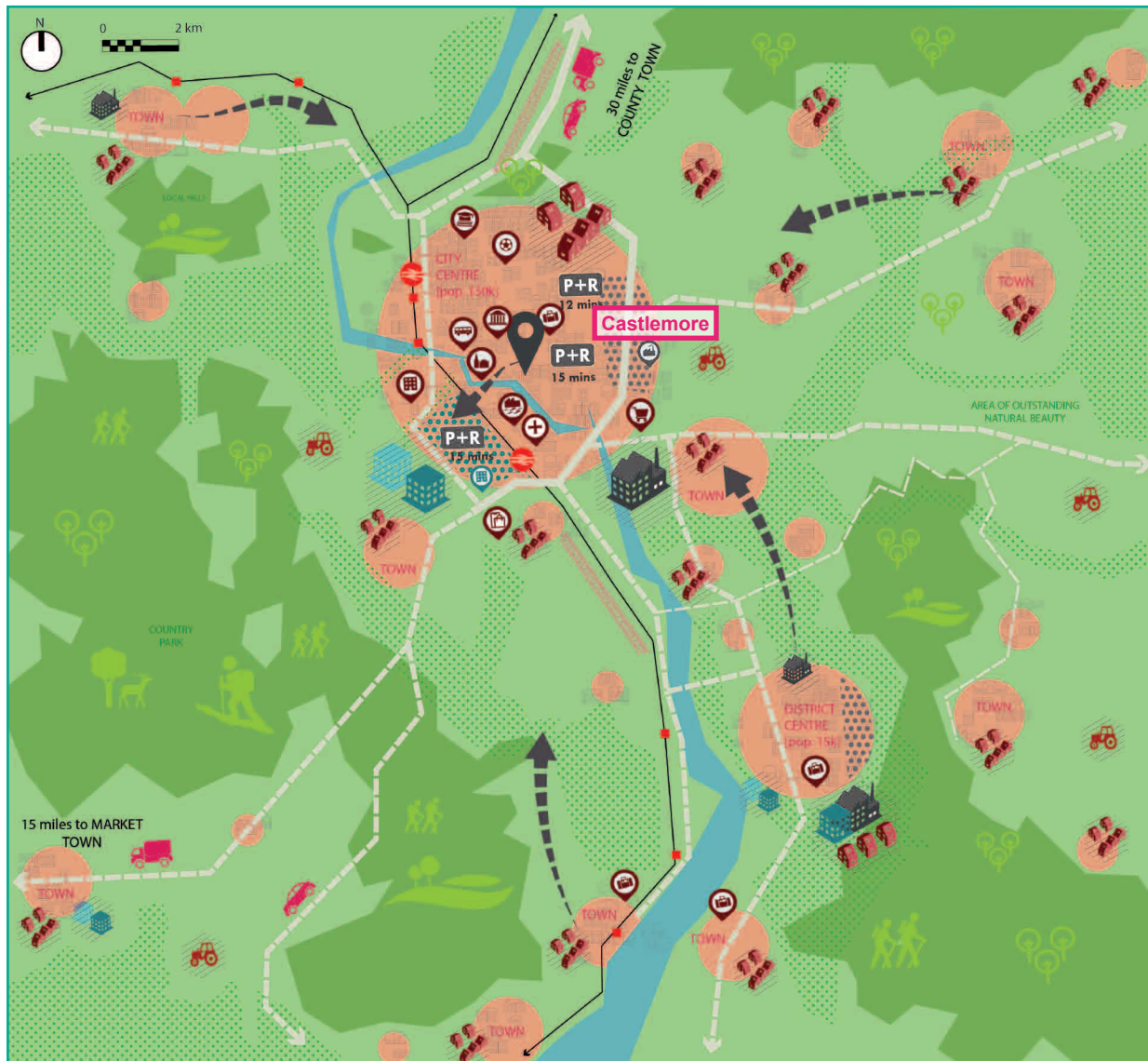


# A pathway to reducing surface transport emissions in a unacentric regional city: Castlemore



## Welcome to Castlemore in 2020

**Population and housing:** A prosperous and growing city of approximately 150,000 people, set within a largely rural area. It has high housing need and takes the traditional approach of lower-density urban extensions which often fail to meet targets or deliver quality outcomes.

**Economy and employment:** The majority of jobs are in health, education, retail and public and professional services, with a strong rural agricultural sector and new sectors emerging in biological and environmental science. There is a diversified city centre economy, but this is increasingly reliant on leisure and residential uses as retail declines and employment shifts to peripheral business parks.

**Travel and transport:** There is significant in-commuting from the surrounding hinterland, and movement within the city to peripheral employment sites. Public transport is comprised of heavy rail and buses, with a limited bike hire network and poor integration between public transport and active travel networks. The city is strongly influenced by its rural hinterland, with green corridors and public rights of way providing links for commuting and leisure.

This information pack is one of four place typologies created by the RTPi to identify and test the impact of interventions to reduce surface transport emissions. To see the other typologies, and read the main report, visit [rtpi.org.uk/netzerotransport](http://rtpi.org.uk/netzerotransport)

# Castlemore in 2030



UNICENTRIC REGIONAL CITY

# Legend

Land use	Low carbon renewal zone	
	Carbon negative growth zone	
	Strategic mobility hub	
	Strategic logistics hub	

Landscape	Farmland	
	Open countryside	
	Parks / open space	
	Allotments	

Access	Railway / train station	
	Road network	
	Rail logistics connection	
	Local logistics connections	
	Movement corridors	
	Strategic cycle route	
	Pedestrianised streets	
	Public square	
	EV public transport	
Living lanes		

Buildings	Community work hub	
	Gigafactory	
	Make space	
	Repurposed out of town	
	Local markets	

Substitute trips	Active travel infrastructure	
	Logistics infrastructure	
	Land use planning	
	IT infrastructure	

Shift modes	Shared mobility	
	Modern public transport	
	Street design and access restrictions	

Switch fuels	EV charging infrastructure	
--------------	----------------------------	--

Cycle friendly	Pedestrian friendly			
e-Cargo bike	Home delivery	Ground drone		
Co-working	Mixed use	15-minute neighbourhood		
Online tasks	Home working	Broadband / 5G		
e-Bikes	Car clubs	Vehicle to grid technology	Mobility hubs	Carpool
DRT	AV EV shuttles	Public / shared modes		
Car-free centres	Drop-off / pick-up priority	Freight restrictions	Last mile connectivity	Segregated cycle highway
EV charging off-street	EV charging on-street	Fast EV charging	EV taxi	

## What's changed?

By 2030, the city of Castlemore is being transformed into a series of interconnected urban villages that bring together the best of town and country. The city centre is the hub of community life. High quality homes are accompanied by new forms of co-working spaces and independent retail, bringing renewed vitality and a sense of local identity to the high street following the loss of mass-market retailers and the migration of traditional sources of employment to the city edge.

Streets within neighbourhoods across the city have been repurposed for liveability and to give people walking and cycling priority. Street trees parklets, urban wetlands and playgrounds encourage slow movement, play and social gatherings between friends and neighbours. Parents feel comfortable letting their children play in the street, and the morning commute is a trip to look forward to.

New areas of growth have been located to maximise the use of sustainable modes of transport from the outset, and have unlocked significant investment in public transport, strategic cycle routes and shared mobility. Car-free living is becoming the norm as vehicles are no longer the most obvious or convenient choice, and as people enjoy the experience of moving through the city's streets and spaces.

The impact of in-commuting has been substantially reduced through the creation of integrated mobility hubs and restrictions on vehicle access within the city. This has facilitated last mile connectivity to the city centre via active and public transport, and created the conditions to deliver more liveable streets.

The relationship between the city and its rural hinterland has been strengthened through a focus on better connecting local agriculture, forest schools and rural industry with local residents and supply chains. Logistics hubs are located next to areas of production and connected directly to the strategic cycle and rail networks, enabling micro-distribution to the local area via cargo bikes and to the wider region via rail. People living in the city increasingly feel they have a stake in the surrounding rural economy and landscape.

Smaller towns and villages in the wider hinterland are becoming more resilient and sustainable, with better digital connectivity and higher levels of home working. This is supporting the return of local services and amenities, and demand responsive transport is removing the barriers posed by distance to traditional public transport stops.

### Key features of the vision

1. 15-minute neighbourhoods including local amenities such as shops, doctors and schools to enable local living
2. Community growing space providing opportunities for locally produced food, sold in local markets and shops
3. Excellent 5G / WiFi connectivity provided to rural locations to enable home working and digital service delivery such as online GP appointments and e-learning
4. Community hubs provide coworking and 'pop up' space for a range of uses, reducing the need to commute long distances
5. Mobility hubs allow for easy transfer to alternative modes of transport within the city
6. Car-free city centre creates space for healthy streets, active lifestyles and mixed-use urban renewal that reduces emissions
7. Integrated public transport networks connecting the city centre, suburbs and local towns
8. Active travel connections provided through high quality green infrastructure that provides tranquillity for urban residents and habitats to support nature recovery
9. Logistics hubs enable more efficient use of road space and facilitate last-mile delivery by more sustainable modes such as e-cargo bike
10. Carbon negative growth zones located on high quality public transport routes and designed around principles of local living and net zero emissions

## An 80% surface transport emission reduction pathway for Castlemore

### 2020 transport carbon budget and a 'do nothing' scenario

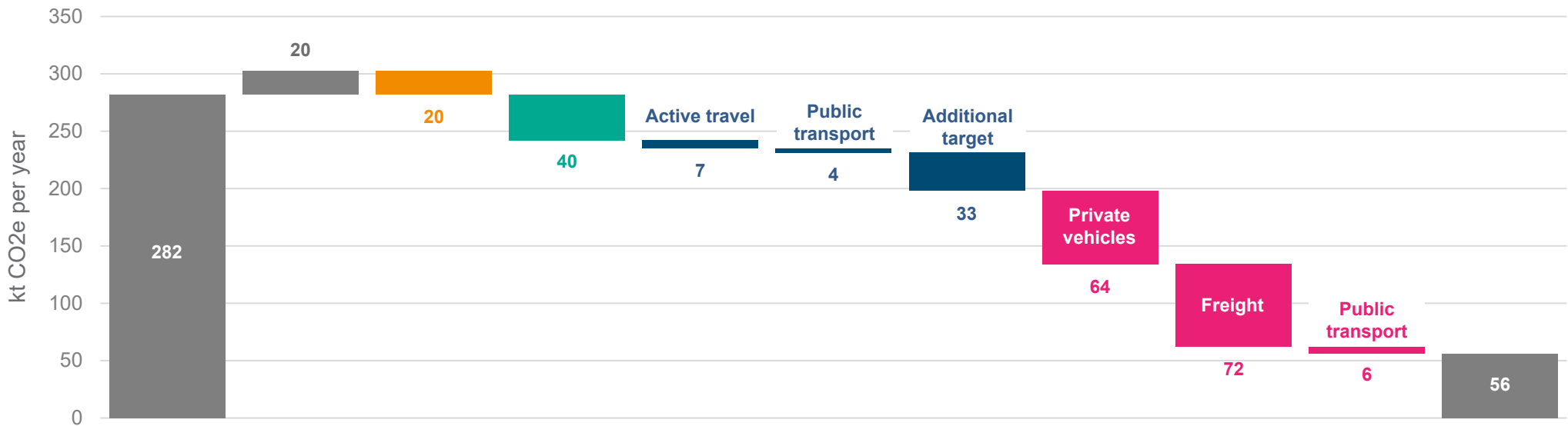
The left hand column shows total surface transport emissions in 2020. Under a 'do nothing' scenario, with no national or local action, emissions in Castlemore rise by 20 ktCO<sub>2</sub>e / year, with new development creating additional trip demands.

### Step 2: Substitute trips

Trips are substituted through digital, transport and land use planning interventions. These reduce travel demand and associated transport emissions by 40 ktCO<sub>2</sub>e / year.

### Step 4: Switch fuels

Private vehicles, public transport and freight switch to zero carbon fuels in line with the projected UK national pathway up to 2030. This reduces emissions by the remaining 142 ktCO<sub>2</sub>e / year.



### Step 1: Negative carbon developments

All development in Castlemore is located and designed to generate zero emissions from transport, and to potentially facilitate the removal of carbon from the wider transport network. This cancels out the emissions growth under the 'do nothing' scenario.

### Step 3: Shift modes

Vehicle trips are reduced by switching modes to active and public transport, based on current UK best practice benchmarks. This reduces transport emissions by 11 ktCO<sub>2</sub>e / year.

Under the 'additional target', trips are further reduced through increased mode shift to active and public transport, based on more ambitious assumptions that exceed current UK benchmarks. This reduces transport emissions by a further 33 ktCO<sub>2</sub>e / year.

### 2030 transport carbon budget under a 'do everything' scenario

An 80% reduction achieved, with a further 20% reductions needed to achieve zero carbon by 2050.

**Travel data**

**2020**

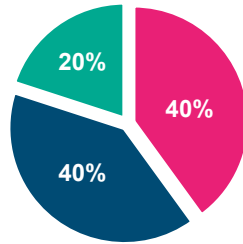
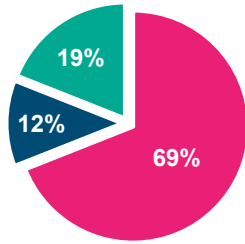
**2030**

**Mode share**

Private vehicles

Public transport

Walking and cycling



**Proportion of journeys made by walking and cycling**

Under 5 miles: 44%

Over 5 miles: 7%

Under 5 miles: 50%

Over 5 miles: 11%

**Average journey length**

9.06 miles

8.04 miles