



Modelling rapid transit systems

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Alternatives to conventional light rail

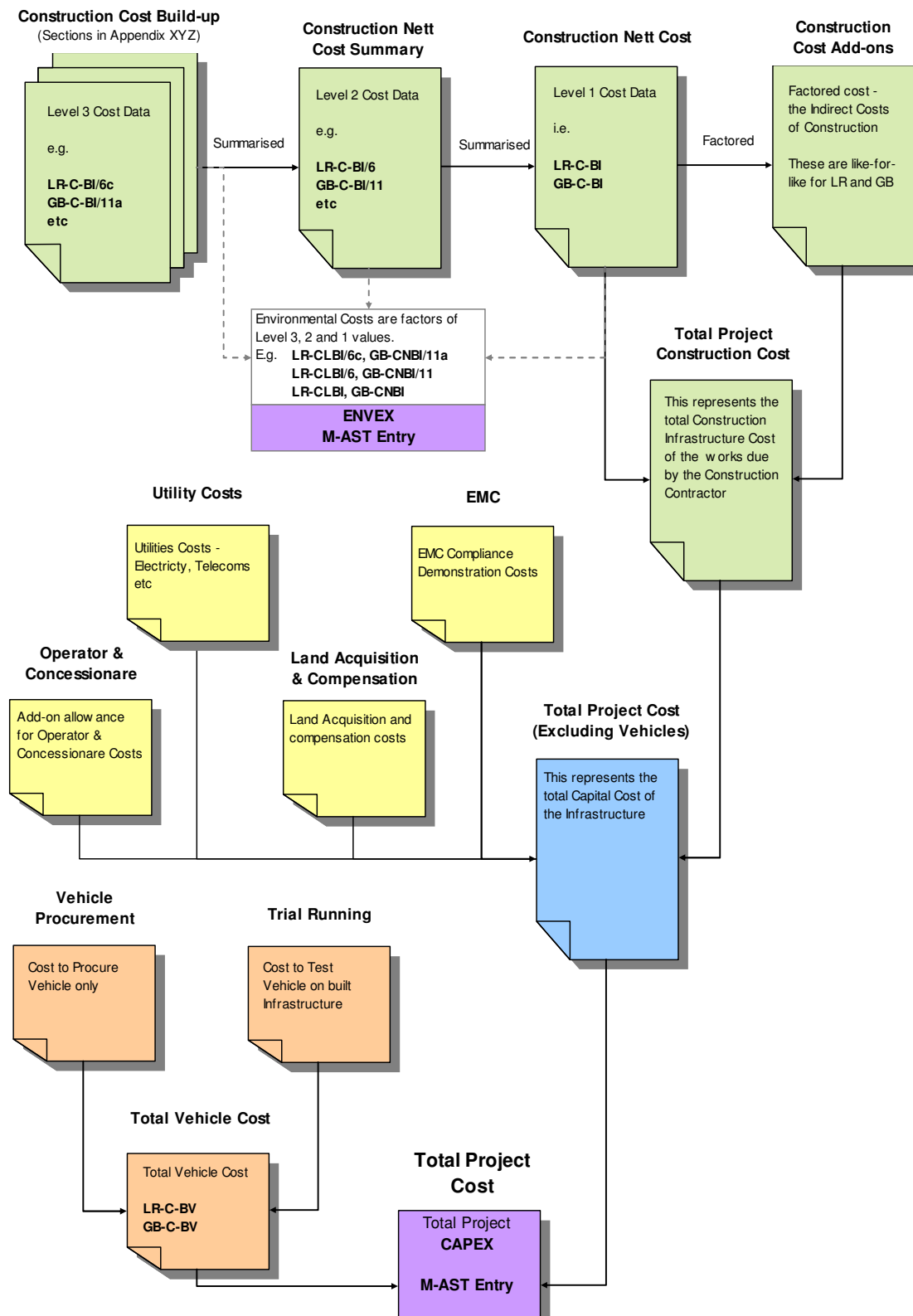


- Model directly compares Light Rail (LR) and Guided-Bus (GB) solutions for an equivalent system
- Key data focus on cost and environmental performance for equivalent service level
- Model framework based upon NATA/webTAG
- Includes
 - Costs, Noise, LAQs, GHGs
- Excludes softer environmental measures, e.g.
 - Heritage of Historic Resources
 - Water Environment
 - Biodiversity

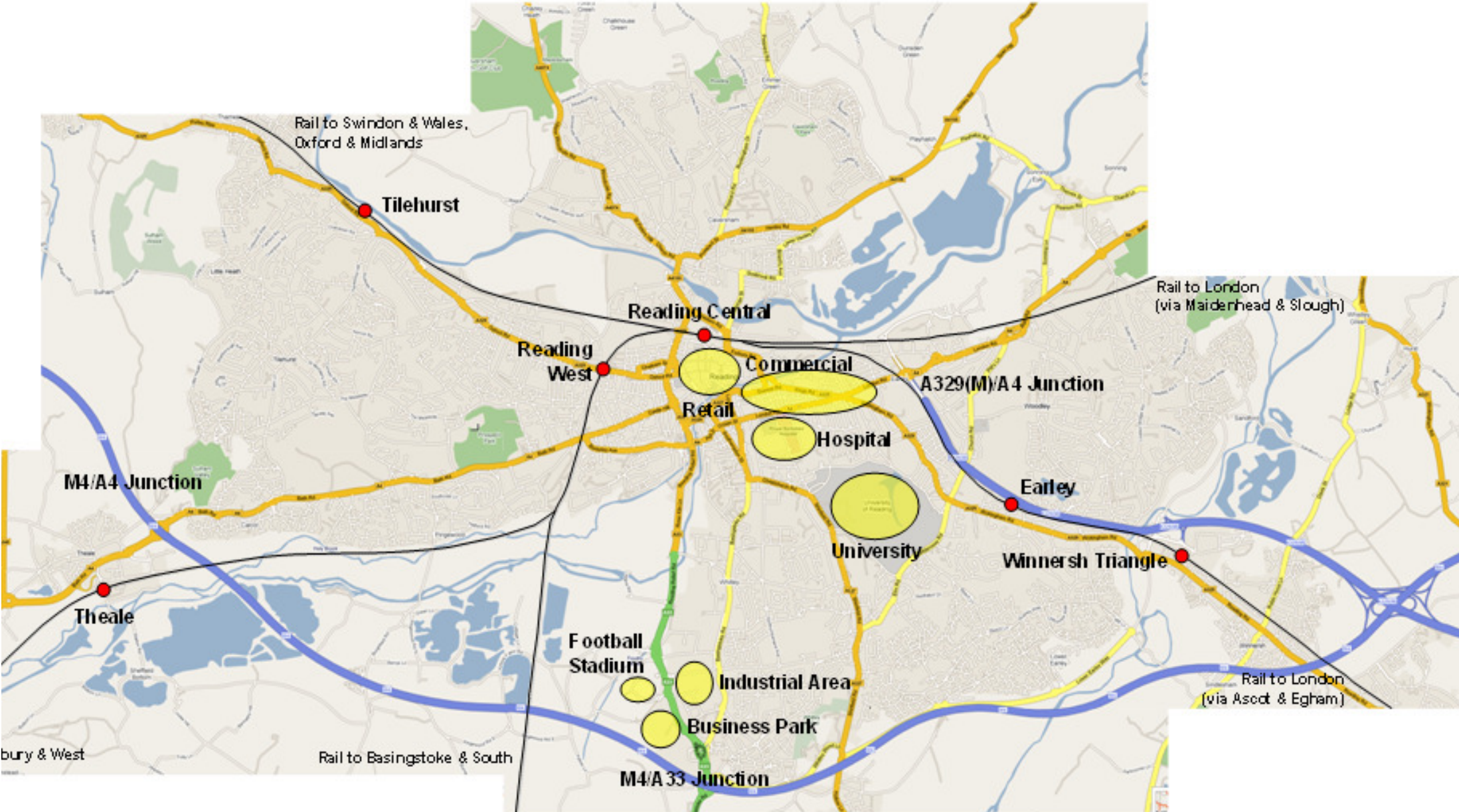
Phileas (*GB?*)



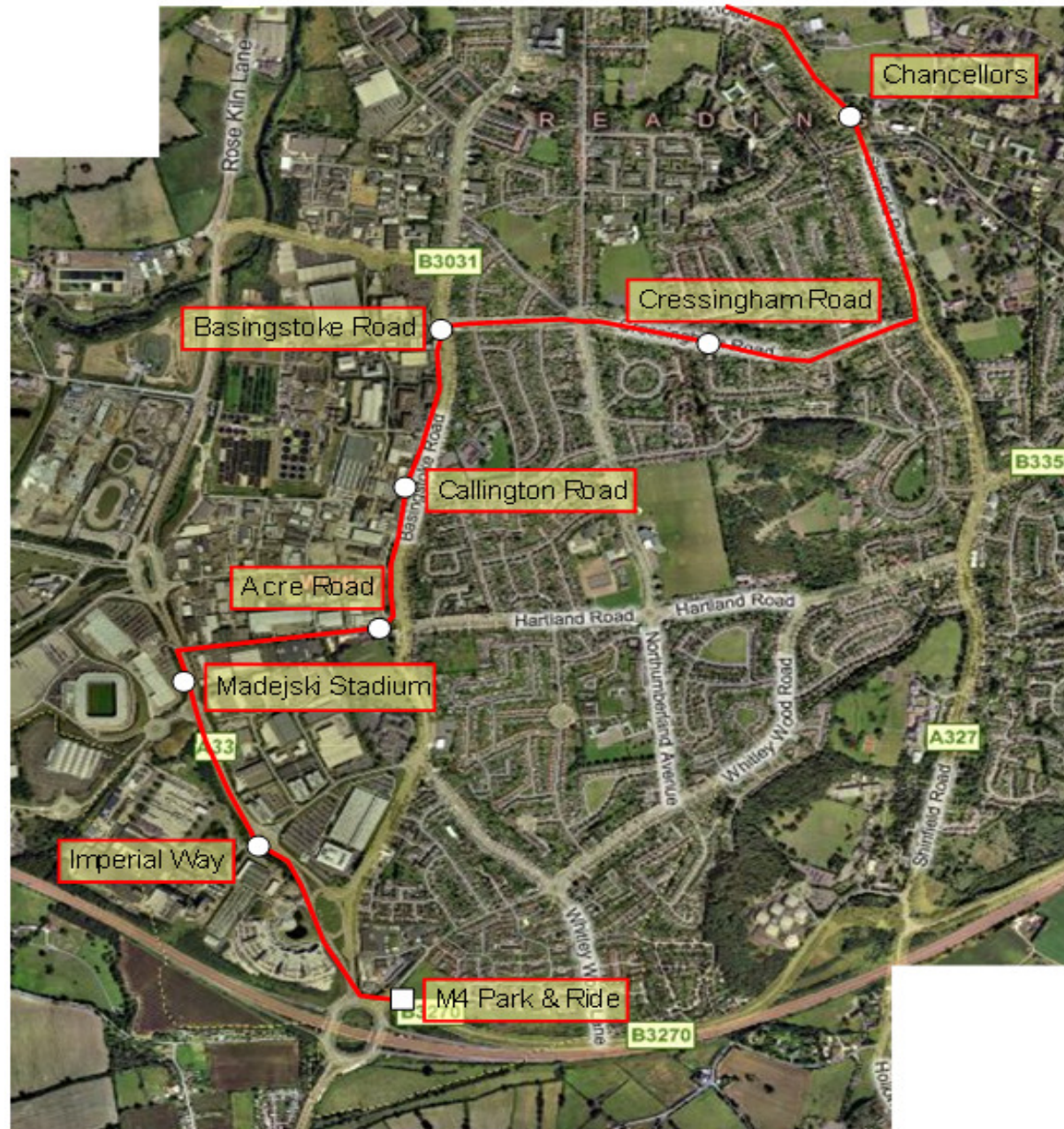
Cost framework



Reading network

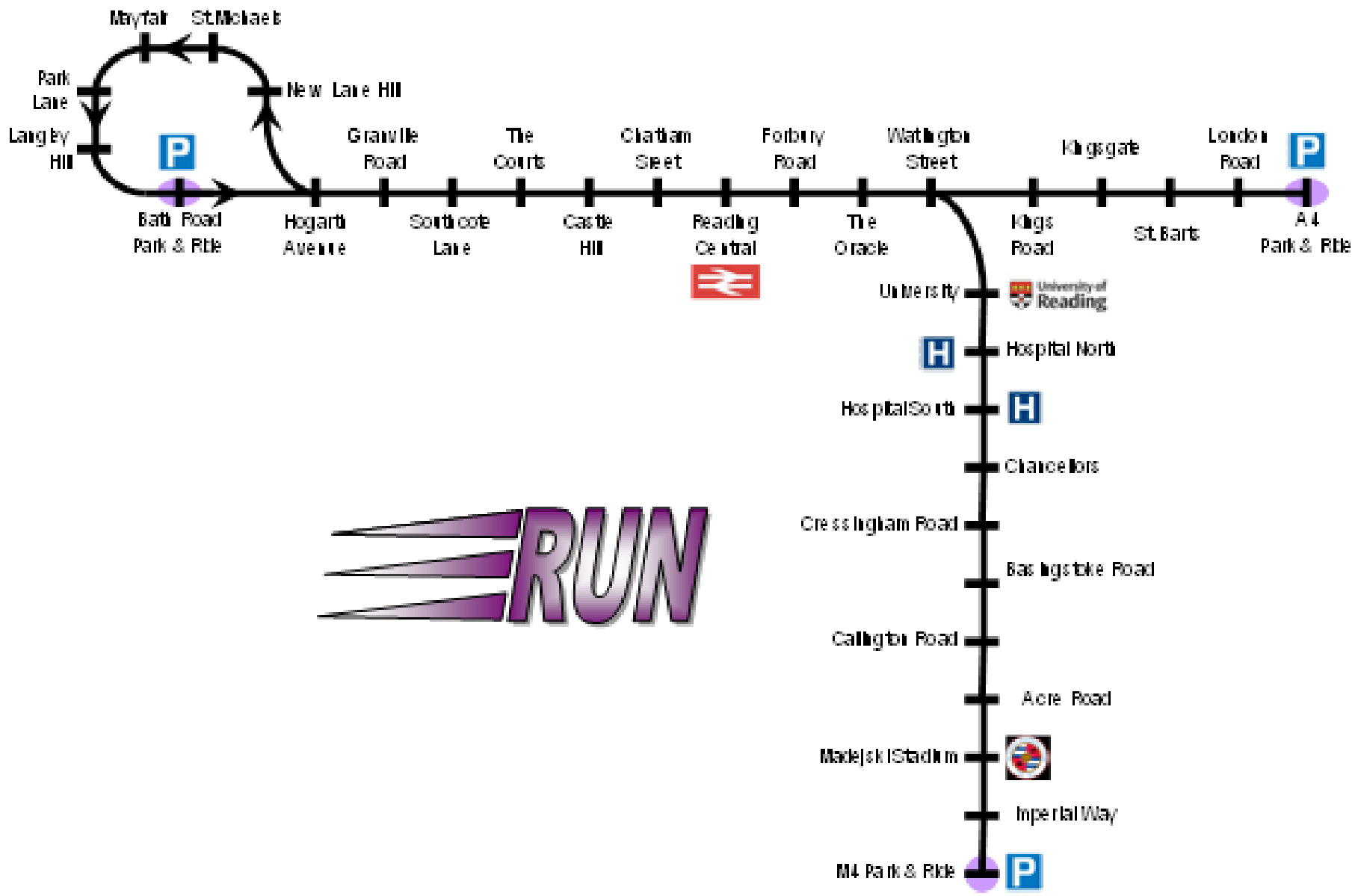


Example of route development





Network map – user centric



RUN Key Data



- Same route length (22.4km)
- Same number of stops (32)
 - different platform configurations necessary
 - Light Rail: 15 Facing/12 Island/5 Single
 - Guided Bus: 27 Facing/5 Single
- Alterations to Road Intersections
 - 71 for Light Rail vs. 50 Guided-Bus
- Number of vehicles
 - Requirement 1 service/6 min (LR)
 - 18 LR Vehicles (15 service + 3)
 - 29 GB (25+4) for equivalent PAX
 - Same average speed assumed, round-trip-time, 2hrs 20mins

LR timetable



	Mins	Diagram	A	B	C	D	E	F	G	H	I	J	K	L	M
<i>M4 P&R</i>	0.00	<i>Depart North</i>	7.00	7.06	7.12	7.18	7.24	7.30	7.36	7.42	7.48	7.54	8.00	8.06	8.12
Watlington	0.17	Westbound	7.17	7.23	7.29	7.35	7.41	7.47	7.53	7.59	8.05	8.11	8.17	8.23	8.29
Hogarath	0.13	Westbound	7.30	7.36	7.42	7.48	7.54	8.00	8.06	8.12	8.18	8.24	8.30	8.36	8.42
Bath Rd P&R	0.02	Terminate	7.32	7.38	7.44	7.50	7.56	8.02	8.08	8.14	8.20	8.26	8.32	8.38	8.44
<i>Bath Rd P&R</i>	-	<i>Depart East</i>	7.40	7.46	7.52	7.58	8.04	8.10	8.16	8.22	8.28	8.34	8.40	8.46	8.52
Hogarath	0.02	Eastbound	7.42	7.48	7.54	8.00	8.06	8.12	8.18	8.24	8.30	8.36	8.42	8.48	8.54
Watlington	0.13	Eastbound	7.55	8.01	8.07	8.13	8.19	8.25	8.31	8.37	8.43	8.49	8.55	9.01	9.07
A4 P&R East	0.07	Terminate	8.02	8.08	8.14	8.20	8.26	8.32	8.38	8.44	8.50	8.56	9.02	9.08	9.14
<i>A4 P&R East</i>	-	<i>Depart West</i>	8.15	8.21	8.27	8.33	8.39	8.45	8.51	8.57	9.03	9.09	9.15	9.21	9.27
Watlington	0.07	Westbound	8.22	8.28	8.34	8.40	8.46	8.52	8.58	9.04	9.10	9.16	9.22	9.28	9.34
Hogarath	0.13	Westbound	8.35	8.41	8.47	8.53	8.59	9.05	9.11	9.17	9.23	9.29	9.35	9.41	9.47
Bath Rd P&R	0.13	Eastbound	8.48	8.54	9.00	9.06	9.12	9.18	9.24	9.30	9.36	9.42	9.48	9.54	10.00
Hogarath	0.02	Eastbound	8.50	8.56	9.02	9.08	9.14	9.20	9.26	9.32	9.38	9.44	9.50	9.56	10.02
Watlington	0.13	Eastbound	9.03	9.09	9.15	9.21	9.27	9.33	9.39	9.45	9.51	9.57	10.03	10.09	10.15
M4 P&R	0.17	Terminate	9.20	9.26	9.32	9.38	9.44	9.50	9.56	9.62	10.08	10.14	10.20	10.26	10.32
	Mins	Diagram	N	O	P	Q	R	S	T	U	V	W	X	Y	A
<i>M4 P&R</i>	0.00	<i>Depart North</i>	8.18	8.24	8.30	8.36	8.42	8.48	8.54	9.00	9.06	9.12	9.18	9.24	9.30
Watlington	0.17	Westbound	8.35	8.41	8.47	8.53	8.59	9.05	9.11	9.17	9.23	9.29	9.35	9.41	9.47
Hogarath	0.13	Westbound	8.48	8.54	9.00	9.06	9.12	9.18	9.24	9.30	9.36	9.42	9.48	9.54	10.00
Bath Rd P&R	0.02	Terminate	8.50	8.56	9.02	9.08	9.14	9.20	9.26	9.32	9.38	9.44	9.50	9.56	10.02
<i>Bath Rd P&R</i>	-	<i>Depart East</i>	8.58	9.04	9.10	9.16	9.22	9.28	9.34	9.40	9.46	9.52	9.58	10.04	10.10
Hogarath	0.02	Eastbound	9.00	9.06	9.12	9.18	9.24	9.30	9.36	9.42	9.48	9.54	10.00	10.06	10.12
Watlington	0.13	Eastbound	9.13	9.19	9.25	9.31	9.37	9.43	9.49	9.55	10.01	10.07	10.13	10.19	10.25
A4 P&R East	0.07	Terminate	9.20	9.26	9.32	9.38	9.44	9.50	9.56	10.02	10.08	10.14	10.20	10.26	10.32
<i>A4 P&R East</i>	-	<i>Depart West</i>	9.33	9.39	9.45	9.51	9.57	10.03	10.09	10.15	10.21	10.27	10.33	10.39	10.45
Watlington	0.07	Westbound	9.40	9.46	9.52	9.58	10.04	10.10	10.16	10.22	10.28	10.34	10.40	10.46	10.52
Hogarath	0.13	Westbound	9.53	9.59	10.05	10.11	10.17	10.23	10.29	10.35	10.41	10.47	10.53	10.59	11.05
Bath Rd P&R	0.13	Eastbound	10.06	10.12	10.18	10.24	10.30	10.36	10.42	10.48	10.54	11.00	11.06	11.12	11.18
Hogarath	0.02	Eastbound	10.08	10.14	10.20	10.26	10.32	10.38	10.44	10.50	10.56	11.02	11.08	11.14	11.20
Watlington	0.13	Eastbound	10.21	10.27	10.33	10.39	10.45	10.51	10.57	11.03	11.09	11.15	11.21	11.27	11.33
M4 P&R	0.17	Terminate	10.38	10.44	10.50	10.56	11.02	11.08	11.14	11.20	11.26	11.32	11.38	11.44	11.50

Sub-modules (model)



- Input data based on system development
- webTAG provides model framework:
 - CAPEX – the cost to:
 - Build infrastructure
 - Manufacture, supply, test vehicles
 - OPEX – the cost to maintain and operate:
 - the infrastructure and the vehicles
 - ENVEX – the cost of mitigation for construction and operational:
 - Noise; Local Air Quality (NO_x and PM₁₀); GHG (CO₂)
 - ENVEM – the emissions associated with construction and operational:
 - Noise; Local Air Quality (NO_x and PM₁₀); GHG (CO₂)



Feedback

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- **Feel free to contact either of us**