

Large fleet rollout of Electric Buses

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Nottingham City Council Electric Bus Project

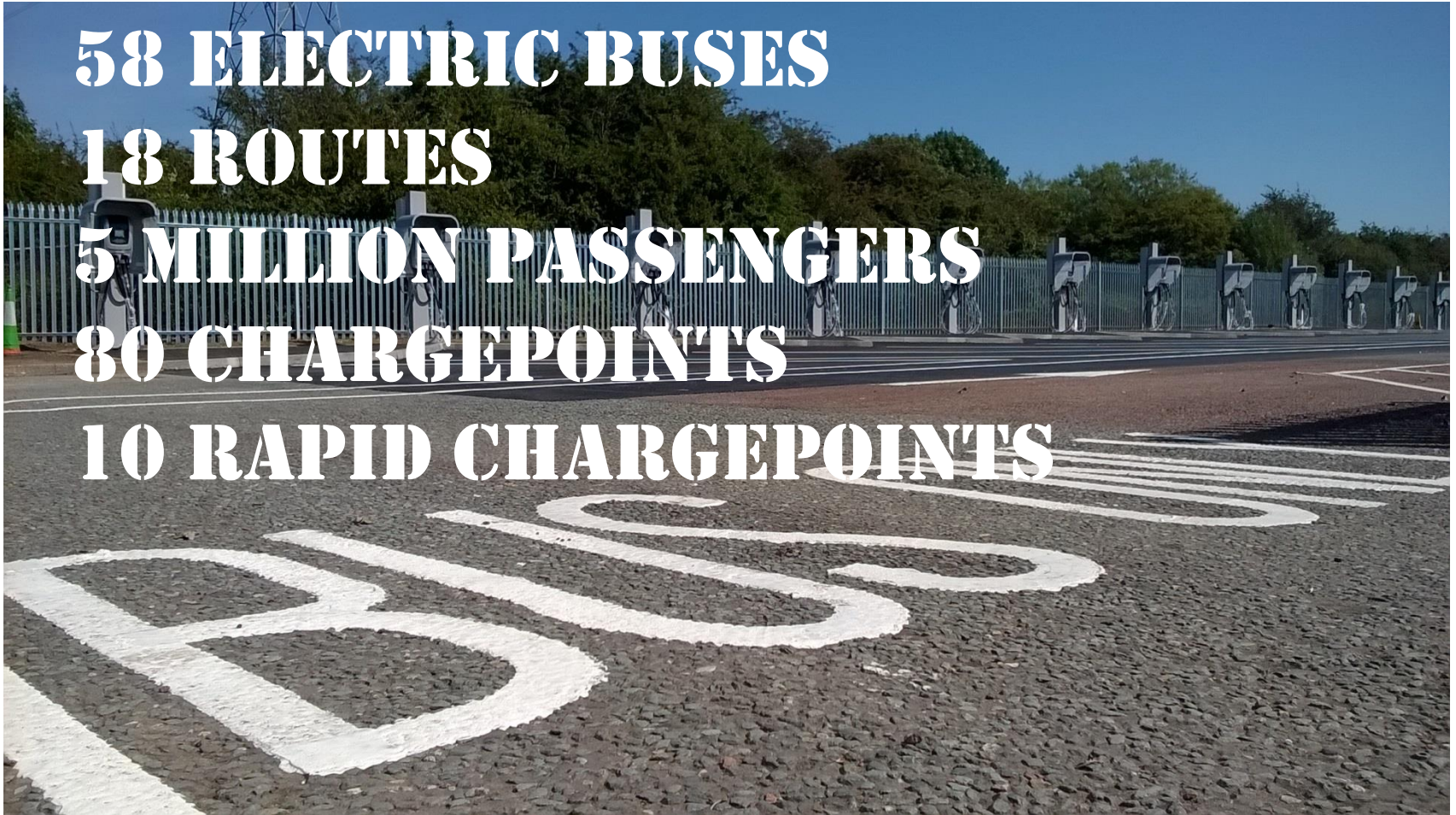
58 ELECTRIC BUSES

18 ROUTES

5 MILLION PASSENGERS

80 CHARGEPOINTS

10 RAPID CHARGEPOINTS



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The 5 Ws

- What?
 - Who?
 - Where?
 - When?
 - Why?
 - How?
 - How much?
- Air Quality
 - *Your name here*
 - *Your local AQMA/LEZ*
 - *Your timescale here*
 - Environment, Health, Cost
 - Using zero emission buses
 - *How much do you have available/ can you get hold of? Business case*

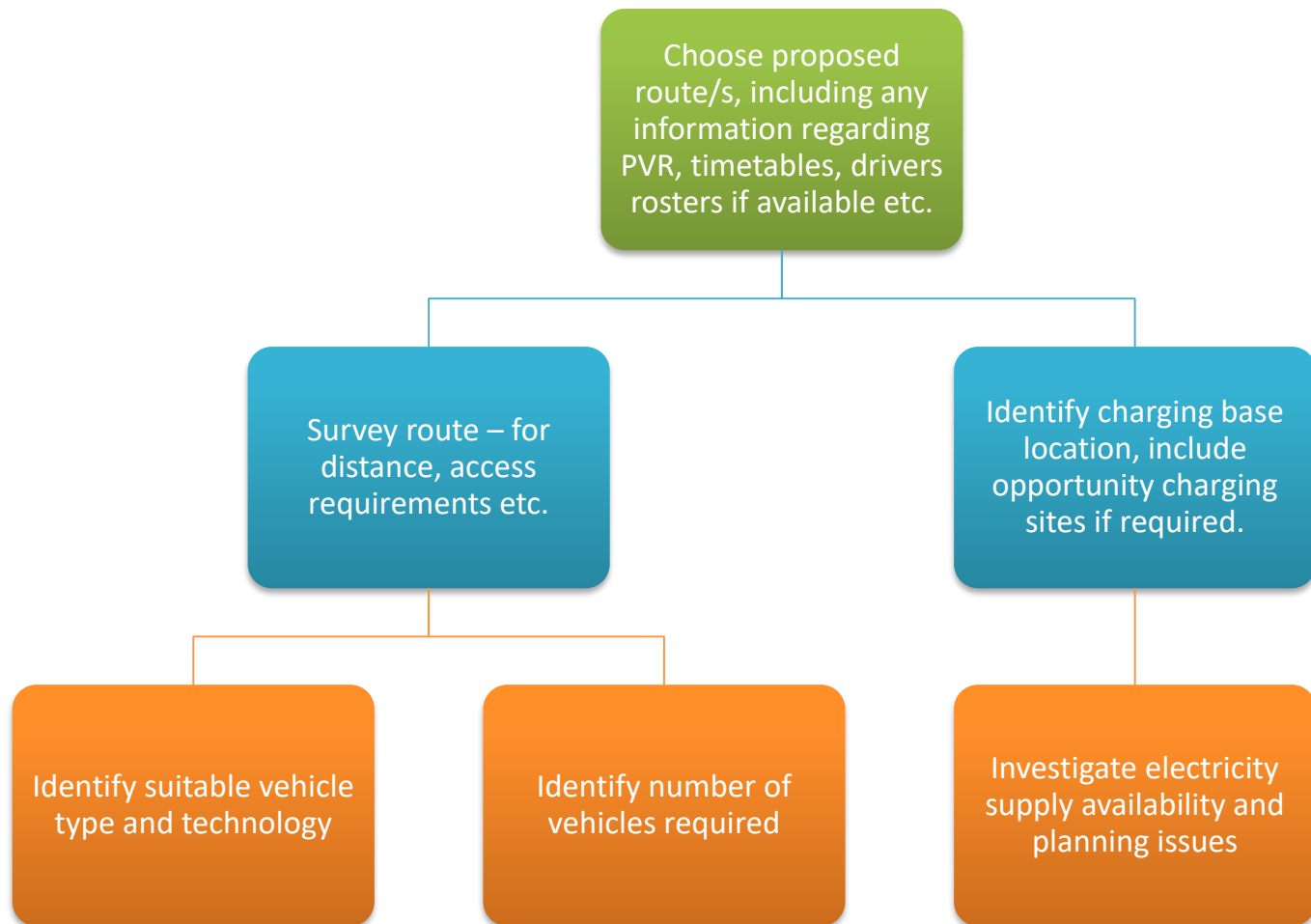


How? Planning

- Initial scoping exercise – scale, route/s
- Different scenarios concerning vehicle ownership
- Contract lengths
- Who is responsible for the provision of vehicles and charging base?
- Think about the expertise and personnel you will require
- Investigate and visit working projects
- Talk to operators and manufacturers
- Think about ancillaries - ticketing, real time and telemetry requirements



How? Planning: Infrastructure and Vehicles



How? Planning: Finance and procurement

- Write/respond to tenders for vehicles and/or services – importance of SLAs and guarantees. Ensure contracts are signed with warranty service providers before delivery.
- Consider extended warranty options
- Consider charging base design and other charging equipment factors
- Consider complete operating costs e.g. standing charges on electricity supplies, the impact of regenerative braking, can you use low tariff electricity?



How? Planning: Vehicles

- Identify suitable vehicles: technology, range, seating, costs, vehicle dimensions
- Heating and a/c types and impacts
- Take into account vehicle build and delivery times
- Keep in touch with the manufacturer throughout
- Testing



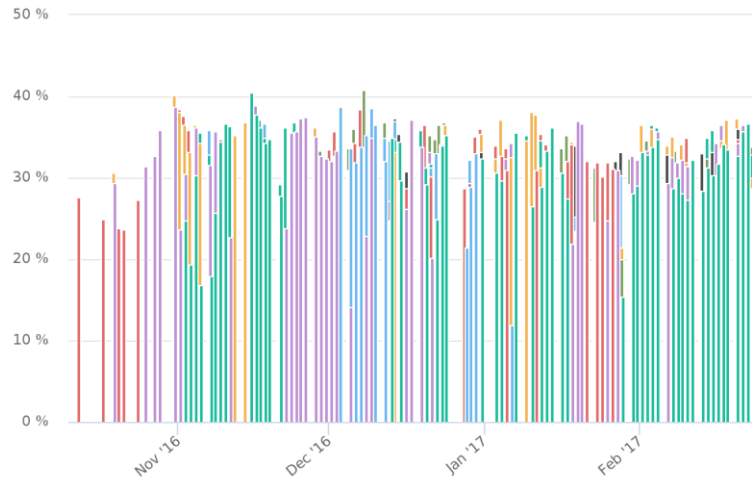
How? Infrastructure construction

- Plan ahead – long lead-in times with DNOs etc. so apply early for POCs, permits to work etc. if required
- Take account of extra civils costs for enclosures, highways works, storage requirements – grant implications
- Program with vehicle delivery – does any charging equipment from the manufacturer need delivering before the vehicles arrive for installation?
- Allow time for trialling with vehicles



How? Operations and monitoring

- Importance of good telemetry
- Charging times – peak/off-peak
- ASC standing charges – can the asc be lowered/offset?
- Grid impacts



● 977 - Regeneration rate ● 978 - Regeneration rate ● 979 - Regeneration rate
● 980 - Regeneration rate ● 981 - Regeneration rate ● 982 - Regeneration rate
● 983 - Regeneration rate ● 984 - Regeneration rate ● 985 - Regeneration rate
● 986 - Regeneration rate ● 987 - Regeneration rate ● 988 - Regeneration rate
● 989 - Regeneration rate



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When?

- Delivery - Project management
- Launch event
 - time to coincide with significant local/national event



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Future..

- Keep looking for funding opportunities
- Electricity Supply Grid Developments
- V2G developments
- Energy trading/brokerage
- Marketing – keep your profile high



Thank you for your attention.

Any questions?

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