phone Mast relocation	Technical	[redacted]	Mobile Phone Service diversion E/O to bumbers	Mobile Phone Mast - Service Diversion E/O to Bumpers BoQ figure - Not Currently in scope If relocate then service diversion	Risk of additional costs/BoQ under-estimate Contractor Delays, E/O Utilities costs.	13/9 - no relocation of mobile phone mast anticipated, all services will go to and rom; may be owned by BT, etc. dealt with as part of commission. May 23 - Design has been developed to avoid this risk.
40		P4 E1	1-Jul-20	Open	Ecological Constraints	Environmental	[redacted]	Results of ecological surveys	Unexpected results from ecological survey/Protected species or habitats may be discovered impacting on scheme delivery.	Increased design costs and construction costs if additional mitigation required. Cost of more land required for mitigation.	20/9 - full team workshop - confirmed risk . 21:12:22: Environmental surveys completed and lacham Bat data analysis is 50% complete. No show stoppers on main A350, however, Lacham Bat results are still to be confirmed. There is potential that the result will return the presence of sensitive bats. Project team to review Action 1 to determine if needed to mitigate risk Last set of environmental survey to be completed by end of Oct. 80% of survey works currently shows no show stoppers.
68		R67	28-Apr-22	Open	Requirements of key stakeholders	Technical	[redacted]	As a result of need for land take to deliver, etc. stakeholder requirements.	There is a risk of significant opposition to aspects of the project.	Resulting in requirements for additional design and late changes to the scheme.	14/09/2023 - Completed and Priced Detailed design does not require any additional land. Focus Groups have been consulted with and a webinar held, so the oposition is expected to reduce as all the stakeholders have been informed and/or consulted. Probability reduced from 40% to 15%
71		R70	21-Dec-22	Open	Waste Material Management	Environmental	[redacted]	Project is expected to generated about 66,000 Tonnes of wastes.	There is a risk that wastes generated may not reusable locally	Extra disposal cost Environmental impact that will trigger a planning Application and full EIA.	20/9 - full team workshop - confirmed. Advanced Works are proposed to remove unclassified overburden material. A compliant Material Management Plan is expected to be prepared by the contractor.
72		G L1	1-Jul-20	Open	Landscape works	Technical	[redacted]	Lack of information regarding requirements for landscaping works	Landscape works not fully defined.	Contract price under-estimated	20/9 - full team workshop - confirmed Landscape proposals have been included in the priced design. All communicated to WC subject mater specialists
74		P5 U1	1-Jul-20	Open	Service Diversion (EXA /OCU)	Technical	[redacted]	Instalcom and/or Vitesse (EXA, ZAYO) services in verge	there is a risk of service diversions being required during advanced works to existing EXA ducting	leading to cost / time impacts over and above what has been allowed for	13/9 - risk updated and reworded for clarity. Increased prob to 50% C2s suggest clash
75		BR U5	1-Jul-20	Open	W&W medium pressure gas main crossing A350	Technical	[redacted]	Gas main crossing scheme	W&W Medium pressure 180mm Gas Main <3m of works or C2 wrong and conflicts works	Some 100m length in close proximity of works (C2 indicates no direct impact on alignment). Hand dig rate included in BoQ, under-estimate	20/9 - confirmed with Lewis, unlikely it will need diverting but does need to be mitigated. 13/9 - duplicate, check (not a duplicate risk rewritten to confirm)
77		BR U3	1-Jul-20	Open	Unforeseen Services/Services not identified	Technical	[redacted]	Unidentified services	There is a risk that services are not identified.	Nature of impact difficult to foresee; delays to programme and costs can not otherwise be mitigated against and so will be high.	13/9 - remains however prob reduced from survey work, trial holes etc.
79		R48	1-Jul-20	Open	PROW yet to be concluded Saltisford Lane		[redacted]	As a result of: There is currently no formal crossing on the A350 especially as the road will be converting to a dual carriage way. There is an ongoing conversation with the Wiltshire Council for the approval of the PRoW diversion plan.	The Diversion plan for PrOW may not be accepted by the Wiltshire council	Extra cost to put a in place a PRoW agreeable to the Wiltshire council.	20/9 - full team workshop - confirmed to remaining risk. 14/09/2023 - PROW has been concluded and all parties (WC, stakeholders and public) informed of the design proposals.
80		R47	1-Jul-20	Open	Insufficient room for construction within existing Highway Corridor		[redacted]	As a result of: requirement to work within the existing constraints and the corridor allocated for the dualling	There is a risk that : Additional land will be required	Resulting in : Additional time and cost required for land re-categorisation, negotiations, and possibly DCO.	14/09/2023 - Design produced with all elements within the existing highways boundary. Risk reduced significantly. **Similar to Risk "LR-D1 (line 16)" - review after QCRA is completed in late September 2023**
81		R54	1-Jul-20	Open	Scope of Works extends beyond available budgets: 1) Southbound carriageway requires resurfacing (not presently in scope of works), 2) Tie-in or incorporation with proposed Revenue schemes		[redacted]	As a result of inflationary pressures pushing cost out. Potential additional works which are not yet understood (public engagement ongoing to gather new requirements)	There may be additional work scope added to the project (e.g. Works at Drakes Crescent and/or noise barrier)	Cost escalation loss of viability	03/02/23: Engagement with the public currently ongoing. Outcome will greatly impact the assessment of this risk. 14/09/23 - Some amendments to the design may be required when contractors ties in to the existing layout. Cost reduced from "Very High" to "Medium" and Probability reduced from 50% to 25%
82		R53	1-Jul-20	Open	Drainage - Outfall may not be viable (condition. Discharge location etc). Additional item to Drainage Design completion identifies issues with proposed OBC works		[redacted]	As a result of: Outdated and substandard original design of the bypass (in 1990s).	There is a risk that : Connections to existing watercourses outside of the highways boundary may be required.	Resulting in : Programme duration increase and cost escalation	20/9 - outside of the scheme, risk of complaints (from wiltshire etc.) re. flooding.
83		R50	1-Jul-20	Open	Bumpers Farm Business Park - acceptance local objections to design or permanent works footprint		[redacted]	Existing congestion at Bumpers Way.	There may be pushback from the business community because project does not provide improved access at bumpers Way.	Re-design exercise Extra cost	03/02/23: Indications from ongoing-engagements with the public are that the bumpers business community is quite supportive of the Risk may expire following outcomes from the ongoing public enaggements. 14/09/2023 - Design within existing boundary has been produced and communicated to all parties. Probability reduced.
85		NR1	13-Sep-23	Open	Low voltage network at Lackham roundabout		[redacted]	eastern verge southbound lane south of existing Lackham.	Risk of impacting network etc. for Lackham. eastern verge southbound lane south of existing Lackham.	adjust the design to reflect the presence of any unchartered services or to suit the location of the know services, if uncovered in an unexpected location.	13/9 - new risk added and defined with team
86		NR2	13-Sep-23	Open	Non performance by statutory undertaker		[redacted]	due to lack of resources / not sufficient notice given to undertaker / differing priorities / emergencies	there is a risk of non-performance by statutory undertakers	leading to delays to programme, cost escalation etc.	13/9 - new risk added and defined with team
87		NR3	14-Sep-23	Open	delay to advanced works		[redacted]	Advanced works are not complete before April 2024, ahead of the main works start.	Contractor of the main works will increase the prices due to late access to site and/or inflation furing the period.	Increased costs and delay to the programme	14/9 - new risk added with full team
88		NR4	20-Sep-23	open	approval process takes longer than allowed 3 months / Dft Approval / Additional work required to satisfy Dft concerns	Business Continuity	[redacted]	due to a 3 month allowance in the current programme, additional work required, dft delays	there is a risk of possible delays outside of the programme allowance	leading to additional delays,	20/9/23 - Nick - new business case approval risk, to be owned by wiltshire
91		NR5	20-Sep-23	Open	construction inflation	Commercial	[redacted]	due to basing our inflation on the current published index	there is a risk that the index used is inaccurate	leading to additional costs	20/9 - new risk added with David & Alex
92		NR6	20-Sep-23	Open	design supervision fee inflation	Commercial	[redacted]	due to the projection in business case model, showing a low inflation	there is a risk that the inflation number used is inaccurate	lading to additional costs	20/9 - new risk added with David & Alex
93		NR7	20-Sep-23	Open	final quantities exceed the BoQ	Commercial	[redacted]	due to the assumptions within the BoQ (e.g. measurements and possible changes)	there is a risk that the final quantaties exceed the BoQ	Leading to additional cost impacts	20/9 - new risk added with david, related to uninstucted works, possible schedule impacts if signficant
94		NR8	20-Sep-23	Open	Scope increases						20/9 - new risk added with David & Alex
95		NR9	20-Sep-23	Open	Chippenham rugby football club			due to request for access to football club from A350 by Chippenham Rugby football club	there is a design change risk including changes to quantaties (already priced)	leading to additional design costs and potential delays to the start of construction stage	20/9 - new risk added with David & Alex

Order	Threat/Opportunity	Phase	Current: Prob	Prob %	Cost	Schedule	Score: Current	Cost Min	Cost ML	Cost Max	Time Min	Time ML	Time Max	Assessment Notes	Prior Score [2 Reviews Prior]	Previous Review Score	Status since Last Review	(Blank)
2	Threat	4 & 5	2 - Low - 10%-25%	15%	3 - Medium - 250K - 500K	1 - Very Low - < 2 weeks		200,000.00	350,000.00	550,000.00	0	5	10	Allowance for less favourable risk classification:- U1B £30/m3 add cost U2 £350/m3 add cost Min - 5% as U1B & 1% U2 - no delay ML - 10% as U1B & 1% U2 - 1 week delay (£75K) Max - 20% as U1B & 1% U2 - 2 week delay (£150K)				
4	Threat	4 & 5	1 - Very Low - 0%-10%	10%	1 - Very Low - 1 - 100K	2 - Low - 2 weeks - 1 Month	2	1,000.00	50,000.00	100,000.00	10	15	20	13/9 changed scores see note, min 1k, max 100k. Time delays remain.				
5	Threat	4 & 5	1 - Very Low - 0%-10%	10%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	2	100,000.00	125,000.00	200,000.00	10	15	20	13/9 - reduced costs as costs have been allowed for this risk is over and above. Time impacts remain unchanged				
7	Threat	4 & 5	1 - Very Low - 0%-10%	3%	1 - Very Low - 1 - 100K	3 - Medium - 1 month- 2 months	3	10,000.00	20,000.00	30,000.00	20	30	40	13/ 9 - costs reduced significantly, see update notes. No longer risk of moving pylon (£1m), we may change design if issues with the cable. Will know more when hear back from SSE. Costs to SSE rather than NG. Revised costs to cover NG involvement and advice.				
8	Threat	4 & 5	1 - Very Low - 0%-10%	5%	3 - Medium - 250K - 500K	5 - Very High - > 3months	5	200,000	300,000	400,000	20	30	40	13/9 - 2 wks delay, 150k plus our costs, 200, 300, 400k. Min delay 2 weeks.				
9	Threat	4 & 5	1 - Very Low - 0%-10%	3%	4 - High - 500K - 1M	4 - High - 2months- 3months	4	100,000.00	500,000.00	1,000,000.00	5	20	50	13/9 - changed prob reduced to 3% as surveys, however discovery during advanced works.				
10	Threat	4 & 5	1 - Very Low - 0%-10%	10%	3 - Medium - 250K - 500K	3 - Medium - 1 month- 2 months	3	250,000.00	375,000.00	500,000.00	20	30	40	13/9 - Consideration of prolongation within costs, 2 weeks allowance (£75k / pw) plus additional costs as most likely. max 3 weeks				
11	Threat	4 & 5	2 - Low - 10%-25%	24%	3 - Medium - 250K - 500K	3 - Medium - 1 month- 2 months	6	150,000.00	250,000.00	350,000.00	20	30	40	13/9 - reduced probability due to mitigations, reviewed costs to include time impacts increased slightly.				
12	Threat	4 & 5	1 - Very Low - 0%-10%	3%	3 - Medium - 250K - 500K	3 - Medium - 1 month- 2 months	3	250,000.00	350,000.00	500,000.00	20	25	40	13/9 - risk reduced and costs reduced, as diversion v.unlikely. Halved costs. Time impacts contractor may need to standby.				
13	Threat	4 & 5	1 - Very Low - 0%-10%	9%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	2	100,000.00	175,000.00	250,000.00	5	10	15	13/9 - contractor will have to remove contamination, more expensive desposal costs, segregation etc. associated elays				
14	Threat	4 & 5	2 - Low - 10%-25%	10%	2 - Low - 100K - 250K	3 - Medium - 1 month- 2 months	6	100,000.00	150,000.00	200,000.00	20	30	40	13/9 - reduced probability to 10% following updates recently. There is residual risk. Could be higher costs maximum, redesign and waiting associated costs.				
15	Threat	4 & 5	1 - Very Low - 0%-10%	10%	2 - Low - 100K - 250K	3 - Medium - 1 month- 2 months	3	100,000.00	150,000.00	200,000.00	20	30	40	13/9 - increased costs reduced prob , contractor stand down, nr endorsement etc. construction stage BAPA with NR				
17	Threat	4 & 5	2 - Low - 10%-25%	25%	3 - Medium - 250K - 500K	3 - Medium - 1 month- 2 months	6	200,000.00	300,000.00	450,000.00	20	30	40	20/9 - confirmed - Base construction cost estimate for excavation and road construction (capping) assumes equivalent actual worst case from A350 Phase 3. Allowance for min 1500m3 additional fill+ 1 week critical delay, ML 2800m3 additional fill + 1 week critical delay Max 3750m3 additional fill + 2 week critical delay				
19	Threat	4 & 5	1 - Very Low - 0%-10%	9%	3 - Medium - 250K - 500K	3 - Medium - 1 month- 2 months	3	250,000.00	375,000.00	500,000.00	20	30	40	20/9 - costs align with schedule delays as per other risks				
20	Threat	4 & 5	1 - Very Low - 0%-10%	9%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	2	100,000.00	175,000.00	250,000.00	10	15	20	20/9 - confirmed.				
33	Threat	4 & 5	2 - Low - 10%-25%	15%	4 - High - 500K - 1M	3 - Medium - 1 month- 2 months		500,000.00	600,000.00	700,000.00	20	30	40	13/9 - Probability reduced, see notes. Cost impacts reviewed, Gas diversions costs fairly high, however max of £1m worked through and reduced. £200 for diversion itself, plus programme delays. Not on critical path, can do work elsewhere to minimise disruption.				
36	Threat	4 & 5	2 - Low - 10%-25%	24%	1 - Very Low - 1 - 100K	3 - Medium - 1 month- 2 months	6	1,000.00	75,000.00	150,000.00	5	10	15	20/9 - reduced as risk better undertood now, and design completed. Costs lower as anticipate to work on other areas during redesign. 14/09/2023 - Time impact reduced by a factor of 3				
38	Threat	4 & 5	1 - Very Low - 0%-10%	3%	3 - Medium - 250K - 500K	3 - Medium - 1 month- 2 months	3	250,000.00	375,000.00	500,000.00	20	30	40	13/9 - delay of services by 1 month / 2 months, and identification of potential locations etc.				
40	Threat	4 & 5	2 - Low - 10%-25%	11%	4 - High - 500K - 1M	4 - High - 2months- 3months	8	100,000.00	375,000.00	1,500,000.00	5	20	80	20/9 - confirmed. worst case is bats / badgers moving in following last survey befoee / during construction, 80m, could be critical path. however min could be a few weeks, Schedule impact here assessed is to cover the time needed for Planning Application and the full Environmental Impact Assessment (EIA). Agree that the impact and delays may be significan. But at this stage of the design the Cost and Time impacts can be reduced. Costs were: 0.5m, 0.75m and 1m Time impacts were: 300, 360, 540				
68	Threat	4 & 5	2 - Low - 10%-25%	15%	2 - Low - 100K - 250K	1 - Very Low - < 2 weeks	4	10,000.00	100,000.00	250,000.00	1	5	20	20/9 - team review - Reduced Min and ML costs . Risk is possibly covered under the comms plan				
71	Threat	3, 4, & 5	1 - Very Low - 0%-10%	10%	4 - High - 500K - 1M	5 - Very High - > 3months	5	10,000.00	400,000.00	1,000,000.00	5	10	25	20/9 -team review, confirmed. low probability but may be contaminated material costly to dispose, up to £1m, worst case. Schedule impact here assessed is to cover the time needed for Planning Application and the full Environmental Impact Assessment (EIA) Cost impact is to cover potential cost of disposal. 14/09/2023 - Reduced Min and ML costs from 0.5m and 0.75m				
72	Threat	4 & 5	2 - Low - 10%-25%	15%	3 - Medium - 250K - 500K	2 - Low - 2 weeks - 1 Month	6	150,000.00	200,000.00	300,000.00	10	15	20	20/ 9/23 - confirmed. Could cost more to review design and proposed mitigations. Reduced COsts from 0.25m, 0.375m and 0.5m				
74	Threat	4 & 5	4 - High - 50%-75%	60%	4 - High - 500K - 1M	3 - Medium - 1 month- 2 months	16	500,000.00	750,000.00	1,000,000.00	20	40	50	13/9 - costs reviewed, currently £85k, not including a350, £300k + diversion costs.				
75	Threat	4 & 5	2 - Low - 10%-25%	15%	2 - Low - 100K - 250K	3 - Medium - 1 month- 2 months	6	76,000.00	170,000.00	250,000.00	5	20	40	20/9 - rediversion 20k, plus programme implications (75k p/w). Min: 75k, 1 week delay, plus £1k most likely: 4wks for gas comp to come back however 2wks delay for contractor = 150k, plus 20k. max: 250k, 200 contractor, 50k gas comp Cost plus critical delay will be looking to complete as ADWS, mitigation to get right first time.				
77	Threat	4 & 5	2 - Low - 10%-25%	20%	4 - High - 500K - 1M	3 - Medium - 1 month- 2 months	8	500,000.00	750,000.00	1,000,000.00	20	30	40	13/9 - reduced probability due to surveys, etc.				
79	Threat	4 & 5	1 - Very Low - 0%-10%	3%	2 - Low - 100K - 250K		2	-	50,000.00	250,000.00	1	5	10	Min: Do nothin ML: Cost of 600m of footway to Joint the Easern Lane bridge Max: Cost of having a footbridge across the Dual carriage road at the current location of the informal crossing.				
80	Threat	4 & 5	1 - Very Low - 0%-10%	3%	1 - Very Low - 1 - 100K	1 - Very Low - < 2 weeks	1	-	20,000.00	100,000.00	1	5	10					
81	Threat	4 & 5	3 - Medium - 25%-50%	25%	4 - High - 500K - 1M	3 - Medium - 1 month- 2 months	12	50,000.00	500,000.00	1,000,000.00	1	5	10	Finger in the air assessement for: Min: cost of Drake Crescent works ML: In between Min and Max. Max: Noise barrier in place				
82	Threat	4 & 5	1 - Very Low - 0%-10%	3%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	2	50,000.00	100,000.00	250,000.00	1	5	10	20/9 - contractor may be instructedto remove obstruction to allow drainage to work properly.				
83	Threat	4 & 5	2 - Low - 10%-25%	10%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	4	-	50,000.00	250,000.00	1	5	10	20/9 High level cost assessment only 14/09/2023 - reduced the probability and costs. Risk mitigated during the design.				
85	Threat	4	2 - Low - 10%-25%	15%	2 - Low - 100K - 250K	2 - Low - 2 weeks - 1 Month	4	100,000.00	150,000.00	250,000.00	10	15	20	13/9 - if identified 1/2 weeks to resolve, considering £75 p/w				
86	Threat	4 & 5	4 - High - 50%-75%	50%	4 - High - 500K - 1M	3 - Medium - 1 month- 2 months	16	100,000.00	600,000.00	1,000,000.00	20	35	40	13/9 - higher end 50% probability, cumulative non performance of any, across 14m progrmme				
87	Threat	4 & 5	3 - Medium - 25%-50%	25%	2 - Low - 100K - 250K	3 - Medium - 1 month- 2 months	9	10,000.00	50,000.00	200,000.00	1	10	20					
88	Threat		2 - Low - 10%-25%	25%	3 - Medium - 250K - 500K	5 - Very High - > 3months	10	50,000.00	100,000.00	500,000.00	20	60	240	could take an additional 3 months. Cost: Indexation within contract applying to any delay.				
91	Threat		4 - High - 50%-75%	50%	2 - Low - 100K - 250K	0 - Negligible	8	50,000.00	100,000.00	150,000.00	0	5	10	20/9 - high prob 50% that the index will change, however the impacts to be considered. If we need to redesign scheme element, redesign. If this risk occurs there could be a financial impact and not a schedule impact for the minimum, for e.g. if index goes up 1% - covered in contract only impact is us updating our figures. ML: small delay. depending on change control there could be processes to be governed.				
92	Threat		4 - High - 50%-75%	50%	1 - Very Low - 1 - 100K		4	25,000.00	50,000.00	100,000.00	0	0	0	20/9 - when calculated b.case, delivery year of 25/26 it was suggested to use low inflation.				
93	Threat		5 - Very High - 75%-99%	75%	3 - Medium - 250K - 500K	2 - Low - 2 weeks - 1 Month	15	-	200,000.00	500,000.00	0	5	15	20/9 - fairly certain that it will vary however the impact is uncertain. There is a possibility of being under also. Potential benefits so minimum could be 0. min: 1 item varies by 1 unit, so there is insignificant cost and time impacts. ML: £200k and 5 days Max: realistic worst case 2%				
94	Threat		4 - High - 50%-75%	51%	3 - Medium - 250K - 500K	3 - Medium - 1 month- 2 months	12	50,000.00	250,000.00	500,000.00	0	20	40	20/9 - prob high/ 50% , impact depedant on number. Programme can vary from 0 to 2m. Min: cost associated with minimal changes £50m				
95	Threat		4 - High - 50%-75%	60%	3 - Medium - 250K - 500K	4 - High - 2months- 3months	16	200,000.00	400,000.00	500,000.00	20	80	120	20/9 - 60% probability, as we ar aware of access request. Could take another few months to redo design, risk assessment, road safety audit - 3 months minimum. Costs could be £300k for the design without delays, however if they tell us later (Feb for e.g and not apprved until march then contractor start 3m later) Min: provision may be descoped, then the impact would be lower, smaller scale redesign. ML: + 100k contractor delays Max : oppositions, public right of way for e.g, up to 6m, design cost around 300k still, contractor costs plus pricesses				

Order	Treatment Plan	Treatment Plan - Actions	Plan Owner	Next Review Date	Target: Prob	Prob %	Cost	Score: Target	Cost Min	Cost ML	Cost Max	Time Min	Time ML	Time Max	Included in QCRA Y/N
2	Undertake trial pitting, CBR and suitably robust SI survey with lab testing as part of detailed design	1-Undertake trial pitting/material testing to mitigate potential delay impact. Could be avoided by redesign to avoid impacted areas but otherwise risk accepted. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		2 - Low - 10%-25%	15%	3 - Medium - 250K - 500K		200,000.00	350,000.00	550,000.00	0	5	10	Y
4	Price for: E-O service diversion and prolongation costs.	1-Commence C3/C4 process and consultation with Instalcom/Vitesse in advance of the works. Include extra-over costs in risk register for short fall in estimate. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2-Price for: E-O service diversion and prolongation costs. -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by: Alex Malumud -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	5%	3 - Medium - 250K - 500K	3	250,000.00	375,000.00	500,000.00				y
5	Price for service diversions in main construction cost estimate.	1-C3 estimate received. Commence C4 process in advance of the works. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2-Price for service diversions in main construction cost estimate. -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3- -by: Alex Malumud -due by: 00-Jan-00 [Status:]; 4- -by: Alex Malumud -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	0%	3 - Medium - 250K - 500K	3	250,000.00	375,000.00	500,000.00				y
7	Design out risk, through topographic survey and close consultation with National Grid.	1-Design out risk, through topographic survey and close consultation with National Grid. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	2%	4 - High - 500K - 1M	4	500,000.00	750,000.00	1,000,000.00				y
8	Undertake trial pitting, CBR and suitably robust SI survey with lab testing as part of detailed design	1-Apply SI results in identifying classification grading of "unsuitable" material in Spec and BOQ. Provide schedule of earthworks quantities by type and works location. Allow extra-over costs in Risk register. - by: -due by: 00-Jan-00 [status:]; 2- -by: 0 -due by: 00-Jan-00 [Status:]; 3- -by: 0 -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	4 - High - 500K - 1M	4							y
9	Allow for cost of disposal (none included in BoQ as not found on site).	1-Allow for the cost of disposal (none included in BoQ as not found on site). - by: Alex Malumud -due by: 30-Mar-23 [status: Ongoing]; 2- -by: Alex Malumud -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	0%	4 - High - 500K - 1M	4	500,000.00	750,000.00	1,000,000.00				y
10	1. GPR surveys. 2. Consideration in design nad operation. Fallback - Price for service diversions in main construction cost estimate.	1-C3 estimate received. Commence C4 process in advance of the works. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		2 - Low - 10%-25%	15%	2 - Low - 100K - 250K	4	100,000	175,000	250,000				y
11	Price for service diversions in main construction cost estimate.	1-Commence C3/C4 process in advance of the works. Include extra-over costs in risk register - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2-Price for service diversions in main construction cost estimate. -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	2%	2 - Low - 100K - 250K	2	100,000.00	175,000.00	250,000.00				y
12	Design out risk, through topographic survey and close consultation with National Grid.	1-Design out risk, through topographic survey and close consultation with National Grid. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		2 - Low - 10%-25%	15%	2 - Low - 100K - 250K	4	100,000.00	175,000.00	250,000.00				y
13	Undertake PAK, WAC and Core testing at design stage	1-Allow E/O estimate in risk register for contaminated road planings - by: Alex Malumud -due by: 30-Jan-23 [status: Ongoing]; 2-Undertake PAK, WAC and Core testing at design stage -by: Alex Malumud -due by: 30-Nov-22 [Status: Completed]; 3-Assess survey data with isopach model to determine impact if any. -by: Donovan Greyling -due by: 30_Jan-23[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		2 - Low - 10%-25%	15%	1 - Very Low - 1 - 100K	2	1,000.00	50,000.00	100,000.00				y
14	TBC		[redacted]		2 - Low - 10%-25%	15%	1 - Very Low - 1 - 100K	2	1,000.00	50,000.00	100,000.00				y
15	Early engagement with NR, submission of Asset Protection Initial Enquiry Questionnaire	1-Early engagement with NR, submission of Asset Protection Initial Enquiry Questionnaire - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	1 - Very Low - 1 - 100K	1	1,000.00	50,000.00	100,000.00				y
17	Undertake trial pitting, CBR and suitably robust SI survey as part of detailed design	1-Undertake trial pitting, CBR and suitably robust SI survey as part of detailed design - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	3 - Medium - 250K - 500K	3	200,000.00	300,000.00	450,000.00				y
19	Commission drainage survey & CCTV survey. Produce model of existing drainage system to establish viability of existing system.	1-Commission drainage survey & CCTV survey. Produce model of existing drainage system to establish viability of existing system. Include for E/O allowance for drainage construction costs in Risk register. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:];	[redacted]		2 - Low - 10%-25%	20%	2 - Low - 100K - 250K	4	250,000.00	375,000.00	500,000.00				y
20	Undertake landownership search and consult Network Rail	1-Client to engage with landowners & stakeholders. Add risk sum for redesign. And allowance for Network Rail brief. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2-Undertake landownership search and consult Network Rail -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	3 - Medium - 250K - 500K	3	1,000.00	50,000.00	100,000.00				y
33	Price for: E/O hand-dig and prolongation, redesign of alignment, major service diversion.	1-Commence C3/C4 process in advance of the works. Include extra-over costs in risk register - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2-Price for: E/O hand-dig and prolongation, redesign of alignment, major service diversion. -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	4 - High - 500K - 1M		500,000.00	750,000.00	1,000,000.00				y
36	2. Develop investigation approach for existing structures. 3. Dig trial holes as specified 4 Fallback: design modification at construction stage.	1-Develop investigation approach for existing structures. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2-Dig trial holes as specified -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3-Fallback: design modification at construction stage. -by: Alex Malumud -due by: 30-Nov-22[Status: Ongoing]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	1 - Very Low - 1 - 100K	1	1,000.00	50,000.00	100,000.00	2	5	10	y
38	2.C3/C4 and plan diversion works ahead of construction award	1-Commence C3/C4 process and consultation with Instalcom/Vitesse in advance of the works. Include extra-over costs in risk register for short fall in estimate. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	25%	3 - Medium - 250K - 500K	3	250,000.00	375,000.00	500,000.00				y
40	2. Ecological survey Phase 1 complete and scope agreed with County Ecologist for Phase 2. (80% completed).	1-Allow E/O time (prolongation) as presence of Bats is most likely to require a restriction on working times. - by: Alice Reiger -due by: 30-Nov-22 [status: Ongoing]; 2-Ecological survey Phase 1 complete and scope agreed with County Ecologist for Phase 2. -by: Alex Malumud -due by: 30-Nov-22 [Status: Completed]; 3-Complete the analysis of the Lacham Bat data -by: Alice Reiger -due by: 30-Jan-23[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	5%	3 - Medium - 250K - 500K	3	250,000.00	375,000.00	500,000.00				y
68	Early engagement with impacted stakeholders.	1-Early engagement with impacted stakeholders. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]						0	0	0				y
71		1-Project tem to continue to discuss options for disposal in the local area - by: Alice Reiger -due by: 30-Mar-23 [status:]; 2- -by: Alice Reiger -due by: 00-Jan-00 [Status:]; 3- -by: Alice Reiger -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]	Mar-23											y
72	Allow E/O for landscape work	1-Allow E/O for landscape work - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	3 - Medium - 250K - 500K	3	250,000.00	375,000.00	500,000.00				y
74	13/9 update! C3/C4 and plan diversion works ahead of construction award	1-Commence C3/C4 process and consultation with Instalcom/Vitesse in advance of the works. Include extra-over costs in risk register for short fall in estimate. - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2- -by: Alex Malumud -due by: 00-Jan-00 [Status:]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		1 - Very Low - 0%-10%	10%	4 - High - 500K - 1M	4	500,000.00	750,000.00	1,000,000.00				y
75	Price for: E/O hand-dig and prolongation, redesign of alignment, major service diversion.	1-Commence C3/C4 process in advance of the works. Include extra-over costs in risk register - by: Alex Malumud -due by: 30-Nov-22 [status: Ongoing]; 2-Price for: E/O hand-dig and prolongation, redesign of alignment, major service diversion. -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		2 - Low - 10%-25%	25%	3 - Medium - 250K - 500K	6	250,000.00	375,000.00	500,000.00				y
77	GPR survey of works areas	1-Commence C3/C4 process in advance of the works. Undertake GPR and trial pitting survey. Include estimate of costs in risk register - by: Alex Malumud - due by: 30-Nov-22 [status: Ongoing]; 2-GPR survey of works areas -by: Alex Malumud -due by: 30-Nov-22 [Status: Ongoing]; 3- -by: Alex Malumud -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]												y
79		1-Continue discussion with the Wiltshire Council to confirm approval of the PRoW diversion plan. - by: Alex Malamud -due by: 00-Jan-00 [status: Onging]; 2- -by: Sourav De -due by: 00-Jan-00 [Status:]; 3- -by: Sourav De -due by: 00-Jan-00[Status:]; 4- -by -due by: 00-Jan-00[Status];	[redacted]						0	0	0				y
80			[redacted]		1 - Very Low - 0%-10%	5%	1 - Very Low - 1 - 100K	1							y
81		1-Understand potential additional scope areas and cost implication. - by: Stephen Wilson -due by: 31-Mar-23 [status: Proposed]; 2-Carry out Value Engineering/Descoping exercise to ensure the project still meets budget requirements. -by: Alex Malumud -due by: 31-Mar-23 [Status: Proposed]; 3-Carry out public engagement analysis to identify if there is a need for additional scope. -by: Steve Wilson -due by: 28-Feb-23[Status: Proposed]; 4- -by -due by: 00-Jan-00[Status];	[redacted]		2 - Low - 10%-25%	20%	3 - Medium - 250K - 500K	6	250,000	300,000	500,000				y
82			[redacted]												y
83			[redacted]												y
85			[redacted]												y
86			[redacted]												y
87															y
88															y
91															y
92															y
93															y
94															y
95															y

Order	Action 1: Action Description	Action Owner	Action Due Date	Action Status	Action 2: Action Description	Action Owner	Action Due Date	Action Status	Action 3: Action Description	Action Owner	Action Due Date	Action Status	Action 4: Action Description	Deliverable	Action Owner	Action Due Date	Action Status
2	Undertake trial pitting/material testing to mitigate potential delay impact. Could be avoided by redesign to avoid impacted areas but otherwise risk accepted.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
4	Commence C3/C4 process and consultation with Instalcom/Vitesse in advance of the works. Include extra-over costs in risk register for short fall in estimate.	[redacted]	30-Nov-22	Ongoing	Price for: E-O service diversion and prolongation costs.	[redacted]	30-Nov-22	Ongoing		[redacted]							
5	C3 estimate received. Commence C4 process in advance of the works.	[redacted]	30-Nov-22	Ongoing	Price for service diversions in main construction cost estimate.	[redacted]	30-Nov-22	Ongoing		[redacted]							
7	Design out risk, through topographic survey and close consultation with National Grid.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
8	Apply SI results in identifying classification grading of "unsuitable" material in Spec and BOQ. Provide schedule of earthworks quantities by type and works location. Allow extra-over costs in Risk register.	[redacted]				[redacted]				[redacted]							
9	Allow for the cost of disposal (none included in BoQ as not found on site).	[redacted]	30-Mar-23	Ongoing		[redacted]				[redacted]							
10	C3 estimate received. Commence C4 process in advance of the works.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
11	Commence C3/C4 process in advance of the works. Include extra-over costs in risk register	[redacted]	30-Nov-22	Ongoing	Price for service diversions in main construction cost estimate.	[redacted]	30-Nov-22	Ongoing		[redacted]							
12	Design out risk, through topographic survey and close consultation with National Grid.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
13	Allow E/O estimate in risk register for contaminated road planings	[redacted]	30-Jan-23	Ongoing	Undertake PAK, WAC and Core testing at design stage	[redacted]	30-Nov-22	Completed	Assess survey data with isopach model to determine impact if any.	[redacted]	30_Jan-23						
14		[redacted]				[redacted]				[redacted]							
15	Early engagement with NR, submission of Asset Protection Initial Enquiry Questionnaire	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
17	Undertake trial pitting, CBR and suitably robust SI survey as part of detailed design	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
19	Commission drainage survey & CCTV survey. Produce model of existing drainage system to establish viability of existing system. Include for E/O allowance for drainage construction costs in Risk register.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
20	Client to engage with landowners & stakeholders. Add risk sum for redesign. And allowance for Network Rail brief.	[redacted]	30-Nov-22	Ongoing	Undertake landownership search and consult Network Rail	[redacted]	30-Nov-22	Ongoing		[redacted]							
33	Commence C3/C4 process in advance of the works. Include extra-over costs in risk register	[redacted]	30-Nov-22	Ongoing	Price for: E/O hand-dig and prolongation, redesign of alignment, major service diversion.	[redacted]	30-Nov-22	Ongoing		[redacted]							
36	Develop investigation approach for existing structures.	[redacted]	30-Nov-22	Ongoing	Dig trial holes as specified	[redacted]	30-Nov-22	Ongoing	Fallback: design modification at construction stage.	[redacted]	30-Nov-22	Ongoing					
38	Commence C3/C4 process and consultation with Instalcom/Vitesse in advance of the works. Include extra-over costs in risk register for short fall in estimate.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
40	Allow E/O time (prolongation) as presence of Bats is most likely to require a restriction on working times.	[redacted]	30-Nov-22	Ongoing	Ecological survey Phase 1 complete and scope agreed with County Ecologist for Phase 2.	[redacted]	30-Nov-22	Completed	Complete the analysis of the Lacham Bat data	[redacted]	30-Jan-23						
68	Early engagement with impacted stakeholders.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
71	Project tem to continue to discuss options for disposal in the local area	[redacted]	30-Mar-23			[redacted]				[redacted]							
72	Allow E/O for landscape work	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
74	Commence C3/C4 process and consultation with Instalcom/Vitesse in advance of the works. Include extra-over costs in risk register for short fall in estimate.	[redacted]	30-Nov-22	Ongoing		[redacted]				[redacted]							
75	Commence C3/C4 process in advance of the works. Include extra-over costs in risk register	[redacted]	30-Nov-22	Ongoing	Price for: E/O hand-dig and prolongation, redesign of alignment, major service diversion.	[redacted]	30-Nov-22	Ongoing		[redacted]							
77	Commence C3/C4 process in advance of the works. Undertake GPR and trial pitting survey. Include estimate of costs in risk register	[redacted]	30-Nov-22	Ongoing	GPR survey of works areas	[redacted]	30-Nov-22	Ongoing		[redacted]							
79	Continue discussion with the Wiltshire Council to confirm approval of the PRoW diversion plan.	[redacted]		Onging		[redacted]				[redacted]							
80		[redacted]				[redacted]				[redacted]							
81	Understand potential additional scope areas and cost implication.	[redacted]	31-Mar-23	Proposed	Carry out Value Engineering/Descoping exercise to ensure the project still meets budget requirements.	[redacted]	31-Mar-23	Proposed	Carry out public engagement analysis to identify if there is a need for additional scope.	[redacted]	28-Feb-23	Proposed					
82		[redacted]				[redacted]				[redacted]							
83		[redacted]				[redacted]				[redacted]							
85		[redacted]				[redacted]				[redacted]							
86		[redacted]				[redacted]				[redacted]							
87						0-Jan-00				0-Jan-00							
88						0-Jan-00				0-Jan-00							
91						0-Jan-00				0-Jan-00							
92						0-Jan-00				0-Jan-00							
93						0-Jan-00				0-Jan-00							
94						0-Jan-00				0-Jan-00							
95						0-Jan-00				0-Jan-00							

ATKINS
Member of the SNC-Lavalin Group

Wiltshire Council

A350 Chippenham Ph45BL Detailed Design

WC_A350-ATK-TTC-XX-RP-TB-000007

Outline Monitoring & Evaluation Plan

04/09/23

A1

Notice

This document and its contents have been prepared and are intended solely as information for Wiltshire Council Highway Term Consultancy contract and use in relation to A350 Chippenham Bypass Improvements. Wiltshire holds no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 27 pages including the cover.

Document history

Revision	Suitability	Purpose description	Originated	Checked	Reviewed	Authorised	Date
C01	A1	Draft for client reviw	NW	AM	NW	AM	04/09/23

Contents

Tables

Figures

1. Introduction and background

1.1. Background and purpose

Wiltshire Council and the Department for Transport (DfT) are responsible for demonstrating that public investment for local transport provides value for money for the taxpayer. Monitoring and evaluation has a role in:

- improving the intervention;
- supporting transparency and accountability;
- enhancing the evidence base available for future decision making; and
- improving understanding of change and how it is caused, informing intelligence on what works and why.

This Monitoring and Evaluation Plan (MEP) for the A350 Chippenham Dualling Phases 4&5 scheme has been developed in accordance with DfT requirements. The scheme is part of the Major Road Network (MRN) programme. DfT has advised MRN scheme promoters to have regard to the publication "Monitoring and Evaluation Framework for Local Authority Schemes" [1]published in September 2012.

This Draft MEP has been developed in support of a Full Business Case (FBC) submission for the scheme, planned for December 2023. This represents the final approval stage for scheme funding. The Draft MEP is being shared with DfT for early approval in principle and feedback as appropriate.

1.2. Scheme background and context

The A350 provides an important strategic north-south link through Wiltshire. High traffic volumes on the A350 Chippenham Bypass have resulted in delays and unpredictable journey times for road users for many years. Increasing traffic demand associated with housing and employment growth across the A350 Growth Zone is forecast to push existing congestion issues to unacceptable levels. This will be detrimental to the strategic role of the A350 Chippenham Bypass.

The delivery of each of Wiltshire's Major Road Network (MRN) schemes present a comprehensive programme to improve regional connectivity, with the need for future dualling having been envisaged in the 1990s. Although the A350 bypass around Chippenham was initially built as a single carriageway, the highway boundary was secured and bridges were constructed to future-proof the bypass corridor for the full dualling.

In addition, the Strategic Transport Plan of Western Gateway Sub-national Transport Body –which was published in March 2020 – also identified the A350 as a key strategic route which is facing resilience issues due to limited capacity and delays.

The A350 Chippenham Bypass MRN phase 4 & 5 scheme will complete Wiltshire Council's aim to dual the entire Chippenham Bypass and increase capacity at Bumpers roundabout. It complements three preceding phases of dualling, and junction improvements undertaken between 2014 and 2019.

1.3. Report structure

The remainder of this document is structured as follows:

- Section 2 provides background context to the scheme;
- Section 3 summarises the scheme objectives and associated expected outcomes and benefits, including a logic map;
- Section 4 outlines the proposed monitoring and evaluation approach in line with the DfT guidance, including the main data sources/metrics and proposed monitoring indicators (covering scheme inputs, outputs and outcomes);
- Section 5 addresses the delivery of the MEP, including governance, timescales and risks; and
- Section 6 identifies the next steps.

[1] DfT, 2012. Available in: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/9154/la-major-schemes-monitoring-evaluation.pdf

2. The scheme

2.1. Scheme scope

The A350 Chippenham Dualling Phases 4&5 scheme comprises the following components, also illustrated in Figure 2-1:

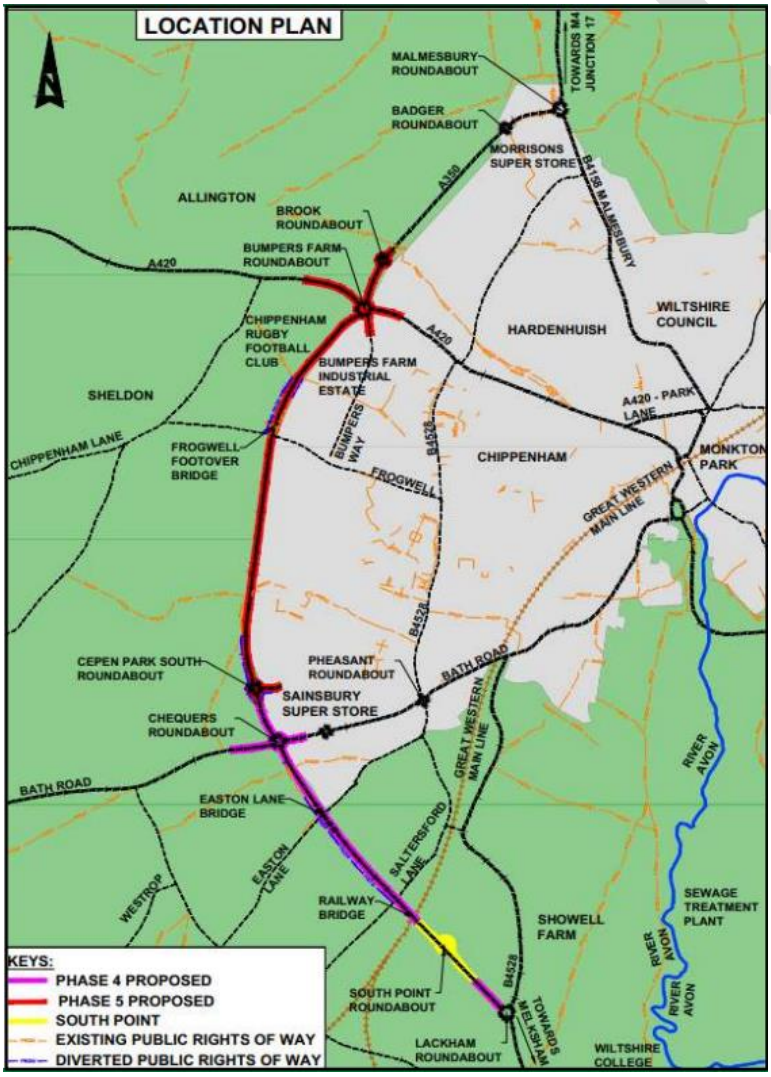
Bumpers Farm Roundabout improvements: includes adding additional lanes and highway capacity on the A420 approaches and exits in both directions. Also includes adding additional lanes on A350 northbound approach to the roundabout. Traffic signals will be added to each of the A420 and A350 arms, and signal-controlled pedestrian and cycle crossings will be added to the northern A350, and eastern A420 arms.

Phase 4 dualling (Chequers to Lackham): widening the A350 to two lanes in both directions, between Chequers and Lackham roundabouts. A new roundabout at the Southpoint development is currently being built by a developer. The Phase 4 works will tie into that new junction.

Phase 5 dualling (Bumpers Farm to Cepen Park South): we will be widening the A350 to two lanes in both directions between Bumpers Farm and Cepen Park South roundabouts. This is the section which passes the rugby club.

Lackham roundabout capacity enhancements (Phase 4): the scheme is anticipated to complete the dualling down to Lackham Roundabout with some minor changes at the junction to improve traffic flows there.

Figure 2-1 - Scheme components



2.2. Scheme cost

The total projected scheme outturn cost is £31 million. Table 2-1 provides a cost profile for the scheme for the years since its preparation to its conclusion including risk associated with the scheme. The scheme cost is subject to revision prior to the final FBC submission.

Table 2-1 - Estimated cost profile

Year	Year 1	Year 2	Year 3	Year 4	Total
Preparatory	£1,149,199	£757,273	£0	£0	£1,906,472
Construction	£0	£2,284,906	£14,193,160	£6,360,596	£22,838,661
Risk	£348,225	£662,468	£2,258,917	£3,075,647	£6,345,256
Total	£1,497,424	£3,704,646	£16,452,077	£9,436,243	£31,090,390

2.3. Scheme status

As identified in section 1.2, there has been a long-standing aspiration to complete the dualling of the A350 around Chippenham, as part of strategic and holistic approach to upgrading the A350 corridor.

The scheme was identified by the Western Gateway, who are the Sub-national Transport Board, as a regional priority to be promoted through the DfT's Major Road Network programme. The Outline Business Case for the project was submitted to the Department for Transport several years ago and was approved in November 2021. Since then, development work on the scheme has progressed and the final stage of the business case process (Full Business Case) to secure funding is in development.

A public engagement exercise was undertaken by Wiltshire Council in late 2022 / early 2023 to raise awareness of the scheme and to inform scheme development.

The tender for the construction contract was published in April 2023, with tender responses due in September 2023.

2.4. Delivery timeframe

The overall planned delivery timeframe and key project milestones for the scheme are summarised in Table 2-2. These are subject to revision as part of the final FBC submission.

Table 2-2 - Key scheme delivery milestones

Milestone	Timeframe
Detailed Design	Spring '23
Full Business Case (FBC) Submission	Winter '23
FBC approval	Spring '24
Award of contract	Spring '24
Start Construction	Spring '24
Finish Construction	Spring '25

3. Scheme Objectives and Benefits

3.1. Scheme objectives

The objectives of the A350 Chippenham are:

- Protect the strategic role of the A350 by increasing road capacity to improve north-south connectivity and minimise traffic reassignment to the local road network.
- Improve journey time reliability and reduce total delay along the A350 Chippenham Bypass.
- Increase the capacity of the A350 Chippenham Bypass to support planned and future growth.
- Reduce the frequency of collisions along the A350 Chippenham Bypass and parallel routes.

Table 3-1 - Scheme objectives

Transport Objectives		High Level Objectives (DfT MRN)
1	Protect the strategic role of the A350 by increasing road capacity to improve north-south connectivity and minimise traffic reassignment to the local road network.	Support economic growth and rebalancing Support the Strategic Road Network
2	Improve journey time reliability and reduce total delay along the A350 Chippenham Bypass.	Reduce congestion Support the Strategic Road Network
3	Increase the capacity of the A350 Chippenham Bypass to support planned and future growth.	Support economic growth and rebalancing
4	Reduce the frequency of collisions along the A350 Chippenham Bypass and parallel routes.	Support all road users

In accordance with the DfT's guidance, as described in the *Monitoring and Evaluation Framework for Local Authority Major Schemes*, three objectives should be monitored to measure their achievement, in conjunction with the standard monitoring metrics.

Therefore, considering the priorities established for this scheme, objectives 1, 2 and 4 were selected to be monitored. For each of the selected objectives, the DfT requires the definition of metrics to monitor their achievement. Since some of the objectives are aligned to measures required for the "Standard Monitoring", their success will be monitored using the same metrics. The assigned metrics are described in Section 4.5 of this report.

3.2. Logic map

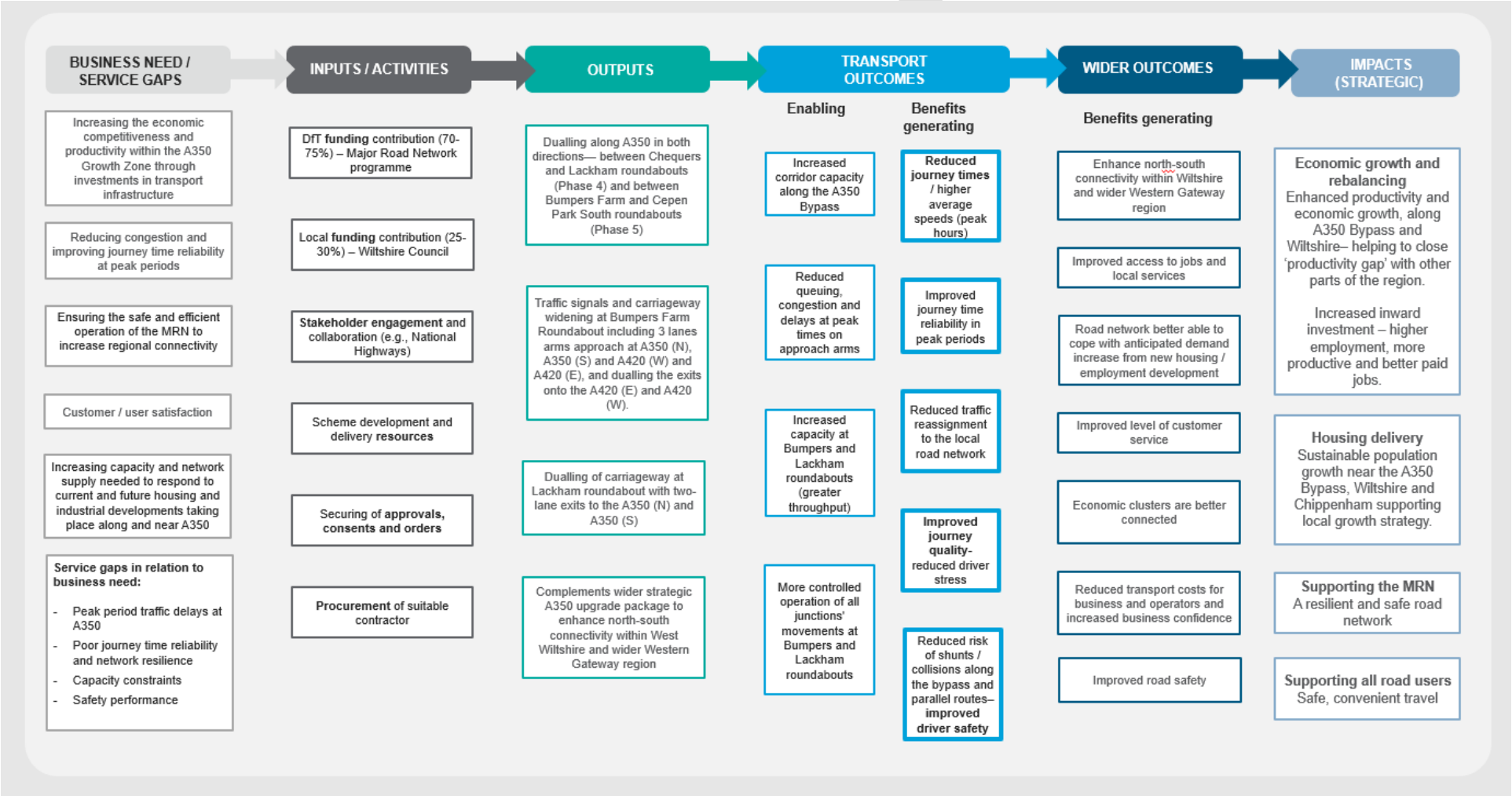
Logic mapping is a systematic and visual representation linking the key components of an intervention. It includes:

- Inputs – what is being invested in terms of resources and activities;
- Outputs – new & modified transport network that is being constructed;
- Outcomes - short and medium-term results, such as changes in traffic flow levels and journey times; and
- Impacts - long-term results such as land use development, better quality of life, environmental benefits and economic benefits.

The process of drawing up the intervention logic map ensures that the decision about what and how to evaluate (in terms of the approach to be selected) is based on a defined analysis and explicit articulation of the anticipated scope and scale of the intervention in terms of input, output, outcomes and impacts.

The logic map shown in Figure 3-1 provides a visual representation of the process by which the scheme outputs will deliver the primary objectives, which contribute to the wider and longer-term impacts which align with key strategic priorities.

Figure 3-1 - Logic map



3.3. Expected benefits

The scheme will benefit around 24,000 vehicles a day by helping to relieve congestion on the A350 Chippenham Bypass, building upon previous phases to remove the remaining restrictions that can cause blockages during peak travel times. Although a predominantly highways-based intervention the scheme will support other users, including:

- Reducing the amount of traffic seeking to use alternative, less appropriate roads – promoting opportunities to create more attractive walking and cycling routes within the town; and
- Maintains and enhances walking and cycling facilities through the design and delivery of the scheme.

Local benefits include:

- Improvements at Bumpers Farm Roundabout will reduce peak time queuing on Bumpers Way and allow easier exit onto the roundabout.
- Increased road capacity along the A350 Chippenham Bypass, which will:
  - Help deter traffic from using alternative parallel routes on the local road network such as the B4528 Hardenhuish Lane and B4528 Hungerdown Lane; and
  - Help support the local economy by improving connections.
- Alterations to the local public rights of way network will improve safety for those accessing the countryside.
- Improvement in journey-time reliability along the bypass and a reduction in congestion, which will:
  - Support future growth in the town and help achieve the economic competitiveness and growth ambitions;
  - Contribute towards reducing greenhouse gas emissions and address the negative impacts on safety, security, health, and quality of life; and
  - Reduce the frequency of collisions along the bypass and parallel routes.

Regional benefits include:

- Improvement in journey-time reliability along the bypass and a reduction in congestion, which will:
  - Help preserve the route's key role as part of the advisory freight route network; and
  - Reduce transport costs for businesses and transport operators and encourage inward investment to the A350 Growth Zone.

3.4. Value for money assessment

The value for money (VfM) assessment from the OBC stage is summarised in Table 3-2. The assessment determined an overall High VfM category, based on the core scenario. The vast majority of the assessed monetised scheme benefits were associated with user benefits, in particular journey time savings.

The VfM assessment is to be reviewed and updated as part of the FBC submission. This will utilise more recent appraisal assumptions and parameters (e.g. from DfT Transport Appraisal Guidance) to ensure that the VfM assessment is current.

Table 3-2 – Value for money assessment (Outline Business Case)

	Assessment Type	Preferred scheme	Detail
Level 1 impacts / initial BCR	Present Value of Benefits (PVB)	£81,973	Includes benefits associated with improved user benefits, greenhouse gas, air quality, noise, collisions and indirect tax revenues
	Present Value of Costs (PVC)	£25,450	Includes scheme development, construction costs and whole life costs.
	Net Present Public Value (NPPV)	£56,523	
	Initial BCR	**3.22**	Indicates a range between High and Very High VfM
Level 2 impacts / adjusted BCR	Present Value of Benefits (PVB)	£89,706	All level 1 benefits plus wider economic impacts and reliability (level 2)
	Present Value of Costs (PVC)	£25,450	Includes scheme development, construction costs and whole life costs.
	Net Present Public Value (NPPV)	£64,256	
	Adjusted BCR	**3.52**	Indicates a range between High and Very High VfM
Qualitative assessment	Social Impacts	The overall social impact of the scheme based on the three indicators assessed qualitatively (Security, severance and journey quality) is moderate beneficial.	
	Environmental Impacts	Environmental impacts were either neutral, slight adverse or moderate adverse in the case of water and ecology. Assuming suitable mitigation measure are put into place it is concluded that these findings do not present a strong case to adjust the VfM.	
	Key risks, sensitivities	Areas of uncertainty within the appraisal have been considered through appropriate sensitivity tests. These demonstrate scope for both increased and decreased benefits / value for money around the core scenario. The overall VfM is likely to be most sensitive to traffic growth. With Chippenham being a key focus for housing delivery through Wiltshire's ongoing LPR (including a Housing Infrastructure Fund site), this is likely to consolidate a VfM categorisation of 'High' for the Preferred Option E. General modest variance around scheme costs and benefits (+-10%) was shown to have a relatively negligible impact.	
	VfM Category	**High**	Overall assessment is that most likely outcome is High VfM.

4. Monitoring and Evaluation Approach

4.1. Purpose and aims

The purpose of the monitoring and evaluation is to provide an assessment of the project's design, implementation and outcomes, including key lessons learned. It seeks to address question such as:

- Was the scheme delivered as intended and were any changes needed?
- How well did the intervention meet its SMART objectives?
- Were there unexpected outputs and outcomes?
- Were costs, benefits and delivery times as predicted at approval?
- Did the scheme investment provide value for money?
- What can be learnt for future interventions?

4.2. Proportionality and scope

The DfT framework defines three potential tiers of monitoring and evaluation: standard monitoring, enhanced monitoring, and fuller evaluation. The standard monitoring is a requirement for all the schemes; however, the enhanced monitoring and the fuller evaluation are required depending on the cost and the complexity or singularity of the schemes. The A350 scheme is required to only develop the standard monitoring due to the projected costs of the project (below the £50 m threshold established for the enhanced monitoring).

Due to the cost and scope of the A350 Chippenham scheme, Wiltshire Council is required to only perform the Standard Monitoring as highlighted in the DfT's *Monitoring and Evaluation Framework for Local Authority Major Schemes*. This framework requires that the MEP monitors the following measures, which can be broadly categorised as follows:

Input / Output-based metrics:

- Scheme build
- Delivered scheme
- Costs

Outcome / Impact-based metrics:

- Scheme Objectives
- Travel demand
- Travel times and reliability of travel times
- Impacts on the economy
- Carbon Impacts

The evaluation plan has been developed to respond to DfT's standard monitoring criteria and verifying the fulfilment of the scheme's objectives.

4.3. Monitoring and evaluation stages

If funding is approved as expected, the scheme construction is planned to occur between Spring 2024 and Spring 2025.

The opening date is planned for Spring 2025. Based on this timeline, the evaluation will be undertaken in three stages, as follows:

- **Pre-construction/ baseline stage**, commencing prior to scheme build (Autumn 2023 – Spring 2024).

  The focus of this stage is to collect information and data to accurately establish the conditions prior to scheme implementation - data should be collected prior to any construction.

- **One Year Post Opening Outcome Evaluation** (Spring 2025 - Autumn 2026).

  This stage will focus on the immediate impacts of the scheme after its construction is completed and the project is already implemented.
- **Five Year Post Opening Impact Evaluation** (Spring 2030 - Autumn 2030.

  This stage will track changes since the first evaluation and the longer term impacts of the scheme, particularly the effects of the project on the economy and employment.

Each stage will be accompanied by a report. The same information collected in the Baseline Report would also be monitored in the Post Opening reports in order to evaluate the effect of the scheme on the same indicators. In addition, to ensure consistency, it is recommended that the data is collected in the same time period of the year (same months or quarters).

The following sections describe the proposed monitoring and evaluation approach for the output and outcome-based metrics.

4.4. Input / output-based monitoring metrics

4.4.1. Scheme build

The DfT's framework requires an assessment of the scheme during the construction with the following information:

- Programme assessment- description of how the key milestones are being delivered.
- Stakeholder management approaches and lessons obtained throughout these processes.
- Risk management.
- Benefits assessment – description of advances towards the achievement of the schemes benefits.

Table 4-1 summarises the proposed approach to monitoring the scheme build:

Table 4-1 - Scheme build evaluation

Measure	Details	Data Sources
Programme	It is envisaged that the scheme programme will be updated and reviewed for both monthly progress meetings and Project Board meetings. This means that during the construction phase, the scheme delivery process will be monitored against the construction programme. This will identify key milestones, which will be reported upon at progress meetings. Any changes to the programme, along with reasons, will be reported.	Scheme Programme Progress Meeting Minutes Project Management Team
Stakeholder Management	It is envisaged that the project plans will be updated as relevant for the construction phase. A summary of the stakeholder management that has taken place will be provided, with any lessons learnt from these processes documented.	Stakeholder Management Plan Communications Plan Progress Meetings/ Project Board Minutes
Risk Management	A review of the effectiveness of the risk management processes will be undertaken by reviewing the risk register to determine which risks were realised, along with the effectiveness of any mitigation measures. In addition, it is envisaged that any risk management issues resulting in significant	Risk Management Plan Risk Register

Measure	Details	Data Sources
	changes to the risk register will be discussed at progress meetings and subsequently reported to the project board.	Progress/ Boarding meeting minutes
Scheme Benefits	The benefits of the scheme will be realised following the completion of the scheme. The assessment of whether the scheme is delivering the expected benefits will be undertaken as part of the monitoring of scheme objectives.	Corridor Capacity (Traffic Flows) Congestion and journey times including journey time reliability Collisions reduction

This information will be presented in the “One Year After” report.

4.4.2. Delivered scheme

The guidelines established in the DfT’s *Monitoring and Evaluation Framework for Local Authority Major Schemes* requires analysis comparing the proposed scheme that was defined in Full Approval with the delivered scheme after its completion. This will help assess scheme delivery, identify any changes to scope and design of the originally envisaged scheme and identify the reasons for such changes.

The framework requires the following information to be assessed and recorded:

- Complete description of implemented scheme outputs, with a clear map of the scheme and additional ones of its individual elements if relevant
- Changes made to the scheme since its funding approval until its completion
- Assessment of beneficiaries
- Changes to mitigation measures of externalities and impacts

Table 4-2 summarises the proposed approach to evaluating the scheme build.

Table 4-2 - Delivered scheme evaluation metrics

Measure	Details	Data Sources
Implemented/ Outturn Scheme	A full description of the delivered schemes, including plans, will be prepared based on the contractor’s ‘as built’ drawings. In accordance with the identified outputs, this will include Phase 4 and Phase 5 improvements along the corridor and roundabouts.	As-built drawings
Changes to the Scheme	Any changes to the design of the scheme introduced during construction and the reasons for the change will be recorded and reported through the change control procedure and progress meetings	Change control log Progress meetings
Intended beneficiaries	An assessment of whether the scheme has reached the intended beneficiaries will be undertaken as part of wider standard evaluation metrics. The evaluator will review the likelihood that the intended beneficiaries have been reached by the scheme. This part of the delivered scheme metrics will be summarised in the Year One and Five Reports.	Traffic flow data Journey time data Junction performance data/ queue lengths at the junction
Changes to mitigation measures	Changes to mitigation measures will be recorded and reported through the scheme programme and progress meetings. In case	Scheme Programme

of externalities and impacts	these are mitigation measures related or involving other stakeholders, these changes will also be reflected in the Stakeholder Management Plan. Changes associated to emission mitigations will be recorded in the Carbon Management Plan.	Progress meetings Stakeholder Management Plan Carbon Management Plan

This information will be presented in the “One Year After” report.

4.4.3. Outturn scheme costs

In order to verify how the final costs of the delivered scheme compared to the initial cost established at “Full Approval”, the DfT requires the following information to be monitored and presented in the evaluation reports:

- Outturn investment costs (with elements disaggregated as in the Major Scheme funding bid)
- Analysis of manifestation of identified risk in the costs
- Identification of cost elements with savings and the reasons for these savings
- Analysis of cost elements with overruns and identification of the reasons for cost overruns.

Table 4-3 summarises the proposed approach for the evaluation of outturn scheme costs.

Table 4-3 - Outturn scheme cost evaluation metrics

Measure	Details	Data Sources
Outturn investment Costs	A breakdown of the scheme costs will be prepared using the same format as presented in the Full Business Case/ at Full Approval. These costs will be as reported to the Project Board.	Scheme financial monitoring and cost breakdown.
Risks	The risk register includes allocated costs for all the identified risks. The way in which the total value of risk as part the overall scheme cost has changed through the scheme delivery process will be described, and the risk related costs that have been realised during the construction process will be identified.	Risk register & Risk Management Plan
Savings/Overruns	Elements of the scheme costs where either savings or overruns have occurred since Full Approval will be identified and described, along with the reasons for the change in cost.	Scheme financial monitoring Progress meeting minutes/ input from Project Manager

4.5. Outcome / impact-based monitoring metrics

In addition to the input / output-based measures detailed above, the DfT guidance requires monitoring of key outcomes and impacts associated with the implementation of the scheme. These are:

- Scheme objectives (maximum of three);
- Travel demand;
- Travel times and reliability of travel times;
- Impacts on the economy; and
- Carbon Impacts.

The three scheme objectives to be monitored are:

1. protecting the strategic role of the A350 by increasing road capacity to improve north-south connectivity and minimise traffic reassignment to the local road network;
2. improve journey time reliability and reduce total delay along the A350 Chippenham Bypass; and
3. reduce the frequency of collisions along the A350 Chippenham Bypass and parallel routes.

Due to the nature of the scheme objectives, there is an overlap between the monitoring of the scheme objectives and the other recommended impacts. Furthermore, the principal metrics and data to be collected could be used to inform monitoring against more than one scheme impact.

Table 4-4 therefore identifies the principal proposed metrics and demonstrates how each of these relates to the monitoring of scheme objectives and / or the other standard recommended impacts.

Table 4-4 - Summary of proposed outcome-based monitoring metrics

		Key scheme objectives			Standard monitoring impacts			
Section	Monitoring	Objective 1: Increase Road Capacity	Objective 2: Improve Journey Time Reliability	Objective 3: Reduce Collisions	Travel Demand	Travel Time	Economy	Carbon
	Metric 1: Traffic Flow/ Volume	✓			✓			✓
	Metric 2: Journey time		✓			✓	✓	✓
	Metric 3: Collision data			✓				
	Metric 4: Business feedback		✓				✓	

The principal proposed metrics are addressed in turn in the following sections.

4.5.1. Metric 1: Traffic flows on key corridors

4.5.1.1. Purpose and impacts addressed

To understand the impacts of the scheme in terms of capacity and traffic distribution, it is proposed to collect traffic count data for key corridors of interest. This will allow analysis of the difference between outturn results and scheme forecasts at both route and screenline level.

This metric provides the key means to monitor **Objective 1.** It also contributes to the general requirement to monitor the impact of **travel demand**. Furthermore, it is also relevant for monitoring **carbon emissions**, by providing an indication of overall changes in traffic demand.

4.5.1.2. Scope

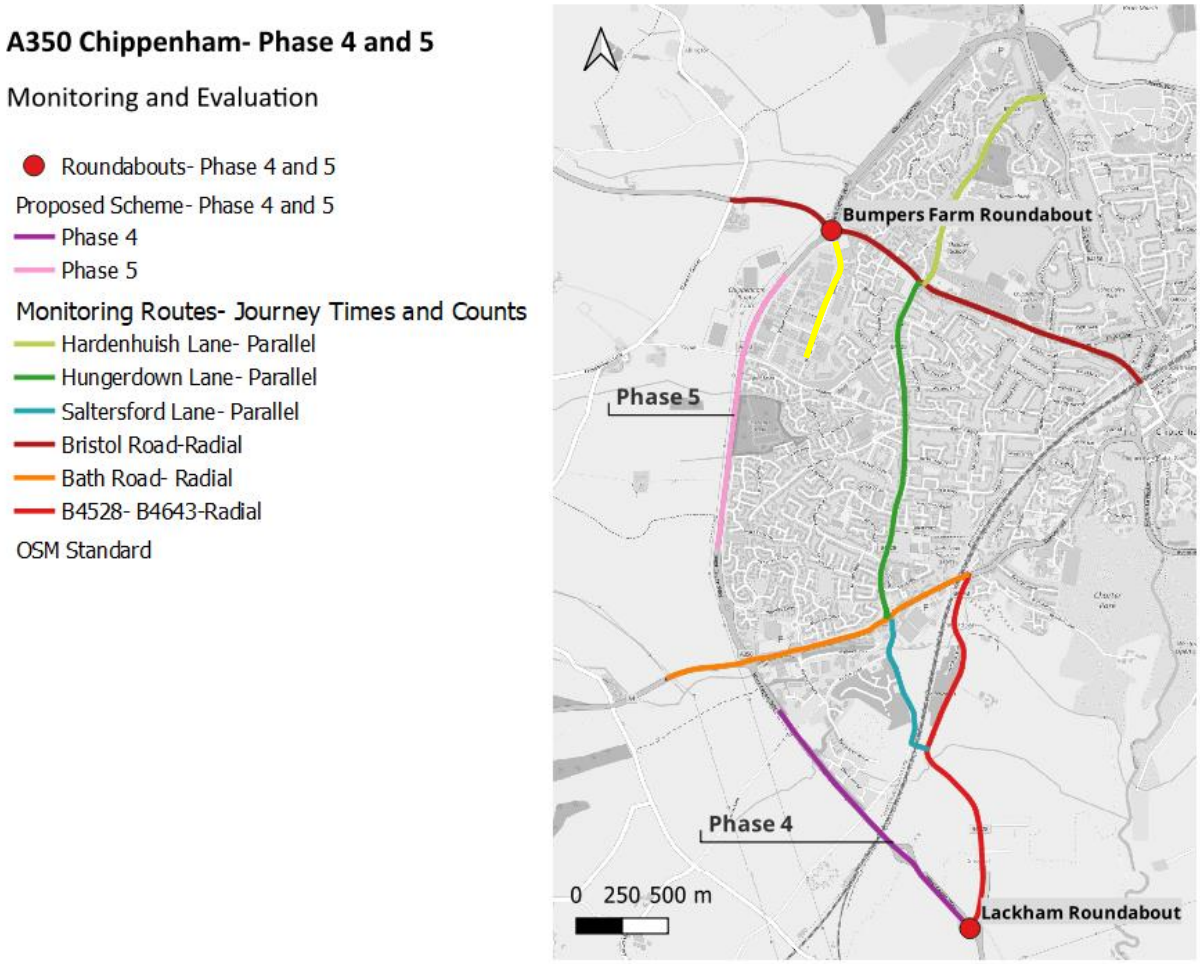
It is proposed to monitor traffic flows along:

- the main A350 route,
- parallel north-south corridors (Saltersford Lane, Hungerdown Lane and Hardenhuish Lane); and
- key radial roads that move traffic across the A350 (Bristol Road, Bath Road, and B4528/B4643).

The main sections of the road network proposed for traffic flow monitoring are illustrated in Figure 4-1. Specific data collection points are to be determined in due course. This may be influenced by factors such as survey company recommendations regarding safety.

Traffic volume data would be collected for all traffic including HGVs.

Figure 4-1 - Key routes / junctions for traffic data collection



4.5.1.3. Format, data collection methodology or source

Traffic data monitoring will make use of existing appropriate sources where feasible (such as permanent or temporary Automated Traffic Count (ATC) sites) on relevant links. This will be supplemented by additional temporary ATC sites to provide an appropriate coverage based upon the identified sections of the road network.

In addition, traffic flows will be monitored at Bumpers Farm junction and Lackham Roundabout via manual classified turning counts to understand the impact of the scheme on highway travel demand at these key intersections.

The traffic flows will be captured across a typical 12-hour day (07:00-19:00), allowing analysis of 12hr volumes by weekday / weekend, as well as AM and PM peak periods. ATC data will be based on an average of two weeks of data. The traffic volume data will be classified (by vehicle type, including HGVs).

Counts should be collected before the implementation of the scheme (prior to the implementation of Phase 4 and Phase 5). After the project culmination, it should be collected in Year 1 and Year 5 to be included in the 1 Year and Final report respectively.

4.5.2. Metric 2: Pedestrian and cyclist demand

4.5.2.1. Purpose and impacts

The scheme involves some changes to pedestrian and cyclist facilities and therefore has potential to influence walking and cycling demand. This metric contributes to the general requirement to monitor the impact of **travel demand**.

4.5.2.2. Scope

The primary points of interest in relation to potential changes in walking and cycling demand relate to crossing provision at Bumpers Farm Roundabout and east-west access points across the A350 between west Chippenham and countryside to the west of the A350. These include:

- Drake Crescent / Sandown Drive (this involves a PROW diversion)
- Rugby Club (this involves a PROW diversion)
- Saltersford Lane / Easton Lane (this involves a PROW diversion)

4.5.2.3. Format, data collection methodology or source

12 hour pedestrian and cyclist counts can be collected as part of the MCC at Bumpers Roundabout (see Metric 1). Supplementary counts would be required at the other locations identified above.

4.5.3. Metric 3: Journey times

4.5.3.1. Purpose and impacts

Travel time measurements are a key indicator of the effectiveness of the scheme in reducing delays and improving traffic flow. Collecting this data will allow monitoring of:

- Travel times in the corridors of interest, including analysis of the difference between outturn results and scheme forecasts at route level;
- Variability of travel times in the corridors of interest, and if applicable, analysis of the difference between outturn results and scheme forecasts at route level.

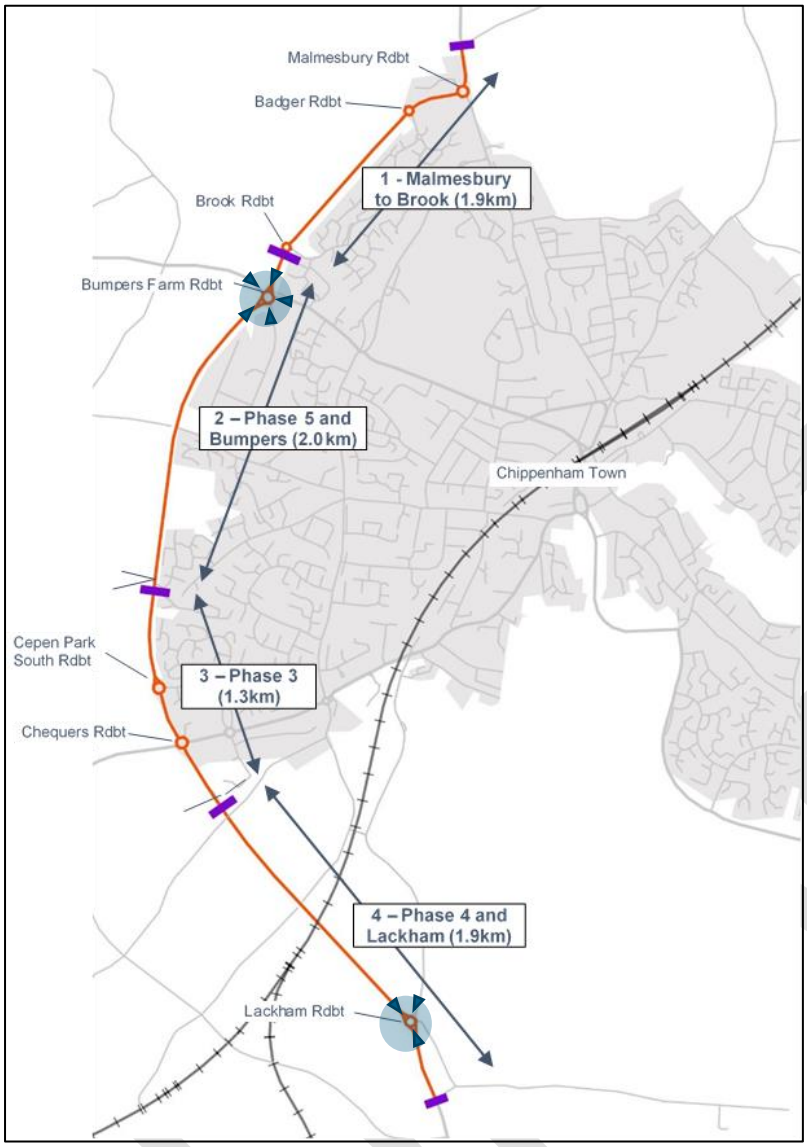
This metric provides the key means to monitor **Objective 2**. It also contributes to the general requirement to monitor the impact of **travel times**. Furthermore, it is also relevant for monitoring **carbon emissions**, by providing an indication of average vehicle speeds.

4.5.3.2. Scope

It is proposed that link based journey time data (absolute travel times and variability in travel times) is collected for the same sections of road network as the traffic volume data (Figure 4-1) for completeness and availability of data to assist with monitoring across different impacts, including carbon emissions.

It is proposed that the primary journey time route for the A350 Chippenham Bypass is defined in terms of four sections, as illustrated in Figure 4-2. In addition, journey time data will be collected for Bumpers Farm Roundabout and Lackham Roundabout such that journey times across the junctions for each arm can be recorded.

Figure 4-2 - Route sections / junctions for journey time monitoring



4.5.3.3. Format, data collection methodology or source

Journey time data will be sourced from TomTom data. This will be recorded for the route sections identified, in each direction.

Data is to be collected across a typical 12-hour day (07:00-19:00), to allow analysis of different time periods, including the AM and PM peak periods. Standard data categories will be extracted from TomTom, including absolute journey time, average vehicle speed, minimum/maximum journey time and standard deviation.

It is recommended that the journey time data utilises at least one month's data and that it is sourced within a similar timeframe to the traffic surveys.

Once the scheme is opened (Year One & Five), monitoring data should be collected consistently with the format and time periods defined in the projects baseline data. This will allow an evaluation of how journey times and reliability have changed following the scheme implementation. The outturn journey times will in turn be compared with those forecast at the scheme opening year, to assist in understanding if the scheme impacts are as intended. An initial assessment of the travel times and reliability will be provided in the Year One Post Opening Reports, with the final assessment summarised in the Year Five Report.

4.5.4. Metric 4: Collisions

4.5.4.1. Purpose and impacts addressed

Changes to infrastructure design, junction operation and vehicle flow/ speeds may have a bearing on collisions. Data will therefore be collected in relation to the number, type and severity of collisions before and after the scheme implementation.

This metric provides the key means to monitor **Objective 3**.

4.5.4.2. Scope

Collision data is to be collected and recorded for the parts of the highway network identified in Figure 4-1. In addition, Chippenham area wide totals will be recorded for comparative purposes.

4.5.4.3. Format, data collection methodology or source

Collision data is to be obtained from STATS19 and will be disaggregated by type of user (cycle, pedestrian) and vehicle involved, if applicable. In addition, data will be collected in relation to severity. Values should be reported as absolutes and rates. Aggregation by location is also recommended (hotspots) for reporting purposes.

Collision data for 5 years prior to construction will be used as the baseline. Data will be collected and analysed for annual periods. However, for the "One-year report", collision data will be reported for information purposes only. For the final report, data from the 5 years after collision will be presented and allow a more robust comparison to the baseline.

4.5.5. Metric 5 – Business feedback

4.5.5.1. Purpose and impacts

The scheme is ultimately expected to deliver wider benefits to the economy through the improved traffic flow and reduced and more reliable journey times, including for HGVs. This can provide improved access and connectivity for businesses and support economic growth and business retention. Business perception of these factors can provide insights into the potential effects of the scheme in this regard.

This metric provides a key means to monitor impacts on the **Economy,** which is a standard DfT monitoring requirement.

4.5.5.2. Scope

It will be appropriate to seek local business feedback on the perceived effectiveness of the scheme, in addition to businesses across a wider area, particularly those heavily dependent upon the A350 corridor (e.g. including hauliers).

4.5.5.3. Format, data collection methodology and sources

It is envisaged that a simple post scheme implementation survey (e.g. online) would be utilised with a small number of questions in relation to the perceived impacts of the scheme. Organisations such as the Chamber of Commerce and Local Enterprise Partnership may be able to assist with disseminating the survey to relevant businesses.

Survey responses would be analysed by geographic location to assist with identifying any key trends (e.g. clusters of businesses, such as at Bumpers Farm Industrial Estate, which may have a particular interest in one aspect of the scheme).

4.6. Summary of proposed performance indicators

Using the data/metrics outlined in the sections above, an overall summary of the proposed monitoring indicators (covering inputs, outputs and outcomes) is provided in Table 4-5.

Table 4-5 – Proposed monitoring and evaluation indicators

ID	Indicator description	Further disaggregation	Relevant measures / type	Type	Key data requirement	Data collection timing	Reporting	
							1 Year After Opening	5 Years After Opening
1	Assessment of delivery against programme	- Key project milestones	**Input** - Scheme build	Qualitative	Project plan / key milestones	During delivery	✓	
2	Assessment of stakeholder management	- Traffic management / construction - Scheme opening	**Input** - Scheme build	Qualitative	Stakeholder Management Plan	During delivery	✓	
3	Assessment of risk management effectiveness	- Key project risks	**Input** - Scheme build	Qualitative	Risk Register	During delivery	✓	
4	Assessment of outturn investment costs, including: – Cost savings – Costs overruns	- Primary cost elements	**Input** - Costs	Quantitative / Qualitative	Outturn financial data	During delivery / 1 yr after opening	✓	
5	Assessment of outturn maintenance costs	-	**Input** - Costs	Quantitative / Qualitative	Outturn financial data	During delivery / 1-5 yrs after opening	✓	✓
6	Assessment of delivered outputs and scope / design changes	- Highway design - Drainage - Equipment (e.g. signalling) - Ped / cycle facilities	**Output** - Delivered scheme	Qualitative	Scheme drawings / site observations	During delivery / 1 yr after opening	✓	
7	Assessment of implementation of mitigation measures	- Noise mitigation - Landscape / views mitigation	**Output** - Delivered scheme	Qualitative	Scheme drawings / site observations	During delivery / 1 yr after opening	✓	
8	Change in traffic flow on key links within the study area. – all vehicles / HGVs – each direction – 12hr / AM pk / IP / PM pk	- Links along the main A350 - Links along parallel B4528 / Hardenhuish Lane - Links along A4 / A420 radials	**Outcome** - Objective 1 - SM - Travel Demand - SM - Carbon	Quantitative	Metric 1 ATC's / MCC	Pre delivery / 1 yr after opening / 5 yrs after opening	✓	✓
9	Change in total screenline traffic volume. – all vehicles / HGVs – each direction – 12hr / AM pk / IP / PM pk	- North/South screenline 1 - North/South screenline 2 - North/South screenline 3 - East/West screenline 1	**Outcome** - Objective 1 - SM - Travel Demand	Quantitative	Metric 1 ATC's / MCC	Pre delivery / 1 yr after opening / 5 yrs after opening	✓	✓
10	Change in pedestrian and cyclist demand – 12 hr	- Bumpers Rbt - Drake Crescent /Sandown Drive - Saltersford Lane / Easton Lane - Rugby Club	**Outcome** - SM - Travel Demand	Quantitative	Metric 1/ 2 MCC	Pre delivery / 1 yr after opening	✓	
11	Change in average journey time along the A350 Chippenham Bypass. – all vehicles – each direction – AM pk / IP / PM pk	- Section 1 - Section 2 - Section 3 - Section 4	**Outcome** - Objective 2 - SM - Travel Times - SM - Economy	Quantitative	Metric 3 TomTom data	Pre delivery / 1 yr after opening / 5 yrs after opening	✓	✓
12	Change in the variability of journey time along the A350 Chippenham Bypass. – all vehicles – each direction – AM pk / IP / PM pk	- Section 1 - Section 2 - Section 3 - Section 4	**Outcome** - Objective 2 - SM - Travel Times - SM - Economy	Quantitative	Metric 3 TomTom data	Pre delivery / 1 yr after opening / 5 yrs after opening	✓	✓

ID	Indicator description	Further disaggregation	Relevant measures / type	Type	Key data requirement	Data collection timing	Reporting	
							1 Year After Opening	5 Years After Opening
13	Change in average journey time across Bumpers Roundabout – all vehicles – AM pk / IP / PM pk	Average of all moves from: - A350 South arm - A350 North arm - A420 West arm - A420 East arm - Bumpers Way	**Outcome** - Objective 2 - SM - Travel Times - SM - Economy	Quantitative	Metric 3 TomTom data	Pre delivery / 1 yr after opening / 5 yrs after opening	✓	✓
14	Change in collisions on key links within the study area. – Total – By severity – By user type	- Links along the main A350 - Links along parallel B4528 / Hardenhuish Lane - Links along A4 / A420 radials	**Outcome** - Objective 3	Quantitative	Metric 4 STATS19 data	Pre delivery (5 yr average) / 1-5 yrs after opening (5 yr average)	✓ (information only)	✓
15	Change in area-wide collisions. – Total – By severity – By user type	- All links within the Chippenham area	**Outcome** - Objective 3	Quantitative	Metric 4 STATS19 data	Pre delivery (5 yr average) / 1-5 yrs after opening (5 yr average)	✓ (information only)	✓
16	Assessment of business perception of scheme impact	- Connectivity - Journey reliability	**Outcome** - SM - Economy	Qualitative	Metric 5 Business survey	Up to 1 yr after opening	✓	
17	Change in estimated vehicle related carbon emissions (function of traffic volumes and average vehicle speeds)	- Links along the main A350 - Links along parallel B4528 / Hardenhuish Lane - Links along A4 / A420 radials	**Outcome** - SM - Carbon	Quantitative	Metric 1 ATC's / MCC Metric 3 TomTom data	Pre delivery / 1 yr after opening / 5 yrs after opening	✓	✓

5. Monitoring and evaluation – delivery arrangements and next steps

5.1. Governance

Leadership and governance is a key enabler of the MEP. Wiltshire Council has overall responsibility for the implementation of the MEP. Scheme monitoring and evaluation should be integrated into the project management and delivery structure.

5.1.1. Monitoring and Evaluation Lead

It is recommended that a Monitoring and Evaluation Lead is assigned on the project to be responsible for overall coordination and management of all monitoring and evaluation activity and reporting.

The Monitoring and Evaluation Lead would report directly to the Project Manager. They should be of an appropriate position and hold the relevant skills to be able to directly influence resources and drive the process forward. They will have knowledge of the scheme but will not be heavily involved in the process. This will ensure the avoidance of bias within the reporting procedure. In addition, they will have knowledge and appropriate experience of the appraisal and review process to ensure that the overall scheme objectives are met.

The Monitoring and Evaluation Lead will:

- ensure that best use is made of local knowledge, experience and skills as part of the evaluation process by providing a link between the project team and wider skills, knowledge and resources within Wiltshire Council and consultants.
- lead on the commissioning of any sub consultants required to undertake specific elements of the evaluation such as data collection/analysis.
- report progress and updates on the MEP regularly to the Project Manager.
- Be responsible for quality control of the MEP:
    - ensure findings are accurate, reliable and uncompromised.
    - Ensure consistency in data collection, the methodology used, reporting and the interpreting of findings.
    - provide an independent, inclusive, robust and transparent evaluation.
- lead on the dissemination of the Monitoring and Evaluation information to the Project Board, the DfT and key stakeholders, under the overall direction of the Project Manager.

5.2. Delivery plan

The principal milestones associated with delivering the MEP are:

- Draft Monitoring & Evaluation Plan – Summer 2023
- Full Business Case submission (including MEP) – December 2023
- Baseline data collection - Autumn 2023 – Spring 2024
- Baseline Report – Spring 2024
- Scheme construction - Spring 2024 and Spring 2025
- Scheme opening - Spring 2025
- One Year Post Opening data collection – Spring / Summer 2026
- One Year Post Opening Report – Autumn 2026
- Five Year Post Opening data collection – Spring / Summer 2030
- Five Year Post Opening Report – Autumn 2030

5.3. Management of risk

Key risks associated with the implementation of the MEP and relevant mitigation measures are summarised in Table 5-1.

Table 5-1 – Monitoring and evaluation risks

Risk	Mitigation
Lack of clarity around the purpose and scope of evaluation	Draft MEP to be shared with Wiltshire Council and DfT for initial feedback and agreement in principle.
Evaluation design fails to provide robust data to capture relevant scheme impacts	Draft MEP prepared in accordance with relevant DfT guidance. Industry-standard forms of data collection are proposed.
Failure to understand / account for possible limitations of the data	Proposed data sources are familiar and potential limitations well understood. Potential risks / limitations to be clearly identified during data collection scoping alongside potential effect on the robustness / completeness of data.
Lack of ownership and resourcing for execution of the MEP	Early assignment of the M&E Lead. Ensure appropriate budget set aside for execution of the MEP.
Unforeseen circumstances affect data collection – impact on data completeness / robustness	Design of data collection to account for potential risks. Planning / scheduling should allow for potential need to repeat data collection.
Failure to account for external (exogenous) influencing factors, and so not being able to directly attribute outcomes/impacts to the scheme	Log to be maintained by M&E Lead to record relevant factors and timing, such that data can be analysed and interpreted taking this into account. Relevant factors to be clearly identified within M&E reporting.

5.4. Reporting and dissemination

Three primary outputs are envisaged:

- Baseline Report
- One Year Post Opening Report
- Final (Five Year Post Opening) Report

The M&E Lead will be responsible for the preparation of these reports. Draft reports will be subject to the project governance and approvals processes. The approved reports will be shared with the DfT and key stakeholders. Wider dissemination would be via the scheme web page on the Wiltshire Council website. This will be managed by WC's communications department. Local press releases will be issued as appropriate.

Key lessons learned associated with the scheme delivery will be recorded and communicated within the organisation in order to benefit future scheme delivery.

6. Next steps

This document has set out a Draft Outline Monitoring and Evaluation Plan for the A350 Chippenham Bypass Phases 4&5 MRN scheme. The recommended next steps are to:

- Submit the Draft Outline MEP to DfT for initial comment;
- Further scope baseline data collection;
- Prepare the Full MEP for inclusion in the Full Business Case submission; and
- Ensure the MEP requirements are factored into the scheme resourcing, costs and delivery programme.

The FBC is currently planned to be submitted to DfT in December 2023. A three month period is currently assumed for DfT approval. Subject to approval being granted, scheme construction is planned to commence in Spring 2024. Baseline data collection should be completed prior to scheme construction commencing. The baseline exercise could commence in advance of DfT approval of the FBC, although this would be at Wiltshire Council's risk.

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ATKINS
Member of the SNC-Lavalin Group

Wiltshire Council

A350 Chippenham Ph45BL Detailed Design

WC_A350-ATK-EGN-XX-RP-LM-000003

Carbon Management Plan

30/11/23

A3

Notice

This document and its contents have been prepared and are intended solely as information for Wiltshire Council Highway Term Consultancy contract and use in relation to A350 Chippenham Bypass Improvements. Wiltshire holds no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 34 pages including the cover.

Document history

Revision	Suitability	Purpose description	Originated	Checked	Reviewed	Authorised	Date
C02	A3	For Construction	TG	JH	SS	AM	30/11/23
C01	A6	For issue	DC	VS	AR	AM	23/03/23
P01	S2	For issue	DC	VS	AR	---	23/03/23

Contents

Chapter Page

Tables

Figures

1. Introduction

This is the Carbon Management Plan (CMP) for the proposed A350 Chippenham Bypass MRN phase 4 and 5 scheme (hereby referred to as the Scheme), which is currently at Full Business Case stage with submission planned in Winter 2023. The Department for Transport (DfT) require a CMP to be submitted at each business case stage for schemes requiring government approval as best practice.

The CMP has been developed following guidance issued by the DfT in November 2021, which includes reference to the Construction Playbook[1], PAS 2080[2], and Transport Appraisal Guidance Unit A3[3].

This CMP summarises the carbon footprint for the Scheme and sets carbon reduction targets. It also outlines the process to enable the carbon reduction targets to be achieved.

This is a live document and will be updated through the Scheme lifecycle to report on the implemented opportunities and any associated carbon reductions achieved.

This document should be read in conjunction with other Scheme specific reports, including the Environmental Assessment Report (EAR).

It includes:

- A brief description of the Scheme
- Legislation and policy with reference to carbon emissions
- Carbon reduction hierarchy
- Scope of carbon management process
- Quantification of carbon emissions
- Baseline, target setting and monitoring
- Management and delivery of the carbon management plan
- Quantification of carbon emissions
- Target setting, baseline and monitoring
- Reporting, continual improvement, communication and training

[1] HM Government (2020). The Construction Playbook - Government Guidance on sourcing and contracting public works projects and programmes. Version 1.0. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/941536/The_Construction_Playbook.pdf

[2] The British Standards Institution (2016). Carbon Management in Infrastructure PAS 2080:2016. Available at: PAS 2080 Carbon Management in Infrastructure verification | BSI (bsigroup.com)

[3] Department for Transport (2021). Transport Analysis Guidance (TAG) Unit A3. Available at: https://www.gov.uk/government/publications/tag-unit-a3-environmental-impact-appraisal

2. Scheme Description

High traffic volumes on the A350 Chippenham Bypass have resulted in delays and unpredictable journey times for road users for many years. Increasing traffic demand associated with housing and employment growth across the A350 Growth Zone is forecasted to push existing congestion issues to unacceptable levels. This will be detrimental to the strategic role of the A350 Chippenham Bypass.

The A350 provides an important strategic north-south link through Wiltshire. Ensuring that the A350 operates effectively is critical for unlocking housing and employment growth in Chippenham and the wider A350 Growth Zone as defined by Swindon and Wiltshire Local Enterprise Partnership.

The Scheme will complete Wiltshire Council's aim to dual the entire Chippenham Bypass. Phase 4 and 5 will involve dualling the remaining stretches of the A350 Chippenham Bypass as well as increasing capacity at Bumpers Roundabout. These works complement three preceding phases of dualling and junction improvements undertaken between 2014 and 2019. The phasing of each scheme was reflective of funding streams available at the time.

The Outline Business Case for the project was submitted to the Department for Transport (DfT) several years ago and was subsequently approved in November 2021. Wiltshire Council have now received funding to develop the project through to the Full Business Case Stage.

Construction of the Scheme is proposed to commence in spring 2024 and be completed by spring 2025.

2.1. Need for the scheme

Wiltshire Council is applying to the DfT for funding from the Major Road Network (MRN) element of the National Roads Fund for the Scheme; the A350 was designated MRN in December 2018. The MRN was adopted by the DfT in 2017 as part of the Transport Investment Strategy and implemented towards the end of 2018. The MRN was introduced to form a middle tier of roads sitting between the national strategic road network and the rest of the local road network and covers the UK's busiest and most economically important local authority 'A' roads.

Western gateway sub-national transport body (STB)

The Western Gateway STB has identified the A350 as a key strategic route. There is a need for an effective north-south link between the M4 and the south coast in order to open up new business opportunities by making it easier to transport freight from the south coast ports, and by improving road access to London as well as the rest of the Western Gateway area. The Western Gateway STB prioritised the Scheme for MRN funding in its Regional Evidence Base submitted to the DfT in July 2019.

The A350 Chippenham Bypass was originally constructed as a single carriageway, futureproofed for dualling. It was futureproofed with a wider corridor dedicated as highway and increased spans of over-bridges, with the aim to facilitate and not prejudice future dualling as currently proposed and to accommodate envisaged future growth.

The Scheme will complete Wiltshire Council's aim to dual the entire Chippenham Bypass. It therefore complements three preceding phases of dualling and junction improvements undertaken between 2014 and 2019. The phasing of each scheme was reflective of funding streams available at the time. All schemes were jointly funded by Wiltshire Council and devolved funding streams as summarised in Table 2-1 and shown on Figure 2-1.

Table 2-1 - Chippenham Bypass improvement schemes completed in recent years

Scheme name	Completion and funding	Description
Phase 1: A350 north of Chippenham	Completed: March 2015 £3m scheme partly funded through the Local Pinch Point Fund	• Widening A350 between the Badger Roundabout and Malmesbury Road Roundabout to dual 2-lane; • Minor adjustments to the entry/exit arms to the south of Badger Roundabout; • Improving Malmesbury Road Roundabout; and • Widening A350 southbound between Jackson's Lane and Malmesbury Road Roundabout to 2- lane.

Scheme name	Completion and funding	Description
Phase 2: Bypass improvements (Bumpers Farm)	Completed: February 2016 £3.4m scheme partly funded through the Local Growth Fund	• Widening the A350 to dual 2-lane between Brook and Bumpers Roundabouts; • Additional widening of the A350 for ~ 250 metres north of Brook to allow for a suitable merge length back to single lane and two southbound lanes for 100 metres approaching Brook; • Widening to dual 2-lane on a short stretch of the A350 immediately south of Bumpers Farm Roundabout; and • Minor widening of the Bumpers Farm Industrial Estate entry arm to Bumpers Farm Roundabout.
Phase 3: Chippenham Bypass improvements (Badger-Brook & Chequers)	Completed January 2019 £7m scheme partly funded through the Local Growth Fund	• Dualling the gap between pinch point improvements (Phase 1) and the Bumpers Farm improvements (Phase 2); • Dualling the A350 between a point 250 meters north of Cepen Park South Roundabout and a point 250m south of Chequers Roundabout; and • Widening of the A4 Westbound approaches and exits at Chequers Roundabout.

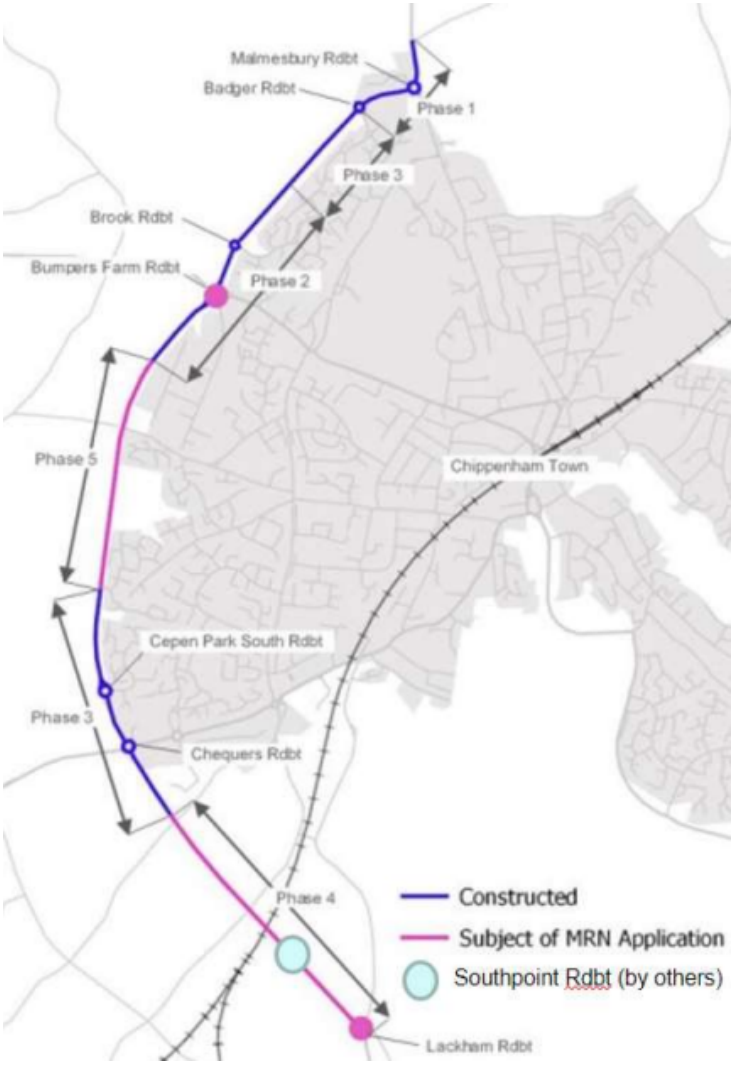


Figure 2-1 – A350 Chippenham Bypass improvement schemes

3. Legislation and Policy Drivers for Carbon Management

Relevant international, national and local policies are provided in Appendix A. Key policies, plans and guidance documents are described below.

3.1. UK National Policy

3.1.1. Climate Change Act

The UK has made commitments to tackle the root cause of climate change by reducing greenhouse gas (GHG) – also termed 'carbon' emissions - as well as to increase the resilience of development and infrastructure to the changing climate. The Climate Change Act 2008 (as amended in 2019)[4] sets a target to reduce net GHG emissions by at least 100% from 1990 levels by the year 2050 (Net Zero).

3.1.2. UK Carbon Budgets

Table 3-1 contains the UK's defined 'carbon budgets' as required by the Climate Change Act, from 2008-2037. The carbon budgets are set by the UK government and quantify the maximum level of emissions that may be released in the UK in million tonnes whilst still meeting its obligatory climate change targets. The UK government has met all its carbon budget targets to date, but it should be noted that to meet future carbon budgets and the Net Zero target by 2050 will require more challenging measures.

Table 3-1 - UK carbon budget reduction targets

UK carbon budget period	UK carbon budget emissions
1st carbon budget (2008 to 2012)	3,018 $MtCO_2e$
2nd carbon budget (2013 to 2017)	2,782 $MtCO_2e$
3rd carbon budget (2018 to 2022)	2,544 $MtCO_2e$
4th carbon budget (2023 to 2027)	1,950 $MtCO_2e$
5th carbon budget (2028 to 2032)	1,725 $MtCO_2e$
6th carbon budget (2033 to 2037)	965 $MtCO_2e$

3.1.3. Transport Decarbonisation Plan (TDP) 2021

In response to the UK's Net Zero emissions target, the DfT published "Decarbonising Transport: A Better, Greener Britain" referred to as the Transport Decarbonisation Plan (TDP) in 2021. The TDP outlines a number of commitments by the Government to remove all emissions from road transport to achieve Net Zero by 2050. Commitments that will have a direct impact on road user emissions from the Scheme include:

- An end to the sale of new petrol and diesel cars and vans by 2030
- All new cars and vans must by 100% zero emission at the tailpipe by 2035
- An end to the sale of all non-zero emission road vehicles including HGVs by 2040

3.1.4. UK Net Zero Strategy: Build Back Greener (2021)

Adopted in October 2021, this sets out the UK Government's strategy for continuing the path to Net Zero by setting out clear policies and proposals for decarbonising all sectors of the UK economy to meet the net zero target by 2050. The strategy sets out plans for reducing emissions from each sector of economy, noting that alongside the electrification of road transport, other measures will be necessary, such as increasing the share of trips made using public transport, cycling and walking.

[4] https://www.legislation.gov.uk/ukdsi/2019/9780111187654

3.2. Local Policy

In February 2019 Wiltshire Council resolved to acknowledge a climate emergency and to seek to make the county of Wiltshire carbon neutral by 2030. Cabinet subsequently committed to also make the council carbon neutral by 2030. The Climate Strategy was adopted at Full Council in February 2022 and sets out how this will be achieved. Wiltshire Council's Climate Strategy Delivery Plan, sets out how the council will deliver the objectives of its Climate Strategy

Chippenham Town Council also declared a climate emergency in 2019. It's draft Neighbourhood Plan includes sustainability and climate change mitigation as a key cross-cutting theme.

3.3. DMRB GG 103 Introduction and general requirements for sustainable development and design

The principles outlined in the Design Manual for Roads and Bridges (DMRB) GG103 'Introduction and general requirements for sustainable development and design' discuss how different engineering and environmental constraints identified throughout design development and assessments have influenced the design.

The specific requirements specified in DMRB GG103 are:

- Design shall aspire to minimise greenhouse gas emissions
- Carbon emissions associated with the whole life of a project shall be minimised

3.4. DMRB LA114 Climate assessment

DMRB LA114 Climate states that: "Projects shall seek to minimise carbon emissions in all cases to contribute to the UK's target for net reduction in carbon emissions. Projects should apply and develop the following options:

1) *Avoid/ prevent:*

a. *Maximise potential for reusing and/or refurbishing existing assets to reduce the extent of new construction required, and/or explore alternative lower carbon options to deliver the project objectives (i.e. shorter route options with smaller construction footprints)*
b. *Identify through projects and delivery programmes opportunities to influence user GHG emissions*

2) *Reduce:*

c. *Apply low carbon and/or reduced resource consumption solutions to minimise resource consumption*

3) *Remediate:*

d. *Identify, assess and integrate measures to further reduce carbon through on or off-site offsetting or sequestration."*

4. Carbon reduction hierarchy

When identifying potential opportunities to reduce carbon emissions, the following carbon reduction hierarchy, as provided in PAS 2080, should be used:

- **Build nothing**: evaluate the basic need for an asset and/ or programme of works and explore alternative approaches to achieve outcomes set by the asset owner/ manager[5]
- **Build less**: evaluate the potential for re-using and/or refurbishing existing assets to reduce the extent of new construction required

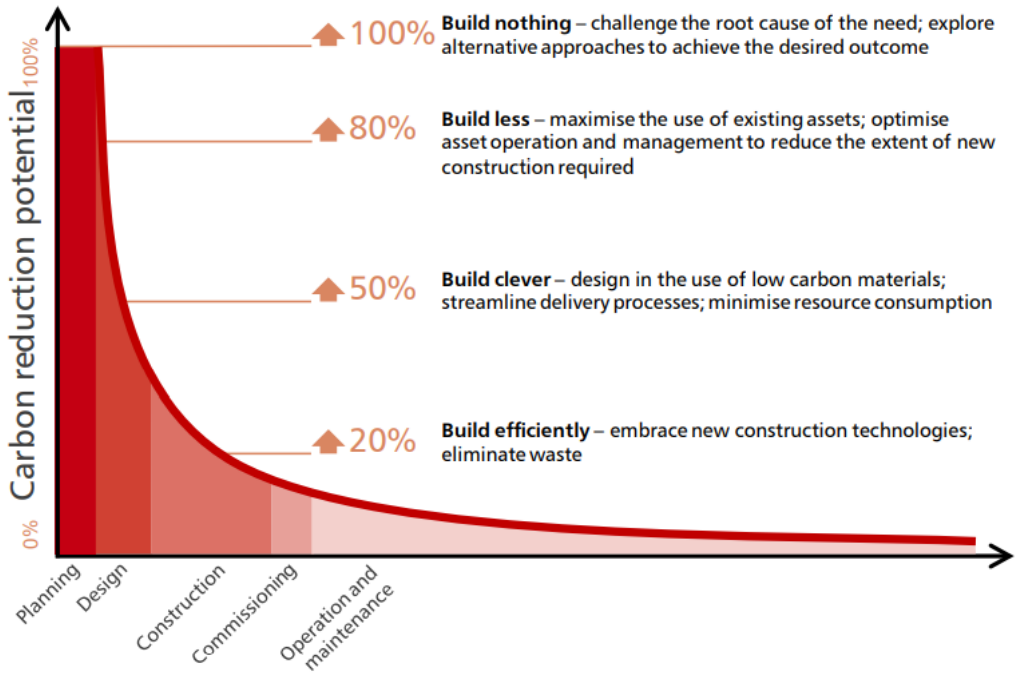
[5] Organization that manages and is responsible for providing, operating and maintaining infrastructure assets

- **Build clever**: consider the use of low carbon solutions (including technologies materials and products) to minimise resource consumption during the construction, operation and user's use stages of the asset or programme of work; and
- **Build efficiently**: use techniques (e.g. construction, operational) that reduce resource consumption during the construction and operation phases of an asset or programme of work.

An example of the potential reductions that can be saved is shown in

Figure 4-1 below.

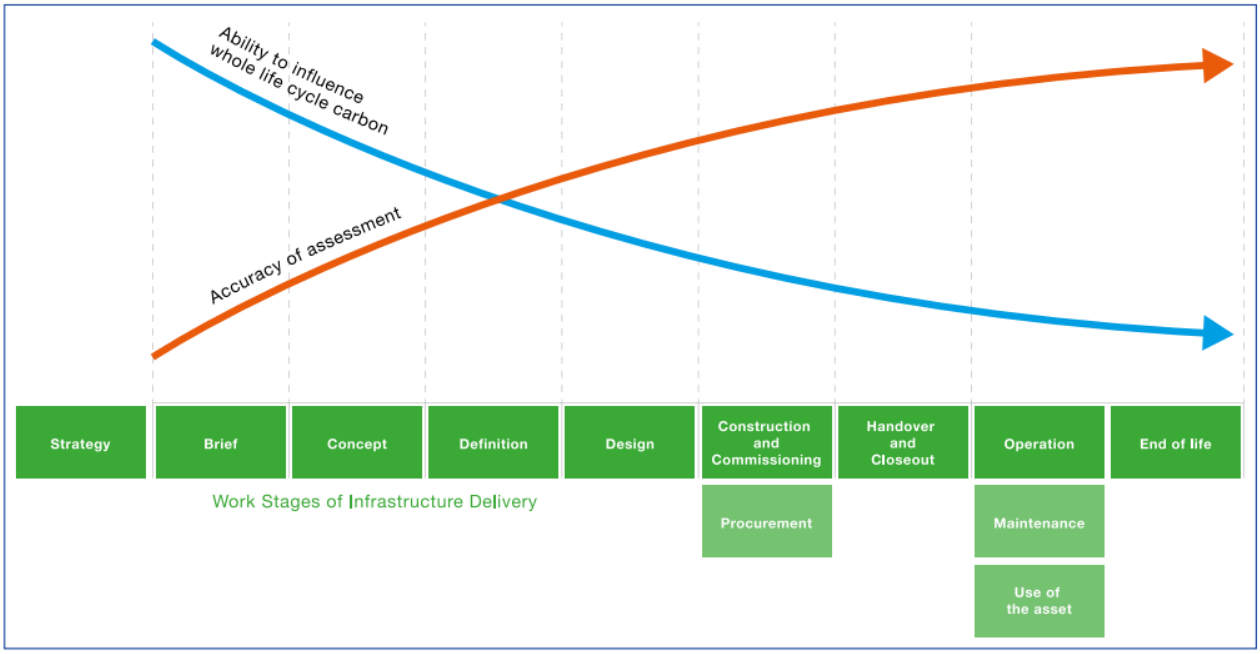
Figure 4-1 - Carbon Reduction Curve



Source: Green Construction Board

The scope for reducing carbon emissions is greater during the initial work stages (stages Brief to Definition) than in the later work stages (stages Design to End of Life), as shown in Figure 4-2. However, the degree of knowledge of the types of assets required to deliver the desired outcomes is smaller at these initial work stages and increases over time. Accuracy requirements for the assessment (or quantification) of whole life cycle carbon emissions also vary in different work stages (e.g. for data and modelling assumptions that are needed for assessing whole life carbon emissions). The degree of accuracy becomes important when it affects decisions in each work stage to select the lowest whole life carbon option.

Figure 4-2 - Conceptual diagram showing ability to influence carbon reduction across the different work stages of project delivery



Within relevant tasks, the hierarchy should be applied through any techniques that generate new ideas, ranging from:

- Individual desk-based working and light-bulb moments; to
- Extensive collaboration across the supply chain as both on-going discussion and specific innovation and value engineering exercises; to
- Identifying transferable solutions external to the scheme, e.g. through learning from other projects, or CPD training.

In summary, any new design or construction idea that is generated, through whatever means, that can lead to lower carbon solutions should be used, and this plan has been developed to enable and accommodate this.

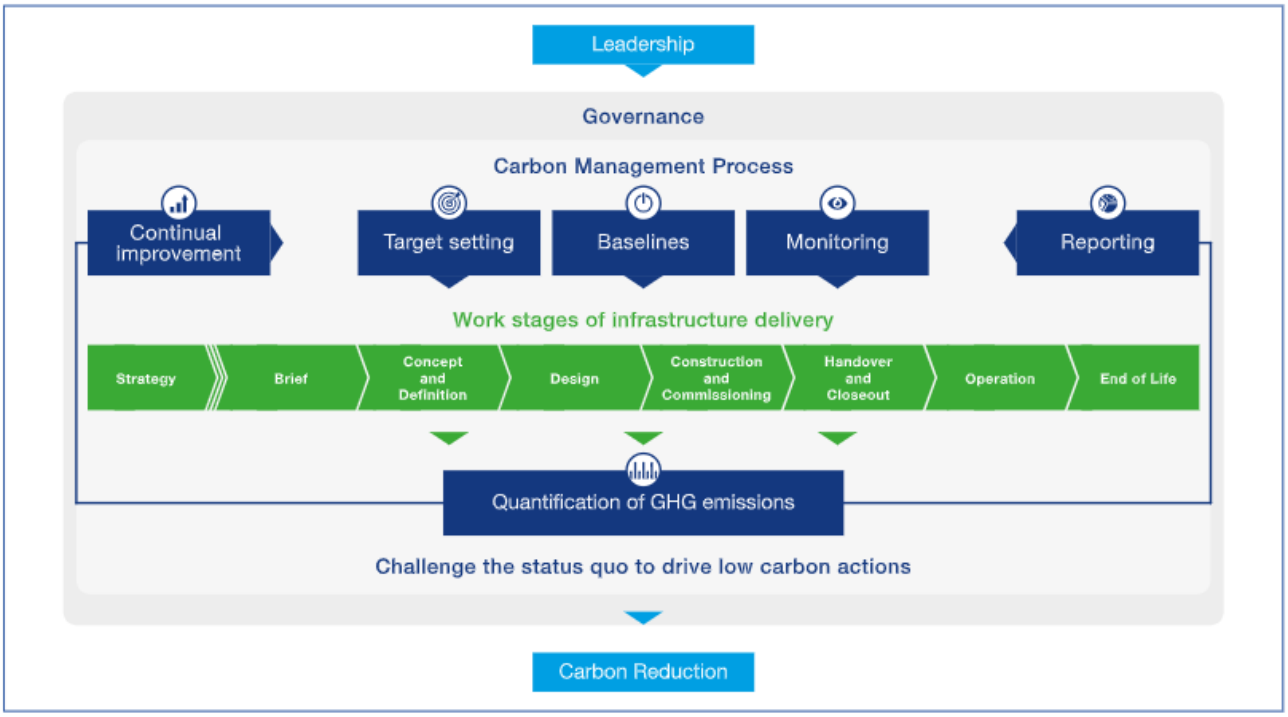
5. Scope of Carbon Management Process

The various components of the carbon management process, in accordance with PAS 2080, are shown in

Figure 5-1. The carbon management process needs to include the following:

- Quantification of GHG emissions
- Target setting, baselines and monitoring
- Reporting
- Continual improvement

Figure 5-1 - Carbon Management Process



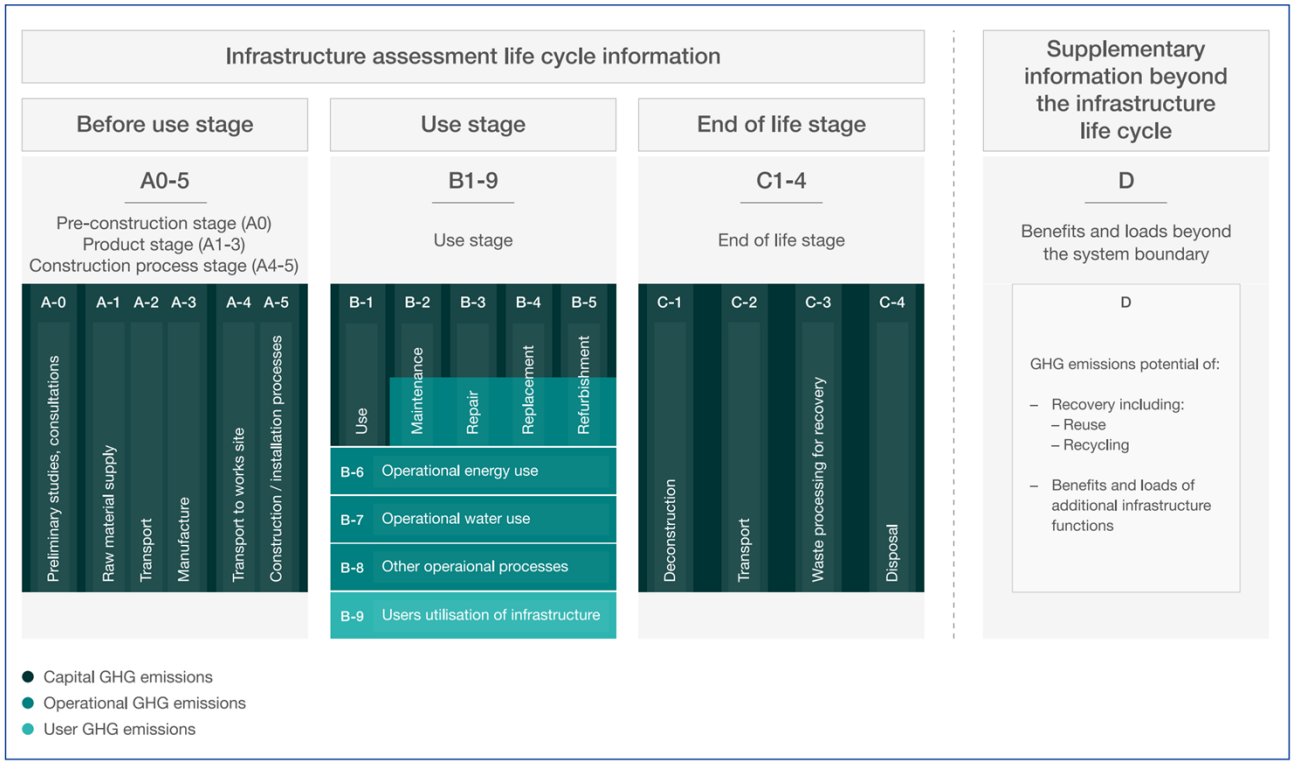
The carbon management process integrated into project delivery processes drives the **value chain**[6], as described in section 6, to collaborate and create a culture of innovation. This supports reductions in carbon and cost during project delivery by driving the use of low carbon solutions.

PAS 2080 applies a **whole life cycle** based approach to GHG emissions, as shown in Figure 5-2 below. The purpose of this is to avoid un-intended consequences, helping to ensure a balanced perspective by showing the gross size/scale of emissions and when they occur. In this way, informed decisions can be made supporting optimum low carbon outcomes.

Each life cycle stage includes boundaries, which further identify specific emissions sources applicable within each life cycle stage, and are critical to defining the full scale of emissions to be considered. The stages that have been quantified for the baseline of this scheme are explained further in section 6.

[6] Organisations and stakeholders involved in creating and managing infrastructure assets. These include asset owners/managers, designers, constructors and product/material suppliers.

Figure 5-2 - PAS 2080 and Project Carbon Emissions Scope

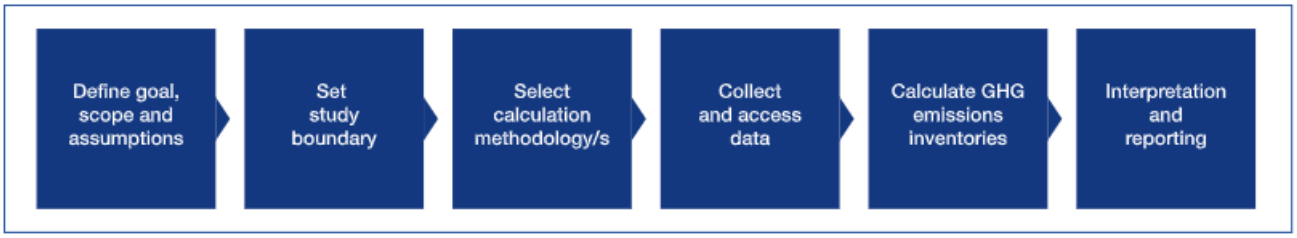


The CMP is a live document which should be updated at each stage of the project, with revisits to the **target setting**, **baselines**, **monitoring** of carbon reduction, **GHG emissions quantification**, and **reporting** to allow for **continual improvement** in the carbon management process in accordance with PAS 2080.

6. Quantification of GHG emissions

The quantification of GHG emissions allows **carbon hotspots** to be identified and informs carbon reduction strategies. The quantification of GHG emissions follows the steps shown in Figure 6-1 in line with PAS 2080 and will need to be revised based on available information at each stage.

Figure 6-1 – Principal steps of GHG emissions quantification



6.1. Assessments undertaken to date

The method used for quantifying carbon emissions to date is provided in Chapter 14 Climate effects of the EAR. The study area, as defined in Chapter 14, has been determined based on DMRB LA 114, the boundaries and scopes of National Highway's Carbon Tool, and PAS 2080. Although this Scheme is not a National Highways Scheme, the Carbon Tool is considered an appropriate tool to use on highways schemes.

The life cycle stages and GHG sources presented in Table 6-1 are included within the assessment, with reference to the type of assessment which has been carried out. Emissions have been calculated for the construction and operation stages of the scheme. The operation phase is assumed to cover 60 years from opening year in line with the appraisal period used in the TAG appraisal. The emissions calculated provide the baseline for the scheme.

It should be noted that the data provided here is based on the Scheme design at the time of undertaking the EAR. Once the Scheme moves into the detailed design phase and a contractor is appointed, more detail will become available which could mean changes to this dataset.

Table 6-1 - Sources and lifecycle stages for scheme GHG emissions

Main stage of project life cycle	Sub-stage of life cycle	Potential sources of GHG emissions (not exhaustive)	Details of sources scoped in
Construction stage	Product stage; including raw material supply, transport and manufacture.	Embodied GHG emissions associated with the required raw materials.	Materials quantities
	Construction process stage: including transport to/from works site and construction /installation processes.	Activities for organisations conducting construction work	Fuel/electricity consumption. Construction activity type/duration. Transportation of materials from point of purchase to site, mode/distance.
	Land use change	GHG emissions mobilised from vegetation or soil loss during construction	Type and area of land subject to change in usage
Operation stage (in line with appraisal period)	Use of the infrastructure by the end-user (road user).	Vehicles using highways infrastructure.	Traffic count/speed by vehicle type for highway links.
	Operation and maintenance (including	Energy consumption for infrastructure operation and	Fuel/electricity consumption for

Main stage of project life cycle	Sub-stage of life cycle	Potential sources of GHG emissions (not exhaustive)	Details of sources scoped in
	repair, replacement and refurbishment).	activities of organisations conducting routine maintenance.	vehicles, lighting and plant. Waste and arisings quantities, transport mode/distance and disposal fate.
	Land use and forestry	Ongoing land uses GHG emissions/sequestration each year	Type and area of land subject to change in usage. The net change in vegetation.
Opportunities for GHG reduction throughout project life cycle (construction, operation and decommissioning)	GHG emissions potential of recovery including reuse and recycling GHG emissions potential of benefits and loads of additional functions associated with the study system.	Avoided GHG emissions through substitution of virgin raw materials with those from recovered sources.	Waste and arisings material quantities and recycling/reuse fate.

Table Source: adapted from DMRB LA 114

6.1.1. Construction emissions

As shown in Table 6-2, the estimated emissions during the construction phase, including emissions due to loss of habitats (Land-Use Change (LUC)), for the Scheme are 9,363 tCO_2e.

The largest emissions are contributed by the embodied carbon of the materials, 5,768 tCO_2e, or 62% of the total.

The split of the emissions for the different phases of the Scheme is as follows, and shows that Phase 5 is associated with the largest quantity of emissions:

- Phase 4: 2,411 tCO_2e
- Phase 5: 3,692 tCO_2e
- Bumpers Farm Roundabout: 2,016 tCO_2e
- Land-Use Change: 1,244 tCO2e

The breakdown of the various components is shown in

Figure 6-2. Bulk materials which constitute asphalt, ready mix concrete, fill and aggregate are the largest contributor to the construction emissions with 4,853 tCO_2e (52% of overall emissions).

Fencing and barrier is the second largest contributor to construction emissions with 1,349 tCO_2e (14% of overall emissions). Land Use Change makes up the third largest source of emissions with 1,244 tCO_2e (13% of overall emissions).

Figure 6-2 - Breakdown of Construction Emissions

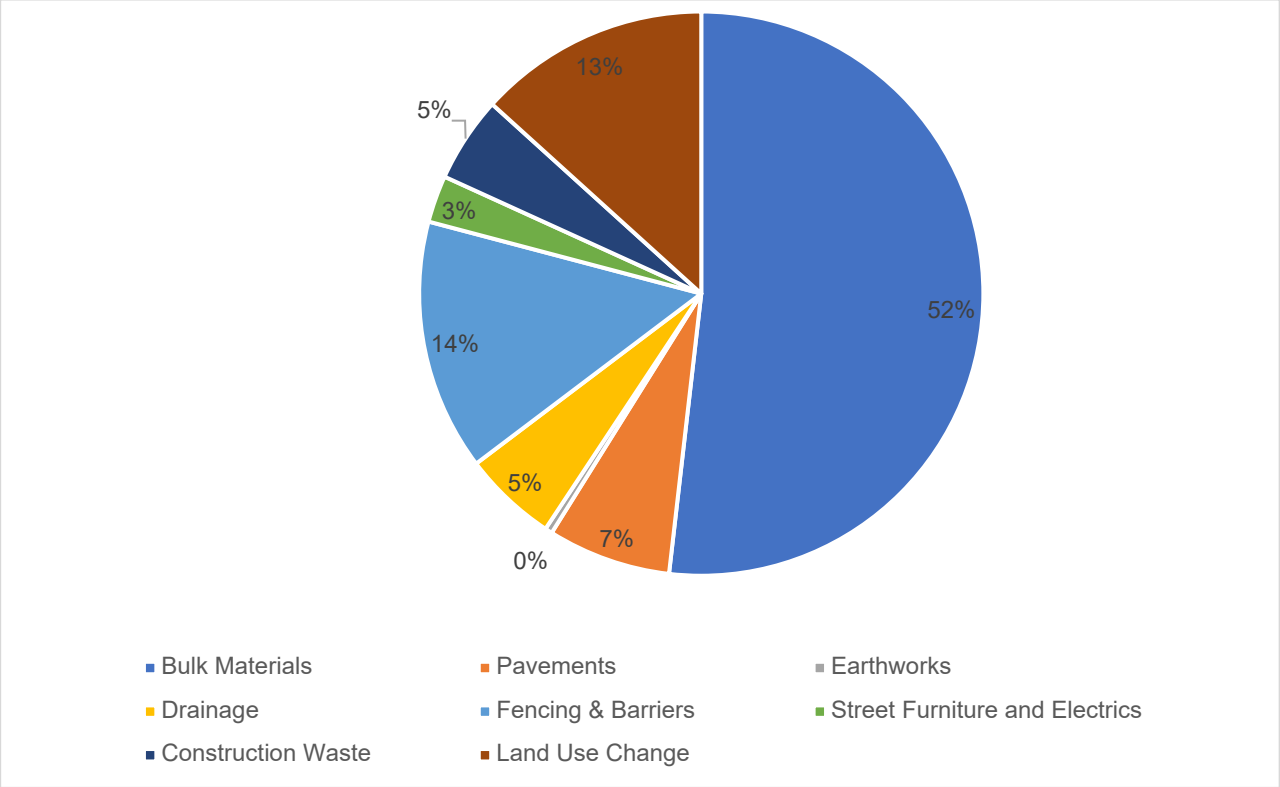


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Table 6-2 - Construction phase emissions, tCO_2e

Scheme Components	Lifecycle	Bulk Materials	Pavements	Earthworks	Drainage	Fencing and Barriers	Street Furniture and Electrics	Construction Waste	Lifecycle Total	Construction phase total
Phase 4	Material	810	171	2	82	587	102	20	1773	2411
	Transport	462	15	2	3	41	0	114	638	
Phase 5	Materials	1373	267	13	314	640	18	27	2651	3692
	Transportation	792	25	10	13	46	0	155	1041	
Bumpers Farm Roundabout	Materials	895	169	7	89	33	131	21	1344	2016
	Transportation	521	17	5	3	2	1	123	672	
Land Use Change (LUC)	Removal habitat								1244	1244*
Total		**4853**	**662**	**39**	**505**	**1349**	**252**	**460**		**9363**

* LUC emissions are for the entire Scheme. The LUC emission calculations are included in Appendix. J, Volume 2 of the EAR

6.1.2. Operational emissions

Operational phase emissions for the opening and design years are shown in Table 6-3 for the Do Minimum scenario and Table 6.4 for the Do Something Scenario.

With the Do Minimum scenario there would be a total of 382,154 tCO_2e in the opening year of 2024 for the Scheme and 307,512 tCO_2e in the Design Year (2039), as emissions from road users reduce in future years. Over the 60 year appraisal period, total emissions would be 19,047,874 tCO_2e.

With the Do Something Scenario, there would be a total of 382,543 tCO_2e in the opening year of 2024 for the Scheme and 308,279 tCO_2e in the Design Year (2039), as emissions from road users reduce in future years. Over the 60 year appraisal period, total emissions would be 19,090,818 tCO_2e when considering all operational phase emissions over a 60-year operational period.

Table 6-3 Do minimum emissions, tCO_2e

Life Cycle Module	Emissions (tCO_2e)		
	2024 Emissions	2039 Emissions	60-year operational period
Direct (Road User)	379,778	303,173	18,803,204
Indirect (Road User)	1,333	3,512	193,280
Operation and maintenance	1,105	889	55,090
Land Use & Land-Use Change	-62	-62	-3,700
Total	382,154	307,512	19,047,874

Table 6-3 – Operational phase emissions – Do something scenario

Life Cycle Module	Emissions (tCO_2e)		
	2024	2039	60-year operational period
Direct (Road User)	380,158	303,921	18,845,150
Indirect (Road User)	1,333	3,520	193,690
Operation and maintenance	1,106	892	55,213
Land Use & Land-Use Change	-54	-54	-3,235
Total	382,543	308,279	19,090,818

Comparing Do Minimum and Do Something scenarios

The calculated operational stage emissions for the 2024 and 2039 Do Minimum and Do Something scenarios are compared below in Table 6-4 to show the net change. The Scheme will lead to an increase in operational emissions compared to the Do Minimum scenario:

- 2024 Opening Year: 389 tCO_2e
- 2039 Design Year: 767 tCO_2e
- For 60-year appraisal period: **42,944**

Table 6-4 – Do Something and Do Minimum operational emissions comparison

Life Cycle Module	Total Operational Emissions (tCO_2e)								
	2024 Do Minimum	2024 Do Something	Difference	2039 Do Minimum	2039 Do Something	Difference	Total over 60-year operation* (Do-Minimum)	Total over 60-year operation* (Do-Something)	Difference
Total emissions for the Scheme	382,154	382,543	**389**	307,512	308,279	**767**	19,047,874	19,090,818	**42,944**

*Cumulative over the period 2024-2084

Over the 60-year appraisal period the majority of additional emissions associated with the Scheme are from road user carbon (82% of total) as shown in **Error! Reference source not found.**, however this will reduce as a result of government policies which are not yet taken into account in the methodology.

Table 6-4 - Carbon emission source apportionment over 60 year appraisal period

Life cycle module	Net change over 60-year appraisal period (tCO_2e)	Percentage of total
Construction	9,363	18%
Direct (Road User)	41,946	82%
Indirect (Road User)	410	0.8%
Operation and maintenance	123	0.24%
LUC (loss or gain of sequestration potential)	-465	-0.9%
Total		100.0%

6.1.3. Land Use and Land-Use Change Emissions

The change in habitats due to construction of new highway and its elements will result in a change in emissions. This has been calculated as -3,700 tCO_2e and -3,235 tCO_2e over the 60 year appraisal period for do-minimum and do-something scenarios respectively, although there is limited data available at this stage. The negative tCO_2e means there is still expected to be carbon sequestration with the Scheme, although the amount sequestered will be less than the Do-minimum due to removal of some vegetation with the Scheme. This estimate also takes into account offsetting of carbon emissions taken up by new planting/ replacement of habitat.

7. Baseline, Mitigation Measures and Monitoring

7.1. Baseline

The baseline for the scheme is presented in section 6 of the CMP, as informed by the quantification of GHG emissions with the scheme during construction and over the 60 year appraisal period during operation, before any carbon reduction measures have been applied. The baseline GHG emissions should be updated and documented as additional design details are available as the CMP is revisited.

7.2. Target Setting

A target should be set against the baseline so that performance against it can be determined. The scheme should aim to reduce carbon emissions as much as possible throughout the life cycle of the project. Given the need to revisit the baseline at each stage of the scheme, as more accurate data becomes available, then it is also possible that the target may need revisiting.

The GHG emissions which make up the construction phase for the baseline at this stage are informed by best estimates by the designers, without any constructor on board. There is potential for scope for further carbon reductions once a constructor is appointed.

Given that the operational phase emissions are largely outside the control of the value chain, and will be reduced over time with the decarbonisation of the vehicle fleet, it is recommended, as a proportionate approach, that the focus on setting a target is for the capital emissions associated with the construction phase only at this stage. However, opportunities to reduce carbon emissions during operation, both from road users and from operation and maintenance, will continue to be logged and included within this CMP.

Given that at this stage there are also no constructors contracted for this scheme, the target should be revisited once they are on board, given their ability to be able to have a greater understanding of where carbon savings can be made through construction rather than just purely from the design.

The target for this scheme at this stage is to reduce capital emissions during construction by between 15% and 25%.

Proposals to inform this reduction in carbon emissions are provided in section 9, and will be further developed over the next stages of this scheme.

7.3. Monitoring

Monitoring is a key and mandatory element of carbon management. Progress against targets and in relation to the carbon baseline should be monitored in line with PAS 2080 and Wiltshire Council specific requirements and should be compatible with other national policy and regulatory requirements.

Data is expected to be reported as tonnes of carbon dioxide equivalent (tCO_2e). Monitoring and reporting is expected to be carried out at each stage of the scheme, and also on an annual basis, once construction commences. This could be undertaken more frequently during construction to ensure the capital carbon target is met.

Appropriate monitoring requires key roles and responsibilities to be established to allow effective implementation of actions. These are discussed further in section 8.

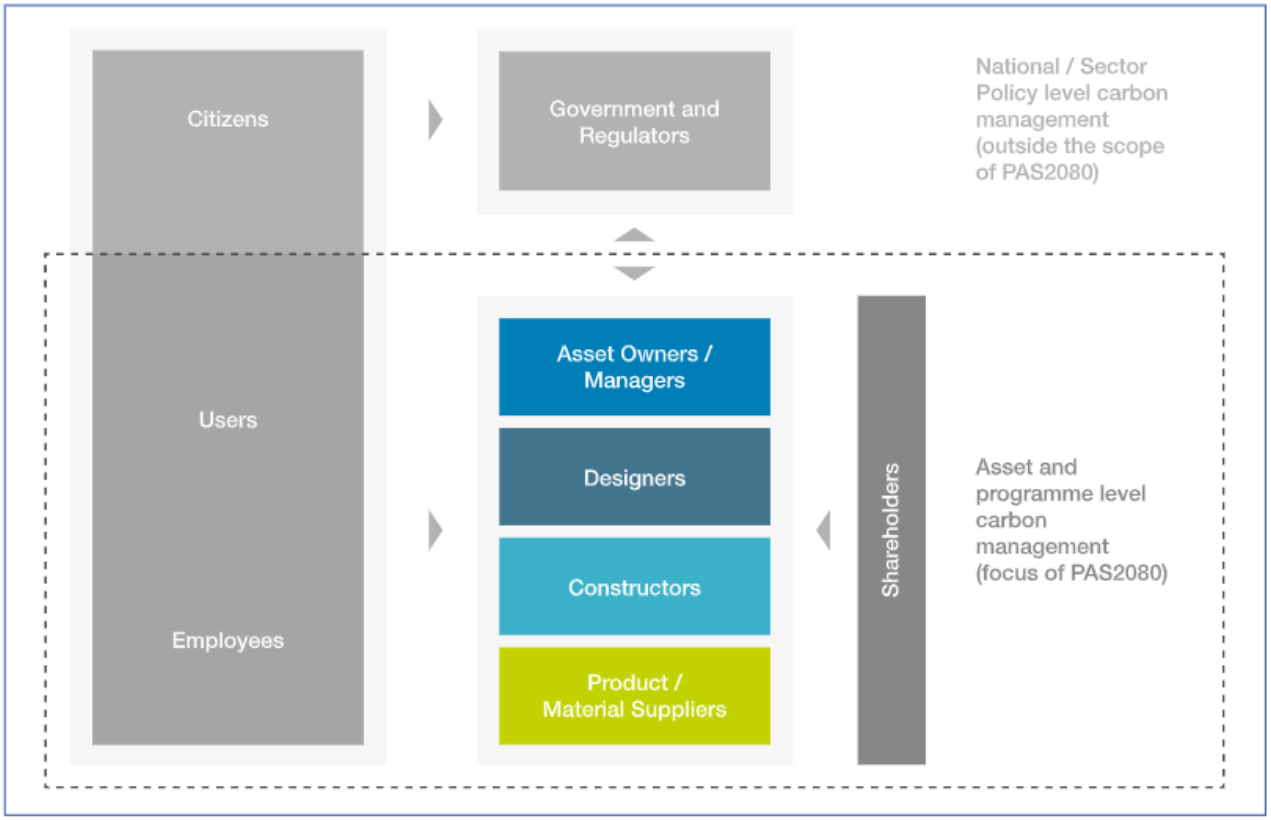
8. Management and Delivery of the Carbon Management Plan

8.1. Value Chain Members responsible for carbon management

Leadership and governance is recognised as a key enabler of a CMP. Wiltshire Council, as **asset owner,** has overall responsibility for the implementation of the CMP, and for encouraging the **value chain** to challenge the existing 'business as usual' approach of infrastructure delivery, to reduce carbon and cost in assets and programmes of work.

Figure 8-1 presents the value chain members responsible for carbon management for the scheme. These include the following: **Asset Owner/ Manager**; **Designer**; **Constructor**; and **Product/ Material Suppliers** – also termed as "**suppliers**".

Figure 8-1 - Infrastructure value chain members responsible for carbon management



8.2. Project Team Roles and Responsibilities

This section sets out the outline roles and responsibilities across the project team. Every project team member is responsible for contributing to improving the carbon performance of a project. As the scheme progresses specific requirements of all value chain members will be included.

Collectively the project team is required to:

- Adopt the carbon reduction targets set by Wiltshire Council as a minimum
- Communicate and share the carbon targets with other value chain members
- Collect data relevant to their activities and roles within infrastructure delivery for carbon baselines
- Take into account limitation in the accuracy of baselines when making comparisons against their activities during delivery and report these against any claims of reductions achieved

- Undertake design development and construction planning according to the requirements specified in the project carbon management plan;
- Apply the carbon reduction hierarchy, using unlimited design and construction thinking and project planning;
- Ensure that carbon management is embedded throughout each stage of the scheme;
- Work with suppliers to identify, assess and develop new design proposals that may improve the carbon performance of the scheme; and
- Understand the overall purpose and requirements of this plan and communicate it to project stakeholders as necessary to assist with implementation.

Specific roles and associated responsibilities applicable to the asset owner, Wiltshire Council, are detailed below.

- Set the overall carbon management direction including targets and governance systems
- Ensure staff have adequate carbon management skills through training or recruitment
- Ensure strategic plans for new and existing assets incorporate clear carbon objectives and targets
- Procure products/ materials/ services using agreed criteria to achieve carbon objectives
- Engage across the value chain to ensure that technologies and solutions proposed and implemented are in line with carbon targets
- Ensure assets are operated to achieve carbon targets
- Ensure asset maintenance and replacement strategies incorporate carbon objectives
- Managing carbon throughout the life of an asset

Specific roles and associated responsibilities that apply to the designer, Atkins, are detailed below.

- Project Director:
  - Ensures that a project carbon management plan is implemented into project delivery
  - Engages with key stakeholders and make them aware of the responsibility to participate in the delivery of the carbon management plan
  - Ensures competent resource is provided to support the delivery of the carbon management plan, and support the development and skills/ awareness throughout the team
  - Supports options assessment and correct prioritisation of carbon performance
- Project Manager:
  - Responsible for implementation of the project carbon management plan on the project
  - Agrees a RACI Matrix of Carbon Management Responsibility
  - Ensures that carbon management is documented in the project programme
  - Supports discipline leads with realising carbon reduction opportunities and minimising risks
  - Has a communications plan in place that supports collaboration between the value chain members
- Project Technical Lead:
  - Ensures appropriate technical assurance, capability and techniques are applied
  - Prepares and updates the project carbon management plan to reflect the overall needs of the project, in accordance with relevant guidance
  - Reviews the competencies of the discipline leads and their teams to ensure appropriate skills and training/ support are mapped
  - Reviews and reports on the implementation of the requirements of the CMP
  - Puts a system in place for recording decisions and ensures they are recorded.
  - Ensures that carbon is a consideration throughout the project's technical delivery processes and co-ordinates this within the wider team
  - Assists team in assessment of carbon performance/ options and brings a consistent approach
- Discipline Leads:
  - Ensure designers, engineers and specialists in their team are aware of their responsibilities, and have the knowledge to carry them out, and can apply the carbon reduction hierarchy

- Challenge designers, engineers and specialists to apply innovation and assess carbon reduction potential opportunities

The responsibilities of those involved within the value chain are included in Table 8-1 which shows the **RACI**[7] matrix for the scheme at this stage. The constructors and suppliers for the scheme are not yet known, however they will be informed of the various activities once they are involved. The terms for the RACI matrix are defined as follows:

- Responsible – The doer of the activity
- Accountable – The value chain member accountable for ensuring the activity is completed to the level required
- Consulted – Value chain member who is actively engaged and contributes input to the doer of the activity
- Informed – Value chain member who is kept aware of how and when the activity is being completed and ready to provide inputs if necessary

Table 8-1 – RACI matrix for the CMP at OBC stage

Carbon Management Process activity	Asset Owner (Wiltshire Council)	Designer (Atkins)	Constructor (tbc)	Product / Material Supplier (tbc)
Set objectives for carbon management	A	R	I	I
Set measurable target to achieve objectives	A	R	I	I
Obtain baseline data by calculating GHG emissions	A	R	I	I
Compare emissions against baseline	A	R	I	I

R= responsible A=accountable C=consult I=inform

[7] Responsible, Accountable, Consulted, Informed (RACI)

9. Reporting, Continual Improvement, Communication and Training

9.1. Reporting

Reports on whole life carbon emissions will be provided at each stage of the scheme, or as required by Wiltshire Council. The reports will allow progress of monitoring against targets and continuous improvement over the duration of the project and inform decision-making in managing whole life carbon.

9.2. Implementation of Low Carbon Solutions

Table 9-1 provides the current log of ideas to reduce carbon emissions. These can be further developed during the next stages of preliminary and detailed design, with those ideas that are implemented, recorded and noted.

Table 9-1 – Log of Potential Carbon Reduction Opportunities

Item No	Summary details of implemented opportunity	Carbon reduction achieved tCO_2	Estimated % reduction
1	Restricting lighting to near the Junction and removing a section of existing lighting	TBD	TBD
2	Using energy-efficient LED lights	TBD	TBD
3	Central management system (CMS)for lighting switching to reduce energy consumption	TBD	TBD
4	Retaining existing lighting units wherever possible to reduce waste and related emissions (reusing some columns potentially)	TBD	TBD
5	Using extra low voltage signal equipment	TBD	TBD
6	Reducing the need for significant retaining walls – highways	TBD	TBD
7	Replacement of hedgerows impacted by the Scheme.	TBD	TBD

9.3. Continual improvement

To allow continual improvement, the following key points should be followed by all value chain members:

- Establish a process of continual improvement and embed in the relevant carbon management process components
- Seek the input of all value chain members to the process of continual improvement of their own activities during infrastructure delivery
- Capture carbon emissions information and share with other value chain members in order to facilitate benchmarking and continual improvement in future carbon management between organizations within infrastructure sectors
- Capture carbon reduction solutions and share learning with other value chain members to inform future current good practice

9.4. Communication

The project team will be kept informed about carbon targets and the carbon management plan through appropriate communications.

Carbon reduction opportunities will also be discussed and recorded at meetings for designers, engineers, construction specialists and key subcontractors where relevant. Carbon reduction achievements will also be communicated.

9.5. Training and Awareness

Training requirements for the key roles will be identified by the management teams, and will vary according to role. This section will be updated for the constructors and suppliers once they are involved in the scheme.

9.5.1. Asset Owner - Wiltshire Council

Training requirements for Wiltshire Council will be ascertained during preliminary and detailed design stages.

[Wilshire Council to add details]

9.5.2. Designer - Atkins

Training resources are provided to all staff on the following topics:

- Design for Life: Carbon and energy use
- Whole Life Carbon Management (WLCM)
- Net Zero Carbon Introduction (course content provided by UK Green Building Council)
- Engineering Net Zero – An Introduction (Global training introducing key concepts around climate change and net zero)

Atkins are also developing further courses to be made available to all staff on:

- Engineering Net Zero – An Introduction (Global training introducing key concepts around climate change and net zero)
- Carbon – The Basics
- How to drive reduction through projects
- Carbon Knowledgebase

9.5.3. Principal Contractor

The Principal Contractor will need to implement the Carbon Management Plan and ensure that key personnel are suitably trained to be able to embed and identify further carbon reduction measures

Appendices

Appendix A. Legislation, Regulatory and Policy Framework

Table A-1 - Legislation, regulatory and policy framework for effects on climate

Scale	Legislation/ regulation/ policy	Summary of requirements
International	Kyoto Protocol (1997)	The first international agreement to mandate greenhouse gas emission reductions. Under the United Nations Framework Convention on Climate Change (UNFCCC) treaty, industrialised nations pledged to cut their annual emissions by 5% on a 1990 baseline by 2012. Although the target was met successfully, it was insufficient to offset the increase in emissions from industrialising countries. Total global emissions continued to grow over the period, by 40% between 1990 and 2009.
	COP 21 Paris Agreement (2015)	Strengthened negotiations at COP 21 led to the 2015 Paris Agreement, the aim of which is to maintain the increase in global average temperature at 'well below' 2°C and 'pursue efforts' to limit the temperature increase even further to 1.5°C. In 2018, the International Panel on Climate Change (IPCC) published a special report in response to the Paris Agreement, to present the impacts of the targeted 1.5°C temperature rise. The report highlighted that to achieve this, global emissions must decrease by 45% by 2030 (against a 1990 baseline), and that net zero global emissions (where emissions and removals from the atmosphere are balanced) must be achieved by 2050. This is noted to require rapid and far-reaching transitions for every sector on an unprecedented scale.
	COP 26 Glasgow (2021)	Negotiations have strengthened further at COP 26 in Glasgow in 2021, with countries agreeing to 'phase down' unabated coal power and 'phase out' inefficient fossil fuel subsidies. 40 countries signed up to ending coal consumption by 2030. Further, the conference concluded with the first commitment on methane emission release, with 100 countries pledging to reduce methane emissions by 30% compared to 2020 levels, by 2030. The final message of the conference concluded the world must 'secure global net-zero by mid-century, to keep the 1.5 degrees target alive', recognising the severity of climate impacts above this.
National	Climate Change Act (2008) as amended in 2019[8]	To support international efforts, the UK Climate Change Act (2008) set a legal reduction target of 80% against 1990 levels by 2050. It also introduced a series of carbon 'budgets' for five-year periods, to act as stepping-stones to the overall reduction. There are budgets currently set up to 2037. In response to the ambitions of the Paris Agreement, in June 2019 the Climate Change Act was amended to set the overall reduction target by 2050 to at least a 100% reduction in net emissions against 1990 levels, i.e. 'net zero carbon'. The UK has so far outperformed its budgets, but progress is slowing, and the country is not on track to meet its future budgets or the overall reduction target, according to the most

[8] http://www.legislation.gov.uk/ukpga/2008/27/contents

Scale	Legislation/ regulation/ policy	Summary of requirements
		Recent Progress to Parliament by the Committee on Climate Change[9].
	National Planning Policy Framework (NPPF) 2021[10]	Paragraph 152 outlines its support for transitioning to a low-carbon future, by way of reducing greenhouse gas emissions and supporting renewable and low-carbon energy and associated infrastructure. Building on the NPPF, planning practice guidance advises on how to identify suitable measures in the planning process to mitigate and adapt to climate change[11].
	Net Zero Strategy: Build Back Greener (2021)	Sets out the UK Government's strategy for continuing the path to Net Zero by setting out clear policies and proposals for decarbonising all sectors of the UK economy to meet the net zero target by 2050. The strategy sets out plans for reducing emissions from each sector of economy, noting that alongside the electrification of road transport, other measures will be necessary, such as increasing the share of trips made using public transport, cycling and walking.
	Transport Decarbonisation Plan (TDP)[12]	In response to the UK's Net Zero emissions target, the Department for Transport published its Transport Decarbonisation Plan (TDP) in 2021. The TDP outlines a number of commitments by the Government to remove all emissions from road transport to achieve Net Zero by 2050. Commitments that will have a direct impact on road user emissions from the Scheme include: an end to the sale of new petrol and diesel cars and vans by 2030; all new cars and vans must be 100% zero emission at the tailpipe by 2035; an end to the sale of all non-zero emission road vehicles including HGVs by 2040.
	Construction 2025 (July 2013) HM Government[13]	Construction 2025 (2013) set out how efficiency improvements were to be created in construction, covering sustainability and carbon and including a target to reduce emissions by 50% by 2025. The emissions reduction target of 50% is not scheme specific, and the efficiency improvements are broad. In terms of the proposed scheme and emissions reduction, the reduction target should be considered when developing scheme-specific mitigation measures, where relevant.
	Infrastructure Carbon Review (2013) HM Treasury[14]	The Infrastructure Carbon Review sets out carbon reduction action required by infrastructure organizations that have formally endorsed the review.
Regional	Wiltshire Council Climate Strategy 2022-2027[15]	Wiltshire's Climate Strategy was adopted in 2022.

[9] Climate Change Committee (2022) Progress in reducing emissions 2022 Report to Parliament https://www.theccc.org.uk/publication/2022-progress-report-to-parliament/

[10] National Planning Policy Framework (publishing.service.gov.uk)

[11] Climate change - GOV.UK (www.gov.uk)

[12] Decarbonising Transport: Setting the Challenge (publishing.service.gov.uk)

[13] https://www.gov.uk/government/publications/construction-2025-strategy

[14] https://www.gov.uk/government/publications/infrastructure-carbon-review

[15] https://www.wiltshire.gov.uk/media/8671/Wiltshire-Council-Climate Strategy/pdf/Wiltshire_Council_Climate_Strategy_2022.pdf?m=637807788064400000

Scale	Legislation/ regulation/ policy	Summary of requirements
		In 2019, the council committed to becoming carbon neutral as an organization by 2030, and to seek to make the county carbon neutral by 2030. The Wiltshire Climate Strategy sets out the next five year's of the council's journey to becoming a carbon neutral county, covering seven delivery themes: Transport; Homes and the Built Environment; Natural Environment, Food and Farming; Energy; the Green economy; Resources and Waste; and becoming a Carbon Neutral Council. The Strategy includes a number of proposed strategies, targets and timelines for delivery. Wiltshire Council's Climate Strategy Delivery Plan sets out how the council will deliver the objectives of its Climate Strategy.
	Wiltshire Council Local Plan, Looking to future (January 2021) [16]	In February 2019, Wiltshire Council acknowledged a climate emergency and agreed to seek to make the county of Wiltshire carbon neutral by 2030. This plan outlines the challenge of climate change in a national and local context and describes how the preparation of the Wiltshire Local Plan can, in part, help address the issue.
	A Green & Blue Infrastructure Strategy for Wiltshire (February 2022)[17]	The Green & Blue Infrastructure Strategy was shaped in consultation with local nature, health and enterprise partnerships and neighbouring authorities. The Strategy is supported by an evidence base and has links to planning guidance on green and blue infrastructure (GBI) and settlement frameworks. It is a high-level strategic document which sets out the vision, goals and principles for GBI across Wiltshire and considers 'what' is needed and 'how' it is to be delivered.
Local	Chippenham Town Council[18]	Chippenham Town Council declared a climate emergency in 2019. It's draft Neighbourhood Plan includes sustainability and climate change mitigation as a key cross-cutting theme.
	Chippenham Town Council, Chippenham Neighbourhood Draft Plan 2023–2036[19]	The Neighbourhood Plan is a community-led framework for guiding the development and growth of Chippenham town in the period up to 2036. It seeks to positively address the climate emergency that has been declared by Wiltshire Council and the Town Council.

[16] https://www.wiltshire.gov.uk/media/5622/Addressing-Climate-Change-and-Biodiversity/pdf/Wiltshire_Local_Plan_Addressing_Climate_Change_and_Biodiversity_FINAL.pdf?m=637469175263630000

[17] 111340-GBIS-Vol1-Strategy-DF-2021-08.indd (wiltshire.gov.uk)

[18] https://www.chippenham.gov.uk/climate-emergency-advisory-group/

[19] https://chippenhamneighbourhoodplan.org.uk/wp-content/uploads/2022/02/CTC_0803_Draft_Neighbourhood_Plan.pdf

Appendix B. Reducing Carbon During Construction

Table B-1 - Reducing Carbon: Construction best practice

Carbon Reduction Hierarchy	Best Practice	Examples	Further Details
Build Less – Reduce built structures	• Reduce size/number of structures/assets.	• Find design efficiencies to design out structures/assets • Substantially reduce their size e.g. use NFM instead of built structures	• Largest potential to reduce overall project carbon
Build Less – Reduce quantities of materials	• Challenge standards / business as usual • Minimise the quantities of materials required to provide the solution	• Avoid over-engineering and over-designing • Prioritise lower-carbon materials over carbon intensive materials	• High potential to reduce overall project carbon. • Also reduces quantities of materials that need to be transported – further reducing emissions
Build Clever – Use Alternative materials	Low carbon / alternative materials: • Cement • Plastics • Timbers • Road Markings • Kerbside Installations • LED Street Lighting and road studs • Surface treatments	Alternative Cementitious options: • Alkali activated materials – CemFree	• Low-stress structures/uses 60 – 80% carbon reduction • 15-20% more expensive
		Cement replacements options: • GGBS • Fly Ash	• 15-70% carbon reduction (depending on % replacement)
		Thermoplastic Marking replacement options: • Methyl Methacrylate • Solvent-water based acrylics	• These alternatives can also be transported via LGVs • Consume less energy as they can be applied at cold temperatures • Require no gasses or primers.[20] • Reduces 80% of carbon. • 30% more expensive but design life 10 years, compared to 3-5.[21]
		Alternatives to geotextile materials: • Geosynthetics	• Reduces emissions by 64% • Provides the same level of erosional defence and stability.[22]
		• Plastic Kerbing Material	• Reduces emission intensity by 40%
		• Timber alternatives for fencing	• There are opportunities for timber to be carbon negative from certified forests[23] • Potential to eliminate 100% of timber related emissions with electric machinery and transport.

[20] https://www.aexcelcorp.com/blog/mma-vs-thermoplastic-paint

[21] CHAPTER 3. COST EFFECTIVENESS - Pavement Marking Demonstration Project: State of Alaska and State of Tennessee-Report to Congress, April 2010 - FHWA-HRT-09-039 (dot.gov)

[22] Aimil (2018) Importance of Geotextiles in Road Constructions& types of geotextiles. Available at:< Importance of Geotextiles in Road Constructions & types of geotextiles - Aimil Corporate Blog> Accessed: 02/12/2021

[23] Accoya (2020) Sustainable Timber Production Sustainable timber, what is FSC certified wood, FSC timber (accoya.com)

Carbon Reduction Hierarchy	Best Practice	Examples	Further Details
		• LED lighting technology	• Uses 70% less energy. • Substantially reduces running and maintenance costs through increased design life[24].
		• Cooking Oils • Lignin	• Waste cooking oil has been tested to be an effective alternative[25]. • Natural Lignin is also another suitable replacement found in trees and plants[26].
	Recycled Materials: • Road lighting columns • Steel RRS barrier • Plastic inspection chamber • Precast Concrete Gullies • Road Cabinets • Cabling • Marker Posts and Signs	• Recycled steel and aluminium and copper	• 80% carbon reduction for steel[27] • Recycled Aluminium uses 95% less energy[28]. • Using copper cables to increase efficiency, with recycled HDPE casing[29].
		• Recycled plastics (e.g., for piling / planks and HDPE materials)	• 50% capital carbon reduction. Additional potential benefits due to longer lifespan • Tested by EU to reduce emissions by 28% • Utilizing recycled concrete gullies will lower carbon emissions.
	Site won materials	• Borrow pits/ • Reuse of excavated materials • Road Gully Waste	• Emissions from sourcing and transportation substantially reduced • By collecting road gully waste, it can be transformed into topsoils and aggregates which can be used for other road schemes[30].
Build Clever – Design-in efficiencies for later project stages	DfMA / Off-site manufacture	• Precast concrete slabs / blocks etc.	• Reduced materials and construction time (less fuel burnt on site)
	Design for EOL	• Ensuring products are as recyclable as possible at EOL	• Reduced emissions for manufacturing of future products
Build Efficiently – Reduce transportation emissions	Locally sourced materials	• Source from local manufacturers / suppliers	• Reduced journey distance of product transport (less fuel burnt)
	Zero Emission Freight	• Battery EV • Hydrogen Fuel Cell HGVs	• Up to 100% carbon reduction (if renewable energy used) (Green Hydrogen from windfarms in future)
Build Efficiently – Reduce	Optimise construction programme	• Reduce hours of machinery • Plant machinery on site	• Emissions from fuel/energy consumption substantially reduced

[24] LED Climate Group (2020). Available:< LED | Climate Group (theclimategroup.org)

[25] Azahar, W.N.A.W., Bujang, M., Jaya, R.P., Hainin, M.R., Mohamed, A., Ngad, N. and Jayanti, D.S., 2016. THE POTENTIAL OF WASTE COOKING OIL AS BIO-ASPHALT FOR ALTERNATIVE BINDER â€“AN OVERVIEW. *Jurnal Teknologi*, *78*(4).

[26] Van Vliet, D., Slaghek, T., Giezen, C. and Haaksman, I., 2016, June. Lignin as a green alternative for bitumen. In *Proceedings of the 6th Euroasphalt & Eurobitume Congress, Prague, Czech* (pp. 1-3).

[27] Warwick Government Paper on Metal Recycling (2020). Metal_recycling_facts_for_website.pdf

[28] Alupro Environmental Benefits (2021) There are significant environmental benefits to recycling aluminium (alupro.org.uk)

[29] Copper and Carbon (2020) Copper Development Association Copper and Carbon - Copper's Contributions Towards Reducing Greenhouse Gas Emissions (copperalliance.org.uk)

[30] Gullies go Green (2015) The Construction Index. Available at: Gullies Go Green (theconstructionindex.co.uk)

Carbon Reduction Hierarchy	Best Practice	Examples	Further Details
construction emissions	On-site renewables	• Solar Generators (e.g. Solar Pod / Solatainer)	• Up to 100% carbon reduction compared to diesel generators
	Electric / Hybrid Plant	• Electric excavators, loaders, rollers etc.	• Up to 100% carbon reduction (if renewable energy used)
Operate Efficiently – Reduce operational emissions	Design in renewables	• Design in solar panels for operational energy requirements	• Up to 100% carbon reduction
	Design in EV infrastructure	• Design in EV chargepoints	• Reduced emission from infrastructure users
Operate Efficiently – Emissions Sequestration	Design in sequestration measures	• Identify opportunities for tree planting within the design	• Capture / remove residual emissions

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