

Net Zero 2045 Plan

November 2024



This net zero transition plan embeds the requirements of PPN06/21 (Carbon Reduction Plans)

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Introduction

Keepmoat is committed to playing our part in addressing the climate challenge. In February 2024 we were proud to be among the first UK homebuilders (and the first privately owned homebuilder) to have a net zero target verified by the Science Based Targets Initiative (SBTi) alongside science-based targets for 2032.

Through verification, we've shown not only that our targets are ambitious and set on a solid basis, but that they are aligned with the scale and pace that global efforts require to keep global heating to 1.5 degrees – beyond which climate change impacts become much more severe.

This net zero plan provides some additional strategic information as to how we achieve net zero. Naturally, we can be more specific about our shorter-term plans. Our longer-term journey will require considerable innovation, new technologies and new approaches that are yet to be developed.





A just transition

There is justified concern that society's journey to net zero may create winners and losers as current industries, technologies and approaches change or give way to new ones.

Keepmoat's approach to sustainability, as we clearly articulate within our **Sustainability Roadmap and Sustainability Policy**, is that economic and social impacts must always be considered alongside environmental impacts.

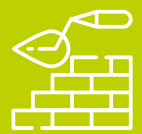
The right approach to this is to engage those likely to be impacted by change – it's why **"Engaging and empowering communities"** is the first area of our Sustainability Roadmap.

A just transition

We believe there are some great opportunities from a net zero transition for the communities in which we build. These include:



Potential for people from disadvantaged groups to gain career opportunities through training in green homebuilding skills.



Potential for local construction businesses to get ahead in learning about installation and maintenance of new green home technologies.



Potential for homeowners to access good mortgage rates through green mortgage products.



Potential for lower energy bills over time – if there is greater parity between gas and electricity prices.



Improved air quality through reduced diesel use in the construction process.

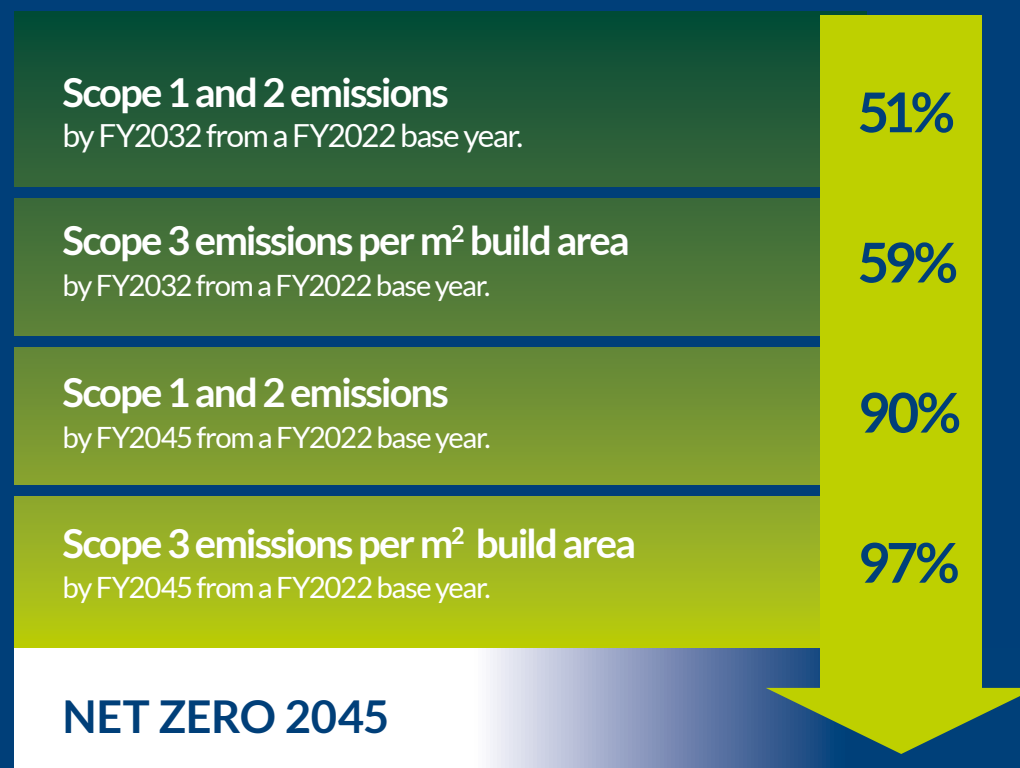
Our approach is to make the most of these opportunities where possible – ensuring an inclusive approach to the benefits of the transition, avoiding and mitigating situations where some parts of the community could be left behind.



Our targets

Our overarching net zero target is to achieve net zero by FY (financial year) 2045.

Our net zero target consists of the following science-based and long term targets.



All these targets take a 'market-based' approach to energy emission factors – which means we will record progress using the emission factors from the energy tariffs we purchase, rather than from an amalgamated UK average. The metric used for carbon emissions is CO₂e (carbon dioxide or equivalent global warming potential).

Understanding our carbon footprint

There are **three 'scopes'** of emissions in carbon emission accounting described by the Greenhouse Gas Protocol.

We outline what those are on the pages that follow and which of our business activities contribute most to them.

Tonnes CO ₂ e	Baseline year (FY22)	Current year (FY23)
Scope 1	3,794	3,704
Scope 2¹	13	7
Scope 3	284,380	306,351
Cat 1. Purchased goods and services ²	192,100	195,054
Cat 3. Fuel and energy-related activities	910	1,174
Cat 5. Emissions from waste	317	329
Cat 6. Business travel	681	794
Cat 7. Employee commuting	2,816	2,694
Cat 8. Upstream leased assets	179	179
Cat 11. Use of sold products	89,114	97,106
Cat 12. End of life treatment	8,865	9,201
TOTAL	294,982	306,531
Scope 3 intensity (tCO ₂ e per m ²)	0.91	0.91

¹ Using a market-based approach. This means that we use the carbon emission factors from the tariffs we purchase, and not the UK average electricity emission factor. ² Estimated using a hybrid approach primarily consisting of spend-based data.

Understanding our carbon footprint

Scope 1

‘Scope 1’ emissions relate to the fuels we create energy from directly. Our scope 1+2 emissions are far smaller than scope 3 emissions and equate to only 1% of our total carbon footprint.



Site diesel

For our business, scope 1 emissions overwhelmingly consist of the construction site diesel that we consume to power telehandlers that move materials around our construction sites. We often have between one or two of these large vehicles on each of our sites. Site diesel is also used to power generators – although each generator is a very heavy diesel consumer, we have few of these out at any one time because they are only required for those sites in early build phases which have not yet been connected to the electricity grid.



Natural gas

Another important source of scope 1 emissions is from natural gas used to heat the homes (and their hot water supply) that we build before we transfer those homes over to our customers (after which emissions would fall into scope 3). We also use natural gas in some of our offices for heat and in some of our show homes and sales offices.



Business travel in company cars

The next significant source of scope 1 emissions is from our fleet of company cars and vans for their business-related mileage – this does not include commuting.



Other sources

A very small quantity of scope 1 emissions come from LPG (liquid petroleum gas) such as propane and butane which are in metal cans. We sometimes use this fuel to help dry plaster in plots during wet and cold weather. Finally, there can be small amounts of refrigerant gases which escape from office air conditioning systems over time. Even though each kilogram of refrigerant gas released has many times the global warming impact of carbon dioxide, the amount released is very small and has little impact on our climate footprint.

Understanding our carbon footprint

Scope 2

Scope 2 relates to purchased electricity – and heat or steam where applicable. Keepmoat uses electricity in our construction site compounds and cabins. We use some electricity in the homes we build before handing them over to the customer. We use electricity in our show homes and sales offices, and in our administrative offices. Keepmoat's electricity is on renewable tariffs.



Understanding our carbon footprint

Scope 3

Scope 3 emissions are those indirect emissions which we influence but do not directly control. For Keepmoat, they are far larger than our direct emissions – equating to 99% of our total carbon footprint.

These emissions are more challenging to calculate and naturally require higher degrees of estimation. However, as a first step, estimating these emissions usefully provides an indication of where emissions are greatest.

For Keepmoat, our largest carbon areas are:



Our supply chain - “purchased goods and services”

Supply chain emissions make up as much as two thirds of our carbon footprint. The construction supply



chain includes purchase of high energy materials such as bricks and blocks, cement and concrete products (cement production is a carbon intensive process), and groundworks which involves carbon-heavy materials and very large diesel-powered equipment. Transport of materials will also contribute here.

Customer energy use in the homes we build - “use of sold products”

The Greenhouse Gas Protocol, which is the defining document on carbon reporting demands that businesses calculate the carbon impact of products in use over their lifetime (we use an industry standard of 60 years for this calculation). It is anticipated that UK energy sources will decarbonise over this time period.

This area equates to about a third of our total carbon footprint.

Understanding our carbon footprint



Employee commuting

Employees commuting to work and working from home equates less than 1% of our scope 3 carbon footprint.



Emissions from demolishing our homes at the end of their life - "End of life treatment"

Eventually, our products will come to the end of their useful life and will need to be demolished. These emissions are calculated to be around 3% of our scope 3 footprint.



Other emissions

Negligible emissions are also derived from business travel in employee-owned cars (the 'grey' fleet), business travel by public transport, and emissions from waste disposal. Modest emissions are also created by use of fuels and electricity due to the emissions used to refine and distribute fuels, and electricity losses as it travels around the grid. These are called 'well-to-tank' and transmission and distribution losses.



Decarbonisation strategy

Here, we outline our broad approach to achieve net zero through describing three periods where different strategies will be required.

Early period (2022-2032)

Direct operations

During this period, availability of the technologies required to make a full transition away from diesel in construction operations cannot be relied upon.

Nonetheless, some transitional technologies are available to support diesel reduction to some extent. There remain opportunities to reduce carbon emissions through improvement of business processes, and communications and training to drive carbon aware behaviours. Renewable electricity tariffs are readily available.



Reducing telehandler fuel use

Telehandler use is the greatest carbon-emitting activity in construction operations. In the early part of the period, rollout of Stage V telehandler engines is expected to modestly reduce wasted fuel from idling through stop-start technology. Our telehandlers are obtained via hire companies who have signed up to the Plant Charter of the Supply Chain Sustainability School which commits the hire companies to supply Stage V machines, backed up by our service-level agreements which request that the most efficient machines are deployed on new sites.

There is potential to enhance the outcomes through improved training and communications aimed particularly at site managers and telehandler operatives. This may include training videos, e-learning, toolbox talks and onsite diesel reduction posters sited near refuelling areas. League tables for diesel consumption and efficient driving metrics integrated into operational performance



Decarbonisation strategy

monitoring processes provide another opportunity.

These can form a strong basis for performance objectives aimed at drivers and site managers – and could even be considered as part of bonusing initiatives.



Reducing generator fuel use

The most efficient generators are those which are never used in the first place, with an emphasis on timely connections to the electricity grid wherever possible.

Where generators must be used, innovation in the space has led to the availability of 'hybrid' generators which can considerably reduce diesel consumption through the attachment of a battery pack. This now forms our specification for those generators likely to be on site for longer than two months.

Other controls that can ensure generators are being used only when necessary is to ensure quality data and monitoring on the extent of hybrid generator rollout, the size of all generators in place and regular checks to



ensure that they are not on hire for longer than necessary.

Reducing natural gas use

Gas use on unsold homes will phase out with the introduction of the net-zero-ready Future Homes Standard which will see gas boilers replaced with electric technologies such as heat pumps.

Energy efficiency audits of administrative offices, show homes and sales arenas can take place to identify very specific energy saving opportunities to form parts of a 'Keepmoat energy plan', providing a series of energy and carbon savings to work through.



Company car fleet decarbonisation

The addition of quality fully electric and hybrid vehicles to the car fleet has been popular with colleagues, driving very rapid reductions in tailpipe emissions which we expect to continue on the basis of forward orders. This has been combined with a capped maximum for tailpipe emissions for those colleagues choosing internal combustion powered vehicles.



Decarbonisation strategy



Renewable electricity tariffs

The business has adopted renewable electricity tariffs covering office locations and construction site electricity, with the impact of making electricity emissions zero for future years.



Scope 3 emissions

Supply chain emissions

The early part of the period has seen the mapping of supply chain carbon emissions using a spend-based approach and industry average carbon emission factors.

This provides a useful overview of the carbon footprint but is insufficiently detailed for targeting swap outs of different materials products for those lower in carbon, or gauging how different design and building techniques could impact carbon emissions.

The early-to-mid part of the period will see increased 'bottom up' embodied carbon calculations of home design, using carbon data from Environmental Product Declarations. This provides opportunities to experience how

alternative designs and building products could impact carbon associated with materials and some services.

A targeted Sustainable Supply Chain Strategy can pave the way for more specific and structured engagement between Keepmoat and key materials suppliers to understand product development in the low carbon space. This can facilitate strong sustainability-focused partnerships to help understand any barriers to low carbon products and work jointly to overcome them.

Sustainability capacity is increased in buying, supply chain and commercial teams through high quality training to aid the above processes.

Groundworks contractors will need to be a major focus towards the middle of the period. Groundwork activities are potentially carbon intensive through use of cement and concrete and very heavy, diesel reliant mobile plant. An industry-level drive, making use of networks such as the Supply Chain Sustainability School will be required to upskill these suppliers on carbon reduction activities and to provide data on fuel consumption to aid efficiency drives.

Decarbonisation strategy



Customer emissions

Customer emissions will reduce sharply as the Future Homes Standard starts to be built out in the years after 2025. These homes will have very high levels of insulation and be all-electric, making use of technologies such as air source heat pumps to be zero-carbon-ready for when the grid achieves full decarbonisation in the period following 2032. In the meantime, they are designed to achieve carbon reductions for customers of around 75%.



Other emissions

Carbon emissions from employee commuting are likely to decrease along with uptake of electric vehicles on the company car fleet and as that take up of these increase within society as a whole.



Decarbonisation strategy

Mid period (2033-2038)

During this period, the maximum potential for fuel efficiency initiatives will have been largely achieved. Carbon savings will need to be driven by moving to different fuel types and electric options as new technology becomes more available.

Direct operations

At the beginning of this period fuel efficient behaviours have already been fully embedded into training regimes and working practices of construction site employees – particularly those with high influence on carbon. The residual diesel remaining in generator use and telehandler driving may be swapped out with an alternative fuel, such as

Hydrotreated Vegetable Oil (HVO), and towards the middle of the period electric mobile plant may become more readily available for large telehandler types. It is possible that the dominant technology for low carbon plant is not electricity but an alternative such as hydrogen fuel cell technology.

New technology for generators is more readily available which could again include hydrogen fuel cells – or mobile battery storage units in their place, making use of surplus renewable energy generation created elsewhere.

Onsite energy generation – for example through solar PV on site cabins could minimise site energy demand further.

New gas boiler installations for offices are phased out during the period, and it is unlikely any administrative offices will utilise gas boilers by the end of it.

Sales offices and show homes are now all fully electric as a result of the Future Homes Standard having been fed through. The same is true for unsold plots.



Decarbonisation strategy

By the end of the period all company cars are fully electric and the grey fleet is almost entirely electric due the ban on combustion engine car sales in 2030.

Scope 3 emissions



Supply chain emissions

Low carbon innovation in supply chain materials is now embedded into manufacturing processes. Carbon capture and storage (CCS) is providing a supply of low carbon cement – which feeds into considerably lower carbon footprints for construction products which use the material as well as the cement itself.

Other high-energy materials (such as bricks requiring high kiln temperatures) are now produced using low carbon electricity or hydrogen.

Carbon data is now routinely fed into the design of new products, and designing-out solutions are used to remove and replace products which have not achieved progress on embodied carbon.



Towards the middle and end of the period low carbon solutions are now readily available for very large mobile plant – such as excavators and dumper trucks used by groundworks contractors.

Helping drive improvement is likely to be embodied carbon assessments covering entire housing developments – possibly through the introduction of a “Part Z” as minimum standard for the whole life carbon of new buildings.

Customer emissions

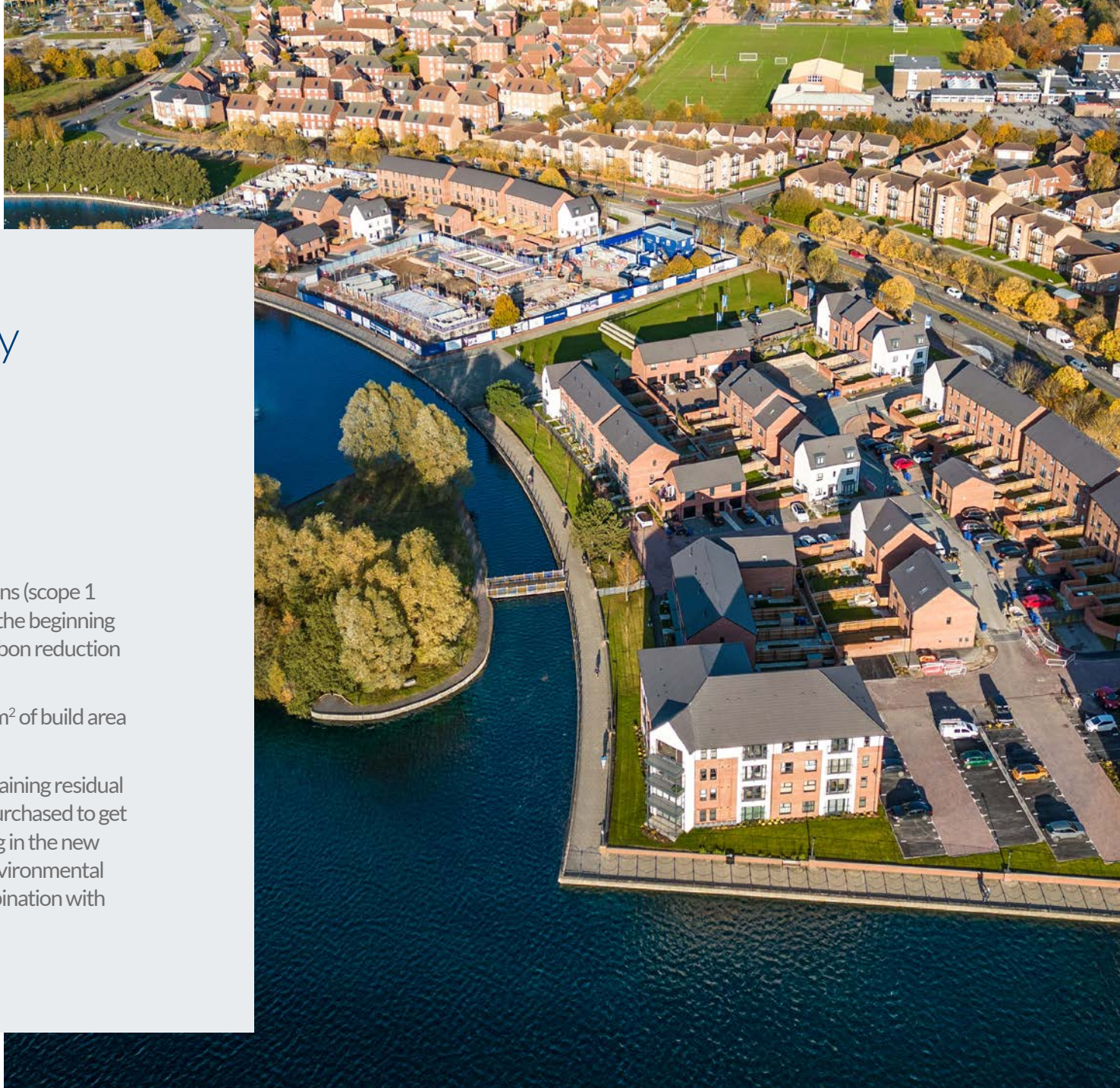
Customer carbon emissions from electricity use in the home will be reduced to zero by 2035 as UK electricity grid fully decarbonises.



Other emissions

Commuting emissions will decline sharply between the beginning and end of the period as internal combustion engines are banned from sale and will be a zero by the end of the period. There will need to be considerable industry research into the end of life treatment carbon of homes during the period with roadmaps for reducing it.





Decarbonisation strategy

End period (2039-2045)

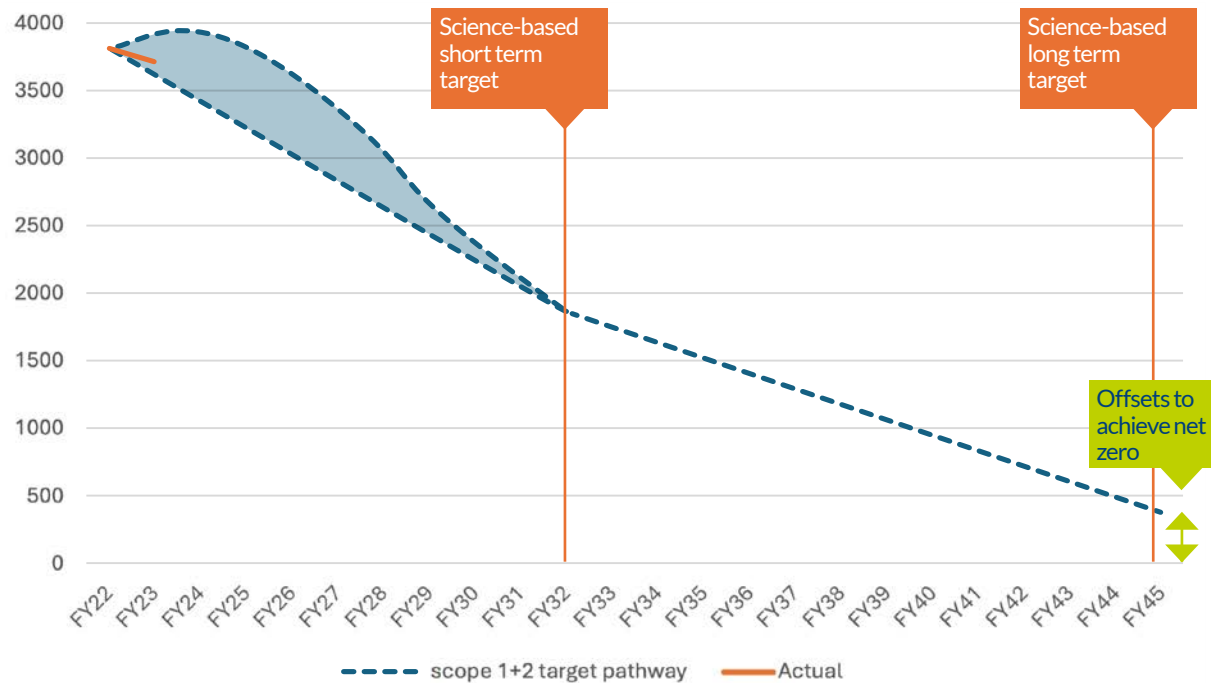
In the late phase of the net zero journey, direct emissions (scope 1 and 2) will be declining by 90% from 2022 levels from the beginning to the end as a result of the cumulative progress of carbon reduction activities.

Supply chain emissions will have reduced by 97% per m² of build area from FY22 levels.

There are no remaining solutions for reducing the remaining residual emissions to zero and so credible carbon offsets are purchased to get to a net zero position. Possibilities for carbon offsetting in the new development process – e.g. through the creation of environmental net gains may be a possibility in the place of, or in combination with the purchasing of offsets from external providers.

Carbon reduction progress

Scope 1 and 2 net zero trajectory

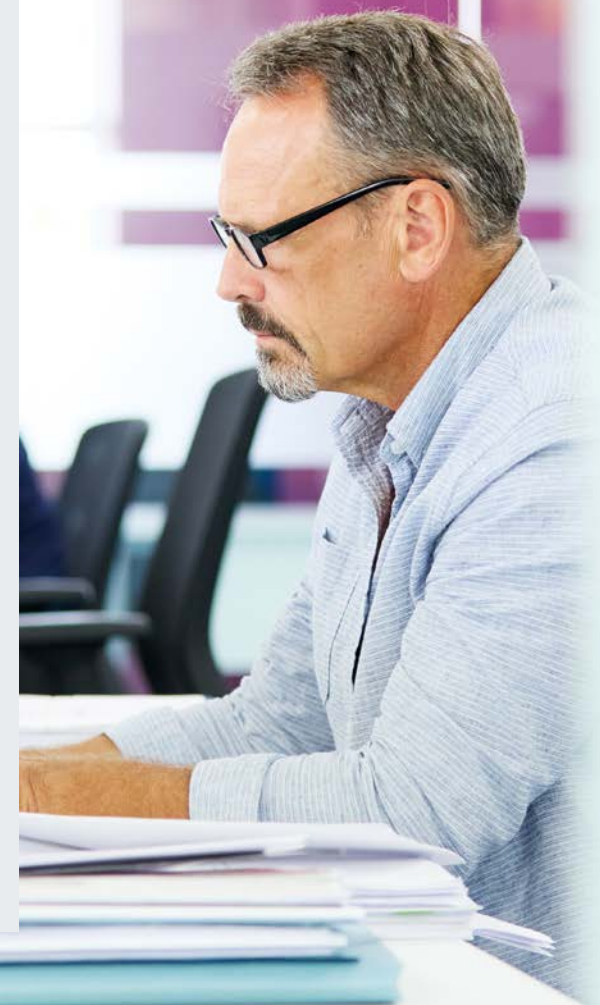


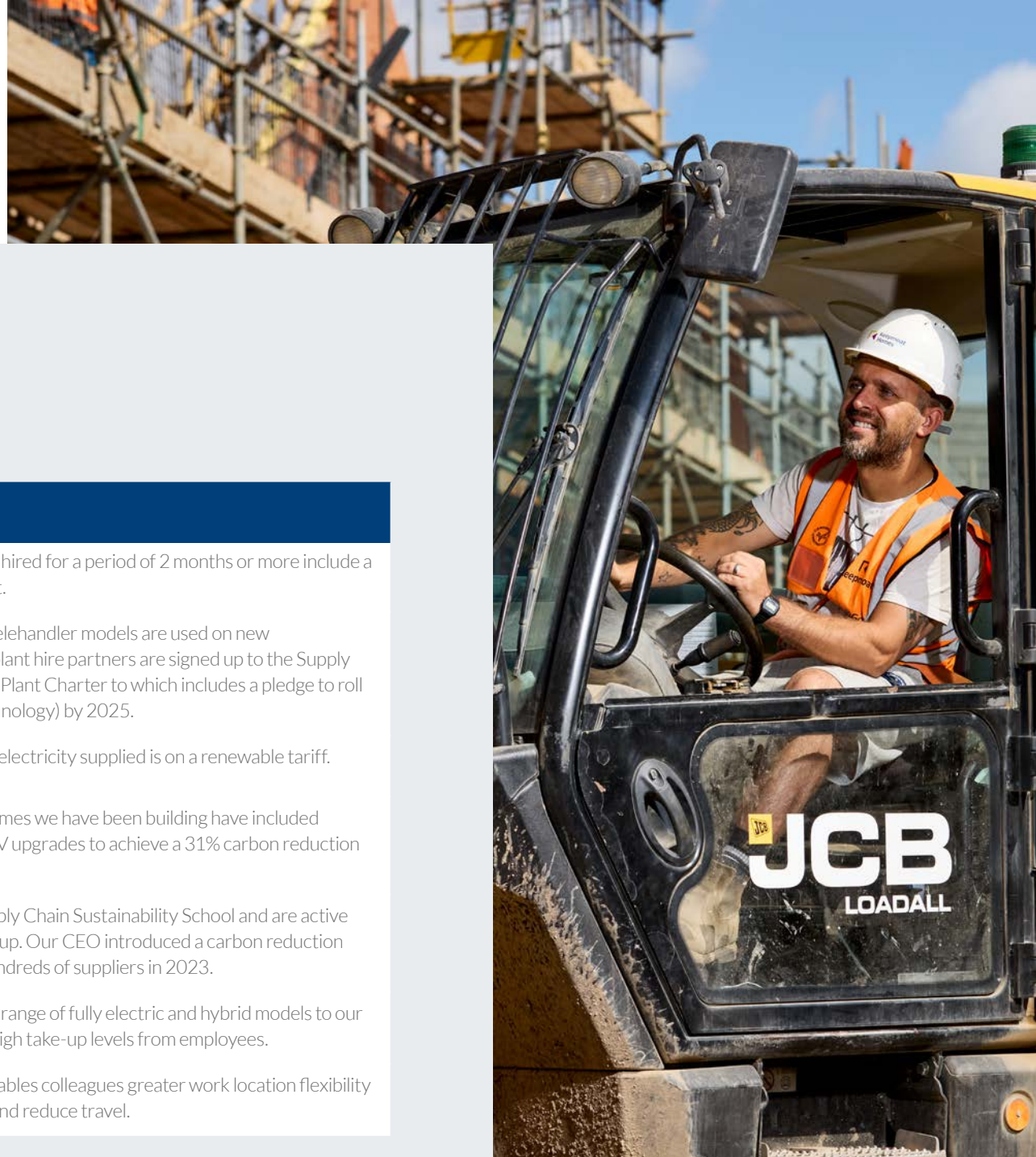
Carbon reduction initiatives

Below are practical measures undertaken by Keepmoat to reduce carbon emissions.

Environmental management

ACTION IMPLEMENTED	DESCRIPTION
ISO 14001:2015	Our integrated Environmental and Health and Safety Management System includes policies and processes to reduce environmental impacts and carbon emissions. It is certified to ISO 14001:2015
ESOS	We completed our Energy Savings Opportunity Scheme Phase 3 report and notification in 2024, which included an assessment of energy and carbon saving opportunities.
Science-based targets	Our carbon and net zero targets were verified by the SBTi in 2024.





Carbon reduction initiatives

Carbon reduction actions

ACTION IMPLEMENTED	DESCRIPTION
Hybrid generator set-ups	We specify that generators hired for a period of 2 months or more include a battery storage attachment.
Stage V telehandlers	We specify that the latest telehandler models are used on new developments. Our group plant hire partners are signed up to the Supply Chain Sustainability School Plant Charter to which includes a pledge to roll out Stage V (stop-start technology) by 2025.
Renewable electricity	As of FY24 all our business electricity supplied is on a renewable tariff.
Part L Building Regulations (2021/2022) update	From FY22, many of the homes we have been building have included insulation and often solar PV upgrades to achieve a 31% carbon reduction on the previous standard.
Supply chain engagement	We are partners of the Supply Chain Sustainability School and are active on the School's Homes Group. Our CEO introduced a carbon reduction conference attended by hundreds of suppliers in 2023.
Business fleet options	We have introduced a wide range of fully electric and hybrid models to our company car options with high take-up levels from employees.
Agile working	Our agile working policy enables colleagues greater work location flexibility to suit their commitments and reduce travel.

Declaration

This Carbon Reduction Plan has been completed in accordance with PPN 06/21 and associated guidance and reporting standard for Carbon Reduction Plans.

Emissions have been reported and recorded in accordance with the published reporting standard for Carbon Reduction Plans and the GHG Reporting Protocol corporate standard and uses the appropriate Government emission conversion factors for greenhouse gas company reporting.

Scope 1 and Scope 2 emissions have been reported in accordance with SECR requirements, and the Scope 3 emissions have been reported in accordance with the published reporting standard for Carbon Reduction Plans and the Corporate Value Chain (Scope 3) Standard.

This Carbon Reduction Plan has been reviewed and signed off by the board of directors (or equivalent management body).



John Bowden
Sustainability Director
11th November 2024

