



Built For Good

Introduction

We understand the critical importance of planning for the transition to a Net Zero economy and are developing an action-oriented strategy to achieve net zero emissions across our value chain by 2050 and ensure our business model is fully adapted to suit.

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Our ambition is to create sustainable communities in Ireland, always mindful of our position of leadership, investing in innovation and in Ireland's future.



MICHAEL STANLEY
CEO



1. Executive Summary

Cairn's broad climate change objective is to deliver high-quality, energy-efficient homes at scale, with a focus on reducing emissions and protecting and restoring biodiversity to meet the needs of present and future communities in Ireland.

As part of these efforts, Cairn has been investing to better understand how transition and physical impacts from climate change impact its capacity to meet its objectives.

The purpose of this, our first Climate Transition Plan, is to illustrate the actions and measures we have implemented to achieve our emissions targets and transition our operations and business model to a decarbonisation trajectory that aligns with climate science recommendations. As well as Decarbonisation initiatives, these actions include formalisation of Board oversight of sustainability matters, robust climate risk management, and a comprehensive stakeholder engagement approach.

This plan

- clearly defines roles and responsibilities, including effective governance mechanisms at Board and Leadership Team levels.
- will be further integrated into our overall business plan and will be linked to our financial statements.
- is forward-looking, focussing on both near- and long-term targets trending towards 2050.
- will be reviewed, updated, and reported on regularly as we measure and track our KPI's, integrating them into our Annual Reports.



2.1

Approach to Transition Planning

Sustainable communities is the ultimate guiding principle that steers the work of Cairn, the driving force behind our commitment to quality, health and safety, sustainable building practices and respect for our people, our customers, and the world in which we live.

The objective of this Climate Transition Plan is to describe the targets, actions and resources addressing climate mitigation and risk management that will support our transition to a low-carbon economy.

We acknowledge the latest climate science from the Intergovernmental Panel on Climate Change (IPCC) which has been described as a 'Code Red for humanity', showing that it is still possible to limit global temperature rise to 1.5°C but that rapid and deep emissions cuts are required to achieve this. The SBTi has approved Cairn's near-term company-wide science-based emission reductions targets which were submitted in December 2022. We commit to reduce absolute scope 1 and 2 GHG emissions by 46.2% by

2030 from a 2019 base year. We also commit to reduce scope 3 GHG emissions from purchased goods and services, upstream transportation and distribution, use of the sold products and end of life treatment of the sold products by 61% per total floor area sold within the same timeframe. We will need the cooperation of our supply chain partners over the coming years to reduce the Embodied Carbon of our homes, but we have immediately initiated design changes to reduce the Operational (In-use) Carbon of several projects. We have the knowledge and expertise required to begin implementing these changes now, and by doing so we estimate the lifecycle carbon footprint of our homes will reduce by at least 25% once they are fully rolled out.

2. Foreword

Actions which Cairn has already taken in its efforts to deliver on this objective, for example:

Research and Development Activities

Ireland has been subject to the requirements of the Environmental Performance of Buildings Directive (EPBD) which required the mandatory introduction of nearly zero energy buildings (nZEBs) in 2018 and has recently been recast to require that all new buildings be Zero Emissions Buildings. In preparation for the legislative changes which will follow, Cairn are delighted to partner with the University of Galway and the Land Development Agency in collaborating on their 'Heatcheck' research study. This project aims to investigate the relationships between the energy consumption and internal environment quality (IEQ) profiles of residential buildings, the people occupying the buildings and the materials commonly used in the construction industry, with the overarching aim to improve the energy audit procedure for the Dwelling Energy Assessment Procedure (DEAP) and Non-domestic Energy Assessment Procedure (NEAP) energy compliance tools, thereby reducing the Performance Gap and allowing for more accurate predictions of real-world performance.

Phasing Out GHG Intensive Products and Processes

We constantly update our build methodologies, systems, materials and processes where appropriate in order to reduce waste, reduce carbon, and increase safety and efficiency on site. We use timber frames in our houses, and modular balconies and bathroom pods in our apartments as standard. We have also developed a timber-framed construction methodology to substantially reduce the embodied carbon of low-rise apartment units and duplexes.

Our purpose is to build sustainable communities where people can thrive, and our sustainability strategy is designed to support that purpose. We have sought to fully understand our material issues using a combination of surveys, in-depth stakeholder consultations and workshops. We have begun the process of ensuring we are compliant with the forthcoming Corporate Sustainability Reporting Directive (CSRD) under which we will report from FY2025, undertaking a full double-materiality assessment throughout 2024 to identify our material Impacts, Risks and Opportunities.



2. Foreword

2.2 Physical Greenhouse Gas Emissions Target

The following emission reduction targets have been validated by the Science Based Targets Initiative: Cairn Homes Plc commits to reduce absolute Scope 1 & 2 GHG emissions 46.2% by 2030 from a 2019 base year.

Cairn Homes Plc commits to reduce Scope 3 GHG emissions from Purchased Goods and Services, Upstream Transportation and Distribution, Use of the Sold Product and End of Life Treatment of the Sold Product 61% per total floor area sold (m²) by 2030 from a 2019 base year.

We have also committed to submitting Net Zero Targets to the SBTi by 2025.

2.3 Standards

The international standards that climate transition plans adhere to are still developing and have not been finalised. In the European context, the Corporate Sustainability Reporting Directive (CSRD) mandates companies to disclose their sustainability targets and the transition plans we have established to ensure their business models and strategies are compatible with the transition to a sustainable economy. In order to ensure this disclosure demonstrates best practice, Cairn Homes has utilised the following standards:

Format and content have been aligned to the Carbon Disclosure Project (CDP) Transition Plan technical Note, which provides guidance on how organisations disclosing through CDP can demonstrate that we have a credible climate transition plan in place.

The content has been aligned to the European Sustainability Reporting Standards (ESRS). The adoption of ESRS by Delegated Act is mandated by co-legislators in the CSRD.

In the construction of the carbon emission trajectories Cairn homes has used the Science Based Targets methodology and its near-term targets were approved by SBTi in 2023.

OUR COMMITMENTS

46.2%

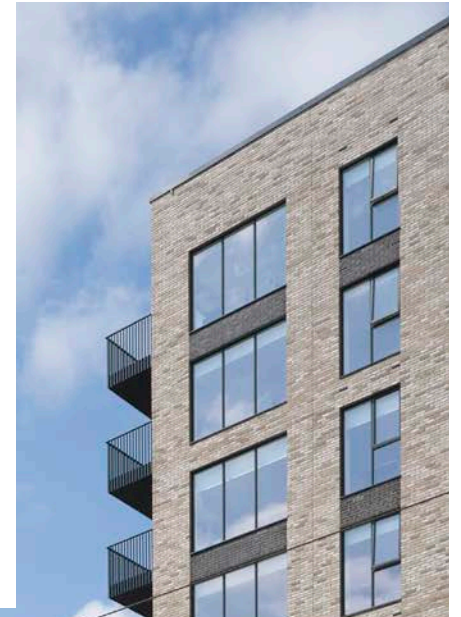
Scope 1 & 2 combined target of absolute reduction by 2030 from a 2019 baseline

61%

Scope 3 intensity reduction by 2030

2025

Committed to submitting Net Zero Targets to the SBTi by 2025



2. Foreword

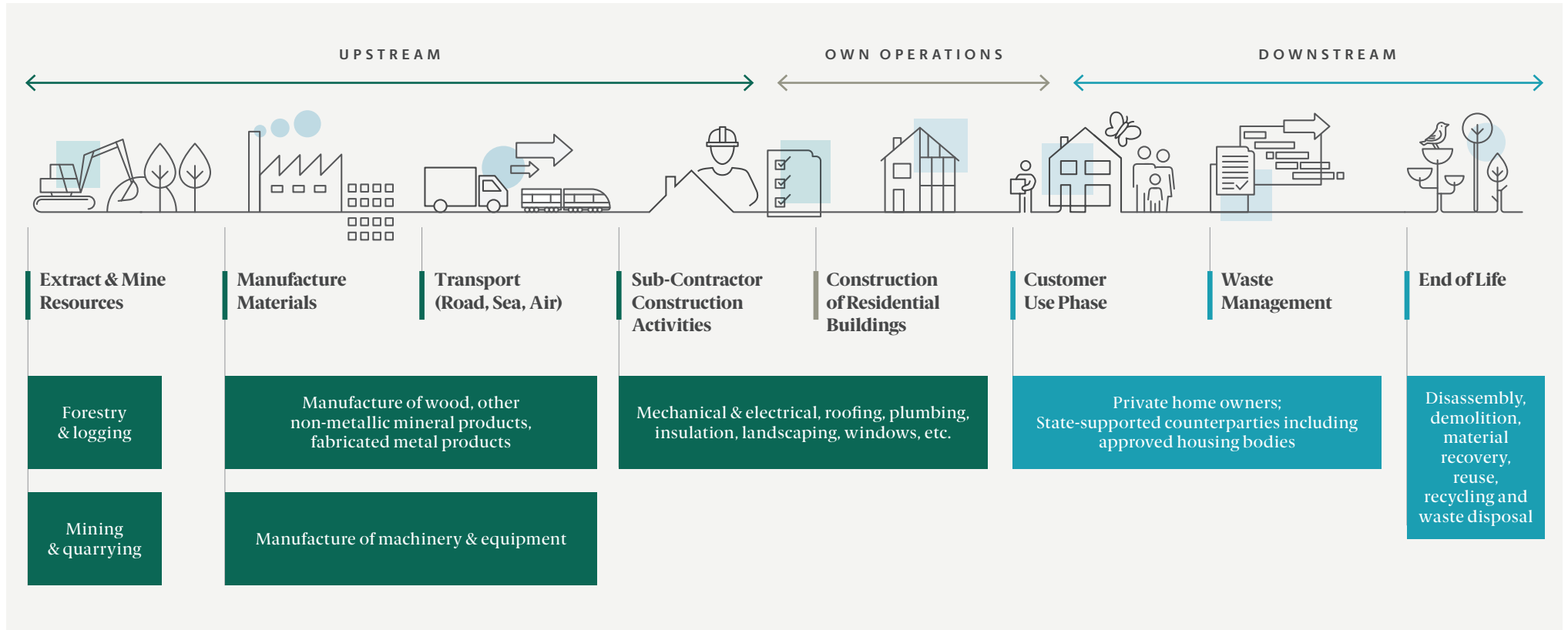
2.4 Business Model and Value Chain

We have developed this Climate Transition Plan to illustrate our strategy to transition towards a decarbonisation strategy that aligns with our public commitments. An integral component of this is to assess our current activities and identify anticipated strategic changes to our business model and value chain.

Extract & Mine Resources	<p>Working with suppliers to upskill and develop more sustainable practices.</p> <p>We are not engaging directly with extraction / mining companies. We are engaging with those who procure their products (e.g. concrete suppliers, insulation suppliers) to ensure that they are aware that we require more sustainable products in order to meet our targets. See below.</p>	Construction of Residential Buildings continued	<p>Diesel and Energy consumption in our direct operations. Switch to Hydrotreated Vegetable Oil (“HVO”) for Site Machinery as a transition fuel. Aim is to move to 100% renewable energy for operations.</p> <p>As a strategic priority, we will continue to target net zero soil import and export by maximising on-site reuse of excavated material and managing any remaining surplus on our Seven Mills site, further reducing the amount sent to landfill.</p>
Manufacture Materials and Transport	<p>Working with suppliers to upskill and develop more sustainable practices. We are engaging with all of our direct suppliers to ensure that they are aware that we require more sustainable products in order to meet our targets.</p> <p>We are Founding Partners of the Supply Chain Sustainability School in Ireland, a free educational resource set up to deliver the vision of ‘An industry where everyone will have the skills and knowledge to deliver a sustainable future.’</p> <p>This is a strategic priority.</p>	Customer Use Phase	<p>In-use energy demand including heating, hot water and lighting.</p> <p>Conducted LCA research and shown ‘in-use energy demand’ is one of the priority areas for achieving Scope 3 emission reductions. To this end, we have launched two of the largest Passive House developments in Europe.</p> <p>Reducing Operational Carbon (Carbon In-use) As Ireland’s largest scale house builder we’ve always been committed to building high-quality homes. Now we’re pushing this commitment further. As part of our evolution to become the most sustainable scale builder in the nation we are pushing what it means to build to the highest possible standards.</p> <p>We want ‘Built for Good’ to become synonymous with a new vision for sustainable living: healthy, calm, comfortable homes with low energy bills, reduced emissions, and connected to nature via our active efforts to restore and protect Ireland’s native biodiversity.</p>
Sub-Contractor Construction Activities	<p>Soil management and site investigation and preparation prior to work commencing.</p> <p>Preconstruction conduct soil management (surveys and mapping).</p> <p>Aim to improve ground design and surface water management.</p> <p>As a strategic priority, we have reduced our Scope 1 & 2 emissions by 59% from a 2019 baseline exceeding our SBTi target of 46.2%. We are committed to procuring 100% of our Scope 2 purchased power from certified renewable sources to further this reduction.</p>		<p>The next step in our journey is to demonstrate the commercial viability of building better. By adopting the Passive House standard for flagship developments we’re showing exactly how we and our peers can make a difference at a national scale by driving down the heat energy demand of the homes we build by an estimated 55%.</p> <p>Ultimately, these initial projects are an investment in innovation, in ourselves, and in Ireland’s future. In the long run it’s an investment from which everyone should benefit.</p> <p>As a strategic priority, we will roll out ultra-low energy standards to further developments.</p>
Construction of Residential Buildings	<p>Reducing Embodied Carbon (Upfront Carbon) We use timber frames, modular balconies and bathroom pods as standard. We have developed a timber-framed construction methodology to substantially reduce the embodied carbon of low-rise apartment units and duplexes.</p> <p>We have focussed significant effort on reducing the embodied carbon of the concrete frames of our apartment blocks by refining the design of structural sections, reducing rebar density and procuring that rebar from sustainable sources, and utilising GGBS and other low-carbon replacement materials.</p> <p>Protecting Biodiversity and achieving Biodiversity Net Gain Our key biodiversity mission is to advance our efforts towards our ultimate goal of halting and reversing nature loss. We have made significant strides in this regard by targeting Biodiversity Net Gain (BNG) on increasing numbers of our developments. We have tied achieving our BNG targets to Executive remuneration, ensuring it is front and centre in our corporate actions.</p>	Waste Management	<p>Appropriate soil/material disposal.</p> <p>As a strategic priority, we will continue to target net zero soil import and export by maximising on-site reuse of excavated material and managing any remaining surplus on our Seven Mills site, further reducing the amount sent to landfill.</p>

2. Foreword

Value Chain Diagram



3. Policy

Our purpose is to build new homes and create places where people love to live.

We take a responsible approach: building high-quality, sustainable homes; creating communities; and striving to improve the built environment in Ireland.

We want to take a prominent role in promoting sustainable building in Ireland, being respectful of both people and planet as we scale our business. We will do this through a sustainability agenda led by commitments fully aligned to the fundamental elements of our purpose: People, Customers and Sustainable communities.

Collectively, Cairn's leaders recognise that integrating sustainability into its business practices is a strategic necessity for its long-term success and resilience. Prioritising the delivery of high-quality, energy-efficient, affordable homes and actively contributing to environmental preservation enables Cairn to secure its long-term position as a leader in the construction industry.

By embracing sustainability, Cairn ensures its ability to meet regulatory expectations, attract customers, secure state contracts and align with investor expectations on capital allocation toward sustainable companies. Moreover, by proactively improving its sustainability, Cairn demonstrates its dedication to long-term value creation for all stakeholders, fostering a reputation for innovation, responsibility, and resilience in an ever-evolving landscape.

Every home we build will reflect on Cairn for generations to come and, more importantly, will be one of the single biggest influences on the people who buy and live in them. What makes a home for our buyers is defined by what it means to them, and how it makes them feel.

Quality

Our homes are built at and beyond the highest industry standards and will always have people at their heart. They will be built not just around their needs today, but what their needs are likely to be in the future, making our homes adaptable and as future proofed as we can make them.

Efficiency

We know that new home affordability is not just about the capital cost, but also the day-to-day cost of living in them. Whether it is in building homes that meet the most efficient energy-ratings, or which have the lowest possible future maintenance costs through their design and construction, we will deliver homes that generate long-term savings for their owners.

Environment and Climate Change

We want the environmental impact of the homes we build, whether now or in the future, to be as small as possible. As well as ensuring they are as energy efficient as possible, we will strive to drive down their embodied carbon.

Biodiversity

We will mitigate the direct impact on local biodiversity of each Cairn development, regardless of type, size, or location. This will be achieved through a development-specific biodiversity programme that replaces or improves the local biodiversity of each new Cairn development, or otherwise contributes to the improvement of Ireland's biodiversity.



Progress with our purpose is evaluated regularly and feedback on key or material issues is sought from internal and external stakeholders. Our Senior Leadership Team leads by example and regularly reviews progress against our responsible business targets. We are committed to comprehensive public reporting and disclosure of the impacts of our business as well as successes in becoming more sustainable.

4. Governance

Responsibility and Accountability

4.1 Board Oversight, Reporting and Culture

The Board is ultimately responsible for sustainability at Cairn while the Executive Directors (CEO and CFO) maintain full strategic and operational oversight of the sustainability agenda.

The Board has also created a new role to assist with ensuring more oversight and support for the sustainability agenda. The Director responsible for Sustainability and Environmental Impact, oversees operational workstreams, meets with various on-site and central office personnel across key functions responsible for carbon reduction, waste management and biodiversity etc. and reports back to the Board on their findings, recommendations and anything else relevant the Board need to be aware of.

This is in addition to the responsibilities of the Workforce Engagement Director, who regularly meets with employees across the business to gain more insights and a better understanding of the culture of the business, the wellbeing, benefits and challenges of working in Cairn and overall, getting a more complete picture of some of the social priorities for our employees.

Cairn's sustainability agenda incorporates our response to the transition risks associated with the shift to a lower carbon economy, and the physical risks it faces in respect of climate change. At each Board meeting (approximately seven per year), progress towards our strategic objectives is discussed, together with factors that are affecting or may affect those objectives and our strategy. Climate-related issues are a key lever in our strategic objectives and, consequently, form an integral part not only of the strategic reporting cycle, but also the annual strategic review.

The Audit & Risk Committee maintains oversight of the risk register, monitors our response to risk and has identified the impacts of climate change as a principal risk. The risk management framework supports and promotes the identification and management of climate-related issues on a business wide basis, managed through our embedded risk management process. This is reflected in the inclusion of sustainability-related metrics within our remuneration frameworks, including our annual bonus plans, long-term incentive plans and our sustainability-linked financing facilities. This ensures that our targets, as well as the individual goals and objectives of our employees, including Executive Directors, are fully aligned.

4.2 Management's Role in Assessing and Managing Climate Risks

The CEO retains responsibility for defining the strategic direction of the business and Cairn's climate-related performance. Operationally, our Senior Leadership Team, supported by Cairn's Head of Sustainable Construction, Sustainability Team and the Innovation forum, direct the management of climate-related risks and opportunities. Separately, the Chief Financial Officer is responsible for ensuring the financial impacts of climate-related issues are fully understood and reflected in Company budgets.

Sustainability Steering Group ('SSG') and Senior Review Team ('SRT')

The SSG is a decision-making body with responsibility to drive and determine Cairn's sustainability strategy and roadmap. The SSG is supported by the SRT, who are responsible for integrating sustainability considerations into day-to-day operations and decision making, including through the gateway process. For sustainability considerations to be fully embedded in the business, the SSG and SRT have

GOVERNANCE STRUCTURE



4. Governance

responsibility to engage managers, employees and workers and clearly communicate the role of each team and individual in achieving Cairn's sustainability statement of intent. In addition to communicating the roadmap and progress to managers, employees and workers, the SSG communicate progress to Executive Directors and the Board, who provide oversight.

4.3 Culture

All employees in Cairn, regardless of seniority, are responsible for supporting the delivery of goals and objectives, identifying and managing risks, and promoting company values. Through our People Strategy, the Chief People Officer ensures that climate-related issues, and our response to them, are both communicated and incorporated into employees' annual objectives and associated incentives. The Chief People Officer is also responsible for ensuring the Company's resources and capabilities match its climate-related responses.

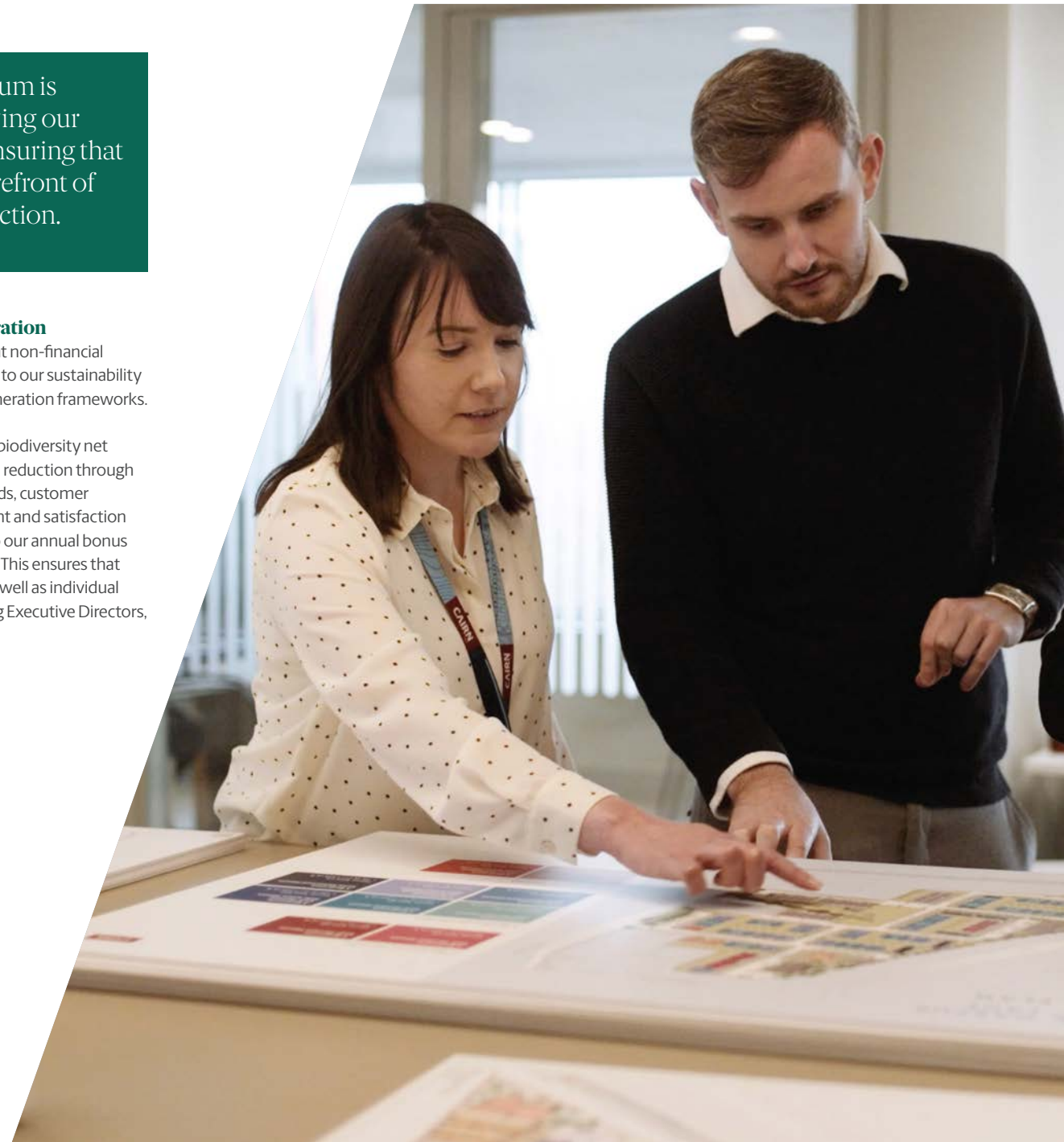
Our Commercial and Procurement Teams are responsible for engaging with our supply chain to increase efficiencies and reduce negative environmental impacts thus improving their own sustainability performance. This responsible sourcing approach is designed to be supportive to our supply chain and ensure they have the resources needed to support the delivery of our sustainability objectives. We challenge our team and our supply chain to explore innovative and sustainable methods of construction and envision the possibilities of the future.

Our Innovation Forum is tasked with improving our ways of working, ensuring that we remain at the forefront of sustainable construction.

4.4 Incentives and Remuneration

In 2020, the Board determined that non-financial KPI's, particularly those pertaining to our sustainability strategy, be reflected in our remuneration frameworks.

Since then, we have incorporated biodiversity net gain, energy efficiency and carbon reduction through building to Passive House standards, customer experience, employee engagement and satisfaction and health and safety metrics into our annual bonus plan and long term incentive plan. This ensures that Company strategy and targets, as well as individual objectives of employees, including Executive Directors, are aligned.



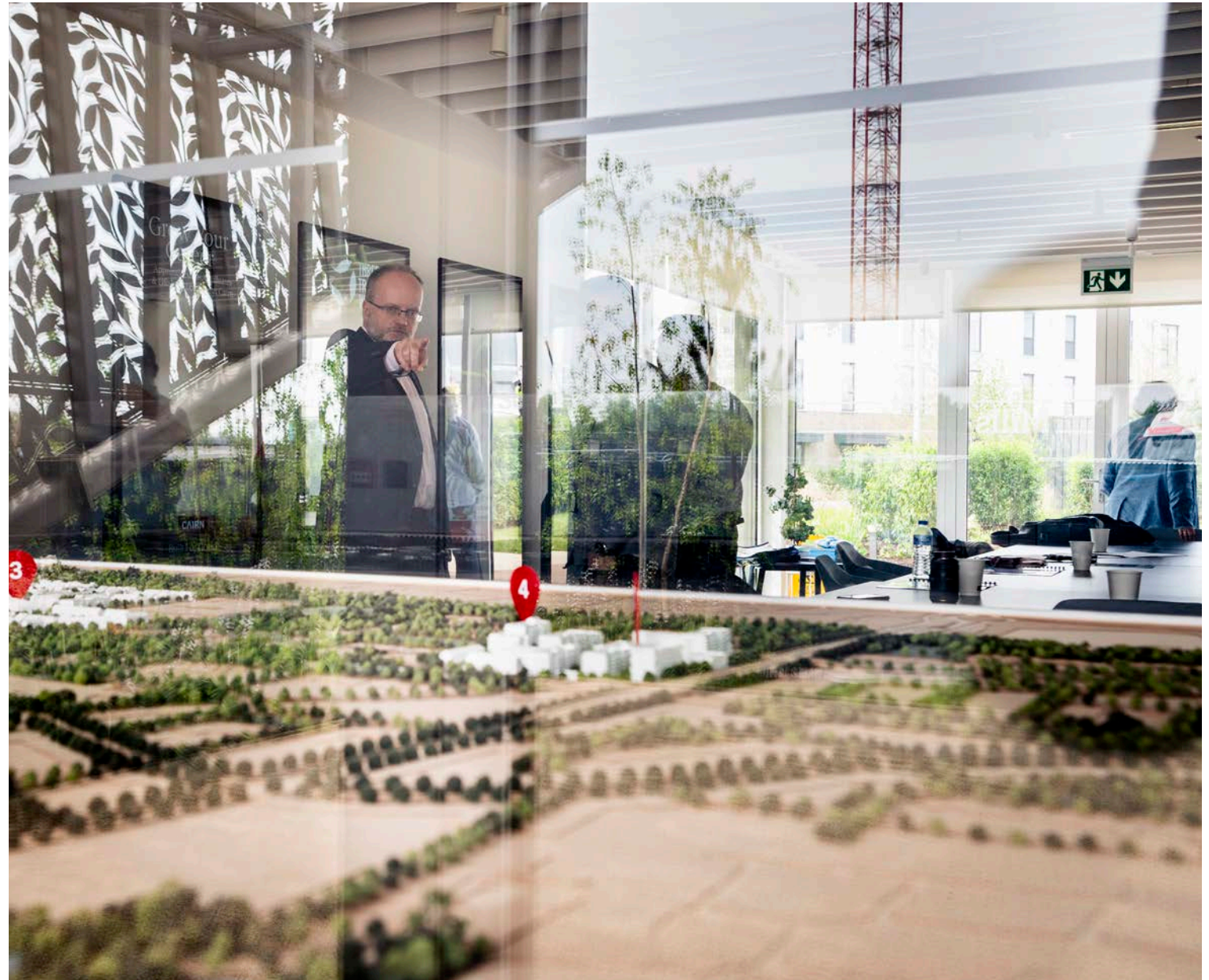
4. Governance

4.5 Skills, Competencies and Training

As part of our broader Learning & Development strategy, there is an ongoing focus on sustainability related training to ensure our employees have the skills and knowledge needed to deliver projects in line with our commitments. Sustainability related skill/knowledge gaps or training needs are identified by functional leads of the Sustainability, Technical and Construction teams and the relevant learning solution/provider is explored and agreed with the support of the Learning & Development team.

Our initial focus has been on building the capability required to deliver our units to Passive House standard. To ensure we meet the needs of the varying roles across the business with the most relevant learning solution, an annual training matrix was developed detailing key roles and appropriate training programs relative to the level of knowledge required for that role. A similar approach will be used to ensure that all future training needs identified are met with a tailored and impactful solution relevant to each role.

All training activity is recorded, tracked and analysed by the Learning & Development team and feedback is continuously collected to ensure training is fit for purpose.



5. Carbon Footprint and Targets

Measuring Our Progress

5.1 Baseline

Cairn homes began recording its carbon footprint in 2019 and uses this year (financial year 2019) as the emissions baseline. Initial analysis focussed on the emissions over which Cairn homes had the greatest influence.

The emissions baseline was 218500 319,726 tCO₂e.



5.2 Physical GHG Emissions Target Trajectory

1. Target: Cairn home aims to reduce its Scope 1 and 2 physical greenhouse gas emissions by 46.2% by the year 2030. This reduction target aligns with recommendations from the Science Based Targets initiative (SBTi), which suggests that most companies should aim to cut emissions by more than 90% and neutralise any remaining emissions to achieve net-zero emissions.
2. Residual Emissions: Despite efforts to reduce emissions, there will still be residual emissions of approximately 446 tonnes of CO₂ equivalent (tCO₂e) by 2040. Cairn homes plans to neutralise these residual emissions through various means such as carbon offsetting or investing in carbon removal technologies.
3. Scope Breakdown: The milestones are broken down by scope, which refer to the different categories of emissions sources defined by the Greenhouse Gas Protocol. Scope 1 emissions are direct emissions from owned or controlled sources, Scope 2 emissions are indirect emissions from purchased electricity, heat, or steam, and Scope 3 emissions are indirect emissions from sources not owned or controlled by the organisation but related to its activities (e.g., supply chain emissions).
4. Progress Reporting: The organisation commits to reviewing and reporting on its progress at each milestone. This transparency allows stakeholders to track Cairn's efforts towards emission reduction and understand its contributions to mitigating climate change.

5.3 Scope 1 and 2 Emissions

Protocol Corporate Accounting and Reporting Standard. Scope 1 and Scope 2 emissions in Table 01 are in line with GRI305-2 reporting guidance. Assuming a market-based value for Scope 2, Cairn Homes emissions has reduced absolute Scope 1 & 2 emissions 59% from 2019 to 2023. Assuming a market-based value for Scope 2, Cairn Homes emissions has reduced absolute Scope 1 & 2 emissions 47% from 2022 to 2023.

Cairn Homes Plc commits to reduce absolute Scope 1 & 2 GHG emissions 46.2% by 2030 from a 2019 base year.

The following emission reduction targets have been submitted and approved by Cairn Homes Plc to the Science Based Targets Initiative in 2023:

	2019 (BASE)	2020 ACTUAL	2021 ACTUAL	2022 ACTUAL	2023 ACTUAL
Scope 1&2 (tCO ₂ e)	2,526	2,367	2,217	1,979	1,034
Total as % of 2019	100.0%	94.0%	88.0%	73.3%	40.9%

Table 01

5. Carbon Footprint and Targets

5.4 Scope 3 Emissions

Cairn Homes GHG Inventory was completed in accordance to ISO 14064-1 and The Greenhouse Protocol Corporate Accounting and Reporting Standard. Scope 3 emissions in Table 02 are in line with GRI205-3 reporting guidance.

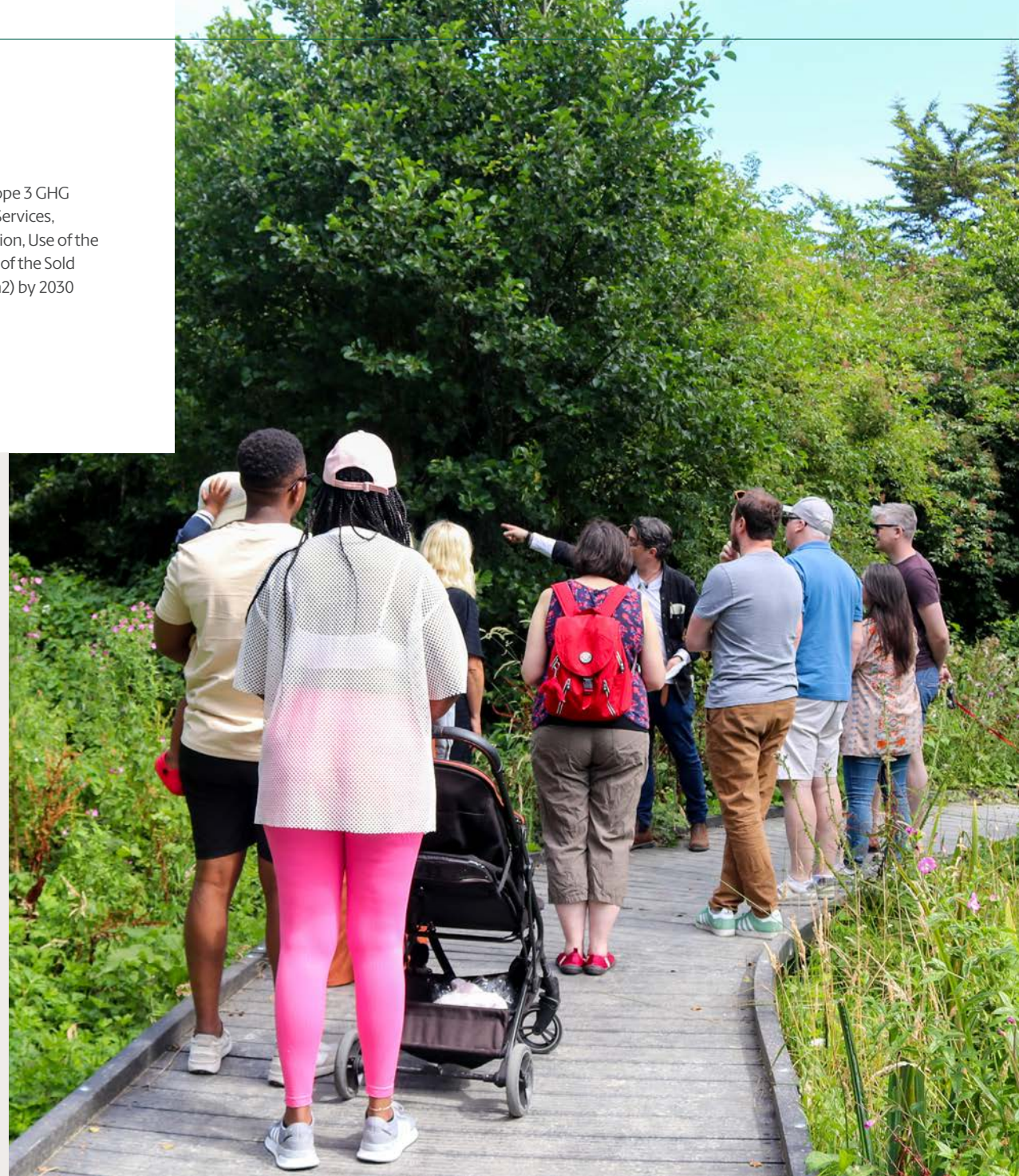
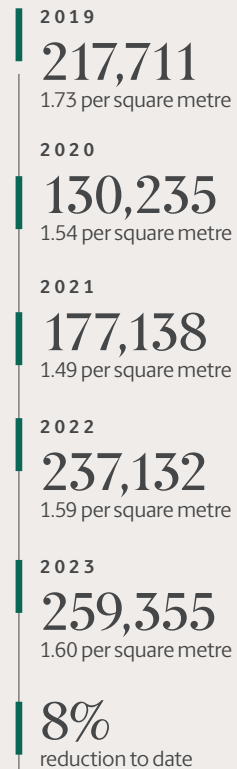
The following emission reduction targets have been submitted to and approved by the Science Based Targets Initiative in 2023:

Cairn Homes Plc commits to reduce Scope 3 GHG emissions from Purchased Goods and Services, Upstream Transportation and Distribution, Use of the Sold Product and End of Life Treatment of the Sold Product 61% per total floor area sold (m2) by 2030 from a 2019 base year.

SCOPE 3	2023 (tCO ₂ e)
Purchased Goods and Services- Water	11
Purchased Goods and Services- Building Materials	111,192
Capital Goods	268
Fuel & Energy Related Activities (Not Included in Scope 1 or Scope 2)	536
Upstream Transportation and Distribution	2,658
Waste Generated in Operations	213
Business Travel	87
Employee Commuting	321
Use of Sold Products	137,751
End-of-life Treatment of Sold Products	6,318
Total	259,355

Table 02

Total Scope 3 Emissions (tCO₂e)



6. Decarbonisation Levers

6.1 Introduction

Decarbonisation Pathways

Decarbonisation Pathways Modelling is a strategic approach used to map out and analyse alternative pathways of an organisation's journey towards decarbonisation. It involves creating scenarios and pathways that align with climate goals or targets.

6.2 Methodology

The methodology for mapping decarbonisation pathways involves a systematic approach to understand past emissions, forecast future trends, and identify effective strategies to achieve emission reduction targets. The key steps in decarbonisation pathway modelling are as follows:

1. Analysis of Historic Emissions – Historical data on greenhouse gas emissions from various sources is gathered. The activities with the highest emissions, known as hotspots, are identified. This helps prioritise areas needing immediate intervention. Also, historical emission trends are examined to understand the underlying drivers and patterns.
2. Emission Forecasting – A baseline scenario is developed using a linear regression model to forecast future emissions without additional decarbonisation efforts. This model involves accounting for expected economic growth and natural industry improvements towards decarbonisation.
3. Inclusion of Decarbonisation Levers – The potential decarbonisation levers are identified, such as renewable energy adoption, energy efficiency measures, electrification of transportation. Various levels of ambition for each lever are defined, which range from conservative to aggressive scenarios. This helps in understanding the range of potential impacts.
4. Scenario Analysis – Multiple decarbonisation pathways are developed by combining the abatement potentials of different levers at various ambition levels. Each pathway represents a different combination of actions and strategies.



6. Decarbonisation Levers

6.3 Expected Industry Improvements and Decarbonisation Levers

6.3.1 Expected Industry Improvements

The Expected Industry Improvements are based on the Environmental Protection Agency's (EPA) Ireland GHG Projection Report. This report outlines the anticipated advancements and measures across various sectors that are likely to contribute to a reduction in greenhouse gas emissions. These improvements include ongoing enhancements in energy efficiency, increased adoption of renewable energy sources, advancements in industrial processes, and the implementation of existing climate policies. The projections consider both technological progress and regulatory measures already in place, providing a realistic baseline for future emissions. By incorporating these expected improvements, the decarbonisation pathways can more accurately reflect the potential reductions in emissions that can be achieved without additional interventions.

6.3.2 Decarbonisation Levers

The decarbonisation levers represent additional strategies and measures that can be implemented to further reduce emissions beyond the expected industry improvements. These levers include transitioning to alternative combustion fuels, adopting renewable energy sources, improving energy efficiency, and electrifying transportation. By leveraging these additional measures at various levels of ambition, it is possible to develop comprehensive decarbonisation pathways that align with climate targets and ensure a sustainable and low-carbon future.

Scope 1 & 2 Decarbonisation Levers

1. Alternative Combustion Fuels: Transition from Diesel to Hydrotreated Vegetable Oil (HVO) for Generators

The transition from diesel to Hydrotreated Vegetable Oil (HVO) involves replacing conventional diesel fuel used in generators with HVO, a renewable diesel alternative derived from vegetable oils or animal fats.

HVO is produced through a hydrotreating process that converts vegetable oils or animal fats into high-quality diesel. It is chemically similar to fossil diesel but offers significant environmental benefits. HVO can reduce lifecycle CO₂ emissions by up to 90% compared to conventional diesel. HVO can be used in existing diesel engines without modifications, facilitating an easy transition.

2. Alternative Combustion Fuels: Transition from Natural Gas to Biomethane

The transition from natural gas to biomethane entails replacing conventional natural gas with biomethane, a renewable form of methane produced from organic waste materials. Biomethane is produced through anaerobic digestion or gasification of organic waste such as agricultural residues, manure, and food waste. It is purified to the same standards as natural gas. Biomethane is a renewable resource that can significantly reduce greenhouse gas emissions compared to natural gas. When sourced from organic waste, biomethane can achieve near-carbon neutrality, as the CO₂ released during combustion is offset by the CO₂ absorbed by the plants during their growth. Biomethane can be injected into existing natural gas grids and used in the same applications as natural gas without the need for infrastructure changes.

3. Alternative Fuels for Vehicle Fleet: Switch from Diesel to Hydrotreated Vegetable Oil (HVO)

The switch from diesel to Hydrotreated Vegetable Oil (HVO) for vehicle fleets involves replacing conventional diesel fuel with HVO in all diesel-powered vehicles.

As a renewable diesel, HVO is produced from sustainable feedstocks like vegetable oils and animal fats, through a hydrogenation process. HVO can be used directly in existing diesel engines, making it a straightforward alternative fuel without requiring significant modifications to the vehicle fleet. HVO has a higher cetane number than conventional diesel, leading to improved combustion efficiency and potentially better engine performance.

4. Alternative Vehicle Fleet: Conversion from Combustion Engines to Electric Vehicles (EVs)

The conversion of the vehicle fleet from combustion engines to electric vehicles (EVs) involves replacing internal combustion engine (ICE) vehicles with battery-electric vehicles (BEVs). EVs are powered by electric motors using energy stored in rechargeable batteries. They produce zero tailpipe emissions and can be charged from the electric grid.

EVs eliminate tailpipe emissions, significantly reducing air pollution and greenhouse gas emissions. EVs are more energy-efficient than ICE vehicles, converting a higher percentage of energy from the battery to motion. EVs have lower operating costs due to cheaper electricity, fewer moving parts, and reduced maintenance requirements. Nevertheless, there are infrastructure challenges linked to EVs. They require the development of charging infrastructure to support widespread EV adoption.



6. Decarbonisation Levers

OUR SCOPE 1 & 2 TARGETS

46.2%

Scope 1 & 2 combined target of absolute reduction by 2030 from a 2019 baseline

Decarbonisation Pathways – Scopes 1 & 2

6.4 Decarbonisation Pathways

Cairn Homes GHG emissions have been projected under different decarbonisation scenarios:

1. Business-as-usual with expected improvements: Year on year growth without any additional decarbonisation initiatives implemented, dependant on the improvements coming from the industry.
2. Incremental Scenario: Making incremental changes in key areas and hopefully being supported by progress across the industry.
3. Ambitious Scenario: Making significant changes in key areas and actively supporting lower carbon initiatives.
4. Aggressive Scenario: Making profound changes in key areas and proactively adopting lower carbon initiatives.

6.4.1 Business-As-Usual with Expected Improvements

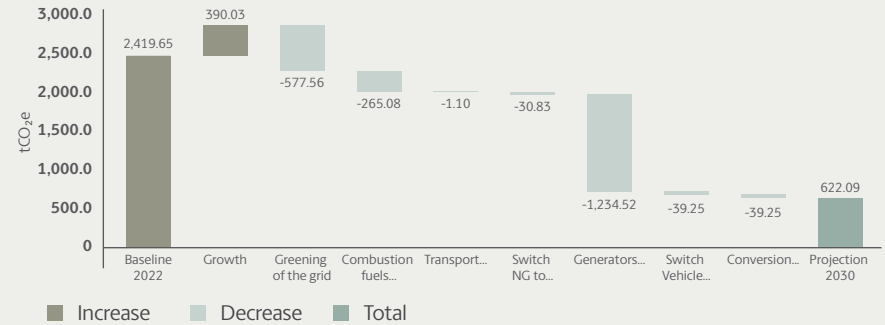
The assumption undertaken for this scenario are as follows:

5. Decarbonisation of combustion fuel emissions by 19% between 2020 and 2030 based on EPA's GHG emissions projections report.
6. Greening of the grid achieving a decarbonisation of about 70% decarbonisation by year 2030.

6.4.2 Incremental Pathway

The assumptions undertaken for this scenario are as follows:

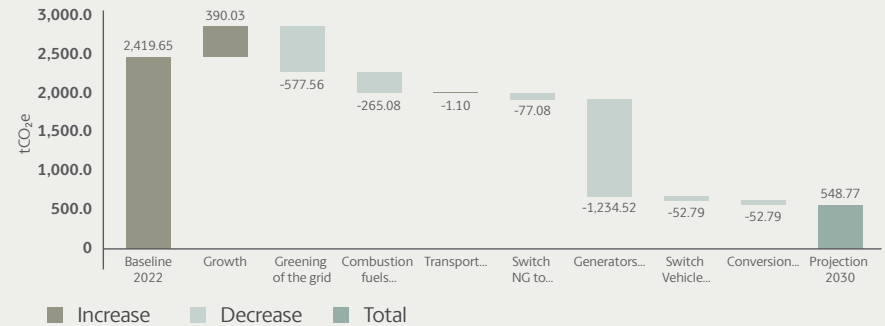
1. Transition of 100% diesel use in generators to Hydrotreated Vegetable Oil.
2. Transition of 10% natural gas usage to biomethane by 2030.
3. Switch up to 30% of diesel use by vehicle fleet to alternative fuels (HVO) by 2030.
4. Conversion of 30% of vehicle fleet to electric vehicles.



6.4.3 Ambitious Pathway

The assumptions undertaken for this scenario are as follows:

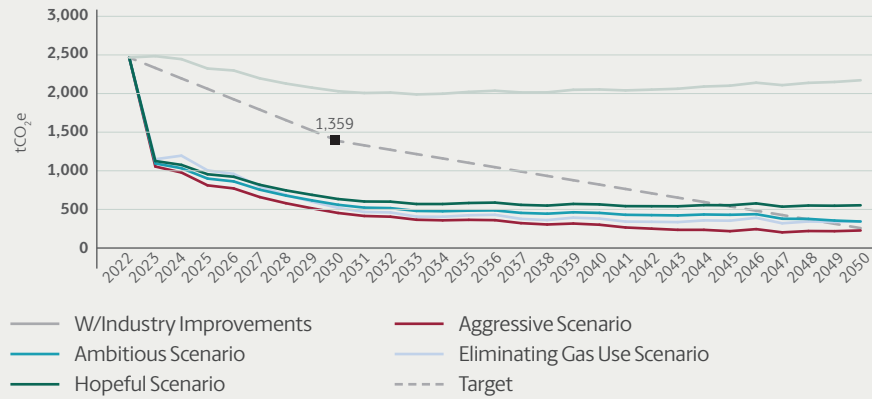
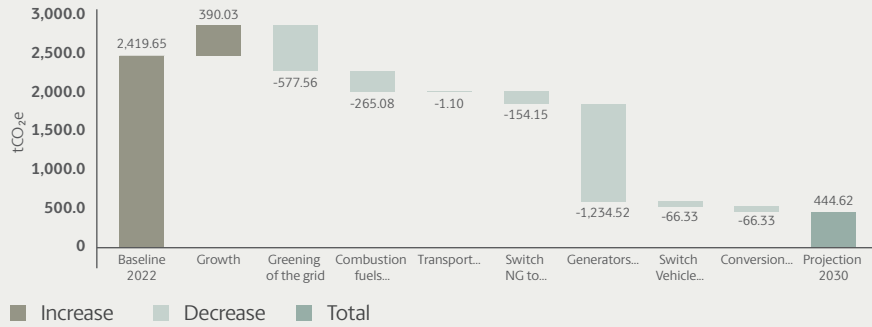
1. Transition of 100% diesel use in generators to Hydrotreated Vegetable Oil.
2. Transition of 25% natural gas usage to biomethane by 2030.
3. Switch up to 40% of diesel use by vehicle fleet to alternative fuels (HVO) by 2030.
4. Conversion of 40% of vehicle fleet to electric vehicles.



6. Decarbonisation Levers

6.4.4 Aggressive Pathway

1. Transition of 100% diesel use in generators to Hydrotreated Vegetable Oil.
2. Transition of 50% natural gas usage to biomethane by 2030.
3. Switch up to 50% of diesel use by vehicle fleet to alternative fuels (HVO) by 2030.
4. Conversion of 50% of vehicle fleet to electric vehicles.



7. Decarbonisation Initiatives

Decarbonisation Roadmap – Scope 3

SBTi Validation

Scope 3 emissions account for 98% of Cairn's total footprint and present a significant challenge demanding immediate action. These emissions originate from sources outside our direct control, but linked to our activities and over which we can have considerable influence. From the materials we source to their transportation to site, the activities of the subcontractors we employ, and finally through to the use of the homes we build, our footprint extends across the entire lifecycle of a project and from end to end of our value chain.

- Materials production & transportation
- Supply chain
- Use phase
- Maintenance and repair
- End-of-life disposal

SBTi targets were submitted in December 2022, Scope 1 & 2 – 46.2% absolute reduction / 4.2% per year to 2030, Scope 3 – 61% intensity reduction by 2030. These targets were validated in September 2023.

OUR SCOPE 3 TARGETS

61%

Scope 3 intensity reduction by 2030



7. Decarbonisation Initiatives

Emissions occur throughout our value chain from the materials we purchase, to the preparation of a site for building, through to the activity on site as homes are built, in-use energy once our customers move in, and maintenance and adaptation processes throughout their full lifecycle.

Site Development



SCOPE 3

Soil management and site investigation and preparation prior to work commencing.

Action Taken

Soil management including detailed surveys and maps which analyse the level and conditions of the site before works commence. This allows us to target net zero soil import and export by maximising the onsite "cut and fill".

Next Steps

Further enhance our geotechnical investigations and ground improvement designs, and our use of nature-based surface water management to optimise site development works.

Strategic Priorities

Continue to target net zero soil import and export by maximising on-site reuse of excavated material and managing any remaining surplus on our Seven Mills site, further reducing the amount sent to landfill.

Embodied Carbon



SCOPE 3

Actions relating to the materials: Concrete, timber, glass, metals, plastics and waste.

Action Taken

We use timber frames, modular balconies and bathroom pods as standard. We have developed a timber-framed construction methodology to substantially reduce the embodied carbon of low-rise apartment units and duplexes.

Next Steps

Provide education and upskilling to our Supply Chain to encourage the development of low carbon products and services. Develop building designs and construction techniques to support circularity.

Strategic Priorities

Research & development: using our Life Cycle Assessment (LCA) outputs and existing research as a guide, we will focus on component level changes (e.g. roof trusses and balconies) to reduce our emissions.

Operational Emissions



SCOPE 3

In-use energy demand including heating, hot water and lighting.

Action Taken

Our LCA research has shown 'in-use energy demand' is one of the priority areas for achieving Scope 3 emission reductions. To this end, we have launched one of the largest Passive House developments in Europe (see below).

Next Steps

We will work with our customers and strategic state partners to monitor the post-occupancy performance of our homes and use the data to educate our customers as to best use of their home via direct engagement and our Customer Care Portal.

Strategic Priorities

Roll out ultra low energy standards to further developments.

Leading on Decarbonisation



Customers



Construction

7.1 Reducing Scope 3.11 'Use of Sold Products' Emissions

Cairn have launched our first Passive House apartment scheme at Piper's Square, Charlestown, which will be one of the most sustainable scaled apartment developments in Ireland.

What is Passive House?

Developed in Germany in the 1990s, the Passive House building standard is designed to minimise the need for space heating and cooling – reducing both carbon emissions and utility bills – while ensuring high levels of comfort and indoor air quality.

The concept centres on the combination of five principles:

- Minimising thermal bridging.
- Ensuring very high levels of airtightness.
- Installing high performance windows.
- Using high levels of insulation.
- Adopting heat recovery ventilation.

Cairn's Adoption of Passive House

The Passive House principles are well known to Cairn and to our subcontractors, but we will be combining them and seeking third-party certification to ensure we achieve the performance levels demanded by this robust and exacting standard.

By adopting this approach, we seek to demonstrate the significant benefits that can be secured by scale housebuilders. We will use our leading position in the Irish construction industry to show that this world-class building standard is achievable using existing supply chains and can become the norm, accelerating decarbonisation across our sector.

Enhanced Energy Efficiency

Passive House delivers outstanding levels of energy efficiency, typically requiring half the heating energy of a building regulations-compliant, new-build home. Applying this rigorous standard to the Charlestown scheme will reduce Cairn's Scope 3 emissions by an estimated 9,500 tonnes of carbon compared with standard building regulations, equivalent to 5% of our entire 2019 baseline footprint.

As well as carbon emissions, reducing energy consumption by adopting these measures delivers lifetime cost savings for building occupants, helping to reduce utility bills and fuel poverty. Benefits also extend to energy infrastructure, with reduced energy demand supporting the resilience of the national grid, which is likely to come under increasing pressure as heating, transport and other sectors decarbonise and drive demand for renewable energy. Studies have shown that the cost of building more efficiently is significantly lower per kWh than the cost of generating that kWh for all forms of renewable energy, in every scenario.

7. Decarbonisation Initiatives

As an established standard, Passive House allows benefits to be secured in the short term, contributing to the achievement of national net zero goals. In the longer term, the 'fabric first' approach that reduces reliance on technologies that may become obsolete also helps to 'future-proof' buildings.

7.2 Building Biodiversity into our Developments

Our key biodiversity mission is to advance our efforts towards our ultimate goal to halt and reverse nature loss. We have made major strides in reducing our direct impacts on nature loss by targeting Biodiversity Net Gain (BNG) on increasing numbers of our developments. We have tied achieving our BNG targets to Executive remuneration (see section 4.4), ensuring it is front and centre in our corporate actions, and will analyse our full nature-related dependencies, impacts, risks and opportunities.

We continue to support the All-Ireland Pollinator Plan with our Pollinator Friendly planting and landscape works across all of our developments and have been acknowledged by the National Biodiversity Data Centre as a Pollinator Friendly business since 2018 and our pollinator plan activities are mapped on the All-Ireland Pollinator Plan website.

We have continued to be supporters of Birdwatch Ireland, an independent conservation organisation, and have collaborated with them on implementing a significant nesting box project as part of our Linden Demesne development.

PASSIVE HOUSE FEATURES

- 1 Highly insulated envelope
- 2 High performance windows
- 3 Efficient junctions
- 4 Airtightness
- 5 Heat recovery



7. Decarbonisation Initiatives

Site-specific projects are bolstered further by our pollinator-friendly strategies across all Cairn schemes. These include:

- 100% of sites undergo a pre-commencement biodiversity assessment.
- Pollinator-friendly mixes of perennials and flowering shrubs in all front gardens.
- Native tree planting in open spaces and private gardens.
- Mixed bulb drifts of pollinator-friendly plants.
- The provision of a packet of pollinator-friendly bulbs and information to every new homeowner.

In 2023 we broke ground on our biggest ever development, Seven Mills. This represents a once in a generation opportunity to create a vibrant and sustainable community and suburb with top-class amenities in a well-designed and planned environment. Its scale has touched every part of our organisation, forcing us to rethink how we do things. The area covers 280 hectares located within the greater Dublin area and we will deliver some 5,400 of the 9,000 homes that will be provided there. Built around large parks and greenways, and boasting kilometres of waterside frontage along the Grand Canal, Seven Mills puts the city centre just minutes away by rail or cycleway.

Nature-based Surface Water Management Strategy

The impacts of extreme rainfall events have increased in recent years due to climate change. The principal impact has been the risk of flooding, but this in turn has increased the risk of pollution from urban surface water runoff. It is often said that the UN Sustainable Development Goals (SDGs) will only be achieved through integrated approaches that incorporate the social, economic and environmental dimensions of sustainable development. Nature-based solutions for water management constitute just such an approach, providing multiple benefits to stakeholders, while at the same time mitigating the risk of flooding events.

The Nature-based Sustainable Urban Drainage systems (SuDS) which have been designed into Seven Mills streetscapes to control this risk of flooding also provide other benefits such as:

- Biodiversity, protecting and providing habitats for a range of species and providing connectivity.
- Climate change adaptation through increased resilience to more frequent and intensive rainfall.
- Climate change mitigation through carbon sequestration.
- Improved groundwater quality by filtering out heavy metal pollutants.
- Reduction in Embodied Carbon of drainage infrastructure.
- Contribute to local amenity and placemaking.

Roads and streets within Seven Mills (particularly next to the Canal) have been designed so that rainwater flows from paved surfaces to appropriately designed bioswales, tree pits and planted areas with subsurface filtration to slow the runoff and encourage infiltration of surface water at source.

These features are provided to collect and convey road runoff where adjacent to open space, and swales adjacent to attenuation basins route surface water runoff to bioretention areas in the detention basins before infiltrating into the attenuation structure below.

River and Canal Water Quality is protected by providing interception storage with treatment of the run-off so collected and within the attenuation storage system and oil separators on the main surface water outfalls from the development. Surface water runoff from the adjacent road is conveyed to grated manhole inlets along the swale which routes any surface water that has not infiltrated naturally into the ground, to the surface water pipe network to be attenuated in the regional attenuation basins. A filter strip is provided between the road and the swale where space allows to add additional area for surface water infiltration. Surface water routed to the swales creates

opportunities for particle, oil/grease and nutrient absorption before discharging into the surface water pipe network.

Swales and bioretention areas contribute to the biodiversity of the development by adding habitat for wildlife and additional area for planting and are landscaped in order to maximise amenity benefits. The bioretention areas are generally located along roads to receive runoff from their surfaces and contribute to aesthetics of the streetscape. Local bioretention areas are also located within the detention basins to receive surface water runoff and create local “wet” areas. This will encourage the growth of plants, further adding to the biodiversity of the development and create enjoyable and aesthetically pleasing public open space areas.

The SuDS street trees increase the habitat for a variety of animal species and insects and act as bridge for wildlife in the post-developed urban landscape. Filtered water passing through the tree pit and into the receiving watercourse would also add to the biodiversity downstream. The green roofs will provide further ecological benefits by attracting birds, bees, butterflies and other insects by creating pockets of habitat at high level for nesting and foraging. The use of green roofs will improve on a range of amenity principles such as improved climate resistance, air quality and noise levels.



7. Decarbonisation Initiatives

Our Biodiversity Key Mission

Our key mission is to advance our efforts towards our ultimate goal to halt and reverse nature loss.

We have made major strides in reducing our direct impacts on nature loss by targeting Biodiversity Net Gain (BNG) on increasing numbers of our developments. We have tied achieving our BNG targets to Executive remuneration, ensuring it is front and centre in our corporate actions, and will analyse our full nature-related dependencies, impacts, risks and opportunities.

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- Native tree planting in open spaces and private gardens.
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- The provision of a packet of pollinator-friendly bulbs and information to every new homeowner.

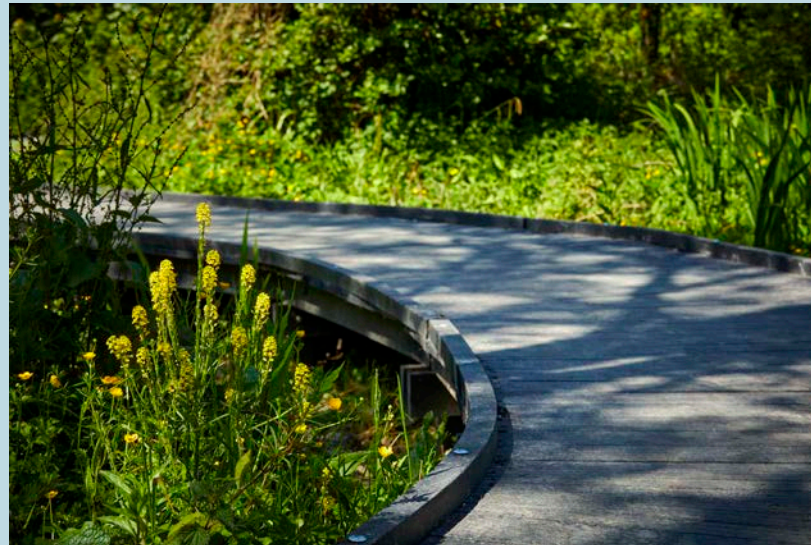
Case Study 🏡

Three Trouts Way

As part of our Archers Wood development Cairn committed to providing a greenway some 1.5km long along the bank of the Three Trouts stream to provide residents with a safe, segregated active travel option between Delgany and Greystones in County Wicklow. It was always envisaged as an opportunity to enhance both the amenity and utility of the space, but also to protect and enhance the biodiversity. We were happy to collaborate with a local 'citizen scientist' to ensure that the walkway was added without disturbance to the local flora and fauna by designing it as a raised boardwalk, allowing the stream to flow

beneath undisturbed with free movement for animals. We planted 10,000 new trees in the area, mostly native and with some fruiting and flowering varieties, and wild flower meadows and have provided 90 bird boxes. The result is a new natural amenity which is being enjoyed by locals young and old, both residents of our new development and those who have lived in the area for generations.

WATCH THE VIDEO →
<https://vimeo.com/manage/videos/1002707642>



2023 Biodiversity Actions

Citywest Phase 3, Dublin 24

Now nearing completion, this was one of our first BNG developments. The 'Local Park' is open and permeable, with access for residents and visitors alike allowing members of the public to enjoy the benefits of the pollinator-friendly planting and native wildflower grass meadow – planted detention basin.

Parkside, Dublin 13

Another high-density development targeting BNG, this 700-unit scheme has seen extensive engagement with local schools regarding the planting and action plan which will see the completion of a Greenway linking Belmayne Avenue with Fr. Collins Park to the east, with lawn verges taking surface water from the paved areas planted with drifts of seasonal bulb planting to provide a variety of colour throughout the year.

Hawkins Wood, Greystones, Co. Wicklow

Featuring our standard Pollinator-friendly mixes of perennials and flowering shrubs in all front gardens, and native tree planting in both open spaces and rear gardens, the biodiversity garden specially designed for the launch of this development and featuring a pond suitable for frogs and other aquatic species showcases individual actions our customers can take to promote biodiversity in their own homes.

7. Decarbonisation Initiatives



Archers Wood, Greystones, Co. Wicklow

The landscaping here integrates the homes with the existing landscape and creates a network of open spaces which contribute to local biodiversity, notably the Three Trouts Way (see across). The perimeter planting is native and naturalised broad-leaf hedgerow and tree planting, along with dense woodland and understory planting, and wildflower meadows have been planted to most of the northern slopes, reducing maintenance requirements, improving local biodiversity and, creating a visually attractive route through the space.



Linden Demesne, Maynooth, Co. Kildare

In our Linden Demesne development, in addition to the retention and regeneration of 150m of native hedgerow habitat, we are planting for the succession of hundreds of new trees, all of native species. A water pond is being designed to enrich the habitat.

Every garden is supplied with native floral planting and a birdbox based on designs supplied by Birdwatch Ireland.



Mercer Vale, Cherrywood, Dublin 18

We planted a new native hedgerow in this development, along with pollinator-friendly mixes of perennials and flowering shrubs in all front gardens and pocket parks. Native trees in open spaces and private gardens create habitats for the future.



Seven Mills, Dublin 22

Our flagship development for sustainability (see Case Study, pages 5-8), targeting Biodiversity Net Gain across its full 225 acres, Seven Mills makes extensive use of nature-based surface water management features and green roofs. Haws were harvested from the site prior to the commencement of our site activities and have been propagated in a nursery, allowing for sustained mature planting as construction proceeds. A new linear park is being planted along the boundary with the canal, protecting and enhancing the existing hedgerow and delineating the riparian zone beside this important wildlife corridor.

Case Study

Reforest Nation

In 2023, Cairn continued to ramp up our efforts to improve the biodiversity of the wider environment in parallel with our Biodiversity Net Gain strategy for our own sites by planting thousand of trees across the country. In choosing native species, we are creating future homes for local wildlife as well as mitigating climate change.

To further this initiative and augment the tree-planting we have carried out on our own sites (18,000+ in 2023, 52,000+ to date), we partnered with Reforest Nation to sponsor a further 3,000 trees at the beginning of 2023. Cairn employees joined a host of volunteers over a weekend in late February to lend a hand tree-planting and come together to make a positive impact on our

environment, helping the local ecosystem and supporting biodiversity. This was the second such event held with Reforest Nation.

We are continuing to partner with Reforest Nation in 2024 to further support them in their mission of rejuvenating Ireland's landscapes and contributing to the global effort against climate change.

Cairn recognises our debt to nature, and our obligation to protect it, and also the need to reverse current trends in biodiversity and habitat loss to ensure a sustainable Ireland for future generations. In 2023, we planted more than double the number of trees planted in 2022 resulting in an average of almost 11 trees planted per unit sold during the year.



8. Scenario Analysis

We have undertaken a more detailed and robust scenario analysis, utilising two different science based physical scenarios and constructing a bespoke scenario relevant to our industry.

Quantitative measures have been used to assess climate related risk and opportunities impacts. Cairn Homes aims to disclose the numeric financial significance of its climate risks and opportunities in the coming years.

The first was a physical scenario in line with a 4°C world based on climate modelling from EPA Ireland. This showed Ireland's climate from 2041-2060 modelled with the IPCC Representative Concentration Pathway (RCP) SSP5-8.5 scenario. The second was a physical scenario in line with a 2°C world based on climate modelling from EPA Ireland. This showed Ireland's climate from 2041-2060 modelled with the IPCC Representative Concentration Pathway (RCP) SSP2-4.5 scenario. These scenarios identified the following possible outcomes: (i) built houses will have to be able to withstand increased temperatures, (ii) excess dust on sites, (iii) reduced productivity due to unworkable conditions resulting in project delay, (iii) potential customers may face challenges when looking for mortgage approval or home insurance due to changing flood plains and (iv) increased rainfall may require changes to construction practices and methods.

The third scenario was a transitional scenario in line with a 1.5°C world which included inputs from Ireland's Climate Action Plan 2021, International Energy Authority (IEA) Net Zero by 2050 Scenario, the London Energy Transformation Initiative (LETI), the Irish Green Building Council (IGBC) and Network for Greening the Financial System (NGFS). This scenario identified the following possible outcomes: (i) increasing carbon pricing may lead to an increase in material costs, (ii) increased fees for disposal of material due to regulation, (iii) may become increasingly difficult to gain permits due to water stress and regulation, and (iv) stringent policy making it difficult to source reliable supply of reused material required.



This scenario was also used to assess climate opportunities for Cairn Homes and identified the following outcomes: (i) the opportunity to avail of finance at a lower interest rate due to a strong ESG performance and (ii) increased demand for BERA rated homes.

This climate related scenario analysis helped to identify material risks and opportunities, as well as inform Cairn's strategy for managing these risks. Where possible, we have estimated the potential financial impact of climate related risks and opportunities.

“Addressing the climate challenge presents a golden opportunity to promote prosperity, security and a brighter future for all.”

BAN KI-MOON, FORMER
SECRETARY-GENERAL OF UN

9. Stakeholder Approach

We recognise that in order to make a difference, we must collaborate and involve others in our journey. We plan to leverage our influence within our industry, the broader business community, academia, and government.

We are actively involved with several industry bodies and academic groups through memberships, working groups, and committees. The most relevant to our transition to net zero are listed opposite. These engagements allow us to stay current with new approaches and technologies, share knowledge with peers, and use our position as a leading business in Ireland to drive action. We will continuously review our affiliations with various organisations and groups.

Additionally, we engage with the government on various issues and will use this plan to identify where we can most effectively advocate for changes that support our transition to net zero.

9.1 Engagement with Government/Policy

Cairn is a member of several industry representative bodies including Irish Institutional Property (IIP), Property Industry Ireland (PII) and the Irish Home Builders Association (IHBA) which is a constituent association of the Construction Industry Federations (CIF).

Cairn representations sit on the relevant ESG committees under each of these organisations to be best informed on all regulatory and legislative requirements and equally to ensure the various bodies and committees are informed of all best practices from the grassroots.

At regular occurrences these bodies will interact with open consultations relevant to circular economy and waste management together with ongoing interactions with Governmental Departments such as the Department of Environment, Climate and Communications.

9.2 Engagement with Industry and Peers

Cairn is a leading Irish business and recognises the responsibility that comes with this position. As such the business would regularly engage with industry and its peers through industry forums, events and seminars etc.

In addition to singular engagement with peers, Cairn, holds council, committee and membership positions with each of the following advocacy groups:

- Irish Institutional Property (IIP)
- Property Industry Ireland (PII)
- Irish Home Builders Association (IHBA) which is a constituent association of the Construction Industry Federations (CIF)
- Society of Chartered Surveyors (SCSI)
- MMC Ireland
- Business in the Community Ireland (BITCI)
- All-Ireland Pollinator Plan
- Supply Chain Sustainability School Ireland (SCSS)
- Irish Green Building Council (IGBC)



9. Stakeholder Approach

Case Study 🏠

Heatcheck Study with UCG and the LDA

Ireland has been subject to the requirements of the Environmental Performance of Buildings Directive (EPBD) which requires the mandatory introduction of nearly zero energy buildings (nZEBs) since 2018. However, despite the efforts of the government towards improving energy efficiency in buildings, it has been reported that new and renovated buildings often do not reach the planned energy performance, resulting in the so-called 'Performance Gap'. This is thought to be due to inadequate consideration of occupant behaviour, energy use and internal environmental quality (IEQ) together. In response, the University of Galway and Cairn are delighted to partner with the Land Development Agency in collaborating on this important project. The project aims to investigate the relationships between the energy consumption and internal environment quality (IEQ) profiles of residential buildings,

the people occupying the buildings and the materials commonly used in the construction industry with the overarching aim to improve the energy audit procedure for the Dwelling Energy Assessment Procedure (DEAP) and Non-domestic Energy Assessment Procedure (NEAP) energy compliance tools. Primarily, this will be achieved by monitoring occupant energy demand behaviours and IEQ profiles, providing real-world comparisons to the standard assumptions made in steady state building energy performance compliance procedures such as DEAP, NEAP and Passive House Planning Package (PHPP). The Heatcheck project will make use of data to be collected in new field studies involving 100 new and existing residential buildings to deliver the project aims, including our Archers Wood apartments which have been purchased by the LDA.



Case Study 🏠

Irish Green Building Council Research Project

Irish Green Building Council Research Project to provide an open source template for the home building industry for a Home User Guide. Cairn provided industry funding for this project and were one of the stakeholders consulted. The intent is to enable the home building and retrofit sector to provide quality information to the occupant on handover of both new and extensively refurbished homes on how to properly operate their homes for health, reduced cost and carbon savings. It will provide templates that are both easy to understand for occupants, and also to provide access to robust technical documentation. This project will progress the recommendations of the Healthy Homes Ireland report which made a key recommendation that home occupants were empowered to operate their homes to be healthy and efficient.

This will be delivered in the form of a Home User Guide which will be applicable to both new build homes and energy renovated homes. The provision of a best practice and high quality Home User Guide by homebuilders to occupants has also been identified as a gap in current practice through IGBC's certification Home Performance Index where it is included as an indicator. The proposed Home User Guide Standards and Best Practice will meet the requirements as stated in the Home Performance Index Manual. This will be directly applicable to the 20,000+ homes currently registered for HPI Certification and also the wider new build sector. The Home User Guide will also be suitable for use on energy renovated homes for example by One Stop shops.



9. Stakeholder Approach

9.3 Engagement with Supply Chain

Our Responsible Sourcing Approach

Responsible Sourcing

We engage with selected supply chain partners who represent c.50% of our annual spend collectively through workshops every two years as part of our Materiality Assessment procedures. These workshops provide an invaluable opportunity to identify common challenges experienced both by Cairn and our supply chain, and result in insightful knowledge and experience sharing between attendees.

Our supply chain partners provided valuable feedback and recommendations for Cairn as we move forward in our Responsible Sourcing programme, citing a need for clarity in terms of our expectations, reasonable timelines and support to achieve compliance, and access to training and guidance materials. These interactions are vital for Cairn to assist us to continue with our Responsible Sourcing Programme which is designed to ensure our supply chain partnerships support the delivery of our sustainability objectives.

Principal Engagement

As part of our commitment to our supply chain partnerships and to ensure we are maintaining strong two-way communication, we hold multiple off-site engagement and strategy days with our Subcontractors each year. We use these opportunities to review the performance of both Cairn and our Subcontractors, enabling clarity around performance expectations and identifying areas for change and improvement.

Over 100 Subcontractor relationship management meetings take place each year to allow for personal review of the Subcontractor performance across the Commercial function from Health and Safety to Procurement.

Moving Forward

In order to help increase efficiencies and reduce negative environmental impacts, we are striving to improve the sustainability performance of our supply chain. However, we understand that as we continue to move towards a more sustainable future and begin setting minimum expectations for sustainability performance for our supply chain partners, we must ensure there is a suitable support system in place, with the resources to help those who need it. To this end, Cairn are proud to be a Founding Partner of the Supply Chain Sustainability School Ireland.

Case Study

Supply Chain Sustainability School Ireland



The Supply Chain Sustainability School (SCSS) has been operating successfully in the UK since 2012. It has established itself as a leading learning platform, and its members have derived significant benefits from its offerings. Developing the SCSS in Ireland is the next step in our commitment to ensuring we bring our supply chain partners with us on our sustainability journey, by providing them with free learning resources, tailored to their needs.

The SCSS Ireland has its own distinct Irish identity, governance structure, and training and learning agenda. This investment by the founding partners including Cairn establishes a free virtual learning platform for our supply chain partners, which will support them with the upskilling they need to deliver a sustainable built environment. All content is built and adapted to reflect Irish and European policy, practice, and regulation.

The SCSS aims to provide standardised education and training through webinars, e-learning modules and workshops across 17 Sustainability Topics including but not limited to;

- Biodiversity and Ecology
- Carbon and Net Zero
- Waste and Resource Efficiency
- Community & Social Impact
- Equality, Diversity & Inclusion and Wellbeing
- Modern Slavery

These educational resources are accompanied by two types of assessment, Corporate Assessment and Individual Assessment.

- Corporate Assessment is based on organisational capability and produces an action plan to drive improvement.
- Individual Assessment is based on personal knowledge and understanding and produces a learning plan to encourage upskilling.

All training and resource tools are CPD accredited and free for all members. We are confident that the Supply Chain Sustainability School will become an invaluable resource for our supply chain partners and the construction industry as a whole.



+4,000 jobs

supported by us directly
and through our contractor base

9. Stakeholder Approach

9.4 Engagement with Communities

Placemaking and Communities

We passionately believe that a workplace that inspires, is a workplace that thrives. As we endeavour to shape the Ireland of tomorrow, we challenge our team to explore innovative and sustainable methods of construction, to envision the possibilities of the future, and to actively pursue them today. When we speak of inspiring Ireland's future, we are referring to the future of our employees, our communities, our industry, and the aspiration for a just and inclusive society.

The generosity and initiative of our employees are instrumental in realising this vision. Initiatives such as the Home Together community initiative, our commitment to Biodiversity Net Gain, various community projects, and our partnership with Make a Wish Ireland have all stemmed from the passion and dedication of our employees to give back and make a meaningful impact.

We believe in fostering partnerships with national organisations, while also proudly supporting grassroots community organisations across Ireland. Our beneficiaries include local sports clubs, schools, and charitable organisations, furthering our commitment to sustainable community building.

In 2023, we are proud to have supported the following national programs:

- Cairn Community Games
- Home Together Initiative
- Children's Books Ireland
- Irish Red Cross – continuing our contribution to charitable housing
- Participation in the annual Dragons on the Docks event to raise essential funds for homeless charity 'Dublin Simon Community'
- Partnership with The Lighthouse Charity to support our sub-contractors and their families
- Business in the Community Ireland Mentoring Program

We also support a variety of more local charities and groups to ensure that we are positively impacting the communities in which we are building. Some examples of this are:

- Down Syndrome Centre Sandyford
- Tallaght Community First Responders
- Maynooth Autism Friendly Town
- Greystones Town Team – Christmas Lights

Case Study

Our Home Together Initiative

Home Together in the spring of 2021, we teamed up with Neighbourhood Network to run a series of community building exercises in Cairn developments, known as the "Home Together" initiative. The ambition of our partnership with Neighbourhood Network was to create happy, healthy places for people to live, where neighbours feel connected and supported by each other.

The principle behind Home Together is fundamentally about facilitating the creation of a new community and allowing that community to flourish independently. We support local leaders to build inclusive, resilient groups in their new environment. In 2023, our Home Together initiative reached a significant milestone, advancing to a stage where most community activities were driven by residents and tailored to the specific character and demographics of the participating developments.

Over 1,106 adults and children attended 21 activations and were involved in community connection estate wide projects and Home-2-Home micro actions, across 7 developments in 2023. Throughout the year noteworthy activities included yard sales, street feasts, outdoor cinema nights, coffee mornings, allotment planning and plotting, community library design workshops, cocktail demonstrations, and balcony planting workshops, in addition to festive events like Halloween and

Christmas socials. These activities not only foster community cohesion but also encourage sustainable practices and resource sharing.

An essential aspect of the Home Together initiative is continuous engagement with residents. They actively participate in surveys, both online and through door-to-door visits, conducted by the Home Together team and key community leaders. Co-creation presentations and workshops provide opportunities for residents to influence the direction of their developments.



Over 1,106

adults and children attended

21

activations

10. Appendix I

Risks and Opportunities



10. Appendix I: Risks and Opportunities

RISK ID	RISK	RISK TYPE	FINANCIAL SIGNIFICANCE	LIKELIHOOD
R1	Increased overall temperature in Ireland.	Physical – Chronic	Major	Almost Certain
R2	Rising sea levels and increased rainfall in winter are expected.	Physical – Acute	Major	Unlikely
R3	Increased costs due to future regulation.	Transitional – Policy & Legal	Minor	Likely
R4	Unable to transition to low carbon options at the pace needed.	Transitional – Technology	Moderate	Unlikely
R5	Project planning and delivery fails to include/meet environmental conditions.	Transitional – Policy & Legal	Moderate	Unlikely
R6	Land value and/or demand may depreciate due to proximity to flood plains.	Physical – Chronic	Moderate	Rare
R7	ESG Response is inadequate resulting in investors moving away from Cairn or a failure to meet obligations for sustainability linked lending.	Transitional – Reputational	Major	Unlikely
R8	An increase in flooding or other changes to weather patterns (e.g. rainfall and drought) may reduce the amount of suitable land available for acquisition.	Physical – Chronic	Moderate	Unlikely
R9	Insufficient capacity in the supply chain due to lack of availability of resources.	Physical – Chronic	Major	Possible
R10	Disruption of supply chain due to extreme weather events causing delays to project delivery.	Physical – Acute	Moderate	Possible
R11	Gradual increased temperature rise affecting project delivery and labour productivity.	Physical – Chronic	Minor	Possible
R12	Sudden heatwave affecting labour productivity.	Physical Acute	Insignificant	Possible
R13	Increased frequency of storms/flooding affecting labour productivity.	Physical Acute	Insignificant	Possible
R14	Damages to assets due to wildfires.	Physical Acute	Insignificant	Unlikely
R15	Incurring fines from environmental damage.	Transitional – Policy & Legal	Minor	Unlikely
R16	Environmental demands require development design or other changes.	Transitional – Policy & Legal	Minor	Unlikely

OPP ID	OPPORTUNITY	OPPORTUNITY TYPE	FINANCIAL SIGNIFICANCE	LIKELIHOOD
Op1	Availing of green finance.	Market	Minor	Almost Certain
Op2	Meet the demand for BER A rated homes.	Products and Services	Major	Likely

10. Appendix I: Risks and Opportunities

LIKELIHOOD	
Rare	The climate risk will probably never happen.
Unlikely	Not expected to happen but it is possible.
Possible	Climate risk may occasionally happen.
Likely	It will probably happen but not persistent.
High	The climate risk will most probably happen, possibly frequently.

IMPACT (FINANCIAL SIGNIFICANCE)	
Negligible	If the climate hazard occurs, it will have little or no impact on business activities across the supply chain, production, logistics or sales.
Minor	If the climate hazard occurs, it will have an impact, but business activity can continue at an acceptable level.
Moderate	If the climate hazard occurs, it will have a moderate impact on business/sector activities across the supply chain, production, logistics or sales.
Major	If there is an impact, business/sector activity can continue but certain KPIs will be affected.
Catastrophe	If the climate hazard occurs, it will have a significant impact on a business/sector, preventing it from achieving desired results to the extent that one/more of its goals will not be achieved.

TIME HORIZON	
Short Term	0-5 Years
Medium Term	5-10 Years
Long Term	10-50 Years

11. Appendix II

Climate Scenario Analysis Methodology



11. Appendix II: Climate Scenario Analysis Methodology

1. Executive Summary

Cairn Homes engaged Goodbody Clearstream to provide support to further enhance its sustainability, climate and TCFD reporting strategy. Specifically, Goodbody Clearstream was asked to supplement existing work to enhance its existing procedures in identifying, understanding and mitigating the risks climate change pose to its business. The work commissioned consists of two elements, climate risk and opportunity identification and climate scenario analysis. The overall project methodology is set out in section 2 below. See summary of climate scenario analysis findings:

PHYSICAL RISK SCENARIO ANALYSIS				
CHOSEN SCENARIO(S):	IPCC RCP4.5 / IPCC RCP8.5			
RISK	OUTCOME	RESPONSE	FINANCIAL SIGNIFICANCE	TIME HORIZON
Increased temperature overall in Ireland.	Houses will have to be able to withstand increased temperatures. Excess dust on sites.	Monitor weather. Implement dust suppression/minimisation plans.	€211,270 – €432,700	Long
Sudden heatwave affecting labour productivity.	Reduced productivity due to unworkable conditions resulting in project delay and loss of productivity. Excess dust on sites.	Integrate hot day factors into business practices. Monitor forecasts. Zero harm policies. Dust minimisation plans.	Minor due to a high ability to respond.	Medium/Long
Increased frequency of storms/flooding affecting project delivery and labour productivity.	Potential customers may face challenges when looking for mortgage approval or home insurance due to changing flood plains. Increased rainfall may require changes to construction practices and methods.	Flood risk assessments are a key part of Cairn land appraisals.	Major	Long
TRANSITIONAL RISK SCENARIO ANALYSIS				
CHOSEN SCENARIO(S):	BESPOKE SCENARIO: NGFS, IEA, CAP23, IGB, LETI.			
RISK	OUTCOME	RESPONSE	FINANCIAL SIGNIFICANCE	TIME HORIZON
Increased costs due to future regulation.	Increasing carbon pricing may lead to an increase in material costs. Increased fees for disposal of material due to regulation.	Science Based Target.	€2,628,112	Medium
Project planning and delivery fails to include/meet environmental conditions.	May fail to meet environmental conditions of planning due to more stringent policy. May become increasingly difficult to gain permits due to water stress and regulation.	Horizon scanning.	Minor due to a high ability to respond.	Medium/Long
Unable to transition to low carbon options at the pace needed.	Stringent policy making it difficult to source a reliable supply of reused material required. Restrictions in finance.	Review low carbon products and processes.	Moderate	Medium/Long

11. Appendix II: Climate Scenario Analysis Methodology

OPPORTUNITY SCENARIO ANALYSIS				
CHOSEN SCENARIO(S):	BESPOKE SCENARIO: NGFS, IEA, CAP23, IGB, LETI.			
RISK	OUTCOME	RESPONSE	FINANCIAL SIGNIFICANCE	TIME HORIZON
Availing of green finance.	Availing of finance at lower interest rates due to strong ESG performance.	Currently availing of green finance.	Minor	Medium
Meet the demand for BER A rated homes.	Increased demand for BER A rated homes.	All of Cairn new houses have heat pumps and B3 rated. They are also rolling out passive house standards.	Major	Medium

3. Climate Risk and Opportunity Identification Methodology

The list of risks and opportunities (outlined in appendix i) were developed through the double materiality process while using the TCFD terms and classification of risks as guiderails. The high-level risks and opportunities were developed using the discovery information. The list is also supported by EPA guidelines and bolstered by numerous tools and sources (pages 35 and 36). Risks were identified as physical or transition risks and allocated to the risk subcategories as a best fit with TCFD definitions (noting that more than one could apply). The list was sent to Cairn Homes sustainability team for initial review, confirmation, analysis, and validated. This approach is common to the climate scenario analysis and double materiality process by Goodbody Clearstream. The materiality process and details on the parameters of the risk matrix is explained in more detail in the next section. This climate scenario analysis workstream is aligned with CDP, CSRD and TCFD guidance.

4. Materiality Assessment Methodology

Goodbody Clearstream engaged with Cairn Homes and produced a list of risks based on the detailed CSRD discovery work with the Cairn Homes Sustainability team. This included a comprehensive review of the Annual Report, Sustainability Report and the Cairn Homes risk register. In addition, after working through the Cairn Homes value chain, key subject matter experts provided dedicated time to discuss climate related risks and opportunities. They did so by rating each risk/opportunity by likelihood, financial significance of impact and time horizon (see appendix i). Those with the highest combined rating on a 5x5 risk matrix are identified as the most material and utilised for the climate scenario analysis.

The use of a 5x5 risk matrix also ensures enough variance in scores to distinguish risks. Using a smaller matrix (3x3) can produce binary results or not allow sufficient delineation between risks which would otherwise have the same score. This also mitigates against underscoring risks (choosing a lower materiality because of unconscious bias). Using a more precise scoring allows accurate plotting on a heat map.

5. Climate Scenario Analysis

The focal question(s) that drove the scenario analysis are:

6. What are the likely impacts for Cairn Homes' business, operations and profitability in a Net Zero economy?
7. What are the likely impacts for Cairn Homes' business, operations and profitability in a climate where we fail to mitigate temperature rises to a safe level?

11. Appendix II: Climate Scenario Analysis Methodology

The physical risk scenario analysis uses scenarios collectively known as the Shared Socioeconomic Pathways (SSPs) that offer different narratives regarding socioeconomic trends that could take shape over time and are associated with distinct global warming trends. The SSPs are from the IPCC AR6. The IPCC assessed that global warming of 1.5°C and 2°C will be exceeded in the 21st century with a best estimate of equilibrium climate sensitivity (average change in mean global surface temperatures) of 3°C with a likely range of 2.5°C to 4°C. Two SSPs were used to conduct the analysis:

- SSP2-4.5: A moderate scenario, where emissions are curbed based on existing policies and announced pledges but fall short of meeting the Paris Agreement targets. This scenario is likely to result in a global temperature rise between 2.1°C to 3.5°C by 2100.
- SSP5-8.5: A very high emissions scenario that assumes no climate change action and is likely to result in a global temperature rise between 3.3°C to 5.7°C by 2100.

Both were chosen to stress test Cairn Homes against potential physical risks that may manifest in a world that overshoots a 1.5°C warming scenario. The physical risk analysis was performed on locations in which Cairn Homes operates, namely Ireland.

Cairn Homes used a bespoke scenario to conduct its analysis of transitional risk. It is a transitional scenario in line with a 1.5°C world which included inputs from Ireland's Climate Action Plan 2021, International Energy Authority (IEA) Net Zero by 2050 Scenario, the London Energy Transformation Initiative (LETI), the Irish Green Building Council (IGBC) and the NGFS.

RISK ID	PHYSICAL RISK	TYPE	SCENARIOS	ASSUMPTIONS	HORIZONS
R1	Increased temperature overall in Ireland.	Chronic	Moderate 2°C (SSP2-4.5)	Under RCP 4.5, global temperatures are projected to rise by approximately 2.4°C above pre-industrial levels by 2100, with a range of 1.7 to 3.2°C.	Long
			Very high 4°C (SSP5-8.5)	Under RCP 8.5, global temperatures could rise by approximately 4.3°C above pre-industrial levels by 2100, with a range of 3.2 to 5.4°C.	
R12	Sudden heatwave affecting labour productivity.	Acute	Moderate 2°C (SSP2-4.5)	IPCC suggests that by the mid-21st century (2041-2060), heatwaves could occur about twice as often as they did in the late 20th century (1981-2000) under the RCP 4.5 scenario. By the end of the 21st century (2081-2100), heatwaves could become even more frequent and severe.	Medium/Long
			Very high 4°C (SSP5-8.5)	By mid-century (2041-2060), heatwaves could become 2-5 times more frequent compared to historical levels. By the late century (2081-2100), heatwaves could become 5-10 times more frequent, with some regions experiencing even greater increases.	
R13	Increased frequency of storms/flooding affecting project delivery and labour productivity.	Chronic	Moderate 2°C (SSP2-4.5)	IPCC suggest that RCP 4.5 will see sea level rise, extreme weather events, and biodiversity loss are expected to be less severe compared to RCP 8.5.	Long
			Very high 4°C (SSP5-8.5)	IPCC suggest that RCP8.5 will see significant impacts on sea level rise, extreme weather events, and biodiversity loss are projected.	

11. Appendix II: Climate Scenario Analysis Methodology

RISK ID	TRANSITIONAL RISK	TYPE	SCENARIOS	ASSUMPTIONS	HORIZONS
R3	Increased costs due to future regulation.	Policy and Legal	Bespoke Scenario	<p>Numerous inputs were used to create a scenario highly relevant and comprehensive for Cairn. The transitional scenario is bespoke and in line with a 1.5°C world which included inputs from:</p> <ul style="list-style-type: none"> • NGFS Net Zero 2050 scenario informed the carbon pricing projections. • Ireland's Climate Action Plan 2021 actions to 2030 mapped out by Irish government. This plan is the Irish governments national decarbonisation plan, because of the Climate Action and Low Carbon Development (Amendment) Act 2021. • London Energy Transformation Initiative (LETI) benchmarks to reach zero carbon buildings by 2050 including operational and embodied carbon. • International Energy Authority (IEA) Net Zero by 2050 Scenario milestones This scenario is for global energy-related carbon dioxide emissions to net zero by 2050. • London Energy Transformation Initiative (LETI) benchmarks to reach zero carbon buildings by 2050 including operational and embodied carbon. • Irish Green Building Council Net Zero Whole Life Carbon (WLC) milestones for the roadmap for the Built Environment in Ireland. Relevant milestones, impacts and benchmarks were consolidated and reviewed under the headings of heating & fuel, electricity, low carbon construction materials and transport. 	Medium
R4	Unable to transition to low carbon options at the pace needed.	Technology			Long
R5	Project planning and delivery fails to include/meet environmental conditions.	Policy and Legal			Medium

OP ID	OPPORTUNITY	TYPE	SCENARIOS	ASSUMPTIONS	HORIZONS
Op1	Availing of Green Finance.	Market	Bespoke Scenario	<p>Numerous inputs were used to create a scenario highly relevant and comprehensive for Cairn. The transitional scenario is bespoke and in line with a 1.5°C world which included inputs from:</p> <ul style="list-style-type: none"> • NGFS Net Zero 2050 scenario informed the carbon pricing projections. • Ireland's Climate Action Plan 2021 actions to 2030 mapped out by Irish government. This plan is the Irish governments national decarbonisation plan, because of the Climate Action and Low Carbon Development (Amendment) Act 2021. • London Energy Transformation Initiative (LETI) benchmarks to reach zero carbon buildings by 2050 including operational and embodied carbon. • International Energy Authority (IEA) Net Zero by 2050 Scenario milestones This scenario is for global energy-related carbon dioxide emissions to net zero by 2050. • Irish Green Building Council Net Zero Whole Life Carbon (WLC) milestones for the roadmap for the Built Environment in Ireland. Relevant milestones, impacts and benchmarks were consolidated and reviewed under the headings of heating & fuel, electricity, low carbon construction materials and transport. 	Medium
Op2	Meet the demand for BER A rated homes.	Products and Services			

12. Appendix III

Physical Scenario Analysis: Outcomes



12. Appendix III: Physical Scenario Analysis: Outcomes

RISK 1 – INCREASED OVERALL TEMPERATURE IN IRELAND
<p>POTENTIAL IMPACT</p> <p>In both chosen physical risk scenarios global temperatures are expected to rise by 2.4°C (RCP4.5) and 4.3°C (RCP8.5) by 2100, respectively (Global). The median daily maximum air temperature in 2020 was 0.5°C. There is expected to be an increase in temperatures overall in Ireland, and in extreme scenarios increased heatwaves. In RCP4.5, the median air temp will rise to 1.4°C in 2050 and 1.5°C in 2100 (Ireland). In RCP8.5, the median air temp will rise to 2.3°C in 2050 and 3.6°C (Ireland). In both these scenarios the Homes sold by Cairn need to be able to withstand the rising temperatures and not overheat, this will require Cairn Homes to be built to the correct standard. A secondary outcome from these scenarios is the increase in dry periods may also lead to increased dust levels on site. Excess dust exiting the site can result in a work stoppage, or site closure by the Environmental Protection Agency, County Councils or the Health & Safety Authority. A decrease in rain in the summer may also lead to stress on water systems.</p>
<p>TIME HORIZON</p> <p>Long Term</p>
<p>RESPONSE</p> <p>Cairns technical, construction and environmental teams are analysing the impact of shifts in climate patterns such as prolonged increasing temperatures on their house types. As an ongoing project they are assessing mitigating overheating in our homes through altering our home designs and any impacts that would have on costs. We closely monitor weather forecasts to ensure worker safety and prepare or adjust build schedules where needed. Remediations are designed on a site-by-site basis, informed by a pre-commencement risk assessment and responsive mitigation plan based on: (i) implementation of a robust dust minimisation plan during specified weather conditions (e.g. wind, dry spells, etc.); (ii) regular water suppression of site haul roads and other areas that are near sensitive receptors; (iii) implementation of dust fogging systems for high-risk sites; and (iv) systematic dust suppression.</p>
<p>FINANCIAL SIGNIFICANCE €</p> <p>211,270 – 432,700</p>
<p>FINANCIAL SIGNIFICANCE – RATIONALE</p> <p>Reported cases demonstrate that compensation costs (excluding legal fees) for residents can reach up to €7,000 per affected resident (inflation adjusted). Potential legal and other fees can realistically increase this figure to at least €21,000 per affected resident. Due to the location of Cairn Homes' sites, it is possible that dust discharges could impact on large numbers of households. The working assumption is that between 20 and 30 households could be affected in the worst cases. Site closure (cost per day): €6575. The potential impact figure (minimum) is based on a fine of €1,270 and costs of remediation at 50% of a potential remediation cost of €21,000 per affected resident (20 residents). $€1,270 + (€21,000 \times 0.5 \times 20) = €211,270$. These would be in addition to putting in place the measures identified as the cost of the response of the risk. The maximum impact figure considers a likely worst-case scenario where the costs of remediation are at 100% of a typical remediation cost, site closure is required for a period of up to ten days to facilitate suppression and remediation, and a fine of €12,700. $(€12,700 + (€21,000 \times 20) = €432,700$. This does not include hidden costs or reputational damage, or the potential health and safety impact to co-workers.</p>
RISK 12 – SUDDEN HEATWAVE AFFECTING LABOUR PRODUCTIVITY
<p>POTENTIAL IMPACT</p> <p>In the chosen physical risk scenarios, the frequency of heatwaves will increase in Ireland. In RCP4.5 they are expected to double while in RCP8.5 they could increase fivefold. Hot day events may result in additional costs associated with loss of outdoor labour productivity, rework, delivery disruption and project delays from unsafe working temperatures, (for example, working in extreme heat, in the absence of other controls, can cause delays, errors and serious illness and injury). An outcome of this is that due to the outdoor nature of Cairns work it will be unsafe for their own workforce to operate in intense heatwave conditions resulting in delays in project delivery and productivity. Climate Analytics utilising the scenarios, projects relative changes in labour productivity due to heat stress in Ireland:</p> <ul style="list-style-type: none"> • RCP4.5 – decline of labour productivity by 0.03 percentage points by 2050 and 0.04 percentage points by 2100. • RCP8.5 – decline of labour productivity by 0.04 percentage points by 2050 and 0.4 percentage points by 2100. <p>A secondary outcome of these scenarios is an increase in dry periods which may also lead to increased dust levels on site. Excess dust exiting the site can result in a work stoppage, or site closure by the Environmental Protection Agency, County Councils or the Health & Safety Authority.</p>
<p>TIME HORIZON</p> <p>Medium/Long Term</p>

12. Appendix III: Physical Scenario Analysis: Outcomes

RISK 12 – SUDDEN HEATWAVE AFFECTING LABOUR PRODUCTIVITY CONTINUED

RESPONSE

Integrating relevant physical risk factors, such as hot day conditions, into business decisions related to new work, existing work, contract terms and pricing, acquisitions and property leases.

Monitoring weather forecasts and conditions for potential extreme weather events and, where necessary, implementing appropriate resilience measures.

Implementation of Zero Harm policies, standards, procedures (for example, Working in Extremes of Temperatures Standard), including to modify or suspend work in extreme temperatures.

FINANCIAL SIGNIFICANCE

Minor due to a high ability to respond.

FINANCIAL SIGNIFICANCE – RATIONALE

It is felt that we have a high ability to respond to events of this type. In the short term we will monitor weather forecasts and respond accordingly, closing sites if necessary. Should this become much more frequent an occurrence we could adapt to different work schedules – opening sites early and closing during the middle of the day in a 'siesta' type arrangement. Lastly, should this become a chronic problem affecting a number of weeks or months of the year we could take more work off-site and indoors so that working conditions can be controlled during extreme weather events.

RISK 13 – INCREASED FREQUENCY OF STORMS/FLOODING AFFECTING PROJECT DELIVERY AND LABOUR PRODUCTIVITY

POTENTIAL IMPACT

Rising sea levels and increased rainfall in winter are expected to lead to a higher risk of flooding in Ireland. Climate Analytics provide detail how the relative changes in annual expected damage from river floods (%) will play out over time in Ireland at different global warming levels compared to base year (2015), based on the RCP4.5 scenario. They find that in 2030 the annual expected damage from river floods will increase by 13%, 2050 will see an 83% increase and peaking in 2065 at 186%. Moreover, Climate Analytics make the same predictions based of the RCP8.5 scenario. They find that in 2030 the annual expected damage from river floods will increase by 24%, 2050 will see a 174% increase and peaking in 2065 at 277.3%. An outcome of this is the challenge for Cairn that if potential customers face challenges when looking for mortgage approval or home insurance due to changing flood plains. For example, where homes are built on areas that were not deemed to be flood plains during development but are expected to become floodplains in the future in a RCP4.5 and RCP8.5 scenarios. A secondary outcome of this is that increased rainfall may require changes to construction practices and methods to ensure output can be maintained without impacting on safety or quality.

TIME HORIZON

Long Term

RESPONSE

The impacts of severe weather events and extreme conditions are actively monitored and evaluated by the Group's technical, construction and environmental teams on a site-by-site basis with remediations developed to respond to site specific risk and mitigate the cost impact. Flood risk assessments are a key part of Cairn land appraisals.

FINANCIAL SIGNIFICANCE

Major

FINANCIAL SIGNIFICANCE – RATIONALE

No currently owned sites are identified on floodinfo.ie under any of their projected climate scenarios. Any sites which are being considered for purchase undergo a full flood risk assessment including such future projected scenarios as are available.

13. Appendix IV

Transitional Scenario Analysis: Outcomes



13. Appendix IV: Transitional Scenario Analysis: Outcomes

RISK 3 – INCREASED COSTS DUE TO FUTURE REGULATION

POTENTIAL IMPACT

The transitional climate scenarios project more stringent climate regulation. This emerging regulation poses a risk to Cairn. Increasing carbon pricing may lead to an increase in material costs as manufacturers face increased costs, it is projected to rise to 200USD t/CO₂ in 2030 and approx. 650USD t/CO₂ in 2050. The scenarios indicate that there is also increasing regulation on energy efficiency, which Cairn must keep up with. There is focus on retrofit of existing buildings and quotas on new builds in Net Zero scenarios for Ireland. Cairn does not currently retrofit and may be limited in output in these scenarios. Broader planning conditions expected to include more environmental mitigation, specifically related to biodiversity and climate resilience.

The construction of any new structure traditionally requires the excavation of soils to a sufficient depth to ensure the stability and appropriate load-bearing capacity of the development site. This creates two issues. The first relates to the disposal or reuse of excavated soil. Where excavated soil cannot be reused on-site for other purposes, it must be removed and transported to landfill sites. However, the number of appropriate landfill sites available in Ireland is reducing due to targets and plans from the EU. The Waste Framework Directive (2008/98/EC) targets EU member states to have 65% recycling rates by 2035. The EU also published the Circular Economy Action Plan in March 2020, which outlines 35 actions to move the EU away from a linear economy where materials are dumped in a landfill and reach their end of life. The consequence of the reducing numbers of landfill sites in Ireland, is that excavated soil must be transported further distances for disposal. In the future, excavated soil may even need to be exported. Consequently, the transportation of excavated materials to landfill sites will become increasingly costly, both in financial and emissions terms. Given the utilised scenario, this trend is expected to continue and is exacerbated by the financial and CO₂ costs associated with the excavation itself. Secondly, for buildings, excavations to stable subsoil can require deep foundations which necessitate the use of significant quantities of concrete (blocks and/or fillings) to bring back to level. This also increases the carbon costs associated with the development.

TIME HORIZON

Medium

RESPONSE

Science Based Target has been validated by the Science Based Targets Initiative in line with a 1.5°C pathway. This will guide their internal strategy towards the same goal as national and EU regulation to keep in line with the Paris Agreement and mitigate risk from emerging regulation.

FINANCIAL SIGNIFICANCE

2,628,112

FINANCIAL SIGNIFICANCE – RATIONALE

This is again something which we seek to keep abreast of so that any impacts are anticipated and minimised. We will in the first instance seek to keep ahead of any future climate regulation, or if that is not possible then to minimise any financial impact arising. By building homes which are low carbon and resilient in the face of climate change we are seeking to position ourselves and our customers as well as possible. For a typical development (excluding green spaces), the potential impact figure is €1,314,056 which assumes excavation is required for (i) building foundations, (ii) traffic areas (including the use of additional 6F2 aggregate for stabilisation of roads and paving areas) and, (iii) service trenches (and in each case the subsequent disposal of excavated materials off-site). The financial impact figure is exclusive of costs associated with additional materials for making level. Over a typical site the total cost associated with (i) and (iii) amounts to €887,182. Costs associated with roads and paving areas have a typical site cost of €426,874. The addition of these impacts leads to an estimated potential financial impact figure for a typical site as noted above: €1,314,056 + €887,182 + €426,874 = €2,628,112.

13. Appendix IV: Transitional Scenario Analysis: Outcomes

RISK 4 – UNABLE TO TRANSITION TO LOW CARBON OPTIONS AT THE PACE NEEDED

POTENTIAL IMPACT

Through the bespoke scenario we can assume there is a risk that Cairn may be unable to transition to low carbon products at the pace needed. For example, there are often public/local authority obstacles to using reused materials within Cairn sites and in the chosen scenarios this stringent oversight will only increase. Where these obstacles are overcome, there may be issues with securing a reliable supply of those materials on a large scale. Some targets for reduction would require timber frame in apartments, which is not normal practice in Ireland. There is also a consideration that financiers may not lend to potential customers if units are not built to certain specifications e.g. no brick and clad.

TIME HORIZON

Long.

RESPONSE

Cairns technical team continues to review low carbon products, systems and processes for our house types. They are members of the Irish Green Building Council and actively participate in the Healthy Homes Ireland Forum with the aim of delivering greener, healthier homes.

FINANCIAL SIGNIFICANCE

Moderate.

FINANCIAL SIGNIFICANCE – RATIONALE

This impact will (if at all) be felt on a relatively small number of projects which are at a particular stage of development where they are affected by unforeseen legislative changes requiring rework and consequent expense. It is anticipated that that confluence of events will be relatively rare as we a) constantly horizon scan to mitigate the risk of such unforeseen and b) it will only be a subset of the 'current' list of projects at any point in time where alterations cannot be incorporated without delay or cost.

RISK 5 – PROJECT PLANNING AND DELIVERY FAILS TO INCLUDE/MEET ENVIRONMENTAL CONDITIONS

POTENTIAL IMPACT

A projection of the chosen transitional climate scenarios is more stringent environmental policy as well as an increase extreme weather events. An outcome of this is that project planning and delivery may fail to include or meet environmental conditions attached to planning approval. This would result in planning conditions not being met which would leave Cairn open to litigation, fines and reputational damage. There is a secondary outcome where permitting approvals may become more challenging due to extreme weather conditions or water stress in some areas.

TIME HORIZON

Medium

RESPONSE

Horizon scanning to ensure that future and upcoming likely legislative changes are considered in project planning. Implementing environmental checklist processes in building practices.

Environmental assessments.

Communication between project delivery and planning facets of the business.

FINANCIAL SIGNIFICANCE

Moderate.

FINANCIAL SIGNIFICANCE – RATIONALE

This impact will (if at all) be felt on a relatively small number of projects which are at a particular stage of development where they are affected by unforeseen legislative changes requiring rework and consequent expense. It is anticipated that that confluence of events will be relatively rare as we a) constantly horizon scan to mitigate the risk of such unforeseen and b) it will only be a subset of the 'current' list of projects at any point in time where alterations cannot be incorporated without delay or cost.

14. Appendix V

Opportunity Scenario Analysis: Outcomes



14. Appendix V: Opportunity Scenario Analysis: Outcomes

OPPORTUNITY 1 – AVAILING OF GREEN FINANCE

POTENTIAL IMPACT

Cairn Homes has the opportunity to avail of green finance, such as: SLLs. In the chosen scenarios, more sustainable focused policies will lead to an increased onus on the financial sector to facilitate the transition to net zero. An outcome of this is financing at lower rates for companies with a strong ESG performance.

TIME HORIZON

Medium.

RESPONSE

Currently availing of green finance.

FINANCIAL SIGNIFICANCE

Minor.

OPPORTUNITY 2 – MEET THE DEMAND FOR BER A RATED HOMES

POTENTIAL IMPACT

Scenarios to keep in line with national climate reduction targets show all new builds should be A rated and have heat pumps as a heating source. This demand may come from any or all parts of our customer base including individual homebuyers and institutional buyers, particularly Government agencies.

TIME HORIZON

Medium.

RESPONSE

All of Cairn new houses have heat pumps by default and all of Cairn homes have a BER rating of A3 or above. They are also rolling out passive house standards to further reduce energy demand for the homes they build.

FINANCIAL SIGNIFICANCE

Major.

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