![Trees & Design Action Group logo]

Roads to Places – integrating green infrastructure for highways
17.02.2016 workshop notes

Image: Robert Huxford

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About the workshop

The "Roads to Places – integrating green infrastructure for highways" took place on 17 February 2016 at Nottingham Royal Concert Hall from 9.00 to 4.00pm.

The workshop was organised by the Trees and Design Action Group (TDAG), with the support of the 8Cs Highway Design Guide Steering Group's Chair and thanks to the help of:

- Nottingham City Council who provided a venue free of charge.
- Event sponsor including Carbon Gold (www.carbongold.com), Geosynthetics (www.geosyn.co.uk), GreenBlue Urban (http://greenblueurban.com) and InfraGreen Solutions (http://Infragreen-solutions.com), who covered costs associated with food and refreshments, as well as provision of one hardcopy of *Trees in Hard Landscapes: A Guide for Delivery* for each delegate.

Local context and workshop objectives

- The 6Cs Highways Design Guide was originally published in 2004 and deals with highways and transport infrastructure for new developments in areas for which the 6Cs authorities are the highway authority. Despite numerous benefits since publication, it has become apparent in recent years that, while there have been some attempts to reflect changes to design philosophy, the guide now falls short of embracing modern design principles and design processes.
- The emerging 8Cs' (now including Blackpool Council and Cheshire East) vision and mission statement highlights the importance of '*working together to create healthy, safe and more inclusive environments*'. This vision seeks to encourage collaborative working with all stakeholders involved in the way residential developments are designed and built, including county and local planning departments, public health authorities, major house builders and developers, and special interests groups.
- The 8Cs aim is to deliver a new design guide that establishes a clear connection with national guidance such as MfS and MfS2, is fit-for-purpose and meets the 8Cs needs.

The Draft 8Cs guide is designed around key principles, which TDAG whole-heartedly endorses, such as:

- Collaborative design.
- Prioritising walking, cycling and other forms of sustainable transport.
- Supporting innovations.
- Delivering welcoming, inclusive, resilient and safe places.

TDAG's objective in organising a workshop was to **facilitate in informed cross-disciplinary discussion on how to make the most of trees and wider contemporary green infrastructure solutions to ensure the 8Cs meets its needs and ambitions for highway design**.

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Participants

49 attendees took part, from all 8 local authorities involved in the 8Cs, as well as from developers working locally. A good mix of professional backgrounds and perspectives were represented:

Highways	16	33%	(Transport planning, Highways Design, development, safety, maintenance etc)
Arboriculture/GI	11	22%	
Planning	5	10%	(Development control, policy etc)
Urban Design	6	12%	
Landscape Design	4	8%	
Housebuilder/developer	3	6%	
Conservation	1	2%	(Building and development conservation)
Economic Growth	1	2%	
Engineering students	2	4%	
	49		

Image: Robert Huxford

About TDAG and the facilitation team

Trees touch every part of our lives – from air and water quality, temperature comfort, flood prevention to public health, wellbeing, safety, commerce and property values or road safety… These are the foundations of healthy, vibrant, resilient places. Enhancing collaboration and collective expertise on the use of trees to build a legacy of great 21st century cities is behind everything TDAG does.

Established in 2007 as a not-for-profit and apolitical collaborative forum, TDAG incorporated as a charitable trust in 2013. Its membership, online publications and information are free. This approach enables TDAG to assimilate ideas and knowledge independently of organisational hierarchy, profit or commercial interests. See www.tdag.org.uk for more details.

The workshop was facilitated by the following team of TDAG members:

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- Robert Huxford (Chair), Urban Design group
- Jeremy Barrell, Barrell Consulting
- Anne Jaluzot, Green Infrastructure Planning
- Paul Morris, Civic Engineers
- Keith Sacre, Barcham Trees

Image: Robert Huxford

Delegates' key take-away points for the 8Cs

Establishing a robust framework for joined-up design
Topics/headings likely to be covered in the Guide where trees should be mentioned/referenced:
- Drainage and SuDS
- Traffic Calming – including how to use trees to reduce forward visibility and for horizontal deflection
- Placemaking, public realm, environmental quality, urban design
- Health and wellbeing
- Education and innovation
- Materials and construction
- Street Lighting and CCTV
- Visibility envelopes and Junction design
- Wayfinding and legibility
- Standards/performance requirement – eg. canopy cover (S106 if not met on site)
- Management and maintenance
- Commuted sums
- Decision-making/Collaborative design process:
    - Team approach: on the local authority side, especially btw development management (planning) & highways; on the development team side: encouraging joined-up approach to access, layout, drainage, servicing and landscape (incl. trees).
    - Early consultation: incl. tree specialist
    - Clarity: key expectation all laid out at pre-application meeting

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Securing good tree-related practice

Key tree-related **principles/objectives[1]** to address:

- TRUX: Tree Urban Canopy Standards. Having trees in development should be the normal and expected thing to happen. A range of tree densities or cover densities can be specified – from continuous canopies along a street, through occasional trees, which will grow into much admired parts of the street scene (S106 contribution if not complied with onsite?). Coupled with benefits matrix.
- Design choices made for the integration of the tree should:
    - Be context-sensitive
    - Ensure the whole life benefits of trees will be realized
    - Ensure the whole life benefits of the surrounding infrastructure will be realised
    - Shape and factor-in underground constraints – seek space-efficient integration with utilities
    - Minimise maintenance needs
    - Maximise retention of existing trees
    - Select tree species that are adequate for the site while also contributing to the resilience (diversity) of the wider tree population
- Commuted sums for highways adoption and ring fencing of ALL resulting tree-related income for tree management and maintenance.
- Informed/joined-up process: early arboriculturalist involvement

Key points to be developed into or take into accounts for **design criteria**:

- Reference relevant (not DMRB) best practice documents effectively
- Planting design integrated into the detailed design of the street
    - Rooting environment design
    - Integration with utilities
    - Integration with footways and carriageway
    - Integration with drainage and storm water storage management
    - Integration with carparking and vehicle speed management
    - Integration with micro-climate management
    - Tree Protection
- Plan view/Location criteria – how streets can be incorporated into a street
    - Spacings
    - Positioning in the carriageway, kerb, verge, front gardens
- Special instances: visibility splays (bearing in mind TRL 661 and LTN 1/11 para 2.8 to 2.11)
- On-going maintenance and adoption

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[1] Observation from the TDAG team: 'Design principles' and 'Design Criteria' reflect the terminology currently used in the Draft 8Cs Guide, however, the term 'Design Objective' (rather than 'Principles') would seem more appropriate.

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Key other considerations

At the end of the workshop, when asked to share one final thought/point to be taken into account in the production of the revised 8Cs Design Guide, the following points were put forward:

1. Leadership is essential – who's championing the 8Cs Guide, and the visions for holistic design it seeks to deliver?

2. Placemaking needs to be a "golden thread" throughout the 8Cs Guide.

3. Make extensive use of images and diagrams. A picture is worth a thousands words! The pictures however need to genuinely illustrate what they are supposed to illustrate. Don't use photos that show one aspect of good practice but several other bad practices.

4. Use examples – they are convincing.

5. Move away from framing the inclusion of trees as problem/cost. Instead use as a starting point that trees are proven asset delivering environmental and other services. This should translate, among other things, in how commuted sums are presented, where both costs and typical benefits for small, medium and large trees are outlined.

6. Ensure space for tree planting is explicitly built into the standards requirements driving the design process (rather than minimum highways dimension leaving trees as an 'afterthought' having to be squeezed in).

7. Take/seek holistic approaches to funding – who are the beneficiaries and how can they contribute? (Developers through commuted sums, health/social care services, consider private management/residents management options).

8. Importance of scale – clear process leading to good outcomes not just for large developments, but also for smaller schemes (the 8Cs Guide need to offer practical solutions/processes for both rather than focus on large development only).

9. Developers need knowledge upfront of what is expected. Difficulties are caused if urban design, highway and planning sections advise different things, and if further in the development process, the requirement to design around utilities, or other factors becomes dominant.

10. Sensible approach to commuted sums – First: double check how the math has been done; Second: be explicit on component parts of the formula; Third: make the supporting evidence readily available (rather than 'on request') - so that while the formula might stay, figures themselves can easily be reviewed/updated.

11. Community involvement should be factored in.

Points raised by speakers in presentations

Back to basics: Reasons for integrating trees with highways design and a few fundamentals about tree costs

Jeremy Barrell, Barrell Consulting

- A striking contrast: View from the Governor's office in Sacramento, California: buildings among trees VS a bird's eye view of London (or many other UK cities) where we see a few trees among buildings.

- Erosion of green assets: large trees removed (as they outgrow their location/cause damage), but not replaced 10-15 years onward despite a policy commitment to doing so.

- Second-rate development (lots of green blobs on plans which don't materialize) – only legacy is by names "Sycamore Road", "Woodgrove estate"…

- Why does it matter?
  - The impact of climate change on our towns and cities and the wider landscape is already strongly felt. The contribution trees make to contribution to micro-climate is obvious (even sheep know this!). Their impact is significant on temperature (perhaps not an issues as pressing for the UK as it is for the UK), as well on stormwater runoff (a very serious challenge for UK towns and cities and the wider UK landscapes).
  - In the EU, the UK is wrestling with some of the most serious air quality problems – the impact on early deaths is significant, and so are compliance costs. Trees can be very effective at absorbing gaseous airborne pollutants (such as NOx) and trapping particulates (such as PM 10 & 2.5).
  - Trees offer one of the simplest expedient to provide contact with nature in the built environment – something seemingly very mundane, which however has deep implication on public health. A growing body of research is demonstrating the impact access to trees have on stress, mental health, healing and recovery time, occurrences of violent behaviour, etc.

- What's in the way and turns trees into a promise (eg. replacement after removal; or green blobs on new development) that doesn't materialize? Raft of reasons, among which:
  - Farrell Review: highlight the lack of/ importance of joined-up, cross-disciplinary approach to make places that work rather than siloed mentality.
  - The way 'Vision zero' ('forgiving' roads) has been implemented in continental Europe, especially France is to remove the hazard rather than the source of the danger. There has been systematic felling of avenues of trees to prevent occurrences of drivers going at excessive speed getting into a fatal collision) provides an illustration of the disastrous consequences of blindly applied single-purpose, approaches. However Vision Zero properly applied is about controlling the speed of vehicles to a level at which, in the event of a

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collision, the people involved will survive without death or long-lasting physical injury. Vision Zero in the UK is highly supportive of tree planting.
- o Lack of flexibility – zero tolerance – strict application of one logic defeats common sense and balanced decision-making. Examples from Sheffield:
  - ▪ Trees at a junction to be removed despite its significance because of minor damage to surfacing. Sparked significant protest from the local community.
  - ▪ Street tree to be removed because of compliance with disable access – alternative solutions and real degree of discrimination not genuinely assessed.
- o Understanding lifecycle of trees and impact on benefits and costs is key.
  - ▪ Trees require important upfront costs (planting, young tree maintenance). If right tree/right place principle has been followed, routine maintenance costs are low.
  - ▪ Contrary to other highways assets, the value of trees, as measured through the benefits they bring, increase overtime.
  - ▪ Tools such as i-Tree enable us today to quantify some of these benefits. Example of returns of a non-pollarded large tree like a London Plane: benefits out-value costs by over £120K. The benefits calculation underpinning this cost-benefit analysis only accounts for air pollution removal and carbon sequestration benefits. Trees delivered other benefits (environmental & beyond) that are not accounted for here.

- What's in it for highways?
  - o From a traffic management perspective: contribution trees can make to helping drivers recognize their speed (parallax effect), better anticipate/perceive highway geometry (highlight edge of carriageway, bends, crossroads, islands, etc.).
  - o From a retail and economic perspective, the impact of the presence of trees on attractiveness, customer dwell time, customer retention is starting to be well documented through both anecdotal evidence and comprehensive academic research (eg. Kathleen Wolf work on consumer environments)
  - o Example of Kingsway: 1951, post WW2, difficult times/scarcity of resources (rationing, etc.). Still the vision/foresight was there to undertake ambitious planting. Those who made this inspired decision are gone, and we get the benefits…. ie:
  - o What **legacy** do we want to create?

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Back to basics: Taking the principles of *Manual for Streets* and *Manual for Streets 2* forward, integrating contemporary shifts from grey-to-green infrastructure

Paul Morris, Civic Engineers

- Traffic engineering has moved from Straight forward, Intuitive, Normal, Low Stress, Civilised (1800s) to Convoluted, Managed, Engineered, Stressful, Vehicle dominated (1950s-present).

- Reducing the risk of chance interaction through segregation results in increased hazard as vehicles tend to move more quickly and an increased risk of serious injury if interaction does occur as drivers are not engaged with their surroundings. The measures introduced to manage and control movements and prevent intuitive behaviour end up creating solutions that are worse than the problem they were meant to address.

- Highway capacity should be measured in terms of the movement of people, not the movement of vehicles, as such the most effective way to create capacity is to encourage people to walk and cycle.

- The fundamental principles of *Manual for Streets* are i) the creation of better places and ii) encouraging and providing for people to walk and cycle (and use public transport) the two are inextricably linked and create a virtuous circle as the more attractive our streets are the more people will want to walk and cycle, this results in a more active environment, that feels safer, and a stronger community that will behave in a more civilised way and take better care of their streets= better places.

- Engineers have a key role to play in enabling highways to become better places. Keeping up with contemporary knowledge, and embracing engineering as a practice combining science and art is at the core of CIHT/ICE codes of practice.

- Keeping up with contemporary knowledge, and embracing engineering as a practice combining science and art is at the core of CIHT/ICE codes of practice.

- Some examples? Van Gogh Walk (Lambeth), Leonard Circus (Hackney), New Road (Brighton), Park Lane (Poynton), Hackbridge High Street (Sutton) – in virtually in all, trees play an important role.

- Traditional approaches to highways design typically translates into the following:
  o Pedestrian and vehicular movement and activity is segregated.
  o Mechanisation and management required to ensure people (drivers and pedestrians) behave as the engineer intended and avoid chance interaction.
  o Barriers provided to control and cajole pedestrians (often preventing intuitive, normal behaviour).
  o Signage and lining is required to tell people how to behave.
  o Safe so long as everyone behaves as the engineer intended.
  o Vehicles & paraphernalia dominate the streetscape and marginalises other activities.

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- Contemporary approaches to designing streets means:
  - Street design encourages reduced speeds and increased user awareness through measures such as:
    - Contextual rather than standardised design
    - Reduced separation
    - Green Infrastructure and street trees
    - A more human scale.
  - Reduced speeds and increased awareness allow negotiated movement and reduces the requirements for control and mechanisation.
  - Intuitive, normal movements can occur along desire lines; crossing points etc. do not have to be strictly prescribed.
  - Generally movements will be slower (both at peak and off peak times) but continuous.
  - Safe so long as people behave normally.
  - Results in a more attractive environment where people want to spend time

- How do trees contribute?
  - *Local Transport Note 1/11*[2] – definition of 'shared space'
  - Role of trees in facilitating speed reduction explicitly recognized – paragraphs 6.8 to 6.11, including suggestion that **trees may be positioned in the middle of the road**.
  - TRL 661[3] – Evidence base underpinning *Manual for Streets* (quoted in figure 7.16 of MfS2) demonstrates direct relationship between forward visibility and speed. Appropriately positioned trees can contribute to reduced visibility
  - Examples – trees used without any other paraphernalia to narrow carriageway and/or reduce forward visibility: Leonard Circus (Hackney), Dutch examples, Altrincham (Trafford): where recent improvements had included resurfacing with granite paving but it was the planting of trees that brought the space to life (as a place) and provided it with the structure needed for movement.

Innovative below-ground designs with trees

Anne Jaluzot, Green Infrastructure Planning

All the benefits previously discussed can only be accrued if the tree can both grow healthily and without compromising the other surrounding infrastructure. The successful delivery of above-ground aspiration is largely determined by below-ground design.

Overview of the seemingly opposite highways and the tree needs ('Setting the brief' diagram p89 of *Trees in Hard Landscapes: A Guide for Delivery*).

How do we achieve this in practical terms?

- Starting point is to ensure there IS space for trees:

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[2] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3873/ltn-1-11.pdf
[3] Available at: http://www.trl.co.uk/reports-publications/report/?reportid=6197

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- o By rationalising below-ground space use by utilities. NJUG Guidelines Volume 1 recommends common utility enclosure, or, at a minima, shared trenches. Made into planning condition early on in the development process.
  - o By securing good understanding of where existing utilities are (in retrofit projects) – requiring survey-proof of deliverability of proposed planting (like the LB of Southward does), referring to PAS 128 to define the standard of investigation to be adhered to.
  - o By pursuing adherence to industry good practice standards – eg. WRc Plc's latest (ie: 7th) edition of *Sewers for Adoption* no longer mandates minimum distances between trees and sewers, but simply requires 'adequate protective measures' (see *Trees in Hard Landscapes* p115 for more details)
  - o -!- Approach to integration can go much further, to secure not simply conflict-free cohabitation, but also mutually supportive functionality (see below)

- Looking into more details at the environment created for the tree to grow – although widely used, tree "pit"…might not be the best term. Need for clarity on what exactly is being discussed/specified: surface opening, tree planting hole, wider root-growing environment, other infrastructure included to support tree growth (like an anchoring or a watering system)…

- Design of the root-growing environment is key:
  - o Continuous trench provide the most (cost) effective way (rather than individual 'pits!).
  - o Use load bearing growing media where load bearing capacity is required – wide ranging solutions now available, each suitable to different contexts/needs:
    - Raft systems
    - Crate systems
    - Structural soil (ie stone/soil mix) - Example of Stockholm's 'Skeleton soil'

    Take notice: most load-bearing growing media also offer the opportunity to use the tree-rooting environment for stormwater runoff management…
  - o Take advantage of the tree & its growing media as a fully functional component of an integrated infrastructure solution…The Swedish example is striking in this respect. Vti (Swedish National Road and Transport Research Institute) has now tested the so-called 'Stockholm skeleton soil' (which is also used outside Stockholm) and approved it for use as sub-grade for any road construction. So, in some suburban projects in Stockholm, the skeleton soil is being used across the whole street profile: it is both a tree growing media, a road substrate, a drainage system… and a means to recycle concrete (as the stone components in the installation sometimes uses recycled concrete blocks from demolition sites), and…. One further innovation in Stockholm is through the introduction of biochar in the skeleton soil installation. Biochar helps with water/nutrient retention and delayed release, as well as with filtering pollutants. Biochar is produced through combustion (pyrolysis) of green waste (both municipal and from residents), and the excess heat produced in that process feeds into the district heating system.

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- To sum up:
  - Design as a holistic thinking process
  - Comprehensive brief for below-ground design
  - Integration with services and drainage strategy (early on!)
  - Demand technical specifications that meets both highways and tree needs

Using existing resources to achieve better specifications

Keith Sacre, Barcham Trees

- Trees often perceived as a problem – what leads to this? Anne talked about creating the 'right place', the second half of the equation to achieve success is to get the 'right tree':
  - Poor species choice – in the past: limited choice of available trees for street planting, different range of constraints of objectives… Times have changed: new constraints, new expectations, but much greater diversity of species available from tree nurseries. Input from tree specialist on right species given the site constraints and design objective is critical (otherwise, aesthetic criteria prevail…and conflicts are likely to occur).
  - Poor nursery stock from lack of specifications – Understanding nursery production techniques to be able to specify a good quality tree that is suitable for the needs of the site is critical. A lot can (and should) be specified when purchasing trees!

- Fundamental question: Is there a DESIRE to include trees? Once the desire to include trees is there, a great amount of technical solutions and of resources are available to make it work:
  - BS 8545 on new planting (see also the Barcham/TDAG *Specification Manual[4]*, which offers a simplified version)
  - BS 5837 on working with existing trees,
  - i-Tree[5] to establish a local quantified evidence-based on the conditions and benefits from the local tree population (see Torbay, London, and other cities). Also being used by design teams working with developers to optimize returns from species choice for their site (see Chobham Manor case study p32 in *Trees in Hard Landscapes: A Guide for Delivery*)

- While single trees matter, it is the whole tree population in a local area (often referred to as the 'urban forest') that collectively delivers benefits: highways (which in cities typically represent about 15-30% of the land area in a town or city) make a significant contribution. Even Highways England (HE) now is working on this - HE Area 1 has conducted an i-Tree assessment of its estate, and is working at tailoring i-Tree to help appraise its new projects.

Creating a successful, joined-up & adequately funded delivery process

Jeremy / Robert / Anne and delegates

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[4] Available from: http://www.barchampro.co.uk/specification-manual
[5] For more information, visit: www.treeconomics.co.uk

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- Blinkered, siloed approaches don't work – the outcome is an awkward mis-match, very costly to fix, and often very costly to operate within.

- Collaboration is the best way forward, particularly in times of austerity. It is necessary to produce the integrated infrastructure and integrated designs that are necessary to meet the full range of people's needs

- Beyond establishing the principle of collaborative working (which is at the heart of the 8Cs revised Guide), establishing some of the specifics about how this collaboration is expected to materialize might be useful: who needs to be involved and when? What information needs to be exchanged and when?

- With this in mind, in *Trees in Hard Landscapes: A Guide for Delivery* (see p13), an attempt was made at mapping this out against the *Local Transport Note 1/08* diagram describing a typical highway scheme process, input and outputs. Perhaps a similar effort, mapping out the lifecycle of highways delivery through development management might help articulate what collaboration means?

- Resourcing long-term maintenance is currently an obstacle to inclusion of trees in highways. While trees in front gardens can seemingly provide an alternative solution, this will inevitably yield less returns (proximity to buildings will require much smaller trees and smaller canopies yield less environmental benefits, co-benefits on supporting highways functions such as traffic calming, etc. will be lost). Options for resourcing long-term maintenance of highways trees include:
  - Highways maintenance budget for routine maintenance (young tree maintenance covered by developer, as part of capital costs) – because trees contribute like other highways asset to making street effective and safe – complemented with:
    - Local resources dedicated to preventative health? (only known precedent is in Merseyside, where the PCT has been funding street tree planting, which represents the largest cost, rather than routine maintenance itself)
    - Ring-fenced uplift in business rate income? (tax increment financing)
  - Commuted sums:
    - What's the logic (or ill-logic) underpinning current trends? Typically in the past, when it came to trees, commuted sums covered only young tree maintenance, or unusual above-standards maintenance costs (Newcastle City Council's approach to commuted sum is a typical/good example[6]). Current trend of requesting commuted sum payment to cover routine maintenance costs for the whole life of the asset implies that rates as a whole are not set high enough – right across the local authority's area – to cover on-going maintenance of basic infrastructure, be this roads, footways, landscaping or trees (in theory, new residents bring in new revenue that should cover for maintenance – while capital costs are supported by the development). Recent court

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[6] See Newcastle City Council's Information Sheet on Section 38 Agreements available at
https://www.newcastle.gov.uk/wwwfileroot/legacy/regen/plantrans/InformationSheet8.pdf

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decisions have not so far challenged this trend (see *Redrow vs Knowlsey MBC[7]).*

- ▪ The LB of Islington/LoTAMB's *Guidance Note on Commuted Sums* (May 2015) offers a worthwhile reading reference[8]: very clear explanation of current interpretation of existing legislation + robust presentation of a defendable calculation method.
- ▪ Even small amounts need to be ring-fenced – rather than get lost in general maintenance budget.
- ▪ The existing 6Cs guide features commuted sums for small/medium/large trees. Transparency on cost calculation methods (what is considered and cost basis for each individual component) is essential for enforcement.
  - o The private streets option avoiding the adoption issue, placing highways assets in a management company, a community interest company (CIC) or charity (trust) – e.g.:
    - ▪ Managing green space and trees – via a Resident Management Company (RMC)
    - ▪ Utilities and trees – via a Multi-Utility Service Company (MUSCo)

Final remarks by Chair

- • Integrated infrastructure and integrated design, that seeks to meet the full range of needs people and the environment should be the objective.
- • Choices made in allocation of highway space are essential in creating streets and places that work – in a residential context, approach to car parking is key. Excellent resource on this: *Space to Park[9]* (from most comprehensive research project ever conducted to-date on residential car parking), by Design for Homes.
- • Once the 8Cs Guide will be available, how will the 8Cs ensure it is used? 8Cs Design Guide 'driving license'?

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[7] A good summary of the case is available at:
http://localgovernmentlawyer.co.uk/index.php?option=com_content&view=article&id=20823%3Ahighway-agreements-adoption-and-liabilities&catid=63%3Aplanning-articles&Itemid=31. The case is also explained in the LB Islington/LoTAMB Guidance Note referenced below.
[8] Available at: http://www.islington.gov.uk/publicrecords/library/Transport-and-infrastructure/Information/Advice-and-information/2015-2016/(2016-01-27)-Commuted-Sum-Guidance-Note.pdf
[9] Available at http://www.spacetopark.org

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APPENDIX: Post-workshop reflection by Chair on possible structure that would suit both the tree other section focusing on specific design components.

General Objectives
Strategic (off-site) – Local (on-site)

Design Criteria
How to do it / what is expected

Integrated design examples
By street character type? Eg:
- Boulevard / Avenue
- Street - continuous tree planting
    - In centre of carriageway
    - At side of carriageway
        - To provide traffic calming
        - To define parking spaces: parallel/angled or 90 degree
    - On kerb
    - In verge
    - In front gardens

- Trees in areas along street where buildings have been set back.

- Occasional trees

- "Place": A straight street with no trees, that connects two squares planted with trees –so that the vista along the street is closed-off by trees (eg. as in Bedfors Place in London between Russell Sq and Bloomsbury Sq)

- Mews... – need to think about how best to incorporate trees into this sort of environment.

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