

Getting it right for trees on streets and highways

Challenges for Existing and New Streets

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Model for a sustainable street?



- Trees
- Waste management
- District heating
- SuDS
- High Quality Environment

Eddington, Cambridge

New Streets: Planning Policy

National Planning Policy Framework

12. Achieving well-designed and beautiful places

136. Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined ⁵³, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.

(53) Unless, in specific cases, there are clear, justifiable and compelling reasons why this would be inappropriate.

New Streets: National Model Design Code

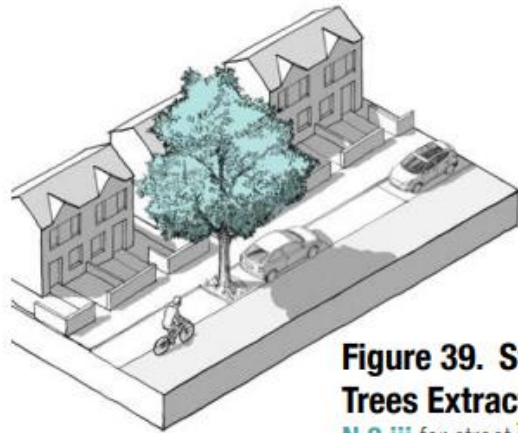


Figure 39. Street Trees Extract See [N.3.iii](#) for street tree design principles

Public Space

	Town centres	Urban neighbourhoods	Suburbs
<p>Primary streets: Designed to take through traffic and public transport See P.1.i Primary Streets</p>	<p>Enclosure Ratio: 1:2 Active Frontage: 30%</p> <p>25-35m</p>	<p>Enclosure Ratio: 1:2 Active Frontage: 10%</p> <p>25-30m</p>	<p>Enclosure Ratio: 1:5 Active Frontage: 10%</p> <p>28-35m</p>
<p>High streets: The focus for local shopping centres, often with traffic but sometimes traffic-free See P.1.i Primary Streets</p>	<p>Enclosure Ratio: 1:1 Active Frontage: 80%</p> <p>15-20m</p>	<p>Enclosure Ratio: 1:1.5 Active Frontage: 70%</p> <p>17-23m</p>	<p>Enclosure Ratio: 1:3 Active Frontage: 60%</p> <p>17-22m</p>
<p>Secondary streets: Taking local traffic into neighbourhoods and often the location of shopping parades and local services such as shops See P.1.ii Local and Secondary Streets</p>	<p>Enclosure Ratio: 1:1 Active Frontage: 50%</p> <p>13-16m</p>	<p>Enclosure Ratio: 1:1 Active Frontage: 30%</p> <p>13-16m</p>	<p>Enclosure Ratio: 1:3 Active Frontage: 20%</p> <p>17-22m</p>
<p>Local streets: Providing vehicle access only to the properties on the street but with through pedestrian and cycle traffic See P.1.ii Local and Secondary Streets</p>	<p>Enclosure Ratio: 1:1 Active Frontage: 30%</p> <p>10-14m</p>	<p>Enclosure Ratio: 1:1 Active Frontage: 0%</p> <p>11-14m</p>	<p>Enclosure Ratio: 1:2.5 Active Frontage: 0%</p> <p>14-18m</p>

Nature

60. All development should enhance the natural as well as the built environment as set out in **Guidance Notes Code Content: Nature**. Most of the guidance will apply to all area types and is summarised below:

i Green infrastructure: New development should contribute towards the creation of a network of green spaces and facilitate access to natural green space where possible. Summary below. **See N.1.i Network of Spaces**

- The requirement for new green space should be based on the government's open space and recreation guidance, that is:
- All housing schemes over 15 dwellings should include a Local Area of Play (LAP).

- All schemes over 200 dwellings should include a Local Equipped Area of Play (LEAP) within 400m.
 - All schemes over 500 dwellings should include a Neighbourhood Equipped Area of Play (NEAP) within 1,000m.
- ii Water and drainage:** Schemes should make the most of waterside locations and address sustainable drainage and flooding, schemes should:
- Make the most of their waterside location, facing onto the water and retaining public access to the water's edge. **See N.2.i Working with Water**

- Integrate sustainable drainage systems into the early stages of design to reduce flood risk and improve water quality, biodiversity and amenity. **See N.2.ii Sustainable Drainage**
- Take account of flood risk and the need for measures to address flood risk. **See N.2.iii Flood Risk**

- iii Biodiversity:** All schemes will be expected to follow national policy by achieving a minimum 10% net gain in biodiversity.
- Schemes should incorporate biodiversity design principles, e.g. creating and enhancing habitats. **See N.3 Biodiversity**
 - All new streets should include street trees to improve streets' popularity and walkability, reduce air pollution and mitigate noise. **See N.3.iii Street Trees**



Figure 38. Biodiversity Design Principles Extract. See **N.3.ii** for a range of biodiversity design principles



Figure 39. Street Trees Extract See **N.3.iii** for street tree design principles

26. Biodiversity Design Principles:

Planting: To provide nectar, nuts, seeds, native vegetation and berries along with trees and shrubs, logs and stones. Native plant and tree species are generally, but not always, better for wildlife.

Existing features: Natural assets such as trees, woodlands, hedges, wetland areas and other natural features need to be retained and enhanced where possible.

Mosaics: A range of elements and structures as small patches of bare ground, tall flower-rich vegetation, or scattered trees and scrub to support a range of species and their life-cycles.

Trees and hedgerows: These should be incorporated into public realm and other open spaces as well as private development where appropriate.

SuDS and rain gardens: These can be designed to provide benefits to nature by including planting and habitat niches.

Ecological network: Masterplans should create an interconnected ecological network that encompasses everything from doorstep spaces and private gardens to the surrounding countryside.

Green roofs & walls: Green facades provide nesting opportunities and food for bees. Habitats can also be created on roofs and are especially beneficial for birds and insects.

Rivers: Restoration techniques create habitat and reduce flood risk.

Creating habitats: Strategies need to be considered for creating natural habitats, for example, through use of trees, wildflowers and ponds as well as bat and bird boxes, bee and bird bricks and hedgehog highways.

Enhancing Habitats: Management of native planting, foraging grounds for bats, feeding grounds and wetlands for birds and forest floor habitats.

Ecological niches: Can create a range of ecological conditions from woodland transition zones to wetland areas and open grassland.



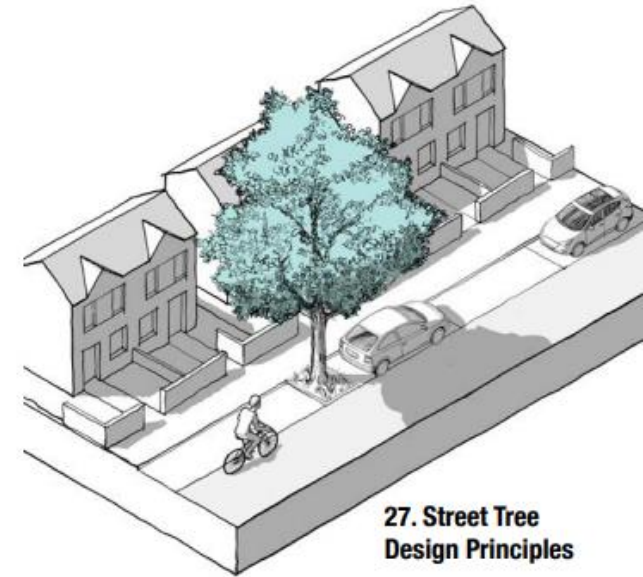
N.3.iii Street Trees

89. Street trees and other landscape features in streetscapes provide habitat, shading, cooling, air quality improvements and carbon sequestration, as well as being a vital component of attractive places. It is the government's intention that all new streets include trees and the Urban Tree Challenge Fund is planting 130,000 urban trees across England. Guidance on installation, management and maintenance is available in the Urban Tree Manual and considerations include:

27. Street Tree Design Principles:

Species: Codes may include a list of species as a palette for use by developers including non-native species which can provide valuable habitat. These help to establish different area types and need to take account of local climate, shape, size, fruit and pollen. A variety of trees provides biodiversity and biosecurity resilience.

Position: Careful positioning to allow space for the mature tree without causing obstruction or interfering with property, infrastructure, street lighting or junction sightlines. This can be on median strips, verges or interspersed with parking bays but only on pavements where the mature tree will not block access.



27. Street Tree Design Principles

Function: Ensure street trees and green infrastructure provide for a range of functions and benefits and sufficient to help improve air quality and reduce noise from the street network.

Services: Coordinating tree planting with utilities providers and service ducts early in the lifetime of a scheme can ensure that trees do not interfere with underground services.

Specification: Care is needed in heavily trafficked areas to avoid the compaction of the soil around the tree. Guidance on tree planting, pits, guards and other technical specifications are widely available and have a significant impact on the tree's survival prospects.

Existing Streets: Sustainable street retrofit

Physical

- Heat waves/heat islands
- Extreme rainfall – downbursts
- Drought / Water shortage
- Utilities chaos
- Footways obstructed with bins
- New services
 - Grey water / district water recycling
 - Upgraded electricity supplies
 - District heating/cooling networks
 - Ground-source heating/cooling
 - Hydrogen distribution?

Humans, Health, Habitats

- Habitats
- Biophilia
- Stress reduction
- Quality of Life

Challenges:

Balanced decisions vs Monomania

Highway authority is part of the local authority – not a separate entity

Judicial Review – Wednesbury Test

Things to balance....

- Statutory duties – Not just the Traffic Management Act Network Management Duty.
- Central Government Policies
- Local authority strategy and policies
- Equality Act – Public Sector Equality Duty
- Common Law – Law of Negligence

- Lack of funding for maintenance

Wednesbury Unreasonableness

direct quote from the court's ruling

ASSOCIATED PROVINCIAL PICTURE HOUSES, LIMITED v. WEDNESBURY CORPORATION. KB 1948
<http://www.bailii.org/ew/cases/EWCA/Civ/1947/1.html>

“

The court is entitled to investigate the action of the local authority with a view to seeing whether they **have taken into account matters which they ought not to take into account,**

or, conversely,

have refused to take into account or neglected to take into account matters which they ought to take into account.

Once that question is answered in favour of the local authority, it may be still possible to say that, although the local authority have kept within the four corners of the matters which they ought to consider, they have nevertheless

come to a conclusion so unreasonable that no reasonable authority could ever have come to it.

Powers – Highways Act 1980

62 General power of improvement.

2.any such authority may, subject to subsection (3) below, carry out, in relation to a highway maintainable at the public expense by them, any work (including the provision of equipment) for the improvement of the highway.

3.
(e)the planting of trees, shrubs and other vegetation and laying out of grass verges

Highways Act 1980 - Myths

Trees within 15 ft of the centre of the carriageway?

141 Restriction on planting of trees etc. in or near carriageway.

(1) Subject to sections 64 and 96 above and section 142 below, no tree or shrub shall be planted in a made-up carriageway, or within 15 feet from the centre of a made-up carriageway.

(2) If a tree or shrub is planted in contravention of this section the highway authority for the highway or, in the case of a highway maintainable by reason of tenure, enclosure or prescription, the person liable to maintain the highway, may by notice given either to the owner or to the occupier of the land in which the tree or shrub is planted require him to remove it within 21 days from the date of service of the notice.

(3) If a person fails to comply with a notice under subsection (2) above he is guilty of an offence and liable to a fine not exceeding level 1 on the standard scale and if the offence is continued after conviction he is guilty of a further offence and liable to a fine not exceeding 50p for each day on which the offence is so continued.

142 Licence to plant trees, shrubs, etc., in a highway.

(1) The highway authority for a highway may by a licence granted under this section permit the occupier or the owner of any premises adjoining the highway to plant and maintain, or to retain and maintain, trees, shrubs, plants or grass in such part of the highway as may be specified in the licence.

Highways Act 1980

64Dual carriageways and roundabouts.

(d)to plant on them trees, shrubs and other vegetation either for ornament or in the interests of safety.

96Powers of highway and local authorities to plant trees, lay out grass verges, etc.

(1)Subject to the provisions of this section, a highway authority may, in a highway maintainable at the public expense by them, plant trees and shrubs and lay out grass verges, and may erect and maintain guards or fences and otherwise do anything expedient for the maintenance or protection of trees, shrubs and grass verges planted or laid out, whether or not by them, in such a highway.

(6)No tree, shrub, grass verge, guard or fence shall be planted, laid out or erected under this section, or, if planted, laid out or erected under this section, allowed to remain, in such a situation as to hinder the reasonable use of the highway by any person entitled to use it, or so as to be a nuisance or injurious to the owner or occupier of premises adjacent to the highway.

Highways Act 1980 – duty to consult

96A Duty of local highway authorities in England to consult before felling street trees

(1) A local highway authority in England must consult members of the public before felling a tree on an urban road (a “street tree”).

(3) The duty under subsection (1) does not apply in a case where—

(a) the street tree has a diameter not exceeding 8 centimetres (measured over the bark, at a point 1.3 metres above ground level),

(b) the authority considers that the street tree is dead,

(d) the authority considers that the street tree is required to be felled in order to comply with—

(i) a duty to make reasonable adjustments in the Equality Act 2010 because the tree is causing an obstruction (see section 20 of that Act), or

(ii) a duty in section 29 of that Act (prohibitions on discrimination etc in the provision of services) because the tree is causing an obstruction,

Street Trees – What and where

- What

- No trees
- Feature trees
- Some trees
- Avenue
- Complete canopy

- Where

1. Highway Maintainable at the public expense
2. Private holes in a highway maintainable at the public expense
3. Unadopted highway – Private Street
4. Private land

No trees



At a junction



End of street

(eg in a square)



Avenue



Mid street



Full canopy



Everywhere



Footway



Verge



Parking strip



Central Median



Edge of Carriageway



Build-outs

In carriageway



On private land

Potential for huge trees



Trees for Existing Streets

– Standard Minimum Street Widths

- 30ft
- 36ft
- 40ft

Existing Streets – Minimum/Standard widths highways intended as carriage roads

1847 Town Improvement Clauses Act

30ft Highway



Existing Streets – Minimum/Standard widths highways intended as carriage roads

1847 Town Improvement Clauses Act	1875 Public Health Act “Model Byelaws”
30ft Highway	36ft - Highway 24ft - Carriageway 6ft – Footways x2



Existing Streets – Minimum/Standard widths highways intended as carriage roads

1847 Town Improvement Clauses Act	1875 Public Health Act “Model Byelaws”	1894 London Building Act
30ft Highway	36ft - Highway 24ft - Carriageway 6ft – Footways x2	40ft Highway 24ft Carriageway



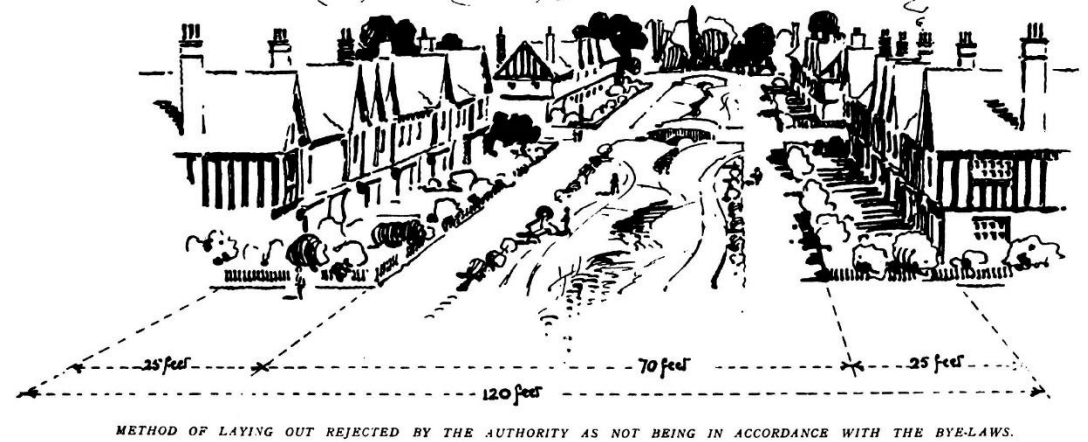
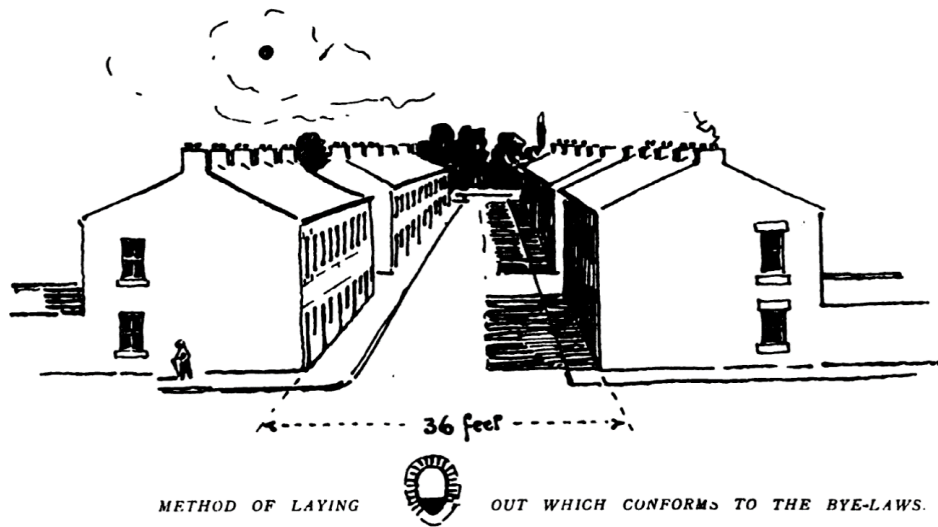






Existing Streets – Minimum/Standard widths highways intended as carriage roads

1875 Public Health Act
“Model Byelaws”





New Earswick
York
Joseph Rowntree

1904 onwards

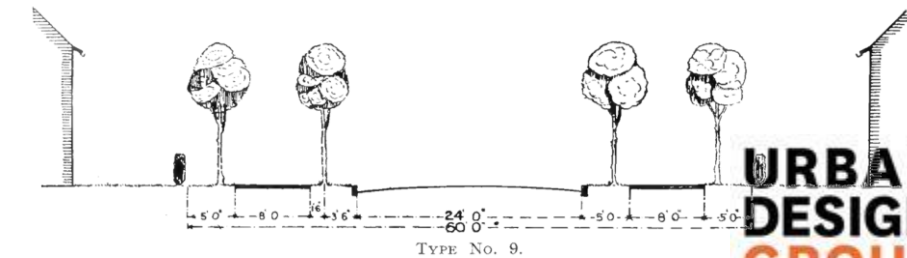
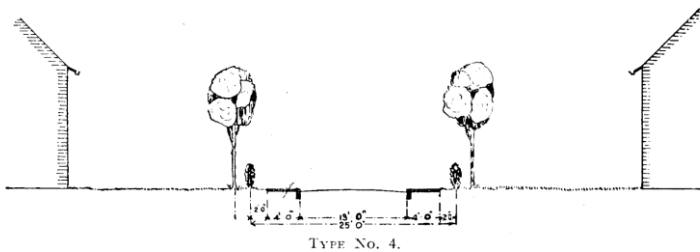
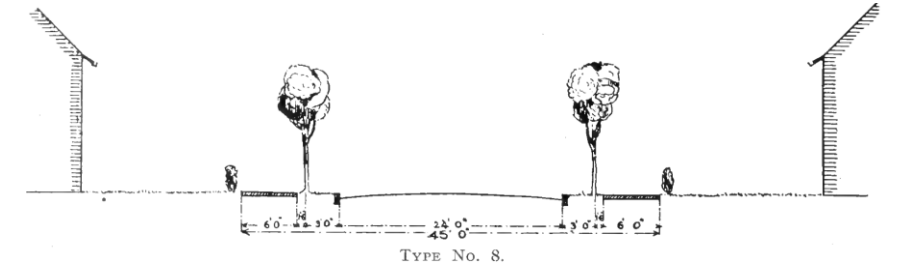
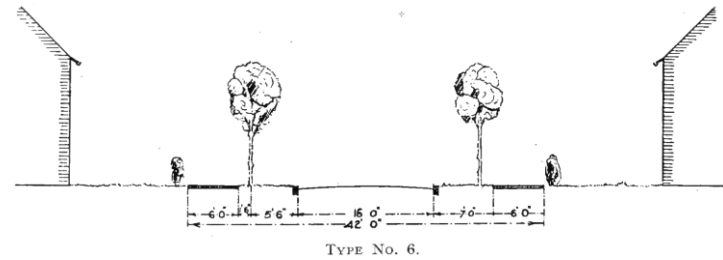
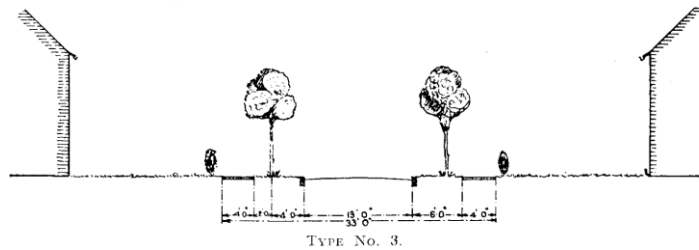
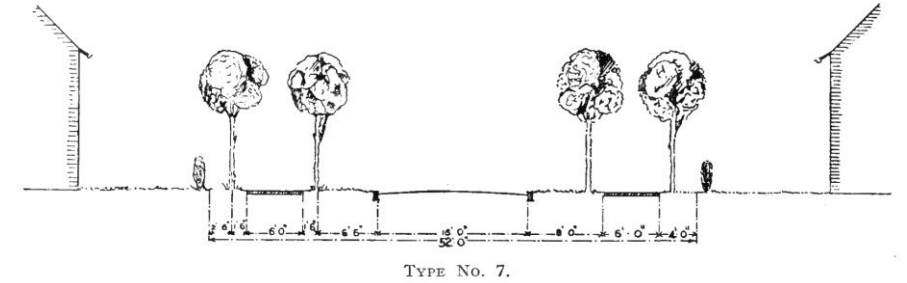
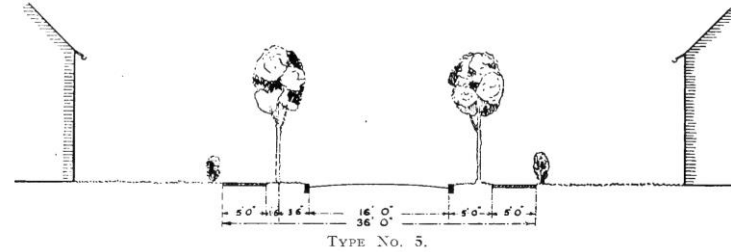
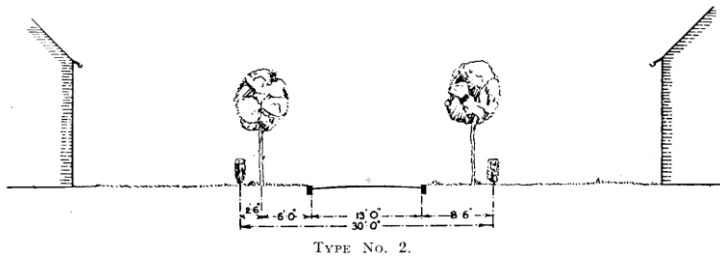
Existing Streets – 20th Century

1906 Hampstead Garden Suburb Act

1909 Planning, Housing etc Act

1918 Housing &c Act

Lower Housing Density – Wider separation between building-lines: min 50ft - Narrower carriageways



Challenges

Damage to footways?

Highways Liability Claims?

Safety?

Crash-friendly roadside environment

Passive safety?

Frangible posts and columns...

From the archive, 17 September 1977:
Marc Bolan dies in car crash

The T Rex star was killed instantly when his car hit a tree in south London



Crash friendly cyclists?

Crash friendly pedestrians?

Highways Liability footway defects



Equality Act 2010 S1 & S149

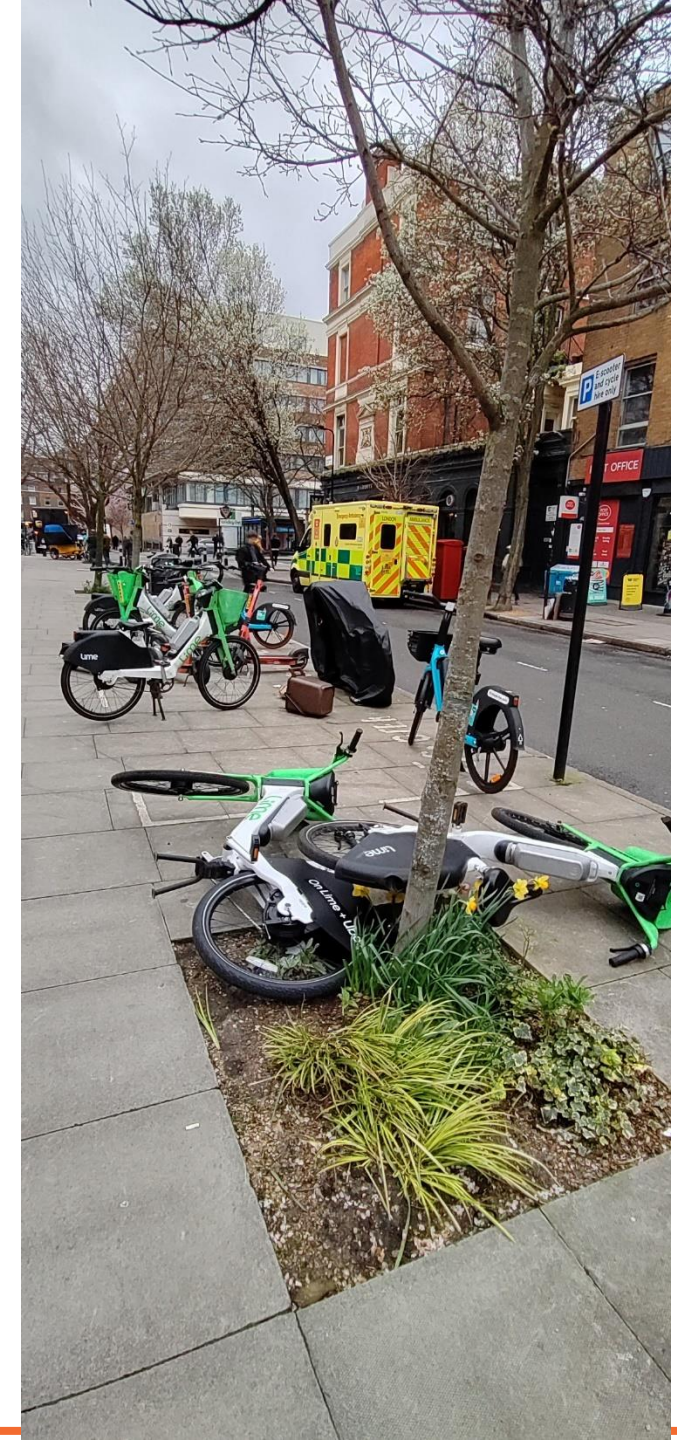


Obstruction

Material obstruction

vs

Hindrance or inconvenience



Challenges: Trees go missing and aren't replaced.....



Challenges: Utilities vs Trees



Utilities vs other utilities vs the highway



Utilities - Guidance

1946
Roads in Built-up Areas

CROSS SECTION SHOWING POSITION OF MAINS UNDER FOOTWAY

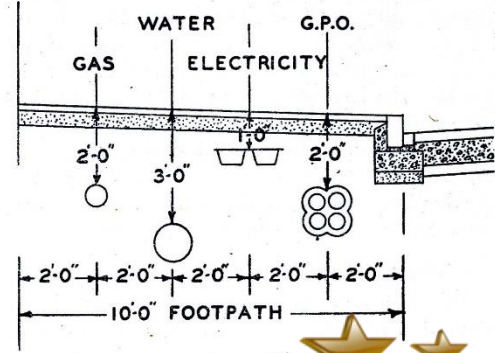
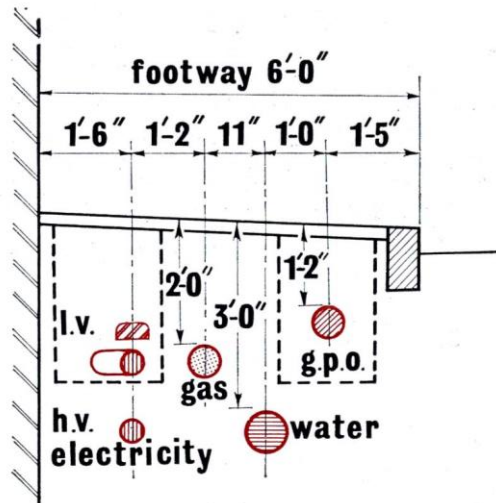


FIGURE 36

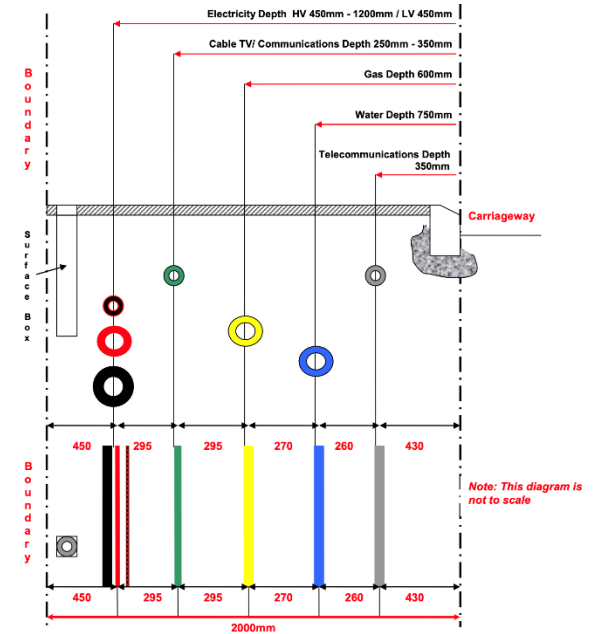


1966
Roads in Urban Areas



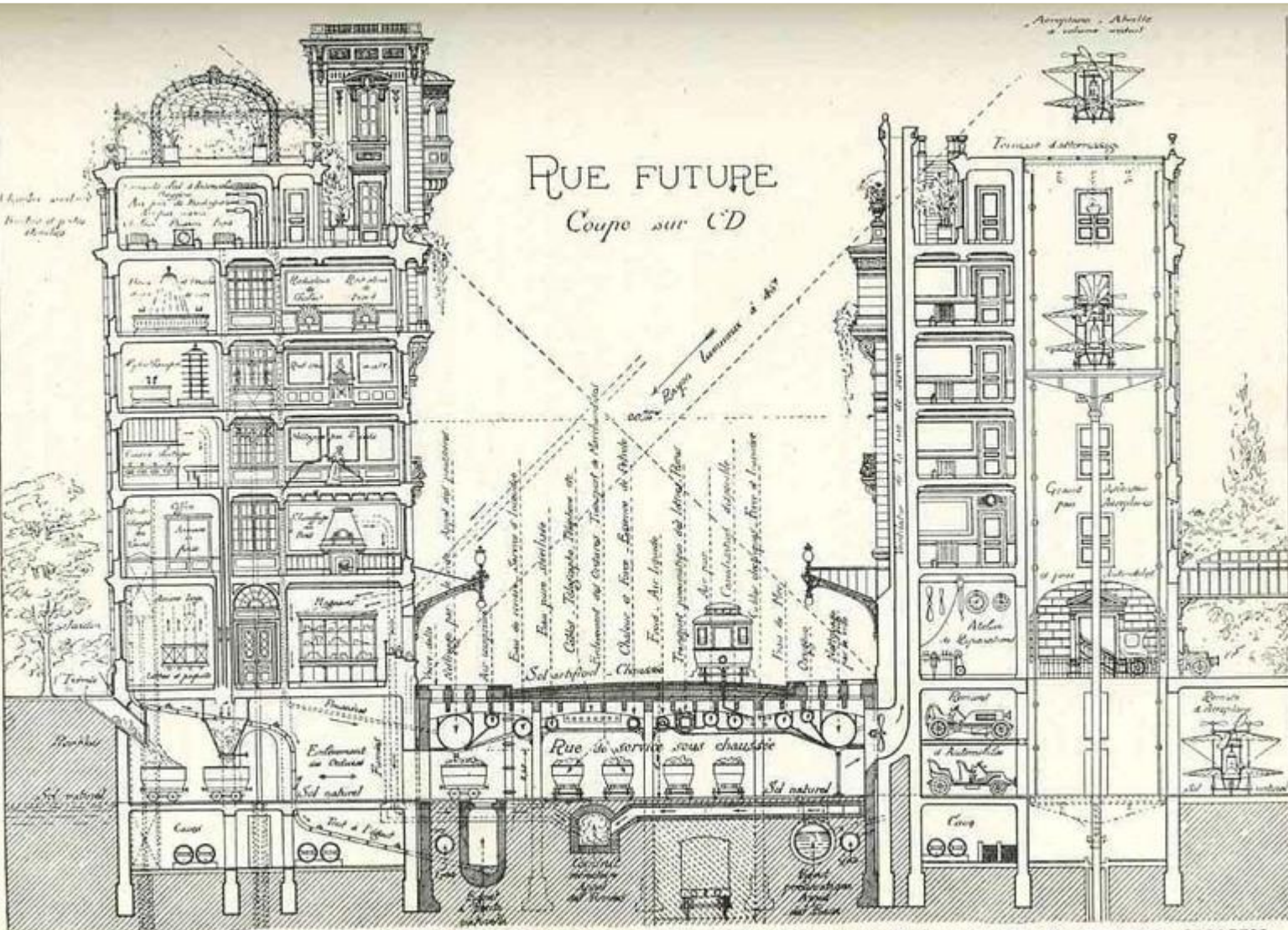
(1) narrow footway

Present day
NJUG/Street Works

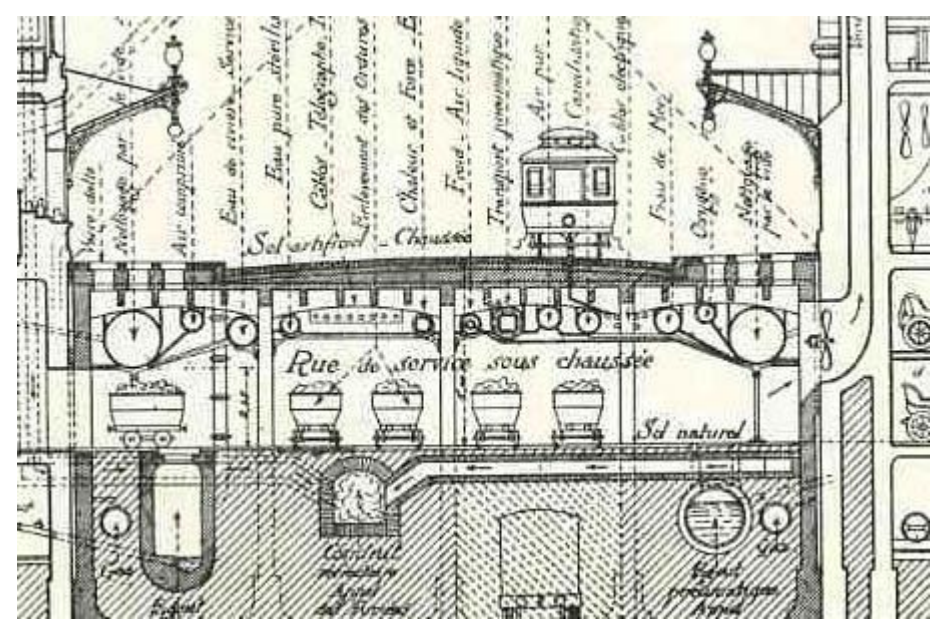


UK Guidelines on the Positioning of Underground Utilities Apparatus for New Development

Utilities...What should be done? - Back to the future? ^{ru}



Eugene Henard – Rue Future
 RIBA Town Planning Conference 1910

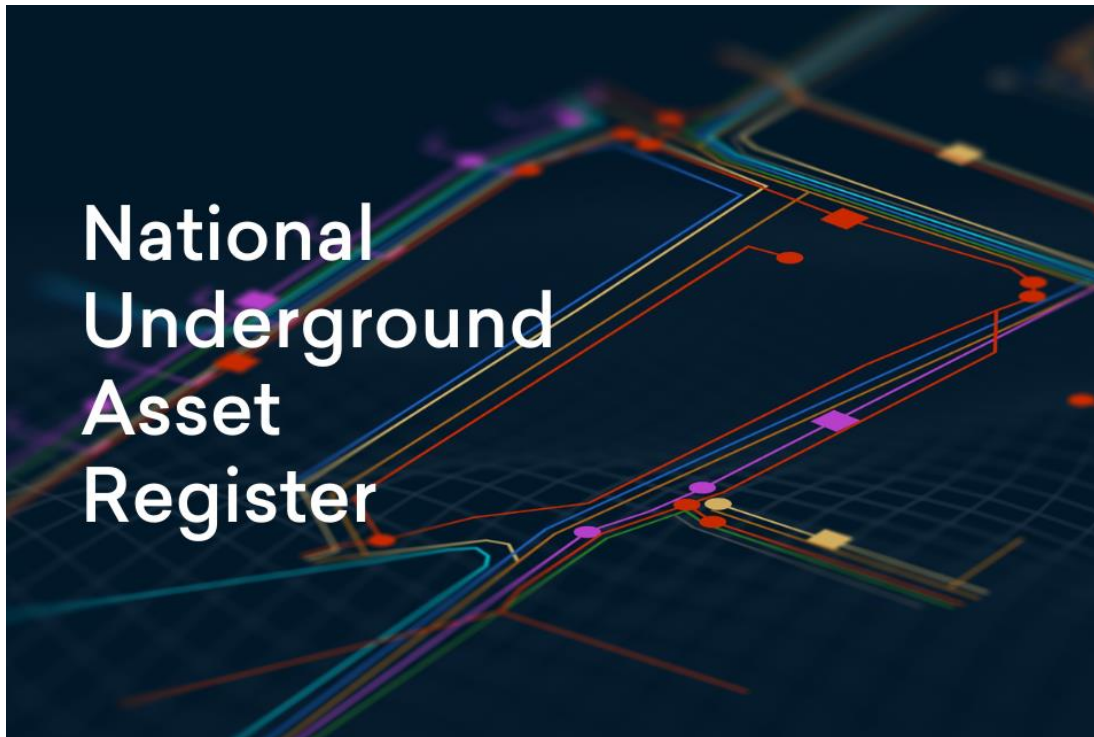


Combined Utilities Ducts and Tunnels?

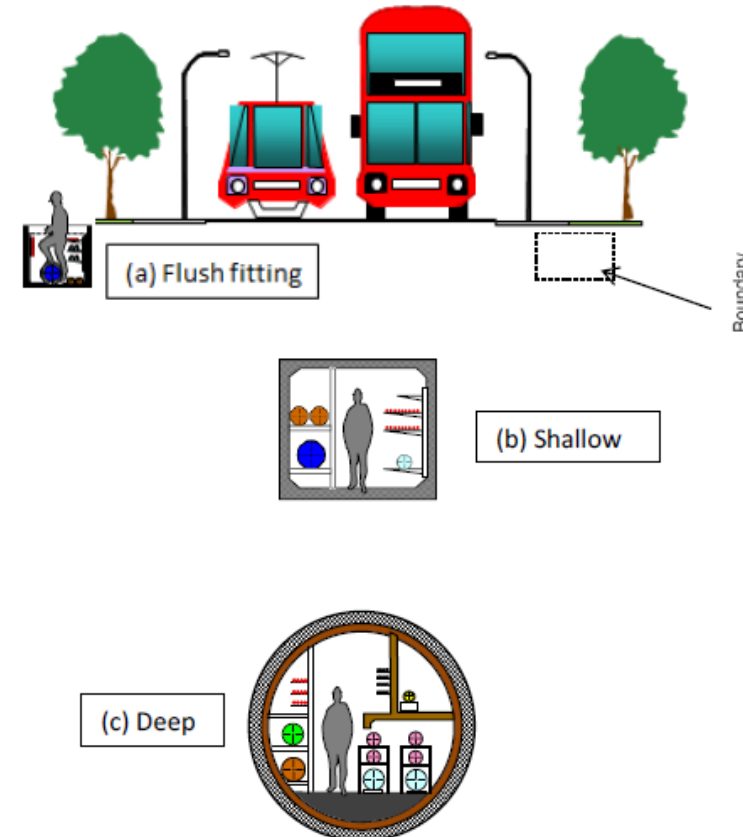


Utilities...What should be done?

National Underground Asset Register



Multiple Utility Ducts, Tunnels



Utilities...What should be done?

National Model Design Code



National Underground Design Code

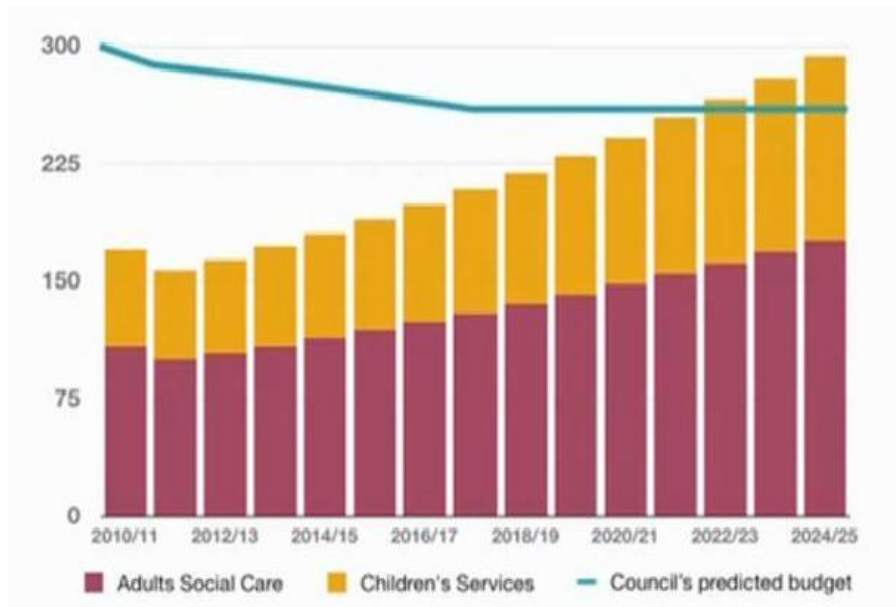
- **Drainage/SuDS/Water**
 - SuDS – attenuation and filtering of rainwater runoff, reducing local flood risk, and also preventing overload of sewerage systems and sewage spills into watercourses and rivers
 - Water recycling (grey water collection, treatment, storage and distribution) – especially where “water neutrality” is required for new development
- **Clean air** - leaves to filter out particulates and hold down peak air temperatures that reduce air quality
- **Landscape & Trees** – space for tree roots
- **Movement & Access** –
 - Smooth, safe attractive, level surfaces,
 - streets that are free from congestion caused by utility streetworks and subsequent repairs
- **Street Lighting** – space for cabling and “roots” of lamp columns
- **Communications** – high-speed broadband, optical fibre systems
- **Energy**
 - upgraded electricity supplies,
 - hydrogen distribution pipes,
 - district heating and cooling, ground source energy
- **Waste Management** – underground waste management systems
- **Sewerage**
- **Surfaces**
 - Highway sub-structures that permit maintenance

Finance vs Trees

What has happened to local authority budgets?
....and the highways budget??

Local Government Funding

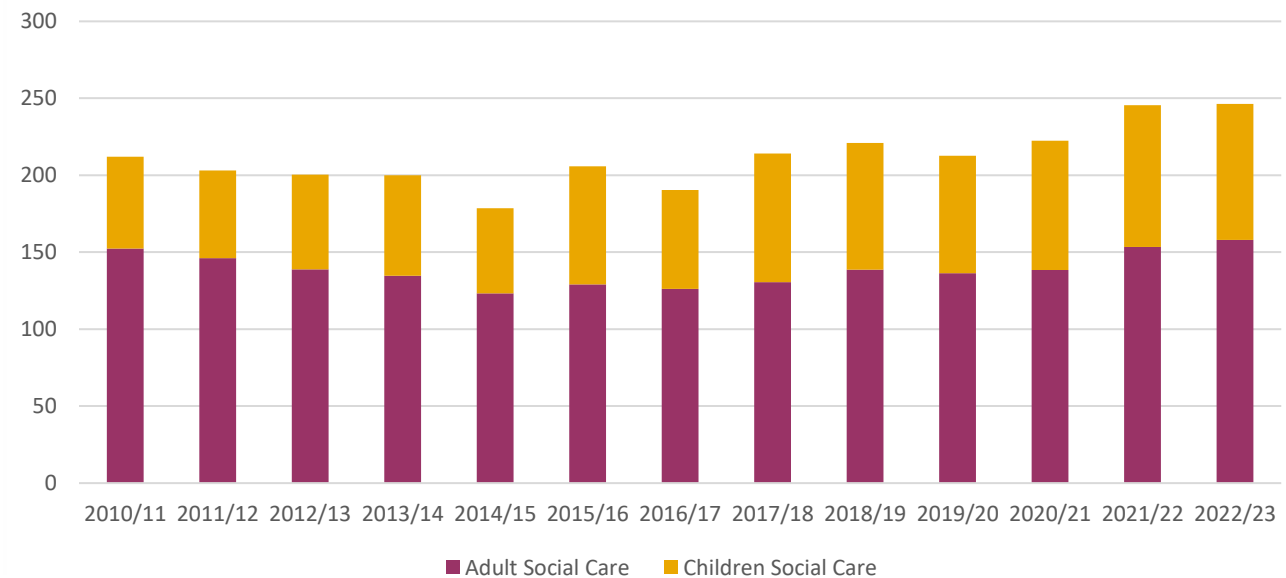
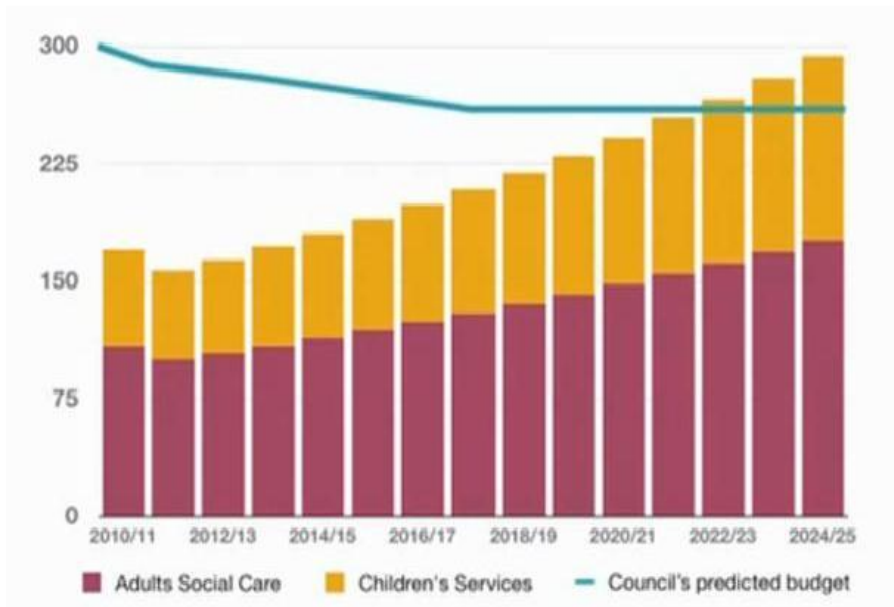
Barnet Graph of Doom



Local Government Funding

Barnet – what actually happened...

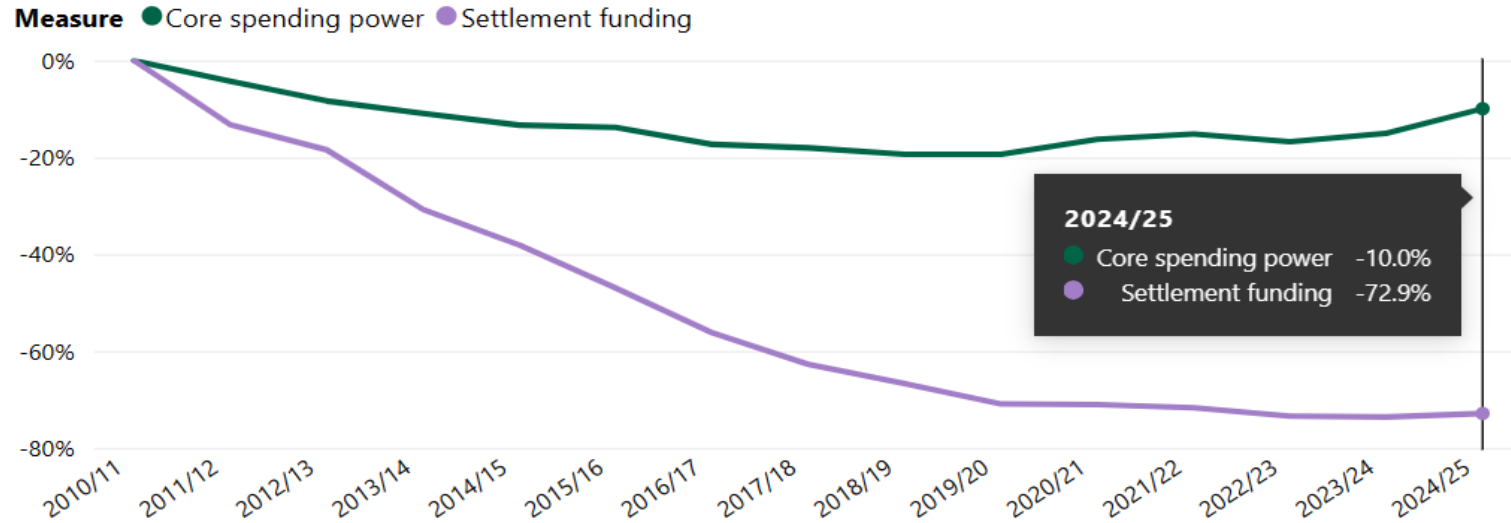
Barnet Graph of Doom



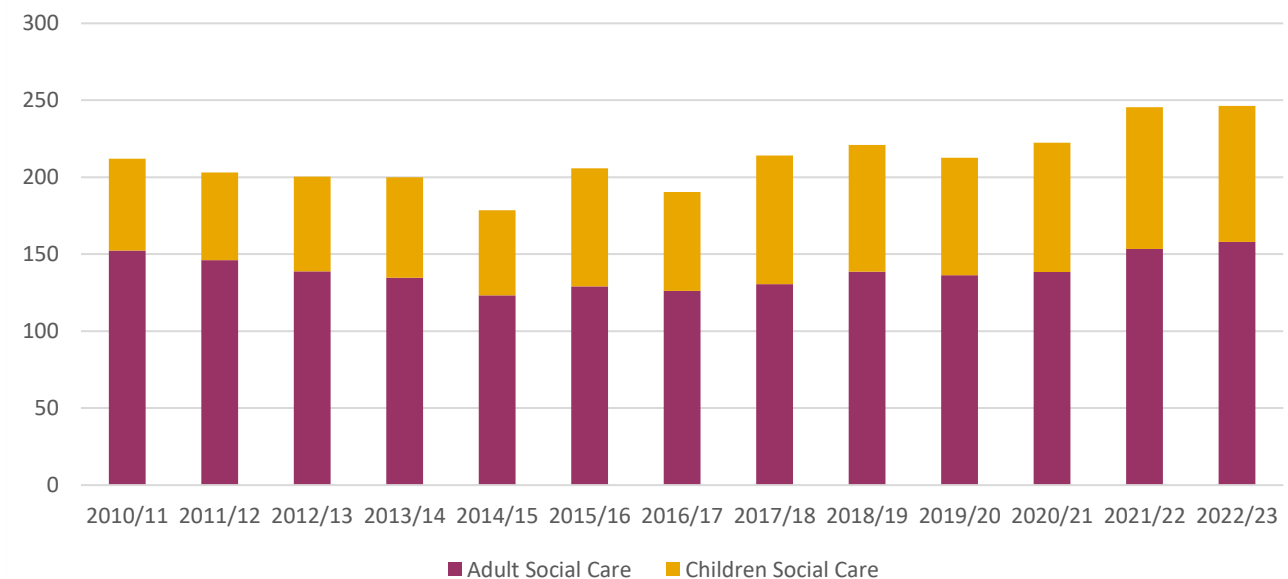
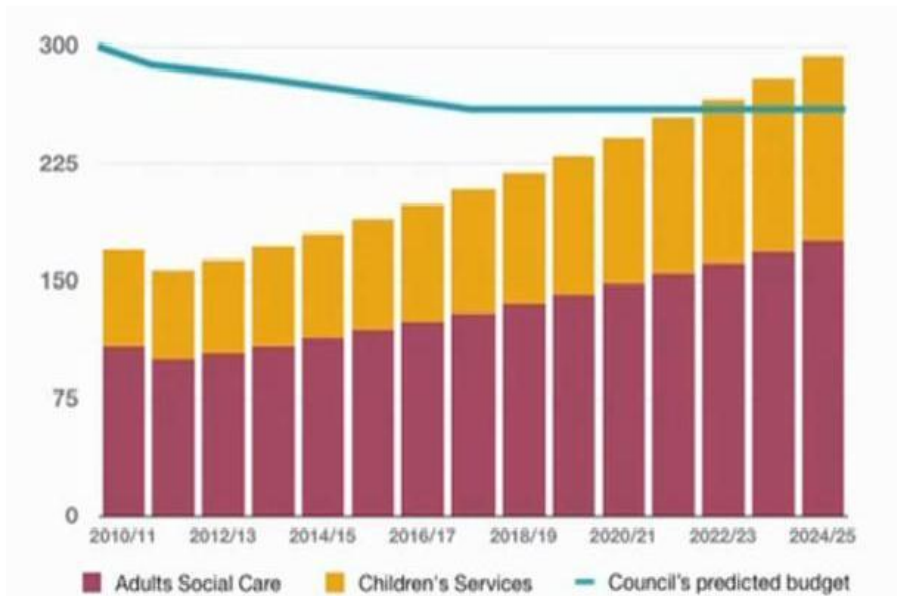
Local Government Funding

Barnet – what actually happened...

Estimated % change since 2010/11, adjusted for inflation



Barnet Graph of Doom



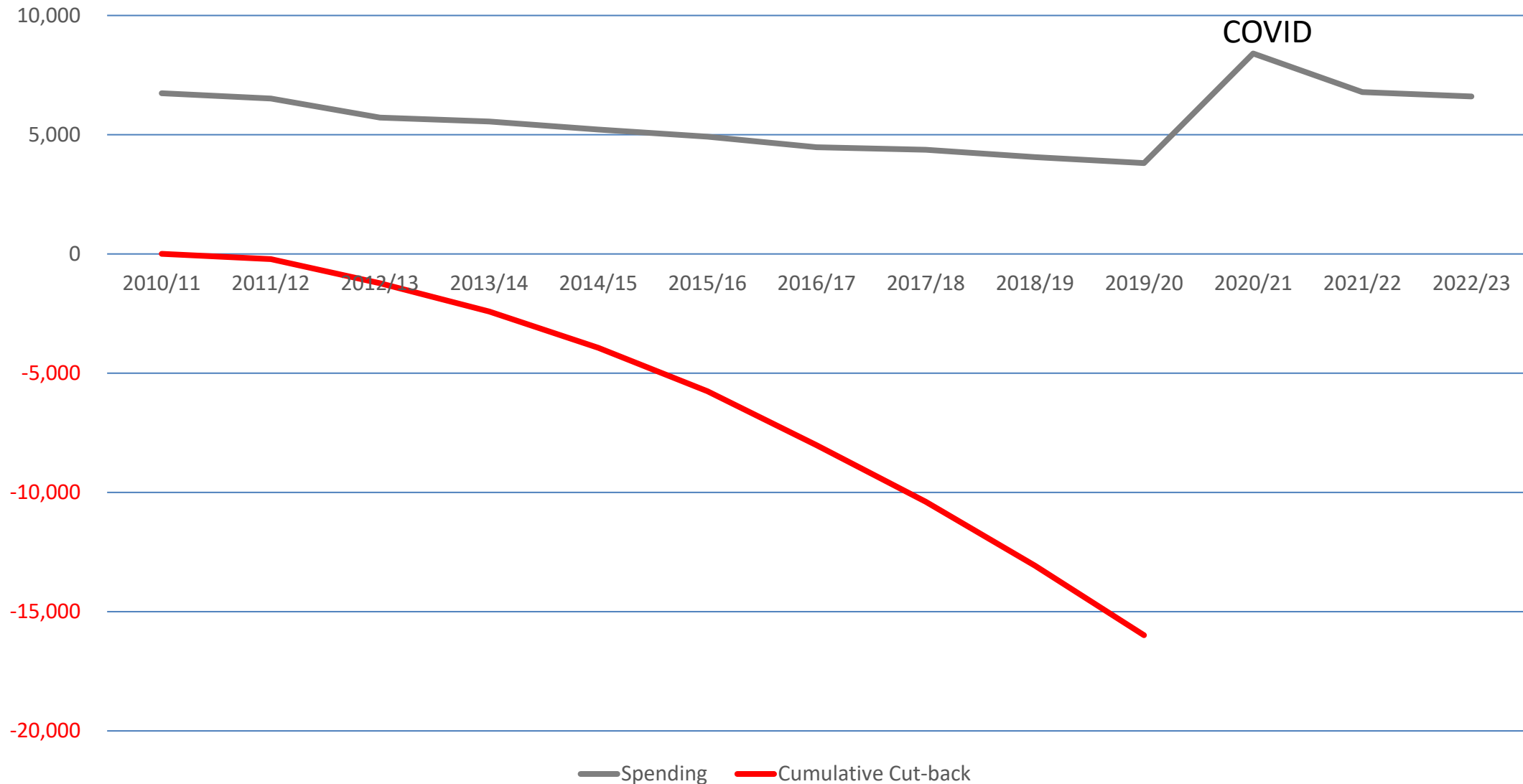
Local Government Funding

Barnet: Highways & Transport Services Expenditure
- constant prices



Local Government Funding – England-wide picture

Highways and Transport Services Expenditure – Constant Prices



Consequences of scarce funding...

Highway Maintainable at the Public Expense

- Utilitarian streets
- Impose low-maintenance design/specification
- Require large commuted sums
- Don't adopt

Holey Streets

Leave parts of the street in private ownership

Private streets

- Higher spec possible
- Need for a management company or association
- Avoids New Roads and Street works Act
- Possibility for Multiple Utility Companies
- Loss of economies of scale – more expensive for occupiers
- Occupiers' liability

