OLEV

Plug-In Vehicle Recharging Infrastructure Guidance

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Contents

1 Introduction

The scope of this study is to undertake a gap analysis of the current guides and information available to assist local authorities in installing plug-in vehicle recharging infrastructure, with the purpose of identifying any missing areas.

The overall objective is to establish if the relevant guidance is available to local authorities who are looking to implement recharging infrastructure for plug-in vehicles.

Specifically, this report assesses whether the following areas are covered in existing documents and guidance:

1. High level explanations of key areas for people new to plug-in vehicle recharging. This includes types of recharging technology and supporting infrastructure (i.e. back office, communication protocols, RFID options etc) with directions to more detailed guidance.
2. The key stages of chargepoint installation, with key actions/decisions at each stage. Also assessed with this is which stakeholders should be involved in the process, both internal to the local authority and from external organisations.
3. A template project plan with suggested timescales for each stage.
4. The necessary national and local regulation requirements (such as relevant planning regulations). It was not expected that these would be reproduced, but that the guidance should include a short summary, any relevant short extracts and pointers to detailed guidance/regulations required.
5. A list of existing technological standards and those in development.
6. Available procurement frameworks and associated material available for general local authority use.
7. PIP case studies and lessons learned.
8. Information on business models including monitoring.
9. Cost information and funding options.
10. Location and layout of chargepoints.

As well as the topics listed above, section 4.4 comments on other topics raised in the guidance.

The study also set out to identify whether further areas should be produced as part of the PIP (Plugged-In Places) learning and closure activities and to create a high level scope description for each additional piece required.

Although a range of guidance documents is available on plug-in vehicles, this study focuses on the guidance which would assist local authority officers in implementing plug-in vehicle recharging infrastructure.

2 Methodology

A number of guidance documents was already known about prior to the study, and these are listed below. Throughout this report, the documents are referred to by the wording in italics.

- IET: Successfully Implementing a Plug-in Electric Vehicle Infrastructure: A Technical Roadmap for Local Authorities and their Strategic Partners
  IET: roadmap (1)
- BEAMA: Guide to Electric Vehicle Infrastructure
  BEAMA (2)
- IET Code of Practice for Electric Vehicle Charging Equipment Installation
  IET: CoP (3)
- RAC: Foundation: Going Green
  RAC (4)
- SMMT Electric Car Guide
  SMMT (5)
- Green Book on publicly accessible charging infrastructures for “low-carbon” vehicles
  Green Book (6)
- TfL: Guidance for implementation of electric vehicle charging infrastructure
  TfL (7)
- ENEVATE Electric vehicle charging infrastructure tool kit
  ENEVATE toolkit (8)
- EV City Casebook
  City casebook (9)

The eight UK Plugged-In Places and selected local authorities were contacted to ask if they were aware of any other guidance documents. Any other documents identified throughout the study or raised by the PIPs are listed in sections 3.3 and 3.4.

The guidance documents were reviewed against the ten criteria set out in section 1 to assess if these areas were sufficiently covered. The available guidance was also reviewed to assess whether the information available in OLEV’s factsheets was sufficiently covered.

3 Existing Guidance

The available documents come from a variety of authors and cover a range of different subjects. Although most documents are available free of charge, some documents have to be purchased. Tables 3.1 and 3.2 summarise the details and coverage for each of the available documents. [Additional documents identified are listed in Tables 3.3 and 3.4.]

3.1 Guidance documents

Below is a short description of each guidance document. The documents are listed in chronological order, starting with the most recent.

IET: roadmap (1) provides comprehensive coverage of many topics. The document is written for local authority officers although the cost (£750) may be prohibitively high for local authorities.

At the implementation phase, existing technical standards (charging modes, plugs and sockets) are covered in the most detail in *BEAMA (2)*.

IET: CoP (3) is targeted at electricians installing recharging infrastructure. This document provides the most detailed coverage of the standards of installation required for domestic, on-street and commercial installations.

RAC (4) provides the best explanation of the powers and policy levers available to local authorities. It also provides survey-gathered data from local authorities who have put these levers into practice.

SMMT (5) serves as a starting place for someone with no technical knowledge or background in plug-in vehicles. It is structured as a list of questions and answers.

Green Book (6) covers a range of topics, from the technical aspects of plug-in vehicles, costs of infrastructure and business models.

TfL (7) has good coverage of a range of documents and is written for borough officers. The document is one of the older pieces of guidance (published 2010) and may therefore be out of date on certain topics (signage etc).

The *ENEVATE toolkit (8)* is yet to be finalised. The toolkit is an extensive project management tool with the best coverage of lessons learnt from the Plugged-In Places scheme and a valuable work-package breakdown.

The *City casebook (9)* provides a range of case-studies but does not include detailed guidance for local authorities on implementing recharging infrastructure. For this reason it has been omitted from Table 3.2.

3.2 Summary tables of existing guidance documents

Tables 3.1 and 3.2 summarise the availability and coverage of the guidance documents against the criteria set out in section 1. The documents are arranged in chronological order by the most recent publishing date (apart from the *ENEVATE toolkit (8)* which is listed last as it is yet to be finalised).

Table 3.2 is colour coded to indicate the level of coverage provided.

	Extensive
	Overview
	Introductory
	Does not feature

Page numbers and references to relevant sections are provided, with references in bold indicating sections of greater relevance.

#	Document	Author	Latest Published	Availability	Cost	Target audience	Length
1	IET: Successfully Implementing a Plug-in Electric Vehicle Infrastructure: A Technical Roadmap for Local Authorities and their Strategic Partners	Matthew Lumsden. IET Standards LTD (Institution of Engineering and Technology)	May 2012	Paperback and http://www.theiet.org/resources/standards/ev-charging-cop.cfm	£750 £675 for IET members	"local authority officers and managers in transport planning, environmental services and sustainable development"	112 pages
2	BEAMA: Guide to Electric Vehicle Infrastructure	The British Electrotechnical and Allied Manufacturers Association	May 2012	http://www.beama.org.uk/en/publications	Free	"Organisations providing advice and guidance to consumers on the day-to-day use of electric vehicle infrastructure"	44 pages
3	IET Code of Practice for Electric Vehicle Charging Equipment Installation	IET Standards LTD (Institution of Engineering and Technology)	January 2012	Paperback and http://electrical.theiet.org/books/e-books/ev-charging-cop-digital.cfm	£50. £35.75 for IET members	"experienced electricians" Installing on behalf of a client	92 pages
4	RAC: Foundation: Going Green	Chris Hanley SKM Colin Buchanan RAC	November 2011	http://www.racfoundation.org/research/environment/going-green-report	Free	Local authorities	66 pages
5	SMMT Electric Car Guide	Society of Motor Manufacturers and Traders	June 2011	http://www.smmt.co.uk/2011/06/smmt-publishes-new-2011-electric-car-guide	Free	Layperson, prospective EV owner	37 pages
6	Green Book on publicly accessible charging infrastructures for "low-carbon" vehicles	Senator Louis Nègre	April 2011	http://www.evplugalliance.org/wp-content/uploads/pdf/Livre-vert-irve-EN.pdf	Free	"local authorities/municipalities"	56 pages
7	TfL: Guidance for implementation of electric vehicle charging infrastructure	Transport for London	April 2010	www.newride.org.uk/downloads/EVCP-Guidance-Apr10.pdf	Free	"borough officers who are responsible for the procurement, design, installation and operation of electric vehicle charging points (EVCPs) on public highways and in public car parks."	80 pages
8	ENEVATE Electric vehicle charging infrastructure tool kit	European Network of Electric Vehicles and Transferring Expertise	To be published	By request: matthew.lumsden@futuretransportsystems.co.uk	Free	"project manager [with little prior knowledge of EV infrastructure] whom has been given the task of developing an EV infrastructure"	156 pages

Table 3.1. Details of the available guidance documents.

#	Title November 2012	High level explanations of key areas for people new to plug in vehicle recharging	The key stages of charge-point installation and key actions and decisions at each stage Including internal and external stakeholder involvement	A template project plan with suggested timescales for each stage	The necessary national and local regulation requirements (such as relevant planning regulations)	List of existing and development technological standards	Available procurement frameworks for Local Authorities	PIP case studies and lessons learned	Information on business models, including monitoring.	Cost information and funding sources	Location and layout of charge-point	Other topics covered
1	IET: Successfully Implementing a Plug-in Electric Vehicle Infrastructure: A Technical Roadmap for Local Authorities and their Strategic Partners	Section 2.1. pg. 5. Introduction to the EV market Section 2.2 pg. 10. EV technologies (cars and vans) Section 2.2. pg. 17. Recharging- 2 page coverage of type of chargepost and charging solutions. Refers to IET CoP (3) document for type and functionality of connectors	Section 1.2.d & f. pg. 3. Partnerships highlighted as key Section 3.2. pg. 24. Working with stakeholders. Explains who to involve	Section 3.1. case study 1. Briefly outlines the aspects of installation which have been problematic with regard to timing Figure 9-A.Gantt chart (12 lines) and high level guidance around managing the installation Refers to ENEVATE toolkit for detailed guidance	xiv. Mention of use of s106 and planning obligations Section 2.1. pg. 5. List and explanation of National legislation and initiatives including Transport white paper, plug-in car grant, PIP, NPPF, town and country planning act. TSB demonstrator programme Section 2.1. pg. 6. Short list of local initiatives to support recharging infrastructure Section 2.1. pg. 6. Implications for local authority policy and strategy. Refers to RAC (4) document for review of policy levers. Gives examples of incentives adopted by local authorities Section 2.2. pg. 11. Mention of EU reduction regulatory targets (new cars <130gCO2/km by 2015) Section 5.17. Pg. 87. States that no planning permission is required for chargepoint installation	**Section 5.1. pg. 69. Signage. Refers to DfT website for details** **Section 5.2. pg. 70. Modes of charging** **Section 5.3. pg. 74. Plugs** **Section 5.4. pg. 77. Cables** **Section 5 also covers energy meters, domestic charging standards, energy sales, wiring, disabled users, etc.**	Section 2.1. pg. 6. Local funding available. Local sustainable transport fund Case study 8. pg. 48. Blue Mobility Innovative procurement route 3.11. pg. 52. Low Carbon Vehicle Public procurement programme (for EVs)	Spread throughout document in blue boxes xiii- Exec summary. PIP lessons learnt on EV potential for air quality improvements as lever Section 3.2. Lessons learnt- Highlights stakeholder engagement as a key lesson learnt Section 3.3. pg. 27. Short mention of planning chargepoint location Pg. 38. Membership cost protocol Case study 9. pg. 51. MECC lessons learnt Case study 11. pg. 54. Charge your Car- success factors and challenges from PIPs	Case study 3. pg. 36. Support to members Case study 4. pg. 38. Interoperability and Open Charge Point Protocol	Section 3.4. pg. 30. Cost of rapid chargers and value for money Section 3.14. pg. 56. Implementation dos, don'ts and risks Tables 4 & 5. pg. 60. Chargepoint capital costs Section 4.1. pg. 62-67. Funding and revenue streams from PIPs, European funding and S106, etc	Section 3.4, pg. 37. Considerations for the location of chargeposts, including locating rapid chargers, maximising value-for-money, clustered and distributed arrangements and vandalism	Section 2.1. pg. 5 Government policy objectives Section 2.2. pg. 10. Plug-in vehicle technology overview Section 3.14. pg.56. Implementation, dos don'ts risks
2	BEAMA: Guide to Electric Vehicle Infrastructure	Summary pg. ii. Summarises charging modes and plugs				Section 1. pg. 2. Charging mode standards. Charging speeds, pros & cons of each mode Section 2. pg. 8. Plugs and sockets Section 3. pg. 11. Applications. Home charging and public charging Section 5.1. pg. 23. Current Standards list		3.2 a. pg. 14. Where is public charging infrastructure being installed in the UK? High level explanation of PIP scheme	3.2 c. pg. 15. How can I access charging infrastructure? Brief mention of membership schemes			Section 6. pg. 25. Induction charging standards
3	IET Code of Practice for Electric Vehicle Charging Equipment Installation		Sections 3.1.2 & 3.2 & 10 pg. 53. Involving the DNO (form in annex B pg. 57 for DNO notification)		Section 3.8. pg. 13. Traffic management order Section 7.3.4. buried cables	Section 2.4. pg. 8. Socket-outlets and charging cables Section 3.2. pg. 11. Design guides for determining supply capacity Section 4.4. pg. 18. Standards for disabled users. Section 5.1. pg. 23. General electrical standards Section 5.2. pg. 23. Earthing. Section 5.3. pg. 25. General requirements. Section 5.4. pg. 26. Shock protection Section 5.5. pg. 26. RCDs. Section 5.6. pg. 27. Requirements for isolation and switching Section 5.7. pg. 28. IP ratings Section 6. pg. 29. Domestic installation requirements. Section 7. pg. 37. On-street installations Section 8. pg. 45. commercial installations Section 9. pg. 51. Inspection Annex A pg. 55. Types of connectors					Section 4.1 & 4.2. pg. 15. location guidance for chargepoints including guidance for those in the vicinity of petrol filling stations. Guidance on chargepoint layout, but not detail on where to site the chargeposts	Greatest level of detail on installation, testing and required adherence to standards. Annex B. Pg. 57. Example DNO notification form. Annexes C-E. Pg. 5. (Electrician's Installation checklists
4	RAC: Foundation: Going Green				Introduction. pg. iv. EU emissions targets pg. vi. Local transport policy & local policy levers	Section 2.3.3. pg. 19. Brief mention of standard connector type		Exec summary. pg. xviii. Mention of PIP scheme Section 1. pg. 2. PIP background		Section 2.3.7 pg. 25. Planning measures CIL	Section 2.3.3. pg. 19. Data on locations of existing and future charging posts	Section 1. pg. 1. Offers the best coverage of the powers available to local authorities Section 2. pg2. Evidence of powers being used and real data on charge-point installation
5	SMMT Electric Car Guide	Section 2. pg. 17. Provides high level explanation of 'infrastructure and charging' + glossary of terms				Section 1.20. pg. 14. Brief mention of development of EU standards for plugs and sockets		Section 2. pg. 8. Section 5.2. pg. 29. High level description of PIP and a mention of how lessons learnt will inform policy				Document looks at most aspects of EVs) not specifically infrastructure). Document covers the operational, financial, environmental and technical considerations of EVs
6	Green Book on publicly accessible charging infrastructures for "low-carbon" vehicles	Part 1. pg. 14. Gives introduction (general and technical)	Intro. e. pg. 11. Role of DNOs in in enabling interoperability			Intro. 3. pg. 10. Types (speeds) of recharging and mention of socket-outlet types pg. 17. Battery recycling directive pg. 19. Modes of charging. pg. 20. Types of sockets			pg. 13. Concessions/PPP/SPL pg. 27. Electricity supply and transaction management prtII.c. pg. 41. Charging prices prtII.e. pgs. 45-52. Economic models for intervention evaluated against criteria	pg. 12. Infomation on cost of posts (in France) PartII. B. pg. 38. Set up cost and factors. Operational costs	pg. 25. guidance on how to lay out up to 12 charging spaces	Documents covers a mix of topics including figures on the deployment of EV chargeposts in French cities, ownership models and technical considerations, transaction management, chargepost demand profiles by location (figure 14)
7	TfL: Guidance for implementation of electric vehicle charging infrastructure	Section 2. pg. 7. Types of charging post installation	Section 1.5.1. pg. 5. High level diagram of implementation phases Section 4.7. pg. 36. Consultation. Section 5.2. pg. 41. Installation tasks Section 5.2.5-5.2.7. Responsibilities of installation [for each stakeholder]	Section 4.10. pg. 38. Timescales	Section 1.4. pg. 2. London policies Section 4.3. pg. 28. Planning legislation Section 4.4. pg. 30. Parking controls Section 4.6. pg. 35. Impact on streetscape Section 4.7. pg. 36. Traffic Management Orders Section 4.8. pg. 37. Enforcement of charging bays	Section 2.6.4-2.6.9. pg. 14. Connection cable and plug types Section 2.6.10-2.6.13. pg. 15. Types of charging (and charge speeds) Section 4.4.3. pg. 30. Signage	Section 3.4. pg. 22. Procurement	Section.1.4.6. pg. 3. £20m commitment (PIP scheme) mentioned	Section 2.5. pg. 11. Chargepoint operation. Restricted vs. open Section 2.2.7-2.2.12. pg. 19. Operational costs of open vs. restricted chargepoints Section 4.4.5. pg. 31. Parking permits and methods of payment Section 7.2.7. pg. 48. Provision of access key, cable and user instructions	Section 3.2. pg. 17- Typical costs Section 3.2. (tables 3.1 & 3.2) pg. 17. Cost of infrastructure Section 3.2.3. Factors which affect capital and installation costs Table 3.3 pg. 18. Cost breakdown Section 3.3. pg. 21. Funding options	Section 4.5. pg. 32. guidance and diagrams on the layout of on- and off-street chargepoint bays Section 4.2. pg. 24. chargepoint location, including diagrams	Section 6. pg. 45. Marketing, Branding and publicity Section 7. pg. 48. Administration Appendix A. Design checklist Appendix B. Service level agreement pro-forma Appendix E- EVCP partnership working group. London boroughs only
8	FTS Electric vehicle charging infrastructure tool kit	Throughout document	Section 10.5. What stakeholders should be involved? Section 12.1. pg. 95. Work package breakdown (step-by-step guide) Section pg. 104. Installation process	Section 11.10. pg. 90. High level timing plan Figure 37. pg. 112. Gantt chart	Section 12.2. pg. 111. timescales relating to planning applications and TROs	Section 11.2. pg. 59. Chargers, standards of sockets, modes of charging Section 11.4.2. pg62. Further info on plugs and sockets Section 11.7. pg. 80. Signage	Section 11.1. pg. 57. Brief considerations for procurement process Section 12.1.2. pg. 99. Guidance on procurement but not details of existing frameworks	Section 10.1. pg. 14. Mention of NE England PIP Section 10.2. pg. 18. PIP funding and Manchester PIP financing Section 10.3. pg. 29. NE England & East England PIP lessons learnt on chargepost placement	**Section 10.4. pg. 31. Issues around business models and Belgian case study** **Section 11.4.5. pg. 72. Metering**	Section 10.2. pg. 15. Pros and Cons of various funding types Section 10.2. pg. 18. PIP as funding and other example of funding streams Section 11.9. pg. 87. Cost infomation	Sections 10.3. pg.20. Location of charge points- factors to consider Section 11.5. pg.74. Choosing sites	Appendix 3 pg. 137. RASIC chart (Responsible, Approves, Supports, Inputs, Consults)

Table 3.2. Summary table of existing guidance documents. Table published 02 November 2012.

3.3 Policy documents

There is a number of policy documents that refer to plug-in vehicles and these are listed below for context and completeness.

Document	Published date	Available	Notes
2011 White Paper "Creating Growth, Cutting Carbon: Making Sustainable transport Happen"	January 2011	http://assets.dft.gov.uk/publications/making-sustainable-local-transport-happen/making-sustainable-local-transport-happen-whitepaper.pdf	Paper from the Department for Transport. Includes the Government's stance on promoting sustainable transport and decentralising power to simplify transport planning.
Planning Policy guidance 13:Transport from DCLG introduces the idea of EVCPs as permitted development	March 2001	http://www.communities.gov.uk/documents/planningandbuilding/pdf/1758358.pdf	Superseded by the National Planning Policy Framework from DCLG.
National Planning Policy Framework , DCLG	March 2012	http://www.communities.gov.uk/documents/planningandbuilding/pdf/2116950.pdf	Paragraph 35, Page 10 is relevant to recharging infrastructure. See OLEV 'Planning' factsheet.
Making the connection: The Plug-In Vehicle Infrastructure Strategy	June 2011	http://assets.dft.gov.uk/publications/making-the-connection-the-plug-in-vehicle-infrastructure-strategy/plug-in-vehicle-infrastructure-strategy.pdf	The Government Strategy on plug-in vehicle infrastructure, setting out how the Government is ensuring plug-in vehicles are an attractive choice for the motorist, making it easier for individuals to charge at home, at night, after the evening peak in electricity demand and making it easy for individuals to locate and use public chargepoints.
Mayor of London: Electric Vehicle Delivery Plan for London	May 2009	http://www.london.gov.uk/sites/default/files/uploads/electric-vehicles-plan.pdf	Document setting out the Mayor of London's commitment towards promoting the use of electric vehicles. The plan is made up of three elements; Infrastructure, Vehicles and Incentives, Marketing & Communications.
London's Electric Vehicle Infrastructure Strategy	December 2009	https://www.sourcelondon.net/sites/default/files/draft%20Electric%20Vehicle%20Infrastructure%20Strategy.pdf	Document setting out the planned delivery of recharging infrastructure across London.

Table 3.3: Relevant planning documents

3.4 Other documents and sources of information

Several documents were identified by liaising with the eight UK PIPs and local authorities. These documents are listed below for reference, however these were not considered to be specific guidance documents for local authorities wishing to install recharging infrastructure. The *City casebook (9)* is listed in this table as it does not sufficiently cover the criteria set out in section 1.

Document	Available	Notes
Automotive Council's New Automotive Innovation and Growth Team's product development roadmap	www.bis.gov.uk/file51511.pdf	
European Roadmap Electrification of Road Transport	http://www.green-cars-initiative.eu/public/documents/Roadmap%20Electrification.pdf/view	High level macro view of EV technology and the future of EVs
Impact analysis for market uptake scenarios and policy implications	http://ec.europa.eu/clima/policies/transport/vehicles/docs/d5_en.pdf	
Material from suppliers	Available from various supplier websites	Chargepoint manufactures, have technical information available from their respective websites.
TfL tender document from source London	Available from TfL	
EV City Casebook	http://www.iea.org/evi/EVCityCasebook.pdf	Good coverage of case studies.

Table 3.4: Other relevant documents

4 Commentary

4.1 Introduction

The previous section indicated the coverage of the available guidance documents. This section summarises the coverage of each criteria, explores the gaps in the available guidance and comments on other useful topics presented in the guidance.

4.2 Discussion of available guidance

Several topics are sufficiently covered in many of the guidance documents, such as the existing technological standards and introductory content for readers who are new to plug-in vehicle recharging infrastructure.

Other topics, including the relevant planning regulations and costs of installation are covered sufficiently only in selected documents (*TfL (7)*). Likewise, sufficient information on business models is only available in the *Green Book (6)* and *ENEVATE toolkit (8)*. Coverage of these topics is therefore spread across several documents.

Below is a summary of how sufficiently each of the criteria set out in section 1 has been covered.

High level explanations of key areas for people new to plug-in vehicle recharging - this is well covered in a number of documents. The *SMMT (5)* guide provides a good overview for a reader who is new to electric vehicles. The *BEAMA (2)* document provides a more technical introduction which includes modes of charging, plugs/sockets and charging applications.

The key stages of chargepoint installation and key actions and decisions at each stage, including internal and external stakeholder involvement - this is well covered, but only in selected documents. The *ENEVATE toolkit (8)* provides a valuable work package breakdown (section 12.1. Pg.95). The *TfL (7)* document also details the responsibilities of each stakeholder, at each stage in the process.

A template project plan with suggested timescales for each stage - *IET: roadmap (1), TfL (7)* and *ENEVATE toolkit (8)* documents all give indications of the timescales for installation. However the available guidance does not provide a detailed breakdown of the timescales within the ‘installation’ stage.

The necessary national and local regulation requirements (such as relevant planning regulations) - this is covered extensively in *TfL (7)* including Traffic Management Orders and planning legislation. For coverage on local policy levers see section 4.4.1.

List of existing and development technological standards - this is extensively covered in several documents. The greatest level of detail is provided in the *IET: CoP (3)* document.

Available procurement frameworks for Local Authorities - although some of the available guidance covers procurement, there is not a comprehensive list of the

frameworks available to local authorities. The OLEV procurement factsheet provides more information on this.

PIP case studies and lessons learned - the *ENEVATE toolkit (8)* provides the greatest available selection of lessons learnt from the PIP scheme. However this could be usefully collated into a single document, particularly at the end of the programme to summarise the experience and the lessons learned.

Information on business models, including monitoring - although the *Green Book (6)* and *ENEVATE toolkit (8)* both provide critiques of various commercial arrangements (e.g. SPVs, PPPs, Concession arrangements) the guidance does not sufficiently cover the commercial implications of membership charging arrangements.

Cost information and funding sources - a detailed cost breakdown is provided in the *TfL (7)* document, also covered in the same document are potential funding streams. Capital and operational costs associate with chargepoints is also covered in *IET: roadmap (1)*.

Locations and layout of charge-points – a location (selection of sites) and layout (arrangement and set-up of charging posts) are both covered in a number of the available documents. *IET: roadmap (1)* and *ENEVATE toolkit (8)* documents provide good coverage of factors to consider when locating chargepoints. *TfL (7)* also provides guidance on the layout of chargepoints.

4.3 OLEV Factsheets

OLEV has produced a selection of factsheets which cover a range of topics:

Traffic signs - the factsheet provides guidance on the regulations and recommended presentation of signage for electric vehicle chargepoints. *IET: roadmap (1)* document also covers this topic and refers to the DfT website for further details. The *TfL (7)* document also provides examples on pg.30. Several documents provide further guidance on signage including the *Traffic Sign Manual 2008* and *The Traffic Signs (Amendment) (No.2) Regulations and General Directions 2011* both available from the DfT website.

Permitted Development Rights - this factsheet explains the Government's decision to introduce Permitted Development Rights for chargepoints. The *IET: roadmap (1)* document states that planning permission is not required for chargepoints.

Planning - extract from the *National Planning Policy Framework*, this document is freely available (see section 3.3).

Equality Act and **Height of charge posts -** two factsheets detailing the height of chargepoint requirements for disabled users. The factsheets refer to the Equality Act 2010 and the inclusive mobility guidance document available from the DfT. The *TfL (7)* document briefly covers the angle and height of chargeposts for disabled users (Section 4.5.3. pg. 33). *IET: roadmap (1)* (section 5.16, pg.87) also states the recommended height for operating sockets and controls.

National Chargepoint Registry - *IET: roadmap (1)* and the *RAC (4)* report both make mention of the National Chargepoint Registry, however the factsheet provides a greater level of detail.

Procurement - although this factsheet has been written specifically for the PIPs, it does set out the available frameworks for purchasing charging posts. This is not collated in any of the other available guidance documents.

Overall, the factsheet topics are generally covered in the range of guidance documents, although not always to the same level of detail. The factsheets are much easier to update, and it is suggested that the factsheets should be readily available (e.g. on the OLEV website) as an up to date source of information for key topics.

4.4 Other topics

Several topics which have not been assessed in Table 3.2 were identified through the study. Although not one of the eight criteria against which the documents were reviewed, these topics may be of use to local authorities who are looking to install charging infrastructure and so these are set out below.

4.4.1 Local Authority levers

RAC (4) has the most detail on local authority statutory powers and regulations:

- Environmental and planning powers - Section 1.
- Transport powers - Section 1.3.
- Air quality - Section 1.4.
- Provides information on existing chargepoint installations - Section 2.3.3.
- Summary -Table 3.3.

Much of this is reiterated in the *ENEVATE toolkit (8)* (section 10.7, pg.47) and *IET: roadmap (1)* document (section 3.5).

4.4.2 Interoperability

Interoperability is one of the key issues raised throughout most of the available guidance. Local authorities can have a role to play in ensuring interoperability, both in the selection of connectors and payment methods.

Enforcing the adoption of standards is one aspect of ensuring interoperability, this is sufficiently covered in several documents.

Case study 3 of *IET: roadmap (1)* document (section 3.6) has good coverage of solutions to technical, commercial and other issues. Also raised is the Manchester Electric Car Company and their proposed contactless payment method.

The Open Charge Point Protocol is covered both in the *IET: roadmap (1)* document (section 3.6) and the *ENEVATE toolkit (8)* (section 11.7, pg. 78).

4.4.3 Integration with other transport modes

IET: roadmap (1) Case study 6 and Section 3.7 provides the best information on modal integration. Section 3.8 of the same document also discusses car clubs.

4.4.4 Electric cycles/scooters

There is relatively little coverage throughout the available documentation specifically aimed at electric cycles and scooters. *BEAMA (2)* section B: Charging Systems for Electric Motorcycles and *IET: roadmap (1)* (section 3.9) does provide some guidance.

4.4.5 Administration and marketing

The *TfL (7)* document has good coverage of the administration (Section 7) and considerations of marketing/branding (Section 6). The TfL guidance on administration covers the arrangement between a borough and chargepoint supplier (the Service Level Agreement), it also covers administration of the end users (application to a scheme and issuing of cables, tags, etc.).

Section 13 of the *ENEVATE toolkit (8)* gives guidance on back office operation and management. Sections 11 & 12.3 of the same document give guidance on useful project team members.

4.4.6 Case studies

City casebook (9) (section 0) provides a good overall look at plug-in vehicles in the global market. The *ENEVATE toolkit (8)* provides useful case studies in context, and the best coverage of lessons learnt from the Plugged-In Places programme.

4.4.7 Other useful information

Several available documents also provide checklists, forms and step-by-step guides, which could be useful to local authorities:

IET: roadmap (1) (section 3.14 pg. 56: Implementation dos, don'ts and risks) - this provides three pages of useful overall advice to local authorities in implementing recharging infrastructure.

Green Book (6):

- Figure 14 (pg. 356) gives a useful 'load curve'
- Table 6 pg. 98 - example risk register for project
- Appendix 2 provides example contracts, Appendix 4 a site inspection form, Appendix 5 a chargepost specification
- Section 12.1 - work package breakdown (a step-by-step guide)

IET: CoP (3): extensive, well-structured and contains checklists, aimed at electricians. Annexes C to E also contain useful checklists and risk assessments which a local authority may wish to ask their installer to fill out.

5 Conclusion

This report has provided a gap analysis of existing guides and information available to assist local authorities in installing electric vehicle recharging infrastructure. The report has reviewed nine pieces of guidance from various authors.

The overall conclusion is that most subjects that a local authority would need to know about when considering the installation of plug-in vehicle recharging infrastructure are covered by the guidance that is currently available, albeit some of it at a relatively high cost. Also, no one document covers all aspects, and so a number of documents is likely to be relevant. Perhaps the bigger question is how interested parties know that such guidance is available? And how do they know which guidance provides the most up to date information in the rapidly changing world of plug-in vehicles?

Making the review of the guidance in this report available to local authorities would help to point them in the right direction. It is suggested that this analysis should be reviewed on a regular basis to ensure that it is kept up to date by including new documents that are produced, as well as changes in standards and regulations and technological changes (e.g. new connectors, induction charging etc).

In the coming months, the document likely to be of most interest to local authorities would be one summarising the PIP programme experience and the lessons learnt. This should report on the whole PIP programme, what was anticipated at the start, what actually happened, why things changed, what have been the most positive outcomes, what would be done differently, and most importantly, what are the learnings for local authorities.

Such a document on the PIP programme, together with this review of the guidance and the PIP factsheets (all being publicly available on the OLEV website) would provide local authorities with the guidance that they need for installing plug-in vehicle recharging infrastructure.