



WEST YORKSHIRE
COMBINED AUTHORITY

Using strategic modelling to prioritise transport investment and inform the scope of a SUMP

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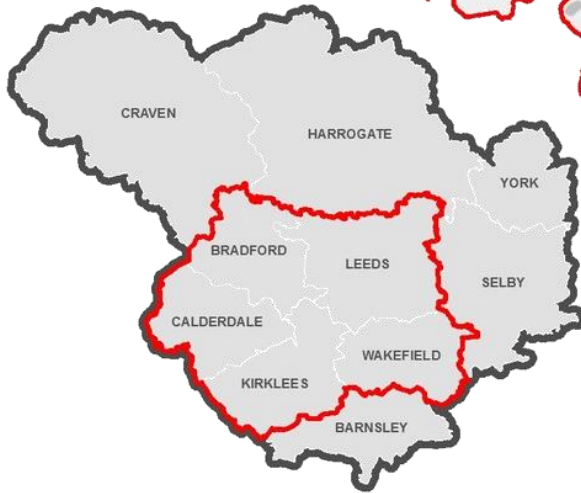


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Bremen

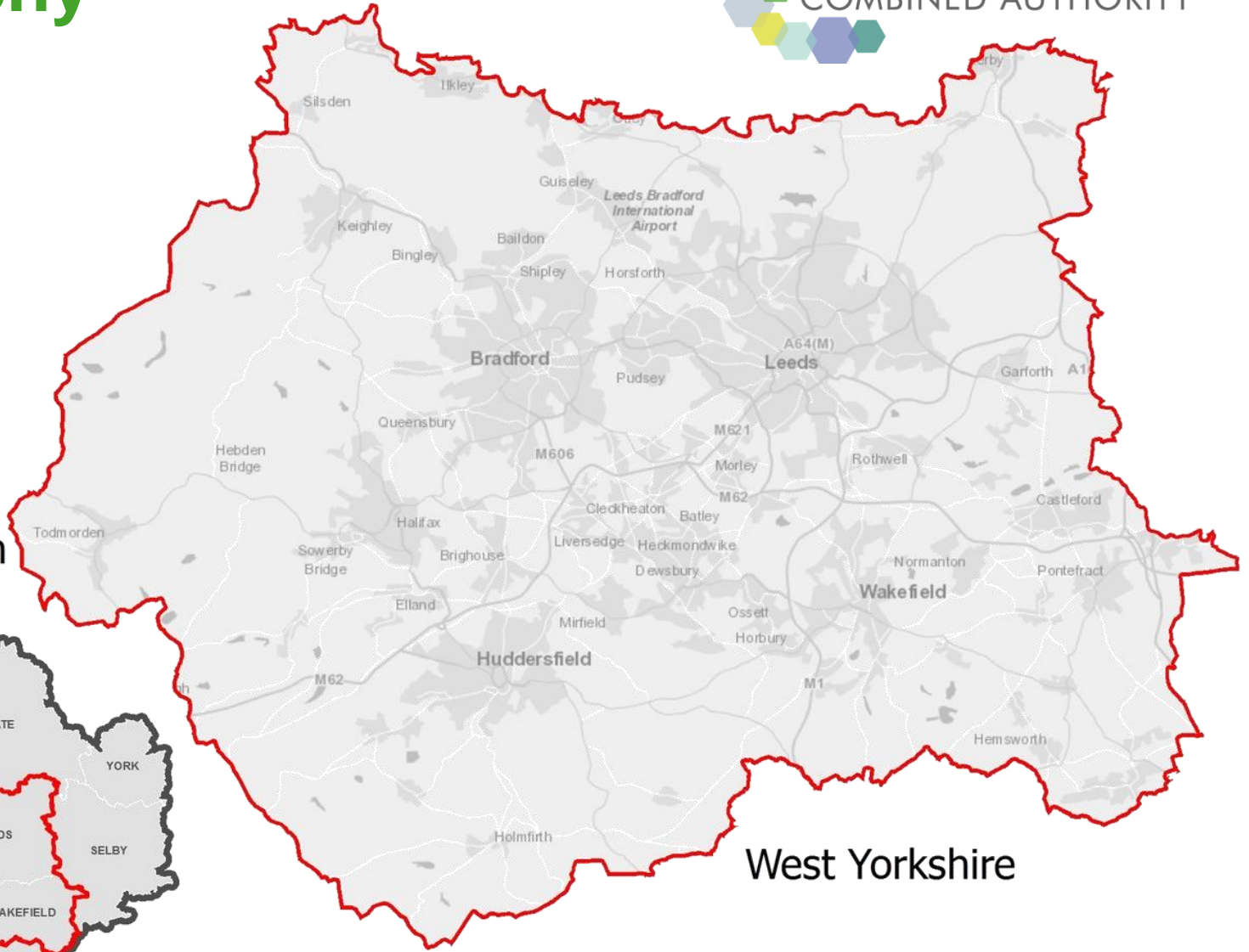
Geography



United Kingdom



Leeds City Region



West Yorkshire

City Deal with UK government (2012)



- Increasing decentralisation and local responsibility for investment priorities
- Agreed to establish a West Yorkshire Combined Authority
 - Strategic responsibility for transport, economy, housing etc
 - Collaboration not competition
 - Financial flexibility
- Agreed to establish a £1 billion Transport Investment Fund

- Clear focus on economic growth
- Support business growth
- Had to be 'sustainable'

- Attract 'investment' in West Yorkshire

Approach



- Set objectives and secure endorsement
- Forecast where and how transport constraints could limit objectives
- Develop sifting and appraisal linked to objectives
- Build and maintain consensus
- Assemble robust evidence to secure funding

- Approach under pinned by a strategic land use, transport and econometric tool – the Urban Dynamic Model (UDM)
- Models interactions between
 - Employment
 - Housing
 - Workforce
 - Commuting patterns and modes
 - Business to business activity
 - Scale and location of development land - which could be developed if transport conditions allow

Objectives



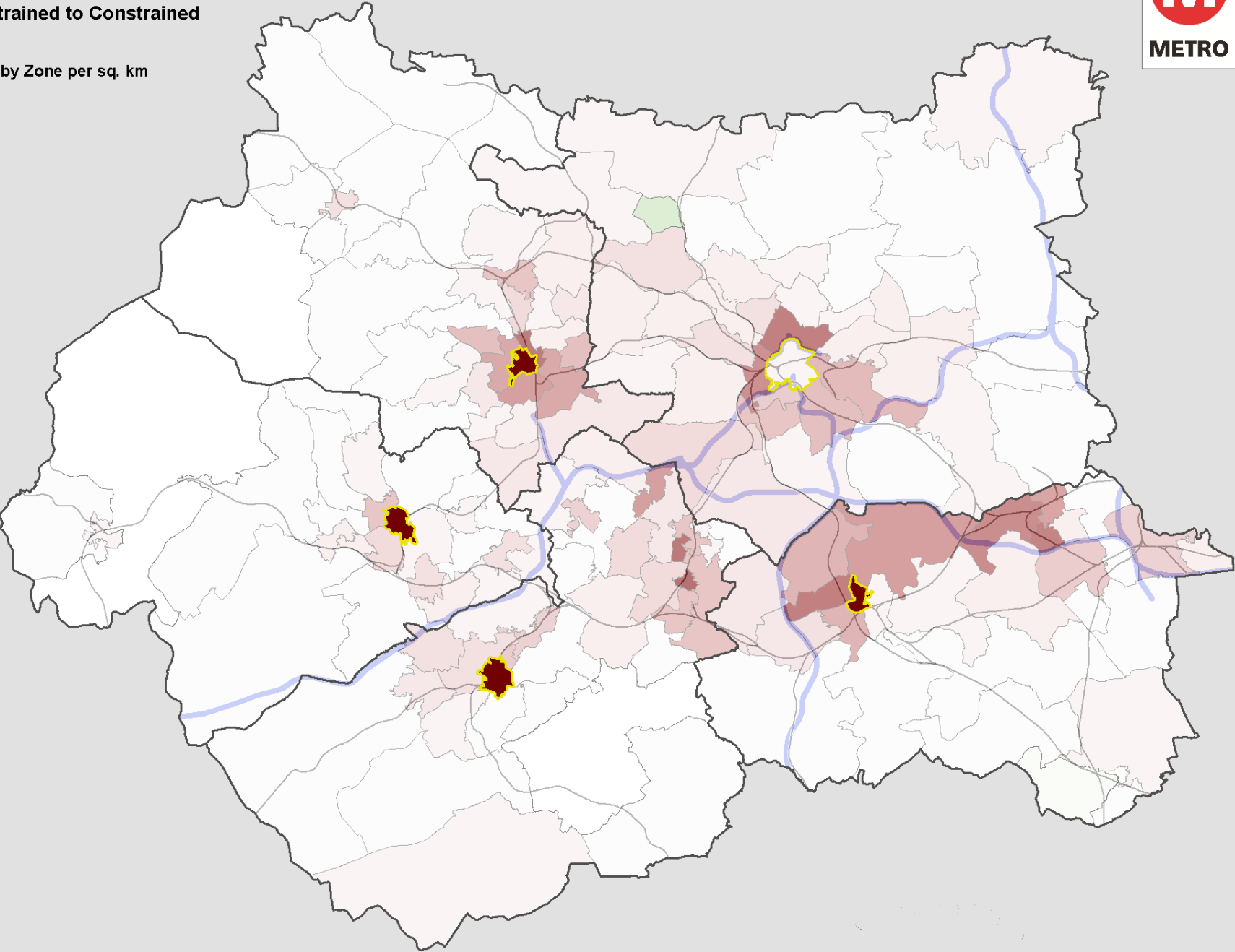
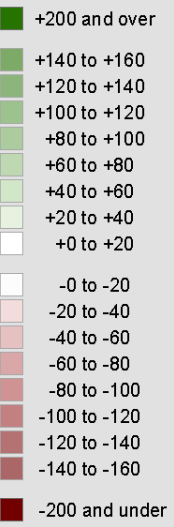
- Primary objective of the Transport Fund was to maximise an increase in **employment and productivity growth**
- Two employment accessibility minima proposed at the package level:
 - Every WY district to gain an average improvement in employment accessibility no less than half the average across WY
 - A better than average improvement in employment accessibility for residents in the most deprived 25% of WY communities
- A neutral carbon impact at the package level

Change in Employment Density: 2026



From Unconstrained to Constrained

Change in Jobs by Zone per sq. km



Sifting and prioritisation



- Step 1 - 120 schemes (£6 billion) reduced through high level analysis
- Step 2 - 60 schemes (circa £4 billion) tested discretely in the UDM
- Ranked on basis of Impact/£
- We used GVA/£, but could be
 - Employment
 - Residents in employment
 - Carbon
 - or any weighted combinations
- Step 3 - 33 schemes (£1.2 billion) prioritised into a package
 - Comparison against objectives

Scheme name	Net capital cost	Whole life cost	Jobs (2026)	GVA (2026)	GVA/per £ of whole life cost	Rank	Cumulative net capital cost (£m)	Cumulative employment impact
East Leeds Parkway	10	0	611	39.2	>10.0	1	10	611
Highway Network Efficiency (UTMC)	7	0	415	28.5	>10.0	2	17	1,027
Normanton Rail P&R	15	0	128	8.6	>10.0	3	33	1,155
Wakefield Eastern Bypass and Park and Ride	29	11	1,784	111.3	9.88	4	62	2,939
A653 Leeds - Dewsbury Corridor	13	5	707	47.2	9.20	5	75	3,646
A651 Bradford Road Gomersal Improvement	1		22	1.6	6.12	6	75	3,668
A650 Tong Street	7	2	167	11.5	5.51	7	83	3,834
Wakefield City Centre Package	9	3	192	12.2	4.42	8	91	4,026
Tong Street - Westgate Hill Street – Laisterdyke New Link including Bowling Back Lane highway link	46	19	1,200	79.1	4.27	9	138	5,226
Leeds ELOR and North Leeds Outer Ring Road	73	30	1,721	116.8	3.83	10	211	6,946
Aire Valley - Leeds Integrated Transport Package	29	9	404	32.4	3.53	11	240	7,351
Bradford - Shipley Corridor Improvement	48	19	976	65.4	3.49	12	288	8,327
M62 new junction 24a on A641 Bradford Road, Huddersfield	19	8	371	24.3	3.09	13	306	8,697
NGT - Leeds City Centre - Aire Valley	98	30	1,140	82.0	2.69	14	404	9,837
Glasshoughton Southern Link Road	7	3	132	8.3	2.65	15	411	9,969
Bradford - Keighley A650 Hard Ings Road and town centre improvements	10	5	170	11.6	2.33	16	422	10,139
Cooper Bridge Rail P&R	20		120	8.3	2.10	17	442	10,259
WY package of red routes (all vehicles) and bus improvements	252	92	2,563	182.9	1.99	18	694	12,821
Rail station parking	32	6	152	10.5	1.91	19	725	12,973
Bradford - Huddersfield A641 corridor improvements (inc Brighouse bypass)	76	25	593	42.6	1.71	20	801	13,567
Halifax - Huddersfield A629 corridor and Halifax Town Centre	121	61	1,380	99.0	1.61	21	921	14,947
Pontefract Northern Bypass	7	2	54	3.3	1.43	22	928	15,001
Caldervale Line Improvements	20	17	312	21.2	1.22	23	948	15,313
A65 - LBIA Link Road	36	15	205	17.4	1.19	24	983	15,518
Leeds A6110 Outer Ring Road Improvements	18	7	120	8.8	1.18	25	1,001	15,638
Castleford Northern Bypass	38	18	351	20.8	1.17	26	1,039	15,989
A62 (Huddersfield to Heckmondwike) and A644 Corridor Improvements (Dewsbury – M62 J25), incorporating	69	26	502	30.4	1.15	27	1,108	16,491
Harrogate Road/New Line Junction	5	2	31	2.1	1.10	28	1,113	16,522
Leeds City Centre network improvement and interchange strategy	37	17	160	14.6	0.85	29	1,149	16,682
PACKAGE CUT OFF								
NGT to east Leeds (city centre loop, Grimes Dyke and park and ride)	162	80	919	63.1	0.79	30	1,311	17,601
A58 Beacon Hill Road, Stump Cross (A6036 junction) and Hipperholme Improvements	9	3	33	2.4	0.72	31	1,320	17,634
A638 Dewsbury - M62 Improvements	6	3	28	2.0	0.62	32	1,327	17,661
Dewsbury - Bradford - Shipley Bus Way	234	139	1,113	75.4	0.54	33	1,560	18,775
Bradford Forster Square and Bradford Interchange improvements	25	8	37	3.4	0.42	34	1,585	18,812
South and East Wakefield Bus to Work	0	19	132	6.6	0.34	35	1,585	18,944
Bus Way to west of Bradford	25	23	88	6.2	0.26	36	1,610	19,032
Bradford Western Outer Ring Road improvements	27	11	41	2.8	0.26	37	1,637	19,073
Leeds West Outer Ring Road Improvements - Dawsons Corner - Rodley roundabout	44	30	111	7.3	0.24	38	1,681	19,184
Shipley Eastern Relief Road	50	24	78	4.4	0.18	39	1,731	19,261
Leeds - LBIA Tram-train link	220	146	376	26.8	0.18	40	1,951	19,637
Leeds - Bradford NGT	270	151	367	27.6	0.18	41	2,221	20,005
A652 Bradford Road Batley Corridor Improvement	6	2	6	0.4	0.17	42	2,227	20,011
Bradford -LBIA Tram-train	250	190	384	28.7	0.15	43	2,477	20,395
Hallam and Wakefield line improvements	19	45	85	5.5	0.12	44	2,496	20,480
Haigh Parkway	21	13	19	1.3	0.10	45	2,517	20,499
Low Moor - Shipley tram-train	248	199	261	17.7	0.09	46	2,765	20,760
M62 J26 segregated westbound off slip (Chain Bar)	214	167	222	14.5	0.09	47	2,978	20,982
Leeds - Five Towns Tram-train	284	182	189	12.1	0.07	48	3,262	21,171
Heavy Rail to LBIA	409	340	215	13.9	0.04	49	3,671	21,385
Castleford Town Centre (including Castleford Transport Hub)	19	11	8	0.4	0.04	50	3,690	21,393
Bradford IRR Stage 4	15	5	-1	0.0	-0.01	51	3,705	21,392
Wortley Curve	11	55	28	-0.8	-0.01	52	3,716	21,421
Electrification of the Harrogate line (Leeds to York)	294	179	-42	-2.9	-0.02	53	4,010	21,378

Employment and Traffic impacts of the prioritised package



- 18,000 new jobs in WY
- 8% increase in employment (commuting)
- 10,000 new homes in WY
- £1.25 billion of GVA per year
- Package BCR of nearly 5:1

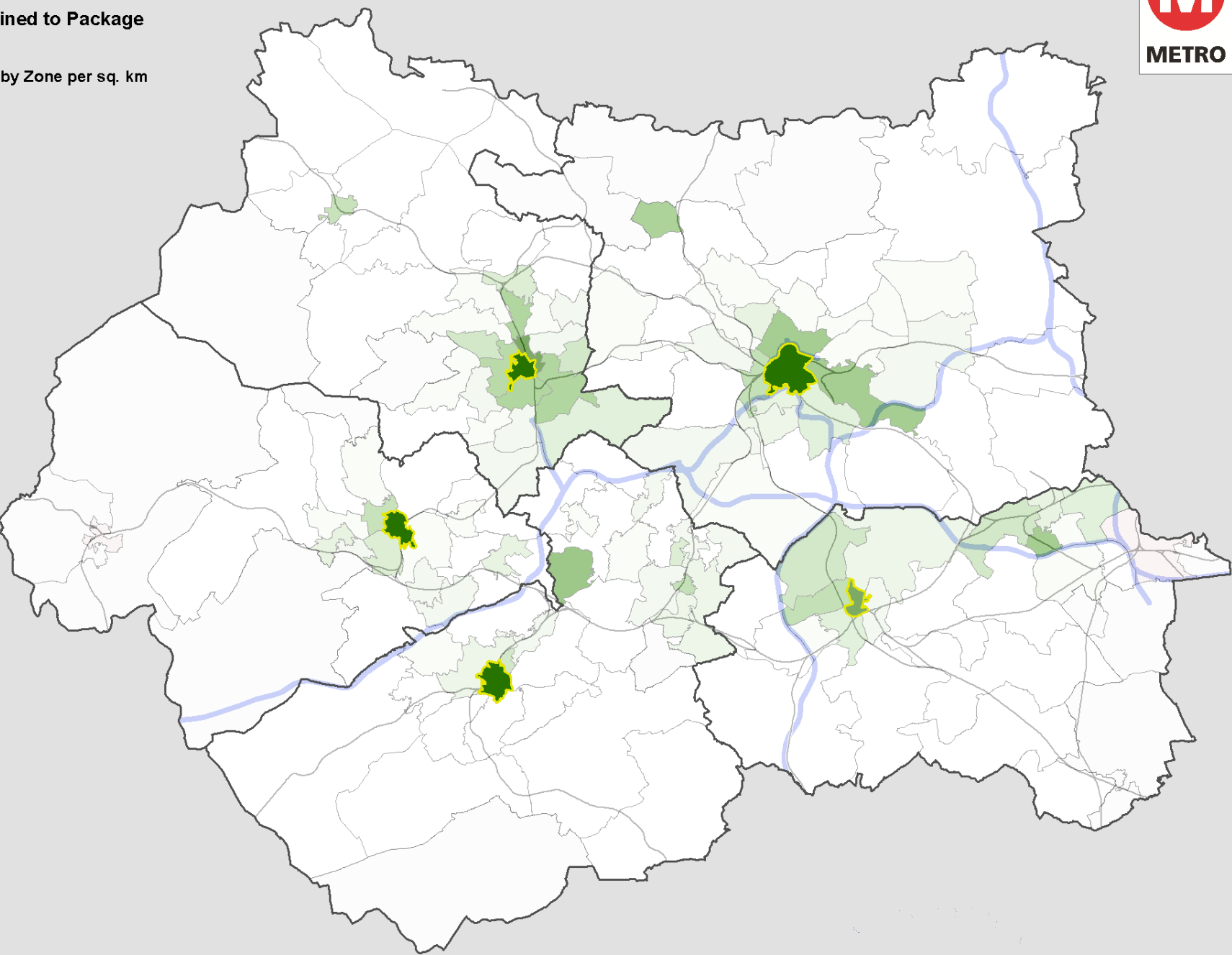
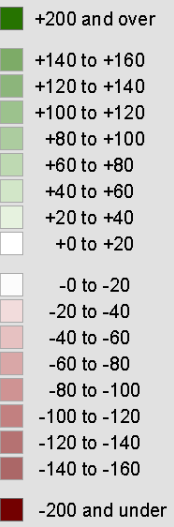
- 6% increase in average commuting distances
- 2.5% reduction in car commuting
- 13% increase in rail use
- 30% increase in bus use
- 11% decrease in walking/cycling
- 2% increase in carbon emissions

Change in Employment Density: 2026



From Constrained to Package

Change in Jobs by Zone per sq. km



Further measures to promote sustainability



- Design of discrete projects will have specific local objectives
- Carbon, air quality and emissions
 - Strategic approach to green infrastructure (quality of place and environmental benefits)
 - Strategic approach to procurement (materials/methods/employment)
 - Acceleration of greener vehicles (buses)
 - Policy approach and Clean Air Zones
- Mode choice, health, affordability, ticketing
 - Car restraint in city centres and reallocation of road space to pedestrians/cycling
 - Enhanced (radial) corridor projects to promote active modes
 - Bus Strategy to lock in additional revenues from new passengers and provide targeted ticketing incentives

Summary and conclusion



- Collaboration not competition essential at sub regional levels
- Driven by strategic objectives and evidence - problem led, not solution led, planning
- Must have appropriate forecasting and appraisal tools
- Effective for building consensus and scenario testing
- Useful for identifying strategic sustainability issues to be addressed through local design and/or strategic policy approach

Further details and information

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