EPOA
Essex Planning
Officers Association

PARKING GUIDANCE

PART 2:
GARDEN COMMUNITIES AND LARGE SCALE DEVELOPMENTS

SEPTEMBER 2024

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ACRONYMS

ECC	Essex County Council
EDG	Essex Design Guide
EPOA	Essex Planning Officers Association
EV	Electric vehicle
GC	Garden Community
LHA	Local highway authority
LPA	Local planning authority
LSOA	Lower Super Output Area (a Census geographic area)
LSD	Large scale development
NPPF	National Planning Policy Framework
PTAL	Public Transport Accessibility Level
PTW	Powered two wheeler
SuDS	Sustainable Drainage Systems

1. INTRODUCTION

1.1 PURPOSE OF THIS PART 2 GUIDANCE

This parking guidance supports the Part 1 Essex Parking Standards produced by the Essex Planning Officers Association (EPOA) in collaboration with Essex County Council, the district councils and the unitary authorities. The Part 1 guidance applies to all new developments in Essex. Whilst this Part 2 guidance is intended for application to Garden Communities (GCs) and large-scale developments (LSDs), Part 1 is also relevant to these sites. Similarly, Part 2 may also be relevant to some smaller development, particularly those in highly connected locations.

GCs and LSDs are defined as follows for the purposes of this guidance:

- **Large scale developments** are defined as residential-led developments usually with other supporting land uses such as education, retail, commercial and community - but which are not recognised as GCs. LSDs are likely to be associated with existing settlements rather than standalone developments, but could comprise around 1,000+ homes. They do not refer to other significant developments such as business parks, logistics centres or energy / industrial / processing sites, and refer to a significantly greater scale of development than the 'major development' definition adopted in the planning system (referring to development of over 10 dwellings). If not defined within Local Plans, the decision over whether a development is to be classed as an LSD should be discussed with the local planning and local highway authorities (LPAs / LHAs) during pre-application.
- **Garden Communities** are defined as strategic, large-scale developments, acting as an extension to an existing town or forming a new settlement. They a defined by their underpinning principles, and can range in scale from around 3,000 homes to 10,000+ homes (as part of mixed-use development). They represent a significant change in the traditional approach to delivery of strategic development, by virtue of their scale, underpinning principles, context, and Local Plan policy support. Many GCs are also recognised by the Government and have received funding to support their delivery, typically through a combination of the public and private sector, and existing local communities.

For simplicity, sometimes in this guidance the above types of development are collectively referred to as 'strategic development'. Given the nature of these developments, this Part 2 guidance has a focus on residential parking, for all modes. It also covers parking associated with other land uses typically found within a large residential-led development, such as retail, commercial and community uses, given that parking availability at a destination can influence residential trips just as much as availability at the origin. Where a land use is not specifically mentioned in this guidance, the Part 1 guidance should be referred to.

This Part 2 guidance has been developed to guide the quantum and design of parking in new strategic developments reflecting objectives relating to reducing car use, enhancing sustainable mobility and enabling place quality and design. It is prepared on the basis that strategic developments in Essex will be developed as sustainable places. It therefore necessarily challenges conventional approaches to parking standards and design, and for this reason an Evidence Base Report has been prepared to support this guidance and underpin the recommendations made within it.

Monitoring and evaluation will be important to understand the practical applications of this

approach as developments progress through the planning process and on to delivery. Review of this guidance should consider its success in achieving the envisioned outcomes as well as application throughout the planning process. LPAs should utilise the opportunity to learn from each other and continue to make improvements to the guidance as developments progress.

1.2 HOW TO USE THE PART 2 GUIDANCE

As with the Part 1 guidance, this Part 2 guidance is aimed at:

- LPAs and LHAs who have adopted the guidance, in determining appropriate levels and design of parking within GCs and LSDs.
- Developers of GCs and LSDs, and their agents and consultants, when undertaking masterplanning and preparing planning applications.

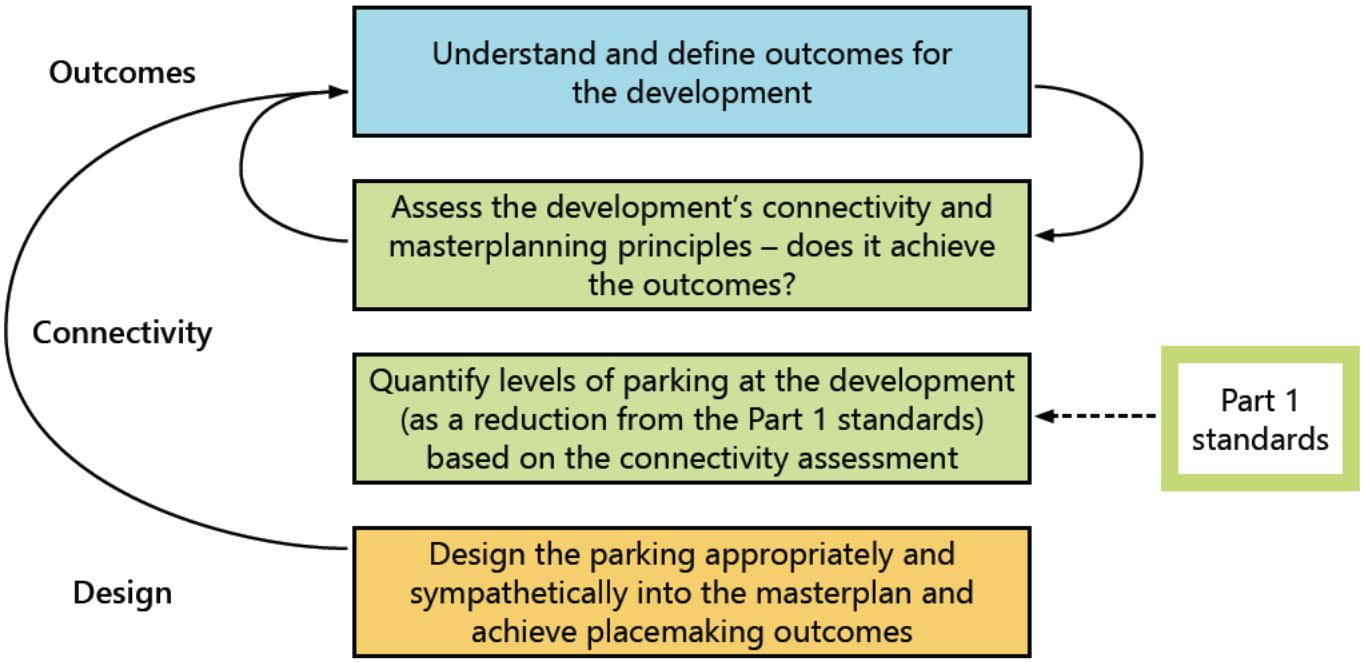
The guidance can be applied to authorities in Greater Essex (including unitary authorities) but may also be of value to neighbouring authorities, where cross-boundary strategic developments are being delivered. For this reason, some mapping presented in this guidance shows areas outside of the EPOA area.

It is anticipated that this guidance will be applied at the planning and pre-planning stages of development, informing outline and reserved matters planning applications in tandem with Transport Assessments and masterplanning. The connectivity component in Chapter 4 may also be useful informing site allocations in Local Plans and infrastructure in Local Transport Plans, as well as potentially being useful for developments in town / city centres where there is good connectivity. The Part 1 standards aim to reduce ambiguity around parking standards for smaller scale developments, to make planning decisions more straightforward. It is however expected that, given their complexities, GCs and LSDs will be subject to extensive baselining, scoping and masterplanning and there will be negotiation over many factors relating to transport and movement. Therefore, whilst this guidance provides more detail than previously in relation to large and complex sites in Essex, it still allows for some flexibility in how parking is designed into strategic developments. This flexibility will ensure that good outcomes are being achieved in the right places, recognising that the context and location of strategic developments will influence the quantum and design of parking within them.

Three components combine to form the process for using this guidance:

- Outcomes: sets out how parking relates to high-level sustainable mobility and design outcomes relevant to GCs and LSDs, and encourages an understanding of the 'vision' to be achieved by the development being assessed. The Outcomes component is described in Chapter 2.
- Connectivity: explores the potential for the outcomes to be achieved in spatial and infrastructure terms, both now and in the future. Based on connectivity mapping and scoring against criteria, the approach suggests a quantum of parking which will be appropriate to the development being assessed. GCs and LSDs which score highly will be able to introduce more progressive parking standards that reflect their high levels of connectivity by walking, cycling and public transport. The Connectivity component is described in Chapter 4.
- Design: guides the design of parking into the development being assessed, in terms of its location and typology. The Design component is described in Chapter 1.

The process for using this Part 2 guidance based on the three components is shown illustratively below.



1.3 WHEN TO APPLY IT

The Part 1 guidance covers detailed technical elements of parking provision for all modes, and these are not duplicated in this guidance. When considering the following, the Part 1 guidance should therefore be referred to for:

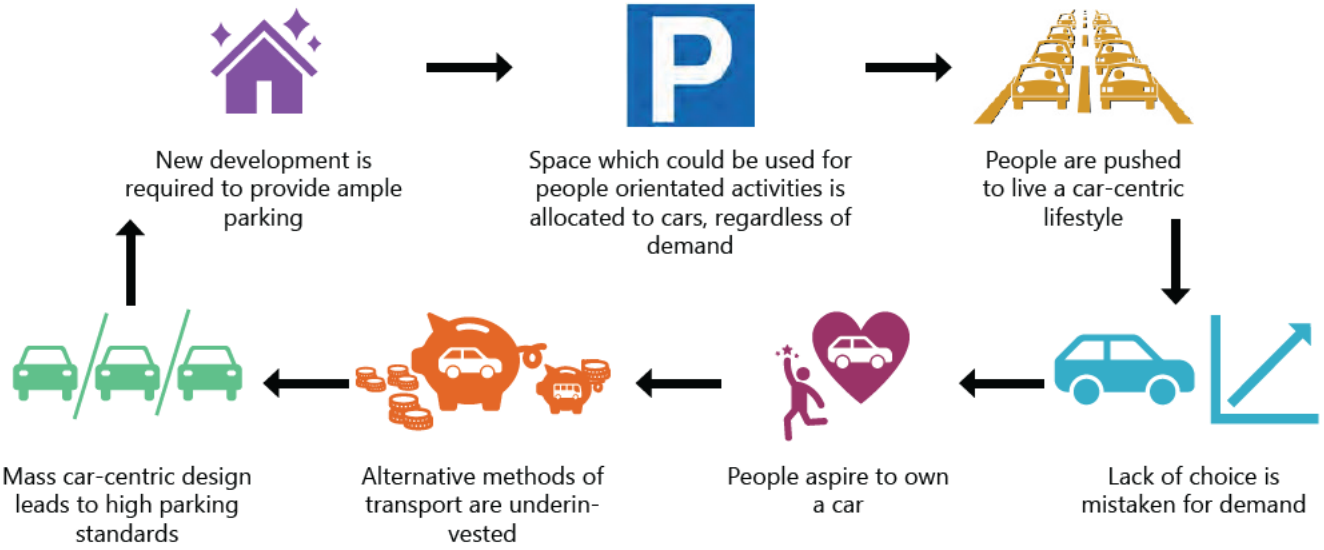
- Vehicle and powered two-wheeler (PTW) parking bay dimensions and car park layouts (e.g. layout of spaces, aisle width).
- Cycle parking dimensions and layout (e.g. type of stand / rack, minimum spacing).
- Parking for mobility impaired vehicle dimensions and layout.
- Electric Vehicle charging infrastructure (charge point specifications, consumer capacity considerations).
- Flooding and drainage implications for different types of parking surface.
- Car Park Management Plans and parking enforcement.

This guidance also refers to the Part 1 standards for the level of cycle, electric vehicle and powered two wheeler (PTW) parking spaces. A progressive approach which enhances provision for these modes has been taken in the Part 1 guidance, and as this represents best practice, the standards are not altered in this Part 2 guidance. Further detail is contained in Chapter 4.

2. THE ROLE OF PARKING IN GCS AND LSDS

2.1 THE CURRENT PROBLEM

Places within Essex and across the UK which have been designed around the car have perpetuated car dependency, in turn worsening congestion, climate change and public health. The lack of alternative choices has been perceived as a part of the demand for parking spaces, and this has influenced the definition of parking standards.



Appendix A presents information on car ownership and usage levels in Essex, setting out the existing situation and context for this Part 2 guidance. The Connectivity component of this guidance takes the above considera-tions and existing context into account.

2.2 THE VISION AND OUTCOMES

GCs and LSDs present opportunities to tackle these challenges, by promoting walkable, vibrant neighbourhoods, where, as a result, you do not need a car to move around. Sustainable travel and people-oriented places tend to have better health, air quality, safety and social outcomes compared to those designed around the car. A New development model for Essex identifies opportunities for Essex to promote more sustainable devel-opment forms ways to overcome barriers to walkability.

ECC's GC principles[1] and their relevance to parking are illustrated in Figure 2 1, demon-strating that the storage, ownership and use of cars is intrinsically linked to what makes a successful strategic development. Careful integration of parking is a means of facilitating density, elevating street design and creating safer streets. This in turn can drive up land value and marketability, by leaving space for more homes and facilities, and creating a place where people want to live. Providing some 'living streets' within a development to create opportunities for safe, car-free active travel and children's play can enhance health and sense of community.

1 drawing on the Town and Country Planning Association's Garden City Principles, and the Healthy New Town Principles

Car free developments may be appropriate in highly connected places, and some areas within large scale and garden community developments where sustainable transport connectivity provides a high level of service to support lifestyles free from car ownership.

These principles should be applied in the context of an individual site. The guidance does not intend to set a 'one size fits all' approach but provide guidance to shape the outputs delivered when planning parking and transport.

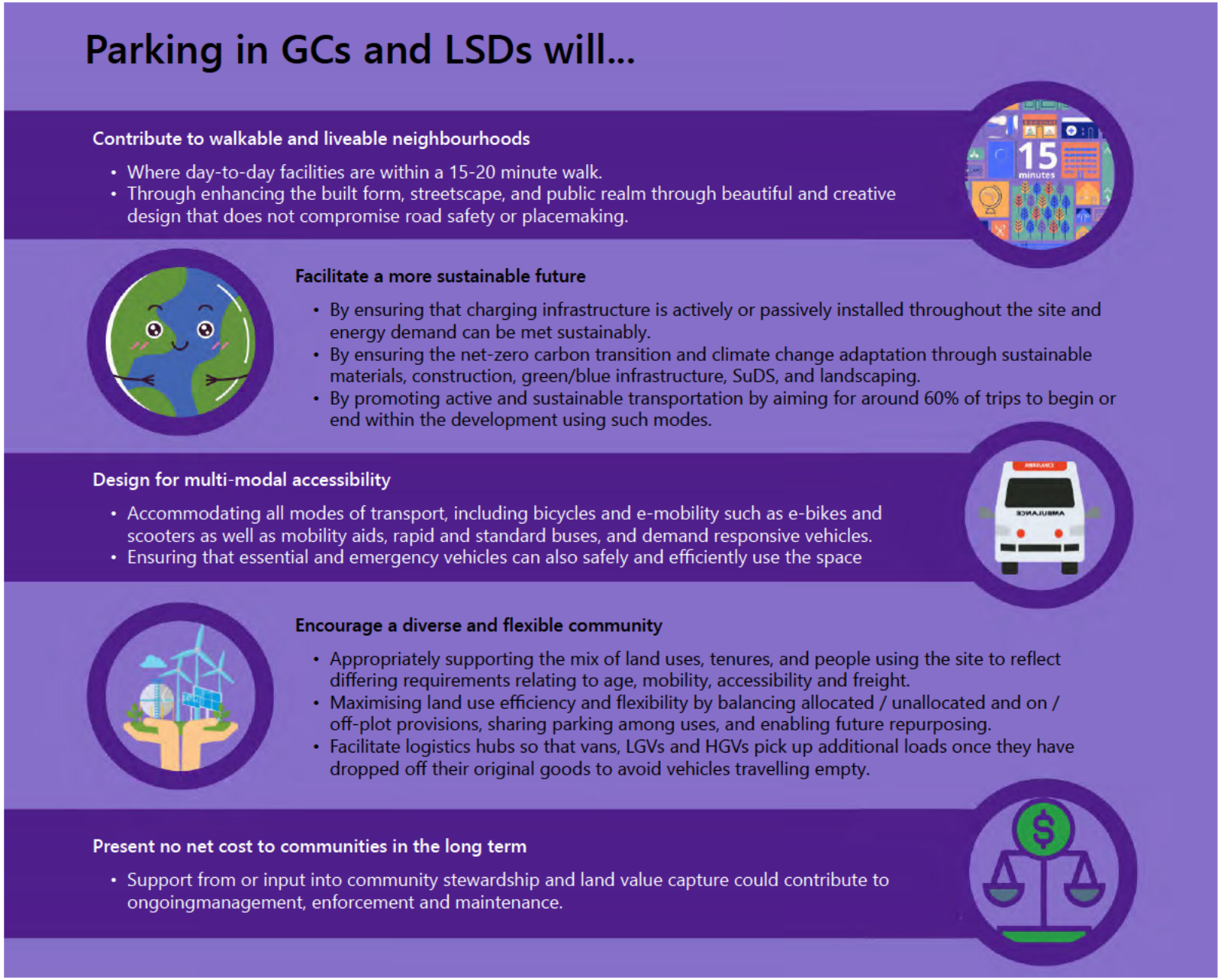
Figure 2-1: Garden Community principles

Living environment	Removing the barriers presented by roads, parking and motorised transport naturally helps to create more walkable, vibrant and social neighbourhoods.
Employment opportunities	Mean that people have more of what they need on their doorstep, and commuting trips for some are shorter and less reliant on motorised travel.
Integrated and sustainable transport	Parking for all modes is provided and allows for seamless interchange between modes, prioritising active and sustainable forms of travel over parking for private cars.
Smart and sustainable living	Places are digitally connected and embrace future technologies relating to public transport, electrification and parking / traffic demand management.
Strong leadership	Across the community, strong corporate, political and public leadership will maintain commitment to the vision for a low-car, people-centred place.
Active local stewardship	Assets such as green infrastructure, community facilities / areas and parking is managed in perpetuity with direct involvement from residents and businesses.
Good design	High quality design of streets and public realm considers the sympathetic design of parking for all modes into the built environment and its management long term.
Green infrastructure	Parking provision is integrated with, rather than taking precedence over, blue and green infrastructure. The landscaping masks parking wherever possible.

Influenced by the EDG GC principles, and other relevant local and national guidance documents, a succinct set of desirable outcomes related to parking at GCs and LSDs in Essex is set out in Figure 2-2. It represents the outcomes component of this Part 2 guidance, forming the basis of decisions related to parking and overall street design at new strategic developments in Essex.

It is recognised that each authority has differing guiding principles / strategic objectives, and any development should align to the latest relevant documents. The outcomes that parking can influence relate to economy, environment, health and wellbeing.

Figure 2-2: GC and LSD parking outcomes



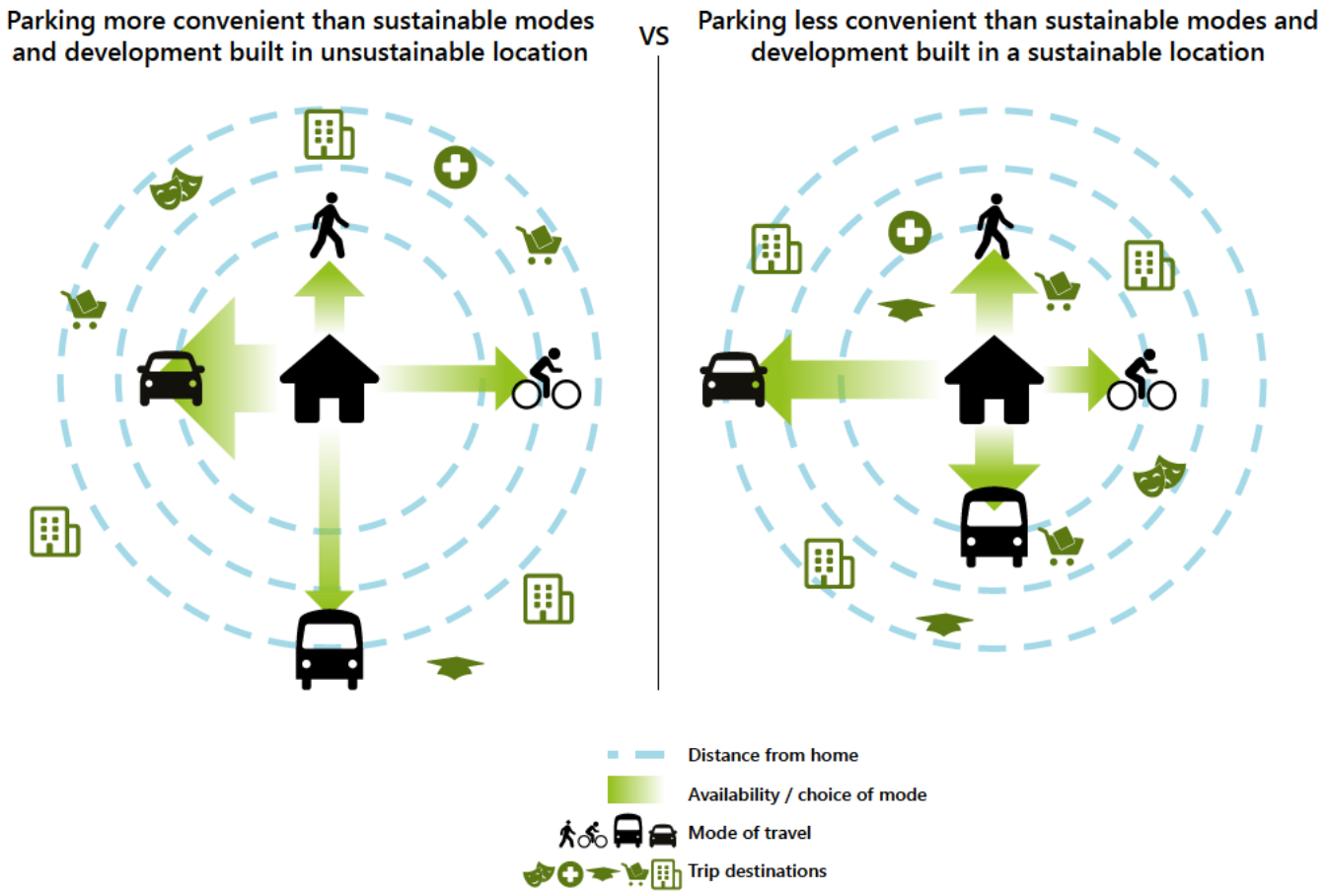
2.3 THE PARKING HIERARCHY

The parking hierarchy below reflects the outcomes and is a simple and practical reference point when considering the quantum, design and provision of parking in new GCs and LSDs throughout the remainder of this guidance. It reflects an order of priority as follows:

1. The storage of active and sustainable mobility and e-mobility modes should be considered first and made most convenient, attractive and prominent. These modes include (but are not limited to) bicycles, e-bikes and cargo bikes, scooters and e-scooters, and mobility scooters.
2. Where vehicle parking is provided the space for car sharing should be most convenient and attractive (applicable to destination land uses such as employment). EV charging infrastructure should become more available and initially more convenient as the vehicle fleet switches from petrol and diesel vehicles. Dedicated space should be made available for PTWs.
3. Parking for petrol and diesel private vehicles should be provided where necessary and carefully integrated into the streetscape.

This hierarchy does not explicitly consider the potential for car free developments which should be promoted in the right locations and development context. While it is acknowledged that some smaller developments may aspire to provide car free developments, in the context of larger scale and garden community developments, it is considered that some car parking will be required, and the hierarchy implemented. Car free developments should include appropriate provision for vehicle drop-off/pick-up and deliveries.

3. GUIDANCE ON SUPPORTING MEASURES



The Evidence Base demonstrates that restraining car parking provision in isolation (e.g. through parking standards, or on-street parking controls) without other supporting measures can result in poor outcomes, which influence the attractiveness and quality of a place. Reducing car parking provision is just one mechanism out of many sustainable mobility interventions that need to work together to support an overall reduction in private vehicle usage.

The NPPF Paragraph 111[2] states:

"If setting local parking standards for residential and non-residential development, policies should take into account:

(a) the accessibility of the development;

(b) the type, mix and use of development;

(c) the availability of and opportunities for public transport;

(d) local car ownership levels; and

(e) the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles."

2 https://www.gov.uk/government/publications/national-planning-policy-framework--2

Quantifying the impact of transport and planning interventions on parking demand is challenging because the places in which they are delivered do not operate in a vacuum. Isolating the impacts of single interventions is seldom possible, but there is evidence that demonstrates that:

- Combining multiple measures that are known to contribute to sustainable travel patterns increases their effectiveness as a range of measures is more likely to meet more people's needs, for a wider range of trips. This includes a range of land use measures.
- Positively influencing travel behaviours depends on human choice, so a range of measures that encourage people towards desirable travel modes is required. For example, ensuring that sustainable travel options present safe and secure ways of travelling that are effective in taking people where they want to go, including supporting linked trips, is important.
- Early infrastructure investment is vitally important but works best when accompanied by new public transport services and behavioural measures to help people make more sustainable travel choices.

As such, to be effective and contribute towards achieving sustainable travel outcomes, an appropriate reduction in car parking provision in strategic developments in Essex can only be delivered alongside the supporting measures described in this chapter. These are discussed in brief in relation to car use and ownership, but this does not represent comprehensive guidance on designing for sustainable mobility outcomes, and should be viewed in the context of other strategies around good built form and landscape design. The supporting measures here feed directly into the connectivity-led standards detailed in Chapter 4.

This Parking Guidance is not designed to provide an exhaustive list of sustainable transport measures. Application of a wide range of existing local and regional strategies that have been endorsed to promote sustainable transport should be employed alongside this parking guidance. Relevant documents include the Local Transport Plan as well as strategies / plans on air quality and climate change, mode specific strategies and area design guides.

3.1 DENSITY AND LAND USE PLANNING

The design of the urban environment can encourage active travel and contribute positively to public health and social wellbeing. A key part of this is limiting the access of vehicles, and where access is provided, managing the volume and speed of vehicles in 'human scale' spaces (including public squares and residential streets) through traffic management measures such as filtered permeability[3].

A varied mix of uses (residential, employment, leisure, retail and education) within new developments also encourages more sustainable travel patterns, by allowing more trips to be made internally, as does building at higher density. By reducing the land required for vehicle parking, land can be more efficiently used for development, creating smaller blocks and in turn bringing facilities and homes closer together, resulting in more walkable neighbourhoods. This creates a virtuous circle of more active streets, which encourages more walking and cycling.

Density has been shown to have a clear relationship with car kilometres driven per capita and delivering well planned higher density developments also enables public transport to be more viable and provide better connectivity to more dwellings.

3 Filtered permeability controls access by private car in order to reduce traffic levels in residential streets and to provide journey time advantage to walking, cycling and public transport

This Walkable Neighbourhood philosophy is centred around creating places that are planned to reduce the need to travel longer distances. By integrating a mix of key land uses such as green spaces, retail, education, healthcare and community facilities within a 15-20-minute walk from people's homes active and sustainable travel are promoted.

It should be noted that building at higher density need not entail high-rise buildings and compromised public spaces, with 'gentle' density radiating out from local centres in strategic developments proving to be successful in recent UK settings, such as Poundbury in Dorset. The case studies throughout this report are included to illustrate different approaches and do not necessarily reflect the answer, but provide built examples to illustrate the principles discussed.

3.2 ACTIVE TRAVEL

Walking forms a key part of almost every journey. Nonetheless the design of the walking environment is often compromised in order to provide convenient car parking and road space, which encourages increased car ownership and use. People without access to a car are more likely to walk as a mode of transport, with the Evidence Base demonstrating that households without a car are as much as 20% more likely to undertake journeys on foot as households with one car.

Walking infrastructure should be safe, direct and convenient, overcoming severance and barriers and ideally segregated from cycling infrastructure. It should be well lit, accessible and adequate in width, and with moments of interest such as public art to improve amenity and legibility, such as pocket / linear parks, fitness trails, 'play on the way', resting stops and open space. Potential to integrate sustainable travel and PRoW routes with nature and green infrastructure creates opportunities for wildlife, and could include, but not be limited to, sustainable drainage systems, native hedgerows, tree and shrub planting.

As with walking, encouraging cycling necessitates a combination of infrastructure and behavioural measures. Segregated cycle lanes and secure cycle parking at the origin and the destination can both contribute to increasing cycling mode share. Application of relevant local and national guidance and policy such as Gear Change and LTN1/20 should be applied. Cycle and e-bike hire also allows people to cycle for a single stage of a longer journey, and can encourage people to try cycling who otherwise might not.

The Walkable Neighbourhoods study provides guidance on creating places where walking is the natural first choice, because the streets and public realm are of exemplar quality and the facilities that people need to access on a day-to-day basis are within a short distance of every home. This is facilitated by higher densities and effective land use planning, as described above.

3.3 PUBLIC TRANSPORT

Public transport provides a sustainable option for journeys that are further than a reasonable walk or cycle distance, as well as catering for those with impaired mobility where active modes are less of an option. They also provide safe and comfortable transport in bad weather, in the evening or when carrying shopping for example. Trains, buses, trams and forms of community transport (such as demand responsive) can all contribute to facilitating trips more sustainably than private vehicles.

Large towns and cities achieve the highest levels of public transport use and in turn support commercially viable services, often comprising of a multi-modal system such as bus. This suggests that high frequency (ideally every ten minutes or more), reliable multi-modal public transport with significant penetration across dense urban areas is important in encouraging high levels of public transport use and reduce car use.

Bus journey times, compared to the comparable car trip, are also a factor in achieving a good mode share. Bus priority infrastructure such as traffic signal priority, bus lane, bus rapid transit and bus gates can offer advantages to public transport journey time through bypassing congestion and more direct routing. These contribute to making public transport services more attractive than using private cars.

The Evidence Base confirms that the proximity of bus stops to destinations (e.g. workplaces) is equally as important as their proximity to origins (i.e. homes), and that low cost public transport options are important if people are to view them as cheaper than driving, the costs of which are often perceived as lower (especially when parking at the destination is free). All bus stops should be high quality in their design, provide at least shelter and seating and should be within 400m of every home / key destination. Passenger information should be included and be real-time where possible. Safety and perceptions of safety both at bus stops and on vehicles are also important.

3.4 CAR CLUBS AND SHARED MOBILITY

The Evidence Base highlights that car clubs and shared ownership of cars are still an emerging mechanism for reducing car use and car ownership, but that recent evidence suggest they can have a positive impact on car ownership if introduced in the right contexts. Research by CoMoUK[4] (February, 2022) suggests that each car club vehicle can on average replace 18 to 20 private cars.

Car clubs can be effective in accommodating occasional longer distance journeys, or journeys which are more difficult to make by public transport, with everyday trips being made using sustainable and active modes. They are also becoming a valuable sales tool for developers, with many prospective residents seeking out the comfort of access to a second vehicle, without needing to own it (and cover the costs of vehicle ownership). The decision to give up a car is also one often made around significant life changes, for example moving house, which suggests building shared car ownership into new developments has the potential to engender the greatest uptakes.

1 car club trip can take up to 20 private cars off the road

[redacted]

Shared mobility could have the potential to reduce household car ownership and the proportion of lone-driver trips which are made in cars. There may be a role for car clubs to play in bridging the gap between one and two car households, if space is only provided for one vehicle to park per dwelling.

Car clubs can go hand in hand with mobility hubs, which should be provided within walking distance of every home and at minimum include a bus stop, seating, shelters and bicycle parking. Larger, 'core' mobility hubs offer the opportunity to co-locate car club and car hire spaces, retail, freight consolidation and parcel lockers, bike/e-bike and other micro-mobility hire, and community space.

3.5 DEMAND MANAGEMENT

Positive measures which work to encourage new site users to make more sustainable choices should be more convenient, direct and attractive than single occupancy private car trips. Research shows that even when sustainable travel choices are available, they will not be taken up to their full potential if it remains comparatively easy to travel by car.

Effective management and maintenance of parking provision is necessary to ensure an attractive and high-quality place is delivered which realises the outcomes (set out in Figure 2-1).

Demand management can cover parking and traffic, and these cover all parts of a journey, at origin, at destination and along the way. For example:

- Parking management
  - On-street parking or loading restrictions
  - Controlled Parking Zones and Restricted Parking Zones
  - Pay & display parking
  - Leased or rented parking
- Traffic management
  - Traffic calming
  - Modal filters and bus gates
  - Car-free streets and Low Traffic Neighbourhoods
  - 20mph speed limits / zones
  - Prioritising walking, cycling and public transport

Leased / rented parking in particular forms a potentially highly effective method of parking control in strategic developments, in turn also generating funding for enforcement, maintenance and wider sustainable travel interventions. In GCs this could be part of stewardship.

3.6 STEWARDSHIP AND ENFORCEMENT

There are a number of options for delivery mechanisms and long-term stewardship of GCs, and the Town and Country Planning Association have collated and produced numerous resources on the subject of Stewardship[5]. Stewardship models can provide a mechanism to become self-financing and contribute to the creation and sustainment of good quality places (including key non-car infrastructure such as safe cycling and walking routes) for the long term[6] when applied at scale across GCs or LSDs. They are critical in ensuring the longevity and quality of a place, without whole reliance on the public sector. Parking control is also essential in some areas, for example on some blue light routes or along rapid transit corridors.

Parking fits into this model in that stewardship can provide a mechanism by which parking restrictions are managed / enforced, but at the same, the revenue generated by parking (fines, leasing, pay & display) can be

[5] [redacted]

fed back into the stewardship body and other functions such as utilities, parks and public realm management. However, income from car parking should not become a "cash cow" and other sources of on-going revenue must be available to fund these functions, including service charging, ongoing developer contributions, and other grants, loans and bonds.

Given the good opportunity that parking restraint represents in terms of demand management, it is important to recognise that any parking control (e.g. yellow lines, controlled parking zones or paid for parking) would have associated on-going staffing costs, including enforcement officers on the ground, cameras, back office support, and maintenance of infrastructure such as surfaces, ticket machines and signage. The strategy for accommodating ad-hoc drop-offs, visitors and vehicles relating to deliveries and servicing should also be considered (for example through allowing for waiting, issuing of visitor passes, etc.). A balanced approach should be taken, considering the potential to reduce total parking through higher proportions of off-plot / on-street provision against the long-term requirement for enforcement.

Given the above, the approach to stewardship, and parking enforcement, should be considered by site promoters from the outset. Streets should be designed to limit the likelihood of people parking vehicles outside properties rather than in the off-plot parking courts. Where on-street parking is proposed these should be carefully considered and, where appropriate, controlled and enforced through Traffic Regulation Orders, or private management arrangements for unadopted highway, where appropriate.

All sites should have a Parking Management Plan. This can be linked to stewardship approaches to support the implementation of management and enforcement of parking.

Retrospectively introducing Traffic Regulation Orders or other forms of parking control once a development is operational will present challenges in terms of costs and changing embedded behaviours. An assessment of the likely consequences of enforcing or not enforcing should be undertaken when initially planning development, engaging with the North Essex and South Essex Parking Partnerships, and including provision of effective management and policing resources. This assessment should take into account factors such as proximity to attractors (such as stations or schools), likely car ownership and other deterrents / measures which are planned. Introducing parking enforcement when development is being planned and built means that the costs can be factored into Section 106 agreements rather than borne by the LHA. Parking controls can also be extended over areas which are not yet adopted by the LHA, further helping to embed behaviours early.

4. CONNECTIVITY-LED STANDARDS

4.1 INTRODUCTION

To help inform decisions on parking levels for GCs and LSDs a Connectivity Tool has been developed. The Tool's main steps are described below and a hypothetical worked example is set out in Appendix E.

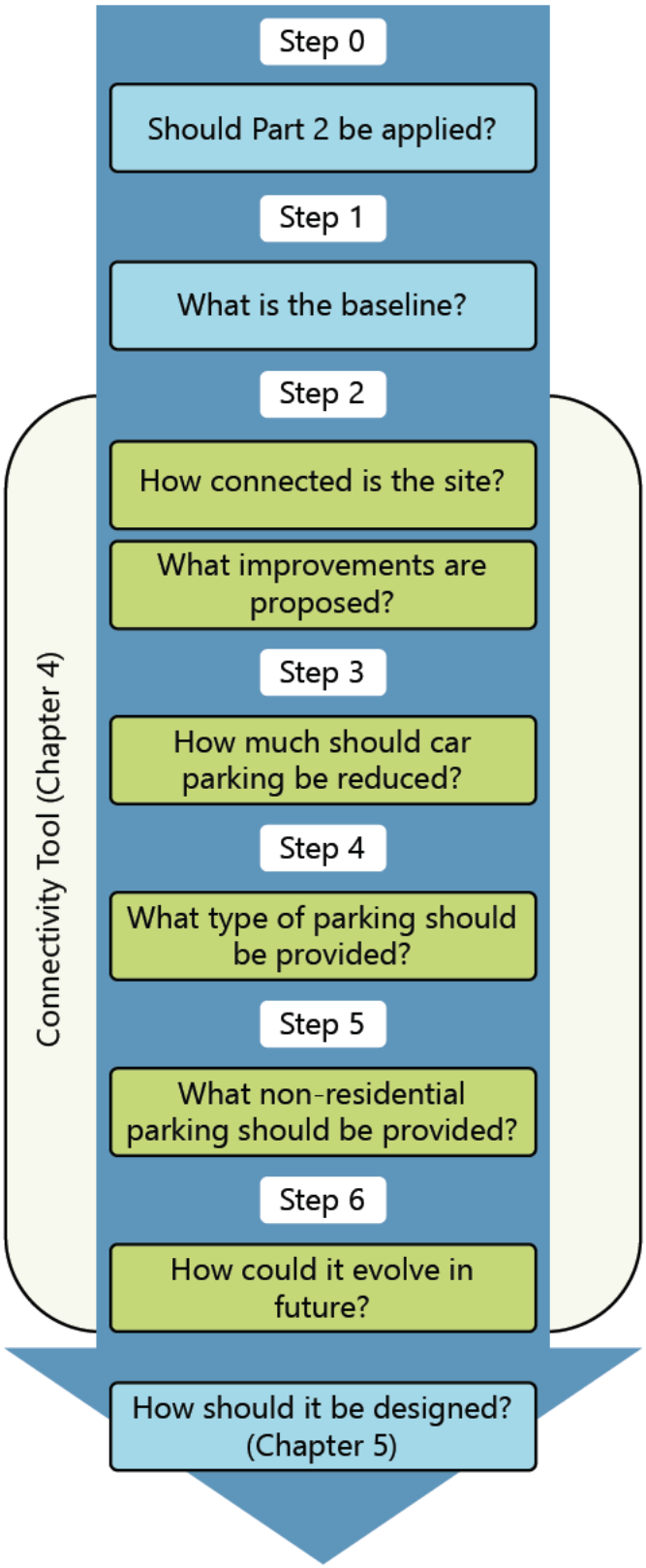
The Connectivity Tool is designed with the expectation that large scale developments will need to meet certain standards to encourage sustainable travel. If such developments do not meet the minimum scores in the tool's framework, they might not be acceptable in sustainable mobility and planning terms.

The Tool suggests that for developments that score higher, it would be appropriate to provide fewer parking spaces than those set out in Part 1.

While the Part 2 guidance is aimed at GCs and LSDs, LPAs can also use the Connectivity Tool for smaller developments in places that are easy to get around, like city / town centres.

The Part 1 standards form a baseline to calculate the overall parking level. The level of parking is based on the Part 1 'low connectivity' standards, which are the most generous and often best represent the locations of GCs and LSDs.

The overall standards are presented as a parking level. This means a total number of vehicle parking spaces is suggested for an entire site or phase but it's flexible how and where these are included in masterplans.



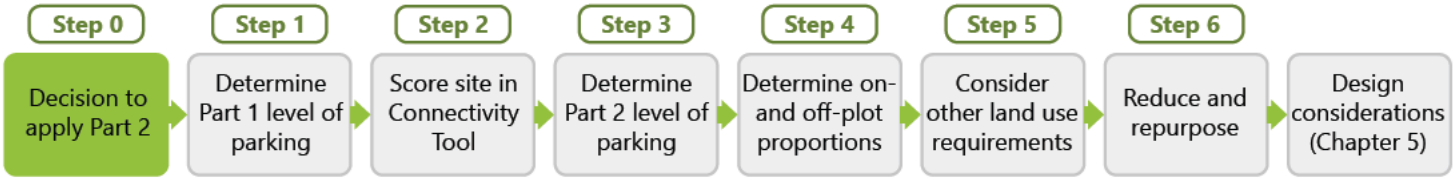
4.2 EVIDENCING THE APPROACH

The Connectivity Tool is provided on the EPOA website and will be updated periodically to reflect changes to baseline situation. Applicants should evidence the calculations for each phase of development by providing copies of the Connectivity Tool as part of the planning submission (one copy per phase / neighbourhood, if applicable).

This Part 2 guidance may be relevant to sites which are adjacent or nearby but promoted by different landowners or developers, even if individually they fall below the definitions of an LSD or GC.

In these instances, decisions should be made based on what is certain and deliverable, which may result in each application being considered on its own merits. This guidance, however, encourages early and proactive discussions between developers and the LPA / LHA to establish mechanisms for building certainty, joint funding of interventions, and potential consideration as 'one' development within the Connectivity Tool.

STEP 0 – SHOULD THE CONNECTIVITY TOOL BE APPLIED?



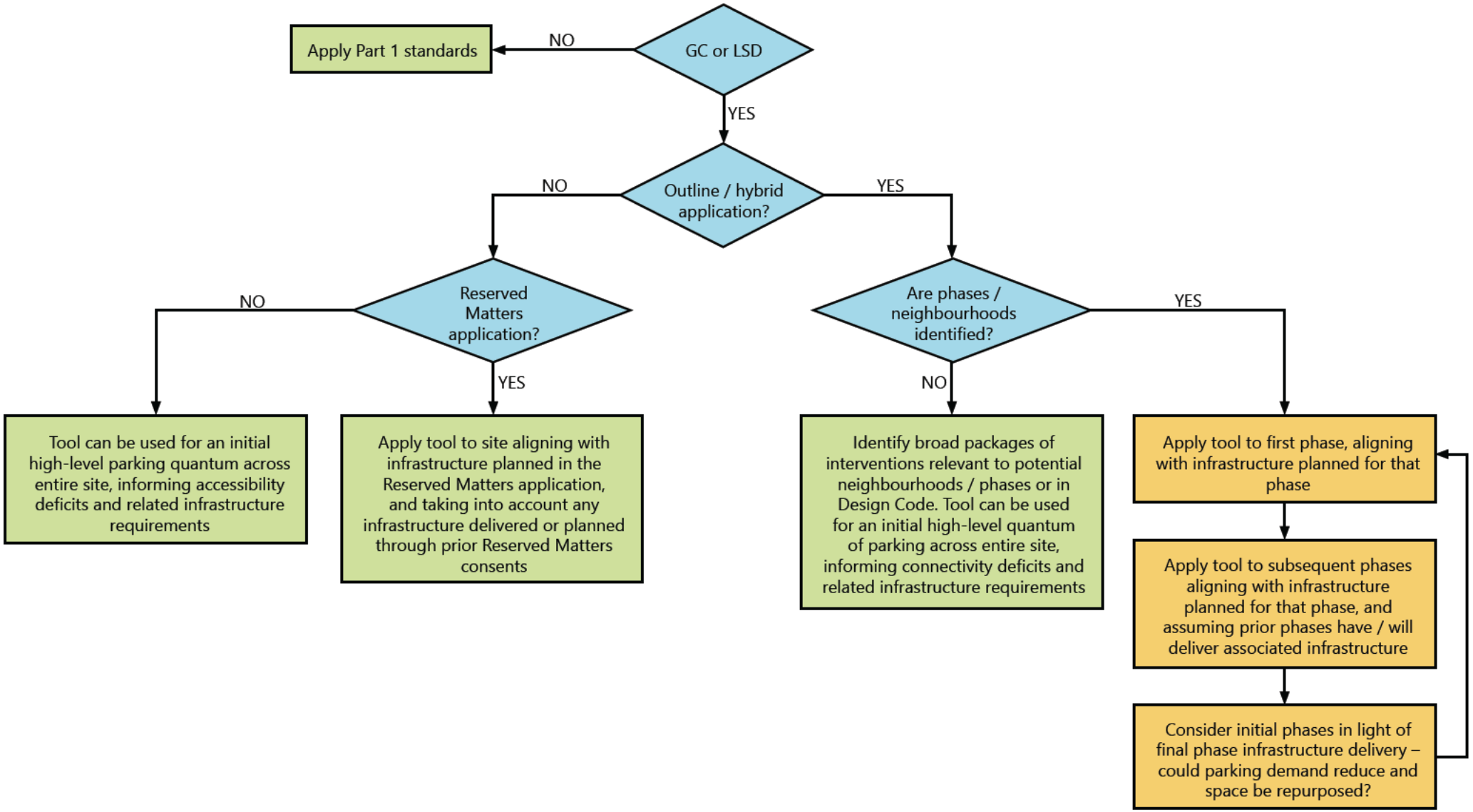
The decision tree in Figure 4-1 shows how the Connectivity Tool applies at different stages of the planning process and for different phases of development. Initially it can be used as an indicator of the scale of parking within a strategic development, as well as to understand how connected a development could be and where improvements could be made.

The Tool can also be used for outline applications, if there is an idea of phases, parcels or neighbourhoods and their associated infrastructure. Parking provision is most often detailed in Full and Reserved Matters applications, and at this point it is expected that the detail of infrastructure delivery, development quanta and connectivity are also known.

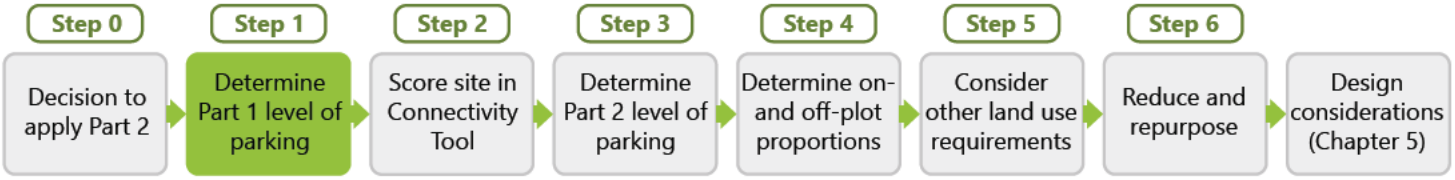
It is important to note that the Connectivity Tool does not incentivise excessive parking provision in early phases of development. GCs and LSDs overall must meet the minimum thresholds against the Connectivity Tool's scoring framework. The Tool allows for a change from the Part 1 standards where infrastructure is delivered early, but equally recognises that under-provision of parking before there are other genuine sustainable travel choices is likely to result in parking overspill. It is important that proposals deliver sustainable transport infrastructure prior to occupation to encourage sustainable travel habits from day one. Where a greater level of parking is provided in early phases, the design component of the Part 2 guidance is important to ensure that parking does not dominate streets and places.

Early phase parking provision should be revisited and repurposed as and when the later phases (and their associated infrastructure) are constructed, and their sustainable travel benefits are realised.

Figure 4-1: Decision tree for use of Connectivity Tool



STEP 1 – DETERMINE LEVEL OF PARKING BASED ON PART 1 STANDARDS



The Connectivity Tool uses the C3 residential parking levels as set out by the Part 1 standards (for 'low connectivity' areas[7]) as a baseline (replicated below for ease). An appropriate level of reduction from this level is calculated through the Connectivity Tool.

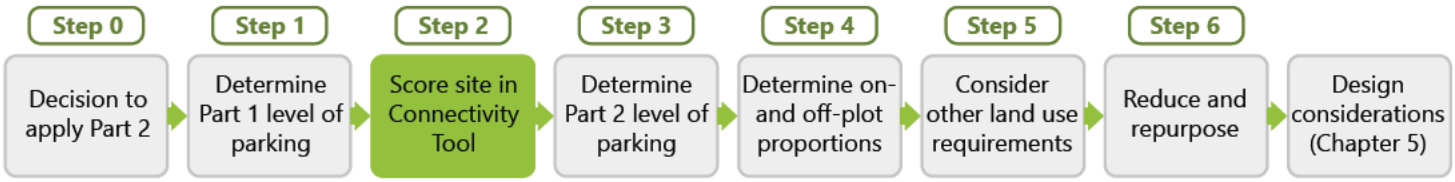
Table 4-1: Part 1 standards for C3 residential development in 'low connectivity' areas

Use	Vehicle	Cycle	PTW	Disabled
1 bedroom	1 space per dwelling*	1 secure covered space per bedroom None if garage or secure area is provided within curtilage of dwelling	Large flatted developments to provide PTW parking area(s) based on need	N/A if parking is in curtilage of dwelling Flatted developments to provide a minimum of 5% of number of dwellings or actual need whichever is the greater
2 bedrooms	2 space per dwelling*			
3 bedrooms	2 space per dwelling*			
4+ bedrooms	3 spaces per dwelling*			
Visitor/ unallocated	0.25 spaces per dwelling (visitor) (rounded up to nearest whole number)	If no garage or secure area is provided within curtilage of dwelling, then 1 space per 40 dwellings for visitors	1 space plus 1 space per 20 car spaces for first 100 car spaces, then 1 space per 30 car spaces over 100 car spaces	

* Excluding garage if less than a 7m x 3.4m internal dimension

7 These are locations defined as 'low' or 'very low' connectivity according to the Connectivity Mapping used in Part 1 and included as Map 3 later in this section.

STEP 2 – SCORE SITE IN CONNECTIVITY TOOL



In this step, the development being assessed will be scored against seven metrics; three are defined by data on the existing local context and four are influenced by proposals for the site to deliver good outcomes (described in Chapter 3). The sum of the scores informs the parking level.

The seven metrics in the Connectivity Framework are shown in Table 1 2 overleaf and are as follows:

1. **Existing car ownership:** is shown in Map 1 overleaf, and is derived from car ownership information from the 2021 Census and presented by Lower Super Output Area (LSOA). The colours of the mapping reflect the associated score category (1 to 6). This provides an indication of existing car dependency for the location.
2. **Existing (commuter) car driver mode share:** is shown in Map 2, and is derived from journey to work information from the 2011 Census and presented by LSOA. The colours of the mapping reflect the associated score category (1 to 6). This provides an indication of existing car dependency for access to employment.
3. **Existing connectivity level:** is shown in Map 3. This is made up from a combination of layers which form a picture of existing connectivity levels across the EPOA area. Again, the colours of the mapping reflect the associated score category (1 to 6) and provide an indication of the level of car alternative travel options available.
   a. Connections to urban centres within 10- and 20-minute walking times[8]
   b. Connections to urban centres within 10- and 20-minute cycle times[9]
   c. Public Transport Accessibility Level (PTAL)[10]

The individual maps listed above are included in Appendix A. Connectivity maps showing more detail at district / authority level are included in Appendix C. Updates to this mapping will be made annually subject to on data availability, users should ensure application of the latest version.

Where a site or phase is within two areas, the area covering the majority of the site should be used for scoring. Where this is not clear, the presumption should be in favour of the more positive outcome (lower car ownership / lower vehicle mode share / higher connectivity level).

The remaining metrics consider the proposed future situation as follows:

4. Range of land uses – is informed by the availability of key facilities that will support the new development. For the largest strategic developments, it is anticipated that most of these will be delivered within the site to support internal trips

8 Using the OS Open Road Data (April 2024) and journey time generated by the software tool TRACC

9 Using the OS Open Road Data (April 2024) and journey time generated by the software tool TRACC

10 Ge[redacted]pril 2024) public transport data from [redacted] and utilising the software tool TRACC

and shorter trips which can be made by sustainable modes. Delivering these facilities in earlier phases of development can help to establish a local community and more sustainable travel habits for the long term.

5. Public transport improvements – measured by the frequency and proximity of public transport, but as a proxy to other important considerations around quality of stops / halts, destinations of routes and priority of buses over private vehicles.
6. Active mode improvement – considering the infrastructure provided for walking and cycling, ensuring safe, convenient and attractive routes (and suitable parking / storage provision) to facilitate local trips compared to comparative vehicle journeys.
7. Micromobility / shared transport – considering the future availability of shared mobility to increase access to sustainable and active modes, and reduce the need to own vehicles as individuals.

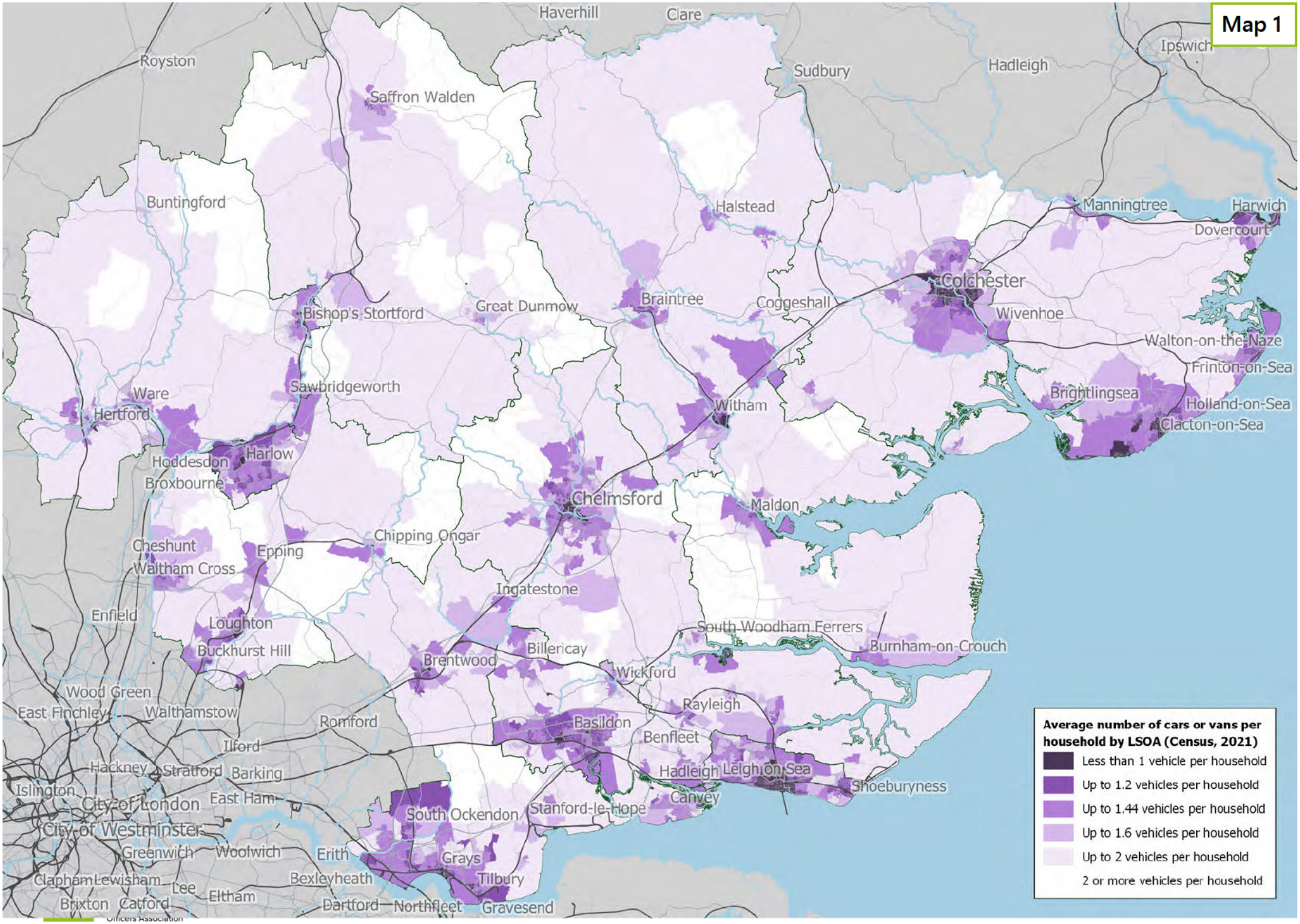
The metrics reflect the key determinants of parking demand, as set out in the Evidence Base and earlier in this guidance. They recognise that even in areas with high car dependency (low scores on the first three metrics) strategic developments can overcome these influences by delivering sustainable transport-focussed interventions and including a variety of land uses (scoring well against the last four metrics). Similarly, new developments cannot rely solely on existing conditions to embed more sustainable travel habits.

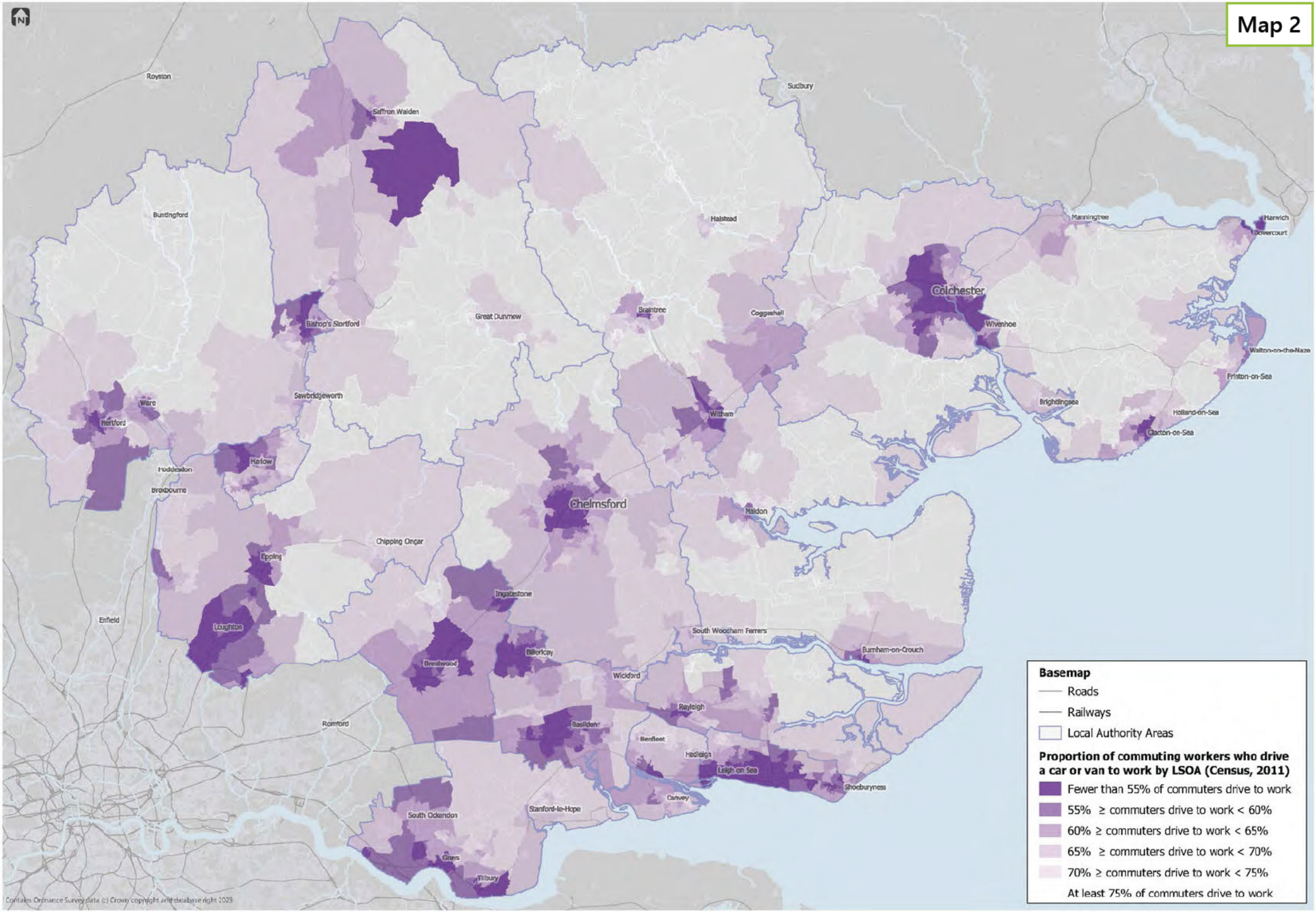
This approach to 'scoring' a development requires information on proposals that may change throughout the development and delivery of a site. With phasing approaches to larger development, inter-dependencies with infrastructure projects and other long term society changes, there is a need to revisit scoring should the context of a site change. This repeat scoring exercise is built into the tool, with Step 6 included as a review stage.

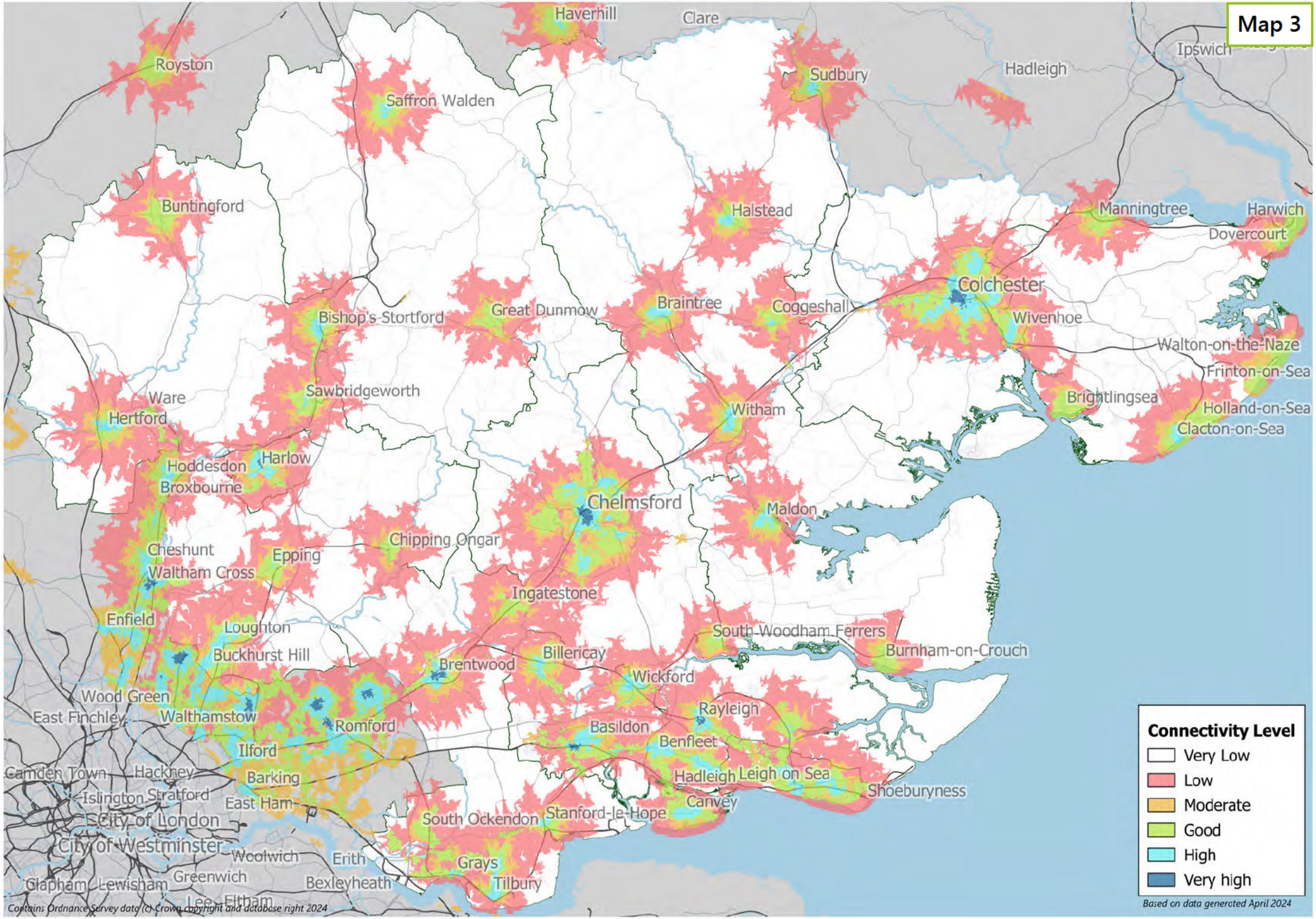
Table 4-1: Connectivity tool scoring framework

Metric	1	2	3	4	5	6
	less potential to reduce parking provision					more potential to reduce parking provision
Existing car ownership (Map 1)	Existing area has car ownership levels higher than the Essex average (>2 vehicles per household on average)	Existing area has car ownership levels higher than the Essex average (>1.6 vehicles per household)	Existing area has car ownership levels higher than the Essex average (>1.44 per household)	Existing area has car ownership levels lower than the Essex average (<1.44 per household)	Existing area has car ownership levels lower than the Essex average (<1.2 per household)	Existing area has car ownership levels lower than the Essex average (<1 per household)
Existing car driver mode share (Map 2)	Existing local driving mode share is higher than the Essex average (>75%)	Existing car driver mode share is higher than the Essex average (>70%)	Existing car driver mode share is higher than the Essex average (>65%)	Existing local driving mode share is lower than County average (<65%)	Existing car driver mode share is lower than the Essex average (<60%)	Existing car driver mode share is lower than the Essex average (<55%)
Existing connectivity Level (Map 3)	Majority of developable masterplan area is of very low connectivity	Majority of developable masterplan area is of low connectivity	Majority of developable masterplan area is of moderate connectivity	Majority of developable masterplan is of good connectivity	Majority of developable masterplan is of high connectivity	Majority of developable masterplan area is of very high connectivity
Range of land uses*	<20% new homes are within a 15-minute walk of at least three facilities	>20% of new homes are within a 15-minute walk of at least three facilities	>40% of new homes are within a 15-minute walk of at least three facilities	>60% of new homes are within a 15-minute walk of at least three facilities	>80% of new homes are within a 15-minute walk of at least four facilities	All new homes are within a 15-minute walk of at least four facilities
Public transport improvements**	Less than 50% of the built development is within 400m of a bus service	At least 50% of the built development is within 400m of bus stop with a service operating every 30 minutes or more	At least 80% of the built development is within 400m of bus stop with a service operating every 30 minutes or more	At least 90% of the built development is within 400m of bus stop with a service operating every 30 minutes or more	At least 90% of the built development is within 400m of bus stop with a service operating every 15 minutes or more	At least 90% of the built development is within 400m of bus stop with a service operating every 10 minutes or more
Active mode improvement	None of the built development caters for active modes over cars - it is easier, quicker and more direct to access local services by car		Development somewhat caters for active travel - it is as easy/quick/direct to access key local services by walking/wheeling as it is by car		Development caters well for active travel - it is easier/quicker/more direct to access key local services by walking/wheeling than by car	
Micromobility / shared transport***	None of the built development is close to a mobility hub	<20% of the built development is within 800m of a mobility hub	>50% of the built development is within 800m of a mobility hub	>50% of the built development is within 400m of a mobility hub	>70% of the built development is within 400m of a mobility hub	>90% of the built development is within 400m of a mobility hub

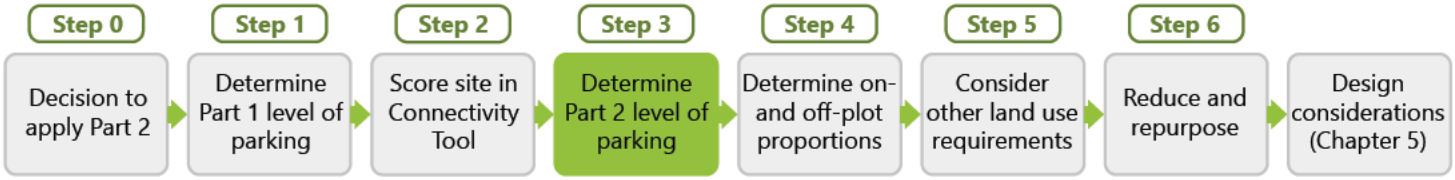
*daily facilities (subject to local authority agreement) could include: convenience store, education (nursery, primary school, secondary school), healthcare (pharmacy, GP), employment.
**average weekday daytime bus frequency. Rail connectivity may be taken into account in agreement with the LPA and LHA.
***Mobility hub to be defined according to site context and best practice guidance. They should at minimum include one public transport option and one shared transport option according to the CoMoUK accreditation document (see https://www.como.org.uk/mobility-hubs/overview-and-benefits).


Map 1
Haverhill
Clare
Ipswich
Royston
Sudbury
Hadleigh
Saffron Walden
Buntingford
Halstead
Manningtree
Harwich
Dovercourt
Colchester
Braintree
Coggeshall
Wivenhoe
Bishop's Stortford
Great Dunmow
Walton-on-the-Naze
Frinton-on-Sea
Sawbridgeworth
Ware
Hertford
Witham
Brightlingsea
Holland-on-Sea
Clacton-on-Sea
Harlow
Hoddesdon
Broxbourne
Chelmsford
Maldon
Chipping Ongar
Cheshunt
Epping
Waltham Cross
Ingatestone
Enfield
Loughton
South Woodham Ferrers
Buckhurst Hill
Billericay
Burnham-on-Crouch
Brentwood
Wickford
Wood Green
Rayleigh
East Finchley
Walthamstow
Romford
Basildon
Ilford
Benfleet
Hackney
Stratford
Barking
Hadleigh
Leigh-on-Sea
Shoeburyness
Islington
East Ham
Canvey
City of London
South Ockendon
Stanford-le-Hope
City of Westminster
Greenwich
Woolwich
Erith
Grays
Clapham
Lewisham
Bexleyheath
Tilbury
Lee
Eltham
Brixton
Catford
Dartford
Northfleet
Gravesend
Average number of cars or vans per household by LSOA (Census, 2021)
Less than 1 vehicle per household
Up to 1.2 vehicles per household
Up to 1.44 vehicles per household
Up to 1.6 vehicles per household
Up to 2 vehicles per household
2 or more vehicles per household


Map 2
Royston
Saffron Walden
Sudbury
Buntingford
Halstead
Manningtree
Harwich
Dovercourt
Colchester
Braintree
Great Dunmow
Coggeshall
Wivenhoe
Bishop's Stortford
Walton-on-the-Naze
Frinton-on-Sea
Sawbridgeworth
Ware
Hertford
Brightlingsea
Holland-on-Sea
Clacton-on-Sea
Witham
Harlow
Hoddesdon
Broxbourne
Chelmsford
Maldon
Chipping Ongar
Epping
Ingatestone
Enfield
Loughton
South Woodham Ferrers
Billericay
Burnham-on-Crouch
Brentwood
Wickford
Rayleigh
Romford
Basildon
Benfleet
Hadleigh
Leigh on Sea
Shoeburyness
Canvey
Stanford-le-Hope
South Ockendon
Grays
Tilbury
Basemap
Roads
Railways
Local Authority Areas
Proportion of commuting workers who drive a car or van to work by LSOA (Census, 2011)
Fewer than 55% of commuters drive to work
55% ≥ commuters drive to work < 60%
60% ≥ commuters drive to work < 65%
65% ≥ commuters drive to work < 70%
70% ≥ commuters drive to work < 75%
At least 75% of commuters drive to work
Contains Ordnance Survey data (c) Crown copyright and database right 2023


Map 3
Haverhill
Clare
Royston
Sudbury
Hadleigh
Ipswich
Saffron Walden
Buntingford
Halstead
Manningtree
Harwich
Dovercourt
Colchester
Braintree
Coggeshall
Great Dunmow
Bishop's Stortford
Wivenhoe
Walton-on-the-Naze
Frinton-on-Sea
Sawbridgeworth
Ware
Hertford
Brightlingsea
Holland-on-Sea
Clacton-on-Sea
Witham
Hoddesdon
Harlow
Broxbourne
Chelmsford
Maldon
Chipping Ongar
Cheshunt
Epping
Waltham Cross
Ingatestone
Enfield
Loughton
South Woodham Ferrers
Burnham-on-Crouch
Buckhurst Hill
Billericay
Brentwood
Wickford
Wood Green
East Finchley
Walthamstow
Romford
Rayleigh
Basildon
Benfleet
Ilford
Camden Town
Hackney
Barking
Hadleigh
Leigh on Sea
Shoeburyness
Islington
Stratford
East Ham
Canvey
City of London
South Ockendon
Stanford-le-Hope
City of Westminster
Woolwich
Erith
Grays
Greenwich
Tilbury
Clapham
Lewisham
Bexleyheath
Lee
Eltham
Connectivity Level
Very Low
Low
Moderate
Good
High
Very high
Based on data generated April 2024
Contains Ordnance Survey data (c) Crown copyright and database right 2024

STEP 3 – DETERMINE PARKING LEVEL BASED ON PART 2



Summing the scores across the seven metrics results in a total. A higher total score means the development has more potential to achieve better sustainable transport outcomes. Based on the Evidence Base, metrics are associated with outcomes relation to mode share (how people travel) and car ownership rates. These give an idea of what to expect if sustainable transport is prioritised in masterplanning, design and implementation. However, these expectations are not guarantees.

For LSDs a score of 21 or more should be aimed for. GCs have a higher target; a minimum score of 26. If a site falls short initially, negotiation with the LPA and LHA should focus on improving metrics 4 to 7 from Step 2 to create a more sustainable development in transport terms.

Result	0 to 10	11 to 15	16 to 20	21 to 25	26 to 30	31 and above
Outcome	Likely to sustain or worsen business as usual levels of sustainable mode share and car ownership	Likely to sustain business as usual levels of sustainable mode share and car ownership	Opportunity to reach a sustainable mode share and car ownership rates around the County average	Opportunity to reach >40% sustainable mode share and car ownership rates below 1.44 per household	Opportunity to reach >50% sustainable mode share and car ownership rates below 1.2 per household	Opportunity to reach >60% sustainable mode share and car ownership rates below 1 per household
	Development unlikely to be acceptable - higher scores need to be achieved			Minimum to be achieved by LSDs	Minimum to be achieved by GCs	Desirable for GCs

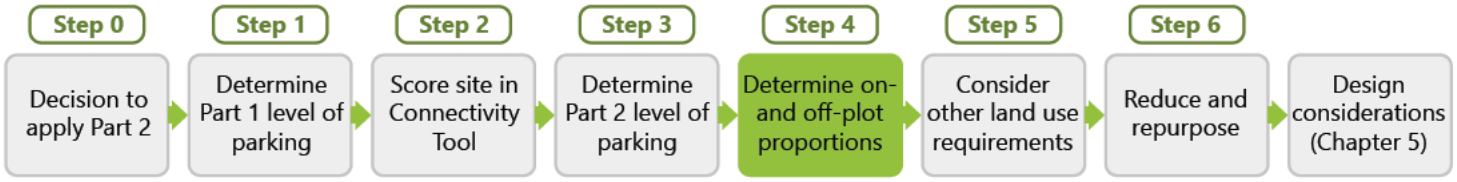
	Standards to Apply					
Comparison to Part 1 'low connectivity'	Apply Part 1 standards relative to connectivity level	Apply Part 1 standards relative to connectivity level	Apply Part 1 standards relative to connectivity level	Apply low reduction to Part 1 standards	Apply medium reduction to Part 1 standards	Apply high reduction to Part 1 standards

When a development scores higher, a lower level of parking for residential (C3 Use Class) is recommended. These reflect a reduced amount of private parking from Part 1 'low connectivity' C3 standards[11]. These represent the allowed private residential vehicle parking across the phase / neighbourhood. Approaches to visitor, PTW, disabled, cycle and EV parking are detailed in the following steps.

The applicant needs to demonstrate that this overall parking level has been provided across all of the dwelling types / sizes / tenures within the site / phase. In some cases it's suitable to have some low or no-car development in the centre of a neighbourhood (e.g. apartments within a local centre), whereas more parking might be expected on the edge of a neighbourhood. The sharing of parking level across the site should be equitable across different ownership and property types.

Chapter 1 describes appropriate design types for different contexts, dwelling types and Use Classes.

STEP 4 – ON-/OFF-PLOT PROPORTIONS



The total private parking (excludes visitor and car club spaces) is broken down into specific proportions of on- and off-plot parking. Evidence suggests that off-plot (and ideally unallocated) parking is a more efficient, and often more attractive, way of providing residential parking. Provisions of off-plot parking are also important in reducing and repurposing future parking (see Step 6).

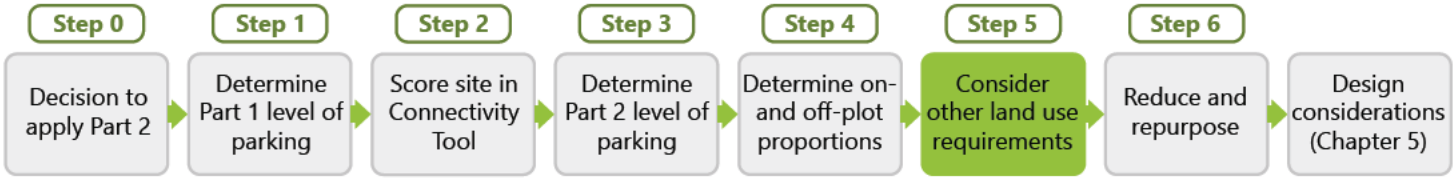
Within the Connectivity Tool the following recommendations are generated:

- Proportion of off-plot – derived from total private parking level.
- Proportion of on-plot – the remainder of total parking can be allocated on-plot.
- Minimum number of additional car club spaces – these are added to the total private parking level and are derived from total dwellings for the site / phase.

The levels recommended are based on the score the site / phase receives in Step 2.

11 The Part 1 'low connectivity' C3 standards are the same as those contained in the adopted 2009 Essex Parking Standards. The reductions from these required in this guidance have already been delivered in many well-connected, strategic developments in Essex, reflecting an organic change in approaches to sustainable development since 2009.

STEP 5 - OTHER LAND USES



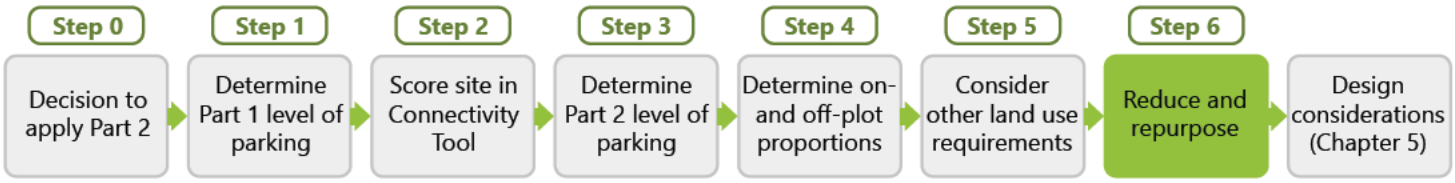
It is anticipated that strategic developments will incorporate land uses beyond C3 residential dwellings, for example leisure, retail, healthcare or commercial. All journeys have an origin and a destination, and conventionally it has been accepted that trip-making is easier to influence at the origin. However, availability of parking at a destination is a key determinant when choosing to drive. Some land uses are better suited to apply restrictions to. Even though applicants have less influence over how people arrive from outside, having an abundance of parking at a destination encourages more car trips there.

The approach to each non-residential land use in a strategic development is determined by the score the site/phase achieved in Step 3. Step 5 adopts three different approaches, depending on the Use Class:

- Parking to be delivered with the same reduction applied to C3 residential in Step 1; or
- Parking to be delivered with some reduction, but not as much as is applied to C3 residential; or
- Parking is to be delivered with no reductions from Part 1, irrespective of the Connectivity Tool score.

Appendix D sets out reductions to non-residential land uses mostly likely to be in a GC or LSD. Part 1 applies for any land uses not listed. The standards in Appendix D represent minimum standards.

STEP 6 – REDUCE AND REPURPOSE



When constructing a new development, it's important to also think ahead. This step looks into the future and while it may not be implemented immediately, there is benefit to outlining a strategy for reducing parking in future during the planning stage. By promoting 'interim' approaches to parking design which group together unallocated parking provision can make it easier to repurpose in future. This repurposing of parking could result in benefits beyond greener, healthier developments, with financial benefit to the community or freeholder of freeing up land for other uses. Planning clusters of parking in single ownership, ideally some form of stewardship body, can help to ensure consideration of parking areas on a holistic basis, as well as aiding any repurposing changes in future.

It is not allowable to use further parking restraint (in isolation) to drive down car ownership where sustainable travel targets / outcomes are not being met. Instead, parking provision should be reduced over time, responding to reduced demand for car ownership as a result of:

- Technological and cultural shifts; and
- Delivery of sustainable travel infrastructure and key facilities / amenities.

In Step 6 the scoring in Step 2 of the Tool is repeated, this time envisaging a future where the entire development is complete and all planned infrastructure in place. This forward-looking perspective is likely to result in the earlier phases scoring higher than they did in Step 2, resulting in a lower total parking.

The difference between the initial parking level (Step 2/3) and the potential future parking level (Step 6) should guide the design of parking. Some parking may need to be designed with repurposing in mind (see Chapter 1) and could reduce the off-plot proportion, as this is more straightforward to repurpose. By collating parking, there are wider options for repurposing in future, such as social and educational functions and potentially provide financial benefits.

Considered monitoring should inform the timing and scale of any repurposing to ensure appropriate transition stages where viable alternatives to the car are accessible, frequent and affordable before car ownership is reduced.

Parking for disabled people, car club vehicles and cycle parking provision should not reduce over time, in fact space for these purposes may increase as space previously used for storage of vehicles is repurposed. It may not be appropriate to reduce visitor parking or car parking at non-residential land uses over time; this should be considered on a case-by-case basis with the LPA and LHA.

Where planning permission is required for repurposing land/property in the future, the applicant must demonstrate that development will not worsen the existing parking circumstance.

5. OUTCOMES BY DESIGN

The previous chapters have given guidance on the role of parking in strategic developments and the quantity (level) of parking to be provided based on existing and future connectivity levels. This chapter provides guidance on designing this parking into new sustainable strategic developments. The design of parking is an important element of the National Design Guide and other relevant design publications such as Building for a Healthy Life and Streets for a Healthy Life, and it plays a critical role in the feel and function of streets and spaces, influencing landscaping, placemaking, safety and amenity. Parking does not just affect how a place looks, it can also affect how happy people feel about where they live and work. Parking should feel secure, cater for demand (where other sustainable modes have been maximised) and be accessible for people with reduced mobility.

This chapter guides how the GC and LSD parking outcomes described in Chapter 2 can be realised through applying design principles and typologies, informed by the parking hierarchy which prioritises active and sustainable modes above single occupancy vehicles. It is not exhaustive, prescriptive or detailed design guidance for parking – further detail can be found in Part 1, the EDG, and the national design publications referenced above (amongst others). It is expected that alongside transport practitioners, architects, urban designers, landscape specialists and masterplanners involved in the development of a GC or LSD will take an active role in ensuring that parking design achieves the outcomes.

5.1 DESIGN PRINCIPLES

The six overarching design principles set out in overleaf should guide the design of parking in new GCs and LSDs. It should be noted that the imagery shown in this chapter is used to help illustrate and explain terminology for types of parking, and is not necessarily exemplary of successful design more widely, for example design of buildings or soft landscaping.

5.2 APPLYING THE PRINCIPLES

5.2.1 Place-led design

Place-led design is as important when designing areas of parking as it is when planning the built form, streets and green spaces. Parking and car access does not have to be provided in all streets within developments. Designating some streets as car free, creates a safe space for active travel and play.

Parking should integrate with landscaping and public realm, sitting within it rather than dominating. Materials which complement the palette of the wider development should be used (e.g. on garage doors, surfaces), whilst recognising implications for drainage and maintenance.

A parking area can be made into an environmental asset by combining permeable paving, bioretention and natural drainage systems. Landscape elements could include making the most of shading and greenery, implementing naturalised drainage, using permeable paving, enhancing safe pedestrian routes; integrating and connecting parking into the neighbourhood and surrounding landscape character.

Parking areas and lengths of bays should be screened (for example with planting) to soften the impact of expanses of hardstanding and vehicles. Where it is provided within public spaces or streets, it should utilise sympathetic design concepts which also allow flexibility for its repurposing in the future into uses which better complement and activate the street, such as bike hangars or parklets.

Figure 5-1: Design principles

Place-led design

Car parking affects the quality of a place and how people use it. Parking should be place and design-led, embedded in wider urban design and masterplan outcomes, with typologies contained within a Design Code. Parking that is designed in isolation will result in poor outcomes.

Shared wherever possible

Allocated car parking results in inefficient use of land in residential and non-residential settings, because under used space is not available for use by other residents or neighbouring uses, at times of high demand.

Accessible to all

People with disabilities may be more likely to need to drive, have access to a car or need adapted cycles. Sufficient parking dedicated to disabled drivers, cyclists and wheelers should be provided for residents and visitors in convenient locations.

Secure and appropriately located

People should feel safe when parking and comfortable leaving their car or cycle behind. Active mode parking should be convenient whereas car parking should be less convenient, (aside from accessible spaces).

Well managed outcomes

Design should manage out inconsiderate parking and therefore the need for enforcement is reduced. The impact on design of the necessary signs and lines should be considered, as well as mechanisms and funding for enforcement and maintenance.

Flexible and future-proofed

Parking should be designed such that it can be repurposed in the future, if demand falls, and so that it can adapt to technologies for electrification of vehicle and micro-mobility modes.

Parking typologies and design elements relevant to the development scale and context should be embedded in Design Codes, identifying appropriate typologies for area, street or building types. Specific local design policies, including adopted DPDs and SPDs, should be adhered to.

ITP – The Avenue (Saffron Walden). Showing parking on street and on driveways which is broken up by planting.

ITP – Newhall (Harlow). Showing a street which incorporates parking typologies that screen parking or take it away from the street entirely.

5.2.2 Shared wherever possible

The Evidence Base demonstrates that shared parking presents the most efficient use of space, both for residential and non-residential land uses. As some households will have one (or no) vehicle, they will not need two allocated spaces, for example. If they are shared, this allows households with more than one vehicle to make use of those spaces instead. Similarly, non-residential land uses tend to reach their peak parking demand at different times of the day, and hence shared parking can cater for peaks across the day if complementary land uses are co-located.

Shared parking will not always be appropriate for every dwelling or land use, and some allocated parking – for example on driveways – adds variety and depth to a street (among other placemaking measures). On-plot and allocated parking can be designed sympathetically, but should not make up the majority of parking at GCs and LSDs (as informed by the outputs of the Connectivity Tool).

ITP - Arkwright Walk (Nottingham). Showing unallocated on street parking laybys.

ITP – Fryerns (Basildon). Showing on plot parking incorporated into driveways and undercroft.

5.2.3 Accessible to all

Not only should parking for adapted vehicles and vehicles used by disabled people, cycles and mobility aids be abundant and convenient (never provided below the minimum Part 1 standards), but the infrastructure around it should also cater for ease of access to dwellings and destinations. Sufficient space should be provided in the vicinity of parking for manoeuvrability, and step free access provided through use of ramps and level surfaces. Car parks should be legible and safe through provision of tactile surfaces, dropped kerbs, signage and adequate lighting. Mobility hubs should provide accessible car parking spaces as well as cycle and micro-mobility spaces. Locating these elements close to the entrance / exit of a building provides opportunity to enhance accessibility for users, as well as creating natural surveillance so storage feels more safe and secure. Care should be taken to ensure that cycle and micro-mobility parking does not obstruct access or minimum clear-widths for manoeuvrability when in use, as specified in Part 1 of the guidance. Consideration should be given to both the dimensions of the storage facility and the dimensions/overhang of any vehicles likely to be using the facility.

Antisocial parking of Micromobility modes and cycles which could obstruct footways should be discouraged by appropriate signage and choosing a facility design that discourages parking outside the intended area, such as choosing a design which prevents users from locking bikes to the outside of facility.

ITP – The Echoes (Grays). Showing a parking space for disabled people in front of a building entrance.

ITP – Devonshire Court (West Bridgford, Nottingham). Showing a parking space for disabled people in front of building entrances.

5.2.4 Secure and appropriately located

All areas of parking for all modes should be adequately lit, and naturally surveilled. It is very important that users feel comfortable that their vehicle, cycle, scooter etc. is secure. Where natural surveillance is not possible, the use of CCTV, shelters, lockable cages and barrier systems may help create a sense of security. People should feel safe exiting the area of parking and walking to their dwelling or destination, again through lighting and surveillance. This is particularly the case where car parking is located more distant from homes than has conventionally been the case in masterplanning.

In accordance with the parking hierarchy, parking should be convenient for active and micro-mobility modes, as close to the front entrances of dwellings and destinations as possible, and at every mobility hub. Aside from car club spaces and car parking for disabled people, private car parking areas should be the least convenient option in terms of walking distance to a building entrance (while ensuring they are safe, secure and well lit). This could be through provision on-street or in parking courts, or ideally, more distant from homes and destinations in parking barns, shared car parks or multi-storey car parks (see Typologies section below).

Where parking is not provided close to a building entrance, enforced drop-off zones may be necessary to allow loading/unloading of bulky goods by building entrances.

ITP – Ebbsfleet Valley (Ebbsfleet Garden City). Showing car parking away from building entrances.

ITP – Eddington (Cambridge). Showing a parking court to the rear of a development block, but with some dwellings overlooking.

5.2.5 Well-managed outcomes

The primary method of managing parking should be through high quality design, as described above. Thoughtful landscaping and geometry, and fostering a sense of place amongst site users, can be effective in 'designing out' indiscriminate and inappropriate parking as well as anti-social behaviour / crime. It is recognised, however, that in areas of higher demand, on important movement corridors, or near to attractions such as stations or mobility hubs, inappropriate parking can cause operational and safety problems.

In tandem with an effective stewardship, leasing and / or site management strategy (see Chapter 3), parking enforcement may be required in order to address overspill and achieve wider outcomes relating to placemaking. Introducing lining and signing on streets should be considered as a last resort, as they detract from quality of design and legibility. Controlled Parking Zones or Restricted Parking Zones may have lesser visual impacts but in both cases there are management costs associated with enforcement. The allocation of parking spaces should not be used as a mechanism for managing overspill (without other enforcement in place), as where there is high demand, allocations can be contravened (and it will continue to be an inefficient use of space).

The extent of the adopted highway should be given careful consideration in terms of whether areas of parking are adopted. On-street parking bays may be adoptable, whereas LHAs are very unlikely to adopt parking courts or barns. This could impact upon the extents and control over Traffic Regulation Orders and Controlled Parking Zones.

ITP – Ebbsfleet Valley (Ebbsfleet Garden City). Showing parking restrictions in the layby.

ITP – The Avenue (Saffron Walden). Showing landscaping to deter on-street parking outside of dedicated bays.

5.2.6 Flexible and future-proofed

Parking demand should reduce over time in strategic developments as behaviours change and new infrastructure is delivered through later phases. All car parking (on-street, on-plot) should be designed with flexibility in mind, whether it be repurposing to provide more parking for other modes, or to be taken back as green space. This not only relates to surfacing, materials and construction specification, but also the location of parking areas and how they relate to frontages, drainage, utilities / services and land uses – for example repurposing a remote parking court, which is not overlooked, to a green space will not be effective.

Parking for all modes should be future proofed to adapt to new technologies and innovations so far as is possible, in residential, non-residential and mobility hub settings. This should include active charging infrastructure for cars, cycles and micro-mobility modes, and at minimum at least passive charging infrastructure for 50% of all space (aligning with Part 1 guidance). Aside from electrification, the scale and type of vehicle and cycle is likely to change over time. Parking for all modes should not be squeezed into constrained spaces which might undermine future uptake of, for example, cargo bikes.

The weight of EVs (heavier than conventional cars) will need to be taken into account in construction specifications of pavements and decked car parking. Maintenance and ownership of on-street, unallocated EV charging points will also require discussion with the adopting authority. Consideration should be given to relevant fire safety standards where EV parking and/or charging is provided or could be provided in future.

ITP – North View Avenue (Tilbury). Showing grasscrete parking areas, which can be more cost effective to remove compared with traditional surfaces (although maintenance implications of grasscrete should be considered).

Camden Council – Fleet Road. Showing a parking space repurposed for a bike hangar.

5.2.7 Typology matrix

Drawing on the above parking design principles, Table 5-1 sets out a Design Typology Matrix. This details the types of parking design which will or will not be acceptable in different contexts and for different land uses. It allows some flexibility in what is provided, with an order of preference identified. Any parking typologies which are not listed for a land use are not acceptable (see Matrix footnotes).

The Matrix allows applicants to interpret the total parking levels for land uses within strategic developments into design solutions which suit the specific street, phase or neighbourhood in question.

Explanatory notes are provided below the Matrix. Descriptions and design guidance for each typology follow the footnotes.

Design Typology Matrix Notes

1. All parking should include appropriate levels of electric charging provision, according to Part 1 guidance.
2. A 'parking barn' refers to a similar structure to a multi-storey car park, often across fewer decks and smaller scale in its mass. It may be a surface level car park, but with shelter, enclosure, screening and some security features. See Typology Guidance section below.
3. If a typology is not listed under a land use, it is not allowable except for in exceptional circumstances (e.g. where there are design influences such as conservation areas). Space constraint is not an exceptional circumstance.
4. Other land uses not explicitly covered can be negotiated / based on judgement, using guidance from Part 1 and Part 2.
5. Parking for other vehicles such as service vehicles and HGVs is not covered by the above table, and should be provided in accordance with Part 1 and the occupier's requirements.
6. Only undercroft integrated garage parking is allowable (described in the Typology Guidance section below). The Part 1 guidance allows garages when they are above specified dimensions. Detached / standalone garages are least preferrable for vehicle storage in strategic developments because they can dominate streets and are a less efficient use of space.
7. Any off-plot parking could be leased (rented by the owner). This is encouraged as a demand management mechanism where there are clear covenants in place, and measures / infrastructure are delivered to provide alternatives to those who are buying houses without default access to parking.
8. Off-plot cycle parking is assumed to be shared / unallocated, and never leased.
9. It should not be assumed that cycles are stored inside individual flats / apartments – dedicated space must be provided at ground floor or basement level.
10. The above recommended private car parking typologies do not supersede the requirements for dedicated parking for disabled people (detailed in Part 1), which should be provided near to building entrances and provided solely for the use of disabled people.
11. Some on-plot and allocated parking may be appropriate for Use Classes where mobility impaired, young or elderly users are likely, for example some uses within C2 Use Classes.

Table 5-1: Design typology matrix

On-plot (proportions informed by Connectivity Tool)

<table>
<tr><td>Use Class</td><td colspan="4">C3/C4</td><td>C2</td><td>E(a), E(b)</td><td>E(c), E(g)</td><td>F1(b)-F1(f), F2</td><td>F1(a)</td></tr>
<tr><td>Includes</td><td>Flats / apart-ments</td><td colspan="2">Terraced</td><td>Semi-detached</td><td>Detached</td><td>Care homes, residential colleges</td><td>Retail</td><td>Commercial</td><td>Community</td><td>Education</td></tr>
<tr><td rowspan="3">On-plot cycle / e-mobility</td><td rowspan="3">Not appli-cable (i.e. no cycle parking within apart-ment itself)</td><td colspan="4">Covered cycle storage with direct external access to street (not through home)</td><td rowspan="5">On-plot parking unlikely to be applicable</td><td colspan="4" rowspan="5">Not applicable</td></tr>
<tr><td colspan="2" rowspan="2">Dedicated covered space in undercroft / mews garage (if provided)[5]</td><td colspan="2">Covered cycle storage with direct external access to street (not through home)</td></tr>
<tr><td colspan="2">Dedicated covered space in undercroft / mews garage (if provided)[5]</td></tr>
<tr><td rowspan="3">On-plot car</td><td rowspan="3">Not appli-cable (i.e. no car parking within curti-lage)</td><td colspan="4">Undercroft / mews garage parking[5]</td></tr>
<tr><td colspan="2" rowspan="2">Driveway – front of dwelling with appro-priate landscape buffer between spaces</td><td colspan="2">Driveway – side of dwelling</td></tr>
<tr><td colspan="2">Driveway – front of dwelling</td></tr>
</table>

Off-Plot (proportions informed by Connectivity Tool)

<table>
<tr><td>Use Class</td><td colspan="4">C3/C4</td><td>C2</td><td>E(a), E(b)</td><td>E(c), E(g)</td><td>F1(b)-F1(f), F2</td><td>F1(a)</td></tr>
<tr><td>Includes</td><td>Flats / apartments</td><td colspan="2">Terraced</td><td>Semi-detached</td><td>Detached</td><td>Care homes, residential colleges</td><td>Retail</td><td>Commercial</td><td>Community</td><td>Education</td></tr>
<tr><td>Off-plot cycle / e-mobility</td><td>Cycle hub[7]</td><td colspan="3">Short stay Sheffield stands or small cycle hubs for visitors[7]</td><td colspan="5">Cycle hub (may be separate long and short stay)</td></tr>
<tr><td rowspan="5">Off-plot car</td><td rowspan="2">Shared barn1, multi-storey, basement or podium6</td><td colspan="3" rowspan="2">Shared barn[1] or multi-storey[6]</td><td colspan="4">Shared barn1 or multi-storey (shared between uses)</td><td rowspan="5">Car park (may be separate long and short stay)</td></tr>
<tr><td colspan="4">Shared car park (shared between uses)</td></tr>
<tr><td>Shared on-street (low density flats only) [6]</td><td colspan="3">Shared on street[6]</td><td colspan="4">Allocated barn1 or multi-storey (dedicated to a land use)</td></tr>
<tr><td colspan="4">Shared court[6]</td><td colspan="4" rowspan="3">Allocated car park (dedicated to a land use)</td></tr>
<tr><td>Allocated barn[1], multi-storey, basement or podium</td><td colspan="3">Allocated barn[1] or multi-storey</td></tr>
<tr><td colspan="3">Allocated court</td></tr>
</table>

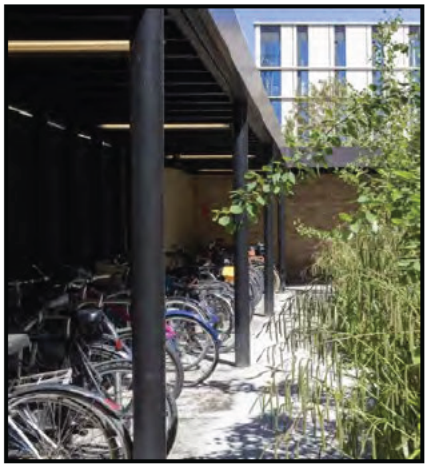
= preferred typology = acceptable typology = least preferable typology

5.3 TYPOLOGY GUIDANCE

The guidance below relates to the typologies set out in Table 5-1 and is intended to complement guidance contained within Part 1, the EDG, and other national policy / guidance, focussing on how the typology should be designed in the context of GCs and LSDs to achieve the outcomes. The graphics and images are for illustration purposes to help describe the typology being discussed - as in some cases terminology is not yet commonplace - and these do not necessarily represent exemplar street or building design.

Cycle hubs (residential and non-residential co-located cycle storage)

1. Should be located conveniently near building entrances or on ground floors. Short stay / visitor parking may be outside, long stay should be inside or well sheltered. Most appropriate for flats, short stay visitor parking, and non-residential land uses.
2. Must be covered, secure and well-lit, ideally with CCTV surveillance.
3. Must be capable of accommodating a variety of non-standard cycles (at least the 10% of total spaces as required by the Part 1 guidance), with charging points and additional passive charging provision. These spaces should be signed / painted for their use.
4. Where space allows, individual cages / stands per dwelling are preferred. Otherwise, unallocated spaces should be organised into areas dedicated for blocks / floors.
5. Should be integrated with other modes and shared transport facilities (e.g. at mobility hubs), where appropriate. This could incorporate bike hire and/or bike clubs.
6. Should include urban greening, and integrate renewable energy generation technologies (e.g. photovoltaic panels) where possible.

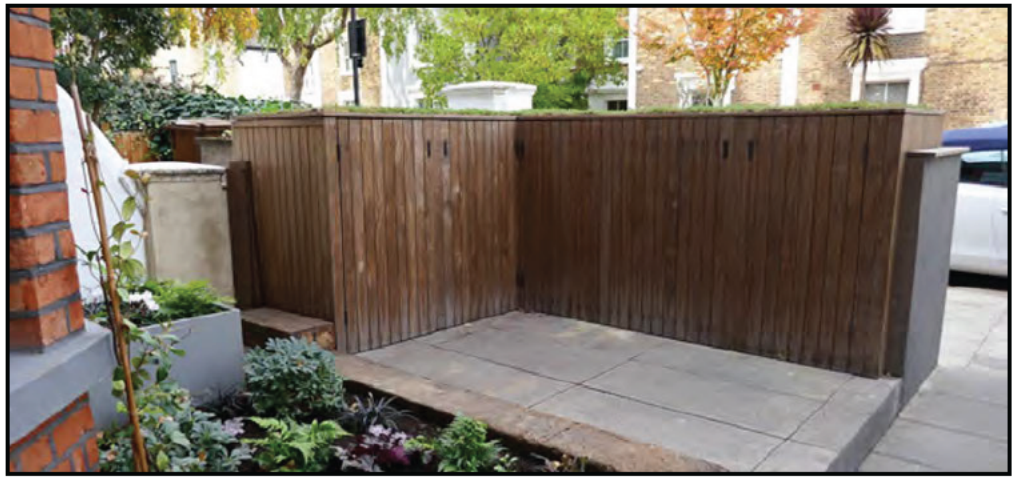




1. https://jlg-london.com/Eddington-Cambridge 2 ITP - Eddington (Cambridge), 3 ITP – Harlow Carr (Harrogate, North Yorkshire), 4. ITP – Ebbsfleet Valley (Ebbsfleet Garden City), 5. ITP – Great Kneighton (Cambridge), showing an indoor cycle hub for flats.

On-plot front/side cycle storage

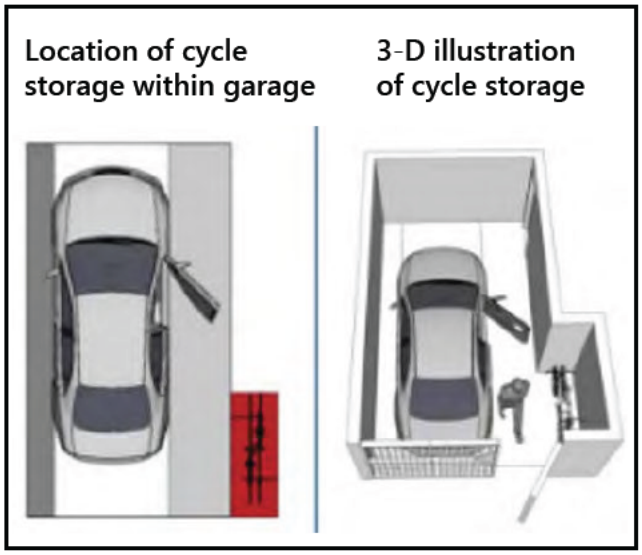
1. Ideally located in front garden / at front of dwelling to maximise convenience and ease of use. If at side of dwelling, a clear, step-free access route must be provided. Appropriate across all densities.
2. Must be covered and secure, with wall or floor anchors for securing cycles.
3. Must be capable of accommodating the minimum cycle parking standard for the dwelling type / size, including as part of that space for at least one non-standard cycle such as cargo or adapted bike (per dwelling). Ideally an e-bike charging point is provided.
4. Should be visible from the dwelling, but unobtrusive when viewed from the street.
5. Should be in addition to storage for other household items, and to car parking space on e.g. driveways (but can be retrofitted in, where demand for car parking space is reduced).

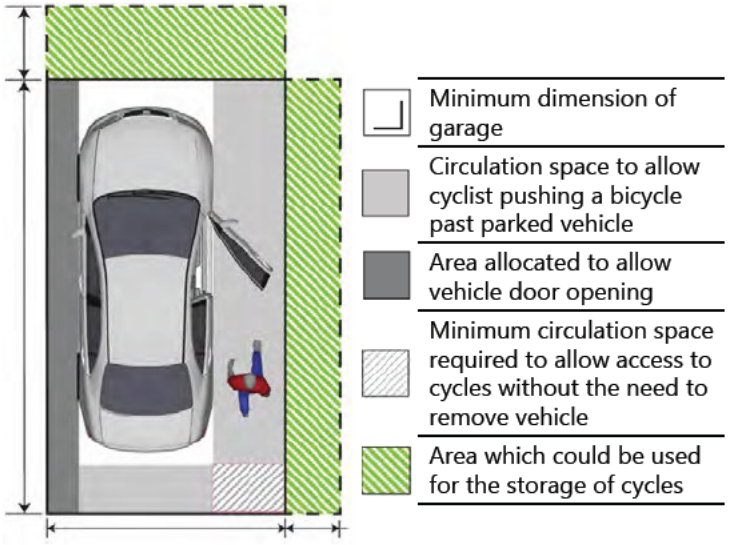


1. Waltham Forest 'Bike Sheds in Front Gardens' guidance, showing cycle storage to side of dwelling.
2. Urbanspec – Brewers Hill (Dunstable), showing cycle storage in front garden.

Dedicated cycle parking in garage

1. Located in undercroft to front / side of dwelling. Most appropriate in mid- to low-density areas.
2. Must be dedicated spaces outwith of standard garage dimensions. Cycle parking space should not be planned to be shared with cars or other household items.
3. Cycle access must be convenient, allowing for some manoeuvrability and potential for hanging space, and therefore storage to the side or front of the garage is preferred.
4. Should be capable of accommodating at least one non-standard (this will require larger dimensions than the minimum in the diagrams). Ideally dedicated e-bike charging is provided.
5. Garage door(s) should be secure, with wall or floor anchors for securing all cycles.





1., 2. and 3. Cambridge Cycle Parking Guide

Basement (and podium)

1. Located below flats or non-residential uses. Only appropriate in high density areas.
2. Should have discrete entrances and facades, where design and use of materials is consistent with or complementary to the design of the site. Space above the decked parking area could be used as communal space and should introduce planting.
3. Must be internally lit, well surveilled and secure, ideally with entrances behind development blocks to deter misuse by wider public.
4. If dwellings are flatted, basement and podium car parks must include secure long-stay provision for cycles and other e-mobility modes, in a more convenient location near to entrances/exits.
5. Should be repurposeable (especially podium car parks) to accommodate falls in parking demand over time. Decks should have sufficient clearance to be suitable for alternative uses, and be able to accommodate additional cycle and e-mobility storage and charging.

1. ITP – Eddington (Cambridge), showing podium parking.
2. Google Maps – Eddington (Cambridge), showing entrance to basement parking.

Multi-storey / parking barn

1. Should be located over circa. 50m (but less than circa. 300m) walking distance from dwellings they serve. Can be used as primary parking provision for a range of densities and dwelling types.
2. Whilst multi-storey car parks will typically be large structures with multiple decks, and barns are typically surface level, covered structures, the principle of off-plot, grouped parking more distant from homes is the same for both.
3. Must be subject to careful design and integration, ensuring that the storage of vehicles does not dominate the landscape or streetscape, using green walls for example.
4. Normally will be separate to parking for disabled people, which should be provided adjacent to buildings. Where multi-storey / barn parking removes vehicles from streets, low-trafficked streets should be capable of accommodating ad-hoc servicing and drop off from private vehicles.
5. Must be secure and lit, and ideally fitted with CCTV. Car parks, and pedestrian accesses to them, must feel safe at all times.
6. Cycle parking should be provided on-plot and near to dwellings. If parking for cycles is provided in multi-storey (e.g. for flats), it must be on the ground floor and in a convenient location near to entrances/exits.
7. Should be repurposeable to accommodate falls in parking demand over time. Ground floor decks should have sufficient clearance to be suitable for alternative uses, and be capable of accommodating additional cycle and e-mobility storage and charging. Roof structure should be capable of accommodating leisure, food/beverage, planting or energy generation such as solar panels.

1. Granta Park Car Park (Coventry) GoogleMaps 2. Vauban im Bild – Parking barn (Vauban)

Mews Garages

1. Integrated into / below dwellings, opening at street level. Most appropriate in mid-density areas.
2. Should be integrated with the street scene, with careful material choices and broken up by frontages and planting.
3. Mews should be activated at street-level (where the activity associated with getting into / out of vehicles is removed). Ground floor dwellings, windows and entrances, community uses and street furniture should be provided.
4. Provides a dedicated area of storage for cars and cycles (secured by covenants), removing them from streets. Associated low-trafficked streets should be capable of accommodating ad-hoc drop-off, waiting and servicing by private vehicles.
5. Streets should be configured to design out indiscriminate parking adjacent to frontages / garage doors, through geometry, setbacks, planting, surfacing and street activation (considering enforcement in some contexts).
6. Every garage parking space should have access to an EV charging point.

1. ITP – Tiptree (Colchester) 2. Alison Brooks Architects – Accordia (Cambridge) 3. ITP – Great Kneighton (Cambridge)

Driveways

1. Ideally located to the side of dwellings in a tandem (one in front of the other) configuration. Most appropriate in mid- to low-density areas.
2. Especially where tandem configurations are provided, streets should also be configured to design out indiscriminate parking outside of driveways, through geometry, setbacks, planting, surfacing and street activation (considering enforcement in some contexts).
3. Every driveway parking space should have access to an EV charging point.
4. Should be screened from the street scene so far as is possible with planting and boundary treatments.
5. Must not obstruct or prevent access to cycle storage; ideally cycle storage will be separate and more convenient, through provision of storage in front gardens / on street.
6. Surfaces should be porous to avoid surface water collection and flooding.

1. ITP – Great Kneighton (Cambridge) 2. ITP – Fryerns (Basildon) 3. ITP – North View Avenue (Tilbury)

On street

1. Parking located on-street either in parallel (layby) form or in squares in the centre of streets. Most appropriate in mid- to low-density areas, though could be effective in some high density contexts.
2. General spaces do not need to be immediately adjacent to the dwellings they serve, aside from parking for disabled people.
3. Outside of delineated / marked spaces, streets should also be configured to 'design out' indiscriminate parking, through geometry, landscaping, surfacing and street activation (considering enforcement in some contexts).
4. Ducts should be provided for passive EV charging on all streets where parking is provided. If spaces are predominantly for residential use, every space should have access to an active EV charging point.
5. Should be integrated into the street scene in terms of materials and broken up / screened by planting, strees and street furniture.
6. Should be repurposeable (through their geometry and surfacing), capable of transitioning to e.g. parklets and cycle hangars, if demand reduces.

1. ITP – The Avenue (Saffron Walden) 2. ITP – Newhall (Harlow) 3. ITP – Great Kneighton (Cambridge

Parking Courts

1. Ideally located in the centre of development blocks. Can be appropriate in high-, mid- or low-density areas.
2. At least half of the dwellings served by the court should have frontages onto it, maximising surveillance and activation to avoid creating anti-social spaces.
3. Should be easily accessible by the dwellings they serve providing safe, secure and convenient pedestrian routes to them. This should include consideration of provision of lighting, dedicated / clearly demarked pedestrian routes, and quality surface materials.
4. Should serve around ten dwellings or less, to maximise efficiency whilst constraining sprawling areas of parking.
5. For residential courts, every parking space should have access to an active EV charging point.
6. Should complement the into the street and built form in terms of materials. To ensure these areas are not dominated by hardstanding, they should integrate planting, trees and street furniture.
7. Surfaces should be porous to avoid surface water collection and flooding.

1. CIHT – Guidance Note: Residential Parking, 2. ITP – Great Kneighton (Cambridge), 3. RIBA – The Avenue, Saffron Walden

Shared car park

1. Located near to the relevant land use(s) (e.g. local centre, employment area, community/leisure facility), ideally shared amongst land uses.
2. Parking for disabled people should be located nearest to building entrances, followed by other dedicated spaces such as cycle parking, parent and child, EV and car share spaces.
3. Should be well lit, legible and accessible, with dedicated pedestrian walkways, dropped kerbs and tactile paving.
4. Should be screened from streets and dwellings, but visible from the buildings they serve.
5. Large expanses of hardstanding should be avoided, broken up by attractive planting, footways, trees and pocket parks. Sustainable drainage systems (SuDS) should be incorporated.
6. Areas of car parks could be considered for repurposing if demand falls, for example conversion to additional amenity / open space connected with the land use the car park serves.

1. David Lock Associates – Houlton (Rugby) 2. ITP – Trumpington (Cambridge)

APPENDIX A

THE CONTEXT IN ESSEX

Map 1 in the main report shows existing car ownership levels by Lower Super Output Areas across the EPOA area (and East Hertfordshire). Current car ownership in Essex is above the England average, with 84% of households having at least one car, compared to a 76% national average (Census, 2021). Data suggest that the rate of growth in car ownership in Essex is higher than the rate of population growth.

No car/van

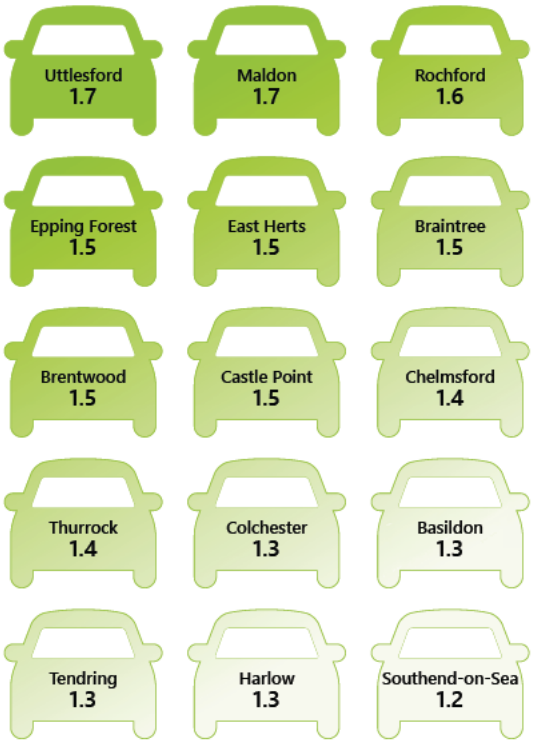
1 car/van

More than 1 car/van

The average vehicle availability per household in Essex is 1.44 cars/vans. The Evidence Base suggests that the strongest influence on car/van ownership in Essex is density and connectivity, where denser areas with more transport options have lower ownership. The larger urban centres tend to have lowest rates of car ownership while in rural areas it is much higher. There are, however, other factors likely at play which influence car ownership, potentially including affluence, demography and cultural attitudes. These are not necessarily linear relationships, but a combination of influences.

In some cases, the design and management of strategic developments has challenged these factors and delivered places with better outcomes than the areas that immediately surround them. This has happened to some degree in places in Essex (such as Beaulieu, Chelmsford) and has been very successful elsewhere in the UK, illustrated in the examples included within the main report.

This has implications when considering setting parking standards and designing parking into developments. The existing car ownership and mode share might have some influence on how a site could operate in the future. It should not, however, mean that the site is permitted to provide excessive levels of parking to pre-emptively meet travel demand, which could otherwise be directed towards



more sustainable modes of travel if they are delivered instead. GCs and LSDs present opportunities to challenge the norm in areas of high existing car ownership and use, by virtue of their critical mass and potential to deliver new infrastructure at scale.

The number of alternative fuel vehicles is growing rapidly in Essex. In 2018, alternative fuels made up 0.3% of the total cars in Essex and this rose to 2.9% of all cars in 2023[12]. At the end of 2023 Essex had 13,821 registered zero emission Battery Electric Vehicles (BEVs) and 10,233 Plug-in Hybrid Electric Vehicles (PHEVs)[13]. This is estimated to rise to 50k by 2025 and 220k by 2030.

Whilst electric vehicles (EVs) only represent a small part of delivering sustainable outcomes, this shows that new development in Essex needs to work hard to fully facilitate electrification (reflecting the ban on sale of new petrol and diesel combustion engines in 2030).

In terms of mode share, car/van ownership in Essex does not directly or linearly relate to use of private vehicles for trip making. Map 2 in the main report shows the areas with the highest and lowest car driver mode share from the 2011 Census, and demonstrates that not all of the same areas which recorded low car / van ownership exhibit a low car driver commuter mode share (and the same is the case for areas with high car / van ownership).

Similarly, the relationship between car ownership, car use and use of other modes such as cycling is not direct or linear. The Evidence Base shows that areas with high car ownership are also often those where people cycle more, suggesting that other factors such as affluence or culture are influencing sustainable trip making. The increases in sustainable trip making are also not proportionate to the number of vehicles owned, so for example, where car ownership is double in one area compared to another, sustainable trip making does not appear to halve. This suggests that at times, multiple car households are not making use of all of their vehicles all of the time, as some trips can be fulfilled by walking, cycling or public transport.

These findings highlight the complexities associated with setting effective parking standards. Drawing on the appraisal of the Essex context has led to production of a flexible, locally contextual and nuanced piece of guidance, acknowledging that:

- There will be no 'one size fits all' for strategic developments in Essex, as travel patterns and car ownership vary across the County and in neighbouring authorities. There are factors directly and indirectly related to transport which can influence how a household or community view car ownership and car use.
- The characteristics of an area surrounding a new GCs and LSDs might influence how that development operates in terms of car ownership/use, but this is likely not the only influence. Strategic developments elsewhere have demonstrably challenged the norm in terms of sustainable mobility through their scale, infrastructure and design.

+380%
2020-2023

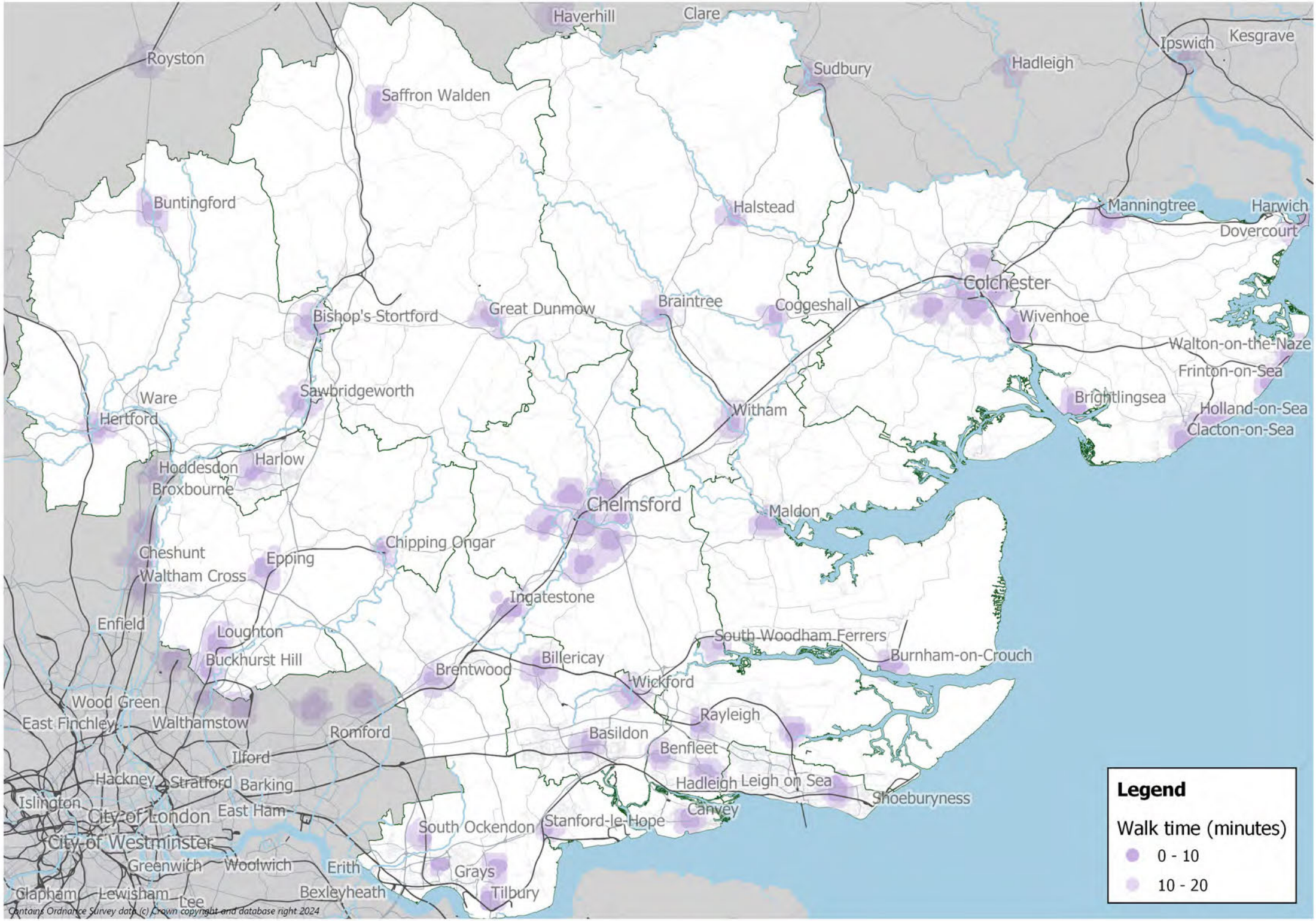
3% overall

12 Licensed plug-in cars (VEH0142) as a proportion of total cars in Essex (VEH0105)

13 Battery Electric Vehicles in Essex Q4 2020 – Q4 2023 (veh0142.ods (live.com))

APPENDIX B

WALKING, CYCLING, PTAL AND COMBINED CONNECTIVITY MAPS


Haverhill
Clare
Royston
Saffron Walden
Sudbury
Hadleigh
Ipswich
Kesgrave
Buntingford
Halstead
Manningtree
Harwich
Dovercourt
Colchester
Braintree
Great Dunmow
Coggeshall
Bishop's Stortford
Wivenhoe
Walton-on-the-Naze
Frinton-on-Sea
Ware
Sawbridgeworth
Brightlingsea
Hertford
Witham
Holland-on-Sea
Clacton-on-Sea
Hoddesdon
Harlow
Broxbourne
Chelmsford
Maldon
Chipping Ongar
Cheshunt
Epping
Waltham Cross
Ingatestone
Enfield
Loughton
South Woodham Ferrers
Buckhurst Hill
Billericay
Burnham-on-Crouch
Brentwood
Wickford
Wood Green
Rayleigh
East Finchley
Walthamstow
Romford
Basildon
Benfleet
Ilford
Hackney
Stratford
Barking
Hadleigh
Leigh on Sea
Islington
Canvey
Shoeburyness
City of London
East Ham
South Ockendon
Stanford-le-Hope
City of Westminster
Greenwich
Woolwich
Erith
Grays
Tilbury
Clapham
Lewisham
Bexleyheath
Lee
Legend
Walk time (minutes)
0 - 10
10 - 20
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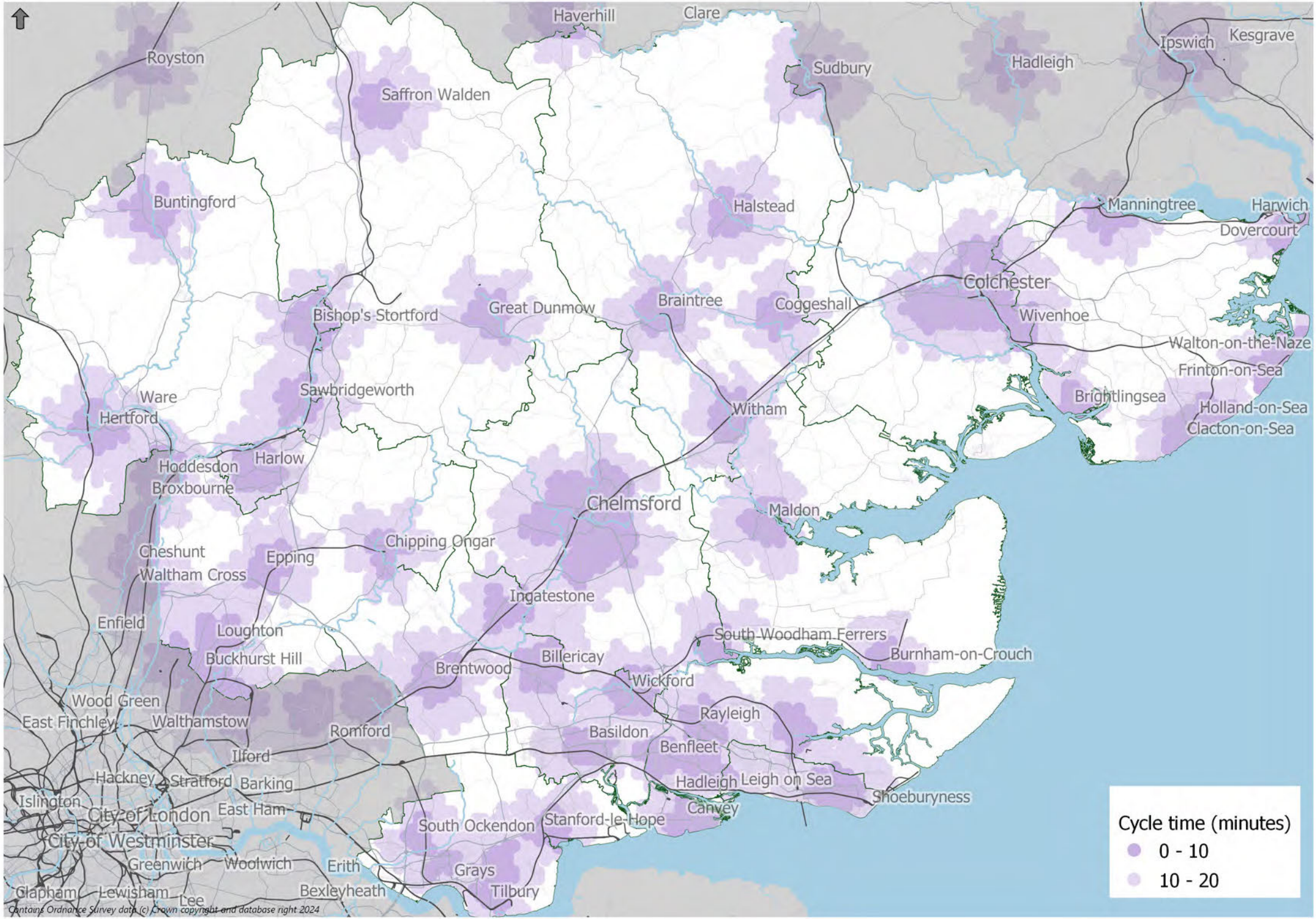

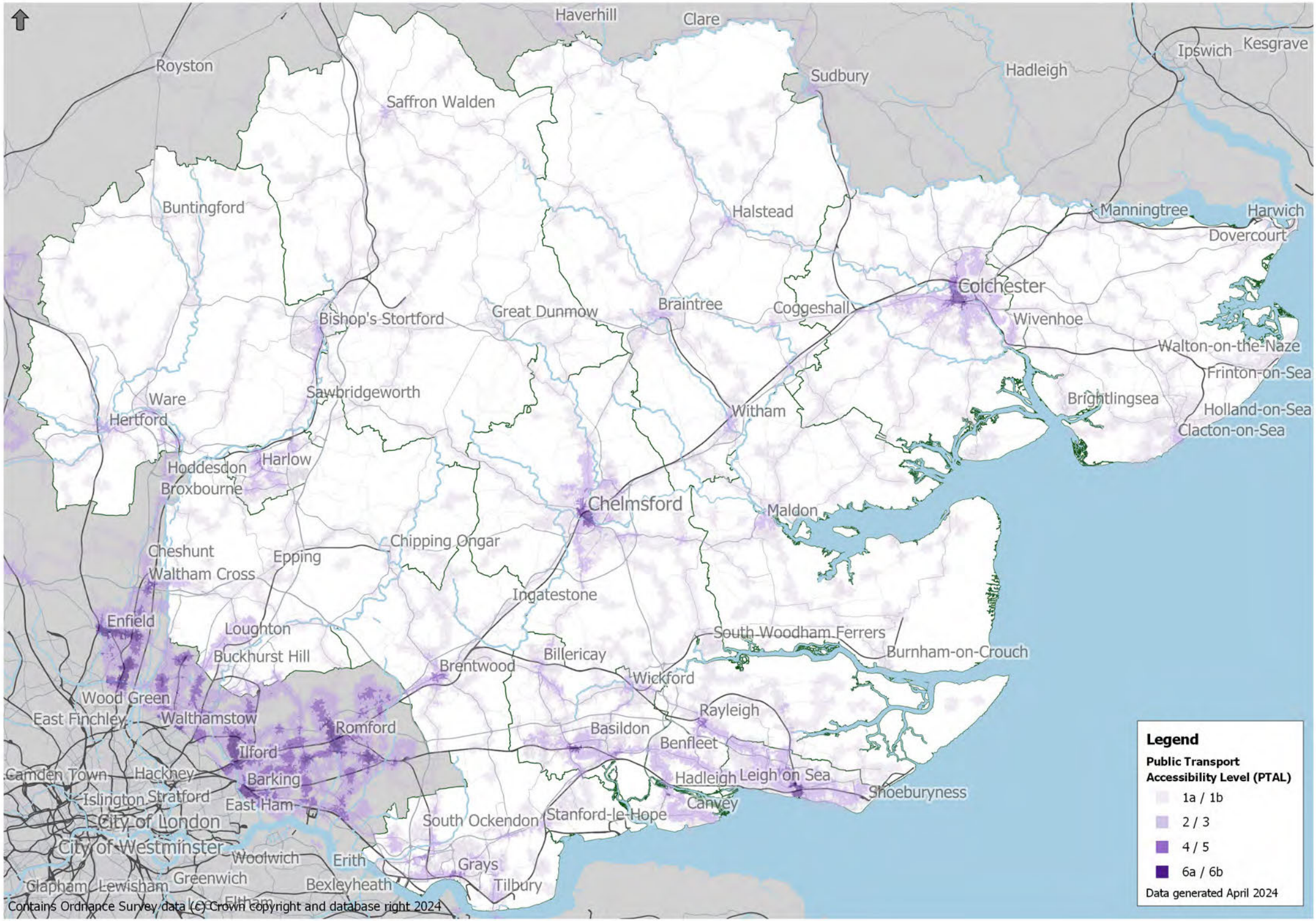

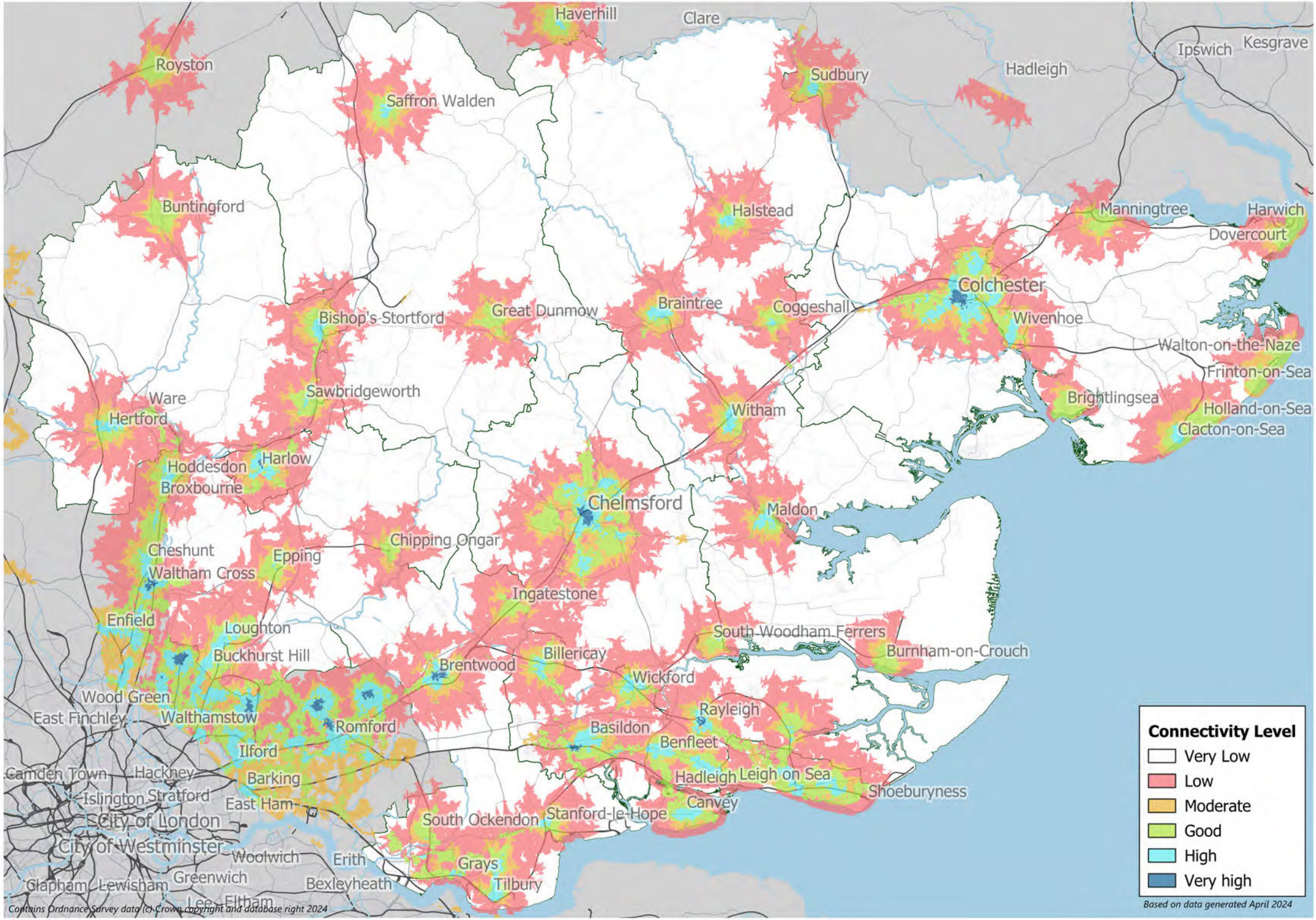
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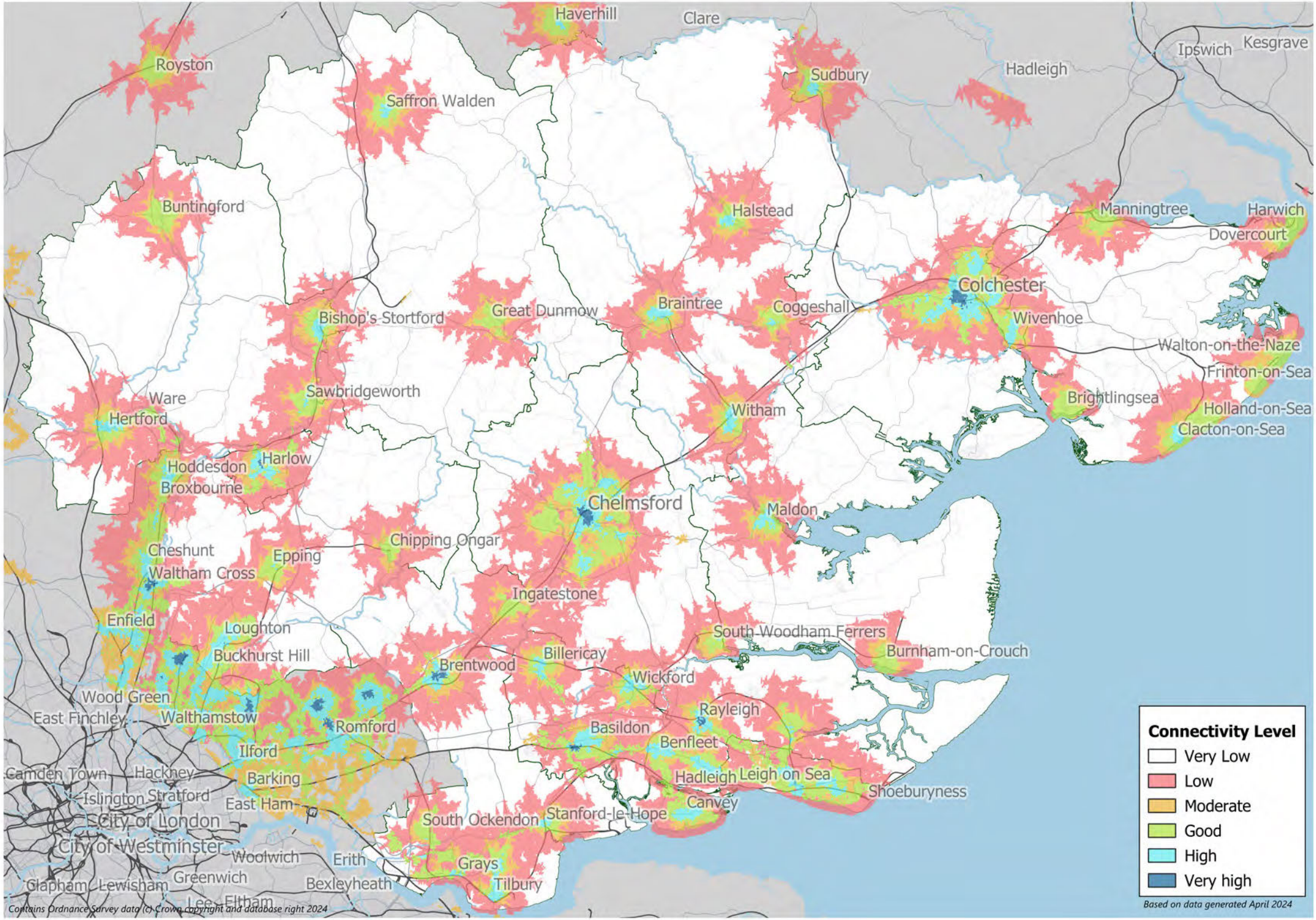
Braintree
Coggeshall
Great Dunmow
Bishop's Stortford
Wivenhoe
Walton-on-the-Naze
Frinton-on-Sea
Sawbridgeworth
Ware
Hertford
Witham
Brightlingsea
Holland-on-Sea
Clacton-on-Sea
Harlow
Hoddesdon
Broxbourne
Chelmsford
Maldon
Chipping Ongar
Cheshunt
Epping
Waltham Cross
Ingatestone
Enfield
Loughton
South Woodham Ferrers
Burnham-on-Crouch
Buckhurst Hill
Billericay
Brentwood
Wickford
Wood Green
East Finchley
Walthamstow
Romford
Rayleigh
Basildon
Benfleet
Ilford
Camden Town
Hackney
Barking
Hadleigh
Leigh on Sea
Shoeburyness
Islington
Stratford
East Ham
Canvey
City of London
South Ockendon
Stanford-le-Hope
City of Westminster
Woolwich
Erith
Grays
Greenwich
Clapham
Lewisham
Bexleyheath
Tilbury
Lee
Eltham
Connectivity Level
Very Low
Low
Moderate
Good
High
Very high
Contains Ordnance Survey data (c) Crown copyright and database right 2024
Based on data generated April 2024

APPENDIX C

DISTRICT CONNECTIVITY LEVEL MAPS



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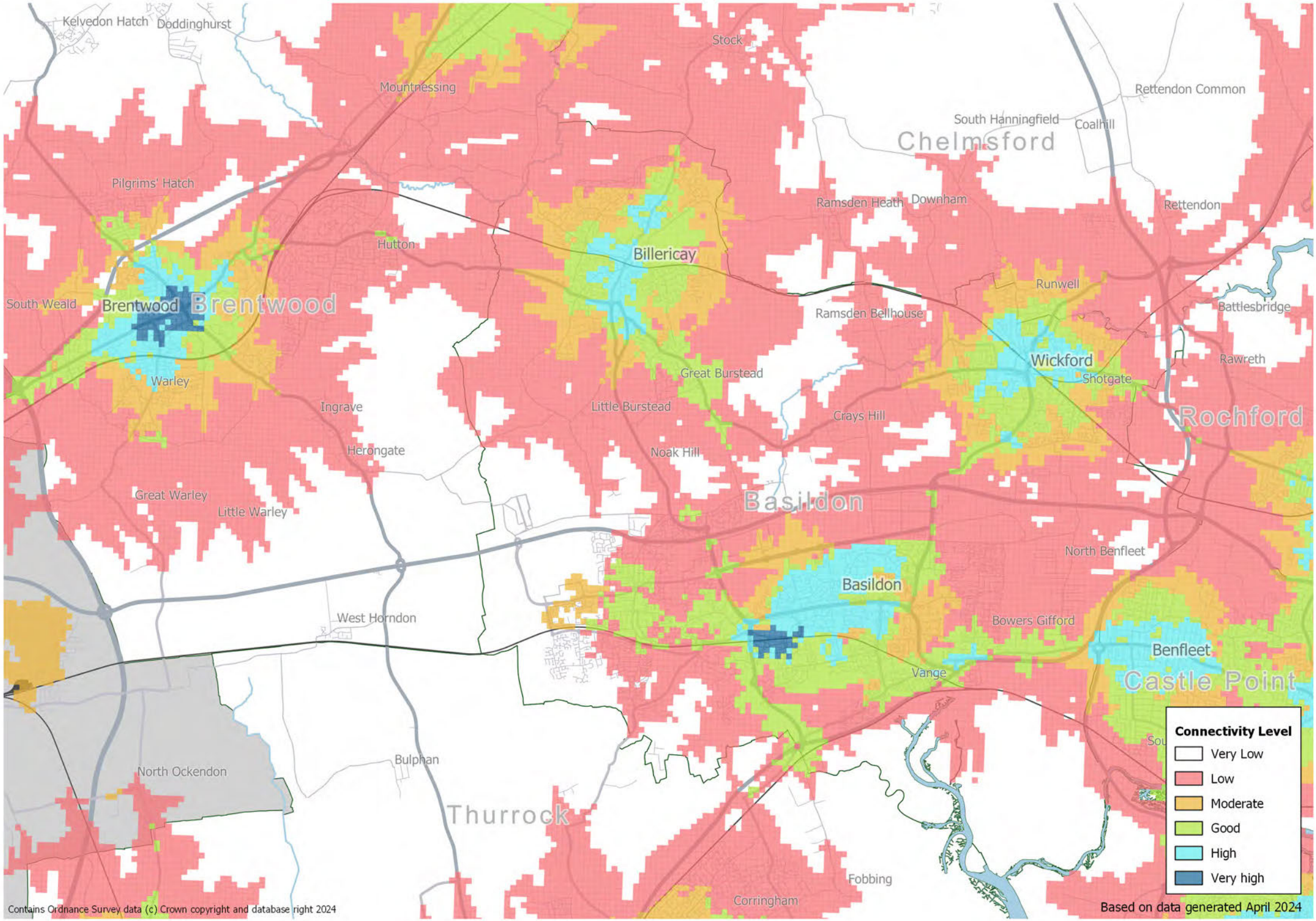
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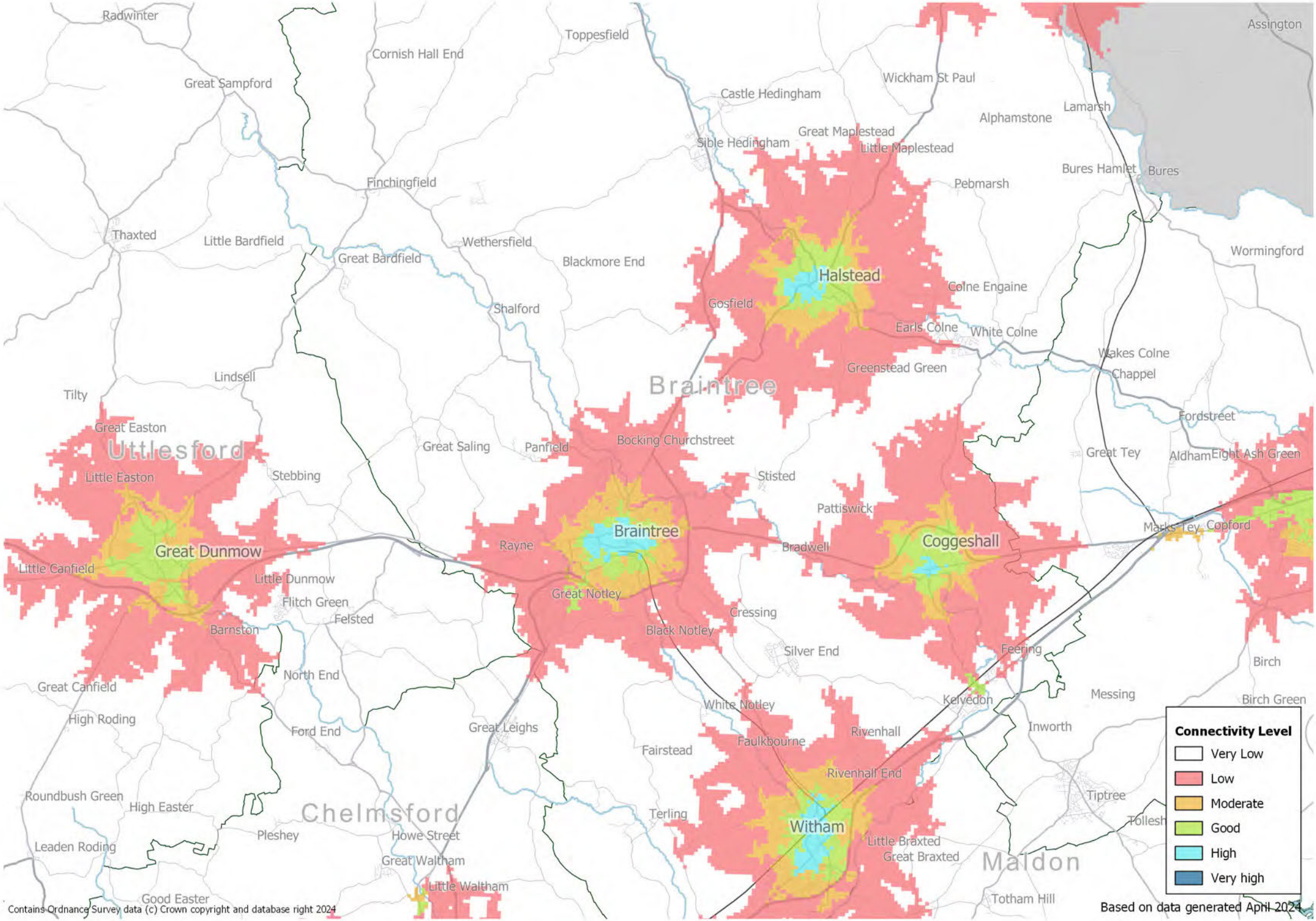
Rettendon
Hutton
Billericay
South Weald
Brentwood
Brentwood
Runwell
Ramsden Bellhouse
Battlesbridge
Wickford
Rawreth
Warley
Great Burstead
Shotgate
Ingrave
Little Burstead
Crays Hill
Rochford
Herongate
Noak Hill
Great Warley
Little Warley
Basildon
North Benfleet
Basildon
West Horndon
Bowers Gifford
Benfleet
Vange
Castle Point
Bulphan
North Ockendon
Thurrock
Fobbing
Corringham
Connectivity Level
Very Low
Low
Moderate
Good
High
Very high
Contains Ordnance Survey data (c) Crown copyright and database right 2024
Based on data generated April 2024



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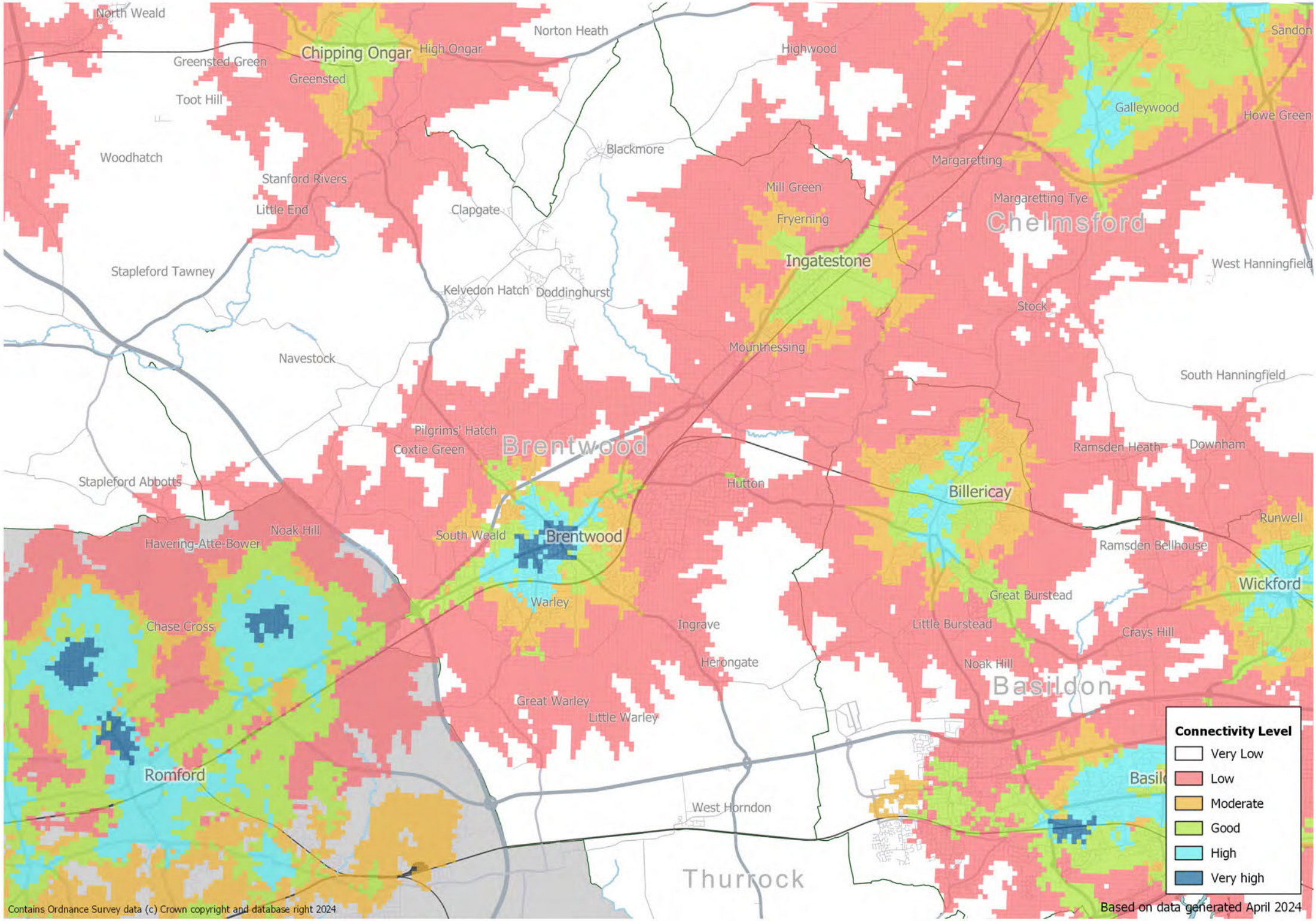

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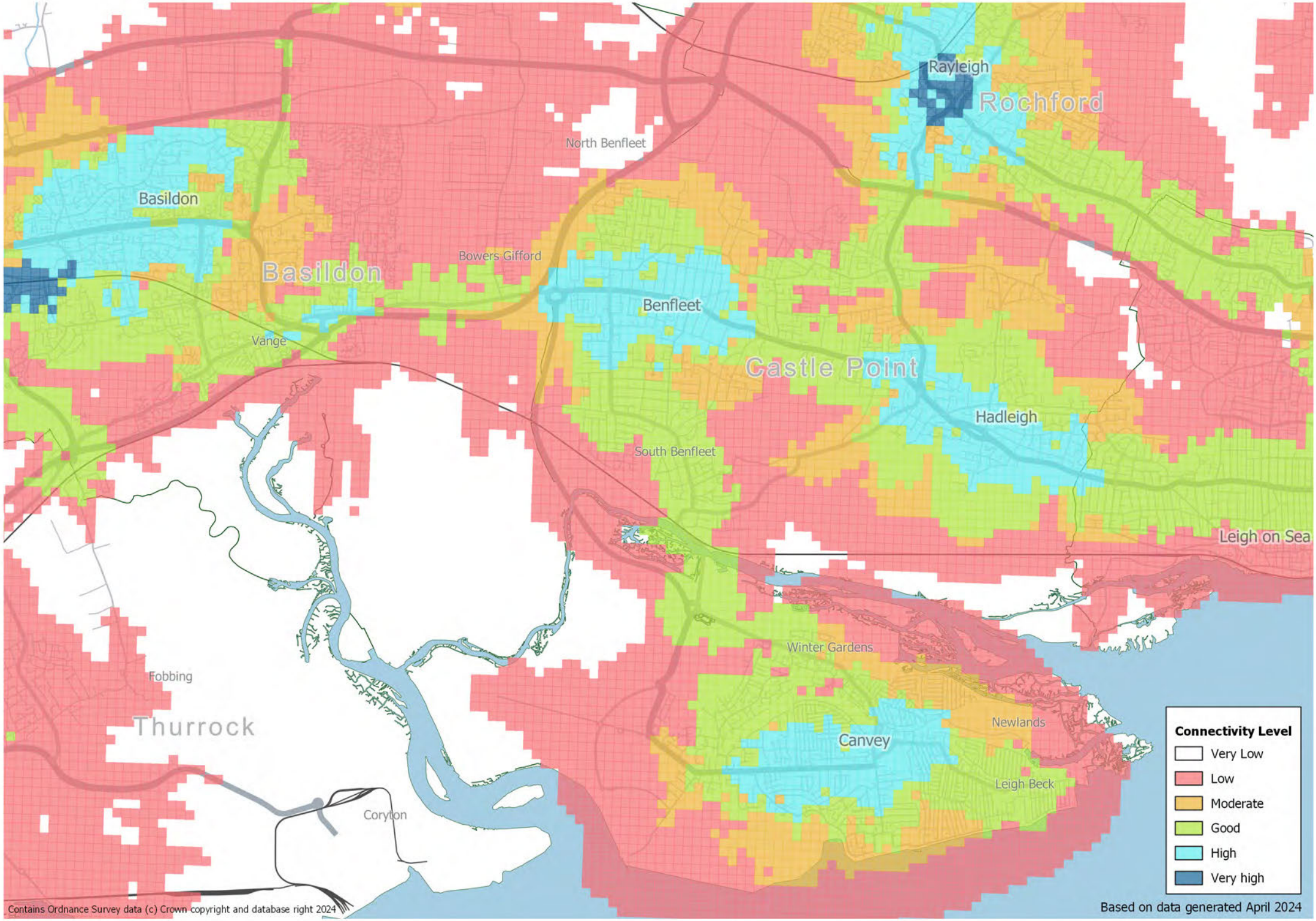
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Basildon
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Benfleet
Vange
Castle Point
Hadleigh
South Benfleet
Leigh on Sea
Winter Gardens
Fobbing
Thurrock
Newlands
Canvey
Leigh Beck
Coryton
Connectivity Level
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Low
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High
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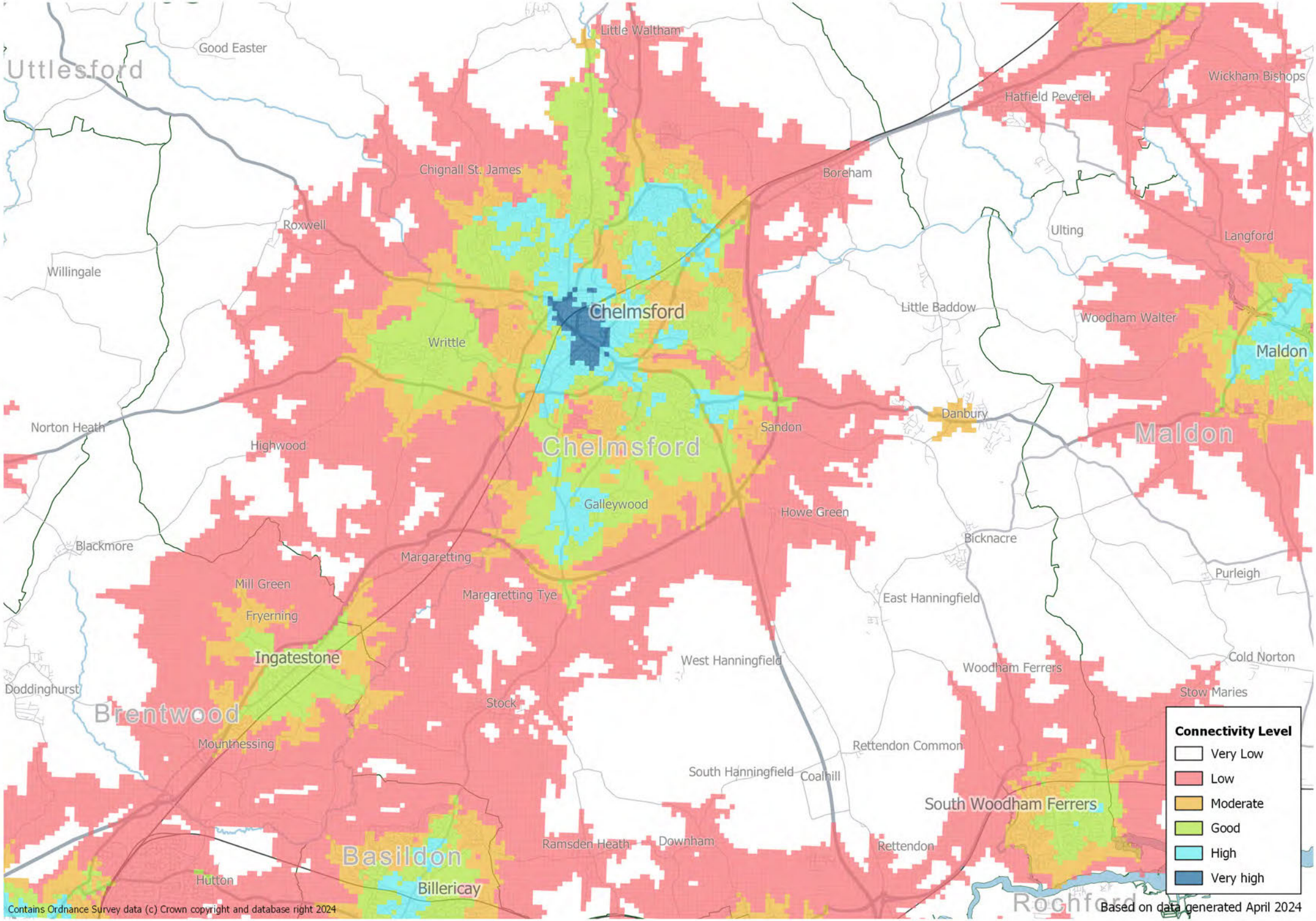
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Little Baddow
Woodham Walter
Writtle
Maldon
Danbury
Norton Heath
Sandon
Highwood
Chelmsford
Maldon
Galleywood
Howe Green
Blackmore
Bicknacre
Margaretting
Purleigh
Mill Green
Margaretting Tye
East Hanningfield
Fryerning
Ingatestone
West Hanningfield
Cold Norton
Woodham Ferrers
Doddinghurst
Stow Maries
Brentwood
Stock
Mountnessing
Rettendon Common
South Hanningfield
Coalhill
South Woodham Ferrers
Ramsden Heath
Downham
Rettendon
Basildon
Hutton
Billericay
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Connectivity Level
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Low
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Good
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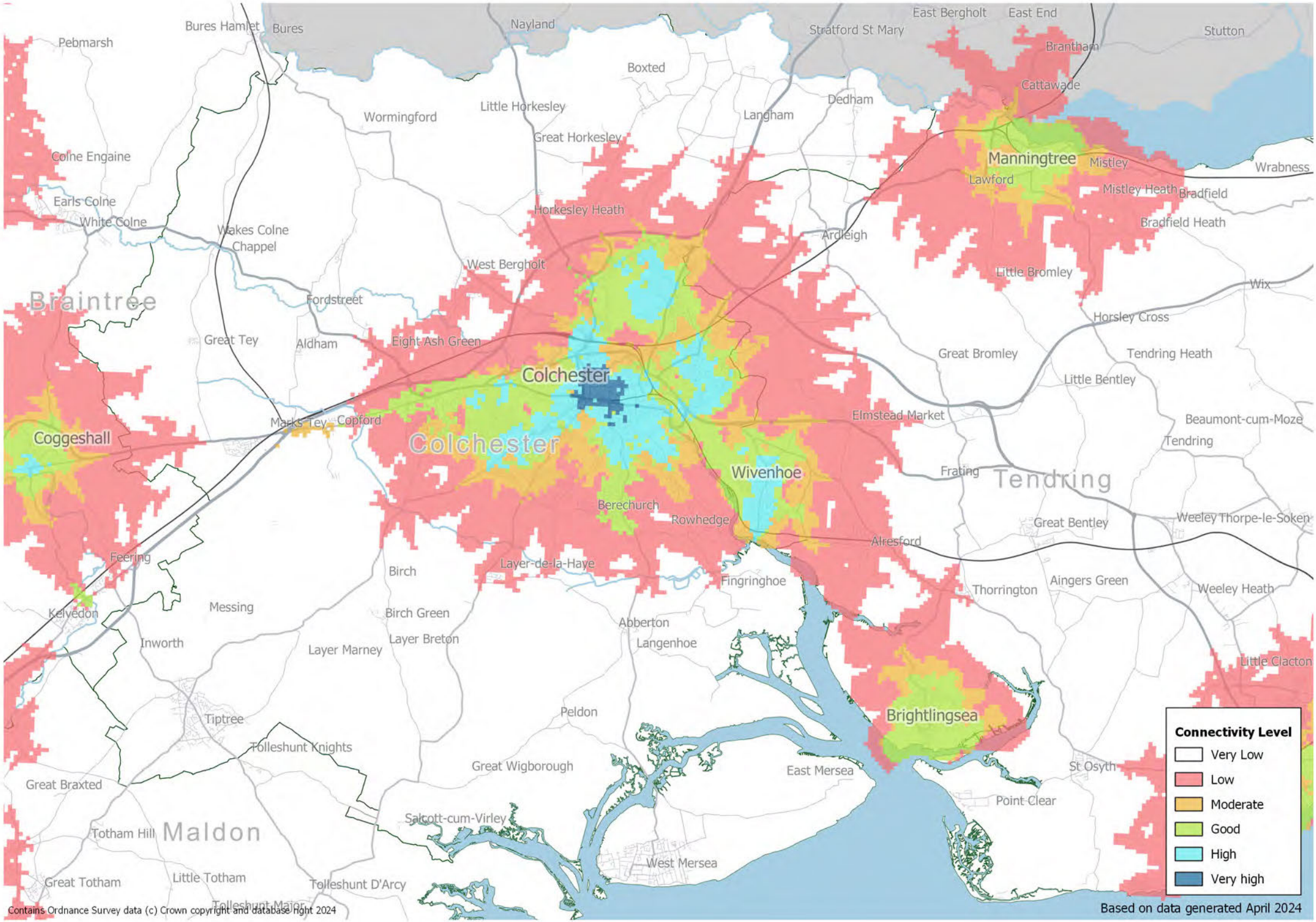

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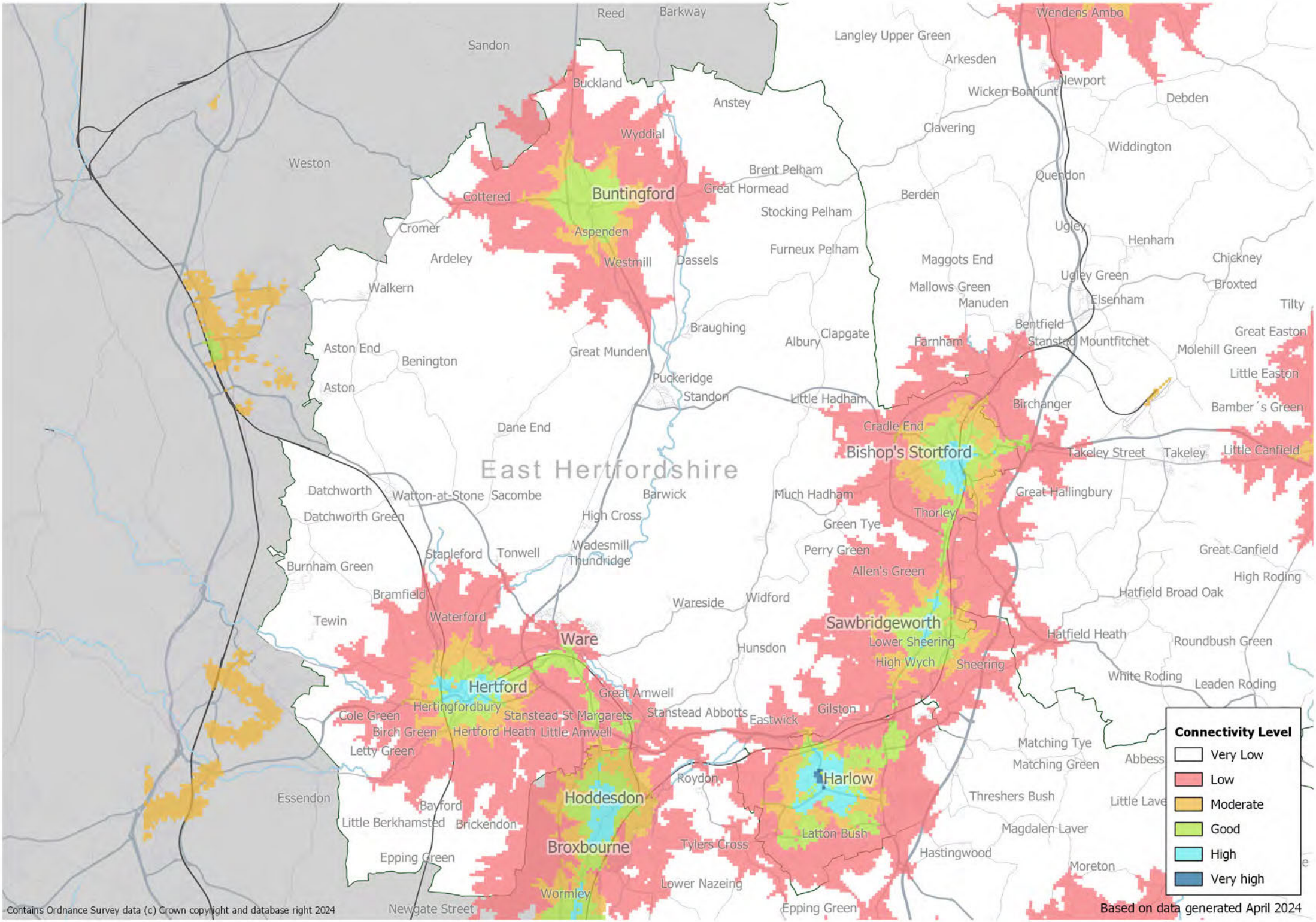
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Harlow
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Broxbourne
Reed
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Sandon
Buckland
Anstey
Wyddial
Weston
Brent Pelham
Great Hormead
Cottered
Stocking Pelham
Aspenden
Cromer
Furneux Pelham
Ardeley
Westmill
Dassels
Walkern
Braughing
Albury
Clapgate
Aston End
Great Munden
Benington
Puckeridge
Standon
Aston
Little Hadham
Dane End
Datchworth
Watton-at-Stone
Sacombe
Barwick
Much Hadham
Datchworth Green
High Cross
Thorley
Green Tye
Stapleford
Tonwell
Wadesmill
Thundridge
Perry Green
Burnham Green
Allen's Green
Bramfield
Wareside
Widford
Waterford
Tewin
Hunsdon
Lower Sheering
High Wych
Sheering
Great Amwell
Hertingfordbury
Stanstead Abbotts
Gilston
Cole Green
Stanstead St Margarets
Eastwick
Birch Green
Hertford Heath
Little Amwell
Letty Green
Roydon
Matching Tye
Matching Green
Essendon
Threshers Bush
Bayford
Little Berkhamsted
Brickendon
Latton Bush
Tylers Cross
Epping Green
Hastingwood
Moreton
Lower Nazeing
Wormley
Newgate Street
Epping Green
Wendens Ambo
Langley Upper Green
Arkesden
Newport
Wicken Bonhunt
Debden
Clavering
Widdington
Quendon
Berden
Ugley
Henham
Maggots End
Chickney
Ugley Green
Broxted
Mallows Green
Elsenham
Manuden
Tilty
Bentfield
Great Easton
Farnham
Stansted Mountfitchet
Molehill Green
Little Easton
Birchanger
Bamber´s Green
Cradle End
Takeley Street
Takeley
Little Canfield
Great Hallingbury
Great Canfield
High Roding
Hatfield Broad Oak
Hatfield Heath
Roundbush Green
White Roding
Leaden Roding
Abbess
Little Laver
Magdalen Laver
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Moderate
Good
High
Very high
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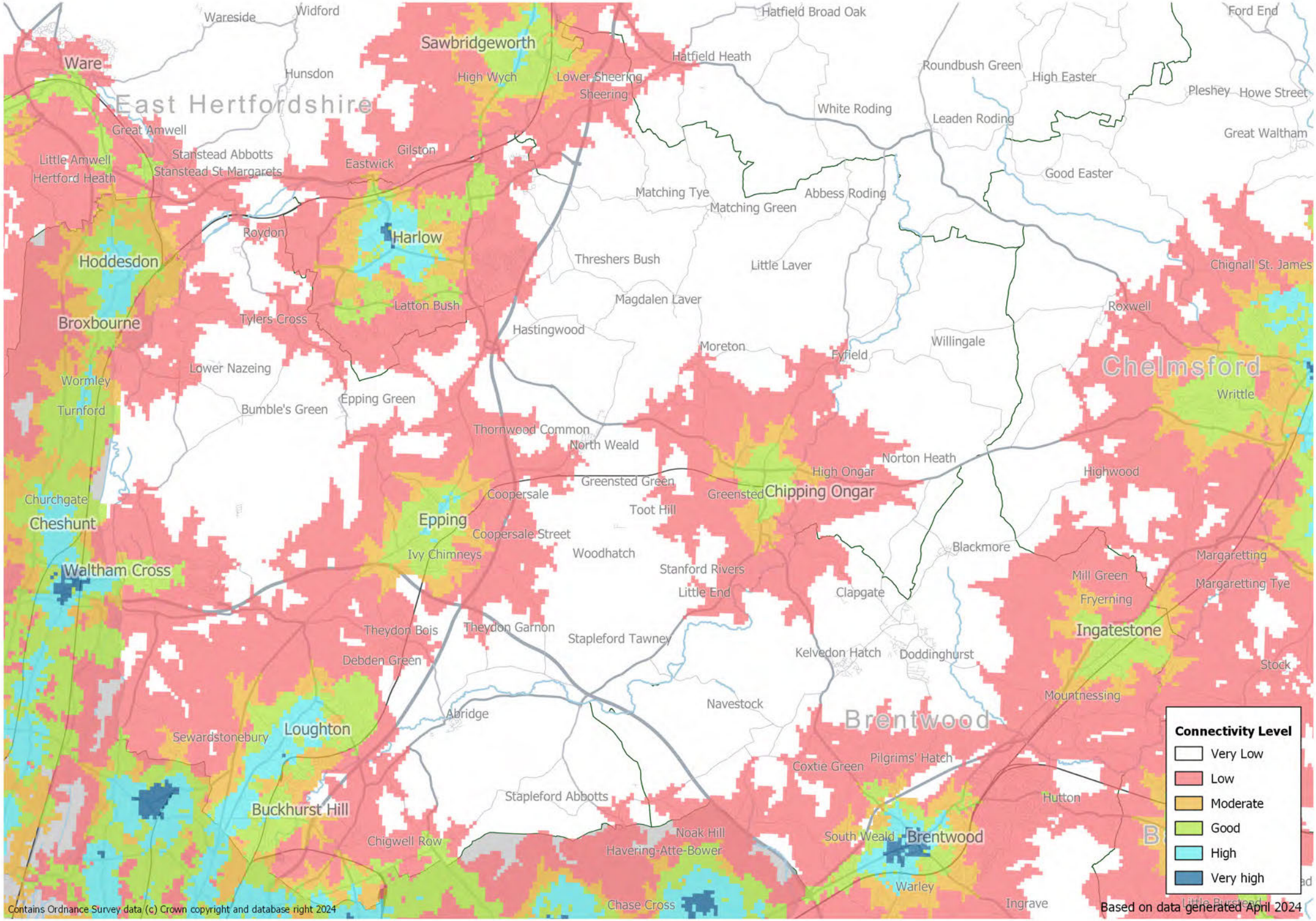

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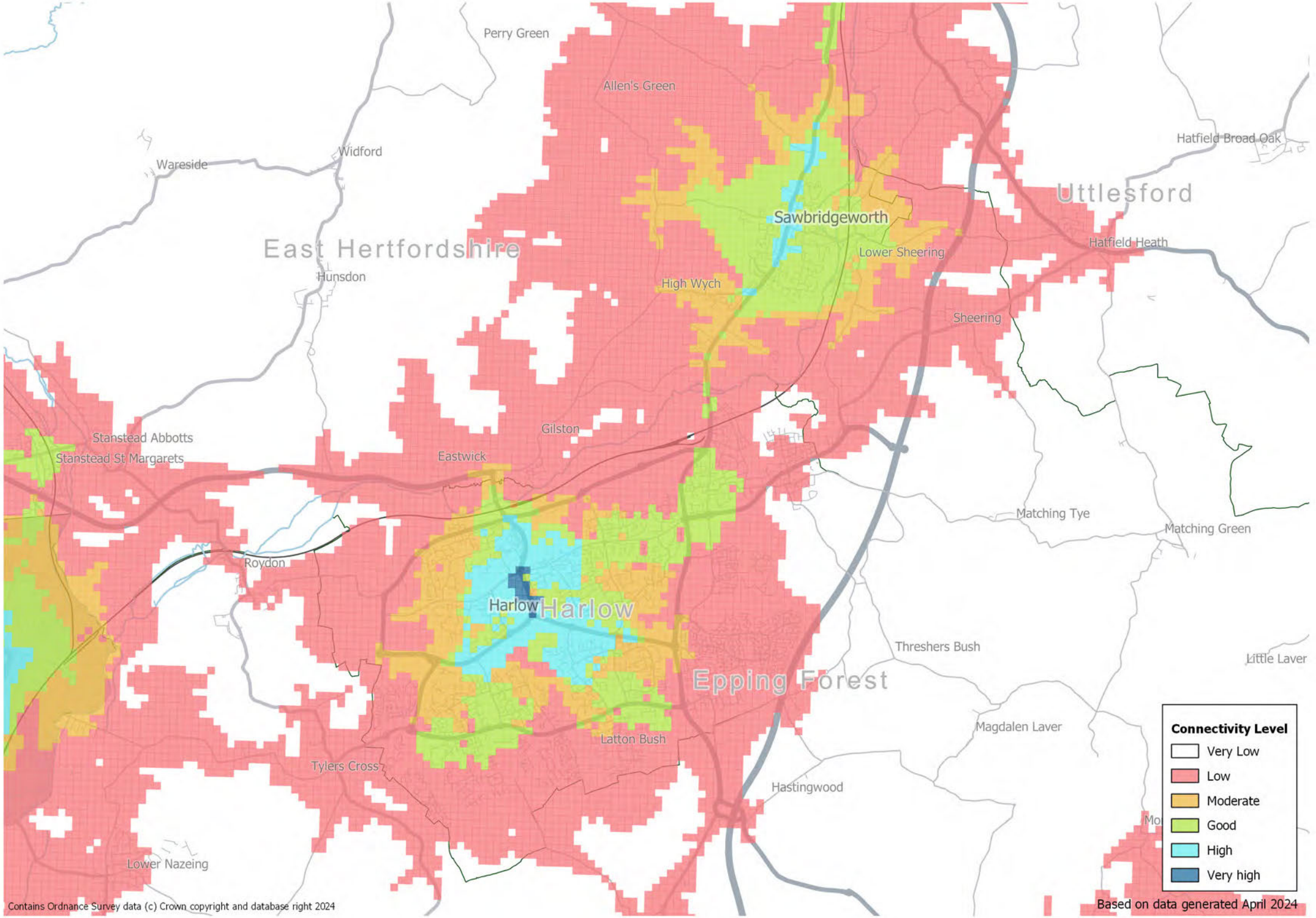
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High Wych
Sheering
Gilston
Stanstead Abbotts
Stanstead St Margarets
Eastwick
Matching Tye
Matching Green
Roydon
Harlow
Harlow
Threshers Bush
Little Laver
Epping Forest
Magdalen Laver
Latton Bush
Tylers Cross
Hastingwood
Lower Nazeing
Connectivity Level
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Low
Moderate
Good
High
Very high
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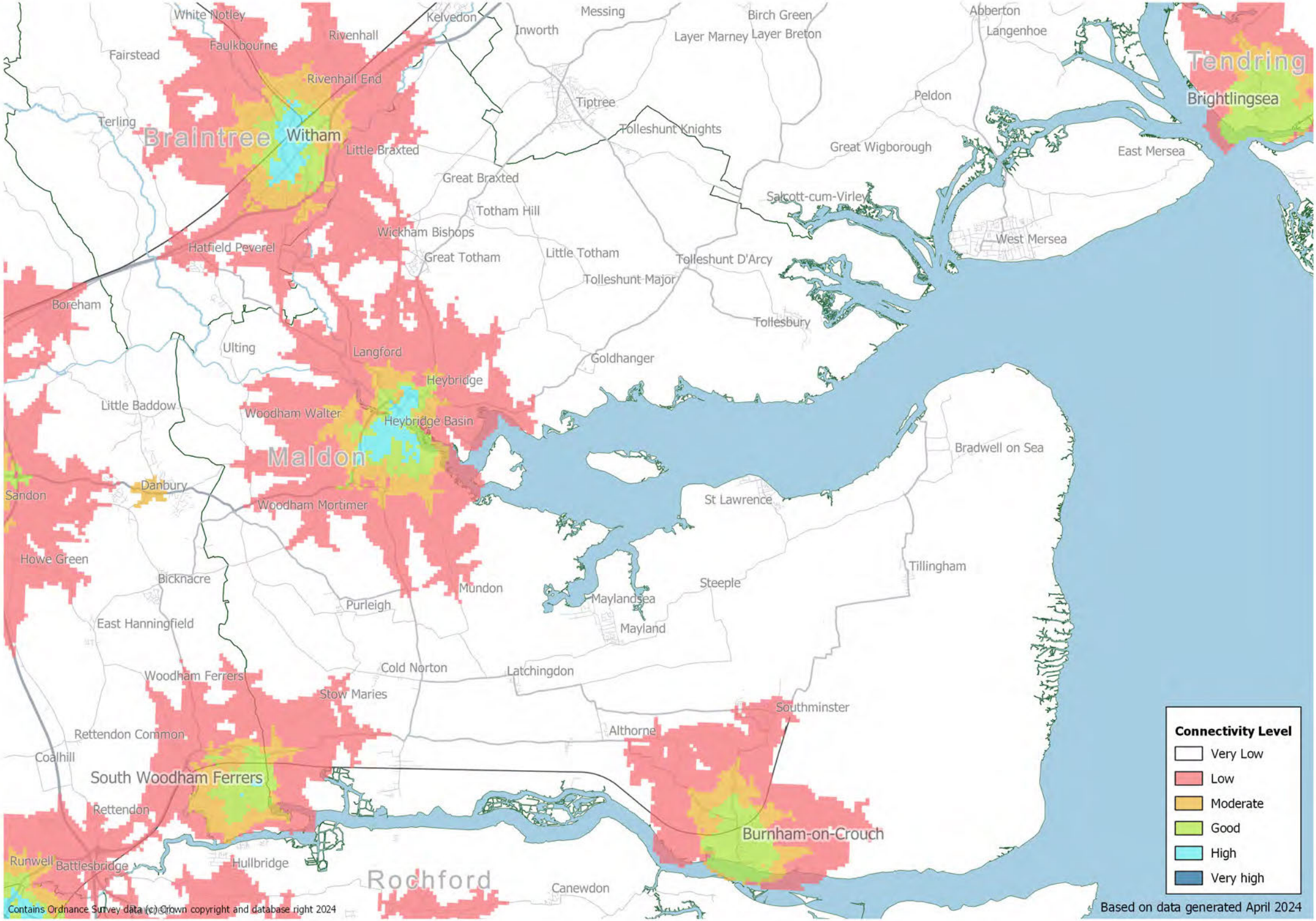
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Abberton
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Faulkbourne
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Inworth
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Layer Breton
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Tendring
Rivenhall End
Tiptree
Peldon
Brightlingsea
Terling
Braintree
Witham
Little Braxted
Tolleshunt Knights
Great Wigborough
East Mersea
Great Braxted
Salcott-cum-Virley
Totham Hill
Wickham Bishops
West Mersea
Hatfield Peverel
Great Totham
Little Totham
Tolleshunt D'Arcy
Tolleshunt Major
Boreham
Tollesbury
Ulting
Langford
Goldhanger
Heybridge
Little Baddow
Woodham Walter
Heybridge Basin
Bradwell on Sea
Maldon
Danbury
Sandon
St Lawrence
Woodham Mortimer
Howe Green
Tillingham
Bicknacre
Steeple
Mundon
Purleigh
Maylandsea
East Hanningfield
Mayland
Cold Norton
Latchingdon
Woodham Ferrers
Stow Maries
Southminster
Althorne
Rettendon Common
Coalhill
South Woodham Ferrers
Rettendon
Burnham-on-Crouch
Runwell
Battlesbridge
Hullbridge
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Connectivity Level
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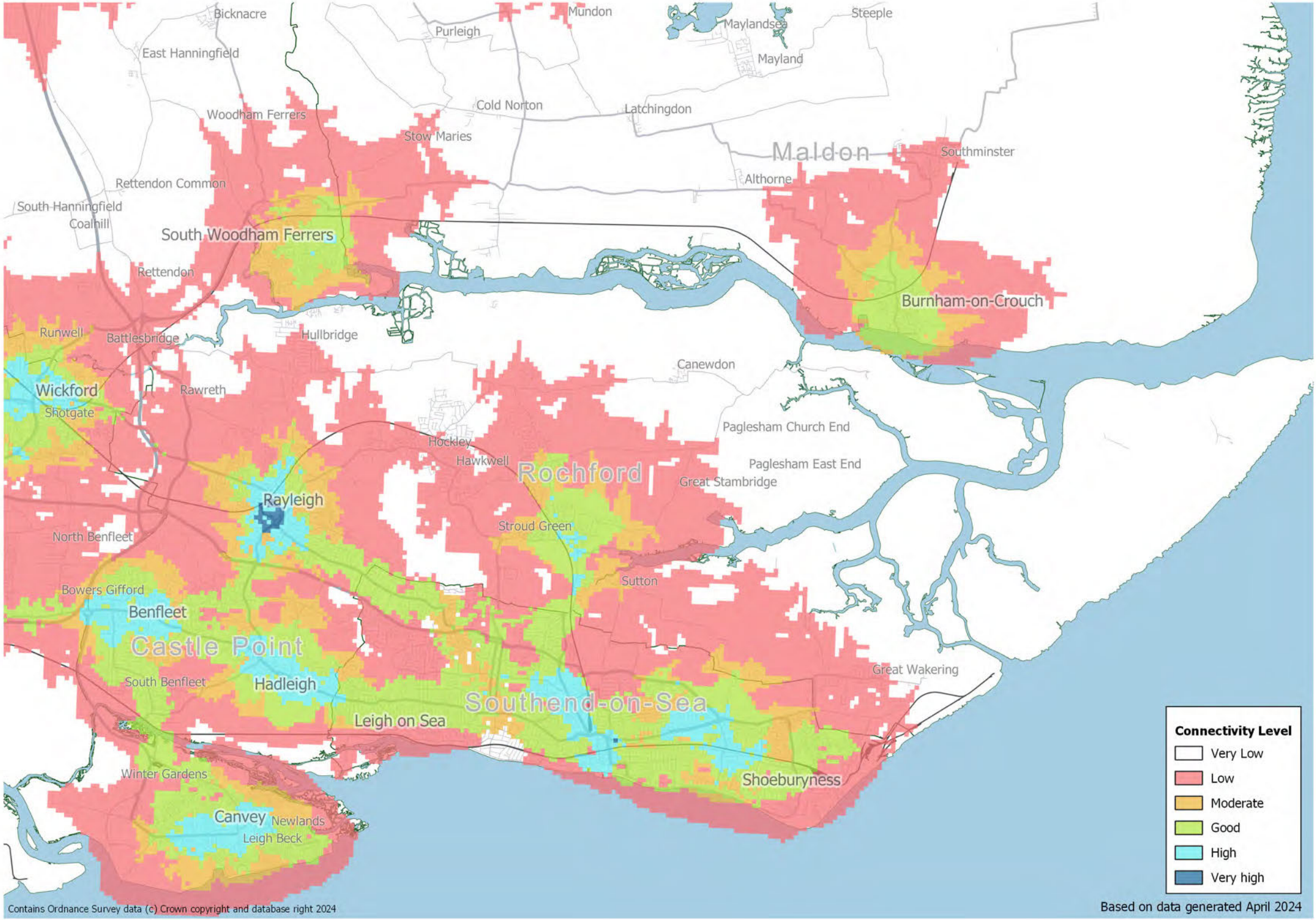

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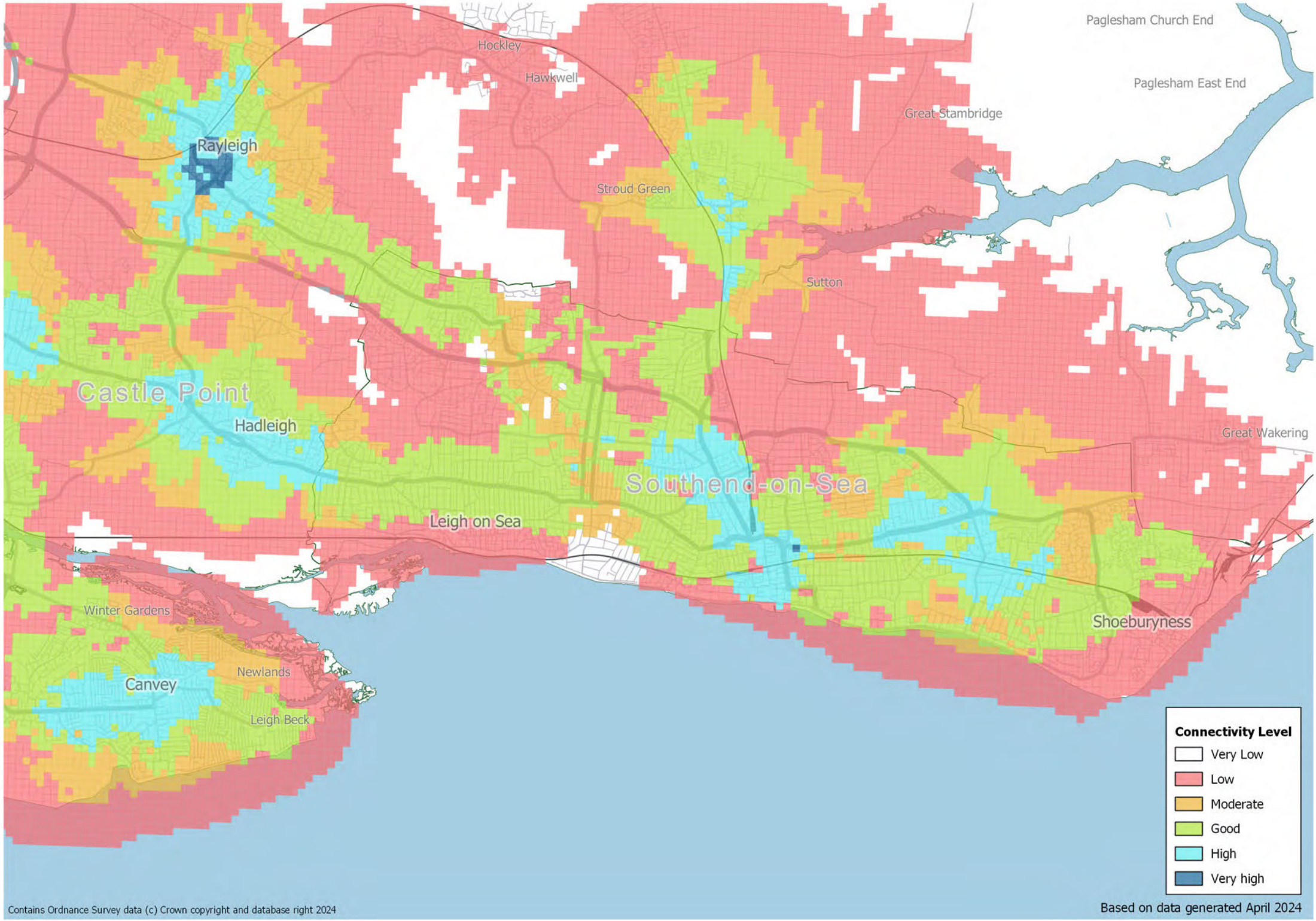

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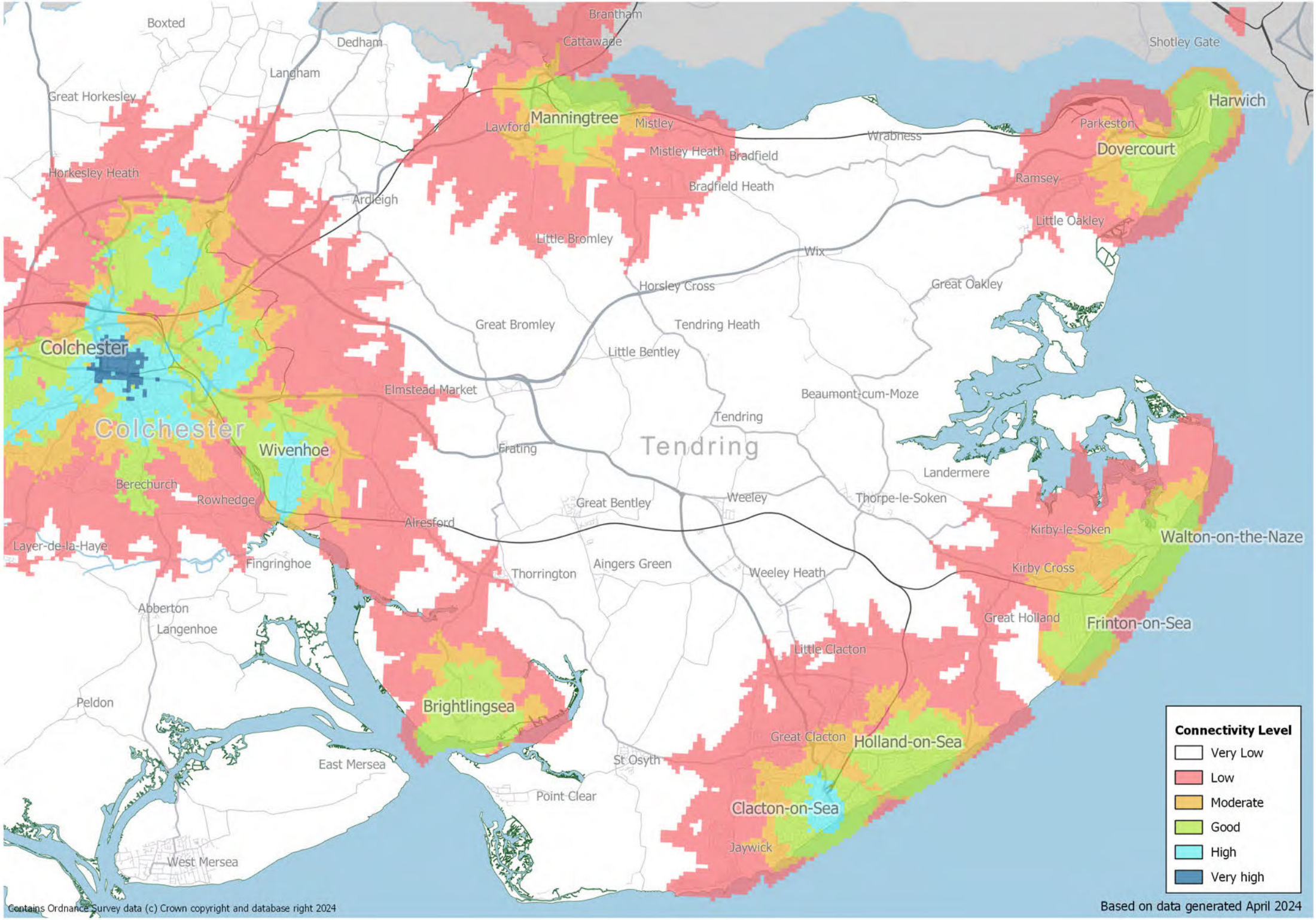
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Brantham
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Shotley Gate
Manningtree
Lawford
Mistley
Harwich
Parkeston
Wrabness
Dovercourt
Mistley Heath
Bradfield
Horkesley Heath
Ramsey
Bradfield Heath
Ardleigh
Little Oakley
Little Bromley
Wix
Horsley Cross
Great Oakley
Great Bromley
Tendring Heath
Colchester
Little Bentley
Elmstead Market
Beaumont-cum-Moze
Tendring
Colchester
Wivenhoe
Frating
Tendring
Landermere
Berechurch
Rowhedge
Great Bentley
Weeley
Thorpe-le-Soken
Alresford
Kirby-le-Soken
Walton-on-the-Naze
Layer-de-la-Haye
Fingringhoe
Thorrington
Aingers Green
Weeley Heath
Kirby Cross
Abberton
Langenhoe
Great Holland
Frinton-on-Sea
Little Clacton
Peldon
Brightlingsea
Great Clacton
Holland-on-Sea
East Mersea
St Osyth
Point Clear
Clacton-on-Sea
Jaywick
West Mersea
Connectivity Level
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Low
Moderate
Good
High
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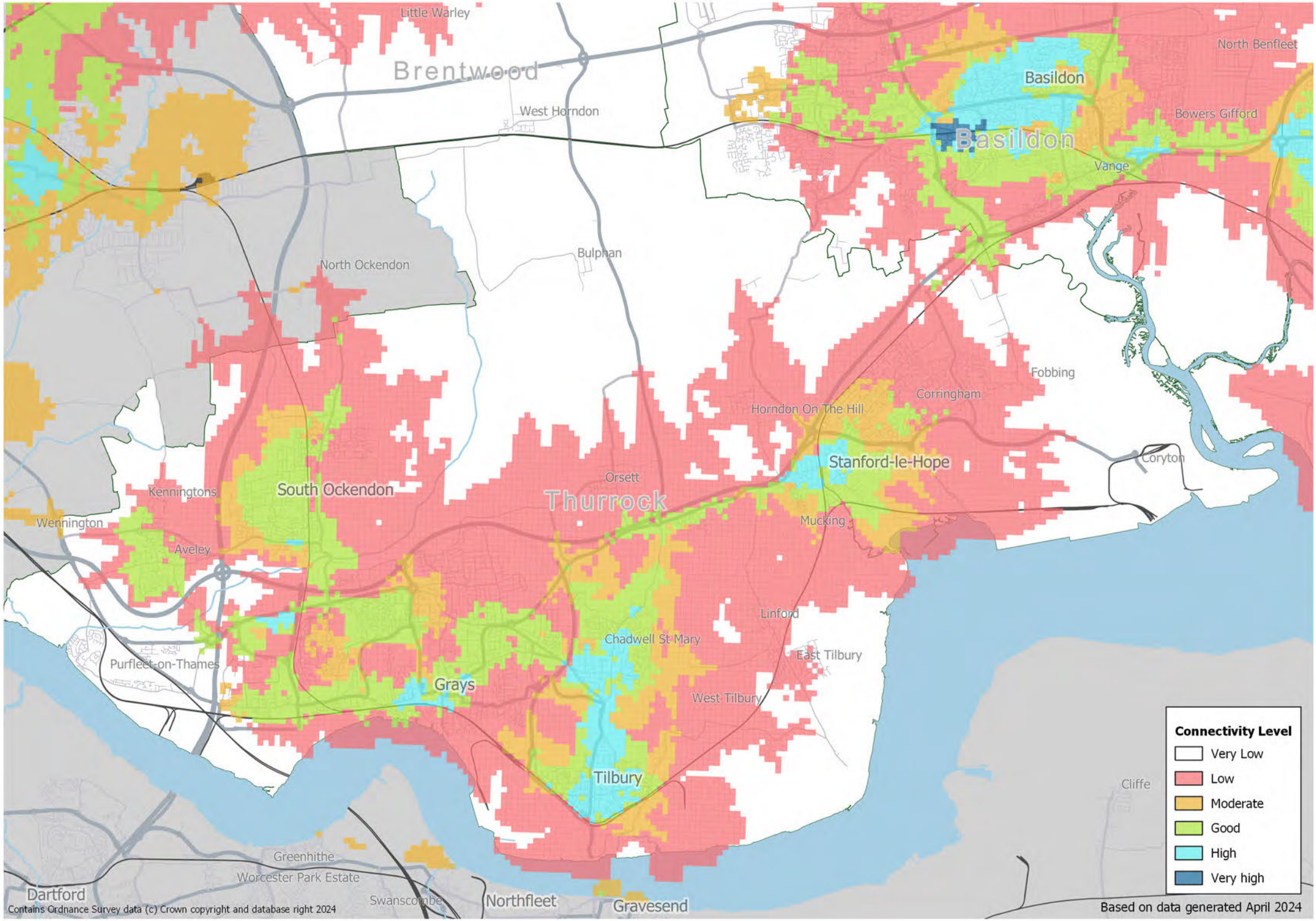

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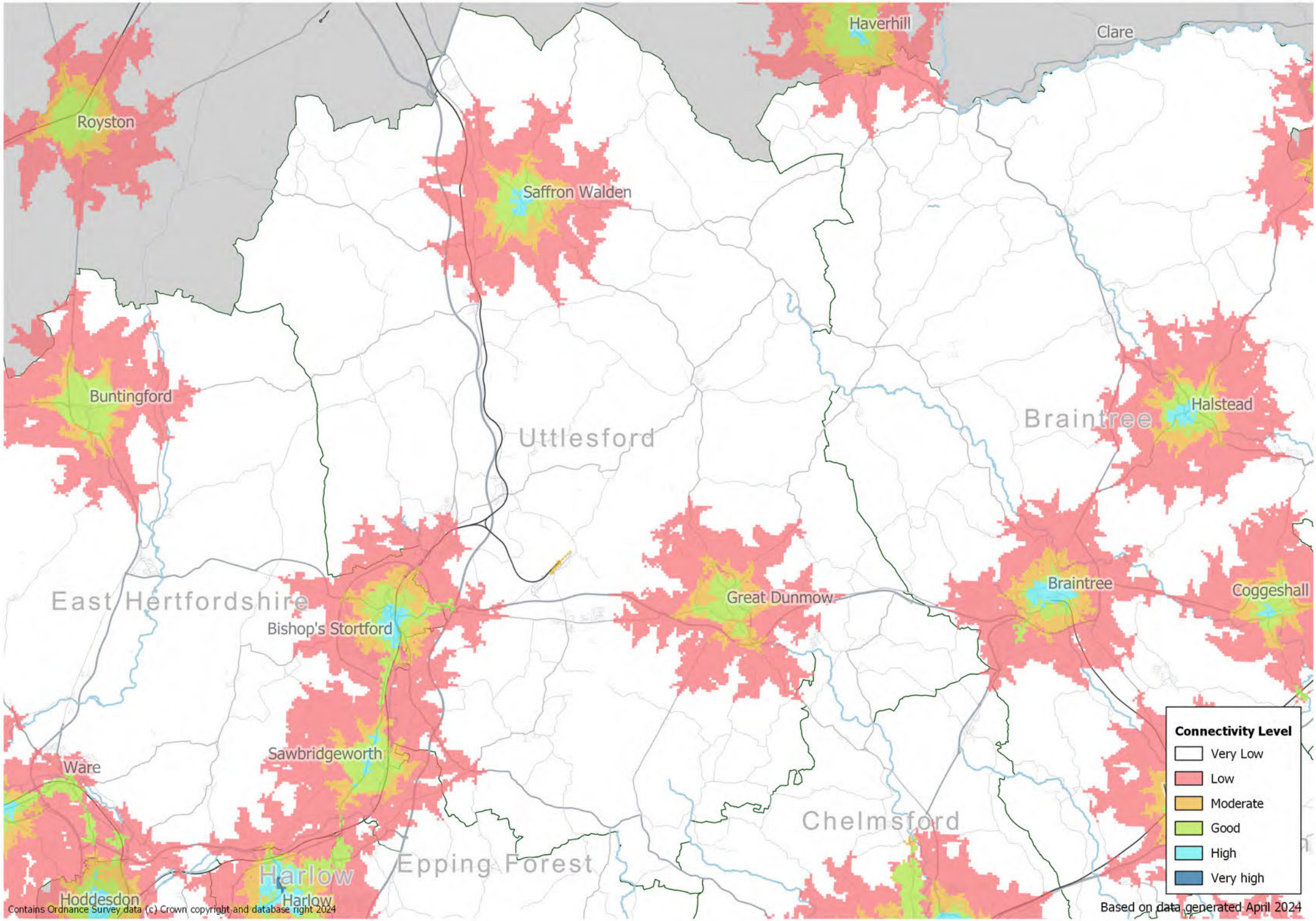
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Halstead
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Bishop's Stortford
Great Dunmow
Braintree
Coggeshall
Sawbridgeworth
Ware
Chelmsford
Epping Forest
Harlow
Hoddesdon
Harlow
Connectivity Level
Very Low
Low
Moderate
Good
High
Very high
Contains Ordnance Survey data (c) Crown copyright and database right 2024
Based on data generated April 2024

APPENDIX D

VEHICLE PARKING REDUCTIONS FOR NON-RESIDENTIAL LAND USES

Connectivity Tool Score	0 to 10	11 to 15	16 to 20	21 to 25	26 to 30	31 and above
Land use Class E(a) and E(b) - Retail						
E(a) Display or retail sale of goods, other than hot food	Apply Part 1 standards			Apply 30% reduction to Part 1 standards. As with Part 1, standards for large developments, such as large department stores and shopping centres will be considered on a case-by-case basis	Apply 40% reduction to Part 1 standards. As with Part 1, standards for large developments, such as large department stores and shopping centres will be considered on a case-by-case basis	Apply 50% reduction to Part 1 standards. As with Part 1, standards for large developments, such as large department stores and shopping centres will be considered on a case-by-case basis
E(b) Sale of food and drink for consumption (mostly) on the premises	Apply Part 1 standards					
Land use Class E(c) and E(g) - Commercial						
E(c)(i) Financial services	Apply Part 1 standards			Apply 15% reduction from Part 1 standards.	Apply 20% reduction from Part 1 standards.	Apply 25% reduction from Part 1 standards.
E(c)(ii) Professional services (other than health or medical services)						
E(c)(iii) Other appropriate services in a commercial, business or service locality						
E(g)(i) Offices to carry out any operational or administrative functions						
E(g)(ii) Research and development of products or processes						
E(g)(iii) Industrial processes						
Land use Class E(other)						
E(d): Gyms, sports halls	Apply Part 1 standards			Apply 30% reduction to Part 1 standards	Apply 40% reduction to Part 1 standards	Apply 50% reduction to Part 1 standards
E(e): Medical centres				Apply 15% reduction from Part 1 standards	Apply 20% reduction from Part 1 standards	Apply 25% reduction from Part 1 standards
E(f): Crèche, childcare						
E(f): Day care centre						

Connectivity Tool Score	0 to 10	11 to 15	16 to 20	21 to 25	26 to 30	31 and above
Land use Class F1 and F2 - Local Community						
F1(a): Education – Primary / Secondary	Apply Part 1 standards, including coach parking and facilities and additional considerations for special schools			Apply 15% reduction from Part 1 standards. Coach parking / facilities and additional considerations for special schools should be included.	Apply 20% reduction from Part 1 standards. Coach parking / facilities and additional considerations for special schools should be included.	Apply 25% reduction from Part 1 standards. Coach parking / facilities and additional considerations for special schools should be included.
F1(a): Education – Further/Higher						
F2(a): Shops (mostly) selling essential goods, including food, where the shop's premises do not exceed 280m2 and there is no other such facility within 1000m	Apply Part 1 standards			Apply 30% reduction to Part 1 standards	Apply 40% reduction to Part 1 standards	Apply 50% reduction to Part 1 standards
F2(b): Halls or meeting places for the principal use of the local community						
F2(c): Areas or places for outdoor sport or recreation (not involving motorised vehicles or firearms)						
Sui Generis						
Drinking establishments	Apply Part 1 standards			Apply 30% reduction to Part 1 standards	Apply 40% reduction to Part 1 standards	Apply 50% reduction to Part 1 standards
Hot food takeaways						
Rail stations - Minor				Be integrated into a mobility hub strategy for the wider site and be connected by good sustainable travel options.	Be integrated into a mobility hub strategy for the wider site and be connected by good sustainable travel options.	Be integrated into a mobility hub strategy for the wider site and be connected by excellent sustainable travel options.
Rail stations - Key				Provision should include dedicated car sharing bays as part of a mobility hub strategy for the wider site and be connected by good sustainable travel options.	Provision should include dedicated car sharing bays as part of a mobility hub strategy for the wider site and be connected by good sustainable travel options.	Provision should include dedicated car sharing bays as part of a mobility hub strategy for the wider site and be connected by excellent sustainable travel options.

Connectivity Tool Score	0 to 10	11 to 15	16 to 20	21 to 25	26 to 30	31 and above
Land Use C - Other Residential						
C1: Hotels	Apply Part 1 standards			Apply 30% reduction to Part 1 standards	Apply 40% reduction to Part 1 standards	Apply 50% reduction to Part 1 standards
C2: Residential Care Home				Apply 15% reduction to Part 1 standards	Apply 20% reduction to Part 1 standards	Apply 25% reduction to Part 1 standards
C2: Hospital	Apply Part 1 standards					
C2: Treatment Centre						
C2A: Secure Residential Institution						
C2: Residential education establishments – Primary/ Secondary						
C2: Residential education establishments – Further/Higher	Apply Part 1 standards			Apply Part 1 standards for FTE allocations. Consider a 15% reduction in the number of additional spaces.	Apply Part 1 standards for FTE allocations. Consider a 20% reduction in the number of additional spaces.	Apply Part 1 standards for FTE allocations. Consider a 20% reduction in the number of additional spaces.
C3: Retirement developments				Apply 15% reduction to Part 1 standards	Apply 20% reduction to Part 1 standards	Apply 25% reduction to Part 1 standards
C4: House in Multiple Occupation (HMO)				Apply 30% reduction to Part 1 standards	Apply 40% reduction to Part 1 standards	Apply 50% reduction to Part 1 standards

APPENDIX E

CONNECTIVITY TOOL WORKED EXAMPLE

Step 1 – Determine level of parking based on Part 1 standards

Phase 3 of an example GC proposes 200 new dwellings, with 30% one-bedroom dwellings, 40% two/three-bedroom dwellings, and the remainder as four-bedrooms or more.

The total number of private car parking spaces required for Phase 3 based on the Part 1 ('low connectivity') C3 residential standards is 400, plus 50 for visitors. Within this a proportion of spaces are to be for disabled people and electric vehicles. Additional PTW and cycle spaces would also be provided.

Step 2 – Score site in Connectivity Tool

The same phase of 200 dwellings in an example GC is proposed, as in Step 1. The Census information on Map 1 indicates existing car ownership rates in the surrounding area average to 1.5 per dwelling (Score 3).

Driver mode share for the same area was 66% on Map 2 (Score 3).

Existing connectivity levels, as indicated on Map 3, show the development currently lies across areas of low and moderate connectivity. The majority of the development area is considered 'low' (Score 2).

With an existing access score total of 8, this development needs to provide a good level of improvement to reach the minimum threshold for large scale developments.

With a new local centre proposed within this phase, along with some existing facilities in neighbouring, earlier phases, >80% of the dwellings can reach at least four day-to-day facilities[1] within 15 minutes. (Score 5).

Public transport is proposed to be improved, extending an existing local route into this phase of development with bus gate access providing a more direct journey to the comparative car journey. However, the rural location of the site means that there may not be demand to justify a very frequent 'turn up and go' bus service (Score 4).

Active mode infrastructure caters for non-car users by making routes more direct by walking or cycling. High quality infrastructure has been designed in to make streets safe and attractive to use, and it is quicker to get to the proposed local centre and an employment hub in a neighbouring, earlier phase by walking and cycling than it is by car (Score 5/6).

A network of new mobility hubs is proposed, with a range of transport modes provided including e-bike hire and car clubs, and facilities including parcel drop-off collection points and community hubs, these centre around the proposed bus stops but also work to incorporate off site locations, integrating the development with existing communities and facilities (Score 6).

1 daily facilities (subject to local authority agreement) could include: food retail, education, healthcare and employment.

Step 3 – Determine the Part 2 level of parking

The proposals mean that Phase 3 of the example GC development achieves a total score of 29, which is within the acceptable range for a GC. It is clear that the developments poorly accessible location to begin with influences its ability to achieve good outcomes in terms of achieving mode shift, and reducing car dependency and dominance. The lower score on these metrics means that the development has to work harder on other metrics (such as provision of mobility hubs).

As a result of this score, the private car parking level for Phase 3 of the GC equates to 240 vehicle parking spaces, plus 50 for visitors.

Step 4 – Determine proportions

With a total private parking level of 260 as determined in Step 3, 132 should be off-plot and 108 on-plot. This is determined by the total Step 2 score of 29.

In addition to the total level spaces above, a further 5 car club spaces should be provided.

Compared to the Part 1 'Low connectivity' standard, which would average two private spaces per dwelling (excludes visitors), the Part 2 standards result in an average of 1.2 spaces per dwelling, plus visitor and car club spaces.

Taking all types of car parking into account, this represents an overall saving of 155 parking spaces, compared with application of the Part 1 'Low connectivity' standards.

Within the total car parking provision, an appropriate level of EV charging and spaces for disabled people should be delivered, based on the Part 1 standards.

460 cycle parking spaces should be provided for the 200 dwellings, with an additional 25 for visitors, giving a total of 485 cycle parking spaces across the phase for the C3 residential dwellings (assumes mix of dwelling sizes as set out in Step 1).

Chapter 5 sets out how cycle and car parking should be designed into the site.

Step 5 – Consider other land uses

With a new local centre to be delivered as part of the development, additional parking requirements are:

- Small supermarket of 900m2 - Part 1 suggests 45 vehicle parking spaces (three of which are for disabled people). With a 40% reduction this equates to 27 parking spaces in total, three of which remain for disabled people.
- Three form entry primary school (infants and juniors, 30 pupils per class) – Part 1 suggests 42 vehicle parking spaces, with two space for disabled people. With a 20% reduction, this results in 34 parking spaces, with two for disabled people. Coach parking / facilities are included and appropriate facility for minibus access for the associated SEND provision.
- GP – a medical centre applies the same parking standards as Part 1. With 12 FTE and 6 consulting rooms, this equates to nine parking spaces, with significant provision for disabled people.

All cycle and PTW parking to be delivered at Part 1 standards.

Step 6 – Reduce and repurpose

The same Phase 3 of 200 dwellings in an example GC is proposed, as in previous steps, but now imagining that the two subsequent phases have also been delivered. As the location of the GC has not fundamentally changed, the scores for Metrics 1, 2 and 3 relating to existing connectivity do not significantly change (and these are also outside of the applicant's control). This again gives an existing access total score of 8.

With a new local centre proposed within this phase, some existing facilities in neighbouring, earlier phases, and future phases planned to deliver a new secondary school and a large food retail store, all new homes in Phase 3 of the GC would be able to reach day-to-day facilities within 15 minutes. (Score 6).

Public transport will further penetrate the wider development. However, the rural location of the site means that there is still not enough demand to render a commercially viable bus to serve 90% of the built development every 15 minutes or more (Score 5).

Active mode infrastructure continues to improve and achieve the highest score for this metric (Score 5/6).

The network of mobility hubs continue to grow, giving every dwelling a range of mobility options on their doorsteps (Score 6).

The resultant total score for this indicative future for this phase is 31. This means that around 40 out of the 240 car parking space level should be designed with repurposing in mind, and the future trigger points / strategy for repurposing identified.