

Dublin Bus
Driving Change:

Our Journey to Zero



Dublin Bus

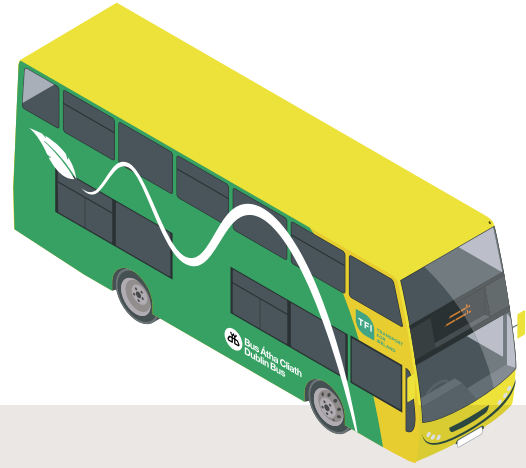
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Dublin Bus Driving Change: Our Journey to Zero



Overview

Introduction

- How Dublin Bus can help the city set the standard for environmental stewardship and sustainable development
- What Dublin Bus is already doing and the progress to date on our journey

Managing growth while protecting our environment

- Challenges posed by our rising population and pressure on resources
- A post-pandemic world (changing work habits and planning for different commuting patterns)
- The solutions that the bus can provide

Sustainability embedded – at Dublin Bus

- Our people
- Our buildings
- Our vehicles

Sustainability enabled – by Dublin Bus

- How the bus can create a virtuous cycle
- Mobility as a Service – the next phase in the evolution of our transport network

Our environmental roadmap

- Initiatives already underway
- The next stages on our journey

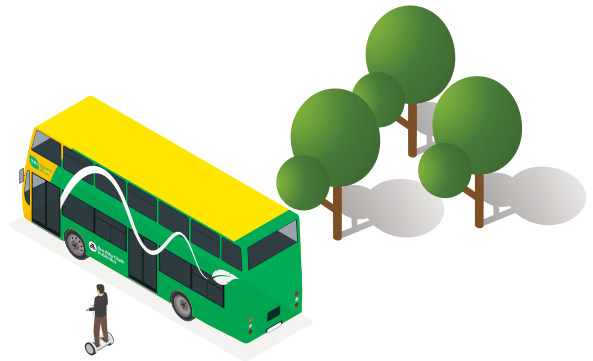




Sustainable public transport is the backbone of urban mobility.

**Image was taken pre-Covid*

Introduction



A sustainable vision for Dublin

Sustainable public transport is the backbone of urban mobility. Dublin Bus envisages a low-cost, frequent and zero emission service which is fully integrated with a suite of flexible transport solutions that make door-to-door journeys for all our customers easy and enjoyable.

We believe this can make a significant contribution towards making Dublin one of Europe's most sustainable cities and one of the best both to live in and to visit.

Dublin can be an example to others of how to manage growth in a balanced and sustainable way. We can live, work, play, travel and enjoy all the benefits of our community and our vibrant economy while protecting the environment around us. And we can do all this while enhancing our quality of life.

Dublin Bus recognises that Climate Change is the defining global issue of our time. We also recognise that we have to play a significant role in helping to improve Ireland's overall performance in this regard. Dublin Bus serves every community in the city. They are where our employees and customers live, work, play, shop and enjoy their leisure time. It is both our honour and our obligation to help keep these communities clean and green.

It is important to note that this is not a new issue. We are committed to improving our own performance, and supporting sustainable transport choices by our customers is long-standing.



Hybrid buses have been introduced on several routes.

Some of the many actions Dublin Bus has taken and the progress we have made include:

- Up to 160,000 cars removed from roads each day as our customers opt for sustainable public transport.
- Total emissions reduced by 13,500 tonnes (17.8%) since 2017.
- Dublin Bus has one of the lowest emission fleets of any operator in Europe.
- We have put in place a plan to achieve the targets set out in the Climate Action and Low Carbon Action Plan 2021 as part of the CIÉ Sustainability Strategy.
- Dublin Bus has participated in trials of zero emission technology including hydrogen fuel cells and is a member of the Hydrogen Mobility Ireland group.
- Hybrid buses have been introduced on several routes in partnership with the National Transport Authority.
- Our new Broadstone Depot has been upgraded to enable hybrid and fully electric vehicles to enter service.
- Our energy management system has been certified to the internationally recognised ISO 50001 standard.
- We are working with the CIÉ Group to update our Procurement Policy to ensure it meets best practice on Green Public Procurement.
- Our goals are aligned to nine UN Sustainable Development Goals, three of which are specific to our role and responsibility regarding the environment, including the commitment for urgent action to combat climate change.
- We have signed up to Business in the Community's Low Carbon Pledge – committing Dublin Bus to science-based carbon reduction targets by 2024.
- We have partnered with the Sustainable Energy Authority of Ireland on its Public Sector Energy Partnership programme.
- Our 3,620 employees have adopted a range of waste reduction and recycling measures including a ban on single-use plastics.
- Fuel efficiency measures have reduced consumption of diesel by more than 2.5 million litres per year.
- LED lighting installed to save energy across our facilities.

We can, and will, do more.



Climate Action must happen at local level and Dublin Bus has a dual mandate in this regard.

The Climate Action Network Europe, which is supported by the European Commission, rated Ireland second last among member states in its progress towards targets set under the Paris Agreement on Climate Change.

This has to improve. Climate Action must happen at local level and Dublin Bus has a dual mandate in this regard.

Our mandate (1) Embedding sustainability in everything we do

As Ireland's largest public transport company, it is our responsibility to embed sustainable practices in every aspect of our business from the vehicles which carry our customers to the energy and materials we use throughout the organisation.

Every customer of Dublin Bus would expect that, at a minimum, we comply with all applicable environmental legislation and that we ensure that pollution and waste are prevented, and resource consumption minimised wherever possible. This is necessary but not sufficient. We have an ethos of continuous improvement.

The environmental performance of our employees, vehicles, buildings and equipment is measured and analysed as part of our Key Performance Indicators and we have allocated resources to ensure we identify areas in which we can improve and effect the necessary changes.

We can always do more to prevent waste. We can always do more to reduce energy consumption. And we can always do more to embrace technology, from introducing zero emission electric buses onto our routes to exploring the installation of renewable energy systems to reduce our reliance on fossil fuels for power.

Our commitment, to all our stakeholders, is that wherever we find we can do more to improve our environmental performance, we will. We need to be as sustainable as we can in everything we do as an operator. We also have a responsibility to help our customers to do the same.



Dublin Bus is a provider of sustainable mobility solutions.

Our mandate (2) Enabling sustainability for our customers

Dublin Bus is a provider of sustainable mobility solutions. A clean, green, fast and efficient bus service enables sustainable transport habits. We are committed to the reduction of emissions, congestion and energy usage. Through our work to promote faster, more sustainable public transport we are also committed to making Dublin a more liveable city.

Every time one of our customers chooses the bus, rather than taking the same journey by car, they are reducing their own carbon footprint and making a positive contribution to the environment. Every full Dublin Bus means a 92% reduction in carbon emissions for every kilometre travelled by our customers compared to the same journey taken by car.

Travel by bus is also a positive choice from an economic perspective. For an average journey undertaken by one of our customers the cost to travel by bus is less than half the cost (42%) of travelling by car. Cleaner fuel and more efficient technology will make each customer journey by bus an even more environmentally positive decision.

Greater capacity and greater frequency will improve choice for customers and make it even easier to choose sustainable public transport. Through network redesign under the BusConnects programme, investment in low emission vehicles, a state-of-the-art ticketing system and a major investment in upgrading infrastructure will greatly improve services by delivering a more efficient, free flowing network.

We are working with the National Transport Authority (NTA) to help deliver the transformational benefits of BusConnects, one of the most significant public transport projects in the history of the state, to our customers.

Dublin Bus is committed to supporting the future development of Dublin in a way that prioritises smart, sustainable mobility solutions. We want to keep our communities connected and clean and ensure that, even as it continues to grow and develop at pace, Dublin will be one of the most liveable cities in the world.





The population
of Dublin is
growing.

Managing growth while protecting our environment

The challenge

The population of Dublin is growing. According to projections from the Central Statistics Office the number of people living in the Greater Dublin Area could increase by more than 400,000 people over the next two decades.

This raises obvious questions about the resources and services required to support the larger population - from housing and healthcare to employment and schools.

The public transport network will play a vital role in helping to answer these questions and ensuring this growth contributes positively to the vibrant social, cultural and economic life of Dublin.

As Ireland recovers from the COVID-19 pandemic and reaches the point where public health restrictions can be fully lifted, it is incumbent on all stakeholders, including Dublin Bus, to look at how future growth will be managed. Traffic congestion and lengthy commutes do not have to be a part of the “new normal”.

Flexible or hybrid working, where appropriate for employers and employees, can be a part of the solution.

It is also clear that helping commuters to reduce their reliance on the private car as a means of transport must be a priority. The bus represents the most cost-effective way for the state to invest in public transport, enabling the rapid deployment of sustainable mobility solutions at scale.

A range of complementary solutions is possible here, including better provision for cyclists and users of Personal Powered Transporters (PPTs) such as e-scooters. The greater the number of clean and efficient options available, the healthier and more sustainable the city will be now and into the future.

Every form of environmentally friendly mobility solution – from walking to e-bikes – has a part to play in reducing our carbon footprint and relieving congestion. The bus, however, remains the most effective means of moving large numbers of people into, out of and through our city.



Every single full bus
replaces the equivalent
of 80 cars on our roads.

Every single full bus replaces the equivalent of 80 cars on our roads, reducing emissions by over 90% and freeing up 300 metres of roadway.

Accelerating the shift away from private cars is the most impactful contribution Dublin Bus can make. This will have a transformational impact in terms of reducing emissions, speeding up journey times and freeing up road space.

From a customer point of view the greatest advantages of BusConnects will be a redesigned network with high frequency spines and greater priority for buses to speed up journey times. To help reduce reliance on the car Dublin Bus has a number of key objectives:

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Post COVID-19, we will support customers to make the switch to the bus by making the decision easier. Dublin Bus will work to ensure the successful implementation of BusConnects, the NTA's programme to greatly improve bus services in cities including Dublin.

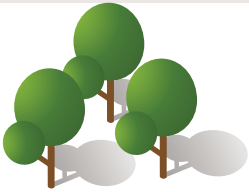


It is crucial that customers experience consistent journey times.

*Image was taken pre-Covid

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- **Greater frequency:** Frequency is the most important priority for public transport users globally and Ireland is no different.
- **More predictable journey times:** It is crucial that customers experience consistent journey times, allowing them to plan their trips to and from work and other destinations accurately.
- **Account-based ticketing:** Introducing systems which allow a broader suite of payment methods to be accepted including mobile payments and payments through wearable devices will improve the customer experience. It will be easier to pay, boarding the bus will be faster and the technology will allow innovations such as dynamic pricing - which could help reduce levels of demand at peak commuting times.





Sustainability,
quite simply, is our
business.

Sustainability embedded at Dublin Bus

We are committed to delivering a high-quality public transport service which meets the needs of people, supports the economic growth of the city and reflects the social values and environmental aspirations of a progressive capital city.

Sustainability, quite simply, is our business.

Our commitments, and the measures we have put in place to achieve the targets set out in the Climate Action and Low Carbon Development Action Plan 2021, are integrated with the CIÉ Sustainability Strategy. Transparency and accountability are at the heart of our approach. This is reflected in our participation in the Carbon Disclosure Programme (CDP), the global non-profit initiative to help measure and manage environmental impacts by businesses. Through the CDP, our carbon footprint and carbon governance can be measured independently. As a first time applicant to the CDP Index in 2020, the CIÉ Group was benchmarked against international companies and transport industry peers, achieving a 'B' rating. This is the highest rating achieved by a first time applicant.

We are members of the Sustainable Energy Authority of Ireland's Public Sector Energy Partnership Programme and we are proud signatories of Business in the Community's Low Carbon Pledge.

As a company our goals are aligned to nine UN Sustainable Development Goals, including three which relate specifically to our role and responsibility regarding the environment.

These goals are:

Goal 11 Sustainable Cities and Communities, which commits Dublin Bus to helping to make Dublin inclusive, safe, resilient and sustainable.

Goal 12 Responsible Production and Consumption, which requires that we ensure sustainable consumption and production patterns in the resources that we use and the bus service we provide.

Goal 13 Climate Action, which requires that we as a business take urgent action to combat climate change and its impacts.

Achieving these goals requires meaningful engagement by our employees and investment in our buildings, vehicles and equipment.

CLEANER AIR

TFI TRANSPORT
FOR
IRELAND



Our 3,602 employees
have taken the lead in
preventing pollution,
reducing waste.

Our people

As part of our commitment to best practice we have allocated resources to training and education to ensure protecting the environment is central to decisions made in Dublin Bus at every level within the business, from strategy formulation to front-line operations.

Our Environmental, Health and Safety team reports directly to our CEO, who is also our Environmental Performance Officer – ensuring accountability at the most senior levels of the organisation. We benchmark our performance against other operators in Ireland and the UK.

Our 3,602 employees have taken the lead in preventing pollution, reducing waste and minimising the consumption of resources by Dublin Bus. Through our sustainability teams, actions have led to significant improvements in our overall environmental performance.

Dublin Bus has significantly reduced waste and improved recycling and recovery rates by taking company-wide initiatives including a ban on single-use plastics. We monitor on an ongoing basis the amount of waste we generate, the amount of waste we recycle and the proportion of material we use which can be recovered or recycled. Since 2017 the amount of waste we generate has fallen by an average of 10% each year. In addition, over 70% of waste generated is now recycled and we continue to look for ways to improve our performance.

We are on track to meet the targets set out under the CIÉ Sustainability Strategy for a 25% reduction in waste and a CIÉ Group-wide recycling rate of 75% by 2025. Dublin Bus provides ongoing training to encourage responsible and sustainable energy usage in our offices and depots and fuel-efficient driving for our vehicles.





Dublin Bus has offices, canteens, engineering workshops and maintenance facilities which are in operation 24 hours a day.

Our buildings

Dublin Bus has offices, canteens, engineering workshops and maintenance facilities which are in operation 24 hours a day.

The scale and range of activities we carry out demands that we closely monitor the resources we consume and the energy we use. Embedded sustainability in our culture means that we are always looking for new ways to conserve resources and cut down on energy consumption.

We have worked with the Sustainable Energy Authority of Ireland since 2008 on a range of energy management practises across our seven depots which have resulted in a decrease in electricity and gas consumption.

The installation of LED lighting, for example, has dramatically reduced the power required to light these facilities.

With over 900 vehicles to be washed each day we have to balance the need to maintain clean and safe vehicles for customers and employees with our responsibility to avoid unnecessary waste. Rainwater harvesting provides a natural solution. Dublin Bus is developing a pilot rainwater harvesting system at the Summerhill Bus Depot.

The system will ensure the thousands of litres of water required to wash buses each night are sourced sustainably from rainwater.





The 74 extended range hybrid vehicles, purchased by the NTA, deliver an immediate reduction of 30% in carbon emissions.

Our vehicles

The Climate Action and Low Carbon Development Action Plan 2021 sets Ireland on the road to net zero emissions by 2050. The Climate Bill makes the Government legally accountable for this target. This means a huge step up in our climate ambitions. It also calls for the public transport fleet to be converted to zero emission alternatives. This process is already well underway. Dublin Bus has been participating in trials of low emission vehicles since 2008 and we continue to explore a range of promising technologies.

Hybrid buses have entered service on a number of routes. The 74 extended range hybrid vehicles, purchased by the NTA, deliver an immediate reduction of 30% in carbon emissions. This is an important step on the journey to decarbonising the public transport fleet in Dublin.

That journey is likely to involve a number of different solutions including battery electric powered and hybrid vehicles.

While the ultimate destination for Dublin Bus is a zero-emission fleet, we recognise that in the interim we will rely on diesel vehicles to serve customers on many routes. This requires us to maintain our focus on fuel efficiency and emissions reduction.

We have a comprehensive programme to address this which covers driver training, maintenance and ongoing investment in the diesel fleet to ensure maximum efficiency. Diesel consumption has fallen every year since 2017 even as the number of customers we carry has increased and our direct carbon emissions have fallen by 9% over the same timeframe.



Encouraging modal shift is a core part of our strategy.



Sustainability enabled by Dublin Bus

The most immediate and direct contribution Dublin Bus makes to the environment is to remove cars from the road, reducing emissions. We also contribute to the sustainable development of the city in other ways, both directly and indirectly.

Dublin Bus specialises in mobility and, as such, we are a central part of a suite of different solutions that can make life in Dublin easier.

Encouraging modal shift is a core part of our strategy. This means making public transport, specifically by bus, a more compelling and attractive alternative for those who currently rely on their cars for journeys to and from work, for school runs, shopping trips and when enjoying sporting, cultural and leisure pursuits.

The bus can be at the centre of a virtuous cycle of sustainable transport. BusConnects is a €2 billion investment by Government and the NTA in sustainable public transport across Dublin. It will see significant improvements in speed, frequency and ease-of-use for customers. These improvements should incentivise modal shift which, in turn, will reduce congestion and deliver further gains in speed and result in savings in fuel and energy use.

People rely on different modes of transport at different times. Our role as the largest public transport operator is not only to maintain a high quality, low emission service but also to help ensure all of these mobility solutions work together to make journeys in and around Dublin as fast and convenient as possible.

Planning cities around the basic assumption that car ownership is a necessity creates a number of challenges including the requirement for greater road capacity and parking facilities. This has implications for the use of public space and for the location of essential services. It also raises questions around cost and access for those who rely on public transport and for whom car ownership may not be an option.





MaaS involves taking the best aspects of all available modes of transport and matching them to the requirements of an individual transport user.

Mobility as a Service

Progressive, modern cities are increasingly adopting an approach to planning and transport based around Mobility as a Service (or MaaS).

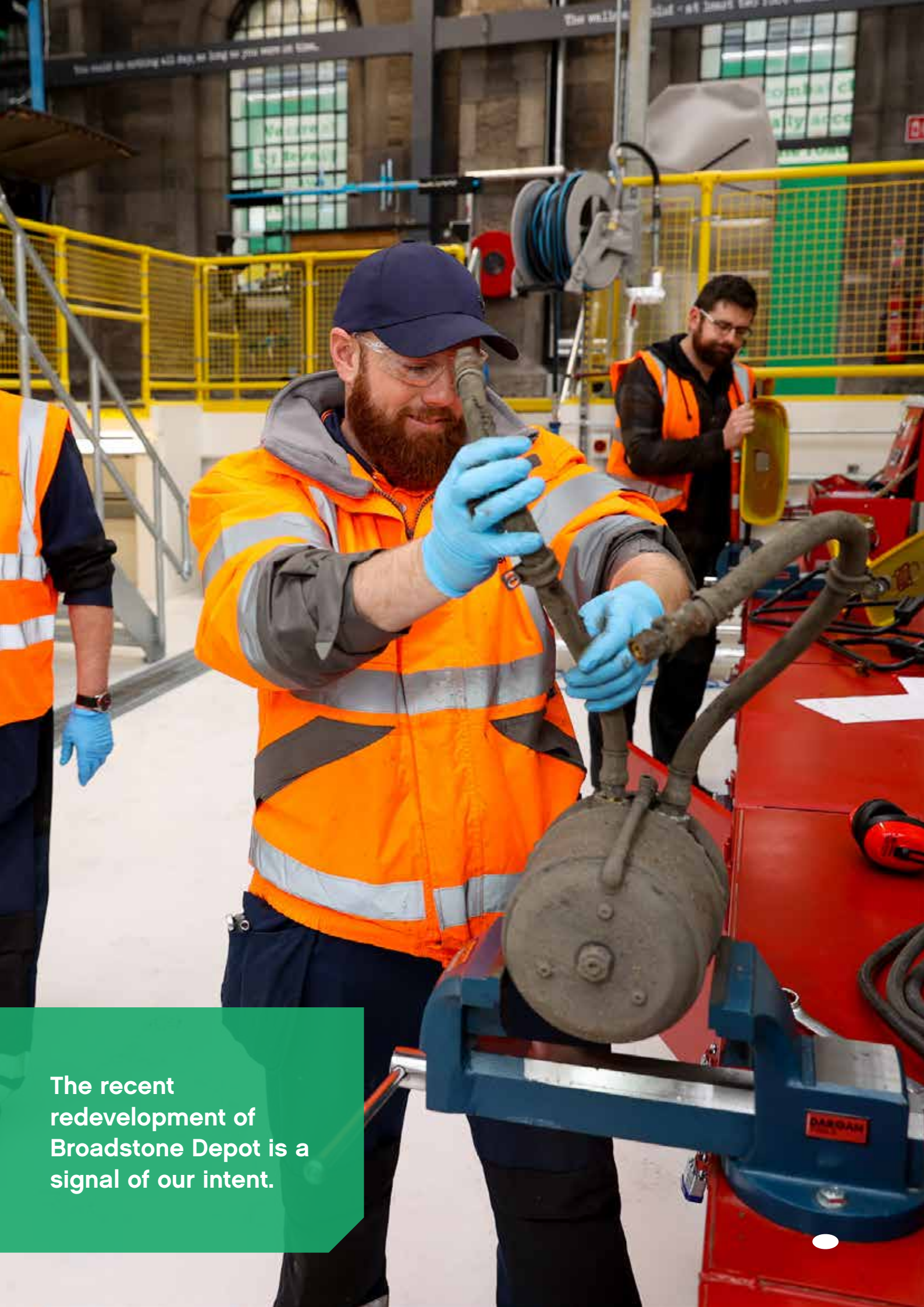
MaaS involves taking the best aspects of all available modes of transport and matching them to the requirements of an individual transport user. In Helsinki, for example, all services offered by transport operators are combined into a single app which recommends the best modes of transport for a customer's journey and allows them to pay in one simple step for the entire journey.

Applying this approach to Dublin would mean having bus, train, DART, Luas, Dublin Bike and a range of other mobility services including e-bike, car or scooter rental integrated into one app and on a single payment platform. In many cases a customer's best option will be to take the bus from A to B. In other instances a customer may prefer to combine different transport modes to incorporate walking or a short bike journey to their final destination, for example.

Dublin Bus envisages multiple transport services working together seamlessly. The goal is to offer a low or zero-emission option for every journey and for this option to be the most cost effective and attractive one in every case. We're engaging with a range of other stakeholders and mobility providers to ensure that MaaS moves from aspiration to reality.

We're exploring actively how Dublin Bus can supplement our core bus services with other complementary, sustainable modes of transport, to improve our overall customer experience.

Dublin Bus has made a submission to the Department of Transport offering to pilot a public, shared e-scooter scheme. Similar schemes have been rolled out successfully in cities such as Madrid, Berlin and San Francisco. Public transport users in these cities can use one of a number of electric scooters to connect with the existing mobility infrastructure, switching between bus or tram and scooter as required to make overall journeys even faster and more convenient. In Dublin, we believe a similar service would add value for customers. E-scooters and other similar vehicles which, collectively, are often referred to as "micro-mobility" solutions, can further encourage the shift away from the private car and accelerate progress towards a pollution and congestion-free Dublin.



The recent
redevelopment of
Broadstone Depot is a
signal of our intent.

Our environmental roadmap

Dublin Bus as an organisation has pledged to take urgent action to tackle climate change through its adoption of nine UN Sustainable Development Goals. Our plans are aligned with the 2020 Programme for Government and the Climate Action and Low Carbon Development Action Plan 2021. We recognise that the clear message from all of these initiatives at both global and local level, however, is that incremental improvement in how we protect the environment, while welcome, is not enough.

In order to reach the targets required in the rapidly closing window of time available we must effect transformational change.

Dublin Bus can become a zero-emission public transport operator. We are already on this path.

The recent redevelopment of Broadstone Depot is a signal of our intent.

Following a €15.2m investment Broadstone Depot, which has been a part of Ireland's transport infrastructure since 1850, is positioned to serve future needs and add many new chapters to its already storied history. The new facility will allow additional capacity and expansion across the Greater Dublin area. It is also equipped to handle full battery electric vehicles as and when they come into service.

Sustainability was the key thread running through this redevelopment. The Broadstone site is a protected site and we worked closely with conservation architects to ensure the restoration and preservation of it.

The construction incorporated sustainable design and build aspects and focused on re-utilising as much of the existing structure as possible which meant the embodied carbon and energy within that structure was retained.



Use of concrete with a 50% GGBS (Ground-granulated blast-furnace slag) cement content with a carbon footprint up to 15 times less than traditional cement.

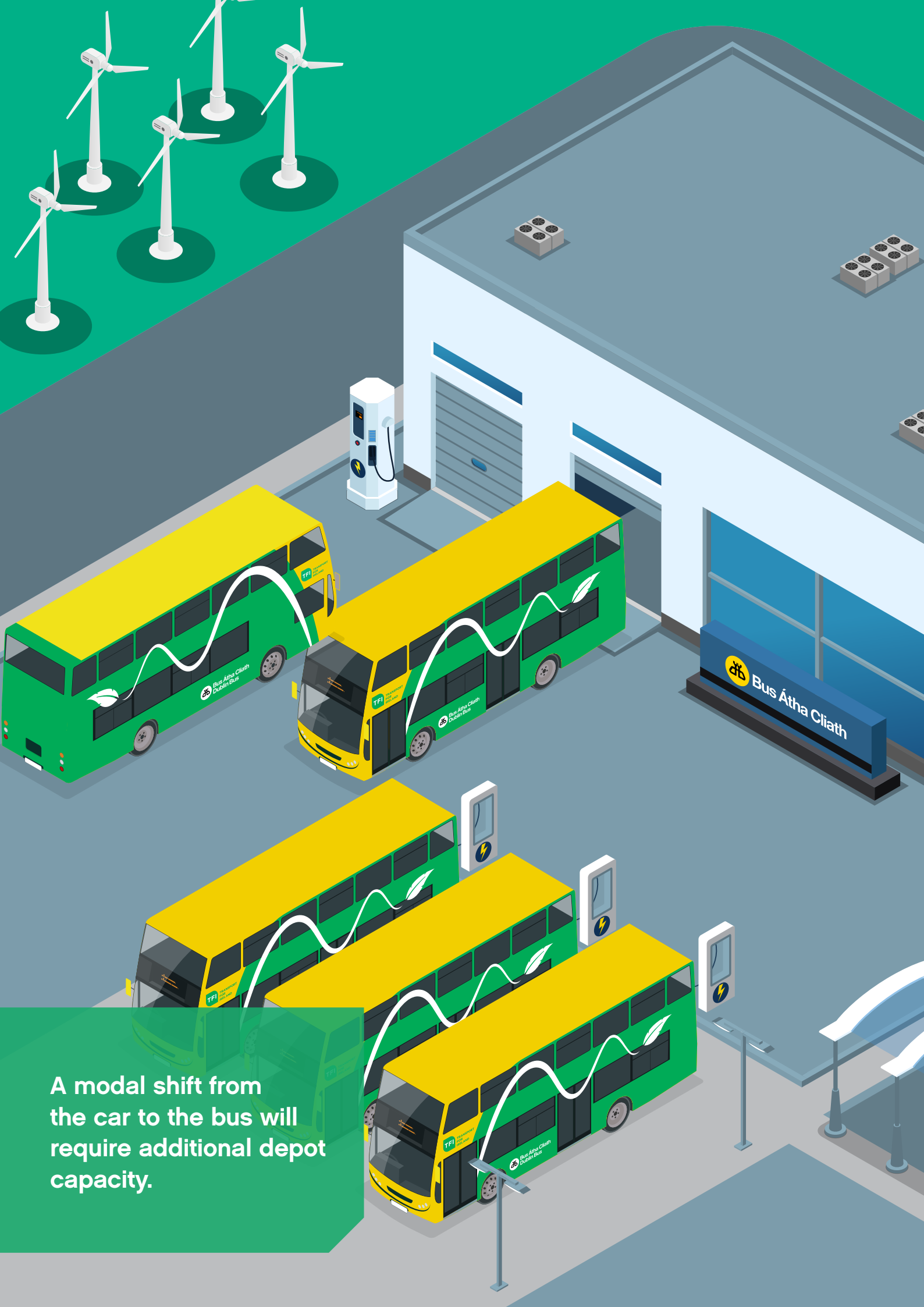
The restoration features include:

- Reduction in the volume of concrete required to approximately 20% of that of a new build of a similar size.
- Use of concrete with a 50% GGBS (Ground-granulated blast-furnace slag) cement content with a carbon footprint up to 15 times less than traditional cement.
- Retention and repair of the original cast iron structure and overhead gantry cranes in the old garage, the 1970s portal frame and the timber trusses where possible.
- Use of other natural materials and low energy products including slate roof, timber in roof repair, zinc cladding and glulam timber to construct new roof areas.
- Through Phibsboro Tidy Towns and Swift Conservation Ireland, swift nesting boxes were installed on the site, in order to help preserve and expand the swift population.

This is a starting point, not a terminus.

The next stages on our journey are critical:

- **First fully electric route** – Within three years customers will see the first zero emission route served by a fully electric, battery operated vehicles.
- **Fully electrified depots** – We are progressing towards our first fully electrified bus depot with a view to a complete conversion across all depots to zero emissions over a seven-year horizon.
- **50% zero-emissions fleet** – Within a ten-year timeframe, 50% of the fleet will be diesel hybrid, battery electric and possibly hydrogen buses.
- **100% zero-emission fleet by 2050.**



A modal shift from the car to the bus will require additional depot capacity.

Other innovations which are on our roadmap include:

- The implementation of Mobility as a Service (Maas).
- The introduction of micro-mobility solutions such as e-scooters to the Dublin Bus fleet.
- Fully cashless, account-based ticketing with dynamic pricing.

As we make these transformational changes, we also need to consider our overall contribution to the city, in addition to our responsibilities as a mobility provider.

By 2027, Dublin Bus expects to introduce an additional 330 buses to respond to the anticipated rise in demand over this period and the delivery of BusConnects. As this programme is rolled out we will see faster journey times and greater frequency, stimulating accelerated modal shift from the car to the bus. This will require additional depot capacity.

As we consider how to deliver this, Dublin Bus is considering the best way to make use of space across its buildings and overall footprint. Encouraging modal shift away from the car can help the city to better manage the finite space we have to deliver housing and avoid the problems of urban sprawl and lengthy commutes. In this context it is vital that Dublin Bus finds efficient and creative ways to use the resources at our disposal.

Public transport operators in other cities, including RATP in France and Sweden's SL in Stockholm have been pioneering mixed use developments around their existing sites in order to marry their requirement for additional capacity with the needs of the cities they serve in a fully integrated manner.

RATP's Lagny Pyrénées depot operates partially underground which has allowed more efficient use of space available for development. When the new depot was delivered in 2016 it incorporated public housing, schools and office space within a single scheme.

Dublin Bus is exploring the feasibility of similar schemes here which would enable optimal use of land at a time when the city has an urgent requirement for housing and public facilities including healthcare, childcare and schools.



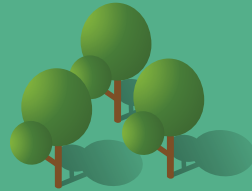
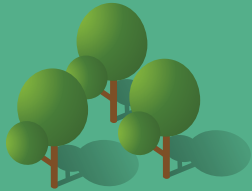
Dublin Bus, as a mobility provider, has much to contribute to this discussion.

Conclusion

The past two years have brought extraordinary challenges and disruption to all of our lives. They have seen significant changes in how we live, work and travel. Some of these changes are temporary in nature but others, including flexible working and increased reliance on digital services, are likely to remain.

This should prompt a broader discussion among all stakeholders as to how we deliver a future for our cities which is different, and more respectful of our environment, than the past.

Dublin Bus, as a mobility provider, has much to contribute to this discussion. We will continue to deliver solutions that meet the city's needs and fulfil our dual mandate of embedding sustainability into everything we do and seeking new and better ways to enable and encourage sustainable behaviour for our customers.



Dublin Bus