APPENDIX 3
TO PROOF OF EVIDENCE

ON CARBON EMISSIONS AND FINANCIAL VIABILITY
By Ng Chien Xen for
Neighbouring Parish councils Joint Committee

TAB 1

Jan 2024

Net-zero transport network

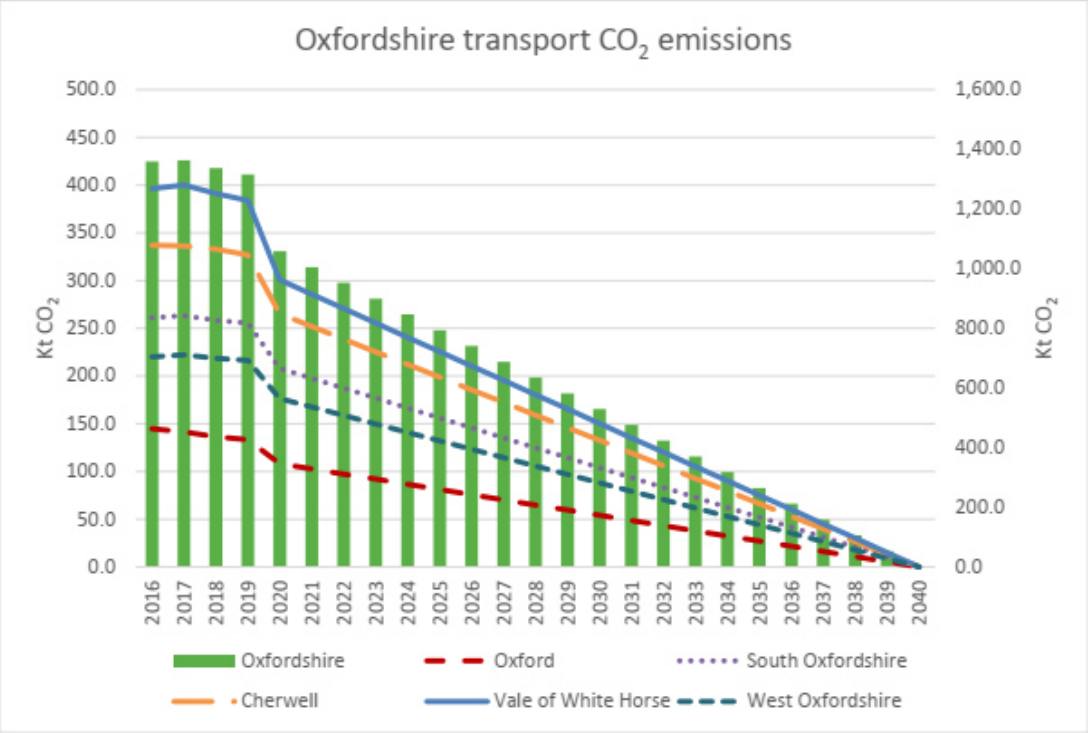

Figure 3 – Oxfordshire transport CO_2 emission data between 2016-2020 and yearly reduction targets to reach 2040 target from 2020 base (Oxfordshire on right axis, districts on left axis)

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TAB 2

Jan 2024

Capital Programme 2022/23 to 2032/33

Strategy/Programme		Capital Investment Programme (latest forecast) Current Year 2022 / 23 £'000s	Firm Programme 2023 / 24 £'000s	2024 / 25 £'000s	Provisional Programme 2025 / 26 £'000s	2026 / 27 £'000s	up to 2032 / 33 £'000s	CAPITAL INVESTMENT TOTAL £'000s
Pupil Places		40,100	42,847	50,876	23,114	16,800	82,622	256,359
Major Infrastructure		70,282	174,998	271,137	188,224	25,965	11,187	741,793
Highways Asset Management Plan		51,636	63,517	44,600	18,958	17,100	86,045	281,856
Property & Estates, and Investment Strategy		15,055	13,403	16,482	6,757	980	2,696	55,373
ICT		9,224	5,632	2,612	1,000	750	2,826	22,044
Passport Funding		10,553	8,408	1,350	1,000	950	2,454	24,715
Vehicles & Equipment		2,215	850	800	800	800	4,800	10,265
TOTAL ESTIMATED CAPITAL PROGRAMME EXPENDITURE		199,065	309,655	387,857	239,853	63,345	192,630	1,392,405
Pipeline Schemes (Indicative funding subject to initial business case)		0	1,600	17,350	18,900	18,150	0	56,000
Earmarked Reserves		0	250	6,580	6,116	15,778	38,865	67,589
TOTAL ESTIMATED CAPITAL PROGRAMME		199,065	311,505	411,787	264,869	97,273	231,495	1,515,994
TOTAL ESTIMATED PROGRAMME IN-YEAR RESOURCES		180,225	286,986	356,013	214,644	81,110	212,579	1,331,557
In-Year Shortfall (-) /Surplus (+)		-18,840	-24,519	-55,774	-50,225	-16,163	-18,916	-184,437
Cumulative Shortfall (-) / Surplus (+)	184,437	165,597	141,078	85,304	35,079	18,916	0	0

SOURCES OF FUNDING		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2025 / 26	up to 2031 / 32	CAPITAL RESOURCES TOTAL
		£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
SCE(C) Formulaic Capital Allocations - Un-ringfenced Grant		73,930	69,888	96,757	41,584	22,500	125,400	430,059
Devolved Formula Capital- Grant		700	1,100	1,000	650	600	654	4,704
Prudential Borrowing		42,472	78,736	71,016	51,280	44,056	2,987	290,547
Grants		38,061	96,788	176,963	95,985	26	918	408,741
Developer Contributions		39,049	39,766	57,115	39,089	5,078	40,727	220,824
Other External Funding Contributions		293	0	350	720	0	0	1,363
Revenue Contributions		4,532	25,227	8,586	2,500	1,930	7,300	50,075
Schools Contributions		28	0	0	0	0	0	28
Use of Capital Receipts		0	0	0	33,061	12,892	34,593	80,546
Use of Capital Reserves		0	0	0	0	10,191	18,916	29,107
TOTAL ESTIMATED PROGRAMME RESOURCES UTILISED		199,065	311,505	411,787	264,869	97,273	231,495	1,515,994
TOTAL ESTIMATED IN YEAR RESOURCES AVAILABLE		180,225	286,986	356,013	214,644	81,110	212,579	1,331,557
Capital Grants Reserve C/Fwd	125,321	92,177	73,778	19,084	0	0	0	0
Usable Capital Receipts C/Fwd	30,009	32,313	35,193	37,113	5,972	0	0	0
Capital Reserve C/Fwd	29,107	41,107	32,107	29,107	29,107	18,916	0	0

PUPIL PLACES CAPITAL PROGRAMME

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Provision of School Places (Basic Need)								
Existing Demographic Pupil Provision (Basic Needs Programme)	941	1,730	2,797	11,940	19,000	14,000	70,804	121,212
Basic Need Programme Completions	0	225	0	0	0	0	1,270	1,495
Wallingford - Expansion by 2FE (ED896)	4,511	2,000	300	124	0	0	0	6,935
William Morris - Improvements to Support 1FE & Repl Temporary Classrooms (ED951)	1,387	400	63	0	0	0	0	1,850
John Watson Secondary (ED934)	1,980	450	50	210	0	0	0	2,690
BGN - 2FE Expansion (ED933)	2,011	3,000	2,398	0	0	0	0	7,409
St Nicholas, East Challow (ED959) - Lower age range to 3-11	378	320	44	0	0	0	0	742
Radley - Expansion to 1FE (ED936)	1,040	2,200	225	88	0	0	0	3,553
Glory Farm - Repl Temp (ED970)	0	275	5	0	0	0	0	280
Kingfisher Phase 2 - (ED960)	83	1,000	68	0	0	0	0	1,151

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Lord Williams, Thame - 1FE (ED954)	883	3,000	2,100	206	0	0	0	6,189
Woodstock - Expansion to 2FE (ED956)	174	600	2,700	432	0	0	0	3,906
Provision of School Places Total	**13,388**	**15,200**	**10,750**	**13,000**	**19,000**	**14,000**	**72,074**	**157,412**
Growth Portfolio - New Schools								
Orion (formerly Northfield) Special School - Replacement & Expansion (ED940)	12,414	1,400	19	0	0	0	0	13,833
Faringdon, Folly View - 2FE Primary School (ED943)	4,529	4,000	1,500	95	0	0	0	10,124
Bicester, Graven Hill - 2FE Primary School (ED919)	154	75	300	471	0	0	0	1,000
NE Didcot, Sires Hill - 2FE Primary Schol (ED929)	649	8,200	3,200	603	0	0	0	12,652
Shrivenham - 1.5FE Primary School (ED945)	534	4,300	5,750	399	0	0	0	10,983
Grove Airfield, St John's - 2FE Primary School No. 1 (ED963)	87	900	1,800	313	0	0	0	3,100

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Wallingford - 2FE Primary School (ED930)	174	200	3,750	3,750	846	0	0	8,720
St Edburg's Primary School - Expansion to 3FE (ED955)	128	1,500	8,500	217	0	0	0	10,345
Grove Airfield - Secondary School (ED965)	3	0	200	21,427	0	0	0	21,630
SEND Free School - Faringdon (ED985)	0	0	275	925	0	0	0	1,200
Bloxham Grove SEND Free School (ED986)	0	500	53	0	0	0	0	553
Heyford New Primary School (ED988)	10	25	100	3,400	468	0	0	4,003
Project Development Budget	44	0	0	50	50	50	206	400
New School Programme Completions	0	200	0	0	0	0	370	570
Growth Portfolio Total	18,726	21,300	25,447	31,650	1,364	50	576	99,113

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Annual Programmes								
Schools Access Initiative	0	250	200	200	200	200	1,200	2,250
Temporary Classrooms - Replacement & Removal	0	100	200	200	200	200	1,200	2,100
Schools Accommodation Intervention & Support Programme	0	0	0	0	0	0	0	0
School Structural Maintenance (inc Health & Safety)	0	3,000	6,000	5,576	2,100	2,100	6,450	25,226
Annual Programme Total	0	3,350	6,400	5,976	2,500	2,500	8,850	29,576
Early Years Programmes								
Capacity Building - Early Yrs Entitlement	14	250	250	250	250	250	605	1,869
Early Years Programme Total	14	250	250	250	250	250	605	1,869
Retentions Total	1,408	0	0	0	0	0	517	1,925
PUPIL PLACES CAPITAL PROGRAMME EXPENDITURE TOTAL	33,536	40,100	42,847	50,876	23,114	16,800	82,622	289,895

MAJOR INFRASTRUCTURE CAPITAL PROGRAMME

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						Total Budget
		Current Year	Firm Programme		Provisional Programme			
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
HIF1								
HIF1 A4130 Dualing	2,918	750	4,300	10,800	13,900	832	0	33,500
HIF1 Didcot Science Bridge	3,234	750	5,500	22,500	23,100	2,116	0	57,200
HIF1 Culham river crossing	6,373	1,400	10,500	60,000	73,500	8,227	0	160,000
HIF1 Clifton Hampden bypass	2,931	700	6,900	12,900	19,200	2,169	0	44,800
HIF1 DGT OBC development	637	0	0	0	0	18	0	655
HIF1 PROGRAMME TOTAL	16,093	3,600	27,200	106,200	129,700	13,362	0	296,155
A40 CORRIDOR (Incl HIF2)								
A40 Oxford North (N G'way)	7,526	3,136	0	0	0	0	0	10,662
A40 Science Transit Phase 2 - Eynsham Park & Ride	8,760	9,700	13,400	85	0	0	0	31,945
HIF2 West Oxon A40 Smart Corridor	15,402	6,600	31,000	50,000	22,922	0	0	125,924
A40 Access to Witney - Shores Green	2,173	2,500	4,500	14,000	1,852	0	0	25,025
B4044 Strategic Cycle Improvement (Development Budget)	88	0	0	282	0	0	0	370

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						Total Budget
		Current Year	Firm Programme		Provisional Programme			
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
A40 Salt Cross to Eynhsam Underpass (Development Budget)	0	250	0	0	0	0	0	250
A40 CORRIDOR (incl HIF2) PROGRAMME TOTAL	33,949	22,186	48,900	64,367	24,774	0	0	194,176
SCHEMES Incl HOUSING & GROWTH DEAL BANBURY & BICESTER								
NW Bicester A4095 Underbridge & Underpass	10,050	650	0	0	0	0	0	10,700
NW Bicester A4095 Road Realignment (Development Budget)	1,353	47	0	0	0	0	0	1,400
NW Bicester A4095 Road Roundabout Improvements	914	650	5,400	3,500	236	0	0	10,700
M40 J10 Improvements	261	700	6,400	1,339	0	0	0	8,700
Access to Banbury North: A422 Hennef Way (Development Budget)	495	5	0	0	0	0	0	500
Ploughley Rd / A41 Junction Improvements, Bicester	875	3,650	32	0	0	0	0	4,557
Tramway Rd, Accessibility Improvements	796	550	1,300	4,000	251	0	0	6,897
A361 Road Safety Improvements	5,079	34	0	0	0	0	0	5,113
Farmfield Road / Oxford Road - Junction Improvement	346	225	0	0	0	0	24	595

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
OXFORD								
Eastern Arc Phase 1 Access to Headington	16,816	0	0	0	0	0	1,124	17,940
Oxford, Botley Rd	9,057	597	0	0	0	0	0	9,654
Oxpens to Osney Mead Cycle	5,920	80	0	2,800	0	0	0	8,800
Oxford Citywide Cycle & Pedestrian Routes	1,133	300	969	0	0	0	0	2,402
Banbury Rd Improvements (Banbury Rd Corridor)	569	194	500	1,107	0	0	0	2,370
Woodstock Rd Improvements (Woodstock Rd Corridor)	732	268	500	2,500	0	0	0	4,000
Connecting Oxford (Development Budget)	527	400	675	0	0	0	0	1,602
A44 Corridor Improvements (Peartree & Cassington Roundabouts)	2,520	13,500	3,400	500	0	0	1,200	21,120
North Oxford Corridors - Kidlington	459	850	2,691	0	0	0	0	4,000
Riverside routes to Oxford city centre	3,048	600	383	0	0	0	0	4,031

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Active Travel Phase 2	2,291	2,340	700	18	0	0	0	5,349
Walton Street	0	50	100	0	0	0	0	150
Oxford Zero Emission Zone	500	600	500	211	0	0	0	1,811
Oxford Controlled Parking Zones	0	0	500	335	500	0	0	1,335
Broad Street	7	450	43	0	0	0	0	500
SOUTH, VALE & OTHER AREAS								
Watlington Relief Rd	583	1,100	1,750	5,500	1,051	0	0	9,984
Benson Relief Rd	784	600	4,400	166	0	0	0	5,950
Milton Heights Bridge	185	150	0	31	0	0	0	366
Wantage Eastern Link Rd (Phase 1-2 Contribution, P3)	2,125	750	6,000	199	0	0	0	9,074
Frilford Junction & Relief to Marcham (Development Budget)	278	200	550	472	0	0	0	1,500
Relief to Rowstock	474	225	1,200	7,000	2,001	0	0	10,900
Science Vale Cycle Network Improvements	5,257	81	0	0	0	0	0	5,338
Didcot Northern Perimeter Road 3 (Development Budget)	691	50	9	0	0	0	0	750
A34 Lodge Hill Slips	1,985	4,700	1,000	15,000	5,124	0	0	27,809

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Golden Balls Roundabout A4074/B4015 (Development Budget)	9	350	500	141	0	0	0	1,000
Didcot Garden Town: Corridor & Jubillee Way (Development Budget)	91	750	159	0	0	0	0	1,000
A40 Minster Lovell, Access to Carterton (Development Budget)	0	0	0	710	0	0	0	710
A420 Coxwell Road Junction	0	0	0	800	950	0	0	1,750
Carterton Improvements	0	0	0	200	200	0	0	400
A4130 Widening (Steventon Lights to Milton Interchange)	0	0	0	500	1,500	0	0	2,000
Science Vale Cycle NetworkPhase 2 (Development Budget)	0	0	0	400	600	0	0	1,000
Abingdon LCWIP	0	0	0	400	600	0	0	1,000
Active Travel Phase 3 Programme	0	600	4,500	6,446	0	0	0	11,546
SCHEMES Incl HOUSING & GROWTH DEAL TOTAL	76,210	36,296	44,161	54,275	13,013	0	2,348	226,303
MAJOR INFRASTRUCTURE TOTAL	126,252	62,082	120,261	224,842	167,487	13,362	2,348	716,634

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						Total Budget
		Current Year	Firm Programme		Provisional Programme			
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
COUNTYWIDE AND OTHER TRANSPORT								
A423 Improvements Programme (including Kennington Bridge)	2,319	4,000	15,000	31,000	20,000	11,866	0	84,185
East-West Rail (contribution)	1,349	0	737	737	737	737	6,758	11,055
Zero Emission Bus Regional Areas (ZEBRA)	0	3,000	28,000	7,815	0	0	0	38,815
Bus Service Implementation Plan	0	0	4,000	4,743	0	0	0	8,743
Oxford Station (Contribution)	0	1,000	7,000	2,000	0	0	0	10,000
City Deal, Pinch Point, Local Growth Programmes - Completed Schemes	0	200	0	0	0	0	2,026	2,226
Other Completed schemes	0	0	0	0	0	0	55	55
COUNTYWIDE AND OTHER TRANSPORT TOTAL	3,668	8,200	54,737	46,295	20,737	12,603	8,839	155,079
MAJOR INFRASTRUCTURE CAPITAL PROGRAMME EXPENDITURE TOTAL	129,920	70,282	174,998	271,137	188,224	25,965	11,187	871,713

HIGHWAYS ASSET MANAGEMNT PLAN CAPITAL PROGRAMME

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						Total Budget
		Current Year	Firm Programme		Provisional Programme			
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
STRUCTURAL MAINTENANCE PROGRAMME								
Carriageways	0	9,000	9,293	6,000	4,000	4,225	21,550	54,068
Surface Treatments	0	5,500	7,051	8,490	3,135	3,024	16,225	43,425
Structural Highway Improvements	0	7,316	6,009	6,555	2,965	3,836	12,300	38,981
Footways & Cycleways	0	1,500	2,404	4,310	490	449	2,550	11,703
Drainage	0	1,900	2,236	2,390	810	1,091	3,700	12,127
Bridges	0	2,900	4,100	4,500	2,700	1,500	7,650	23,350
Public Rights of Way	0	400	450	525	125	125	625	2,250
Electrical	0	1,235	1,060	1,030	950	650	3,000	7,925
Traffic Signals	31	469	0	0	0	0	0	500
Section 42 contributions	0	1,400	0	0	0	0	0	1,400
Safety Fences	0	75	750	100	100	100	525	1,650
Minor Works: Traffic Schemes	0	430	430	400	200	200	1,025	2,685
SM 32/33	0	0	0	0	0	0	15,300	15,300
STRUCTURAL MAINTENANCE ANNUAL PROGRAMMES TOTAL	31	32,125	33,783	34,300	15,475	15,200	84,450	215,364

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
IMPROVEMENT PROGRAMMES								
Accessibility & Road Safety Schemes	0	2,400	1,880	1,700	199	0	0	6,179
Bus Journey Time Reliability	0	1,000	1,000	1,000	57	0	0	3,057
IMPROVEMENT PROGRAMMES TOTAL	0	3,400	2,880	2,700	256	0	0	9,236
Major schemes and other programme								
Street Lighting LED replacement	7,492	12,000	21,321	0	0	0	0	40,813
New Salt Store (R20)	0	100	140	1,500	1,027	0	0	2,767
Drayton Depot	178	330	242	0	0	0	0	750
Part 6 Moving Vehicles Violations Cameras	0	300	500	800	200	900	0	2,700
Highways Bridges Recovery Programme	0	150	500	1,100	1,000	0	0	2,750
20mph Speed Limit	0	1,800	3,000	3,200	0	0	0	8,000
Tree Policy	0	0	185	0	0	0	0	185
A423 Kennington Bridge (Maintenance)	4,354	511	66	0	0	0	0	4,931
STRUCTURAL MAINTENANCE MAJOR SCHEMES TOTAL	12,024	15,191	25,954	6,600	2,227	900	0	62,896

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
OTHER MAINTENANCE PROGRAMMES/PROJECTS								
Public Rights of Way (developer and Other funded)	0	100	100	200	200	200	0	800
Small schemes (developer and other funded)	0	820	800	800	800	800	1,595	5,615
OTHER MAINTENANCE PROGRAMMES/PROJECTS TOTAL	0	920	900	1,000	1,000	1,000	1,595	6,415
HIGHWAYS ASSET MANAGEMENT PLAN CAPITAL PROGRAMME EXPENDITURE TOTAL	12,055	51,636	63,517	44,600	18,958	17,100	86,045	293,911

PROPERTY & ESTATES, AND INVESTMENT STRATEGY CAPITAL PROGRAMME

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
CORPORATE ESTATE DEVELOPMENT PROGRAMME								
Bicester Library (CS13)	1,210	240	0	0	0	0	0	1,450
Aston Children's Home (ED932)	250	1,025	1,300	355	0	0	0	2,930
Re-provision of Banbury Library (PE39)	102	150	1,000	1,948	0	0	0	3,200
Faringdon Library Improvements	0	205	0	0	0	0	0	205
Collaborative Asset Management Programme	0	0	0	2,000	2,500	0	0	4,500
Children's Homes Programme	0	0	4,000	6,000	450	0	0	10,450
CORPORATE ESTATE DEVELOPMENT PROGRAMME TOTAL	1,562	1,620	6,300	10,303	2,950	0	0	22,735
CLIMATE ACTION PROGRAMME								
Green Homes Grant / Sustainable Warmth Fund	1,275	3,611	0	0	0	0	0	4,886
Car Parks - Electrical Vehicle Charging Points	668	531	0	0	0	0	0	1,199
One-Fleet EV Charging Point	11	50	150	199	0	0	0	410

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
SALIX Energy Programme	0	0	0	300	300	130	0	730
Climate Action Recycling Fund	0	0	0	600	600	600	700	2,500
CLIMATE ACTION PROGRAMME TOTAL	1,954	4,192	150	1,099	900	730	700	9,725
CORPORATE ESTATE CONDITION (Non-School) PROGRAMMES								
Minor Works Programme	0	430	380	100	0	0	108	1,018
Health & Safety (Non-Schools)	0	800	250	250	250	250	1,250	3,050
Defect Liability Programme	7,143	2,500	1,000	1,000	1,657	0	0	13,300
Public Sector De-Carbonisation Grant Programme	975	1,425	0	0	0	0	0	2,400
Estate Decarbonisation / Condition Programme	45	200	2,000	1,630	0	0	0	3,875
CORPORATE ESTATE CONDITION PROGRAMMES TOTAL	8,163	5,355	3,630	2,980	1,907	250	1,358	23,643
INVESTMENT STRATEGY								
Resonance Fund	2,000	2,000	1,000	0	0	0	0	5,000
Office Rationalisation & Co-location Programme	0	1,000	1,000	1,700	1,000	0	0	4,700
Planning Consents Programme	0	600	500	400	0	0	385	1,885

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
INVESTMENT STRATEGY PROGRAMME TOTAL	2,000	3,600	2,500	2,100	1,000	0	385	11,585
WASTE MANAGEMENT PROGRAMME								
Waste Recycling Centre Infrastructure Programme	0	261	823	0	0	0	0	1,084
WASTE MANAGEMENT PROGRAMME TOTAL	0	261	823	0	0	0	0	1,084
Retentions (completed schemes)	0	27	0	0	0	0	253	280
PROPERTY & ESTATES, AND INVESTMENT STRATEGY CAPITAL PROGRAMME EXPENDITURE TOTAL	13,679	15,055	13,403	16,482	6,757	980	2,696	69,052

ICT STRATEGY CAPITAL PROGRAMME

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
ICT STRATEGY PROGRAMME								
Children Services - ICT (Phase 1&2)	1,130	2,170	0	0	0	0	0	3,300
Broadband in Rural Oxfordshire (BiRO)	4,163	711	0	0	0	0	0	4,874
Rural Gigabit Hub Site	588	2,500	3,700	1,212	0	0	0	8,000
Digital Infrastructure	564	3,843	1,932	1,400	1,000	750	2,826	12,315
ICT STRATEGY PROGRAMME EXPENDITURE TOTAL	6,445	9,224	5,632	2,612	1,000	750	2,826	28,489

PASSPORTED FUNDING CAPITAL PROGRAMME

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						Total Budget
		Current Year	Firm Programme		Provisional Programme			
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
THIRD PARTY GROWTH & HOUSING DEAL								
Local Growth Fund								
LGF - Remaining Projects	4,359	1,656	0	0	0	0	0	6,015
Getting Building Fund	7,326	1,137	0	0	0	0	0	8,463
THIRD PARTY GROWTH & HOUSING DEAL TOTAL	11,685	2,793	0	0	0	0	0	14,478
PASSPORTED FUNDING								
Disabled Facilities Grant								
Disabled Facilities Grant	6,658	6,658	6,658	0	0	0	0	19,974
Public Health								
PHE Wayfinding Grant	0	52	0	0	0	0	0	52

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Schools Capital								
Devolved Formula Capital	1,129	700	1,100	1,000	650	600	654	5,833
PASSPORTED FUNDING TOTAL	7,787	7,410	7,758	1,000	650	600	654	25,859
SPECIALIST HOUSING & FINANCIAL ASSISTANCE								
ECH - New Schemes & Adaptations to Existing Properties	0	250	550	250	250	250	1,750	3,300
Deferred Interest Loans (CSDP)	0	50	50	50	50	50	50	300
Loans to Foster/Adoptive Parents	92	50	50	50	50	50	0	342
SPECIALIST HOUSING & FINANCIAL ASSISTANCE TOTAL	92	350	650	350	350	350	1,800	3,942
PASSPORT FUNDING PROGRAMME EXPENDITURE TOTAL	19,564	10,553	8,408	1,350	1,000	950	2,454	44,279

VEHICLES & EQUIPMENT CAPITAL PROGRAMME

Project/ Programme Name	Previous Years Actual Expenditure	Latest Forecast						
		Current Year	Firm Programme		Provisional Programme			Total Budget
		2022 / 23	2023 / 24	2024 / 25	2025 / 26	2026 / 27	up to 2032 / 33	
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
Vehicles & Equipment								
Fire Protective Equipment	0	700	50	0	0	0	0	750
F&RS Vehicles replacement	0	800	800	800	800	800	4,800	8,800
RFID Kiosk Replacement (PE43)	0	407	0	0	0	0	0	407
Library Furnishing Enhancement Programme (PE41)	0	308	0	0	0	0	0	308
VEHICLES & EQUIPMENT PROGRAMME TOTAL	0	2,215	850	800	800	800	4,800	10,265
VEHICLES & EQUIPMENT CAPITAL PROGRAMME EXPENDITURE TOTAL	0	2,215	850	800	800	800	4,800	10,265

APPENDIX 3
TO PROOF OF EVIDENCE

ON CARBON EMISSIONS AND FINANCIAL VIABILITY
By Ng Chien Xen for
Neighbouring Parish councils Joint Committee

TAB 3

Jan 2024

CABINET – 17 OCTOBER 2023

CAPITAL PROGRAMME UPDATE AND MONITORING REPORT

Report by the Director of Finance

Recommendations

1. The Cabinet is RECOMMENDED to:

Capital Programme

1. Accept the latest capital monitoring position for 2023/24 set out in Annex 1.

2. Approve the updated Capital Programme at Annex 2 incorporating the changes set out in this report, noting the return of £1.2m corporate funds from the Defect Liability Programme.

Additions to the Capital Programme

3. Approve the inclusion of Oathill Lodge - a Children's Residential Home - into the Capital Programme, releasing £2.528m of funding agreed by Council in February 2023 (paragraph 56).

4. Approve the inclusion of Greenways, Wootton - a Children's Residential Home - into the Capital Programme, releasing funds of £2.065m agreed by Council in February 2023 (paragraph 58).

5. Approve the inclusion of Thames Path Bank Repairs into the Capital Programme using £1.5m of earmarked reserves approved by Council in February 2023 (paragraph 60).

Grant funding Bids

6. Agree to proceed with a bid for Local Electric Vehicle Infrastructure Funding and to seek permission to enter procurement (paragraph 62).

7. Agree to proceed with a bid for the Property Decarbonisation Programme funding (paragraph 64).

Executive Summary

2. The Council's Strategic Plan has set out a clear vision for the county, centred around strong local communities, healthy places to live, and a zero-carbon economy that benefits everyone. The strategic plan has nine priorities with a set of objectives for each. The capital and investment strategy agreed in February 2023 articulates how the Council's capital investment will help achieve this vision and the nine priorities.

3. The Capital programme also supports statutory functions such as school placements and urgent health and safety capital maintenance works.

4. The ten-year Capital Programme sets out how the Council will use capital expenditure to deliver these council priorities. The Capital Programme is updated quarterly and fully refreshed annually as part of the Budget and Business Planning Process to ensure that it remains aligned to the latest priorities, reflects the latest cost projections and profile for delivery, and incorporates the current funding position.

5. This is the second quarterly capital programme update and monitoring report for 2023/24 and sets out the monitoring position based on activity to the end of Aug 2023. The report also provides an update to the Capital Programme approved by Council in February 2023 taking into account additional funding and new schemes. The updated programme also incorporates changes agreed through the Capital Programme Approval Reports to Cabinet during the year as well as new funding.

6. The forecast programme expenditure for 2023/24 is £226.9m (excluding earmarked reserves). This has decreased by £21.9m compared to the latest capital programme for 2023/24 approved by Cabinet in July 2023. The updated programme reflects the spend profile from the latest delivery timeframes and the inclusion of new grants received by the Council.

7. Due to a number of new inclusions and changes, the total ten-year capital programme (2023/24 to 2032/33) is now £1,269.5m. The updated capital programme summary is set out in Annex 2. The main changes since the report to Cabinet in July 2023 are set out in this report.

Introduction

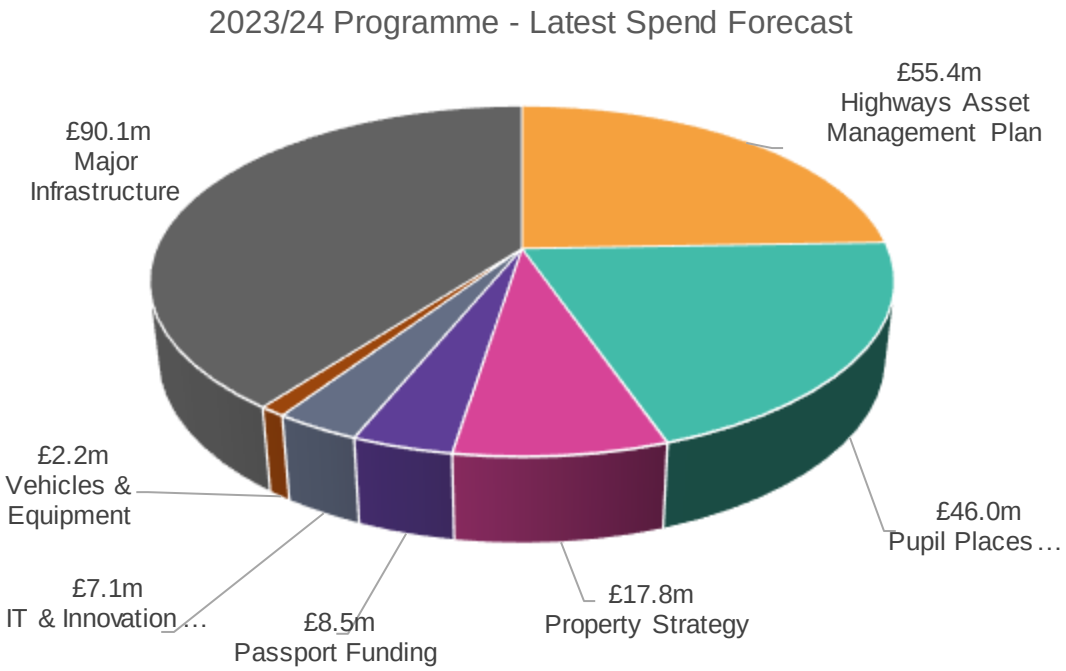
8. Capital expenditure is defined as spending that creates an asset for the council (e.g. buildings, vehicles and equipment) as well as spending which meets the definition in regulations specified under the Local Government Act 2003. This includes spend on non-current assets that are not owned by the council such as academies and the award of capital grants and funding agreements.

9. The capital programme supports the delivery of the council's priorities as set out in the Strategic Plan. The programme is updated quarterly and fully refreshed annually as part of the Budget and Business Planning Process to ensure that it remains aligned to the latest priorities, reflects the latest cost projections and profile for delivery, and incorporates the current funding position.

10. The programme is structured as follows:

- **Pupil Place Plan:** including basic need (new schools and expansion), maintenance, health and safety and improvements
- **Major Infrastructure:** including Growth Deal Infrastructure programme
- **Highways and structural maintenance:** including street lighting, and bridges
- **Property Strategy:** including health & safety, maintenance, improvements and the Investment Strategy
- **IT, Digital & Innovation Strategy:** including broadband and equipment
- **Passported Funds:** including Disabled Facilities Grant and Devolved Schools Capital
- **Vehicles and Equipment:** including fire and rescue vehicles and equipment

11. The detailed investment profile for the 2023/24 Capital Programme is set out below:



12. This is the second capital programme update and monitoring report for the financial year and focuses on the delivery of the 2023/24 capital programme based on projections at the end of August 2023 and new inclusions within the overall ten-year capital programme.

13. The following annexes are attached:

Annex 1	Capital Programme Monitoring 2023/24 (Summary)
Annex 2	Updated Capital Programme 2023/24 – 2032/33 (Summary)

2023/24 Capital Monitoring

14. The capital monitoring position set out in Annex 1, shows forecast expenditure for 2023/24 of £226.9m (excluding earmarked reserves). This has decreased by £21.9m compared to the latest capital programme approved by Cabinet in July 2023. The updated programme reflects the year end position for 2022/23 and the impact of re-profiling expenditure into 2023/24 where relevant.

The table below summarises the changes since July 2023 by strategy area:

Strategy Area	Last Approved Programme 2023/24 * £m	Latest Forecast Expenditure 2023/24 £m	Variation £m
Pupil Places Plan	47.3	46.0	-1.3
Major Infrastructure	110.8	90.1	-20.7
Highways Asset Management Plan	55.1	55.4	+0.3
Property Strategy	17.7	17.7	+0.0
IT, Digital & Innovation Strategy	7.1	7.1	+0.0
Passported Funding	8.6	8.4	-0.2
Vehicles & Equipment	2.2	2.2	+0.0
Total Strategy Programmes	**248.8**	**226.9**	**-21.9**
Earmarked Reserves	0.5	0.5	+0.0
Total Capital Programme	**249.3**	**227.4**	**-21.9**

* Approved by Cabinet 18 July 2023

15. Actual capital expenditure at the end of August 2023 was £67.9m**.** The combined spend to date and current forecasted in-year commitments for the Capital Programme is £141.0m or 62% of the revised estimate for the year. The rate of expenditure is expected to increase in the remaining months of the year due to several major infrastructure schemes reaching the construction stage.

Pupil Places Plan

16. Forecast expenditure for the Pupil Places Plan is £46.0m. The decrease of £1.3m compared to the latest budget for 2023/24 reflects the latest forecasted expenditure profiles on the delivery timeframe on the various projects in the programme. The planned scheme spend incorporates the Basic Need and Growth Portfolio Programmes as well as Schools' Structural Maintenance.

17. The Basic Need Programme is forecasting expenditure of £13.6m. This has increased by £1.4m compared to the latest approved budget and includes the following six projects that have been completed or are in the construction phase:

Completed:

- Radley CE Primary School – expansion to provide an additional 105 primary pupil places.

- Glory Farm Primary School, Bicester – replacing 4 temporary classrooms delivered by Bernwode Schools Trust via a funding agreement.

In Construction:

- Woodstock CE Primary School – expansion to provide an additional 105 primary pupil places.
- Blessed George Napier School, Banbury – expansion to provide an additional 300 secondary pupil places delivered by Pope Francis Catholic Multi Academy via a funding agreement.
- Lord William's School, Thame – expansion to provide an additional 150 secondary pupil places delivered by Thame Partnership Academy Trust via a funding agreement.
- St Edburg's CE Primary School, Bicester – expansion to provide an additional 210 primary pupil places delivered by Oxford Diocese Board of Education via a funding agreement.

Where the schemes are being delivered through a funding agreement, they continue to be monitored through the Council's governance procedures.

18. The in-year increase in forecast spend reflects a combination of additional costs for the Aston and Cote Primary School project and the reprofile and additional costs on the relocating of the Oxford Hospital School. It also includes provision for the purchase of land for the future expansion of Stanford-In-The-Vale Primary School.

19. The Growth Portfolio Programme has a forecast expenditure of £27.0m, a decrease of £1.4m. It includes the following four projects that are within the construction phase of the programme:

- Sires Hill Primary Academy, Didcot – a new school to create 420 primary places and 90 nursery places. The Omnia Learning Trust were able to move into the school on 11th September under a partial possession enabling the school to open and operate as planned whilst the remainder of the works are completed by ISG leading to a full Practical Completion scheduled for the October half term.

- Graven Hill Primary School, Bicester – a new school to create 420 primary places and 90 nursery places and being delivered by the housing developer. This achieved Practical Completion and was successfully handed over to the Warriner Multi Academy Trust to welcome pupils from the 11th September 2023.

- St John's CE Academy, Grove – a new school to create 420 primary places, 60 nursery places and SEND support spaces and being delivered by the housing developer. This achieved Practical Completion and was successfully handed over to the Vale Academy Trust to welcome pupils from the 18th September 2023.

- Shrivenham CE Primary School – a new school to create 315 primary places and 75 nursery places, is still under construction and will be completed in time for the Summer Term 2024.

Where schemes are being delivered by the housing developer, they will still be monitored through the Council's governance procedures.

20. The decrease in in-year spend is due to several factors including that the Folly View Primary School project was able to be delivered without using the contingency and risk provision, these have been reprofiled and that the total project cost will reduce. In addition, the forecast for Shrivenham CE Primary School has been re-profiled in-line with the construction programme meaning that some of the spend (£1.8m) will take place in 2024/25.

21. Further projects are in pre-construction for delivery in 2024/25. Depending on the delivery timeframe, some of these will reach the construction phase later this financial year. These are a mixture of expansions to existing schools and includes the relocation of the Oxfordshire Hospital School.

22. It is expected that the current £6m budget for the School Structural Maintenance Programme will incur expenditure of £4.7m in year on projects including new boilers, roof replacements, improvement to school structure and fire alarm replacement. The balance will be carried forward into 2024/25.

23. Condition surveys of all maintained schools have been completed and these will be used to prioritise investment requirement. Energy surveys will be delivered over 2023/24 and 2024/25.

24. There were a total of 35 school projects within the School Structural Maintenance Programme:

- 15 projects are complete,
- 8 projects are on site/in construction,
- 6 projects to be completed by end of 2023/24,
- 5 projects will be carried forward into 2024/25,
- 1 project is on hold as the school is now an academy converter.

Major Infrastructure

25. The latest forecast position for the Major Infrastructure Programme is £90.1m. The programme is divided into sub-programme areas as shown in the table below. Overall, there is a reduction of £20.7m compared to the latest capital programme budget.

Major Infrastructure	Latest Budget	Latest Forecast	Variation
	£'000	**£'000**	**£'000**
Housing Infrastructure Fund 1 (HIF1)	19,700	6,300	-13,400
Housing Infrastructure Fund 2 (HIF2) & A40	25,592	23,631	-1,961

A423 Improvement Programme	3,000	3,500	+500
Active Travel Phase 3	2,400	2,200	-200
Banbury & Bicester	4,759	3,509	-1,250
Oxford	16,029	16,841	+812
South & Vale	12,494	8,394	-4,100
Major Infrastructure Sub-total	**83,974**	**64,375**	**-19,599**
Other Programmes	26,784	25,714	-1,070
Major Infrastructure – Total	**110,758**	**90,089**	**-20,669**

HIF1 Programme

26. The forecast of £6.3m for the HIF1 programme in 2023/24 reflects the impact of the decision to refuse Planning permission and the Secretary of State's call-in, resulting in a significant delay whilst the Compulsory Purchase Order and Planning Inquiries take place. The forecast is based on the minimum cost to keep the programme on hold, whilst awaiting a decision on planning. Dialogue continues with Homes England and formal funding arrangements within this temporary phase are being finalised.

HIF2 & A40

27. The HIF2 & A40 programme in-year forecast of £23.6m is £1.9m less than the latest budget. This is mainly due to the HIF2 A40 Smart Corridor programme, where dialogue is continuing with Homes England to formalise the agreement of a rescoped programme. The forecast is likely to change further depending on the outcome of this dialogue.

28. The Eynsham Park & Ride programme is progressing well through the construction phase.

Growth Deal Programme and Other Funding

29. This programme is forecasting spend of £28.7m in 2023/24, £4.5m less than the latest approved budget.

30. £3.5m of this variation relates to the Wantage Eastern Link road (WELR) scheme, where the original budget phasing assumed construction would be completed in 2023/24. While the scheme has commenced on site, the completion of the works is now scheduled for 2024/25.

31. Key Oxford Core schemes, including the Oxford Traffic Filters and the wider Zero Emission Zone (ZEZ) Scheme are progressing through the Business Case stage for formal inclusion into the capital programme.

Integrated Transport Programme

32. The Integrated Transport Programme is forecasting year end spend of £25.7m, a reprofile of £1m compared to the current budget. The main element of this programme includes the Zero Emission Bus Regional Areas (ZEBRA) programme. Confirmation of the in-year delivery and spend levels have been provided for the ZEBRA payments to the Bus companies.

Highways Asset Management Plan

33. The total in-year capital forecast for 2023/24 is estimated to be £55.4m, an increase of £0.3m compared to the latest budget. The programme is divided into 4 sub-programme areas as shown in the table below:

Highways Asset Management Plan	Latest Budget	Latest Forecast	Variation
	£'000	£'000	£'000
Structural Maintenance Annual Programme	35,385	35,839	+454
Improvement Programme	2,800	2,880	+80
Structural Maintenance Major Schemes	15,939	15,680	-259
Other Programmes	1,020	1,000	-20
Highways Asset Management Plan – Total	**55,144**	**55,399**	**+255**

34. The annual planned target total surfacing programme (excluding patching) for 2023/24, is calculated at 3% of the network. The expectation is that this would enable the council to maintain the 4,656km of network that it is responsible for in as close as possible to a 'steady state' within the funding available.

35. The annual Structural Maintenance Programme plans to invest £35.8m. The forecast has increased by £0.5m compared to the latest budget, which will be supported by funding brought forwards from 2024/25. The table below shows the planned key structural maintenance deliverables for 2023/24:

Project	Schemes/ Units Planned	Comments
Surface Treatments (schemes)	43	Schemes to restore the condition or prolonging the life of existing carriageways. There is also pre-works for next year's programme, however these schemes are not included in this number.
Carriageways (schemes)	17	Surfacing/reconstruction/strengthening of roads.
Structural Highways Improvements (schemes)	66	Surface inlay and minor patching schemes across the county. There will also be minor works carried out in addition to this throughout the year.
Footways (schemes)	32	Repair/construction of footways and cycleways.
Drainage (schemes)	46	Repair/renewal of existing drainage infrastructure and provision of new infrastructure to resolve known drainage issues. There is also planned reactive work which will be carried out.

Project	Schemes/ Units Planned	Comments
Bridges (schemes)	14	Strengthening/replacement/imposition of management measures on weak structures. Additional area bridges programme is determined during the year.
Public Rights of Way	8	Improved Pedestrian Access Points (delivered as planned-reactive – dependent upon need). In addition to this new/refurbished kit bridges (delivered as planned-reactive with in-house resource).
Section 42 contributions (schemes)	78	Programme delivered by IODS and covers all the unclassified roads and footways within the City.

36. The annual Improvement Programme is forecasting to spend £2.9m in line with the latest budgets. This includes 63 road safety and traffic improvements including road markings, cycle provision improvements, pedestrian crossings, footway improvements and speed limit alterations. The programme also includes enhancement to support journey time reliability which also aid bus movements, and traffic signal improvement schemes.

37. Structural Maintenance Major Schemes are forecasting to invest £15.7m and the table below shows the key planned deliverables for 2023/24:

Project	Schemes/ Units Planned	Comments
Electrical	6,513	LED Replacement units being installed this year.
20mph Speed limit (schemes)	34 84	Phase 1 - schemes slipped from last year Phase 2 - schemes this year Revised speed limit orders and install signs in towns and parishes.

Property Strategy

38. The Property Strategy is forecasting expenditure of £17.7m in 2023/24, There is no change compared to the latest budget.

39. The programme is forecasting to spend £6.0m on corporate estate development including provision for new Children's Homes, including the acquisition and refurbishment of new sites. The intention is to provide four new homes within Oxfordshire (two four bedroom houses and two six bedroom houses) to support solo provision for children with autistic spectrum disorders and children who have experienced adverse childhood experiences.

40. The corporate estate condition programme is forecasting to spend £3.8m during 2023/24. This includes the commencement of £1.8m new

decarbonisation works. It is planned that a further £1m is incurred on the Defect Liability programme during 2023/24 to make the overall outlay to £10m. £1.2m corporate funding is not now required by the Defect Liability Programme and this will be added to capital programme reserves for future priorities. A review of the programme will take place as part of the Budget and Business Planning Process to ascertain if any further budget provision can be released back to the capital programme reserves for future priorities.

41. The Environmental & Climate Change programme is forecasting to spend £5.3m during 2023/24. This includes the various grants through the Green Home Grant / Sustainable Warmth Fund.

42. Home Upgrade Grant 1 (HUG1) was launched in 2022 and completed at the end of June 2023. The total grant was £2.2m with the delivery date of June 2023 stipulated by the Department for Energy Security and Net Zero (DESNZ). Although the total budget was not spent and £0.7m unspent budget will be returned to the grant provider, Oxfordshire was amongst the top performing authorities in the country for delivery of the scheme. There were a number of factors contributing to the underspend. These relate to the availability of accredited installers, early capacity issues and the award of funds under HUG2 which meant HUG1 could not continue once HUG2 was in operation

43. A further £6.4m has been secured for phase II of the Home Upgrade Grant. This will benefit over 300 further residents, specifically those not using mains-gas for heating (targeting coal, oil, Liquid Petroleum Gas (LPG) and low efficiency electric heating), in energy inefficient properties, and for home-owners or privately renting tenants whom are fuel poor / low income, beginning from June 2023. A total of £2.8m has been included within the 2023/24 forecast.

Local Electric Vehicle Infrastructure (LEVI)

44. The council has worked with Oxford Direct Services (ODS) to progress two Innovate UK funded projects to develop and pilot the 'Gul-e' – a sub-surface channel, permanently installed into the footway, which secures an Electric Vehicle (EV) charging cable between a home EV charger and an EV parked at the kerbside. The 'Gul-e' EV cable gully is aimed at EV drivers who do not have access to an off-road home charger, and who otherwise would struggle to charge an EV cost effectively, or who would resort to trailing their charging cable across the public highway, generating a significant trip hazard. Using an EV cable gully, the trip hazards and clutter caused by informal cable crossings and public kerbside chargers are avoided, and the low price point of this solution makes it accessible for self-funding by the user.

45. £0.7m grant funding to support the scheme has been awarded to the council as part of central government's LEVI pilot to deliver an expansion of the cable gully scheme. This project is planned to deploy 500 cable gullies across Oxfordshire over the next two and a half years, starting late in 2023. The business case around the contribution from residents will be finalised by Spring 2024, but the grant funding will be used to offset some of the extra costs that currently exist due to the early stage development of

the solution. The forecast spends in 2023/24 is around £0.2m, the £0.5m balance is to be spent in 2024/25 and 2025/26. The project is expected to be completed by 2025/26.

IT, Innovation & Digital Strategy

46. Forecast expenditure for 2023/24 is £7.1m and there is no change compared to the latest budget.

47. The Rural Gigabit Hub Sites programme commenced in 2021/22 and is progressing well and on schedule with a further £3.7m of externally funded spend due in 2023/24 to enable fibre infrastructure to be built for county council buildings (where gigabit broadband infrastructure does not exist), other public buildings such as schools and GP practices, and a range of community-based buildings such as village halls. The programme is currently underspent against its allocated budget and this position is being reviewed with the supplier to see whether additional community buildings can be delivered within the existing budget envelope.

48. The network connectivity programme will complete the migration of all council sites to a secure "zero trust" network – providing higher bandwidth at lower cost. Revenue savings of approximately £0.3m to meet savings built into the 2023/24 budget will be achieved by these improvements.

49. The Social Care Data Warehouse & Power BI project is a significant investment of £1m to improve the timeliness of key data to social care managers in Adult Social Care and Children's Services, so that they are able to take data driven operational decisions. It is anticipated that this will form part of the foundation for wider sustainable and secure use of data and dashboards across the council. This project is scheduled to complete in early 2024/25.

50. The Children's Services Education System project has been completed. Work is now focussed on working with the service to consolidate the improvements implemented.

51. Forecast spend on other IT Innovation and Digital capital funded projects in 2023/24 includes:

- £0.2m on continued work to improve the council's digital presence building on the content improvements delivered for the music hub and recruitment.
- £0.25m towards the procurement and implementation of a vehicle telemetrics system to track and enable the optimisation of vehicle use by the council.
- £0.3m on the implementation of an applicant tracking solution or service to provide an easier and more welcoming recruitment experience for people applying for council careers and jobs.
- Up to £0.750m on laptop and mobile refresh to ensure staff have suitable modern devices for agile working.

- £0.2m on replacing public network PCs in libraries and community sites to improve their performance, reduce downtime so more availability for residents, and make them more energy efficient.

Passported Funding

52. Expenditure for 2023/24 is forecasted to be £8.4m, a decrease of £0.2m compared to the latest budget.

53. The Disabled Facilities Grant for 2023/24 announced in May 2023 confirmed funding of £6.658m as per the forecast within the capital programme. This funding, which is part of the Better Care Fund, is issued to the County Council but has to be passed directly on to the City and District Councils in accordance with the grant determination. An additional grant of £0.581m was received in September 2023 and this has been included within the capital programme.

54. To utilise remaining funding from the Local Growth Fund (LGF), funding of £0.7m has been provided to the A423 Improvement Programme (Inc Kennington Bridge). The LGF programme is managed by Oxfordshire Local Enterprise Partnership (OxLEP). LGF Grant funding is received by the Council on behalf of OxLEP in the Council's role as Accountable Body.

Vehicles and Equipment

55. Expenditure for 2023/24 is forecasted to be £2.2m, no change compared to the latest budget.

CAPITAL GOVERNANCE APPROVALS

Property Strategy

Children's Services Residential Programme, Emotional Behaviours Disorder Home – Oathill Lodge, Enstone, Chipping Norton.

56. To support the sufficiency strategy for placements for Children We Care For, Children's Services plan to deliver four additional children's homes. An extensive search has been carried out across the County to identify properties on the open market. 'Oathill Lodge' has already been operating as a Children's Home for 15 years and will give children the opportunity to live and thrive within a settled and safe community within easy reach of amenities. The property meets the requirements for the Large Emotional Behaviour Disorder (EBD) Home set out in the Business Case proposal for 50:50 joint funding approval by DfE and Cabinet (5 December 2022).

57. Approval is required to release £2.528 of funds within the Children's Homes Programme, agreed by Council in February 2023, to purchase Oathill Lodge and fund the cost of adaptation and refurbishment.

Children's Services Residential Programme Solo Home 2 – Greenways Wootton

58. A second property has been identified, 'Greenways' Wootton, to support the delivery of the four additional children's homes. The property meets the requirements for the Small Solo Children's Home set out in the business case proposals for 50:50 joint funding approval by DfE and Cabinet (5 December 2022).

59. Approval is required to release £1.934m of funds within the Children's Homes Programme, agreed by Council in February 2023, to purchase Greenways, Wootton and fund the cost of adaptation and refurbishment.

Environment & Climate Change

Thames Path Oxford – Bank Repair & Reconstruction Programme

60. The Thames Path is a Public Right of Way and the responsibility of the county council to maintain as the Highway Authority. The towpath is failing in several sections over a length of approximately 1.5km. If work is not carried out the towpath, it may result in needing to be closed to the public.

61. To progress this work, approval is required to add this scheme into the Capital Programme. Cabinet is recommended to release £0.023m to complete design and procurement and to approve the drawdown of £0.529m of the £1.5m funding agreed by Full Council in February 2023 to complete the first phase of work.

Capital Funding Bids

IT, Digital and Innovation Strategy

Oxfordshire Local Electric Vehicle Infrastructure Programme (OXLEVI)

62. OXLEVI is the Oxfordshire Local Electric Vehicle Infrastructure Programme led by OCC in collaboration with Oxfordshire's district councils.. The programme seeks to support the transition to electric vehicles across Oxfordshire with a focus on supporting residents who need access to public EV charging due to their off-road parking.

63. Approval from Cabinet is required to enter the bid.

Property Strategy

Property Decarbonisation Programme

64. The strategic approach to the development of the Decarbonisation Programme to set a programme of works up to 2030 has been conducted in line with the energy hierarchy, with a focus on energy efficiency measures prior to an increase in renewable energy. To support the programme, the Council can bid for grant funding through the Public Sector Decarbonisation Scheme.

65. Approval is from Cabinet is required to enter the bid.

Major Infrastructure

A423 Improvement Programme (Including Kennington Bridge)

66. The A423 Kennington Rail Bridge is a crucial part of the Environment Agency's Oxford Flood Alleviation Scheme (OFAS) as floodwater from the scheme needs to pass under it to re-join the River Thames and ensure the efficient movement of water through the floodplain. The current capacity of the channels under the bridge are too small to meet OFAS requirements, and the scheme requires larger channels in this location.

67. The initial proposal as part of the OFAS was to construct two new culverts within the A423 road embankment either side of the Kennington Rail Bridge. The culverts would carry the flood flows beneath the A423, either side of the bridge. However in mid-2019, the Council determined that the bridge needed to be replaced. At that stage they also advised that due to the bridge's current poor condition, it would be unsafe to build the proposed new culverts immediately adjacent to it.

68. As the existing bridge is due to be replaced, it was agreed as part of the project to enlarge the Hinksey streams under the bridge's side spans to achieve the required increased flood flow capacity for the flood scheme.

69. The integration OFAS with the replacement of Kennington Railway Bridge is now the most efficient way to deliver the OFAS and realise its wide-reaching benefits. The funding from the Housing Infrastructure Fund Marginal Viability (HIFMV) will be used to enable the OFAS to be delivered.

70. It is proposed that the Council can accept £2.0m of HIFMV funding to be spent on design costs for the A423 Kennington Improvement Programme by 31 March 2024 from Oxford City Council due to linkage with the Environment Agency Oxford Flood Alleviation Scheme. This £2.0m will be passed to the Environment Agency when they start construction. The final version of the agreements between OCC, Oxford City Council and the Environment Agency will be subject to standard OCC governance arrangements.

Ten Year Capital Programme Update

71. The total ten-year capital programme (2023/24 to 2032/33) is now £1,269.5m (excluding earmarked reserves) and has increased by £3.9m compared to the capital programme approved by Cabinet in July 2023. A summary of the updated capital programme is set out in Annex 2. The following table summarises the variations by strategy. The main reason for the increase is the release of some pipeline provision approved as part of the capital priorities in February 2023, closedown of projects and the addition of Section 106 contributions supporting projects already in the capital programme.

Strategy Area	Last Approved Total Programme (2023/24 to 2032/33) *	Latest Updated Total Programme (2023/24 to 2032/33)	Variation
	£m	£m	£m
Pupil Places Plan	228.3	227.7	-0.6
Major Infrastructure	684.8	687.3	+2.5
Highways Asset Management Plan	243.5	245.6	+2.1
Property Strategy	54.7	54.7	0.0
IT, Digital & Innovation Strategy	12.9	12.9	0.0
Passported Funding	14.6	14.5	-0.1
Vehicles & Equipment	26.8	26.8	0.0
Total Strategy Programmes	**1,265.6**	**1,269.5**	**+3.9**
Earmarked Reserves	88.8	87.8	-1.0
Total Capital Programme	**1,354.4**	**1,357.3**	**+2.9**

Approved by Cabinet 18 July 2023.

Capital Funding Update

Prudential Borrowing

72. The ten-year Capital Programme includes a requirement to fund £248.8m through prudential borrowing. The latest borrowing expected to be taken in 2023/24 is £70m. The majority of this relates to schemes that have already been delivered but have, until now, been funded temporality by borrowing from other funding sources within the Capital Programme to delay the need to apply the prudential borrowing. The borrowing in 2023/24 is expected to include a further £45m from the £120m agreed in 2018. £32m relates to additional investment in the Highways Asset Management Plan and £13m for general funding to support capital investment priorities. A further £5m for the £41.7m borrowing supporting the OxLEP City Deals programme, and the first drawdown of £20m supporting the £40.8m Street Lighting LED replacement programme.

73. The use of prudential borrowing will increase the Council's Capital Financing Requirement. The Council is required under statute to set aside a Minimum Revenue Provision to pay down the Capital Financing Requirement. Prudential borrowing is generally paid over 25 years. The Medium Term Financial Strategy takes account of this cost. As the Capital programme includes the OxLEP City Deal Programme, the borrowing costs relating to this scheme (for which the Council is the Accountable body) will be fully funded through Enterprise Zone 1 retained business rates.

Earmarked Reserves

74. The level of earmarked reserves has decreased by £1m from the previous reported position (July 2023). This includes the release of some of the pipeline provision (£2.7m) approved as part of the capital priorities in February 2023 (Thames Towpath, Travellers Sites). An Additional £1.2m included from the budget being returned from the Defect Liability Fund.

This includes the capital programme contingency for the delivery of the current ten-year capital programme plus identified provisions.

Capital Reserves

75. The current level of capital reserves (including capital receipts and capital grants reserves) is approximately £190m. This is expected to reduce to approximately £52m at the end of 2025/26. The reduction is mainly due to the delivery of the Growth Deal Programme and the A423 Improvement Programme. Reserves can be used to temporarily fund schemes to delay the need for prudential borrowing or to help manage timing difference between the delivery of schemes and the receipt of Section 106 funding. The level of reserves impacts on the cashflow of the capital programme and the overall Council Balances and is already factored into the funding of the overall capital programme.

Risk Management

76. As reported previously, there are a mix of factors continuing to impact on the deliverability and cost of capital schemes. Where those schemes are grant funded (particularly Housing & Growth Deal, HIF1 and HIF2) there is a risk that slippage could impact on the availability of grant funding as it is not possible to complete the scheme by the funding deadline. Inflationary pressures may also mean that costs increase further by the point the scheme reaches the construction phase eroding the value of the grant funding so that is insufficient to meet the revised scheme costs.

77. These risks are being managed through the council's capital governance process at both project and programme level and through the Strategic Capital Board. Where necessary action is being taken to adjust scheme deliverables and to use value engineering to maintain spend within the available funding.

78. HIF1 is a significant financial risk to the authority because the scheme cannot now be completed before the end date of reclaiming expenditure of March 2026. However, following the outcome of the planning inquiry a decision will be required to stop the scheme or alternatively an extension to time/additional funding/rescoping of the scheme would need to be agreed with Homes England. As such it is expected that the financial risks will be managed through either of those routes.

79. Following a review of the council's strategic risk register in March 2023, the council is now be focussing on assessing and tracking seven strategic risks in 2023/24. One of these risks is "Major Infrastructure Portfolio Schemes become undeliverable". Updates on this risk are being reported through the Business Management & Monitoring Reports to Cabinet.

Financial Implications

80. The report sets out the planned investment and available funding for the ten-year Capital programme including the risks associated with the delivery of the programme.

81. The following risks are inherent within the funding of the capital programme:

- Certainty over the timing and value of future capital receipts and Section 106 Contributions
- Certainty over the receipt and security of future grant funding

82. If capital receipts or section 106 contributions are not received within the planned timeframe it may be necessary for the Council to temporarily fund capital expenditure through prudential borrowing. The council has a prudential borrowing reserve to help manage the revenue impact of additional prudential borrowing.

83. Where additional funding is required to fund schemes on a permanent basis this will need to be addressed by reducing investment elsewhere within the programme (reprioritisation) or by permanently funding through prudential borrowing. This would require the identification of long term revenue funding as the Prudential Borrowing is usually repaid over 25 years through the Minimum Revenue Provision.

Comments checked by:
Lorna Baxter, Director of Finance

Staff Implications

84. There are no staffing implications arising directly from the report.

Equality & Inclusion Implications

85. There are no equality and inclusion implications arising directly from this report.

Legal Implications

86. In year changes to the capital programme must be approved by Cabinet in accordance with the Council's Financial Regulations. In particular paragraph 5.1.1(IV) sets out that where the total estimated resource allocation is above £1,000,000, then Cabinet can agree its inclusion into the Capital Programme, via the periodic Capital Report to Cabinet, based on the recommendations by Strategic Capital Board and the Section 151 Officer.

Comments checked by: Anita Bradley, Director of Law & Governance & Monitoring Officer

LORNA BAXTER
Director of Finance

Background papers:

Contact Officers: Kathy Wilcox, Head of Corporate Finance
Natalie Crawford, Capital Programme Manager

October 2023

APPENDIX 3
TO PROOF OF EVIDENCE

ON CARBON EMISSIONS AND FINANCIAL VIABILITY
By Ng Chien Xen for
Neighbouring Parish Councils Joint Committee

TAB 4

Jan 2024

Setting Climate Committments for South Oxfordshire

Quantifying the implications of the United Nations Paris Agreement for South Oxfordshire

Date:	January 2024
Prepared By:	Dr Jaise Kuriakose, Dr Chris Jones, Prof Kevin Anderson, Dr John Broderick & Prof Carly McLachlan

NB: All views contained in this report are solely attributable to the authors and do not necessarily reflect those of the researchers within the wider Tyndall Centre.

Key Messages

This report presents climate change targets for South Oxfordshire[i] that are derived from the commitments enshrined in the Paris Agreement [1], informed by the latest science on climate change [2] and defined in terms of science based carbon setting [3]. The report provides South Oxfordshire with budgets for carbon dioxide (CO_2) emissions and from the energy system for 2020 to 2100.

The carbon budgets in this report are based on translating the "well below 2°C and pursuing 1.5°C" global temperature target and equity principles in the United Nations Paris Agreement to a national UK carbon budget [1][ii]. The UK budget is then split between sub-national areas using different allocation regimes [4]. Aviation and shipping emissions remain within the national UK carbon budget and are not scaled down to sub-national budgets. Land Use, Land Use Change and Forestry (LULUCF) and non-CO_2 emissions are considered separately to the energy CO_2 budget in this report.

Based on our analysis, for South Oxfordshire to make its 'fair' contribution towards the Paris Climate Change Agreement, the following recommendations should be adopted:

1. Stay within a maximum cumulative carbon dioxide emissions budget of 5.6 million tonnes ($MtCO_2$) for the period of 2020 to 2100. At 2017 CO_2 emission levels[iii], South Oxfordshire would use this entire budget within 7 years from 2020.
2. Initiate an immediate programme of CO_2 mitigation to deliver cuts in emissions averaging a minimum of -13.4% per year to deliver a Paris aligned carbon budget. These annual reductions in emissions require national and local action, and could be part of a wider collaboration with other local authorities.
3. Reach zero or near zero carbon no later than 2041. This report provides an indicative CO_2 reduction pathway that stays within the recommended maximum carbon budget of 5.6 $MtCO_2$. At 2041 5% of the budget remains. This represents very low levels of residual CO_2 emissions by this time, or the Authority may opt to forgo these residual emissions and cut emissions to zero at this point. Earlier years for reaching zero CO_2 emissions are also within the recommended budget, provided that interim budgets with lower cumulative CO_2 emissions are also adopted.

1. Introduction

This report presents advisory climate change targets for South Oxfordshire to make its fair contribution to meeting the objectives of the United Nations Paris Agreement on Climate Change. The latest scientific consensus on climate change in the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C [2] is used as the starting point for setting sub-national carbon budgets [3, 4] that quantify the maximum carbon dioxide (CO_2) associated with energy use in South Oxfordshire that can be emitted to meet this commitment. This report translates this commitment into;

1. a long-term carbon budget for South Oxfordshire;
2. a sequence of recommended five-year carbon budgets;
3. a date of 'near zero'/zero carbon for the area.

The United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement commits the global community to take action to "hold the increase in global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C" [1]. Cumulative emissions of CO_2 from human activity are the principle driver of long-term global warming[iv]. It is the relationship between CO_2 and global temperatures which means that staying within a given temperature threshold requires that only a certain total quantity of CO_2 is released to the atmosphere. This is the global carbon budget.

In addition to setting global average temperature targets, the UNFCCC process also includes foundational principles of common but differentiated responsibility [1]. This informs the fair (equitable) distribution of global emissions between nations at different stages of economic development. Industrialised nations are expected to show leadership towards a low carbon future, while it is acknowledged that a greater total share of future emissions will be associated with other countries as they develop (though their emissions per capita will remain low). Any sub-division of the global carbon budget must therefore account for the development needs of what the Paris Agreement refers to as "developing country Parties" in setting a fair/equitable national or sub-national carbon budget.

The carbon budgets presented here apply to CO_2 emissions from the energy system only. Although all greenhouse gas (GHG) emissions, such as methane and other forcing agents, such as aircraft contrails, affect the rate of climate change, long term warming is mainly driven by CO_2 emissions [5]. Furthermore the physical or chemical properties of each GHG vary, with different life-times causing warming in different ways, and with subsequent, and often large, uncertainties in their accounting [6]. As such the global carbon budgets in the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C (SR1.5) [2], relate to CO_2-only emissions. In this report we have discussed non-CO_2 emissions and CO_2 emissions associated with land use, land use change and forestry separately.

Ultimately staying within a global temperature threshold (e.g. "well below 2°C") requires limiting cumulative CO_2 emissions over the coming decades. Carbon budgets can be an effective way to understand the amount of CO_2 emissions that can be released into the atmosphere in order to do this. End point targets such as 'net zero' by 2050, with very clear assumptions, can be useful indicators of ambition, but it is ultimately the cumulative CO_2 released on the way to that target that is of primary significance to achieving climate change goals. Whereas end point focused targets can be met with varying levels of CO_2 emissions (and therefore varying global temperature with consequent climate impacts) depending on their reduction pathways, carbon budgets specify the limits to CO_2 emissions within the period of the commitment. This is a reason why the UK Climate Change Act has legislated 5-year carbon budget periods, as well as a long term target, to keep CO_2 emissions consistent with the framing goal of the climate change commitment. It is also the reason why we recommend a carbon budget based approach.

1.2 Wider UK Policy Context

The UK Climate Change Act now legislates for a commitment to net zero greenhouse gas emissions by 2050[v], with five yearly carbon budgets to set actions and review progress [7]. The carbon budgets for this target were not available at the time of our analysis for direct comparison, however the

recommended budget in this report will most likely be more stringent. This is primarily due to two key differences between our approach and the current recommendations of the UK Government's advisory body the Committee on Climate Change (CCC) that inform the revised UK net zero target:

1. The equity principles of the Paris Agreement and wider UNFCCC process are explicitly and quantitatively applied. Our approach allocates a smaller share of the global carbon budget to the 'developed country Parties', such as the UK, relative to 'developing country Parties'. Moreover the approach is also distinct in including global 'overheads' for land use, land use change and forests (LULUCF) and cement process emissions related to development.
2. Carbon dioxide removals via negative emissions technologies (NETs) and carbon offsets[vi] are not included. The UK Climate Change Act's 'net zero' framing means that the commitment is met when greenhouse gas emissions (debits) and removals (credits) from the UK's carbon 'account' balance at zero. Hence the 2050 target can be met using carbon dioxide removal technologies, including land use sequestrations, and potentially carbon offsetting. The CCC include a significant role for NETs such as bioenergy carbon capture and storage and direct air capture in their analysis supporting the net zero target. Doing so theoretically increases the size of a carbon budget, but increases the risk of failing to deliver on the Paris global temperature target. The UK Government has also rejected the CCC's advice to explicitly exclude international carbon offsetting as an approach to meeting the net zero target. Allowing for future carbon dioxide removal technologies and international carbon offsetting ostensibly increase the size of the UK's carbon budget. However carbon removal technologies are at a very early stage of development and whether they can be successfully deployed at sufficient scale is highly uncertain. While they are an important technology to develop, it is a major risk to prematurely adopt a carbon budget that allows for additional CO_2 on the basis that future generations will be in a position to deploy planetary-scale NETs. Similarly, as the CCC note in their advice, the efficacy of carbon offsetting as a contribution to meeting global climate change commitments is not robust enough to incorporate into recommended carbon budgets.

We regard our UK carbon budget to be at the upper end of the range that is aligned with the Paris Agreement's objectives. Early results from the latest Earth system models suggest that the climate may be more sensitive to greenhouse gases than previously thought implying a smaller global carbon budget is required [8]. In addition, assuming that developing countries will, on aggregate, implement rapid emissions reduction measures in line with a 2025 peak year is far from certain. Therefore, we recommend that these budgets are taken as reflective of the minimum commitment required to deliver on the Paris Agreement.

2. Method

The Setting City Area Targets and Trajectories for Emissions Reduction (SCATTER) project [4] funded by the Department for Business Energy and Industrial Strategy (BEIS) developed a methodology for Local Authorities to set carbon emissions targets that are consistent with United Nations Paris Climate Agreement. This report uses the SCATTER methodology with revised global carbon budgets, based on the latest IPCC Special Report on 1.5°C and updated CO_2 emissions datasets, to downscale global carbon budgets to South Oxfordshire. This methodology has been successfully piloted with Greater Manchester Combined Authority and is being made available nationally to support all local authorities and groupings of local authorities.

Step 1: A global carbon budget of 900 $GtCO_2$ is taken from the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5ºC [2]. This global carbon budget represents the latest IPCC estimate of the quantity of CO_2 that can be emitted and still be consistent with keeping global temperatures well below 2ºC with an outside chance of stabilising at 1.5 ºC. This budget assumes no reliance on carbon removal technologies.

Step 2: A 'global overhead' deduction is made for process emissions arising from cement production (60 $GtCO_2$) [9][vii]. Cement is assumed to be a necessity for development [5]. We also assume that there is no net deforestation at a global level (2020 to 2100) so none of the global carbon budget is allocated to this sector. This will require a significant global effort to rapidly reduce deforestation and significantly improve forestry management as well as increase rates of reforestation and potentially afforestation.

Step 3: A share of the global carbon budget is allocated to "developing country parties" assuming a trajectory for those countries from current emissions to a peak in 2025 then increasing mitigation towards zero emissions by around 2050. The remaining budget is allocated to "developed country parties" which includes the UK [10]. This approach of considering developing countries first, is guided by the stipulation of equity within the Paris Agreement (and its earlier forebears, from Kyoto onwards) [10].

Step 4: The UK is apportioned a share of the 'developed country Parties' budget after Step 3 to provide a UK national carbon budget. The apportionment is made according to "grandfathering"[viii] of emissions for the most recent period up to the Paris Agreement (2011 to 2016).

Step 5: Aviation and shipping emissions are deducted. Assumptions and estimates are made about the level of future emissions from aviation, shipping and military transport for the UK. These emissions are then deducted from the national budgets as a 'national overhead" to derive final UK energy only carbon budgets. Emissions from aviation including military aircraft are assumed to be static out to 2030, followed by a linear reduction to complete decarbonisation by 2075. The total CO_2 emissions of this path are >25% lower than Department for Transport central forecast followed by reduction to zero by 2075. Shipping emissions are based on Walsh et al [11] 'big world' scenario out to 2050 followed by full decarbonisation from this sector by 2075. These aviation and shipping emissions (1,518 $MtCO_2$) are then deducted as a 'national overhead' from the UK budget to derive the final carbon budgets for the UK, from which local authority budgets are subsequently derived [4]. The budgets provided are therefore aligned with "well below 2°C and pursuing 1.5°C" provided that aviation and shipping emissions do not exceed the pathway assumed in our analysis [4]. Failure to hold aviation and shipping emissions within the outlined allocation will reduce the carbon budget for UK regions, including for South Oxfordshire.

Step 6: South Oxfordshire is apportioned a part of the remaining UK carbon budget. Our recommended budget is based on sub-national allocation through 'grandfathering'. A grandfathering approach allocates carbon budgets on the basis of recent emissions data. The most recent annual CO_2 emissions for South Oxfordshire up to the Paris Agreement [12] (2011-2016) is averaged and compared to averaged data for the whole UK [13] over the same period. The carbon budget (2020-2100) for South Oxfordshire is then apportioned based on South Oxfordshire's average proportion of UK CO_2 emissions for the 2011-2016 period. CO_2 emissions in the carbon budget include emissions from fossil combustion within the region and a share of the emissions from national electricity generation (relative to the South Oxfordshire area's end-use electricity demand).

Step 7: Carbon emission pathways. The carbon budgets for South Oxfordshire are related to a set of illustrative emission pathways. These pathways show projected annual CO_2 emissions from energy use in South Oxfordshire and how these emissions reduce over time to stay within the budget. The energy-only CO_2 emissions for 5-yearly interim carbon budget periods are calculated in line with the framework set out in the UK Climate Change Act. It is the cumulative carbon budget and the 5 year interim budgets that are of primary importance as opposed to a long term target date. The combination of a Paris-compliant carbon budget and the projected emissions pathways can however be used to derive an indicative near zero carbon target year for South Oxfordshire. The near zero carbon year of 2041 is defined here as the point at which, on the consistent reduction rate curve, less than 5% of South Oxfordshire's recommended budget remains. Annual CO_2 emissions at this point fall below 0.04 $MtCO_2$ (CO_2 levels >96% lower than in 2015 – a Paris Agreement reference year).

3. Results

3.1 Energy Only Budgets for South Oxfordshire

Following the Method the recommended energy only CO_2 carbon budget for the South Oxfordshire area for the period of 2020 to 2100 is 5.6 $MtCO_2$. To translate this into near to long term commitments a CO_2 reduction pathway within the 5.6 $MtCO_2$ is proposed here. A consistent emissions reduction rate of -13.4% out to the end of the century is applied. In 2041 95% of the recommended carbon budget is emitted and low level CO2 emissions continue at a diminishing level to 2100.

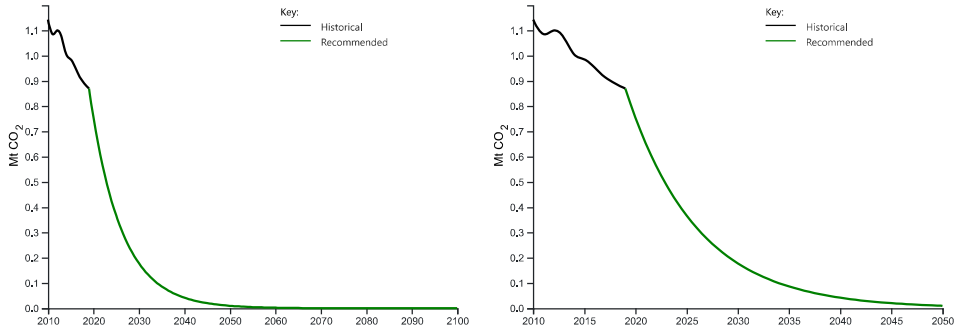


Figure 1a (left): *Energy related CO_2 only emissions pathways (2010-2100) for South Oxfordshire premised on the recommended carbon budget.* ***Figure 1b (right):*** *Energy CO_2 only emissions pathways (2010-2050) for South Oxfordshire premised on the recommended carbon budget.* ***y-axis shows emissions in $MtCO_2$***

Table 1 presents the South Oxfordshire energy CO_2 only budget in the format of the 5-year carbon budget periods in the UK Climate Change Act. To align the 2020 to 2100 carbon budget with the budget periods in the Climate Change Act we have included estimated CO_2 emissions for South Oxfordshire for 2018 and 2019, based on BEIS provisional national emissions data for 2018 [14] and assuming the same year on year reduction rate applied to 2019. The combined carbon budget for 2018 to 2100 is therefore 7.4 $MtCO_2$.

Table 1: *Periodic Carbon Budgets for 2018 for South Oxfordshire.*

Carbon Budget Period	**Recommended Carbon Budget (**Mt CO_2**)**
2018 - 2022	3.7
2023 - 2027	1.9
2028 - 2032	0.9
2033 - 2037	0.4
2038 - 2042	0.2
2043 - 2047	0.1
2048 - 2100	0.1

The recommended budget is the maximum cumulative CO_2 amount we consider consistent with South Oxfordshire's fair contribution to the Paris Agreement. A smaller carbon budget, with accelerated reduction rates and an earlier zero carbon year, is compatible with this approach. It is however important that for an alternative zero carbon year the proposed 5 year budget periods are the same or lower that those specified in Figure 2. Furthermore meeting the budget must not rely on carbon offsets.

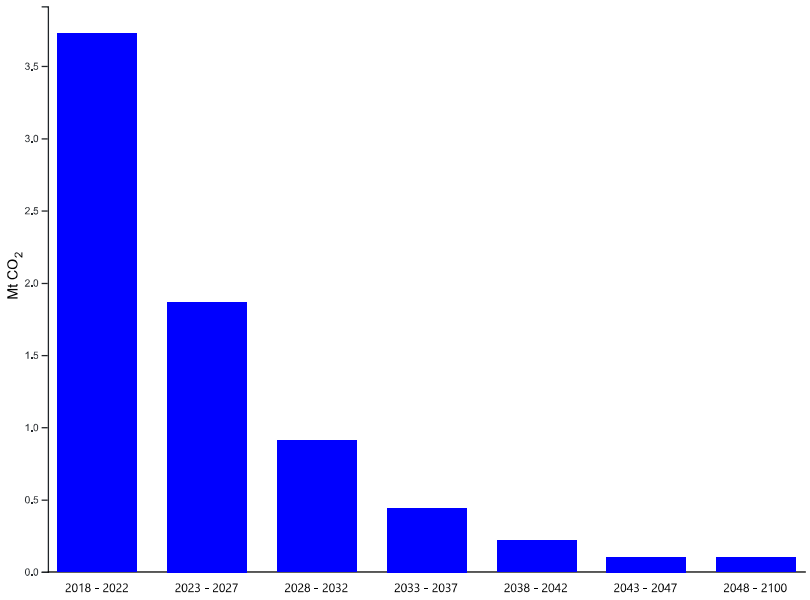


Figure 2: *Cumulative CO_2 emissions for budget period (based on Table 1) from 2018 to 2100 for South Oxfordshire*

3.2 Recommended Allocation Regime for Carbon Budget

The recommended carbon budget is based on a grandfathering allocation regime for sub-dividing the UK sub-national energy only carbon budget. There are three distinct allocation regimes that can be applied to determine sub-national budgets. We have opted to recommend one common approach for allocating carbon budgets that can be applied to all Local Authority areas. This enables straightforward compatibility between carbon budgets set at different administrative scales. For example this makes it easier for individual Local Authorities to calculate their own carbon budgets that are compatible with a budget set at Combined Authority scale. It also means that under the recommended carbon budgets, all Authorities are contributing to a common total UK carbon budget. If for example all Authorities selected the allocation regime that offered them largest carbon budget the combined UK budget would not comply with the objectives of the Paris Agreement. The common approach to allocation we recommend therefore further assures that the carbon budget adopted is Paris Agreement compatible.

We have chosen a grandfathering as our common allocation approach because, based on our analysis, it is the most appropriate and widely applicable regime within the UK.

Population and Gross Value Added[ix] (GVA) are alternative allocation regimes. Population shares the carbon budget equally across the UK on a per capita basis. In this allocation regime the UK population [15] is compared to that of South Oxfordshire [16] from 2011 to 2016. The carbon budget (2020-2100) for South Oxfordshire is then apportioned based on its average proportion of the UK population for the period 2011-2016. For regions where per capita energy demand deviates significantly from the average (e.g. a large energy intensive industry is currently located there) the budget allocated may not be equitable for all regions, therefore it is not recommended as the preferred allocation. GVA is used as an economic metric to apportion carbon budgets. For example, the UK total GVA [17] is compared to that of South Oxfordshire [17] from 2011 to 2016. The carbon budget (2020-2100) for South Oxfordshire is then apportioned based on South Oxfordshire's average proportion of UK GVA for the period 2011-2016. GVA can be useful as a proxy for allocation on economic value, however without an adjustment for the type of economic activity undertaken, areas with high economic 'value' relative to energy use can get a relatively large budget, while the inverse is true for areas with energy intensive industries, and/or lower relative economic productivity. We would therefore not recommend GVA as an appropriate allocation regime for all regions.

Table 2 presents the result outcomes for alterative allocation regimes – population and gross value added (GVA).

Table 2: *Energy only CO_2 budgets and annual mitigation rates for South Oxfordshire (2020-2100) by allocation regime*

Allocation regime (% of UK Budget allocated to South Oxfordshire	UK Budget[x] ($MtCO_2$)	South Oxfordshire Budget ($MtCO_2$)	Average Annual Mitigation Rate (%)
Grandfathering to South Oxfordshire from UK (0.2%)	2,239	5.6	-13.4%
Population split to South Oxfordshire from UK (0.2%)	2,239	4.7	-15.5%
GVA split to South Oxfordshire from UK (0.2%)	2,239	5.3	-14.2%

Pathway projections for the change in annual energy-only CO_2 emissions pathways for South Oxfordshire based on the carbon budgets in Table 2 are illustrated in Figure 3a & 3b.

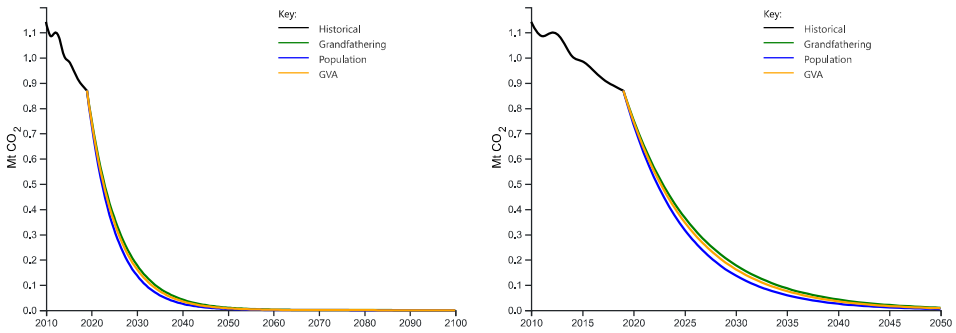


Figure 3a (left): *Energy related CO_2 only emissions pathways (**2010-2100**) for South Oxfordshire premised on carbon budgets shown in Table 2.* ***Figure 3b (right):*** *Energy related CO_2 only emissions pathways (**2010-2050**) for South Oxfordshire premised on carbon budgets shown in Table 2.* ***y-axis shows emissions in $MtCO_2$***

3.3 Land Use, Land Use Change and Forestry emissions for South Oxfordshire

Land Use, Land Use Change and Forestry (LULUCF) consist of both emissions and removals of CO_2 from land and forests. We recommend that CO_2 emissions and sequestration from LULUCF are monitored separately from the energy-only carbon budgets provided in this report. South Oxfordshire should increase sequestration of CO_2 through LULUCF in the future, aligned with Committee on Climate Change's high level ambition of tree planting, forestry yield improvements and forestry management [18]. Where LULUCF is considered, we recommend it compensate for the effects of non-CO_2 greenhouse gas emissions (within the geographical area) that cannot be reduced to zero, such as non-CO_2 emissions from agriculture.

3.4 Non-CO_2 Emissions

The IPCC SR1.5 report identifies the importance of non-CO_2 climate forcers (for instance methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), sulphur dioxide (SO_2) and black carbon) in influencing the rate of climate change. However, a cumulative emission budget approach is not appropriate for all non-CO_2 greenhouse gases, as the physical and chemical properties of each leads to differing atmospheric lifetimes and warming effects [19]. There are also substantial relative uncertainties in the scale, timing and location of their effects.

We do not provide further analysis or a non-CO_2 emissions reduction pathway in this report. However the global carbon budget in the IPCC Special Report on 1.5ºC, that our analysis is based on, assumes a significant reduction in rate of methane and other non-CO_2 emissions over time. Therefore to be consistent with carbon budgets South Oxfordshire should continue to take action to reduce these emissions.

The Department of Business Energy and Industrial Strategy's Local Authority emissions statistics do not at this time provide non-CO_2 emissions data at the regional level. Given the absence of robust non-CO_2 emissions data, any non-CO_2 emissions inventory by other organisations at scope 1 and 2 for South Oxfordshire may form the basis of monitoring and planning for these emissions. We recommend considering the adoption of a LULUCF pathway that includes CO_2 sequestration sufficient to help compensate for non-CO_2 emissions within South Oxfordshire's administrative area.

4. Conclusions

The results in this report show that for South Oxfordshire to make its fair contribution to delivering the Paris Agreement's commitment to staying "well below 2°C and pursuing 1.5°C" global temperature rise, then an immediate and rapid programme of decarbonisation is needed. At 2017 CO_2 emission levels[xi], South Oxfordshire will exceed the recommended budget available within 7 years from 2020. **To stay within the recommended carbon budget South Oxfordshire will, from 2020 onwards, need to achieve average mitigation rates of CO_2 from energy of around -13.4% per year**. This will require that South Oxfordshire rapidly transitions away from unabated fossil fuel use. For context the relative change in CO_2 emissions from energy compared to a 2015 Paris Agreement reference year are shown in Table 3.

Table 3: *Percentage reduction of annual emissions for the recommended CO_2-only pathway out to 2050 in relation to 2015*

Year	Reduction in Annual Emissions (based on recommended pathway)
2020	24.2%
2025	63.2%
2030	82.1%
2035	91.3%
2040	95.8%
2045	98.0%
2050	99.0%

The carbon budgets recommended should be reviewed on a five yearly basis to reflect the most up-to-date science, any changes in global agreements on climate mitigation and progress on the successful deployment at scale of negative emissions technologies.

These budgets do not downscale aviation and shipping emissions from the UK national level. However if these emissions continue to increase as currently envisaged by Government, aviation and shipping will take an increasing share of the UK carbon budget, reducing the available budgets for combined and local authorities. **We recommend therefore that South Oxfordshire seriously consider strategies for significantly limiting emissions growth from aviation and shipping.** This could include interactions with the UK Government or other local authority and local enterprise partnership discussions on aviation that reflect the need of the carbon budget to limit aviation and shipping emissions growth.

CO_2 emissions in the carbon budget related to electricity use from the National Grid in South Oxfordshire are largely dependent upon national government policy and changes to power generation across the country. **It is recommended however that South Oxfordshire promote the deployment of low carbon electricity generation within the region and where possible influence national policy on this issue**.

We also recommend that the LULUCF sector should be managed to ensure CO_2 sequestration where possible. The management of LULUCF could also include action to increase wider social and environmental benefits..

Endnotes

[i]Defined in terms of the administrative boundary of the South Oxfordshire area.

[ii]We base our global carbon budget on the latest IPCC Special Report on 1.5ºC (IPCC SR1.5) findings on how carbon emissions relate to global temperatures. The budget value we have selected provides a 'likely' chance of staying below 2°C and offers an outside chance at holding temperatures to 1.5°C. As IPCC SR1.5, notes there are no emissions pathways for limiting warming to 1.5°C that do not rely upon significant carbon dioxide removal technology deployment [2]

[iii]Based on BEIS LA statistics 2017 CO_2 emissions South Oxfordshire (excluding aviation, shipping, process CO2 emissions from cement production and those from LULUCF).

[iv]This is due to the near-linear relationship between cumulative CO2 emissions and temperature is the result of various feedback processes and logarithmic relationship between atmospheric CO2 concentrations and radiative forcing, as well as the changes in the airborne fraction of CO2 emissions [19].

[v]The 2019 amended UK Climate Change Act commits the UK to at least a 100% reduction in greenhouse gas emissions by 2050 from 1990 levels on the basis that the UK's 'carbon account' is 'net zero' by this point. This is not the same as zero greenhouse gas emissions by 2050. In this framing residual greenhouse gas emissions are net zero on the provision that they are balanced by greenhouse gas removals in the UK's carbon account.

[vi]Carbon offsetting refers to the purchase of a tradeable unit, representing emissions rights or emissions reductions, to balance the climate impact of an organisation, activity or individual.

[vii]Based on IEA's ambitious 2 degree scenario on process CO_2 for the period 2020-2050, subsequently extrapolating to zero by 2075

[viii]Grandfathering is based on the average proportion of CO_2 emissions from each Party in recent years.

[ix]Balanced approach at current basic prices

[x]After deducting an emissions budget for aviation, shipping and military transport of 1,518 $MtCO_2$

[xi]Based on South Oxfordshire's 2016 CO2 emissions (excluding aviation, shipping, process CO_2 emissions from cement production and those from LULUCF).

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TAB 5

Jan 2024

experience of driving an EV more convenient than driving a conventional vehicle, for instance due to the ability for drivers with access to off-street or local on-street charging to recharge vehicles overnight or while visiting destinations, ready for use when required.

- Battery cell prices have seen a steady decline over recent years but increased in 2022 due to supply-chain disruptions, with the pandemic and the war in Ukraine seen as contributing factors. This indicator is slightly behind the CCC's pathway (Figure 4.2e).

Energy price rises have reduced the per-mile savings offered by electric vehicles, but these savings remain strong for drivers able to charge at home.

- Sharply rising electricity prices have reduced the per-mile cost savings offered by EVs compared to fossil-fuelled vehicles (Figure 4.7). Savings remain strong for drivers able to charge through their domestic electricity supply, but trends are more concerning for those reliant on public charging infrastructure.

- While public sentiment towards EVs is positive (see Chapter 15), addressing risks to this such as chargepoint availability and reliability, vehicle wait-times and availability of affordable new and used models across all size and use categories will be important to sustain this progress.

Conventional vehicle efficiency. Improvements in engine technologies (e.g. hybridisation) are being offset by trends towards larger vehicle sizes (particularly SUVs (Figure 4.5)), which has led to average new internal combustion engine (ICE) cars and vans becoming less efficient over recent years (Figures 4.2f-g). The CCC's pathway and the Government's assumed baseline both entail the carbon-intensity of the new non-ZEVs that continue to be sold falling gradually this decade, but current trends are moving in the wrong direction.

Road transport demand. Alongside the uptake of EVs, measures to limit growth in road traffic are also crucial for decarbonising transport, and bring wider co-benefits such as improved air quality.

Road transport demand seems to have recovered to a new steady state, around 5% below pre-pandemic levels.

- The number of kilometres driven by road vehicles was 21% higher in 2022* than in 2020 as travel restrictions were lifted following the pandemic (Figure 4.8), and seems to have reached a new steady state† which is around 5% below pre-pandemic levels. Studies have shown that rising fuel prices, increases in home-working and implementation of low-traffic neighbourhoods have all contributed to this reduction in overall demand.[11,12,13]

Without policy action to embed reductions in the need to travel by car or increase the appeal of more sustainable modes, pre-pandemic traffic growth trends are likely to resume.

- Measures to reduce car demand are largely absent from the Government's CBDP quantified delivery pathway, so we are not able to compare this against any clear pathway showing Government ambition, only the wide assumption ranges used in DfT's Transport Decarbonisation Plan. Compared to the CCC's pathway (Figure 4.2h), car demand is currently on track although there is a significant risk that this will fall off track if pre-pandemic traffic growth trends resume. As highlighted in our 2022 Progress Report, without policy action to embed a reduction in the need to travel by car or grow the availability and attractiveness of alternative lower-carbon modes, traffic is likely to increase beyond the CCC's pathway.

* This is based on provisional demand figures for the rolling 12-month period up to the end of Q3 2022 as final data for the whole of 2022 were not yet available at the time of writing.

† By this new steady state for road transport demand, we mean that the rebound in road vehicle-kilometres following the pandemic appears to have plateaued at a level around 5% below pre-pandemic levels. This is likely to resume growing at the rate it did before the pandemic unless policy interventions are introduced to limit traffic growth.

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TAB 6

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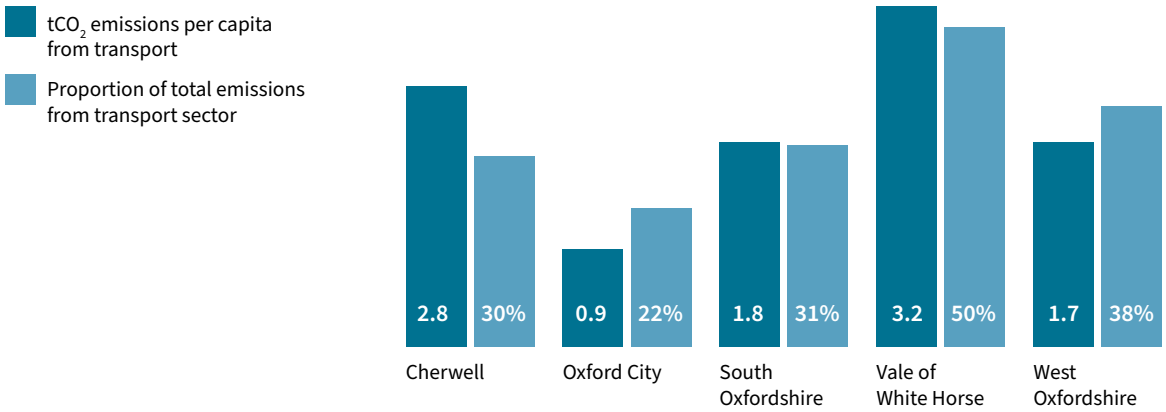
6.1 Introduction & context

The transport sector is responsible for a large and growing proportion of carbon emissions in the UK and Oxfordshire as other sectors, such as energy and industry, become cleaner. The share of carbon emissions from all road and rail transport increased from 38% to 46% between 2014 and 2018, mirroring the trend in the South East of England.

Figure 6.1: 2018 transport carbon emissions by Oxfordshire Districts, excluding motorway traffic



Oxfordshire, like the UK as a whole, has struggled to reduce emissions from transport, despite successes such as accelerated uptake of electric vehicles in the county and investment in cycling in Oxford City. One factor limiting progress on reducing transport emissions is that new housing has been concentrated outside Oxford City, where transport emissions per capita are higher than the national average, even once motorways are excluded. Whilst some of these extra emissions may be attributed to through-traffic on the strategic A-roads, particularly in Cherwell and the Vale, new housing developments in these areas are also more likely to be less dense and more car dependent than new housing in Oxford City.

This is evidenced by the Royal Town Planning Institute's research on the location of new housing development in Oxfordshire between 2012–2015, and 2015–2017.[82] Although the proportion of planning permission applications granted within built up areas increased from 19% to 77% between the two periods, the proportion within 10 km of an employment cluster decreased from 64% to 38%, driving up the need for longer distance commuting, which may not be possible by bus or bicycle. Less than 10% of permissions granted were located within 2 km of an existing railway station in the first period and less than 20% in the second period, meaning that rail is also not an option for many of those living in new housing developments. The tendency towards car-dependent development may be a result of the national priority to deliver large amounts of viable, new housing, even if at the expense of whether the location of that new housing would enable its future residents to travel sustainably to work and other destinations.

The relevance of planning and local place-making to reducing transport emissions has gained greater attention in the last year, as the global pandemic has forced residents to access essential goods and services close to home. Interactions between urban form and travel behaviour are complex, and assumptions that population and housing growth will lead to traffic growth must be challenged. Drastic emissions reductions cannot be achieved through a transition to electric vehicles alone, as even the most optimistic pathways towards adoption would still require significant demand reduction to meet emissions targets.[83] The key components of pathways to decarbonise transport are often described in terms of 'Avoid, Shift, Improve'. Switching to electric is an example of 'Improve', but it does nothing to reduce congestion, which requires measures that 'Avoid' travel. Nor does it increase footfall on local high streets, as a 'Shift' to local, active travel might encourage.

82 RTPI (2016), Location of New Development.

83 CREDS (2020), Decarbonising Transport: Getting carbon ambition right.

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TAB 7

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Table 1 – Revised Funding Summary

20.

Source	Value (£'000's)
Housing Infrastructure Fund grant	£ 218,020
Section 106 (held)	£ 6,736
Section 106 (underwritten by Council but expected to be received prior to project close)	£ 9,713
Additional capital contributions	
Additional Housing Infrastructure Fund grant	£ 21,800
Oxfordshire Local Enterprise Partnership	£ 10,000
Council capital borrowing (approved as part of budget 8th February 2022)	£ 29,893
Total	**£ 296,152**

Extract from OCC (2022), 'Didcot Garden Town Housing Infrastructure Fund (HIF) Revised Grant Determination Agreement', 21 June 2022,

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TAB 8

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Department for Energy Security & Net Zero

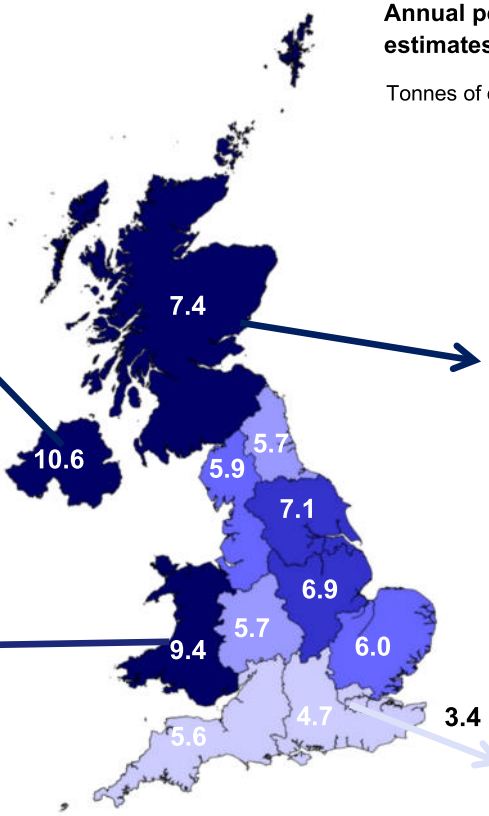
2021 Local Authority and Regional Greenhouse Gas Emissions

London had the smallest and Northern Ireland had the largest emissions per capita in 2021*

Northern Ireland has the highest emissions per capita from agriculture (3.2 tCO_2e per person), Land Use, Land Use Change and Forestry (1.2 tCO_2e per person), domestic (2.0 tCO_2e per person), and waste management (0.5 tCO_2e per person) sectors.

Annual per capita greenhouse gas emission estimates in 2021 by region and country

Tonnes of carbon dioxide equivalent (tCO_2e) per person



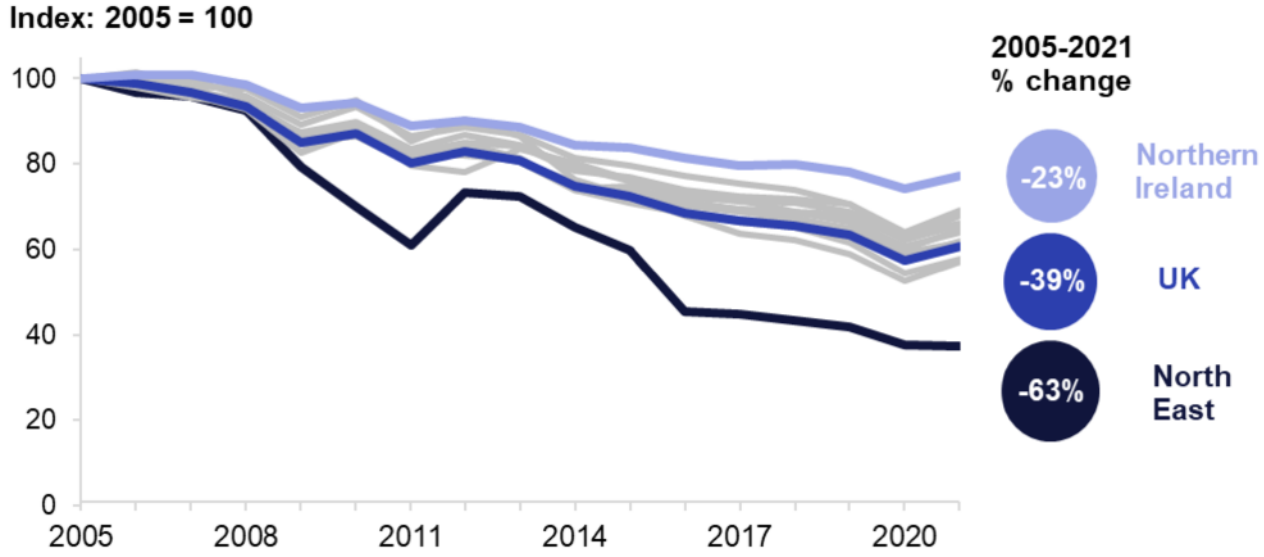
Scotland has higher per capita emissions than the UK average in almost every sector, in particular from agriculture (1.5 tCO_2e per person) and Land Use, Land Use Change and Forestry (0.4 tCO_2e per person).

Wales' emissions per capita are higher than most other regions due to it having the highest emissions per capita from the industrial sector (3.6 tCO_2e per person), reflecting its higher level of industrial installations.

London has the lowest emissions per capita of any region due to the urban nature of the transport system, a high population density and its lower level of large industrial facilities than other regions.

* Emissions per capita (per person) allow comparison between areas of different population size. However, emissions are driven by many factors other than resident population.

While all regions have seen falls, the North East experienced the largest percentage reduction in carbon dioxide emissions from 2005 to 2021, in part due to industrial closures



Further information: https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics
Enquiries: GreenhouseGas.Statistics@beis.gov.uk
Responsible statistician: Connor O'Sullivan Tel: 07385 931259

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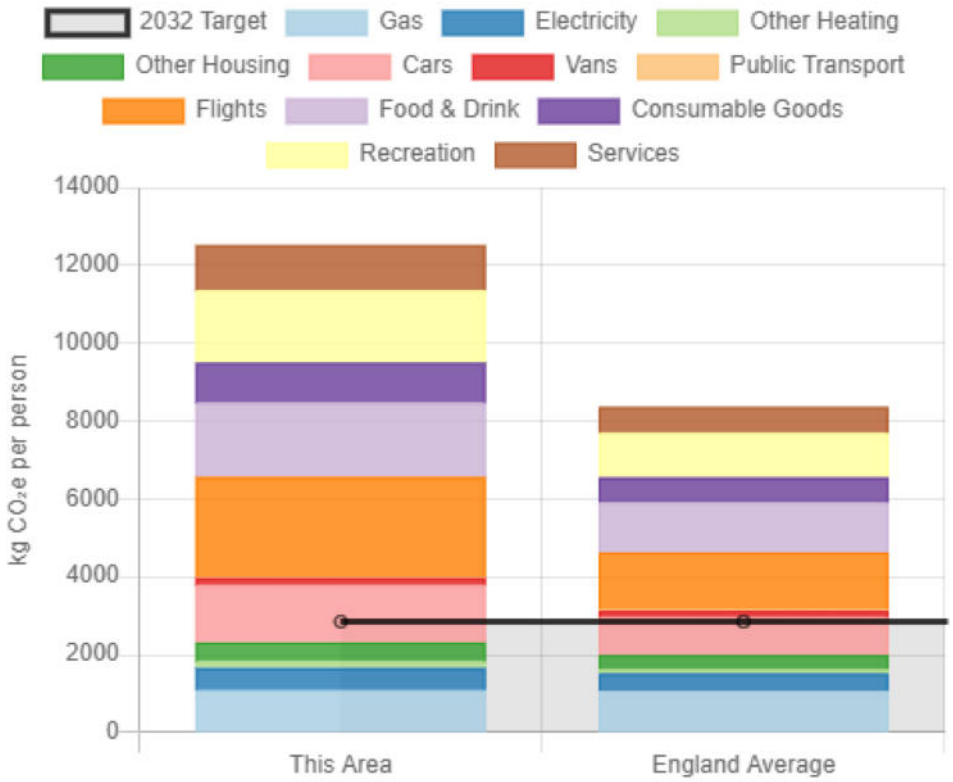
TAB 9

Jan 2024

Select a Local Authority or Region South Oxfordshire

Overall Carbon Footprint

This page gives a modified version of the report card in the main tool showing summary statistics for Local Authority areas. Use the menu at the top to select an area of interest. Not all data provided for LSOAs, such as the grades, is available for Local Authorities areas.



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TAB 10

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1. Introduction: Why local delivery matters

The Committee is advising that the UK set its Sixth Carbon Budget (i.e. the legal limit for UK emissions of greenhouse gases over the years 2033-37) to require a reduction in UK emissions of 78% by 2035 relative to 1990, a 63% reduction from 2019. This will be a world-leading commitment, placing the UK decisively on the path to Net Zero by 2050 at the latest, with a trajectory that is consistent with the Paris Agreement.

The CCC's Sixth Carbon Budget advice recognises that significant policy strengthening will be required and that plans must translate to action. Its advice and policy reports outline how Government must organise for the major delivery challenge of Net Zero.[1] This delivery challenge extends to local authorities which have a key role in supporting people, communities and businesses through what must be a just and fair transition.

Why local delivery matters

The CCC recognises the vital role local authorities in delivering Net Zero.

The CCC recognises the vital role local authorities* have in delivering this transformation. It commissioned this report to make the Sixth Carbon Budget relevant to local authorities, highlighting the key areas where strategic policy and practical action at regional and local levels are critical to achieving the pathway towards Net Zero. It also shows government where there are challenges and blocks to action and provides recommendations for action.

Many of the urgent changes and decisions which are needed to reduce emissions and reach Net Zero have a strong local dimension.

Progress to date has been largely achieved through centrally driven policy to phase out coal for electricity production. This required a small number of actors supported by local supply chains in specific places. But many of the urgent changes and decisions which are needed next to reduce emissions and reach Net Zero have a strong local dimension. Decarbonising buildings, transport, waste and industry, cutting emissions from agriculture and storing more carbon through land-use and forestry are dependent on delivery at a local scale. Over half of the UK's emissions cuts are dependent on purchasing decisions, behaviours and habits of individuals, businesses and organisations.

Around a third of the UK's emissions are dependent on sectors that are directly shaped or influenced by local authority practice, policy or partnerships.

Around a third of the UK's emissions are dependent on sectors that are directly shaped or influenced by local authority practice, policy or partnerships.

To deliver the Sixth Carbon Budget decisive coherent policy and support needs to translate effectively into practical implementation across the whole UK, through devolved administrations, regional organisations, local authorities and agencies all the way into homes and businesses.

Actions taken now, locally, will grow the pipeline of projects, jobs and skills to scale up delivery of zero carbon buildings and transport, waste reduction and low-carbon land use. For local authorities, this does not entail focused emissions cuts in separate sectors, but means transforming whole places towards Net Zero, working with residents, communities and businesses to deliver the right changes and investments for the area. This needs a bold yet adaptable approach, and it needs proper funding and powers in the right places.

* Local authorities referred to in this report includes county and district councils, unitary authorities, metropolitan districts and London boroughs, National Park Authorities and Combined Authorities.

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TAB 11

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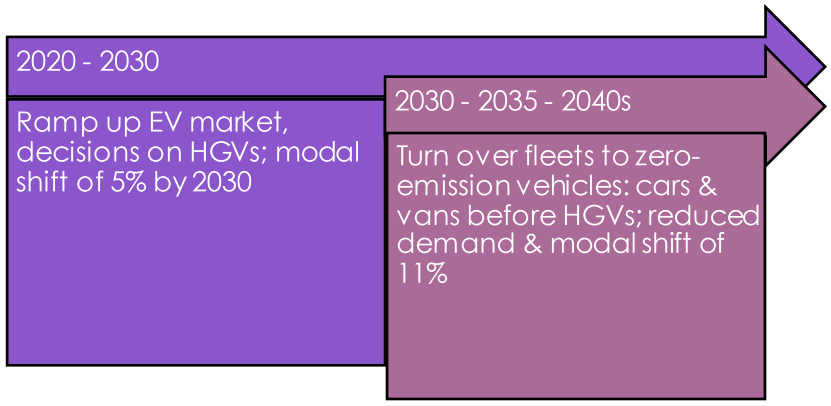
Surface transport is the highest emitting sector in the UK making up 22% of UK emissions in 2019. A 70% reduction in emissions between now and 2035 is needed. The number of kilometres driven has increased notably over the past decade and total road traffic was 530.6 billion vehicle-kms in 2019, an increase of 6% since 2008. Significant growth in SUVs from 6% market share in 2008 to 25% in 2019 has stalled progress in reducing new car CO_2 emissions.

Box 3.9
What needs to happen to deliver the sixth carbon budget and be on track for Net Zero?



A) How can this be achieved?

The CCC's recommended Sixth Carbon Budget pathway sees a rapid shift to electric vehicles over the 2020s and 2030s, alongside a shift away from car journeys wherever possible, and a shift to low-carbon HGVs. In particular:

- **By 2032 at the latest all sales of new cars and vans should be electric. This means that by 2030 over a third of all cars are likely to be electric vehicles** (EVs), and the EV share of the fleet is expected to be nearly 90% by 2040. To deliver this change a steep scale up of chargers from current levels is needed across all UK regions. This will also require upgrades to the local electricity distribution network.
- **A third of the HGV fleet should be low-carbon in 2035**, though trials of low-carbon options will need to take place before then. The main HGV transition to battery, overhead wires and hydrogen fuel cells is expected to take place during the 2040s. Driver efficiency and logistics improvements such as urban consolidation centres are expected to reduce HGV and van kilometres driven during the 2020s.
- **Constraining the growth in vehicle mileage is vital to reducing emissions**, even as EVs replace petrol and diesel cars. Car and van mileage can be reduced by 7-16% by 2030 and 12-34% by 2050 against today's levels. There should be:
    - greater investment in resilient digital technologies mobile connectivity and fibre broadband to drive the societal and technological changes that reduce trips by home working and online conferencing

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ID	Sector	Recommendations for the Department for Transport (DfT)	Timing
R2023-148	Surface transport: Car demand	Conduct a systematic review of current and future road-building projects to assess their consistency with the Government's environmental goals. This should ensure that decisions do not lock in unsustainable levels of traffic growth and develop conditions (which can be included in the Roads Investment Strategy 3 process and beyond) that permit schemes to be taken forward only if they meaningfully support cost-effective delivery of Net Zero and climate adaptation. **Primary responsibility: DfT**	2023
R2022-282	Surface transport: Public transport	Prioritise delivery of a new, transparent public transport fare structure that offers more affordable and reliable travel, ensuring fairness in relation to more carbon-intensive choices, and a more interlinked public transport system between operators. **Primary responsibility: DfT** Supporting actors: HMT	Q1 2023 Overdue
R2022-290	Surface transport: Freight demand	Work with the freight industry to design and implement pilot schemes to explore approaches to reducing van and HGV usage in urban locations. **Primary responsibility: DfT**	2022 Overdue
R2022-301	Surface transport; Electricity supply	Take action to reduce the cost of local public charging for drivers who do not have access to private off-street parking to make it more comparable to charging at home. This should include reducing VAT on residential public charging. **Primary responsibility: DfT** Supporting actors: HMT	Q1 2023 Overdue
R2023-116	Aviation: Efficiencies	Confirm when the Jet Zero Strategy will undergo its first five-yearly review and begin work in 2023 to understand what policy framework or mechanism would need to be in place for additional measures within the sector to be rapidly deployed in the late-2020s if the Government is not on track to meet its aviation pathway. These measures could include demand reduction policies. **Primary responsibility: DfT**	2024
R2023-117	Aviation: Demand	Start to track the carbon-intensity of, and demand for, different aviation ticket types (e.g. business, first class, economy class), and demand for private flying, to help understand how demand-side measures could reduce the carbon intensity of flying. **Primary responsibility: DfT**	2024
R2022-046	Aviation: Sustainable aviation fuel	Ensure the Sustainable Aviation Fuel Mandate is legislated in time for it to become operational by the start of 2025, with a strong set of criteria for the fuels included in the mandate. **Primary responsibility: DfT**	2024

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BCIS tender price index panel

Published: 15/03/2022

BCIS introduced a new methodology for estimating the latest All-in Tender Price Index results in 2019.

The method is based on a panel (Delphi) survey approach*. BCIS enlisted a panel of cost consultants (BCIS Tender Price Index Panel) from firms involved in multiple tenders in each quarter.

The BCIS Tender Price Index Panel is intended to measure the trend of contractors' pricing levels in accepted tenders at commit to construct, i.e. cost to client, in the previous quarter (mid-quarter to mid-quarter).

A questionnaire asking for the individual panel members' experience in the last quarter is completed. The questionnaire

also requests contextual details for the responses: i.e. location, size, procurement routes, sector, building types.

The results are analysed and reported to the panel for discussion. A consensus increase in the Tender Price Index (TPI) is agreed following the discussion. The result is a percentage change in the quarter.

The index is used to provide an estimate of the BCIS All-in Tender Price Index in the latest quarter.

It is not published as a separate series.

The previous methodology for calculating the TPI was based on pricing levels in contracts, typically single stage, traditional procurement, average value <£5million, (minimum £100,000, no maximum). It excluded M&E and other specialist trades, for example facades. It assumed that this reflected the market for single stage design and build, and specification and drawing schemes. The project Indices were normalised for location, size and procurement. A decline in the number of available projects procured using detailed measurement made the methodology unreliable. BCIS still analyses projects to produce a project index to provide valuable background to the trend.

BCIS also analyses projects into elements to provide benchmarking data.

The BCIS TPI panel members at inception.

- Ian Aldous, Arcadis
- Simon Birchall, Equals Consulting
- Simon Cash, Artelia
- Rachel Coleman, Alinea
- Richard Hill, Currie and Brown

- Karl Horton, Mott MacDonald Group
- Kristopher Hudson, Turner & Townsend
- Philip Hynard
- Mark Lacey, Alinea
- Brian Livingston, Gardiner & Theobald
- Simon Longstaffe, F+G
- Peter Maguire, WT Partnership
- Adam Reeve, Calfordseaden
- Phil Southgate, Gleeds
- Will Waller, Arcadis
- Steve Waltho, Turner & Townsend
- Roger Hogg, Rider Levett Bucknall

The panel has continued to develop and the current panel is shown in the news item on the results published each quarter.

*The Delphi method is a structured communication technique or method, originally developed as a systematic, interactive forecasting method that relies on a panel of experts. The experts answer questionnaires in two or more rounds to arrive at a consensus.

Other BCIS price index Methodologies

BCIS have developed price indices for a range of clients and purposes and would be happy to discuss developing bespoke indices. **Visit our BCIS Consultancy page**

Currently we produce two other price indices using different methodologies

- Scottish Social Housing Tender Price Index – developed for the Scottish Government and based on the earlier Tender

Price Index for Social Housing, the index is based on project indices calculated by comparing the cost of schemes with model prices for houses and flats of various type, size and specification. The Index is published by the Scottish Government.

- Private Housing Construction Price Index – developed for BCIS, the index is based on the change in construction cost for a developer defined standard property. The changes are adjusted for changes in scope and specification. The index is published in **BCIS Online**.

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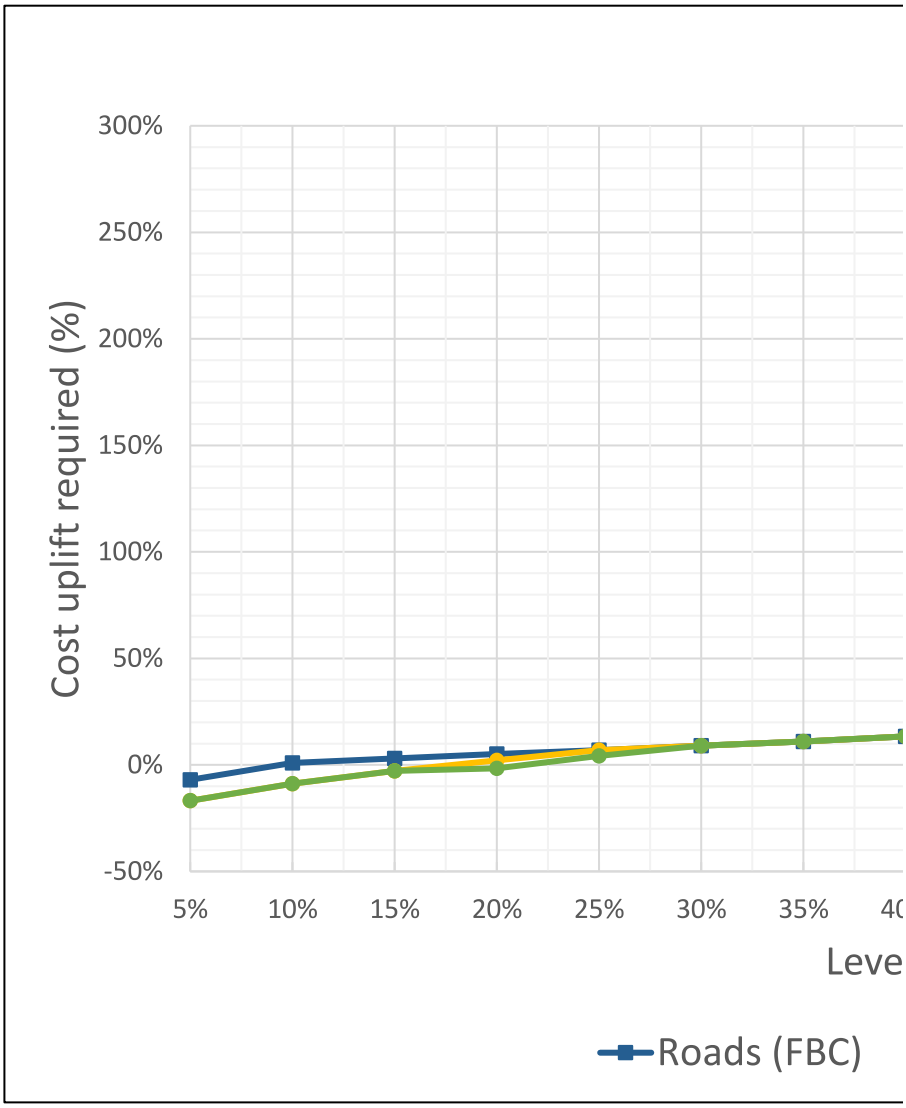
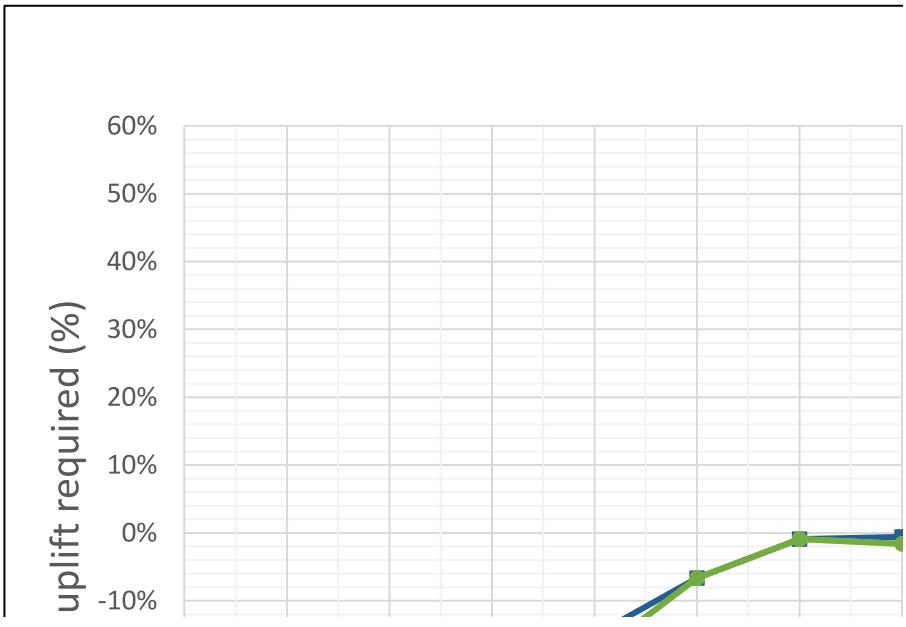
UK Road Cost				
P-value	Level of certainty of the estimate	Roads (FBC)	Roads (OBC)	Roads (SOC)
5	5%	-7%	-17%	-17%
10	10%	1%	-9%	-9%
15	15%	3%	-3%	-3%
20	20%	5%	2%	-2%
25	25%	7%	7%	4%
30	30%	9%	9%	9%
35	35%	11%	11%	11%
40	40%	13%	13%	13%
45	45%	16%	16%	16%
50	50%	18%	18%	18%
55	55%	21%	21%	21%
60	60%	23%	23%	23%
65	65%	26%	26%	39%
70	70%	29%	30%	42%
75	75%	33%	44%	77%
80	80%	37%	54%	98%
85	85%	41%	58%	104%
90	90%	51%	70%	227%
95	95%	67%	86%	243%
N		202	202	202
Mean		20%	23%	46%

UK Road Schedule				
P-value	Level of certainty of the estimate	Roads (FBC)	Roads (OBC)	Roads (SOC)
5	5%	-35%	-37%	-42%
10	10%	-33%	-33%	-33%
15	15%	-30%	-30%	-30%
20	20%	-24%	-24%	-24%
25	25%	-15%	-18%	-18%
30	30%	-7%	-7%	-7%
35	35%	-1%	-1%	-1%
40	40%	-1%	-2%	-2%
45	45%	0%	0%	0%
50	50%	0%	0%	0%

55	55%	0%	0%	0%
60	60%	0%	0%	0%
65	65%	0%	0%	0%
70	70%	1%	9%	4%
75	75%	3%	16%	11%
80	80%	5%	22%	17%
85	85%	8%	22%	22%
90	90%	12%	37%	32%
95	95%	16%	46%	31%
N		7	7	7
Mean		-2%	0%	-2%


300%
250%
200%
150%
100%
50%
0%
-50%
Cost uplift required (%)
5%
10%
15%
20%
25%
30%
35%
Leve
Roads (FBC)


60%
50%
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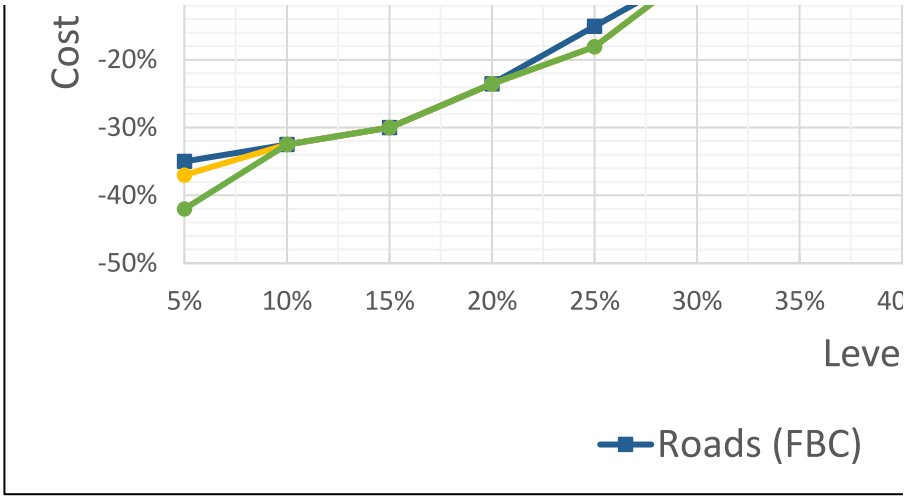
Cost
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-40%
-50%
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10%
15%
20%
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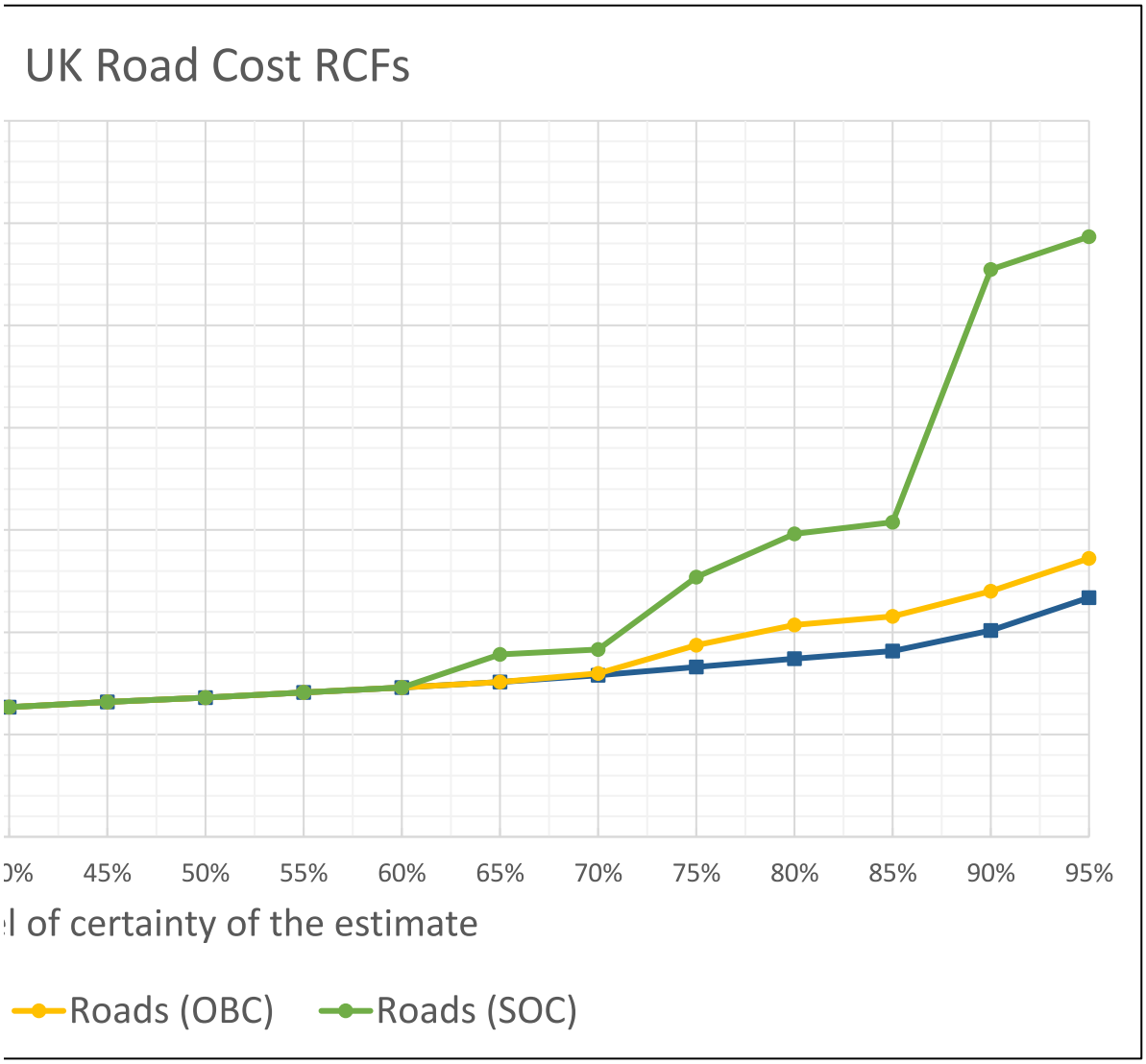
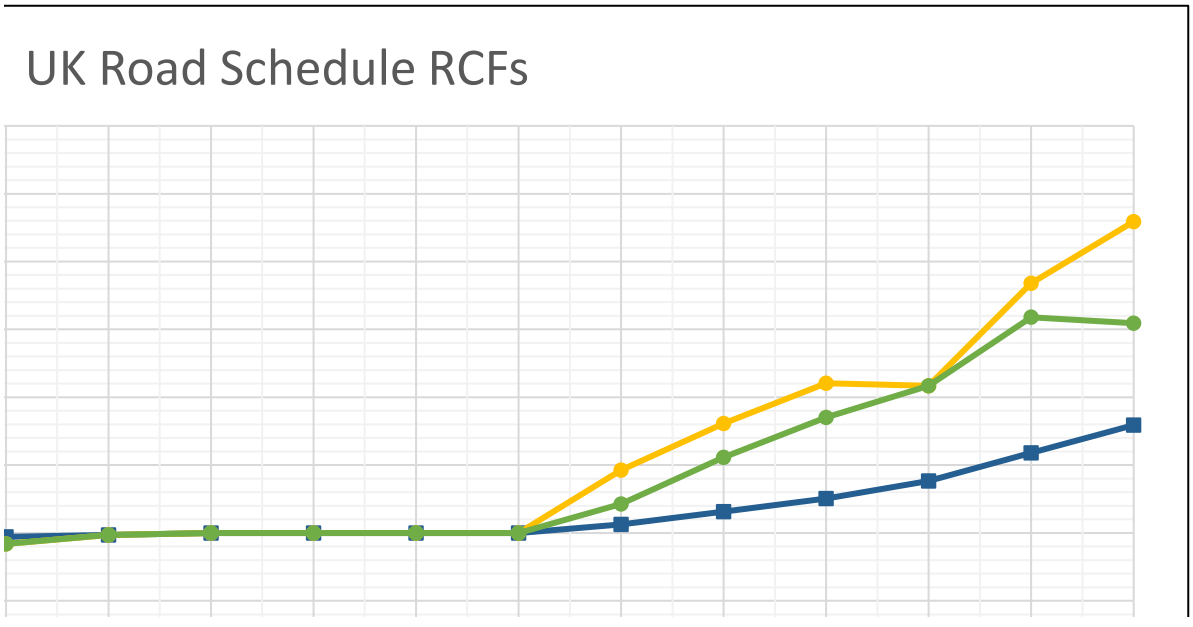
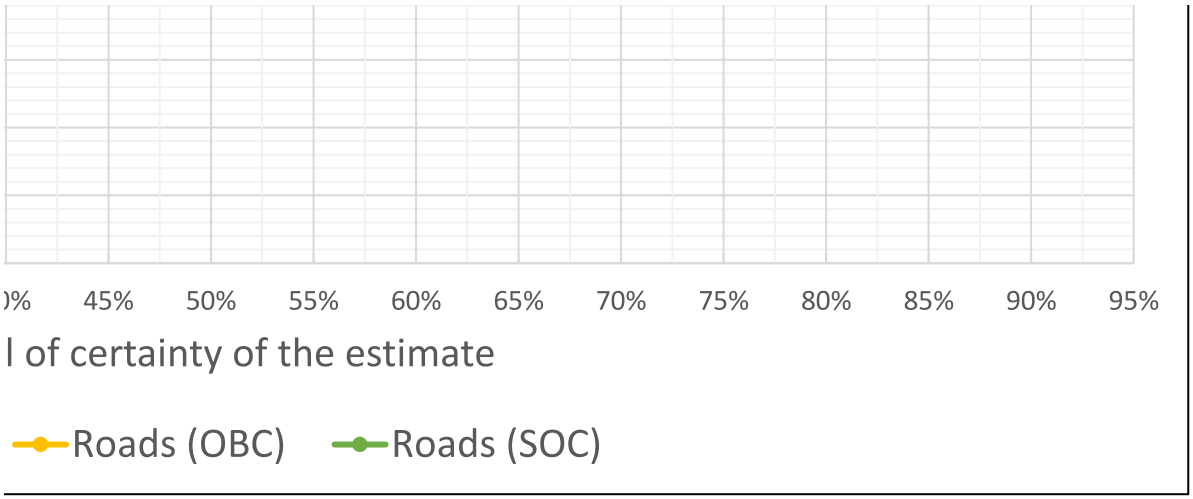
30%
35%
40
Leve
Roads (FBC)


UK Road Cost RCFs
0%
45%
50%
55%
60%
65%
70%
75%
80%
85%
90%
95%
l of certainty of the estimate
Roads (OBC)
Roads (SOC)


UK Road Schedule RCFs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l of certainty of the estimate
Roads (OBC)
Roads (SOC)

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4 Practical considerations (Level 3: doing/advising)

4.1 Advising on appropriate procurement route

The selection of appropriate procurement routes should include the identification of risks for each procurement option specified and the use of qualitative risk assessment to establish the risk profile of each option. The relative risk profiles of each of the options should be used to influence the selection of the option that provides the lowest risk solution for the project.

4.1.1 Tender return risk profiling

The evaluation of tender returns should include the identification of risks for each return and the use of qualitative risk assessments to establish the risk profile of each option. The relative risk profiles of each of the tender returns should be used as a criterion in the evaluation process and should be assigned a weighting appropriate to the importance of the risk profile assessment in relation to the other evaluation criteria.

4.1.2 Risk responsibilities

An example of the responsibilities of individuals and roles on the project are shown in table 8 (Note that where a risk manager is not appointed, the role needs to be allocated to someone else in the project team).

4.1.3 Applying quantification techniques and advising clients on level of risk allowance

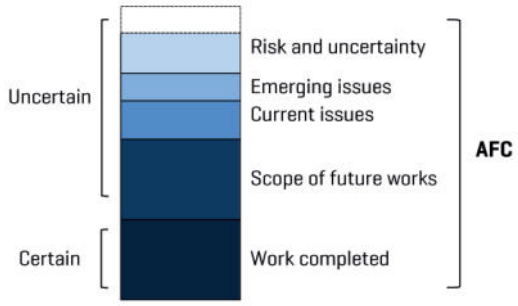
4.1.3.1 Risk allowance risk analysis and anticipated final cost

Project risk allowance is often derived as a percentage of the capital cost of a project, for example, 5% of capital cost. This approach produces a risk allowance figure that can be subjective. An alternative, which is increasingly mandated by many public bodies (such as the Office of Government Commerce (OGC)) is to use the quantitative risk analysis (QRA) to generate a risk allowance. The process produces a risk figure based on a percentage confidence that the figure will not be exceeded. It is common to report on an 80% confidence level. This is commonly referred to as the P80 risk allowance. Software tools will give any level of confidence so the level can be easily changed and tailored to specific needs (the Monte Carlo technique is a widely practiced technique to undertake a quantitative risk analysis).

Risk modelling can be used to minimise the increasing risk exposure of a project and likewise a reduction on risk allowance. Should risk materialise, these should be drawn down through a formal change control process.

It is important to know that the output from QRA is used to inform risk allowance and not used as the specific risk allowance figure.

Figure 4: Anticipated final cost (AFC)



4.1.3.2 Risk deliverables

The primary deliverables from the risk-management process and associated procedures are:

- a risk-management plan
- a risk register (see appendix B)
- risk ranking/critical risk identification
- quantitative cost risk analysis results
- quantitative schedule risk analysis results
- a risk-response plan
- risk-response progress reviews
- risk-management reports
- risk-management maturity assessments
- procurement option reviews and
- tender return risk reviews.

4.1.3.3 Risk reporting

Agendas and minutes of meetings should be given document reference numbers and saved on the programme (project) document control management system. Risk registers should be saved once a month (with a new document reference and date) as a record of the

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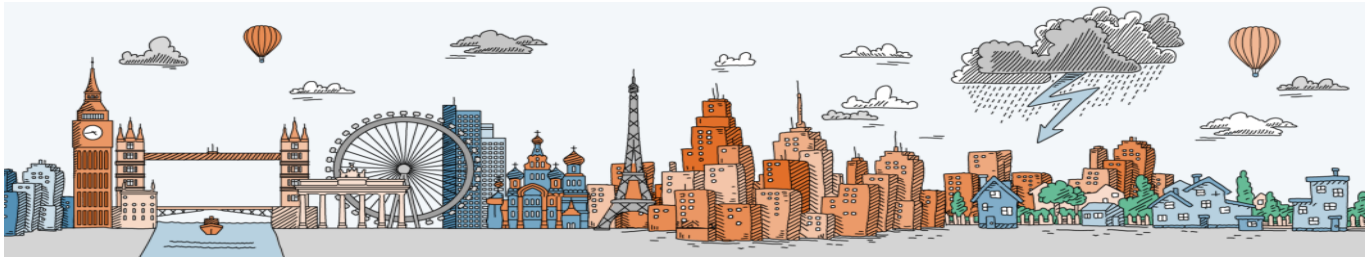

About the Project

Setting City Area Targets and Trajectories for Emissions Reduction (SCATTER)

This work was developed as part of the Setting City Area Targets and Trajectories for Emissions Reduction (SCATTER) project. The SCATTER project, funded by the Department for Business Energy and Industrial Strategy (BEIS), developed a methodology for Local Authorities to set carbon emissions targets that are consistent with United Nations Paris Climate Agreement. The SCATTER project was a collaboration between Tyndall Manchester, Antheis Group and Greater Manchester Combined Authority. The further development of the carbon budget methodology into a widely applicable free online resource for local authorities UK-wide was supported through funding from the University of Manchester EPSRC Impact Support Fund. A SCATTER online tool by Anthesis Group is also available to local authority users online.

Tyndall Manchester

The Tyndall Centre for Climate Change Research is an interdisciplinary research group formed in 2000 and currently based at University of East Anglia, University of Manchester, Newcastle University and Cardiff University. Our research covers most areas of climate change research including;

The Tyndall Carbon Budget Reports project was led by researchers at Tyndall Manchester – Jaise Kuriakose, Kevin Anderson, John Broderick, Carly McLachlan and Chris Jones. The views expressed in the research related to the Tyndall Carbon Budget Tool and its outputs are those of the named researchers and not necessarily of the wider Tyndall Centre.

For further information about the Tyndall Carbon Budget Reports, other Tyndall Manchester research or to let us know how you are using the tool please contact Chris Jones at c.w.jones@manchester.ac.uk .

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Targets

In order to track delivery of the vision and key themes we have identified a set of headline targets.

By 2030 our targets are to:

- Replace or remove 1 out of every 4 current car trips in Oxfordshire
- Increase the number of cycle trips in Oxfordshire from 600,000 to 1 million cycle trips per week
- Reduce road fatalities or life changing injuries by 50%

By 2040 our targets are to:

- Deliver a net-zero transport network
- Replace or remove an additional 1 out of 3 car trips in Oxfordshire

By 2050 our targets are to:

- Deliver a transport network that contributes to a climate positive future
- Have zero, or as close as possible, road fatalities or life-changing injuries

Policies

The LTCP outlines our transport policies which will be used to influence and inform how we manage transport and the types of schemes we implement. These policies outline the new approaches and measures that we will be taking to make the vision and targets achievable.

The LTCP policies are grouped according to policy focus area. The policy focus areas are:

- Walking and cycling
- Healthy place shaping
- Road safety
- Digital connectivity
- Public transport
- Environment, carbon and air quality
- Network, parking and congestion management
- Innovation
- Data
- Freight and logistics
- Regional connectivity
- Local connectivity



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England's Economic Heartland

England's Economic Heartland (EEH) is a partnership authority group, which functions as a non-statutory sub-national transport body. It provides leadership on strategic transport infrastructure in support of the Arc.

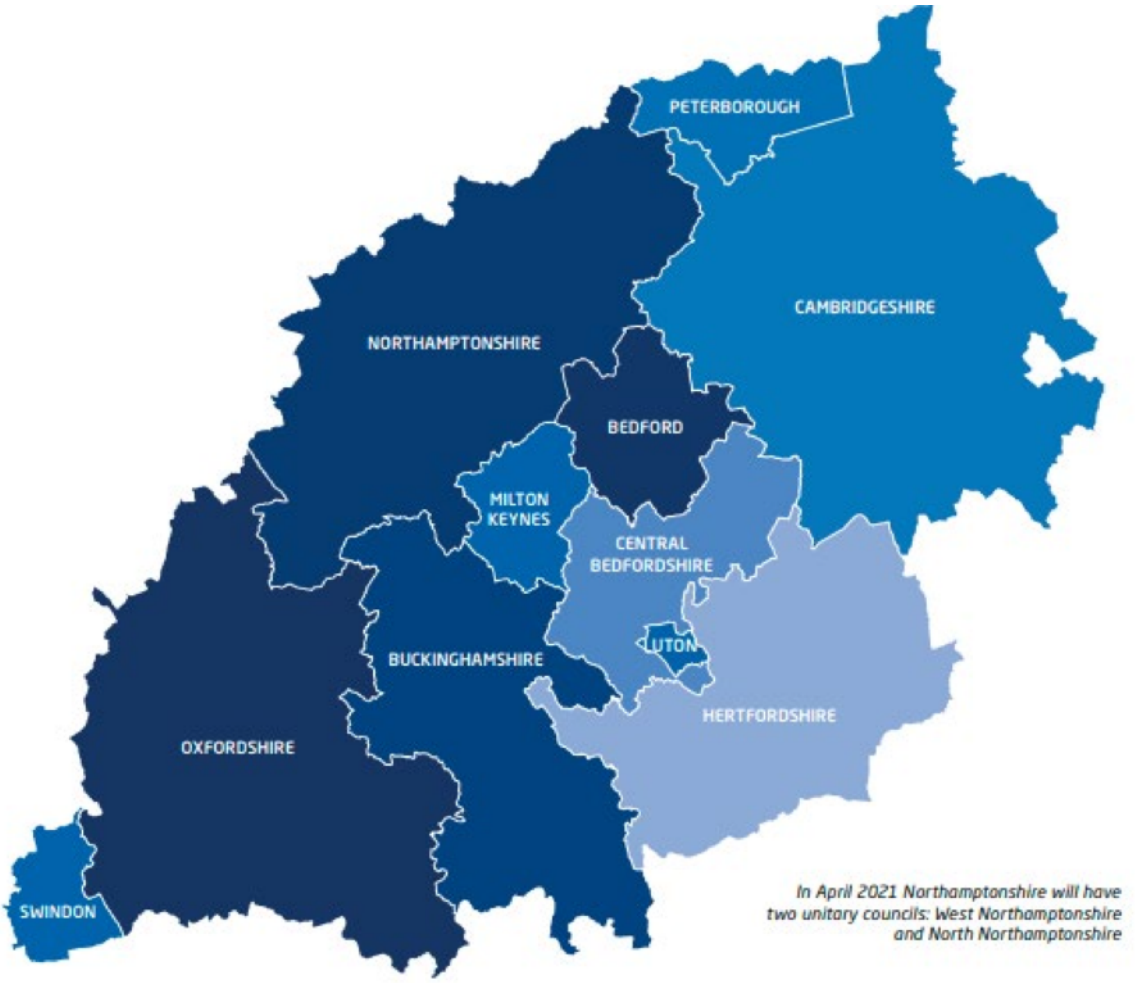

Figure 3 - England's Economic Heartland Geographical Area[2]

EEH has expanded since forming in 2014 and now comprises of transport authorities across Swindon, Oxfordshire, Northamptonshire, Milton Keynes, Buckinghamshire, Bedford, Central Bedfordshire, Luton, Hertfordshire, Peterborough and Cambridgeshire.

2. EEH Transport Strategy

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5 DISCUSSION OF EVIDENCE AND CONCLUSIONS

In this section we discuss the main findings from the studies reviewed in this report and then draw out the overall implications of the evidence for RIS2, including gaps in the current evidence base.

5.1 WHAT ARE THE KEY FINDINGS AND WHAT DO THEY MEAN FOR RIS2?

5.1.1. Much of the evidence reviewed in this report comes from econometric studies, with a smaller body of evidence from case studies and models.

The evidence from econometric studies is varied but there are some consistent findings

5.1.2. Elasticities of demand with respect to capacity expansion provide a measure of the induced demand effect that can easily be derived from econometric analysis. Elasticities represent the percentage change in traffic (VKT) relative to a percentage change in road capacity. A wide range of elasticity values are, however, reported in the literature. Specifically we find that:

- LR estimates of induced demand are larger than SR estimates. This is consistent with the expectation that there are more sources of induced demand in the long run when changes in employment, residential location and land-use may play a role than in the short run. Of course, it is not clear whether these changes in employment and residential location are transfers from other areas, which may see reductions in travel. Short run estimates range from 0.03 to 0.6, long run estimates from 0.16 to 1.39.
- Studies that differentiate between urban and non-urban areas find a larger induced demand effect in urban areas (Rentziou et al., 2012, Duranton & Turner, 2011). Urban areas are expected to have high initial levels of congestion and potentially higher levels of suppressed demand. However, only one study (Pasidis, 2017) analyses the effect of a metro system on road traffic and finds a much smaller induced demand effect in cities with metro systems. The implication is that cities with good public transport provision may have less suppressed demand for road travel.
- Induced demand elasticities that are close to one are associated with studies that estimate long-run elasticities for specific road types, particularly in large metropolitan areas, outside of the UK. They also mainly use the same methodological approach (Duranton & Turner, 2011, Hsu & Zhang, 2014, Pasidis, 2017). As they focus on particular road types, the demand response reported in these studies generally include re-assignment effects and is larger than the induced demand response.
- There is no recent econometric evidence on project level investment. van der Loop et al. (2016), consider the overall impact on the network of 150 separate capacity improvements. The review studies report short-run elasticities of 0.24 (Cervero, 2003) and 0.29 (Strathman et al., 2000).
- There are clear differences in the magnitude of long run elasticities estimated using different methodological approaches. These differences cannot be fully explained by the geographical scale at which the elasticities are estimated or the type of roads included in the analysis. One explanation is that some studies suffer from endogeneity; while induced traffic is the VKT response to increased capacity, some of the observed increases in road capacity may themselves have been as a result of increases in VKT. Not fully controlling for this latter effect may lead to smaller elasticity estimates. Another possibility is that approaches estimating smaller elasticities control differently for the background traffic component of VKT.

It is difficult to compare the econometric evidence with the evidence from case studies and modelling

5.1.3. The evidence from case studies and modelling is reported as percentage changes in traffic relative to the baseline, having controlled in some way for background traffic growth and reassigned traffic. These percentage changes are not related to a corresponding percentage change in capacity and may also be measured in numbers of vehicles rather than vehicle-kilometres. This makes them difficult to compare with the elasticities reported in econometric studies.

- Case studies reported a wide range of short-run percentage changes in traffic flows (5 % to 38%). These cover a range of different projects. Large percentage changes are reported for improvements to highly congested routes (Davies, 2015) or roads that fall within large metropolitan areas, such as the M25 (Sloman et al, 2017).[43]

[43] We note that this is our categorisation using the terminology of some econometric studies.

- Modelling studies reporting at the city region scale find smaller percentage changes in traffic flows due to induced traffic (0.7% to 3.84%), compared with 5 per cent on a main road link.

5.1.4. Based on the evidence from the different study types, we identify some broad, overall findings.

More induced traffic is associated with road capacity increases where there is a high level of congestion and suppressed demand

5.1.5. There is econometric and case study evidence that indicates the induced demand effect is greater when there is a high level of congestion. Much of this evidence is from large metropolitan areas, where congestion and suppressed demand are expected to be present. The range of values reported in the evidence makes it difficult to quantify for RIS2. However, most studies that report elasticities indicate that a 10 per cent increase in capacity would result in at least 5 per cent induced traffic. The starting level of congestion is important for the size of the effect. However, the empirical evidence does not really quantify this beyond differentiating between urban and non-urban settings.

A smaller induced demand effect is associated with capacity changes at an aggregate scale or for changes that increase accessibility.

5.1.6. Studies that estimate elasticities of demand with respect to road capacity considering all road types (and therefore controlling for reassignment effects) at the state or regional level find smaller induced demand effects, such that a 10 per cent increase in capacity would result in induced demand in the range 1 to 4 per cent (e.g. Hymel et al, 2010, Gonzales & Marrero, 2012). For the trunk road network in the Netherlands, an elasticity of 0.2 is estimated (van der Loop et al., 2016). Where the impact of road capacity that adds to the length of the road network is distinguished from lane capacity increases for the existing network (Hsu & Zhang, 2014, Pasidis, 2017), the former can be interpreted as an accessibility effect. This is associated with a smaller elasticity (approx. 0.3).

The size of the induced demand effect relative to background traffic growth in the long run is not clear

5.1.7. This could be important if road building is designed to cope with future expected growth rather than to relieve congestion and is discussed further in Appendix A. van der Loop et al. (2016) find a 3 per cent induced demand effect (corresponding to an elasticity of 0.2) compared to 12 per cent background traffic growth over a 14 year period. Modelling studies covering long run changes also find small induced demand effects relative to background growth (Kang et al. (2009) estimate 0.7 percent induced traffic and 19.3 per cent background growth). However, many studies either focus on the short run or do not report the background effect in addition to the induced demand effect.

5.1.8. With the exception of models, the evidence presented in this review is based on observed traffic, from which the induced traffic component is then derived in some way. The observed traffic includes background growth as well as re-assigned traffic and the methodology used to control for these two types of traffic will have an impact on the resulting estimation of induced demand and need to be clearly explained.

Recent evidence from the UK and Europe is consistent with the findings of SACTRA 1994

5.1.9. The evidence they reviewed included before and after studies from the UK (including London) and Amsterdam, which showed that traffic level increases on new routes were not offset by corresponding reductions in traffic on equivalent unimproved routes. This was consistent with the existence of induced traffic but it was not possible to show the sources or size of effect. The report also highlighted the potential difficulties for research on induced demand such as isolating a statistically significant effect due to one factor, causality, establishing suitable controls and the problem of comparing evidence drawn from different sources.

5.2 EVIDENCE GAPS

There is limited evidence on the sources of induced traffic

5.2.1. Using a combination of case-study and modelling approaches, Rohr et al. (2012) were able to quantify the share of induced car trips that resulted from destination changes and mode shift for the Manchester Motorway Box with change in destination the more important source. The Weis & Axhausen (2009) evidence suggests that increases in journey length may be a more important source of induced traffic than additional trips, although this is not limited to road traffic. Duranton & Turner (2011) is the only econometric study that analyses the possible sources of induced demand resulting from road capacity expansion. Using US data they find that the demand response is mainly due to new travel. However, they are not able to distinguish between additional trips and increased trip length. Trucks trips are found to account for almost 30% of additional VKT, changes in annual household travel behaviour for between 9 and 39%, route switching for 10% and migration

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Table 6: RIS2 expenditure, and cumulative CO_2 emissions between 2020 and 2032 due to changes in vehicle speed, link length and traffic composition from schemes built in each year of RIS2

Year of scheme construction		2020	2021	2022	2023	2024	TOTAL
RIS2 capital enhancement expenditure £m		2,475	3,076	2,980	2,885	2,702	**14,118**
Cumulative emissions (Mt CO_2)	**RTF Scenario 1**	1.39	1.58	1.38	1.21	1.00	**6.56**
	RTF Scenario 7	1.28	1.44	1.25	1.08	0.89	**5.95**

We cross-checked this estimate from completed road schemes against modelled predictions from RIS road scheme Environmental Statements.

A total of 12 publicly available Environmental Statements included predicted CO_2 emissions from operation in the scheme opening year and the "design" year (15 years later). These 12 schemes overlapped with, but were not identical to, the ones for which construction emissions were reported (see section 6.1) and had a combined cost of £5.2 billion.

The modelled changes in CO_2 emissions ("with" versus "without" the scheme) in the scheme opening year and "design" year enabled us to estimate the change in emissions for intervening years by interpolation. The modelling appears to take account of changes in average speed, link length and traffic composition. Given the extended time period that is being modelled, it is possible that some element of induced traffic has been taken into account. However, the change in annual emissions over this period is very small for most schemes, suggesting that, in most cases, (with the single exception of the A303 Stonehenge scheme), little or no induced traffic has been allowed for. Cumulative emissions were calculated for each scheme over 13 years (equivalent to the 13 years from 2020-2032 inclusive for which emissions were estimated using POPE data from completed road schemes). Cumulative emissions over this period ranged from -35 to +1754 tCO_2e per £1 million, with an average of 410 tCO_2e per £1 million. If this average is applied to the £14,118 million RIS2 road schemes, it suggests cumulative emissions from operation of 5.8 $MtCO_2e$ over 13 years, which is similar to the estimates in Table 6 (although note that it is not exactly equivalent because the calculations shown in Table 6 are based on staggered expenditure over a five year period). This cross-check suggests that our earlier estimate is plausible.

6.3 Carbon emissions from induced traffic

As noted earlier, changes in carbon emissions in the scheme opening year reported in POPEs are likely to underestimate any short-term induced traffic effects, and take no account of medium- to long-term induced traffic.

The method used in the POPEs to estimate traffic flows "with" the scheme versus those "without" relies on national road traffic forecasts to predict what traffic flows would have been expected if the scheme had not been built. This is a form of evaluation which is categorised by the government's Magenta Book guidance on evaluation as "weaker / riskier"[36], because there is no comparison with changes in traffic flows at similar locations where no road building has occurred. Since national road traffic forecasts have repeatedly over-estimated traffic growth, using a "do-nothing" forecast as the counterfactual is highly unreliable, and is likely to substantially understate the amount of induced traffic. This is the main reason why Highways England argue that their POPEs show relatively little evidence of induced traffic. For example, a recent "meta-insights" paper by Highways England

examined the POPEs for a sample of 71 schemes, and (using this "weaker / riskier" research design) concluded that evidence of induced traffic was observed in only a quarter (24%) of schemes[37].

A further weakness of the Highways England POPE methodology is that no evaluation of longer-term induced traffic effects, over periods of more than five years, is undertaken. Since large-scale regional induced traffic effects may occur over much longer time periods of a decade or more, the POPE meta-insights finding that only a minority of schemes show evidence of induced traffic is more likely "absence of a search for evidence" rather than "evidence of absence".

In an earlier study, we evaluated changes in traffic flows from road schemes by comparing with regional and county-level traffic trends[38]. In a sample of nine schemes across England, plus four longer-term case study schemes, use of this method found evidence of induced traffic (defined as traffic growing in the scheme corridor at a higher rate than in the relevant region and county) for all 13 schemes. The rate of traffic growth in excess of background regional / county trends was fairly modest in the short-term (averaging about 7% over periods of 3-7 years) but much larger in the longer-term (averaging about 40% over periods of up to 20 years). The combined data from these 13 schemes suggests induced traffic might on average increase at around 2% per year, although it would be expected that some schemes might show higher rates, and some lower. However, it should be noted that the time period on which this estimate is based includes the 2008 economic downturn, following which there was a hiatus in new development. It may therefore be an underestimate of the amount of induced traffic in periods of normal economic activity.

These findings are consistent with analysis in 1994 by the Standing Advisory Committee on Trunk Road Assessment (SACTRA) on trunk roads and the generation of traffic[39]. SACTRA reported 11 before-and-after studies in which traffic levels were compared with background general traffic growth, or with growth on specific control (unimproved) roads in the same area. In every case, the growth rate in the corridor of the scheme was substantially greater than that on the roads used as controls, and greater than background growth rates, with an unweighted average of "unexplained" growth of 25%, and a range from 7% to 66%. The unweighted average of the growth rates over less than a year was 9.5%, increasing to 33% after 5 years.

More recently, a 2018 evidence review on induced traffic, commissioned by DfT to inform the development of RIS2, supports the findings of the SACTRA report on induced traffic[40]. It also notes the inaccuracy of "do-nothing" scheme forecasts, citing a statistical analysis of 20 road projects in the UK and 15 in Denmark, for which the "do-nothing" case could be empirically established (for example, schemes for which "do-nothing" forecasts were made, the scheme was cancelled, and "do-nothing" outcomes could then be observed). A systematic bias was found towards overstating the forecast of "do-nothing" demand.

In order to estimate the possible effect of induced traffic on carbon emissions at the programme level for RIS2, we checked the POPEs for all 87 road schemes for the *total* carbon emissions in the scheme opening year. POPEs for 63 schemes reported this figure (a subset of the 80 schemes for which the change in carbon emissions was reported).

For each scheme, we factored total carbon emissions in the opening year downwards to reflect current average vehicle efficiencies, in the same way as described in section 6.2. Opening year total emissions from all 63 schemes, adjusted to reflect current vehicle efficiencies, were 4.2 $MtCO_2$, and expenditure on these schemes was £6.9 billion (in 2020 prices). These figures give an opening year figure of 613 tonnes CO_2 for each £1 million expenditure (in 2020 prices).

We made the assumption that induced traffic would be zero in the year the scheme was completed; 2% of opening year traffic in the year after the scheme was completed; and rising by 2% per year to

24% of opening year traffic 12 years after scheme completion. We then used the same assumptions from RTF Scenarios 1 and 7 described in section 6.2 to estimate cumulative emissions due to induced traffic for the period between 2020 and 2032, for each £1 million expenditure in each year of RIS2, assuming, as before, that the carbon effect of each extra kilometre of induced traffic would diminish over time due to improvements in vehicle efficiency. The results are shown in Table 7. As before, expenditure early in the RIS2 period has a larger cumulative effect in the period of interest (2020 to 2032) than expenditure later on. The additional emissions between 2020 and 2032 are 8.0 $MtCO_2$ using vehicle efficiency factors based on RTF Scenario 1 or 6.9 $MtCO_2$ using vehicle efficiency factors based on RTF Scenario 7.

These figures are sensitive to the assumed rate of increase of induced traffic. If induced traffic increases at only 1% per year, additional emissions are 3.4 - 4.0 $MtCO_2$, and if induced traffic increases at 3% per year, additional emissions are 10.3 - 12.0 $MtCO_2$. Induced traffic is likely to be higher if land use planning policy is more permissive (i.e. allowing more out-of-town car-dependent development). The shift towards more permissive planning policy by the current government means that it is plausible that cumulative emissions from RIS2 could be in the higher range of 10 – 12 $MtCO_2$.

Table 7: RIS2 expenditure, and cumulative CO_2 emissions between 2020 and 2032 due to induced traffic, from schemes built in each year of RIS2

Year of scheme construction		**2020**	**2021**	**2022**	**2023**	**2024**	**TOTAL**
RIS2 capital enhancement expenditure £m		2,475	3,076	2,980	2,885	2,702	**14,118**
Cumulative emissions (Mt CO_2)	**RTF Scenario 1**	1.98	2.07	1.66	1.31	0.97	**7.99**
	RTF Scenario 7	1.74	1.80	1.43	1.11	0.82	**6.89**

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Jan 2024

3. Modelling inputs and assumptions for each scenario

Our modelling framework is based on many years of data and evidence on why, when, and how people travel. This chapter describes the key drivers of demand and the inputs and assumptions made in the Core Scenario and Common Analytical Scenarios.

Core Scenario input assumptions

3.1 The Core Scenario is based on the latest government projections of the main drivers of road traffic demand, for example population, GDP, employment, households, fuel prices and fuel efficiency. The core also includes 'firm and funded' government policy, for example, where ambitions are supported by published plans or funded policies. Relationships between the key drivers of demand and road traffic are broadly assumed to continue in line with historical trends and evidence, for example, how drivers respond to changes in fuel costs or how changes in GDP influence people's travel choices.

3.2 The Core Scenario is the starting point for most of the Common Analytical Scenarios except for the Behavioural Change Scenario. The rest of the scenarios are created by changing some of the Core Scenario inputs. The base year for the NTM v2R is 2015 which pre-dates the COVID-19 pandemic. The "Common Analytical Scenarios inputs" section from paragraph 3.24 onwards explains the assumptions behind the scenarios in more detail.

Adjusting for coronavirus (COVID-19)

3.3 The COVID-19 adjustment method described below and in Annex C shows the department’s approach strictly for the purpose of producing national road traffic projections. Other model owners should use knowledge of their model, local data and evidence to interpret TAG guidance to line up with their circumstances and specific needs.

3.4 We have been through an unprecedented period in modern history, with the COVID-19 pandemic leading to travel being significantly restricted by law during much of 2020 and 2021. During the pandemic people changed their travel behaviour with frequency of travel, trip lengths, time of travel, journey purpose and mode choice all

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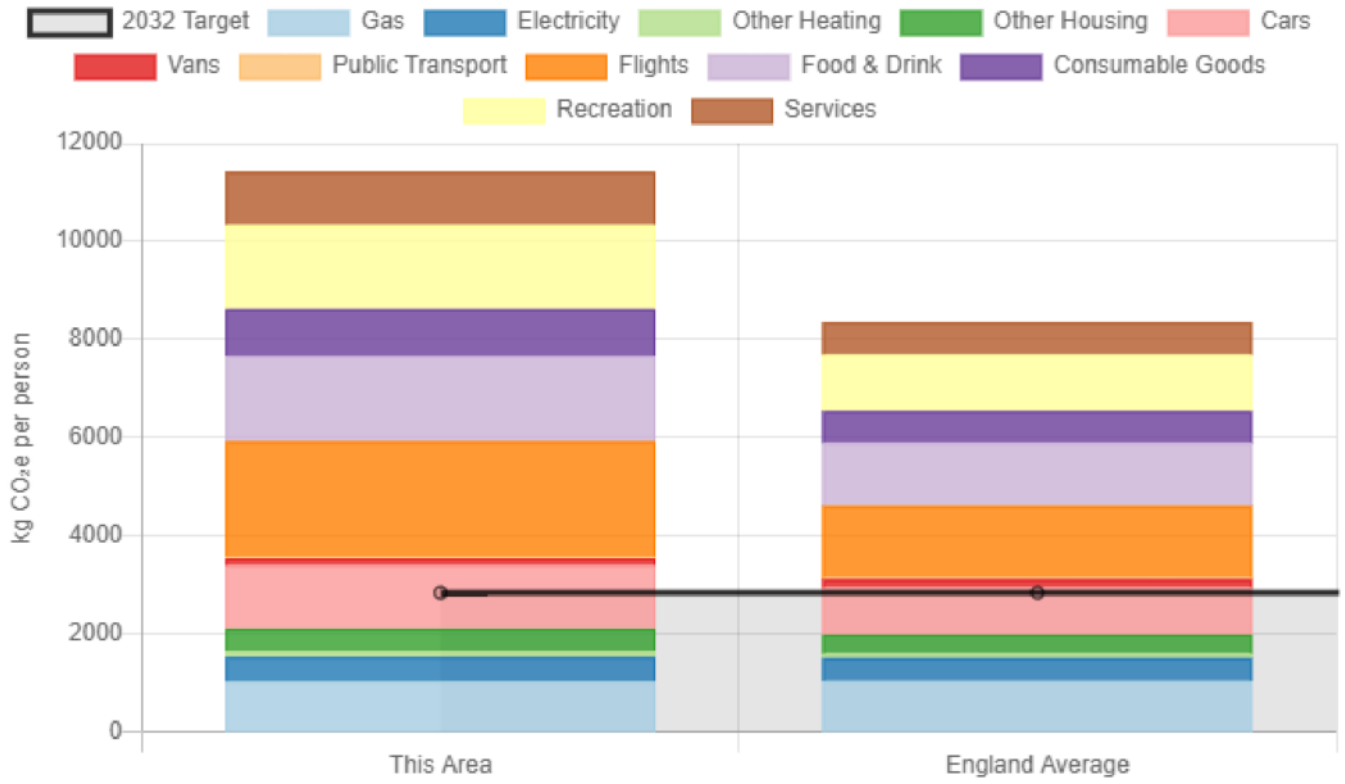
Select a Local Authority or Region Vale of White Horse

Overall Carbon Footprint

This page gives a modified version of the report card in the main tool showing summary statistics for Local Authority areas. Use the menu at the top to select an area of interest. Not all data provided for LSOAs, such as the grades, is available for Local Authorities areas.



Enhancements

15.9.5 The implementation and delivery of enhancement measures relating to procurement and further energy reduction will be driven by the PC through their subsequent iterations of the OEMP, which will involve the development and implementation of a management plan to reduce energy consumption and associated GHG (carbon) emissions, and will include measures relating to the use of renewable and/or low or zero carbon energy sources and the recording of savings achieved.

15.9.6 The specification and installation of highway equipment capable of withstanding high temperatures (including electrical equipment comprising information and communication systems, bridge joints and paved surfaces) arising from severe weather events to provide resilience to climate change.

15.9.7 Implementation of emergency systems and response plans, including the identification of suitable network redundancies and diversion routes, to respond to severe weather events, will further increase the resilience of the Scheme to extreme weather conditions.

15.9.8 Measures relating to climate change vulnerability comprise the identification, selection and use of construction materials with superior properties that offer increased tolerance of fluctuating temperatures associated with climate change.

15.10 Assessment of likely significant effects

15.10.1 The prediction of impacts and the assessment of effects (and their significance) during construction and operation of the Scheme on climate change and GHG emissions has taken account of the embedded mitigation measures presented in Section 15.9.

15.10.2 Using the methodologies as detailed in Section 15.4, the GHG emissions associated with Scheme construction and operation have been calculated. Table 15.15 details the Scheme net GHG emissions against relevant carbon budgets. This data is considered further in the sections below.

Table 15.15: Net GHG Emissions against relevant carbon budgets

Carbon budget	Years	UK Carbon budget Mt CO_{2e}	Domestic Transport Budget Allocations Mt CO_{2e}	Construction t CO_{2e}	Operation t CO_{2e}	Total t CO_{2e}	% of UK carbon budget	% of Domestic Transport Budget Allocation
4th Carbon Budget	2023 - 2027	1,950	395	154,842	-4,601	150,241	0.0077%	0.03804%
5th Carbon Budget	2028 - 2032	1,765	325	-	-5,752	-5,752	-0.00033%	-0.00177%
6th Carbon Budget	2033 - 2037	965	178[9]	-	-5,752	-5,752	-0.00060%	-0.00324%

[9] Calculated based on the proportion of the 5th carbon budget allocated to domestic transport

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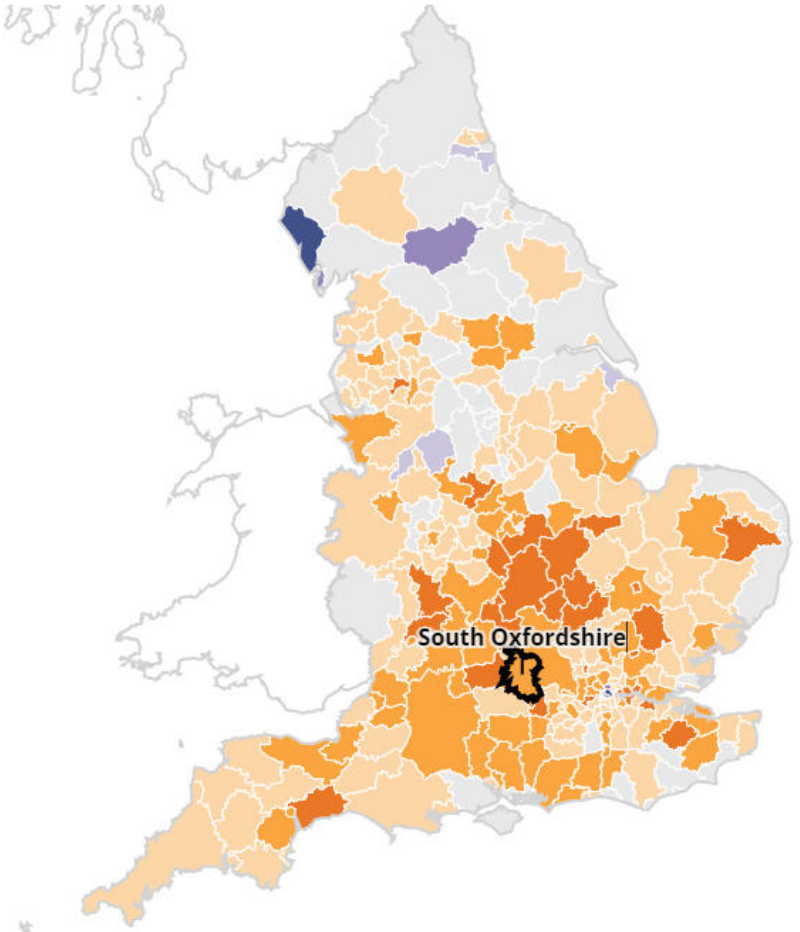
The carbon impact of the nation | National road traffic projections | South Oxfordshire population ch

https://www.ons.gov.uk/visualisations/censuspopulationchange/E07000179/

Population change (%) of local authority areas in England between 2011 and 2021

Percentage change

-20 -6 -3 -1 +3 +7 +13 +23%



In South Oxfordshire, the population size has increased by 11.1%, from around 134,300 in 2011 to 149,100 in 2021. This is higher than the overall increase for England (6.6%), where the population grew by nearly 3.5 million to 56,489,800.

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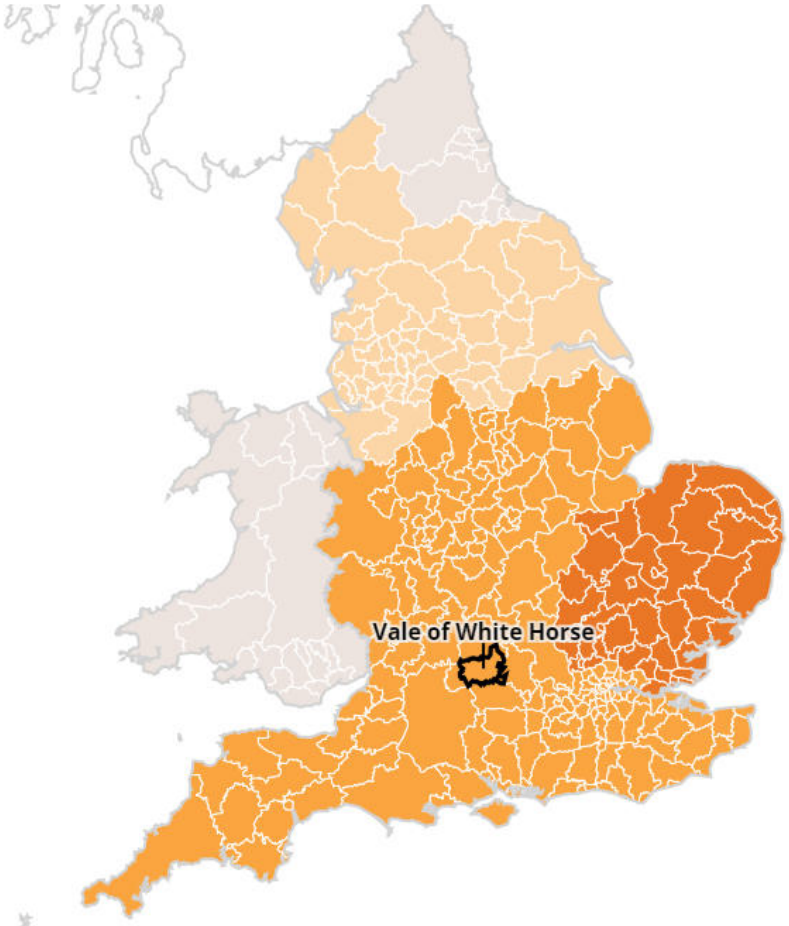
The carbon impact of the nation | National road traffic projections | Vale of White Horse population

https://www.ons.gov.uk/visualisations/censuspopulationchange/E07000180/

Population change (%) of local authority areas in England between 2011 and 2021

Percentage change

-20 -6 -3 -1 +3 +7 +13 +23%



In Vale of White Horse, the population size has increased by 14.8%, from around 121,000 in 2011 to 138,900 in 2021. This is higher than the overall increase for England (6.6%), where the population grew by nearly 3.5 million to 56,489,800.

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Exploring the shift to Zero Emission Vehicles (ZEVs) - Vehicle-led Decarbonisation Scenario, Mode-balanced Decarbonisation Scenario and Technology Scenario

3.39 Three of the Common Analytical Scenarios explore how the shift towards ZEVs, self-driving cars and achieving decarbonisation in the transport sector could change travel.

3.40 The Vehicle-led Decarbonisation Scenario and Mode-balanced Decarbonisation Scenario both assume a high and fast uptake of EVs and ZEVs, in line with stated ambitions to end the sale of diesel and petrol cars, vans, HGVs and buses/coaches. In both scenarios, vehicle fleet electrification approaches 99% by 2050. We do not project 100% EVs as specialist vehicles such as classic cars and other legacy uses of Internal Combustion Engine (ICE) vehicles are expected to remain.

3.41 In the Vehicle-led Decarbonisation Scenario, no other adjustments are made compared to the Core Scenario. The current cost regimes for EVs is maintained. Making the use of cars cheaper over time, as the fleet electrifies, leads to higher car use, more congestion and reductions in the use of other modes including public transport.

3.42 The Mode-balanced Decarbonisation Scenario represents a world where the assumed increase in EVs does not result in a decline in public transport use. There are many policy options that could deliver this outcome and, consequently, several ways to model it. For the purposes of modelling simplicity, we have taken the straightforward approach to equalise the perceived costs of EVs with those of petrol and diesel. This removes the cost advantage of EVs and creates a slight cost disadvantage compared to current conditions making the usage of public transport, walking and cycling more attractive.

3.43 The Technology Scenario supposes a future wherein road travel becomes far more attractive and accessible. The same high and fast uptake of EVs and ZEVs is assumed as in the Vehicle-led and Mode-balanced Decarbonisation Scenarios. In addition, a high take-up of autonomous vehicles (AVs) is assumed which enter the fleet in the 2020s and make up 50% of it by 2047.

3.44 As a result of the introduction of AVs, the Technology Scenario includes changes to driving licence holding, trip rates and car occupancy which all increase car use. The value of time is adjusted downwards to account for the ability to work or relax whilst travelling in a self-driving vehicle, as a result it is assumed that people are more willing to undertake a longer journey because of this. Car occupancy is also adjusted downwards to reflect zero-occupancy trips (trips with no passengers or drivers). The Technology Scenario does not adjust for potential capacity improvements from AVs being able to communicate with each other, reducing the gap needed between cars. This represents one potential autonomous vehicle future of many as uptake rates and timescales, the balance between private ownership and rental, shared versus individual usage, the impact on capacity and use of road space are all uncertainties at this stage.

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LTP4 review

As part of our work to develop the LTCP we have also reviewed progress made on the delivery of LTP4. This is important to identify progress made on delivering the plan, success and failures. This will help us to improve the LTCP and identify lessons learned so that delivery is improved.

LTP4 policies

LTP4 set out our policy and strategy for developing the transport system in Oxfordshire to 2031. It was developed with four over-arching transport goals:

- To support jobs and housing growth and economic vitality.
- To reduce transport emissions and meet our obligations to Government.
- To protect, and where possible enhance Oxfordshire's environment and improve quality of life.
- To improve public health, air quality, safety and individual wellbeing.

To achieve these goals, ten objectives for transport were developed. These were set within three themes, around which the policy section of LTP4 was structured. A summary of the objectives and themes is provided below.

Theme and section in LTP4	Objective
Supporting growth and economic vitality	Maintain and improve transport connections to support economic growth and vitality across the county
	Make most effective use of all available transport capacity through innovative management of the network
	Increase journey time reliability and minimise end-to-end public transport journey times on main routes
	Develop a high-quality, innovative and resilient integrated transport system that is attractive to customers and generates inward investment
Reducing emissions	Minimise the need to travel
	Reduce the proportion of journeys made by private car by making the use of public transport, walking and cycling more attractive
	Influence the location and layout of development to maximise the use and value of existing and planned sustainable transport investment
	Reduce per capita carbon emissions from transport in Oxfordshire in line with UK Government targets
Improving quality of life	Mitigate and wherever possible enhance the impacts of transport on the local built, historic and natural environment
	Improve public health and wellbeing by increasing levels of walking and cycling, reducing transport emissions, reducing casualties and enabling inclusive access to jobs, education, training and services

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Targets

In order to track delivery of the vision and key themes we have identified a set of headline targets.

By 2030 our targets are to:

- Replace or remove 1 out of every 4 current car trips in Oxfordshire
- Increase the number of cycle trips in Oxfordshire from 600,000 to 1 million cycle trips per week
- Reduce road fatalities or life changing injuries by 50%

By 2040 our targets are to:

- Deliver a net-zero transport network
- Replace or remove an additional 1 out of 3 car trips in Oxfordshire

By 2050 our targets are to:

- Deliver a transport network that contributes to a climate positive future
- Have zero, or as close as possible, road fatalities or life-changing injuries

Policies

The LTCP outlines our transport policies which will be used to influence and inform how we manage transport and the types of schemes we implement. These policies outline the new approaches and measures that we will be taking to make the vision and targets achievable.

The LTCP policies are grouped according to policy focus area. The policy focus areas are:

- Walking and cycling
- Healthy place shaping
- Road safety
- Digital connectivity
- Public transport
- Environment, carbon and air quality
- Network, parking and congestion management
- Innovation
- Data
- Freight and logistics
- Regional connectivity
- Local connectivity



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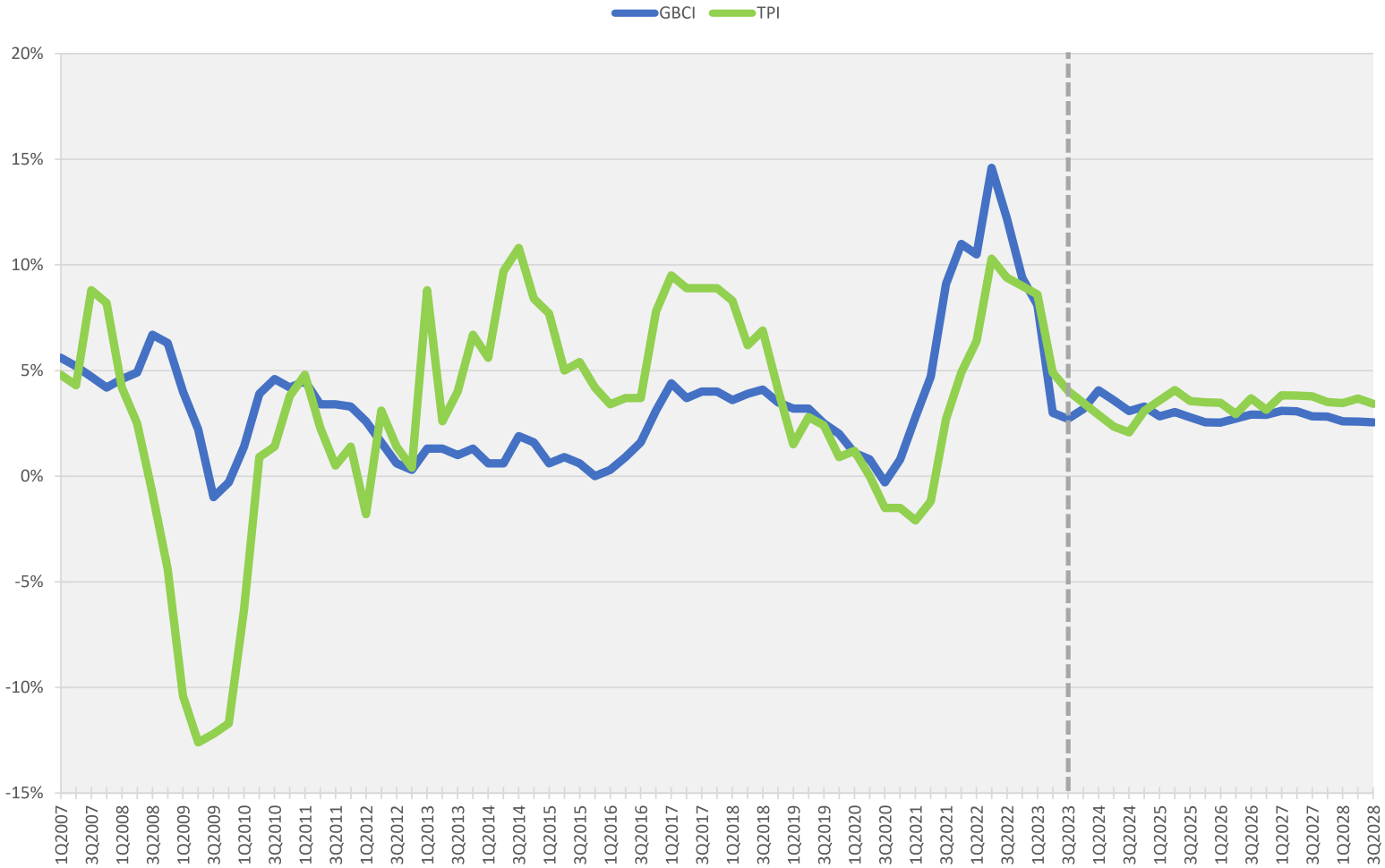
Growth in BCIS General Building Cost Index & Tender Price Index (BCIS 2023)



Forecasts relatively benign compared to the recent past. Some evidence of a minor uptick in the GBCI next year, while the TPI remains subdued given demand conditions

BCIS tender price index panel

Published: 15/03/2022

BCIS introduced a new methodology for estimating the latest All-in Tender Price Index results in 2019.

The method is based on a panel (Delphi) survey approach*. BCIS enlisted a panel of cost consultants (BCIS Tender Price Index Panel) from firms involved in multiple tenders in each quarter.

The BCIS Tender Price Index Panel is intended to measure the trend of contractors' pricing levels in accepted tenders at commit to construct, i.e. cost to client, in the previous quarter (mid-quarter to mid-quarter).

A questionnaire asking for the individual panel members' experience in the last quarter is completed. The questionnaire

also requests contextual details for the responses: i.e. location, size, procurement routes, sector, building types.

The results are analysed and reported to the panel for discussion. A consensus increase in the Tender Price Index (TPI) is agreed following the discussion. The result is a percentage change in the quarter.

The index is used to provide an estimate of the BCIS All-in Tender Price Index in the latest quarter.

It is not published as a separate series.

The previous methodology for calculating the TPI was based on pricing levels in contracts, typically single stage, traditional procurement, average value <£5million, (minimum £100,000, no maximum). It excluded M&E and other specialist trades, for example facades. It assumed that this reflected the market for single stage design and build, and specification and drawing schemes. The project Indices were normalised for location, size and procurement. A decline in the number of available projects procured using detailed measurement made the methodology unreliable. BCIS still analyses projects to produce a project index to provide valuable background to the trend.

BCIS also analyses projects into elements to provide benchmarking data.

The BCIS TPI panel members at inception.

- Ian Aldous, Arcadis
- Simon Birchall, Equals Consulting
- Simon Cash, Artelia
- Rachel Coleman, Alinea
- Richard Hill, Currie and Brown

- Karl Horton, Mott MacDonald Group
- Kristopher Hudson, Turner & Townsend
- Philip Hynard
- Mark Lacey, Alinea
- Brian Livingston, Gardiner & Theobald
- Simon Longstaffe, F+G
- Peter Maguire, WT Partnership
- Adam Reeve, Calfordseaden
- Phil Southgate, Gleeds
- Will Waller, Arcadis
- Steve Waltho, Turner & Townsend
- Roger Hogg, Rider Levett Bucknall

The panel has continued to develop and the current panel is shown in the news item on the results published each quarter.

*The Delphi method is a structured communication technique or method, originally developed as a systematic, interactive forecasting method that relies on a panel of experts. The experts answer questionnaires in two or more rounds to arrive at a consensus.

Other BCIS price index Methodologies

BCIS have developed price indices for a range of clients and purposes and would be happy to discuss developing bespoke indices. **Visit our BCIS Consultancy page**

Currently we produce two other price indices using different methodologies

- Scottish Social Housing Tender Price Index – developed for the Scottish Government and based on the earlier Tender

Price Index for Social Housing, the index is based on project indices calculated by comparing the cost of schemes with model prices for houses and flats of various type, size and specification. The Index is published by the Scottish Government.

- Private Housing Construction Price Index – developed for BCIS, the index is based on the change in construction cost for a developer defined standard property. The changes are adjusted for changes in scope and specification. The index is published in **BCIS Online**.

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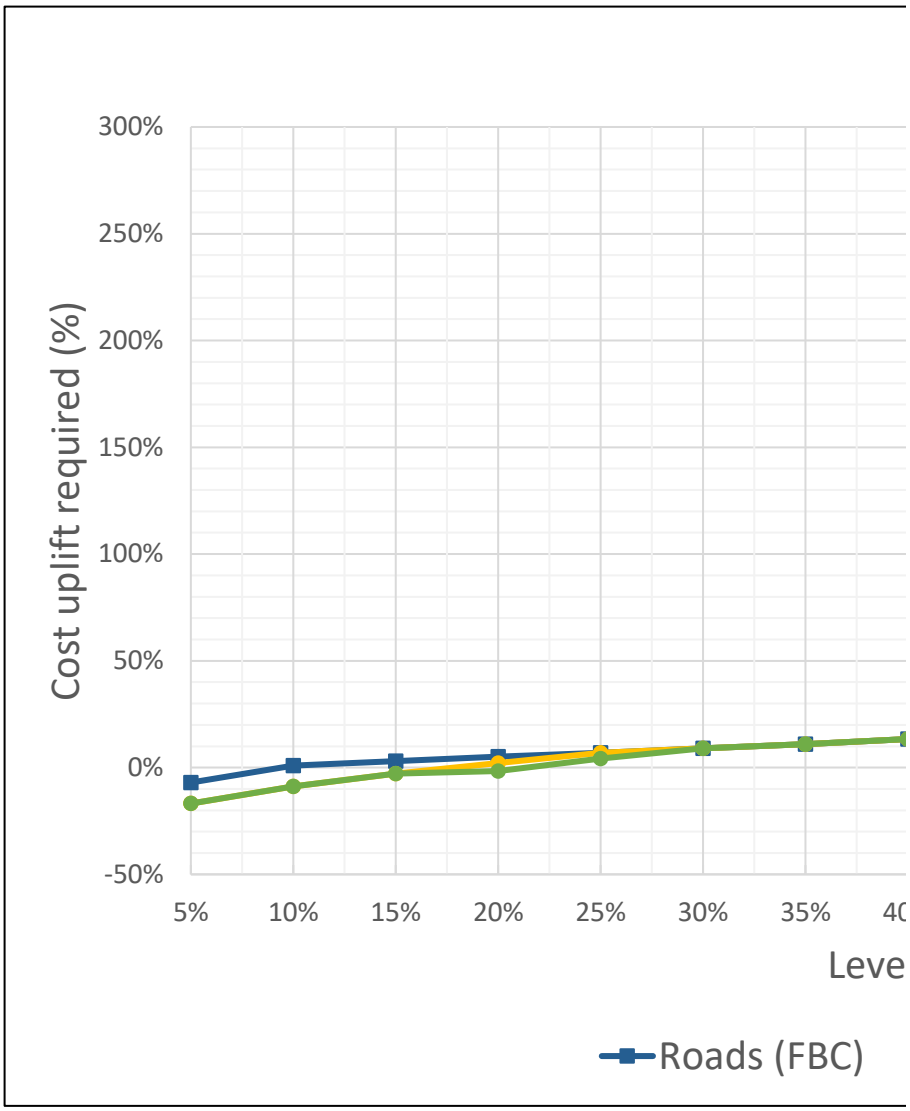
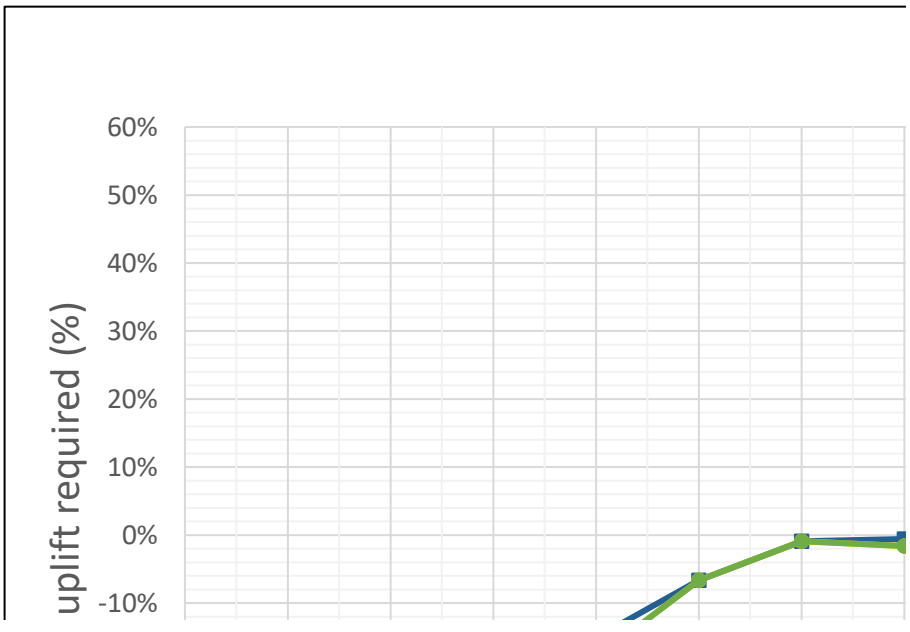
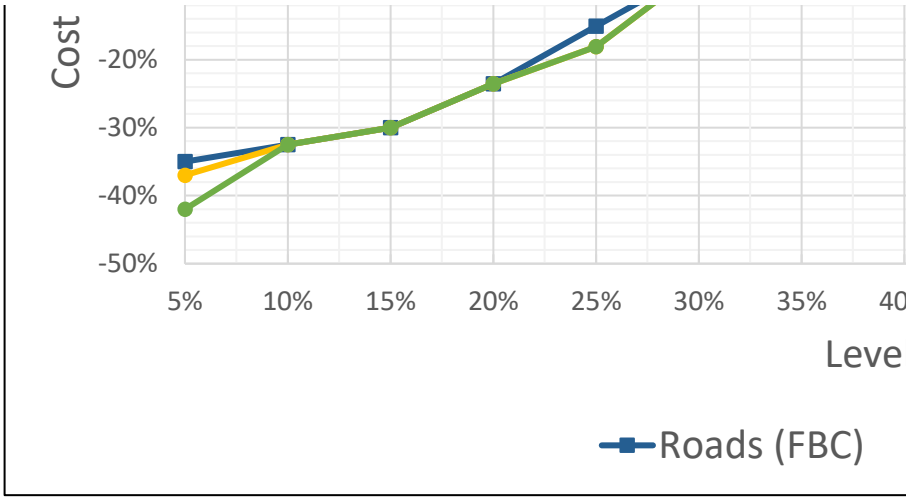
UK Road Cost				
P-value	Level of certainty of the estimate	Roads (FBC)	Roads (OBC)	Roads (SOC)
5	5%	-7%	-17%	-17%
10	10%	1%	-9%	-9%
15	15%	3%	-3%	-3%
20	20%	5%	2%	-2%
25	25%	7%	7%	4%
30	30%	9%	9%	9%
35	35%	11%	11%	11%
40	40%	13%	13%	13%
45	45%	16%	16%	16%
50	50%	18%	18%	18%
55	55%	21%	21%	21%
60	60%	23%	23%	23%
65	65%	26%	26%	39%
70	70%	29%	30%	42%
75	75%	33%	44%	77%
80	80%	37%	54%	98%
85	85%	41%	58%	104%
90	90%	51%	70%	227%
95	95%	67%	86%	243%
N		202	202	202
Mean		20%	23%	46%

UK Road Schedule				
P-value	Level of certainty of the estimate	Roads (FBC)	Roads (OBC)	Roads (SOC)
5	5%	-35%	-37%	-42%
10	10%	-33%	-33%	-33%
15	15%	-30%	-30%	-30%
20	20%	-24%	-24%	-24%
25	25%	-15%	-18%	-18%
30	30%	-7%	-7%	-7%
35	35%	-1%	-1%	-1%
40	40%	-1%	-2%	-2%
45	45%	0%	0%	0%
50	50%	0%	0%	0%

55	55%	0%	0%	0%
60	60%	0%	0%	0%
65	65%	0%	0%	0%
70	70%	1%	9%	4%
75	75%	3%	16%	11%
80	80%	5%	22%	17%
85	85%	8%	22%	22%
90	90%	12%	37%	32%
95	95%	16%	46%	31%
N		7	7	7
Mean		-2%	0%	-2%


300%
250%
200%
150%
100%
50%
0%
-50%
Cost uplift required (%)
5%
10%
15%
20%
25%
30%
35%
Leve
Roads (FBC)


60%
50%
40%
30%
20%
10%
0%
-10%
uplift required (%)


Cost
-20%
-30%
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15%
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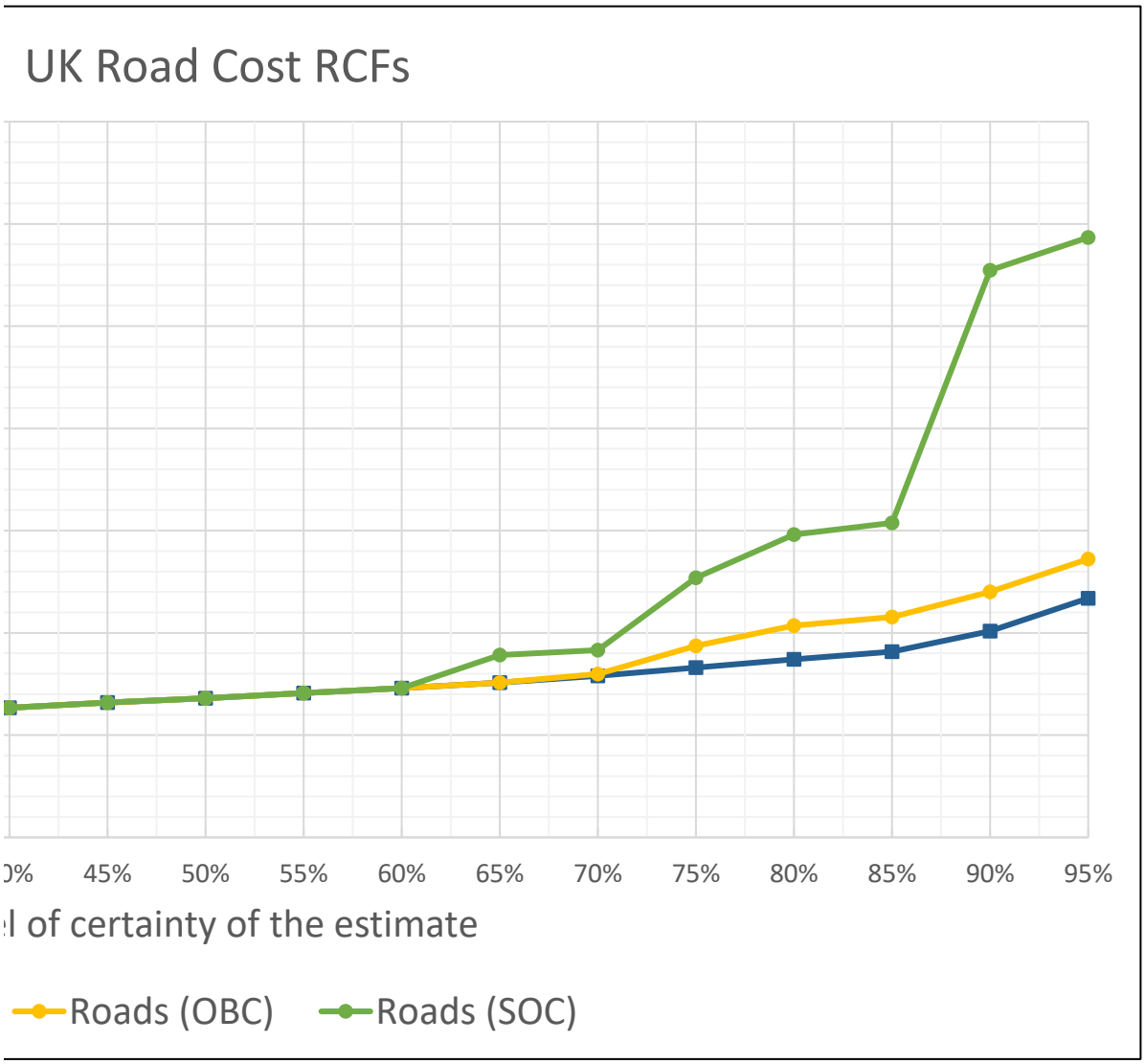
40
Leve
Roads (FBC)


UK Road Cost RCFs
0%
45%
50%
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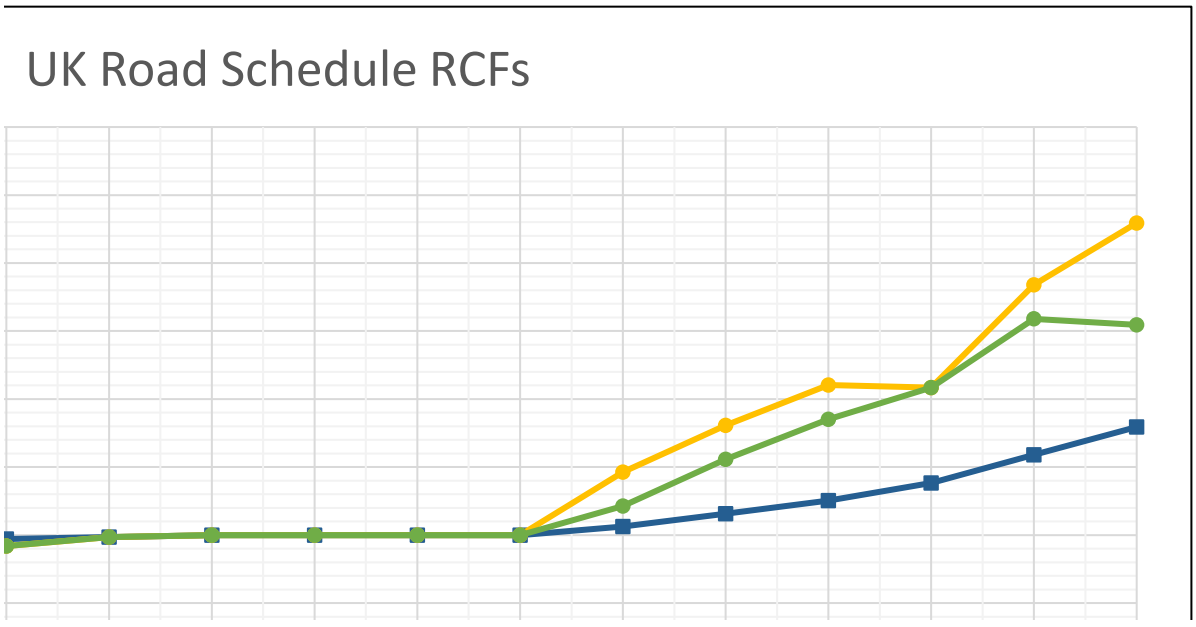
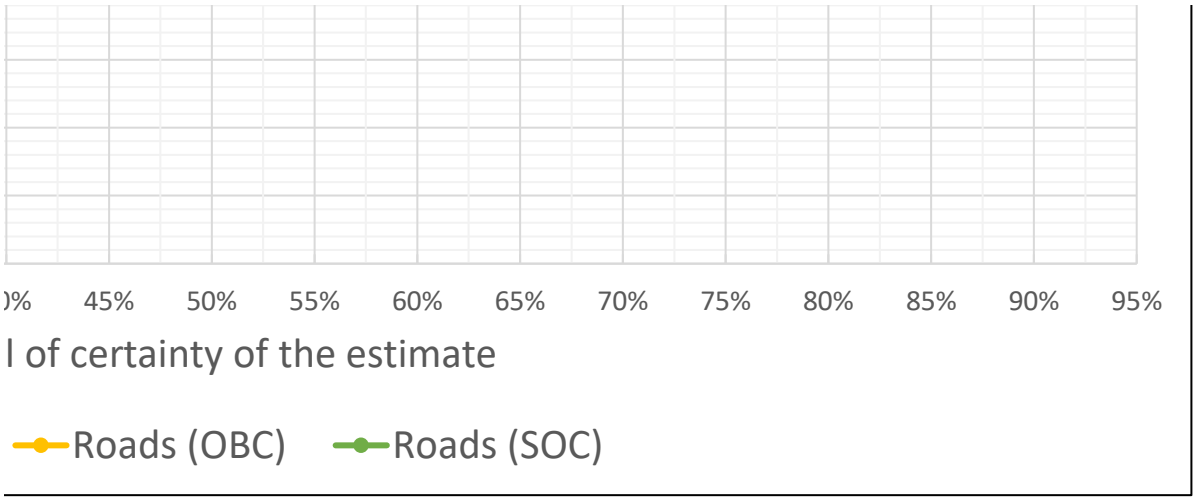
l of certainty of the estimate
Roads (OBC)
Roads (SOC)


UK Road Schedule RCFs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Roads (OBC)
Roads (SOC)

APPENDIX 3
TO PROOF OF EVIDENCE

ON CARBON EMISSIONS AND FINANCIAL VIABILITY
By Ng Chien Xen for
Neighbouring Parish Councils Joint Committee

TAB 31

Jan 2024

Extract DfT Full Business Case High Speed 2, Phase One April 2020.

2.17 For Phase One the point estimate is £31bn in 2015 prices (£35bn in 2019 prices). The Target Cost agreed between the Department and HS2 Ltd is £36bn (£40bn in 2019 prices) (which represents the point estimate plus £5bn of contingency) at the point of NtP. This has been used as the reference case for the economic case. A sensitivity using the total Funding Envelope of £40bn (£45bn in 2019 prices) has been provided to capture the total government held contingency. The contingency amounts are informed by reference case forecasting (RCF). The Target Cost and Funding Envelope are associated with

50 per cent and 75 per cent respectively of the reference projects based on the remaining cost to go. The rationale for the use of RCF to support assumptions on contingency is provided in the Financial Case. This approach factors in that some risk may have already materialised on the sunk costs of the programme.

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TAB 32

Jan 2024

DfT perm sec admits HS2 now represents ‘poor value for money’

Stripped-back plans for high-speed rail are now costed at £54bn to connect London with the West Midlands

Artist's impression of HS2 trains at a station Photo: HS2 Ltd

By Jim Dunton

06 Oct 2023

Department for Transport permanent secretary Dame Bernadette Kelly has acknowledged that the government’s pared-back plans for the HS2 rail network will cost up to £54bn and represent “poor value for money” for taxpayers.

Her admission came in a letter to parliament’s Public Accounts Committee that accompanies an accounting-officer assessment of prime minister Rishi Sunak’s decision to cancel plans to extend the high-speed rail line beyond the West Midlands.

Kelly’s latest assessment for the sections of HS2 that will still go ahead is that delivering the line will cost £45bn to £54bn, up from the department’s current budget envelope of £44.6bn at 2019 prices. HS2 was originally estimated to cost £37.5bn in 2009 prices.

She also said governance of phase one “is being strengthened to further increase the focus on cost control and increase government oversight”.

On Wednesday, Sunak used his speech to the Conservative Party’s annual conference to confirm widely-briefed proposals to scrap phases of the project that would have delivered new high speed lines to Manchester and the East Midlands. Plans for HS2 rail lines to Leeds were cancelled in 2021.

Construction of phase one of HS2, which will link London with a new terminus in Birmingham and includes lines connecting the new tracks with the existing West Coast Main Line in Staffordshire, is well under way and is set to continue.

However uncertainty surrounds the future of London’s Euston Station as the southern terminus for HS2 services. Sunak said DfT-owned HS2 Ltd would be stripped of its role in relation to Euston in favour of a private-sector led approach to delivering the station that includes “building thousands of new homes”. Work at Euston was paused in the spring following a near doubling of the projected cost of the new HS2 station.

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In her accounting-officer update on the changes to the HS2 programme, Kelly said cancelling its phase-two works would require primary legislation and that processes to lift or alter restrictions on land safeguarded for the project would need to be followed.

She said the “alternative vision” set out by the government for Euston – which Sunak told the Conservative Party conference would save £6.5bn – was “subject to further work and business case”.

Kelly’s accounting-officer assessment says the benefit-cost ratio range for continuing with phase one of HS2 is between 1.2 and 1.8 – suggesting that every pound invested would deliver between £1.20 and £1.80 in benefits.

The assessment concludes: “I can confirm that, in my judgement, completing the delivery of HS2 between Euston and Birmingham, including Handsacre, meets the value for money requirements of Managing Public Money.”

However in her letter to PAC chair Dame Meg Hillier, the perm sec notes that the value-for-money opinion only relates to the “marginal decision” to continue with phase one of the project at the current stage of its delivery.

“Taking an estimated range for the total costs of phase one and assessing them against the estimated total benefits (i.e. including sunk costs and excluding remediation costs) would result in a BCR range significantly below 1 and would represent poor value for money,” she said.

According to figures from think tank the Institute for Government, £22.5bn had been spent on phase one of HS2 as of February this year, and a further £2.2bn on the HS2 project as a whole.

Figures provided by DfT and No.10 on Wednesday suggested that the BCR for the revised version of HS2 “could fall as low as 80 pence for every £1 spent”. Some previous estimates put the benefits of every £1 spent as high as £2.30.

Responding to Sunak’s announcement yesterday, Hillier said “stop-start approaches” to large and complex infrastructure projects plainly did not represent value for money for taxpayers.

She said the government’s approach risked undermining wider confidence that its programmes for major infrastructure investment would be delivered.

“In a globally competitive world, companies may now choose to invest their time and skills in other countries,” she said.

"As a committee we have been raising concerns about HS2 for a full decade, so this latest change is little surprise.”

She added: “It is likely we will be examining the costs of this latest decision in the months to come."

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