

Nottingham Electric Bus Project

Progress and Plans

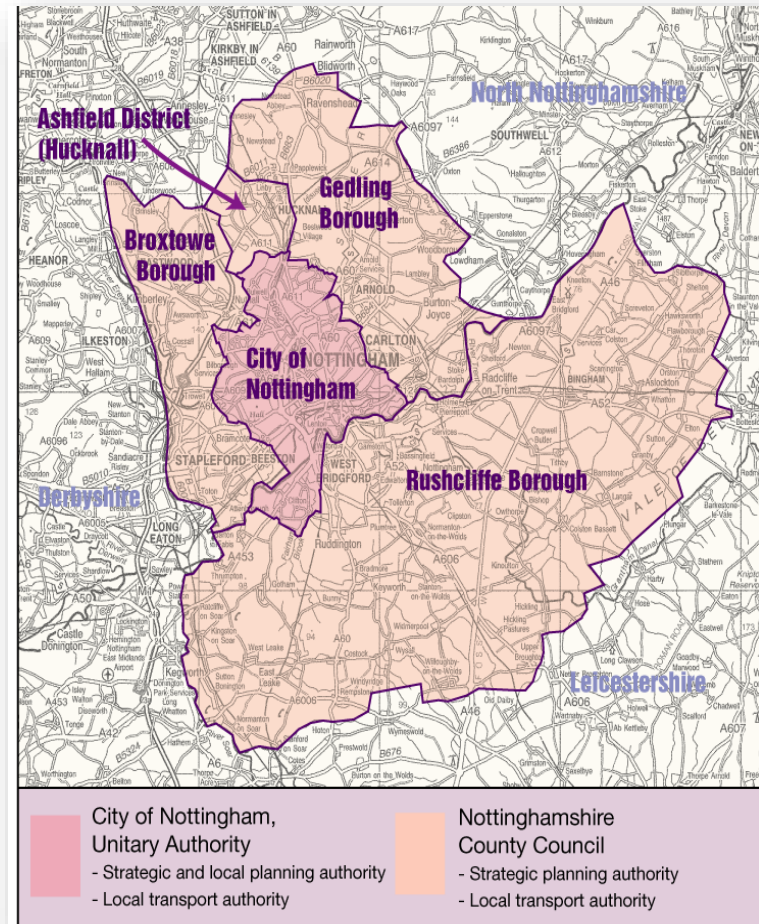
Steve Cornes
Electric Bus Project Manager
Nottingham City Council



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Nottingham: Background

- 1M within travel to work area
- 0.5m conurbation residents
- 300k within city boundary
- Regional Centre
- Unitary authority
 - Public Transport and Highways
- Pro-public transport



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Nottingham Public Transport

- Deregulated market
- Commercial Bus Services 90% of departures
- Contracted Bus Services (10 %)
- Socially necessary and strategic contracts
- Locallink network - a network of routes to workplaces, health and education sites and district centres, with seven million trips a year
- Tram - 3 lines, cross-city services



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The Council role

- Statutory Concessionary travel scheme (£9m)
- **Provision of contract bus services (£2.8m p.a.)**
- **City Centre SQPS Scheme since 2010**
- Robin Hood Multi-operator season ticket: Admin, auditing, publicity costs



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Electric buses

- Why electric?
- Cost savings
 - NCC Fleet ownership
 - DfT GBF Grant + WPL
 - Capital rich/revenue poor
 - BSOG removal
 - LCEB incentive
- CO₂ & NOx reductions
- Fuel security
- Wider policy
- Council strengths
 - energy supply
 - Property



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Business Case Per Electric Bus

- Capital cost difference £105k
- Grant (£85k)
- Apportioned spare £40k
- Additional 8 yr warranty £12k
- Maintenance diff £0k (-40%)
- Fuel savings (min) £18k
- Payback (grant) 4 years
- Payback (no grant) 8.7 years



Electric Bus Network

Implementation stages

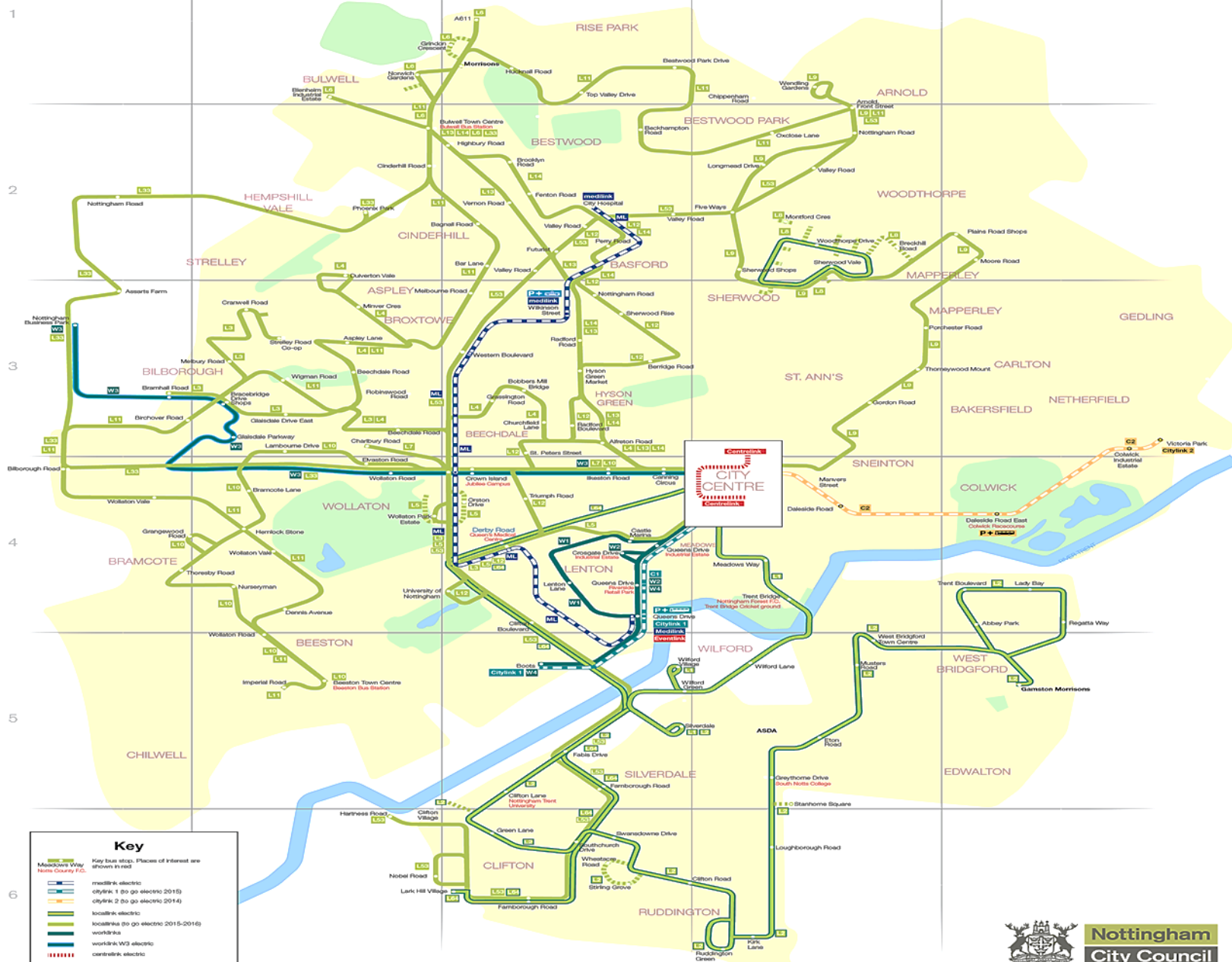
- Charging network development
- Trickle charge/overnight base
- Fast chargers

Contracted Services

	Bus no.
• Centrelink – high <i>f</i> /small bus	4
• Localinks – low <i>f</i> /small	8
• Medilink – high <i>f</i> /small	16
• Localinks – high <i>f</i> /small	17
• Citylinks – high <i>f</i> /large	13



Electric bus network



Electric Bus Network: Progress

- £15.1m project
- Phase 1 & 2
 - 8 vehicles
- Phase 3 May 2014
 - 20 buses
- Phase 4 Feb 2015
 - 17 Buses delivered
- Phase 5 Sept 2016
 - Infrastructure in
 - 13 vehicles delivered
 - Fully operational Jan 2017
- Phase 6 2017-18
 - City-wide fast charger network planned



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Feedback: Project

Charging issues

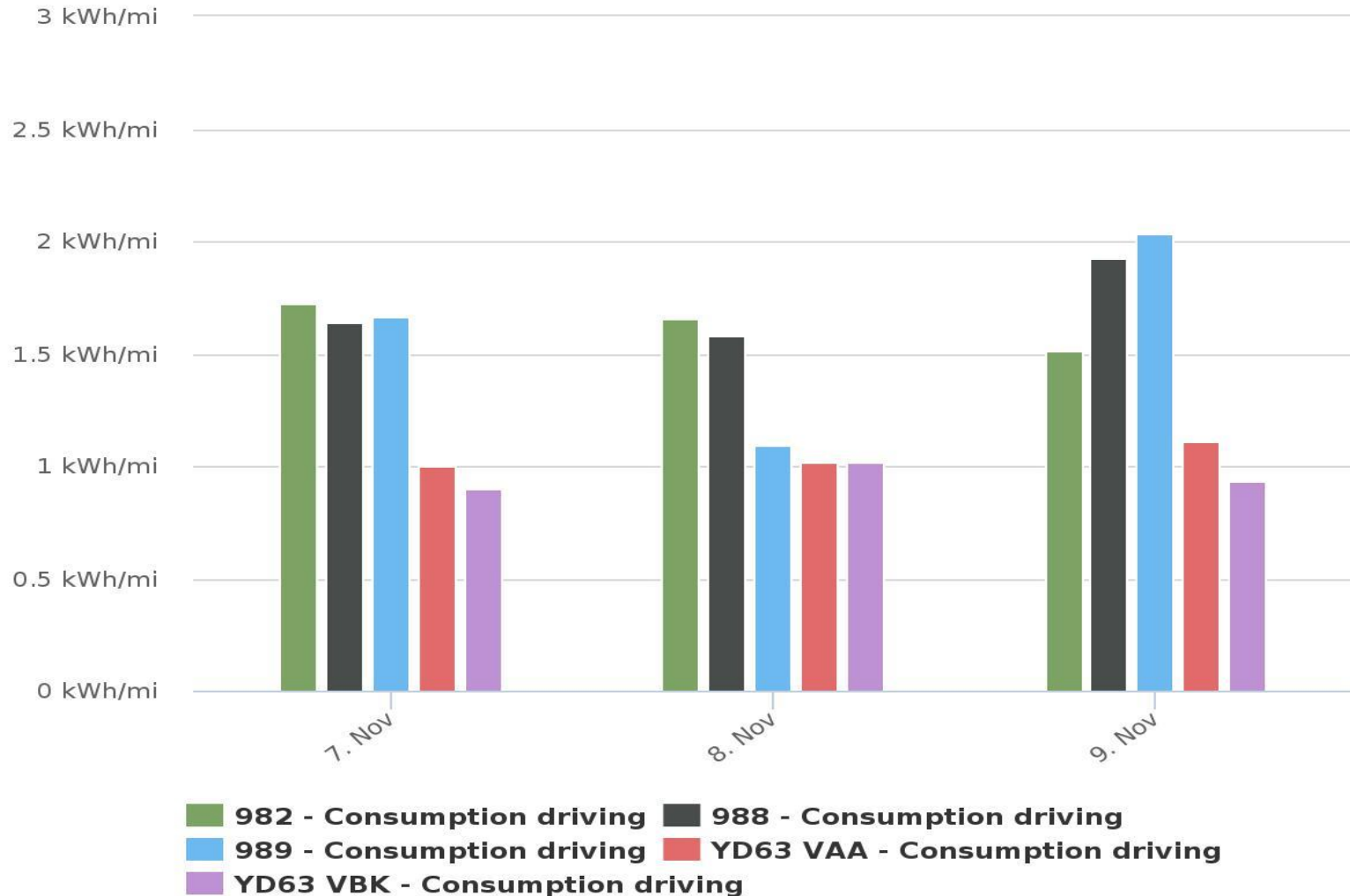
- Fast charging
- Ind. operational base
- Fast charger network
- Temperature!

Vehicles

- Timetables/driver rotas
- Driver variation
- Battery range
- Reliability
- Development



Feedback: Vehicles Performance



Feedback: Vehicles

Energy consumption and cost

Vehicle	Fuel unit cost £	Distance Miles	L or kWh/Mile	£/mile	Grant/mile	Cost/mile	Saving/mile £
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Diesel*	0.89	1	0.5	0.45	0.175	0.27	-
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Solo EV	0.12	1	1	0.12	0.09	0.03	0.24
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BYD	0.12	1	1.65	0.20	0.09	0.11	0.16
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Off-peak electricity tariff							
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Solo EV	0.07	1	1	0.07	0.09	-0.02	0.29
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BYD	0.07	1	1.65	0.12	0.09	0.03	0.24
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*Assuming 10mpg

BSOG £.035/L

Electricity standing charges not inc.



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Feedback: Policy

- Perception
- Emissions
- Branding
- Engaging bus operators
- Partnerships
- Access areas
- Unlock funds
- Political



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Future plans: ElectriCity...?

- Single electric solution
- So far: Tram & buses...
- GuL City
 - Cars, taxis
 - LEZ
- NCT 53 gas buses
- All buses entering city-centre Euro 6 by 2020



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