



# Spending £2.4bn Better

The Economy & Opportunity of Investing £2.4bn in Active Travel Compared to Carbon Fuels Subsidies | TECHNICAL REPORT

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Lea Bridge Road, Mini Holland p 4, 24, 33, Photography: Alexander Christie, Scheme Design: LBWF Highways and what if: projects | <http://www.what-if.info/>  
Mountain Trike Company, p 32 | <https://www.mountaintrike.com/>  
Mobility Hub, p 27, SHARE-North, CoMoUK | <https://como.org.uk/>

#### Glossary of Terms:

|                     |                                                                |
|---------------------|----------------------------------------------------------------|
| Active travel       | Walking, wheeling and cycling as a means of transport          |
| bn                  | Billion                                                        |
| CO <sub>2</sub> e   | Carbon dioxide equivalent                                      |
| m                   | Million                                                        |
| Mt                  | Mega tonne, or million metric tonnes                           |
| MtCO <sub>2</sub> e | Mega tonne carbon dioxide equivalent                           |
| UK                  | United Kingdom (England, Northern Ireland, Scotland and Wales) |

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## REPORT BACKGROUND

### **£2.4bn Fuel Duty Relief March 2022 – March 2023**

In the context of the cost-of-living crisis, UK government has taken action to support motorists by cutting fuel duty by 5p per litre in the year from the 23<sup>rd</sup> of March 2022 to March 2023. This cut is equivalent to £2.4 billion over the next 12 months<sup>1</sup>. However, motorist consumer organisations note that these savings are not necessarily being passed on to motorists<sup>2</sup>. Although car ownership and dependency are high across the UK, car owners are more likely to be more affluent, meaning that the financial relief for families and individuals will not be distributed fairly. The relief level of the £2.4bn fuel duty relief equates to £35.78 distributed theoretically on a per capita basis. This amount is small compared to the scale of increase in cost of living over the past 12 months and the expected increases over the next year.

### **Why Cycling UK commissioned this report:**

Cycling UK commissioned this report to examine whether equivalent investment of £2.4 bn in active travel infrastructure offers better value than a fuel subsidy in terms of low carbon mileage, and to quantify what the investment in active travel infrastructure would mean for each devolved nation.

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<sup>1</sup> <https://www.gov.uk/government/publications/temporary-cut-to-fuel-duty>

<sup>2</sup> <https://www.autoexpress.co.uk/news/93906/uk-petrol-and-diesel-prices-5p-tax-cut-means-just-3p-pumps>

## EXECUTIVE SUMMARY

### Window of Opportunity Missed

There is an immediate window of opportunity for transport spending – including spending relief - to deliver on big ticket whole economy issues such as economy, health, national security and net zero targets. It is well established that investing in walking and cycling infrastructure is key to delivering net zero targets as well as achieving these wider socio-economic gains. The fuel duty relief set from March 2022 to March 2023 is equivalent to a £2.4 billion direct carbon spending. The fuel duty relief will likely have little impact on the cost-of-living crisis for individuals and is unlikely to be distributed fairly. **Overall, the £2.4bn fuel duty relief represents a large, missed opportunity to decarbonise transport and reduce direct subsidies of high carbon transport.**



Figure 1 **A world class separated walking and cycling bridge, Lea Bridge Road in Mini Holland,**  
© Photography: Alexander Christie, Scheme Design: LBWF Highways and what if: projects

### Methodology

As an exploratory analysis, the £2.4bn was reallocated to each devolved nation on a per capita basis, and a shopping list of equivalent walking and cycling infrastructure estimated. The purpose of this exercise was to quantify and better understand what impact a fair share of £2.4bn in active travel investment represents for each nation. Using a nominal design capacity for the walking and cycling infrastructure over a 35-year lifespan, trip kilometres were estimated, and this mileage then used to calculate the carbon footprint.

The methodology used are quick high level assessments which provide immediate insight but have limitations. The number of walking journeys calculated due to upgrading may be overestimated with some double counting of walking journeys already taking place. However, walking levels can vary considerably by location. The impact of the mobility hubs is not estimated, which has likely led to an underestimate of walking and cycling journeys. The level of fuel subsidy reaching motorists and being converted into car mileage may have been overestimated, as potentially up to half of the subsidy is being retained by the fuel retailers.



## Spending £2.4bn Better – Top Line Findings

**The £2.4bn fuel duty relief is equivalent to three times the current designated active travel infrastructure investment of £738.5m per year across the UK.** Better spending the £2.4bn on active travel infrastructure would have greatest per capita impact in England, where it would increase annual active travel investment by four-fold, and Northern Ireland where it would increase annual active travel investment by five-fold. From a whole systems accounting perspective, while the 2022-23 fuel duty relief is intended to provide immediate financial relief, it may serve to undermine wider strategic priorities such as health, net zero and national security.

Across the UK, the “better spending” scenario of £2.4bn investment in world class walking and cycling infrastructure would deliver:

- **1775 play streets**
- **57 km of flagship walking infrastructure**
- **1165 km of walking infrastructure upgrades**
- **527 km of separated cycling infrastructure**
- **61 walking and cycling bridges**
- **18 large mobility hubs with 90,000 cycle parking spaces**
- **1210 in street mobility hubs**

The “better spending” of £2.4 bn in walking and cycling infrastructure would generate an **estimated 68 billion zero carbon walking and cycling kilometres** during a 35-year infrastructure lifespan compared to the 27 billion high carbon kilometres theoretically financed by the 2022-2023 fuel duty relief. In conjunction with not spending on high carbon fuel relief subsidies, the modal shift enabled through £2.4 bn investment in world class walking and cycling infrastructure would deliver **an estimated 57.4 MtonCO<sub>2</sub>e in carbon reduction - this equivalent to 1.5 times the annual carbon footprint of aviation in the UK.**



**Figure 2 Cycle priority approaches are a cost-effective innovation to deliver safe cycling for all ages. The “Wee Unicorns” school cycle bus in Edinburgh creates a cycle priority effect – what if this could be the case all the time? © Andy Catlin**

## Spending £2.4bn Better – Boosted Active Travel Investment by Nation

### England

For England, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £2,013 million active travel infrastructure spend, or £35.78 per capita. As a “better spending” scenario, this is equivalent to investment in **1500 dedicated play streets, 45 km of flagship walking infrastructure, 1000 km of walking infrastructure upgrades, 450 km of separated cycling infrastructure, as well as high value connectivity assets such as 50 pedestrian & cycling bridges, 15 major mobility hubs, and 1000 in-street mini mobility hubs.**

This level of active travel investment would generate an estimated **57.8 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 9,908,098 tonnes CO<sub>2</sub>e.**



Figures 3 **There are historic precedents for Play Streets across the UK dating back to the 1938 Street Playground Bill. Play Streets are a great place to learn to ride a bike!** © unknown

### Northern Ireland

For Northern Ireland, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £67.8 million active travel infrastructure spend, or £35.78 per capita. As a “better spending” scenario, this is equivalent to investment in **50 dedicated play streets, 2 km of flagship walking infrastructure, 25 km of walking infrastructure upgrades, 12 km of separated cycling infrastructure, as well as high value connectivity assets such as two pedestrian & cycling bridges, one major mobility hubs, and 30 in-street mini mobility hubs.**

This level of active travel investment would generate an estimated **1.6 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 272,610 tonnes CO<sub>2</sub>e.**

## Scotland

For Scotland, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £196 million active travel infrastructure spend, or £35.78 per capita. As a “better spending” scenario, this is equivalent to investment in **150 dedicated play streets, 5 km of flagship walking infrastructure, 100 km of walking infrastructure upgrades, 45 km of separated cycling infrastructure, as well as high value connectivity assets such as 5 pedestrian & cycling bridges, one major mobility hub, and 100 in-street mini mobility hubs.**

This scale of active travel investment would generate an estimated **5.8 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 1,001,758 tonnes CO<sub>2</sub>e.**

## Wales

For Wales, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £113 million active travel infrastructure spend, or £35.78 per capita. As a “better spending” scenario, this is equivalent to investment in **75 dedicated play streets, 5 km of flagship walking infrastructure, 40 km of walking infrastructure, 20 km of separated cycling infrastructure, as well as high value connectivity assets such as four pedestrian & cycling bridges, one major mobility hub, and 80 in-street mini mobility hubs.**

This scale of active travel investment would generate an estimated **2.8 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 481,720 tonnes CO<sub>2</sub>e.**



Figures 4 “Activating” public transport, bikes on buses in the Borders Scotland © Alexander Dennis



## **Active Travel Innovation Toolbox**

World class walking and cycling infrastructure is key to achieving increases in walking and cycling journeys and decreasing car mileage. From Chapter 2, this report introduces high impact active travel infrastructure investment opportunities. These key opportunities include:

### **Quick Wins**

- Play streets
- Residential cycle parking
- At destination cycle parking
- Widen and declutter footways
- Continuous level footways
- Pop-up zebra crossings

### **Walking Flagships**

#### **Cycling Innovation**

- Cycle priority streets
- European best practice for cycle priority streets
- Piloting transformational approaches
- Separated walking and cycling bridges

### **Active Green Corridors**

#### **Mobility Hubs**

- Mobility hub minis
- Mobility hubs at work
- Place/train/bus interchanges
- Mobility hubs in rural areas

#### **Active Travel in Rural Areas**

- Flagship rural active travel freeways
- Ecycling and inclusive cycling as standard
- Semi-open active travel tunnels

### **“Activating” Public Transport**

- Hopper services
- Active flexi carriages on buses
- Active flexi carriages on trains
- Public transport car-scrappage
- Climate tickets

## 1 Economy

### 1.1 Window of Opportunity to Decarbonise Transport Spending

To get on track for a safe future, there is little doubt that transport spending needs to fund infrastructure which will deliver big on net zero and offer sustained financial value for households. To understand the order of magnitude of this missed zero-carbon investment opportunity, the £2.4bn fuel duty relief from March 2022 to March 2023 is compared to current levels of active travel investment across the devolved nations. As shown in [Table 5](#), **the £2.4bn the fuel duty relief is three times the current designated active travel infrastructure spend across all nations of £738.5m**. The £2.4bn the fuel duty relief is equivalent to a £35.78 per capital spend, which is greater than the per capita spend on active travel in all nations. **The largest disparity is compared to the per capita active travel spend in Northern Ireland of £7.12 per capita, and England of £8.84 per capita**. Overall, this exploration demonstrates that the scale of the 2022-23 fuel duty relief spend is large and would represent a significant large spend in active travel terms.

| Nation           | Dedicated Active Travel Budget | Timeframe | Spend per year | Spend per Capita <sup>3</sup> |
|------------------|--------------------------------|-----------|----------------|-------------------------------|
| England          | £2000m                         | 2020-2025 | £500m          | £8.84                         |
| Northern Ireland | £13.5m                         | 2021-2022 | £13.5m         | £7.12                         |
| Scotland         | £150m                          | 2022-2023 | £150m          | £27.44                        |
| Wales            | £75m                           | 2021-2022 | £75m           | £23.66                        |
| Total per year   |                                |           | <b>£738.5m</b> |                               |
| Fuel Duty Relief | £2400m                         | 2022-2023 | <b>£2400m</b>  | <b>£35.78</b>                 |

Table 5 **Comparison of dedicated active travel spending to the 2022-23 fuel duty relief spending**

As a second scale of investment exercise, the 2022-2023 £2.4bn fuel duty relief spend is reallocated per capita to boost current active travel spending budgets. As shown in [Table 5](#), active travel spending is relatively low across all devolved nations but with funding levels significantly lower in England and Northern Ireland. Scotland currently has the highest per capita spend at £27.44 per person, with a policy commitment to increase active travel spend to £320 million, or 10% of the transport budget, by 2024/25<sup>4</sup> (equivalent to £58.54 per capita).

<sup>3</sup> Office of National Statistics (2022) Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2020. Table 2 Table 2: Drivers of population change for UK countries: mid-2020

<sup>4</sup> Transport Scotland, Press Release 17 March 2022

Boosting current spending through reallocation as shown in *Table 6*, **Northern Ireland and England would gain most in terms of relative impact increasing active travel spending by 600% and 440% respectively. For both Scotland and Wales this reallocated spend would represent doubling current active travel investment budgets** – again, a substantial spend.

| Nation           | Current Direct Active Travel Spend/year | Current Direct Spend per Capita | Boosted Active Travel Spend /year | Boosted Spend per Capita |
|------------------|-----------------------------------------|---------------------------------|-----------------------------------|--------------------------|
| England          | £500m                                   | £8.84                           | £2523m                            | £44.62                   |
| Northern Ireland | £14m                                    | £7.12                           | £81m                              | £42.90                   |
| Scotland         | £150m                                   | £27.44                          | £346m                             | £63.22                   |
| Wales            | £75m                                    | £23.66                          | £188m                             | £59.44                   |

*Table 6 Active travel spend boosted by reallocation of the £2.4 bn fuel duty relief spend.*

## 1.2 Whole Systems Accounting

A high level whole systems accounting analysis was conducted as shown in *Table 7*. This functions to set the wider socio-economic context of investment, and sense check the wider benefits, or disbenefits, to society. While this method is simplistic, it provides an accessible overview of the strategic context of investment. The economic benefits of investment in walking and cycling infrastructure are well established with a typical benefit to cost ratio of 5.62:1 - considered 'very high' value for money<sup>5</sup>. **This whole systems accounting analysis suggests that while the 2022-23 fuel duty relief is intended to provide immediate financial relief, it may serve to undermine wider strategic priorities such as health, net zero and national security.**

| Transport Sector   | Per Capita Economy | Health | Carbon | Biodiversity | National Security | Total Score |
|--------------------|--------------------|--------|--------|--------------|-------------------|-------------|
| Active Travel      | 5                  | 5      | 5      | 5            | 5                 | 20          |
| Ecars              | 1                  | 1      | 1      | 1            | 1                 | 4           |
| Petrol/Diesel Cars | 2                  | 1      | 1      | 1            | 1                 | 5           |
| Public Transport   | 4                  | 3      | 5      | 4            | 3                 | 16          |

*Table 7 Whole systems accounting overview of key transport investment sectors*

<sup>5</sup> Hirst (2020) Active travel: Trends, policy and funding. House of Commons Library Research Briefing. Available at: <https://commonslibrary.parliament.uk/research-briefings/cbp-8615/>

### 1.3 Better Spending by Nation

As a third exploratory scale of investment exercise, the £2.4bn was reallocated to each devolved nation on a per capita basis, and a “shopping list” of equivalent walking and cycling infrastructure estimated. The purpose of this exercise is to quantify and better understand what a per capita share of £2.4bn in active travel investment represents for each nation. In addition, the carbon and mileage impacts are estimated.

#### England

For England, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £2,013 million active travel infrastructure spend. As a potential scenario, this investment would result in **1500 dedicated play streets, 45 km flagship walking infrastructure, 1000 km of walking infrastructure upgrades, 450 km of separated cycling infrastructure, as well as high value connectivity assets such as 50 pedestrian & cycling bridges, 15 major mobility hubs, and 1000 in-street mini mobility hubs.**

| Intervention             | Investment | Quantity |
|--------------------------|------------|----------|
| Play Streets             | £225m      | 1500     |
| Walking Upgrades         | £200m      | 1000 km  |
| Walking Flagships        | £191m      | 45 km    |
| Separated Cycling        | £1013m     | 450 km   |
| Pedestrian/Cycle Bridges | £125m      | 50       |
| Mobility Hub - Big       | £225m      | 15       |
| Mobility Hub - Mini      | £34.5m     | 1000     |
| Grand Total              | £2013m     |          |

Table 8 *Per Capital Reallocation of £2.4bn Fuel Relief in Active Travel Spend England*

This level of active travel investment would generate an estimated **57.8 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 9,908,098 tonnes CO<sub>2</sub>e.**



## Northern Ireland

For Northern Ireland, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £67.8 million active travel infrastructure spend. This is equivalent to £35.78 per capita. As an alternative scenario, this “activated” spend is equivalent to investment in **50 dedicated play streets, 2 km flagship walking infrastructure, 25 km of walking infrastructure upgrades, 12 km of separated cycling infrastructure, as well as high value connectivity assets such as two pedestrian & cycling bridges, one major mobility hubs, and 30 in-street mini mobility hubs.**

| Intervention             | Investment | Quantity |
|--------------------------|------------|----------|
| Play Streets             | £7.5m      | 50       |
| Walking Upgrades         | £5m        | 25 km    |
| Walking Flagships        | £8.5m      | 2 km     |
| Separated Cycling        | £27m       | 12 km    |
| Pedestrian/Cycle Bridges | £5m        | 2        |
| Mobility Hub - Big       | £15m       | 1        |
| Mobility Hub - Mini      | £1m        | 30       |
| Grand Total              | £67.8m     |          |

*Table 9 Per Capital Reallocation of £2.4bn Fuel Relief in Active Travel Spend Northern Ireland*

This level of active travel investment would generate an estimated **1.6 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 272,610 tonnes CO<sub>2</sub>e.**

## Scotland

For Scotland, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £196 million active travel infrastructure spend. This is equivalent to £35.78 per capita. As an alternative scenario, this “activated” spend is equivalent to investment in **150 dedicated play streets, 5 km flagship walking infrastructure, 100 km of walking infrastructure upgrades, 45 km of separated cycling infrastructure, as well as high value connectivity assets such as 5 pedestrian & cycling bridges, one major mobility hub, and 100 in-street mini mobility hubs.**

| Intervention             | Investment     | Quantity |
|--------------------------|----------------|----------|
| Play Streets             | £22.5m         | 150      |
| Walking Upgrades         | £20m           | 100 km   |
| Walking Flagships        | £21.3m         | 5 km     |
| Separated Cycling        | £101m          | 45 km    |
| Pedestrian/Cycle Bridges | £12.5m         | 5        |
| Mobility Hub - Big       | £15m           | 1        |
| Mobility Hub - Mini      | £3.5m          | 100      |
| <b>Grand Total</b>       | <b>£195.6m</b> |          |

*Table 10 Per Capital Reallocation of £2.4bn Fuel Relief in Active Travel Spend Scotland*

This scale of active travel investment would generate an estimated **5.8 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 1,001,758 tonnes CO<sub>2</sub>e.**

## Wales

For Wales, a per capita reallocation of the £2.4 billion fuel duty relief equates to a £113 million active travel infrastructure spend. This is equivalent to £35.78 per capita. As an alternative scenario, this “activated” spend is equivalent to investment in **75 dedicated play streets, 5 km flagship walking infrastructure, 40 km of walking infrastructure upgrades, 20 km of separated cycling infrastructure, as well as high value connectivity assets such as 4 pedestrian & cycling bridges, one major mobility hub, and 80 in-street mini mobility hubs.**

| Intervention             | Investment | Quantity |
|--------------------------|------------|----------|
| Play Streets             | £11.3m     | 75       |
| Walking Upgrades         | £8m        | 40 km    |
| Walking Flagships        | £21.3m     | 5 km     |
| Separated Cycling        | £45m       | 20 km    |
| Pedestrian/Cycle Bridges | £10 m      | 4        |
| Mobility Hub - Big       | £15m       | 1        |
| Mobility Hub - Mini      | £2.7m      | 80       |
| Grand Total              | £113m      |          |

Table 11 *Per Capital Reallocation of £2.4bn Fuel Relief in Active Travel Spend Wales*

This scale of active travel investment would generate an estimated **2.8 billion walking and cycling kilometres** over a 35-year infrastructure lifespan, with a **reduced carbon demand of 481,720 tonnes CO<sub>2</sub>e.**

## Total UK Impact

The UK wide assessment of carbon and kilometre impacts indicates that the £2.4bn fuel relief is equivalent to a 45.7 MtonCO<sub>2</sub>e deficit, while an equivalent £2.4bn investment in active travel infrastructure would generate an 11.7 MtonCO<sub>2</sub>e dividend. In total the associated design capacity of this better spending scenario of £2.4bn investment in walking and cycling infrastructure would generate **68 billion zero carbon walking and cycling kilometres** over a 35-year infrastructure lifespan compared to the 27 billion high carbon kilometres theoretically financed by the 2022-2023 fuel duty relief. In conjunction with not spending on high carbon fuel relief subsidies, the modal shift enabled through £2.4 bn investment in world class active travel infrastructure would deliver **an estimated 57.4 MtonCO<sub>2</sub>e in carbon reduction - this equivalent to 1.5 times the annual carbon footprint of aviation in the UK.**

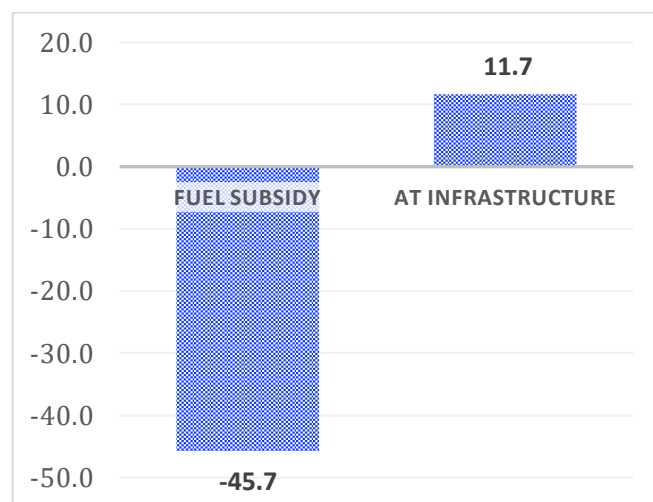


Table 12 Comparative carbon footprint of £2.4 bn fuel duty relief compared to £2.4bn investment in active travel (in MtonsCO<sub>2</sub>e)

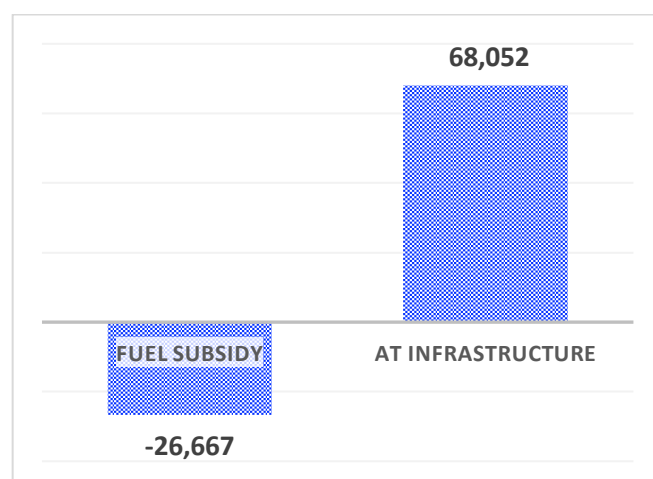


Table 13 Comparative zero carbon mileage of £2.4 bn fuel duty relief compared to £2.4bn investment in active travel (in million kilometres)

In the following chapters, a toolbox of key walking and cycling infrastructure investments are laid out with brief descriptions of the value of each intervention.

## 2 Quick Wins

### 2.1 Play Streets

Today, designated 24/7 Play Streets are widely used across Germany, Switzerland and Austria and many other European countries. There are historic precedents for play streets across the UK which paint a delightful picture of active and sociable play. **Play streets are a great place to learn how to ride a bike!** And could form part of the toolbox of 20-minute neighbourhoods.



Figure 14 A 24/7 play street in Germany, with a “child mph” speed limit – children are expected to play in the carriageway, cars and vehicles can still access properties © Atelier Dreiseitl / J Read



Figure 15 A play street in Basel - pedestrians always have priority © Planungsamt BVD



## 2.2 Residential Cycle Parking

Much of the housing stock across the UK is historic with narrow hallway dimensions and often without basement or shed space. Secure, in-carriageway cycle parking is a much needed and easy win. A 1% conversion approach can be applied to convert 1% of car parking to cycle parking each year.



Figure 16 In-street cycle parking placed in the carriageway is one way to provide secure cycle parking at home. Attention should be paid to provide 30% of spaces suitable for adapted and inclusive cycle types such as trikes, cargo bikes and bike trailers © Cyclehoop

## 2.1 At Destination Cycle Parking

Whether at a work hub, or outside local shops, school or park, convenient cycle parking with lots of natural surveillance is much needed. Again, cycle parking is best placed in the carriageway to maintain the integrity and network capacity of the footways.



Figure 17 Easy peasy cycle parking right outside © Cyclehoop

## 2.2 Widen and Declutter Footways

After a ban on pavement parking, decluttering and widening footways is a simple high impact active travel investment. There is a strong evidence base that walking interventions are important and the work<sup>6,7,8,9</sup>. Good walking infrastructure is particularly important for older people<sup>10</sup> and children<sup>11</sup>. As an example of best practice of widening and decluttering footways, Perth & Kinross Council have delivered several continuous footways and footway improvements along school routes. Broich Road is a well-used route to both the Primary and Secondary schools in Crieff. The footway was realigned and widened up to 3 m and continuous footways installed using raised level tables and give-way markings.



Figure 18 Use of double give way markings and a raised continuous footway on the route to a primary and secondary school on Broich Road in Crieff © Perth & Kinross Council

## 2.3 Continuous Level Footways

The use of continuous level footways is widely established across Europe as the best practice for improving road safety for pedestrians and cyclists, but also vehicle users. Iconically, this question was asked in Copenhagen: how can my child get to school independently without crossing the road? Continuous level footways are standard across Copenhagen which has some of the best safety rates per km cycled, particularly for children. There are historic examples of continuous level side junctions in Glasgow, Bristol and many other towns and cities across the UK. Emerging best practice examples can be found at Leith Walk in Edinburgh, Sauchiehall Street in Glasgow, and York.

<sup>6</sup> Public Health England (2017) Spatial Planning for Health

<sup>7</sup> Public Health England (2016) Working Together to Promote Active Travel

<sup>8</sup> Living Streets (2016) Overcoming Barriers and Identifying Opportunities for Everyday Walking for Disabled People.

<sup>9</sup> Cavill et al. (2019) Active Travel and Physical Activity Evidence Review. Sport England

<sup>10</sup> Living Streets (2021) Our Streets Too – Why Walking Infrastructure is a Priority for Healthy Ageing in Scotland

<sup>11</sup> Read (2022) Child MPH - Delivering Safe Walking and Cycling Infrastructure for Children and Young People in Scotland





Figure 19 A raised continuous footway in an attractive buff material adds placemaking value in York

## 2.4 Pop-Up Zebra Crossings

Raised level zebra crossings are key to delivering place-led traffic calming and moderating vehicle speeds to be more people friendly and lower carbon. However, currently it can take far too long to design and deliver a zebra crossing. The use of temporary pop-up zebras can help get in some quick, high impact wins where they are urgently needed.



Figure 20 Example of a temporary raised level zebra crossing © Rosehill Highways



### 3 Walking Flagships

#### 3.1 Flagship Walking Infrastructure



**Figure 21 The High Line in New York is a 2.4 km green walking route built on a disused raised rail line which receives over 8 million visitors per year © Dansnguyen**

The Highline in New York City is a former raised freight railway track which has been repurposed as a linear green public park. It is 1.5 miles (2.4 km) long and receives 8 million visitors per year. The unparalleled success of the Highline shows how a transport corridor can be re-purposed to great effect.



**Figure 22 A paradise for walking (and cycling and using the bus) in Sheffield © Sheffield City Council**

Grey to Green is an award-winning scheme bringing colour and sustainability to inner-city Sheffield. It transformed a tarmacked area into a green public space that encourages cycling and walking<sup>12</sup>.

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<sup>12</sup> <https://www.greytogreen.org.uk/background>



## 4 Cycling Innovation

### 4.1 Cycle Priority

Road space is often constrained by the historic dimensions, and there might not be enough width to reallocate. A great solution to this is to re-prioritise the road space, giving cyclists priority on the existing carriageway. Reprioritising offers a spatially pragmatic and cost-effective solution to delivering high quality and safe cycling infrastructure. This approach works with rather than against the reality that we are a car dependent society, and we need to put solutions in place which provide alternatives to car travel before taking this away. Change of priority on side junctions and in-route reminders mean even the most time-pressed delivery driver knows cyclists have priority.



Figure 23 The “Wee Unicorns” school cycle bus in Edinburgh creates a cycle priority effect – what if this could be the case all the time © Andy Catlin



Figure 24 Cycle priority corridor used to great effect in a rural village context in Fisher's Hill, Hampshire © Fisher's Hill Facebook



## 4.2 European Best Practice for Cycle Priority

The use of cycle priority approaches is well established in the Netherlands, but has also been growing rapidly recently in Germany, Switzerland, and the USA.



Figure 25 Cycle priority approaches are being rapidly adopted across Germany which allows Germans to still love their cars and park right outside of the shops while giving themselves and their children safe options to cycle © Ralph Peters



Figure 26 Cycle Priority Streets are widely used across the Netherlands and supported by a rule of no overtaking cyclists to support child road safety © J Read



### 4.3 Piloting Transformational Approaches



Figure 27 A one-way motorised traffic loop allows the conversion of a motorised vehicle lane into a separated bi-directional cycle track in Rathdown, Ireland © Paul Ohara



Figure 28 Forrest Road Spaces for People Scheme in 2020, Edinburgh © Mies Knottenbelt / Spokes

Pop-up approaches which were delivered as part of emergency active travel funding during the Covid-19 pandemic have provided a benchmark for high-impact and transformational delivery of safe walking and cycling. There have been multiple examples of the introduction one-way traffic systems to enable delivery of bi-directional cycle facilities, pop-up separated

cycle lanes and widened and decluttered footway provision. Pop-up approaches have ongoing value to deliver projects first on a temporary trial basis for e.g., 18 months to allow communities and businesses the opportunity to experience this level of provision possibly for the first time.

As an example of best practice, Edinburgh City Council introduced 'Spaces for People' pop-up walking and cycling measures during 2020 and 2021 to give people more space on pavements and roads during the Covid-19 pandemic<sup>13</sup>. These measures included temporary pop-up approaches to deliver:

- 39 km of separated cycle infrastructure
- 54 measures around schools to give more space to pupils and their parents/carers
- removing street clutter such as unused poles and parking signs

#### 4.4 Separated Walking & Cycling Bridges



*Figure 29 Separated walking and cycling bridge, Lea Bridge Road in Mini Holland © Photography: Alexander Christie, Scheme Design: LBWF Highways and what if: projects*

Segregation between walking and cycling is key to make sure active travel infrastructure works for everyone. This particularly important to future-proof for the uptake of e-cycling and e-scooters, and at critical points like bridges and crossings.

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<sup>13</sup> <https://www.edinburgh.gov.uk/spaces-people-1>



## 5 Active Green Corridors

Road investment needs to deliver impact. Integrated, multi-functional approaches mean that the investment creates more value for money, as nature recovery, active living, local economy and resilience are embedded into multi-modal transport offers.



**Figure 30 Roads can be multifunctional and deliver space for nature, active living, shop frontage as well as big ticket transport, flood, and energy resilience infrastructure.**

As, an example, Edinburgh has an ambitious agenda for change, for a healthier, thriving, fairer and compact capital city with a higher quality of life for all residents. The George Street and First New Town Public Realm Improvements Project reflects this bigger vision for the city. The design has been developed over a number of years, with extensive consultation, and in response to a range of key city plans.

The proposal creates a welcoming, safe, better connected and sustainable space that will embrace and enhance the much-loved heritage of George Street, Castle Street, Frederick Street and Hanover Street. Our vision is to provide a great place that everyone can enjoy and benefit from, which supports Edinburgh's drive to be net zero carbon by 2030 and economic recovery. People are at the heart of this key part of Edinburgh's City Centre Transformation, whether a resident or there to work, visit, shop, cycle to and through, socialise or simply pause for a while.



Figure 31 **George Street in Edinburgh is being redesigned as an active, green corridor with outstanding liveability and place quality** © City of Edinburgh Council

The Copenhagen Climate Implementation Masterplan encompassing a total area of 34 km<sup>2</sup>. The strategy addresses key issues of flood resilience and water quality, while seeking to create the greatest possible synergy with the urban environment. This new generation of blue-green infrastructures addresses essential city services such as mobility, recreation, health and biodiversity, creating a strategic and feasible approach to ensure long-term resilience and economic buoyancy. The project was ASLA Award of Excellence, Analysis and Planning Category in 2016.



Figure 32 **The Copenhagen Climate Implementation Masterplan envisions integrating blue-green infrastructure approaches to finance improving walking, cycling and place** © HOFOR

## 6 Mobility Hubs

Mobility hubs are an appealing concept which offers a **creative solution to how vehicles – including cars, cycles and scooters – can be securely and compactly stored with choice and synergy with wider services**. Mobility hubs combine vehicle storage with convenient connectivity to wider mobility choices such as public transport services, and options for e-cycling or e-scooter rental. They could also include e-charging points. They can be located in the carriageway as “minis” or be part of bus and train stations or multi-storey car parks as “biggies”. Mobility hubs have application in urban settings, and equally high relevance in rural settings.

**Mobility hubs are game-changing in terms of delivering a ban on pavement parking.** The mobility hub concept recognises that at this time the UK is a car dependent society, and at this time many people will both want and need to retain access to a vehicle until there is more choice in how they travel. Underpinning this is the need to innovate on previous parking management approaches which rely on high carbon finance models. **Mobility hubs should operate on a zero-carbon finance model** and provide better access to services such as health, tourism, or council services, as well as micro-enterprise opportunities such as fruit ‘n veg stalls, repair services, start-up hubs, or childcare.

As initial starting points for discussion mobility hubs provide:

- Safe and secure parking for cycles, scooters, cars and e-options
- Convenient public transport interfaces with real-time Information
- Mobility hire such as (e)cycles, (e)scooters, and (e)cars
- Zero carbon finance model
- Services and/or micro-enterprise opportunities

### 6.1 Mobility Hub Minis



Figures 33 **Mobility hub “minis” are placed in the carriageway and can be introduced with other street improvements as part of the ban on pavement parking** © SHARE-North



## 6.2 Mobility Hubs at Work



Figure 34 A mobility hub in the workplace can be understood to include things like cycle storage so that these do not pose a trip hazard around the front entrance, but also drying rooms and storage for things that people need to walk to work e.g., coats, hats, boots, and umbrellas. This could be better connected to public transport, for example RTI to local bus services © J Read



Figure 35 A mobility hub with space for 150 cycles, CCTV and lighting and convenient to the local train station © Cyclepods Ltd

### 6.3 Mobility Hubs at Place/Train/Bus Interchanges



Figure 36 A mobility hub as part of a train station in the market town of Deventer, Netherlands. The hub includes easy ramped access, a cycle repair shop and real-time information for train and bus connections which are immediately adjacent. Hubs in other locations include day-care facilities, cycle repair services, workspace or a café © J Read



Figure 37 Mobility hubs are key to introducing the ban on pavement parking as we will need to put the cars somewhere while we decarbonise transport. Nature-based car parking using green facading soften the visual impact of multi-storey car parking in Zurich, Switzerland © Jakob Green Facades



## 6.4 Mobility Hubs in Rural Areas

The Bregenzerwald is an alpine region in western Austria which has pioneered innovative ways of working with its main local resource of wood to drive economic regeneration. This has extended from leading in wood-to-energy technologies, and architectural and structural innovations in wood. In a creative leap, this was extended to a competition to design rural bus stops in wood, which have become visitor destinations in themselves and accessible with the attractive bikes on buses service offering a fun green tourism experience.



Figure 38 A regionally sensitive mobility hub/bus stop which has become a visitor destination in the southwest corner of the Austrian Alps © A. Bereuter



Figures 39 Bikes on bike trailers on buses in the Austrian Alps © REGIO Bregenzerwald/ VMOBILE



## 7 Active Travel in Rural Areas

### 7.1 Flagship Rural Active Travel Freeways

The RS1 is a high capacity peri-rural network **designed to replace 50,000 car journeys per day**<sup>14</sup>. The route is a 101km east-west route, designed to connect train stations, workplaces, tourism, shopping, study and recreational destinations such as football stadiums across the county of Nordrhein-Westfalen. The RS1 route demonstrates a high capacity design standard with segregation between walking and cycling which future-proofs for the uptake of e-cycling. The route design standards include the use of a drainage channel to segregate walking and cycling, and side drainage along the route. The walking lane surface treatment is nature-based using a compacted gravel aggregate which visually softens the wider dimensions reducing the visual impact.



Figure 40 The RS1 is an 101km rural active travel freeway designed to replace 50,000 car journeys per day in the Ruhr Valley, Germany © Schulte

The Dutch Fast Network is an approach to specifically design and upgrade cycle paths to deliver modal shift from car to cycling for everyday journeys to deliver health and carbon benefits<sup>15</sup>. Each county in the Netherlands is developing their own network, with emphasis on high quality design standards such as extra width, safe junctions, designing for e-cycling and better lighting<sup>16</sup>. The routes seek a high level of connectivity with public transport interchanges such as train and bus stations. The Fast Cycle Network aims to cater for core distance ranges of 10 to 20km while adding mobility choices<sup>17</sup>.

<sup>14</sup> <https://www.rvr.ruhr/themen/mobilitaet/radschnellwege-ruhr/>

<sup>15</sup> <https://www.snelfietsroutes Gelderland.nl/Netwerk-van-snelle-fietsroutes>

<sup>16</sup> <https://www.provincie-utrecht.nl/onderwerpen/mobilititeit/fiets/snelfietsroutes>

<sup>17</sup> <https://www.vlotveiligfietsen.nl/>

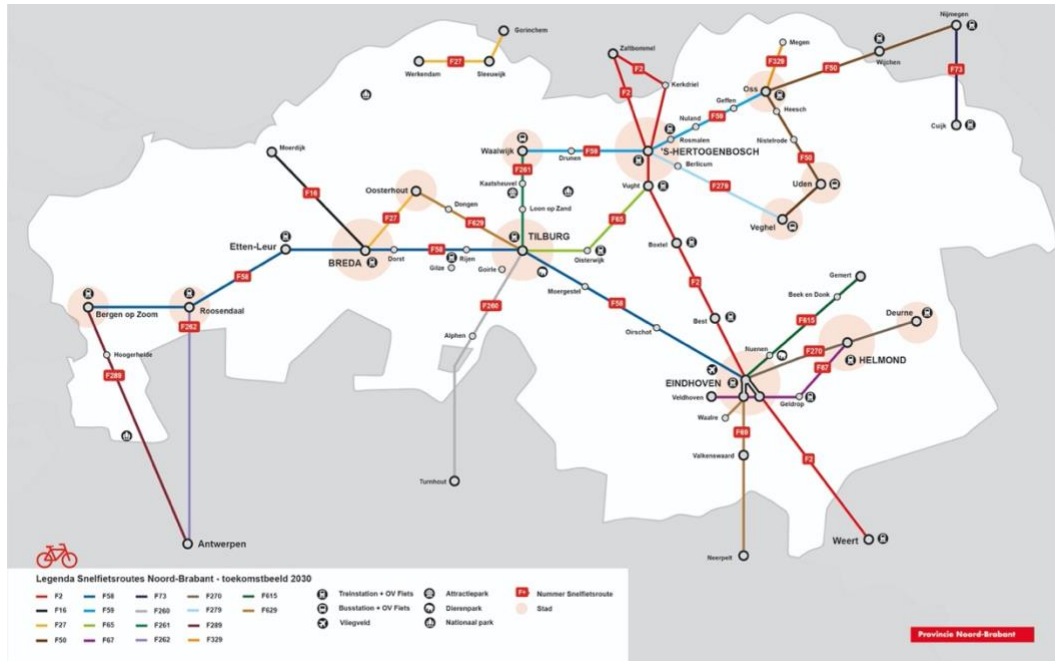


Figure 41 Fast Cycle Route Network for the County of Nord-Brabant showing connectivity with public transport nodes designed for distances of 10 to 20 km © Noord-Brabant.

## 7.2 Treat Eycling and Inclusive Design as Standard



Figure 42 In rural areas, designing for eycling and inclusive cycling as standard is absolutely game changing © Mountain Trike Company



A suite of recent studies conducted by the University of Bristol has found that **ecycling has clinical health benefits for both vulnerable people with health conditions as well as for the general population**<sup>18</sup>. The studies find that ecycling supports robust transport ranges<sup>19,20, 21</sup>. **As such, ecycling is a gamechanger to enable older and more vulnerable people to cycle.**

Ecycling also includes more diverse cycle types such family ecycles to transport multiple children, e-trikes which add stability and space for shopping or a dog, or ecargo bike micro-freight services such as the 'Parcels not Pollution' programme launched by Hammersmith & Fulham which at the time of writing was making 1000 deliveries per day<sup>22</sup>. However, ecycling increases the importance of segregation between walking and cycling, as an ecyclist poses both perceived and absolute danger to pedestrians.

- E-cycling has clinical health benefits
- E-cycling supports cycling for more vulnerable and older people
- E-cycling supports distance ranges relevant to daily journeys
- E-cycling impacts design standards increasing the importance of segregation
- E-cycles need secure cycle parking at home and at destination



Figure 43 **Lea Bridge Road, Mini Holland, segregation between walking and cycling is fundamental to future-proof for the uptake of ecycling. Designing for inclusive cycling as standard is as important in rural areas as in urban areas** © Photography: Alexander Christie, Scheme Design: LBWF Highways and what if: projects

<sup>18</sup> Bourne et al. (2018) Health benefits of electrically-assisted cycling: a systematic review

<sup>19</sup> Cooper et al. (2018) Potential of electric bicycles to improve health of people with Type 2 diabetes: a feasibility study

<sup>20</sup> Bourne et al. (2020) The impact of e-cycling on travel behaviour: A scoping review

<sup>21</sup> Netherlands Institute for Transport Policy Analysis (KiM) (2018) Cycling Facts

<sup>22</sup> <https://www.lbhf.gov.uk/articles/news/2020/03/hf-s-eco-cargo-bike-delivery-service-hits-1000-parcels>



### 7.3 Semi-Open Cycle Tunnels



Figure 44 A semi-submerged tunnel under an A-road on a national cycle route in the Netherlands. The retaining walls are designed open outwards to allow for lots of natural light and clear sight lines to the far side © Interreg North-West Europe CHIPS

Decades of underpasses delivered in city and town centres has left discomfort with the memory of dark dingy tunnels with no view of an exit and a boding niggles of unsafety. However, a well-designed cycle tunnel does have a role to play when they can offer tangible road safety, and retain connectivity for pedestrians, cyclists, motor vehicles and horse riders where A roads need to be crossed. Semi-submerged and open tunnels have a clear sightline to the far side and allow for lots of natural light and natural surveillance, which is important to underpin gender equality in cycling<sup>23</sup>. Designed carefully, a semi-submerged tunnel can also support wildlife connections.

<sup>23</sup> Infrastructure and Cities for Economic Development (2017) Violence against Women and Girls, Infrastructure and Cities Briefing Paper

## 8 “Activating” Public Transport

### 8.1 Hopper Services

A ‘hopper’ service adds an extra dimension of fun to improving connectivity within town. A ‘hopper’ could be a frequent loop service running between mobility hubs, the town centre and the train station. This gives residents and visitors options to walk, cycle or scoot part of their journey, then to jump on a hopper with heavy shopping or when legs are tired or just to get up the hill! A regular hopper services could also be game changing to enable resident to park their cars at a mobility hub and being able to catch a hopper there if desired.



Figures 45 Ljubljana runs a “Kavalir” micro-hopper and noddly train hopper service © Wedam

### 8.2 Active, Flexi-Carriages on Buses



Figure 46 Bikes on buses in the Bregenzerwald, the Austrian Alps © REGIO Bregenzerwald

Active flexi-carriages are designed to accommodate wheelchairs, pushchairs, cycles, adapted cycles, luggage, dogs and all the other sundry needed to leave the car at home. Inspiration from rural settings which place economic value on enabling an active walking and cycling interfaces with public transport as a green tourism approach include Bike-Buses operated by Border Buses<sup>24</sup>, as well as bikes-on-buses services in the Alps<sup>25</sup>.

<sup>24</sup> <https://ecf.com/news-and-events/news/buses-combining-cycling-and-public-transport-scotland>

<sup>25</sup> <https://www.bregenzerwald.at/radbus-und-bahntransport/>





Figures 47 **Bikes on buses in the Borders Scotland** © Alexander Dennis

### 8.3 Active, Flexi-Carriages on Trains

The UK's first active travel carriages have been introduced on the Highland Explorer<sup>26</sup> in Scotland. There is widespread use of active flexi-carriages on trains in Switzerland<sup>27</sup> and Alpine southern Germany<sup>28</sup>.



Figures 48 **The UK's first active travel carriages have been introduced in Scotland** © ScotRail

<sup>26</sup> <https://www.scotrail.co.uk/scotrail-highland-explorer>

<sup>27</sup> <https://www.sbb.ch/en/timetable/travel-advice/bicycles/take-your-bike-with-you.html>

<sup>28</sup> <https://www.bwgt.de/ihr-nahverkehr/service/fahrrad-services/fahrradmitnahme-in-zuegen>





Figure 49 Active flexi train carriages are good for wheelchairs, pushchairs, cycles and all the things you need for an everyday adventure Left © Chris Roberts



Figure 50 Switzerland offers an annual bike ticket at € 240 per year © SBB.

## 8.4 Public Transport Car-Scrappage

Residents of Barcelona can scrap their old clunker for the T-Verda travel card and benefit from three years of free public transport across the entire public transport network (tram, train, metro, and buses)<sup>29</sup>.



Figure 51 **Three years public transport across all networks in metropolitan Barcelona for scrapping an old clunker** © (screenshot) Transport Metropolitans de Barcelona

## 8.5 Climate Tickets

Austria has introduced a single, integrated “Climate Ticket” which is valid for all public transport across Austria for € 1095 per year<sup>30</sup> - equivalent **to £2.50 per day for access to all public transport**. The ticket is valid across the myriad of transport operators which run bus and train services in Austrian states and metropolitan areas. There is a reduced price for under 25s, over 65s and Disabled users of € 821 per year. A family Climate Ticket costs €1205 – about £1000 per year for all the family, how about that for affordable public transport!



Figure 52 **The Climate Ticket in Austria is valid on all public transport services for less than £3 per day** © (screenshot) One Mobility Ticketing GmbH

Switzerland offers an annual bike ticket at € 240 per year<sup>31</sup>.

<sup>29</sup> <https://www.tmb.cat/en/barcelona-fares-metro-bus/single-and-integrated/t-verda>

<sup>30</sup> <https://www.klimaticket.at/en/>

<sup>31</sup> <https://www.sbb.ch/en/travelcards-and-tickets/railpasses/annual-bike-pass.html>

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