

DUCHY OF CORNWALL

NET ZERO CARBON

REPORT 2022



DUCHY *of* CORNWALL



Foreword – HRH The Duke of Cornwall



For nearly every problem we face, Nature, with the benefit of billions of years of evolution, has already provided us with the solutions. Universal principles rooted in the harmony of Nature’s patterns, cycles and geometry, which ancient civilizations and indigenous peoples have known all too well, need to be harnessed to inform science, technology, design and engineering and can, in fact, drive a sustainable future and a net zero economy.

But time is fast running out. Timelines simply must be brought forward if we are to make a transformative shift before it is too late.

At this historic tipping point, with the lives and livelihoods of present and future generations in mind, we need a roadmap for acceleration towards an ambitious and sustainable future; one that will harness the power of Nature combined with the transformative power, innovation and resources of all sectors of society. This is the aim of my Terra Carta; and I could not be more delighted that the Duchy of Cornwall is aligned to and supporting this global effort.

While we are all part of one global system of transition, it is also critical that we act locally. This is why the Duchy of Cornwall has launched this formal plan to reach net zero across the estate by the early 2030s. It goes hand in hand with efforts across the estate to restore natural capital and to accelerate Nature-based solutions to climate change.

This report highlights the significance of emissions arising from land use. Yet land has, perhaps uniquely, huge potential for helping to solve this crisis. I was greatly encouraged to read about the carbon footprinting of one of our tenanted farms – discussed on page 13 – where straightforward changes to farming practices can turn the farm from being a carbon-emitter to being a carbon sink, no longer part of the problem, but part of the solution. We are already making headway dealing with degraded peatland on Dartmoor, and we are trialling building materials with less embodied carbon.

The Duchy cannot act alone. The land and property are let and the emissions arising from their use are, by and large, out of our control. This plan, therefore, entreats all tenants and partners to work with us to achieve this common goal, so that we really can deliver sustainable stewardship for communities, enterprise and Nature.

Welcome

Thank you for your interest in the Duchy of Cornwall and Net Zero Carbon.

The climate crisis is the challenge of our lifetime. As the science around global heating has become clearer, the urgency with which we need to act has also increased.

The Duchy is a private estate of agricultural, residential and commercial property, mainly in the South West of England, and a financial investments portfolio. It has existed since 1337, with deep history and tradition. Almost all the property is let to tenants.

The estate provides an income to The Duke of Cornwall, HRH The Prince of Wales and has long been managed in harmony with The Prince's ethos so that it can be passed on with pride to the next generation.

The Duchy's vision is Sustainable Stewardship – for communities, enterprise and nature.

This vision is supported by five critical success factors:

1. viability;
2. reputation;
3. governance;
4. people; and
5. sustainability.

This report, our first Net Zero Carbon Report, sets out our ambition and our plans to reach net zero by the early 2030s. We report on our greenhouse gas (GHG) emissions, across Scopes 1, 2 and 3, building on previous Integrated Annual Reports, where we have reported operational emissions (Scopes 1 and 2) in previous years.

We have high ambitions, but we are not daunted by the challenge ahead. Through working in partnership with staff, tenants and suppliers, we have a plan to achieve our net zero goal. I hope you find this report informative, and we look forward to reporting on progress periodically and to sharing our learning with others.



Alastair Martin
Secretary and Keeper of the Records
29th June 2022

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The importance of reaching net zero

At the Earth Summit in Rio in 1992, a climate change treaty was adopted by 196 countries stating that “anthropogenic interference with the climate system” would be avoided. Twenty-nine years later, at COP26 in Glasgow, many of those same nations came forward with plans to limit warming by moving their economies to net zero by mid-century.

But those plans may not be enough. The Intergovernmental Panel on Climate Change (IPCC), the United Nations’ scientific advisory body, stated in spring this year that “without immediate and deep emissions reductions across all sectors, limiting global warming to 1.5°C is beyond reach... limiting warming to around 1.5°C requires global GHG emissions to peak before 2025 at the latest, and be reduced by 43% by 2030; at the same time, methane would also need to be reduced by about a third”.

The Duchy of Cornwall recognises that climate change is the challenge of our lifetime and is therefore making a commitment to reach net zero across its varied and diverse portfolio.

On the basis of its own operations, the Duchy has been net zero since 2006. However, when considering our wider footprint and that of our supply chain, the challenge of attaining net zero becomes much greater, but one that we are committed to achieving.

The Duchy has set a goal to become net zero, to halt its contribution to global warming across Scope 1, 2 and 3 emissions sources, by the early 2030s. We have committed to do so with the speed and ambition that we believe the scale of the challenge requires of us. This commitment will only be met if we work positively in partnership with our tenants and suppliers.

“We simply cannot waste any more time. The only limit is our willingness to act, and the time to act is NOW.”

HRH The Prince of Wales, addressing the World Economic Forum in Davos, January 2020, on the climate crisis.

Emissions across the Duchy of Cornwall Estate

Source/sink	tCO _{2e}
SCOPE 1 AND 2 OPERATIONAL EMISSIONS	
Duchy offices and trading enterprises (holiday cottages, nursery, harbour)	46
SCOPE 3 EMISSIONS	
Farming	144,783
Peatland	55,400
Developments and construction	11,323
Commercial property	9,904
Financial investments	8,886
Let residential	3,487
Other	1,031
Total Scope 3	234,814
Nature-based solutions	-26,040
Total net Scopes 1, 2 and 3	208,820



Sustainability at the Duchy of Cornwall

For sustainability, our objective is to conduct our business in accordance with recognised standards of sustainable management that protect the planet.

The Duchy adopted integrated thinking and reporting in 2016. A key facet of this approach is the consideration and reporting of what truly matters to an organisation's stakeholders. In 2019 we refreshed our review of materiality, so as to better understand the issues that have the most significant impact on our ability to create value. We considered how important each issue is in terms of its relevance to stakeholders and how significant they were in terms of the Duchy's economic, environmental and social impacts. The results inform our strategy and governance.

In assessing our top material issues, we started with desk-based research, involving a peer review, media research and an employee survey. We then held materiality workshops with internal and external stakeholders to discuss and refine the findings. The results were reviewed by the Duchy Executive Committee and members of the Finance & Audit Committee.

Further refinements were made. We reported our materiality results to stakeholders and, since March 2019, in our Integrated Annual Reports.

During these stakeholder review sessions, addressing the climate crisis emerged as the most significant of the material issues facing the Duchy. We have, therefore, identified in our Integrated Annual Reports the climate crisis as one of the main external factors affecting value creation.

The climate crisis cannot be addressed in isolation, it is entwined with the equally daunting nature crisis and social justice. In 2021 the Duchy became a signatory to Terra Carta, which recognises this interdependence.

Terra Carta was launched in 2021 by HRH The Prince of Wales, after campaigning for the environment for over 50 years, and serves as the guiding mandate for his Sustainable Markets Initiative (SMI). It offers the basis of a recovery plan that puts nature, people and planet at the heart of global value creation – one that will harness the precious, irreplaceable power of nature combined with the transformative innovation and resources of the private sector.

For the Duchy, this means supporting all the aims of Terra Carta, in particular furthering, and where possible exceeding, the goals and targets outlined in the Paris Climate Agreement, the Sustainable Development Goals and the Convention on Biological Diversity; and supporting the protection and

restoration of a minimum of 30% of biodiversity, on land and below water, by 2030 and 50% by 2050. These targets are designed into our Natural Capital Project and our net zero plan.

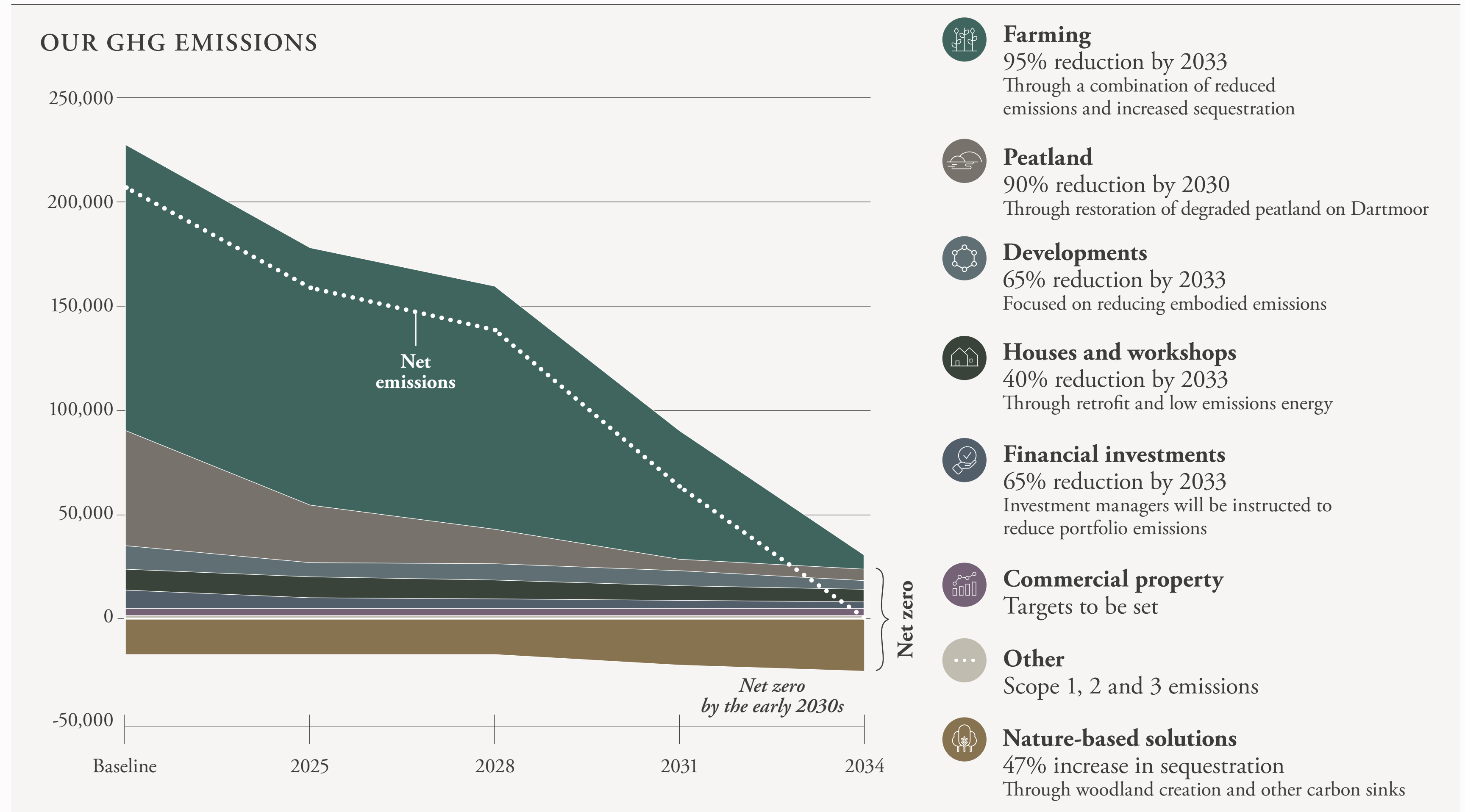


Our net zero carbon ambition

The Duchy of Cornwall’s total GHG emissions (Scopes 1, 2 and 3) amounted to 234,860 tonnes carbon dioxide equivalent (tCO₂e) in 2019, our baseline year (see note 3) (net emissions 208,820 tCO₂e). We have set a goal to become net zero, to halt our contribution to global heating across Scope 1, 2 and 3 emissions, by the early 2030s.

There is no denying our ambition is high: we aim to achieve net zero many years before national and international targets. The only way we will succeed is in partnership with our tenants and our suppliers.

We have developed a Net Zero Carbon Programme, with plans established to reduce emissions and increase sequestration across the estate. These plans have been generated by logically assessing how we will achieve change – what will the Duchy need to do differently to help and support tenants and suppliers reduce their emissions and increase sequestration, what investments are necessary, what additional staff or resources are required, what new skills do we need? These plans are described in more detail in the Looking Forward section.



Progress to date

SCOPES 1 AND 2 SINCE 2006

The Duchy has been calculating and publishing carbon footprint data for operational (Scope 1 and 2) emissions for the last 16 years. Our carbon reporting has developed over the years so that by 2021 the report was designed to meet, inter alia, the requirements of the UK Government's Streamlined Energy and Carbon Reporting (SECR) framework.

We have achieved a 76% decrease in overall Scope 1 and 2 emissions since the baseline year of 1990, with a remaining output of 117 tonnes carbon dioxide equivalent (CO₂e) in 2020/21.

All remaining Scope 1 and 2 emissions are neutralised by specific additional tree planting on the Duchy estate, with carbon credits being externally verified and excess credits being sold to sister organisations. Although the rate of reduction had flattened over recent years, 2020/21 saw a significant drop due to much-reduced levels of business travel and staff commuting during the national lockdowns.

Using 1990 as the baseline year, following typical Kyoto Protocol targets, we met our target of 25% reduction by 2008/09 and a subsequent reduction target of 40% by 2012.

A new target was set to reduce GHG emissions by 60% against baseline by 2020, which was achieved in 2018/19, although in 2019/20 we slipped back slightly. All emissions and energy consumption are within the UK.

All offices and trading businesses purchase only electricity generated from renewable sources backed by Renewable Energy Guarantee of Origin certificates, and purchase only gas backed by Renewable Gas Guarantees of Origin registered through the Green Gas Certification Scheme. The Cornwall and Devon offices have biomass boilers, Hereford has a heat pump

and Bath has a roof-mounted solar PV array. The nature of the buildings, many of which are Listed, often inhibits the implementation of modern energy-efficiency measures.

We have taken various steps to encourage sustainable travel. The Duchy offers a car-leasing scheme for all staff, enabling them to lease electric vehicles via a salary sacrifice scheme and, thus, access government tax incentives. The Duchy does not pay the higher HMRC mileage rate for business travel, so as to encourage more fuel-efficient cars. On the Isles of Scilly and in mainland Cornwall, office pool cars have been replaced with electric vehicles and to date five charging stations have been installed across the estate for staff use. Many staff also successfully used video conferencing when face-to-face meetings and site visits were no longer feasible due to the COVID-19 pandemic. This practice will continue to be used wherever possible, reducing emissions from travel.



Progress to date

SCOPE 3 SINCE 2019

Our commitment to broadening our ambition for GHG emissions reductions to include Scope 3 was agreed in September 2019, following the findings of our refreshed materiality study. A high-level strategy was researched during 2020, which was discussed by the Finance & Audit, Commercial & Development and Rural Committees. The final strategy was then refined and endorsed by The Prince's Council in December 2020. A budget of over £0.7million across the Revenue and Capital accounts was approved for 2020/21. We formed a Net Zero Carbon Task Force and a consultant net zero programme manager was appointed to work with staff teams to design a detailed implementation programme, with the target to achieve net zero by the early 2030s. This programme plan was approved by the Task Force in late 2021.

As promised in last year's Integrated Annual Report, this year we are reporting under the Corporate Value Chain (Scope 3) Accounting & Reporting Standard. This Net Zero Carbon Report has also been informed by the Climate Action 100+ Net Zero Benchmark, The Task Force on Climate-related Financial Disclosures (TCFD), 2022 Corporate Climate Responsibility Monitor, and the UK Government's SECR framework.

Our initial order of magnitude calculations, published in the Integrated Annual Report last year, have been scrutinised and revised. This work was supported by Eunomia Research and Consulting, specialists in GHG inventories. Eunomia reviewed the Duchy's GHG inventory boundaries, advised on data collection required within the Duchy, carried out many of the GHG calculations, and advised on content for the Duchy's GHG reporting.



Looking forward – achieving our ambition

To achieve our net zero ambition, we have identified a wide range of projects and initiatives to make change happen at the pace the planet needs.

These initiatives will be coordinated through a Net Zero Carbon Programme, with resources and investments made where needed, and learning and development woven throughout. This is a significant programme, and will succeed because everyone across the Duchy will be supported in playing their part.

For each of the Duchy’s asset types, we have set short-term emissions reduction goals for 2025 and 2028 on the pathway to net zero by the early 2030s (see page 6). We will record emissions in these years and report on progress.



ENABLING INITIATIVES

- Carbon literacy and engagement
- Nature and climate bonds
- Sustainable procurement guide
- Net zero decision-making
- Resilient Duchy review
- Monitoring and reporting
- Emissions offsets policy



FARMING

- 62% of Duchy emissions
- Future farming engagement toolkit (joined with Natural Capital Project)
- Future farming transition plans and tenancy agreements



PEATLAND

- 24% of Duchy emissions
- Deliver Nature for Climate Fund restoration
- Local peatland restoration industry
- Final peat restoration phase



DEVELOPMENTS

- 5% of Duchy emissions
- Materials guide
- Supply chain engagement
- Sustainable lifestyles and communities
- Innovation research and pilots



FINANCIAL INVESTMENTS

- 4% of Duchy emissions
- Investment manager engagement and review



COMMERCIAL PROPERTY

- 4% of Duchy emissions
- Tenant engagement
- Retrofit and energy efficiency
- Renewable energy
- Data and certification
- Green leases



HOUSES AND WORKSHOPS

- 1% of Duchy emissions
- Duchy refurbishment guide
- Tenant engagement programme
- Refurbishment programme planning
- Supply chain engagement
- Duchy energy services



NATURE-BASED SOLUTIONS

- Neutralises 11% of Duchy emissions
- Tree planting programme
- Woodland management plans
- Marine sequestration enhancement





ENABLING INITIATIVES

The key to succeeding in our net zero ambition is to embed net zero thinking into every action taken by the Duchy every day. We have seven initiatives that, when combined, will help all Duchy staff be part of the Duchy’s net zero success.

CARBON LITERACY AND ENGAGEMENT

Launched end 2021

To bring all staff in the Duchy up to a common level of knowledge around GHG emissions, and to keep everyone engaged, a Duchy-wide learning and engagement programme will be developed. Staff will be supported in making suggestions for innovations and changes that will lead to reduced emissions. A series of more detailed learning modules will be designed for particular professions (e.g. land agents, building surveyors, development project managers, accountants) to ensure we are all equipped with the latest knowledge in our respective fields.

NATURE AND CLIMATE BONDS

Nature bonds ready in 2022, carbon elements ready before 2024

A Duchy-wide investment vehicle to attract private finance into the full suite of natural capital and GHG emissions commodities will be developed. This will span farmland, peat, woodland and potentially development sites, and will seek to create a new revenue stream for the Duchy and tenants. The aim is to have this fully in place by the time the Environmental Land Management scheme (ELMs) rolls out nationally in 2024 to allow income from public and private sources to be aligned.

SUSTAINABLE PROCUREMENT GUIDE

Launch 2022

A guide will be developed to help all purchasing managers factor Scope 3 emissions into their buying decisions. This will incentivise purchasing managers to seek options with lower associated GHG emissions.

NET ZERO DECISION-MAKING

Launch start 2022

An initiative to roll out a trial of a “shadow price of carbon” in decisions in the Duchy, linked to the decision-making framework associated with the Duchy’s critical success factors. This will be trialled initially on capital improvement decisions, then rolled out further.

RESILIENT DUCHY REVIEW

Investigate during 2022

A review of the resilience/adaptation challenges of a 1.5 to 4°C world to identify where the material risks to our business continuity lie. At this time, it will also be more possible to assess which assets will truly be able to become net zero and therefore give an opportunity to consider what a net zero Duchy portfolio could look like, and whether there will be “stranded assets” in the current portfolio.

MONITORING AND REPORTING

Implement first half 2022

An initiative to integrate emissions and sequestration data collection into Duchy systems, and prepare for ongoing monitoring and reporting of the Duchy’s emissions across all scopes. This will enable progress tracking and net zero decision-making.

EMISSIONS OFFSETS POLICY

Launch start 2022

A policy will be produced that guides decisions on how and whether to use offsets across the Duchy. This will address the question of how to neutralise embodied carbon from capital investments (e.g. on development sites, on farms, during refurbishments) as part of an overall plan. Different models of sharing the responsibility between the supplier, the Duchy and tenants/users will be explored.

ENABLING INITIATIVES

CASE STUDY

Carbon Literacy Programme

Carbon Literacy and Engagement is one of the most important enabling initiatives in the Duchy's Net Zero Carbon Programme. It will ensure that everyone, no matter what job they do, can contribute to the Duchy's goal of becoming net zero by the early 2030s. Every action and decision taken by every member of staff will make that goal easier or harder to achieve, so equipping staff with the knowledge and enthusiasm to take action is crucial in achieving a culture change for net zero in the Duchy.

We are adopting a recognised approach to getting teams to act on carbon emissions, the Carbon Literacy Project's (CLP) standard. Over 2,000 companies have engaged their staff with "a day's worth of learning and doing" over the past 10 years to prepare them for taking climate action in their organisations. CLP has worked with companies across all sectors, including the public sector and charities. Over 23,000 people have become carbon literate as a result. The course creates real impact for organisations on their net zero journeys.

All staff, Council and Committee members are being encouraged to take part. Our bespoke programme has been accredited by CLP and began in April 2022. We aim to become a silver standard organisation during 2022 – one that has a substantial proportion of their staff trained (including the organisation's leadership) and where carbon literacy is built into performance management processes. We will then aim for gold and platinum standards.





FARMING

The Duchy's farmed estate is the single largest source of GHG emissions. Reducing emissions in agriculture is very difficult, but there is significant scope for reducing emissions and increasing the amount of carbon sequestered in the soil and nature on farms. By aligning our net zero ambition with the Natural Capital Project, we will focus on two initiatives to achieve net zero in farming.

FUTURE FARMING ENGAGEMENT TOOLKIT

Joined with our Natural Capital Project, soft launch by mid-2022, then ongoing continuous review and improvement

For farmers to make their businesses net zero, they may need help from the Duchy. A range of different supporting tools will be developed to be used on a case-by-case basis with individual farm tenants – such as a continuation of farm carbon audits and reports, offering learning and knowledge-sharing opportunities for tenants in peer-to-peer groups (as an extension of the natural capital focus farms), provision of adviser and training vouchers, support in applying for ELMs and other grants/private finance, risk sharing when tenants adopt new practices, and recognition and awards schemes. Some farmers will be more engaged than others and some will find the journey to net zero easier than others, so there will be no standard approach. A new land use policy (which sets out common ambitions and minimum standards, and aligns with the Terra Carta) will be developed in collaboration with tenants. Connections will be made with farm supply chains and neighbouring farms and clusters to collaborate where there is a common interest.

FUTURE FARMING TRANSITION PLANS AND TENANCY AGREEMENTS

Ready during 2023

With each farm tenant, the potential for a transition to our net zero and natural capital goals will be assessed and analysed alongside farm business resilience to Basic Payment Scheme (BPS) withdrawal. As part of developing a new relationship for future sustainable rent, a new model tenancy agreement or addendum to current tenancy agreements will be explored to bring net zero and natural capital to the fore. The ideas behind the nature and climate bond will be developed and integrated into future agreements, so that “better than net zero” farms benefit from their leading position. The new agreement will be used for newly let farms and farms that see the benefits of making the switch. For tenants that wish to retire or exit the industry or where different farming systems and land uses may be more suitable, their transition will be supported and new tenancy terms may be taken up.



FARMING

CASE STUDY

Farm carbon footprinting

For our 2020 net zero strategy, high-level order of magnitude calculations were made for each let farm on the estate based on area, farming system and an informed estimate of livestock numbers. Emissions conversion factors were supplied by the Farm Carbon Toolkit consultancy.

As we now begin discussions with every farm tenant about their natural capital resources and their farm emissions, a more detailed assessment is possible, and required. Soil scientists seconded from the Farm Carbon Toolkit consultancy are visiting each farm. They work with the farmer to undertake a thorough emissions calculation. Assessments have been completed for 20% of farms to date. Initial results suggest the order of magnitude calculations have been a sound basis for developing our net zero plan.

A typical carbon footprint report and action plan shows the overall carbon balance of the farm, highlighting the emission sources and the opportunity for carbon sequestration across the farm. As well as the carbon report, detailed soil sampling is undertaken to allow for an understanding of the current levels of carbon storage and the potential for additional carbon sequestration to offset emissions.

To the right is an example of the summary carbon footprint from an arable farm on the Duchy estate. The farm grows wheat, oil seed rape, linseed, field barley and potatoes. The significant sources of emissions are the diesel used in the farm vehicles, nitrous oxide emissions from crop residues, and the use of ammonium nitrate and ammonium sulphate inorganic fertilisers. These emissions are partially offset by the sequestration taking place on the farm, mainly from increasing levels of soil organic matter, and with hedgerow and woodland growth.

An action plan is included with each report and discussed with the farmer. Recommendations for this farm include efficiency measures to reduce diesel usage, use of herbal leys to allow for a reduction in inorganic fertilisers, increasing the use of livestock on the farm to break down cover crops, increasing carbon sequestration by building more soil organic matter, increasing the size of woodland and allowing hedgerows to grow out and increase in height. Combined, these measures could create a net zero farming system, bring financial savings and increase biodiversity. The tenant is also investigating organic conversion.

EMISSIONS	tonnes CO ₂ e	%
<i>Fuels</i>	465.62	32.20%
<i>Inputs</i>	454.96	31.46%
<i>Crops</i>	367.62	25.42%
<i>Inventory</i>	73.00	5.05%
<i>Materials</i>	45.75	3.16%
<i>Livestock</i>	38.51	2.66%
<i>Waste</i>	0.59	0.04%
Total	1,446.03	100%

SEQUESTRATION	tonnes CO ₂ e	%
<i>Soil organic matter</i>	-598.71	83.36%
<i>Hedgerows</i>	-53.20	7.41%
<i>Woodland</i>	-38.91	5.42%
<i>Other (e.g. recycling)</i>	-17.14	2.39%
<i>Fields margins (uncultivated)</i>	-10.31	1.43%
Total	-718.26	100%



PEATLAND

Peat on Duchy land on Bodmin Moor and Dartmoor is a huge store of carbon, but after centuries of drainage and damage, the stored carbon is leaking back into the atmosphere, making this the second-largest source of GHG emissions from the Duchy estate. But these emissions can be reduced by restoring and maintaining the peatland in a healthy natural state. We will extend and accelerate successful restoration work through three initiatives.

DELIVER NATURE FOR CLIMATE FUND PEATLAND RESTORATION

Start now, complete by 2024/25

The Duchy has already secured funding with the South West Peatland Partnership from the Nature for Climate Fund, with restoration work started in 2021/22 and completing in 2024/25. This has enabled the rollover of the Dartmoor Commoner's Higher Level Stewardship (HLS) agri-environment scheme.

LOCAL PEATLAND RESTORATION INDUSTRY

Start now, ready for contracts let in early 2022, review in late 2022

An initiative to stimulate and support the local employment and development of local businesses who will become suppliers in the peatland restoration and maintenance industry. From sourcing equipment to securing training opportunities and demonstrating a long-term commitment to using local contractors, the Duchy will generate jobs locally.

FINAL PEAT RESTORATION PHASE

Ready for launch 2024

In preparation for a final phase of peat restoration (after the Nature for Climate Fund work), a project will be planned out to identify sites, engaging with Commoners, the Ministry of Defence and other peat partnership stakeholders, and developing a funding model. This model may be a combination of public money from a future round of the Nature for Climate Fund and ELMs, and nature and climate bonds, and potentially Duchy funds.





CASE STUDY

Dartmoor peatland restoration

Upland peat bog is a globally rare habitat, with the UK hosting 13% of the world's blanket bog. Dartmoor is the largest extent of this habitat in the South West of England, much of it owned by the Duchy of Cornwall. Peat bogs are rich in wildlife and when in a natural wet state safely store millions of tonnes of carbon and ensure an abundant, clean water supply for human use. However, through centuries of draining and cutting, largely for fuel, Dartmoor's peat bogs became degraded. Wildlife, carbon stores and water supplies were put at risk.

Since 2010, the Duchy has been investing in reversing this situation, working in partnership to achieve 400 hectares of peatland restoration by 2021.

This still leaves 1,860 hectares of degraded peatland on the Duchy's land, emitting 55,400 tCO₂e per year (24% of the Duchy's total Scope 3 emissions). In 2021/22, with partners in the South West Peatland Partnership, we were successful in a bid to the UK Government's Nature for Climate Fund, which will enable the restoration of a further 809 hectares by 2025. Within this phase of work, the Duchy will contribute £700,000 as matched funding to the Partnership. The Partnership includes South West Water, Dartmoor National Park, Natural England, the Environment Agency and farming representatives. Much of the restoration will take place on common land and therefore the interests of Commoners are key.

The first restoration site being delivered with this funding is on the former Prison Farm, a 157-hectare Duchy tenanted sheep and cattle farm on the high moor near Princetown. The restoration works involve blocking 337 drainage ditches with peat bunds, peat and wooden blocks. Two-thirds of the area has now been restored, with the remainder to be done in autumn 2022. The restoration area is actively farmed and is under an HLS scheme. We are working closely with our tenants who are interested in the restoration. We are seeking ways in which future land management policy can further help to support both this work and the maintenance and management of restored sites.





DEVELOPMENTS

Duchy developments are high profile and help shape the public's perception of the Duchy, famously integrating HRH's ethos of sustainability and aesthetic. Our ambition for net zero calls for more innovation to create truly net zero developments, from construction, use and eventually to their end of life. We will raise the bar for our developments through four initiatives.

MATERIALS GUIDE

Launch during 2022

Building on existing design guides, this materials guide will be used across Duchy developments (large and small scale) and refurbishments to direct materials and equipment selection that minimises embodied carbon and operational emissions. The guide will set the standard but, given the diverse nature of the buildings portfolio, it will need to be flexible to accommodate specific circumstances.

SUPPLY CHAIN ENGAGEMENT

Ongoing

The common aspiration around sustainability will be further explored with development partners and other suppliers. Using guidance and professional development opportunities from the UK Green Building Council, British Standards/ISO, RIBA, LETI and others, we will support our supply chains in developing their knowledge and skills so that they can innovate and lead the development of lower carbon developments. Development partners will all be expected to demonstrate their credentials and accreditation in this regard, making their own commitments to a credible net zero journey.

SUSTAINABLE LIFESTYLES AND COMMUNITIES

Framework defined during 2022, engagement ongoing

The Duchy produces developments that encourage sustainable lifestyles (beyond low carbon into healthy, biodiverse and socially valuable developments). Current performance against the broad sweep of sustainability objectives will be assessed and, through community engagement, the Duchy will both generate a sense of pride in the well-being that this brings to residents and encourage them to take ownership of sustainability in their lifestyles, leading to further improvements.

INNOVATION RESEARCH AND PILOTS

Underway, with further pilots in 2023

As a specific thread of supply chain engagement, development partners will be encouraged to propose and deliver a rolling programme of pilots, testing new methods and materials that will lead to continuous improvement and a ratcheting up of performance around GHG emissions. The results of these pilots will feed into further development of the materials guide.



DEVELOPMENTS

CASE STUDY

Low Carbon Construction

GHG emissions associated with the construction of new build properties (“embodied carbon”) are an important component of the emissions from buildings. Choice of materials used in construction and emissions associated with construction activities lead to large variations in these embodied carbon emissions. Operational emissions from the use of a building relate to the energy efficiency of the property and primary energy sources used.

The Duchy has a strong track record in developing low emissions properties in both construction and operation. Through local and natural construction material selection, for example local slate, which require minimal energy to manufacture and transport, embodied carbon is kept low. Additionally, in Nansledan, Cornwall, many of the residential properties are built using blocks with a high percentage of recycled aggregate, meaning that they have at least 90% lower embodied carbon compared to a usual block. By focusing on high-quality construction methods, our developer partners ensure that the thermal efficiency of new homes is high, minimising energy consumption in use and thus reducing operational emissions.

The Duchy has defined the boundary of its Scope 3 emissions in developments as emissions up to point of sale of the freehold to a new resident or draw down by the developer (embodied emissions and first-year operational emissions), incorporating an apportionment of site infrastructure embodied carbon. Our baseline emissions are 11,320 tCO₂e in 2020 (5% of the Duchy’s total Scope 3 emissions). Because newly constructed property does not come into Duchy ownership prior to sale, our Scope 3 boundary excludes emissions associated with the use of the building over its lifespan. However, through our common aspiration on sustainability, the Duchy works with development partners to ensure both embodied carbon and operational emissions are minimised beyond regulatory requirements. Whole life emissions for a typical Duchy property type built in Nansledan in our baseline year, assessed over a standard 60-year life, are 1.7 tCO₂e/m². We are currently working with our development partners to develop a whole life carbon reduction pathway to meet our common aspiration on sustainability.

The Duchy takes very seriously the wider sustainability of the communities created. Masterplanning of the developments incorporates objectives to create walkable communities with mixed commercial and residential neighbourhoods and good public transport links. By providing employment opportunities locally, the need to commute or drive to local amenities is minimised. Biodiversity enhancements in and around the edges of development sites are very important. At Nansledan, a former agricultural field at the edge of the development has been converted into an extensive wildflower meadow. This has become a haven for wildlife and a destination for local recreation. This means that people are less likely to travel to an existing neighbouring Special Area of Conservation that could have been damaged by increased public access.



FINANCIAL INVESTMENTS

The Duchy generates income through ownership of company shares and bonds, which are managed by external investment managers. Ensuring that these investments work hard for the Duchy, while not investing in polluting industries, is part of the Duchy's strategy, but our expectations need to remain in step with our net zero ambitions. We will do this through one ongoing initiative.

INVESTMENT MANAGER ENGAGEMENT AND REVIEW

Commence 2022

As part of regular financial portfolio reviews presented by investment managers, performance on Environmental, Social and Governance performance (including GHG emissions) will be monitored and benchmarked.

The Duchy's principal financial investments (valued at £92million at 31st March 2022) are managed by two external fund managers, and overseen by the Finance & Audit Committee. There is an ethical global equity income fund and an ethical high yield bond fund. Both are managed according to the Duchy's ethical investment criteria that prohibit investment in certain sectors such as tobacco, pornography, fossil fuels, armaments, alcohol, gambling and high-interest rate lending.

The baseline emissions from the financial investment portfolio are 7,039 tCO_{2e} per year, around 3.5% of total gross emissions. This data is provided by the fund managers using industry standard approaches.



FINANCIAL INVESTMENTS

CASE STUDY

Ethical global high yield bond fund

Baseline associated emissions, 5,585 tCO_{2e}

Following discussions with our fund managers, the ethical global high yield bond fund in which we were invested has been converted into an ethical climate impact fund, emphasising environmentally sustainable investments.

This change has meant that every investment is scrutinised for its climate impact. The fund receives primacy on allocation of green, sustainable and sustainability-linked bonds. Fund manager engagement with issuers has been increased to influence their decarbonisation

efforts, and regular reporting is provided on carbon emissions data. The focus is on companies with credible decarbonisation plans, sustainability solutions and low carbon intensity. The weighted average carbon intensity is significantly below the average for the broad high yield bond universe.

Our original ethical fund had a carbon intensity 38% below the benchmark and the ethical impact fund has a carbon intensity nearly 70% below the benchmark, so associated emissions will be nearly halved, against an already low baseline for this sector.





COMMERCIAL PROPERTY

The Duchy's large commercial real estate includes diverse property such as retail, offices, hospitality and social infrastructure. This diverse portfolio contributes around 4% Scope 3 emissions and due to the nature of tenancy arrangements, our ability to directly deliver emissions reductions is limited.

TENANT ENGAGEMENT

Start in early 2022

Engagement with tenants will prioritise those with the most significant emissions and the shared desire to achieve net zero, seeking opportunities to influence plans on refurbishment and energy supply contracts.

RETROFIT AND ENERGY EFFICIENCY

Start in 2022

Working with tenants to identify opportunities to implement energy use reduction measures within current existing tenancy agreements and to build retrofit ambitions into future tenancy agreements.

RENEWABLE ENERGY

Review in 2022

As part of a wider review, a study will examine opportunities for renewable energy generation on site, with the goal of supplying property energy requirements and feeding the surplus back to the grid or neighbouring properties. As part of tenant engagement activities, use of renewable energy supplies will be encouraged.

DATA AND CERTIFICATION

Start in 2022

Data sharing between landlord and tenant will enhance the shared ability to understand emissions and opportunities to reduce them. An open dialogue around energy use and emissions data will be encouraged as part of tenant engagement activities.

GREEN LEASES

Explore during 2022

When new leases are negotiated, clauses that build net zero ambitions into tenancy agreements will be proposed to acknowledge the growing interest in net zero goals among occupiers.





HOUSES AND WORKSHOPS

The diverse residential and rural commercial property portfolio comprises hundreds of individual buildings, each with their own tenant. Many of the properties are old and therefore not built to modern standards. So bringing them up to net zero standard will require considerable effort in engaging tenants and refurbishing the fabric of the buildings. We will do this through five initiatives.

DUCHY REFURBISHMENT GUIDE

Ready in 2022

A pan-Duchy guide will be developed that provides a checklist for assessing refurbishment needs and decision-making around what renovations to carry out. It will set the standard, building on existing guides such as LETI's retrofit guide or the Passivhaus EnerPHit guide, and will need to be flexible to accommodate specific circumstances. It will also refer to the Duchy materials guide, as well as indicate where to access grants for retrofits.

TENANT ENGAGEMENT PROGRAMME

Start during 2022

As an extension of the residential tenant survey, tenants will be engaged in dialogue on energy use, fuel poverty, warm homes and carbon emissions. This will support ongoing monitoring of emissions (by asking questions about bills and suppliers), encourage uptake of Duchy energy services (if approved) and facilitate greater acceptance of in-tenancy refurbishment works (if required).

REFURBISHMENT PROGRAMME

Scoped ready for end 2022

A refurbishment programme will be generated, creating a pipeline of refurbishment projects. This programme will be reviewed regularly to take account of changing circumstances.

SUPPLY CHAIN ENGAGEMENT

Start during 2022

An initiative to engage with local refurbishment supply chains to encourage greater adoption of net zero-aligned practices and materials, supporting skills development and therefore preparation for economy-wide retrofit contracts. This could be joined up with existing local initiatives run by local authorities, housing associations and other landlords.

DUCHY ENERGY SERVICES

Investigate during 2022

A project to explore, and roll out if approved, a Duchy energy services approach that will provide carbon neutral energy to Duchy tenants (and potentially others). This may be incorporated into future tenancy agreements for fully refurbished properties.





NATURE-BASED SOLUTIONS

The Duchy's woodlands neutralise around 6% of the combined emissions from the rest of the estate, nature-based solutions on-farm neutralise around 4%, and marine assets neutralise a further 1%. While we need to achieve net zero primarily through reducing GHG emissions close to zero, we know that there will be a need to neutralise what cannot be eliminated. We will increase the capacity of our nature-based solutions to provide greater carbon sequestration.

TREE PLANTING PROGRAMME

Start now, roll out in conjunction with Natural Capital Project

A tree-planting programme will be defined where carbon sequestration, natural capital enhancements, and revenue and capital values will be considered. The programme will include guidance on whether the planting is conducted on existing Duchy land or on newly acquired land, and the species mix (right tree, right place, right purpose). To further increase carbon sequestration, we may purchase existing forests. The programme will make maximum use of the England Woodland Creation Offer (ELMs successor) and the Duchy nature and carbon bond.

WOODLAND MANAGEMENT PLANS

Roll out during 2022 in conjunction with Natural Capital Project

Woodland management plans will be generated for each Duchy block of woodland, making clear who has responsibility for management, as well as rights over the carbon and ecosystem services.

MARINE SEQUESTRATION ENHANCEMENT

Start during 2023

Potential sites for sub- and intertidal sequestration habitat enhancements will be identified with partners. Ongoing partnership working with others, such as through the ReMEDIES project, will continue and this work will be joined up with the Natural Capital Project.





NATURE-BASED SOLUTIONS

CASE STUDY

Marine sequestration

The Duchy owns significant marine and foreshore assets, primarily in river estuaries and the intertidal coast in the South West of England. These areas include a variety of habitat types such as beaches, mudflats, saltmarshes, rocky foreshore and seagrass beds.

Working in partnership with local groups, the Duchy helps enable the positive management of marine and intertidal habitats. Often the most important habitats for nature conservation also have carbon sequestration benefits. Our scientific understanding of the carbon sequestration of these habitats is at a broad and early stage. Research has been relatively limited on UK marine sequestration rates, but scientists are helping us estimate current sequestration rates and identify opportunities to increase the rate at which these habitats soak up carbon from the atmosphere.

The baseline sequestration rate associated with Duchy-owned marine habitats is 2,173 tCO₂e per year (neutralising around 1% of the Duchy's total Scope 3 emissions). Sequestration associated with mudflats is the most significant contributor to this total, partly because it is an extensive habitat type within the Duchy's property. The greatest opportunity for increasing sequestration is through expanding the extent of seagrass, which has a high sequestration rate per hectare.

The multi-partner ReMEDIES project will improve important marine habitats, with target areas around Plymouth, the Fal and Helford Estuary and Isles of Scilly, all areas where the Duchy has intertidal and estuary bed property. The South Hams AONB partnership, supported by the Duchy, is exploring opportunities to improve the conditions to encourage seagrass expansion. These projects will collectively lead to improved natural habitat condition and carbon sequestration.












“Today in 2022, the pressing need to protect and restore our planet has never been more urgent. When humankind focuses its mind, anything is possible. Together, if we harness the very best of humankind and restore our planet, we will protect it for our children, for our grandchildren and for future generations to come.”

HRH Prince William, Duke of Cambridge, speaking at the Platinum Party at the Palace, June 2022

Picture by Victoria Jones/PA Wire/PA Images



Timeline of Duchy climate action

<p>2006</p> <ul style="list-style-type: none"> First emissions calculations undertaken, together with a baseline assessment as at 1990 in line with Kyoto Protocol. First publication of carbon footprint. 	<p>2007</p> <ul style="list-style-type: none"> A biodiesel fuel station is installed at the Duchy office near Bath, and suitable staff cars are running on 100% biodiesel produced locally from secondary use vegetable oils. Seminars and events are held during the year to promote alternative energy amongst Duchy tenants, staff and other interested parties. Amongst other topics, these cover carbon sequestration, biodiesel, anaerobic digestion, wood fuel and the management of peat. A staff cycle to work scheme is introduced. A much more fuel-efficient boat for the St Mary's harbour is purchased, leading to a 19% reduction in emissions from travel. 	<p>2008</p> <ul style="list-style-type: none"> An oil-fired heating system in the Hereford office is replaced with a geothermal system. Land in Somerset is set aside and planted specifically to offset carbon emissions. The Duchy leases an electric drive smart car, as part of Mercedes-Benz UK's corporate trial of these cars. The car is run on renewable electricity and has zero emissions. It is used for journeys on the estates surrounding Bath, and by staff for their commuting. The Duchy's experiences helped with the development of the vehicles. 	<p>2009</p> <ul style="list-style-type: none"> The trial of a biodiesel fuel station at the Bath office is deemed a success and further fuel stations are installed at three other offices. The Duchy part-funds a research project on upland peat bogs and their response to climate change and the bogs' ability to contribute positively to carbon sequestration and water management. The Duchy sponsors an Eco Zone at the annual Bath and West Show. 	<p>2010</p> <ul style="list-style-type: none"> Duchy woodlands sequester annually an estimated 10,575 tonnes of carbon dioxide, over 25 times the annual emissions from the activities under our ownership and direct management. The Duchy works with the Farming and Wildlife Advisory Group with a number of Duchy tenants to undertake farm carbon footprint audits. All Duchy offices now purchase 100% renewable electricity. The new greenhouse and retail areas at the Duchy Nursery at Lostwithiel in Cornwall are heated by a wood pellet boiler. 	<p>2011</p> <ul style="list-style-type: none"> Our carbon footprint has reduced by 25% on the 1990 baseline of 495 tCO₂e, meeting the target to reduce emissions by 25% by 2012 three years early. A new target, to reduce emissions by 40% by 2012, is established. The Duchy's first standalone Carbon Report is produced, in line with a revised formal carbon reporting policy. External assurance is obtained from PricewaterhouseCoopers LLP. A 100kW wood chip boiler is installed to heat the recently developed farmstead at Llwynywermod that is to serve as a base for TRH when in Wales. The buildings incorporate natural high-efficiency sheep's wool insulation. Mini district heating systems with wood chip boilers are installed at newly renovated rural commercial property in Herefordshire and at a Duchy office and holiday let complex in Cornwall. 	<p>2012</p> <ul style="list-style-type: none"> We exceed our 40% target with a 45% reduction in emissions since baseline, a 26% reduction in travel and 60% in property emissions. During the year, a record £6.6million is invested in renewable energy projects and works to reduce emissions. Five major solar PV arrays are commissioned on the roofs of agricultural buildings at a cost of over £1million. These will generate around 325MWh hours of renewable electricity per year. 	<p>2013</p> <ul style="list-style-type: none"> JV Energen LLP, with the Duchy as partner and lead investor, commissions the Rainbarrow Farm anaerobic digestion (AD) plant generating renewable electricity. The biogas from the Duchy AD plant is used not only to generate renewable electricity but is now purified to produce biomethane, which is injected into the local gas distribution network, heating homes and workplaces at the nearby development at Poundbury and across Dorset. The plant produces enough gas for the annual requirements of 3,200 new build houses. The gas spreads through the distribution network to around 4,000 homes in the winter and 56,000 homes in the summer. The plant produces a net carbon saving of around 4,435 tCO₂e emissions a year. The project is the first commercial biomethane to grid plant in the UK. We win the Environmental Impact Award at the 2013 Energy Innovation Awards run by the gas and electricity industry, for creating "a meaningful, lasting legacy on the energy network". And we win the Leadership Award at the British Renewable Energy Association 2013 Awards. The Duchy installs a substantial wood chip boiler system at Highgrove House. Further investment is made in solar PV arrays on farm buildings. 	<p>2014</p> <ul style="list-style-type: none"> A large ground source heat pump system is installed as part of a large barn conversion project, including four boreholes, each over 130 metres deep. 	<p>2015</p> <ul style="list-style-type: none"> 426MWh of renewable electricity is generated from the Duchy's nine major on-farm solar PV installations. A biomass boiler is installed this year at the Duchy-owned Prince of Wales pub in Stoke-sub-Hamdon, Somerset. 	<p>2016</p> <ul style="list-style-type: none"> Scope 1 and 2 emissions now down 56% compared to baseline. The biomethane-to-grid AD plant at Poundbury produces a net saving of over 6,000 tCO₂e compared to burning the same amount of natural (fossil) gas. 
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Timeline of Duchy climate action

2017

- ▶ Having commissioned an audit of natural capital assets in line with the corporate natural capital accounting (CNCA) framework, the Natural Capital Project is launched.
- ▶ Duchy woodlands sequester over 11,000 tonnes of CO₂ per year.



2019

- ▶ During stakeholder review sessions, dealing with the climate crisis emerges as the most significant of the material issues facing the Duchy. The Duchy Executive sets an ambition to be net zero.
- ▶ To date we have installed or facilitated 2,942kW of renewable energy projects, including, this year, our first micro-hydro scheme, on Dartmoor.



2021

- ▶ The Duchy's ethical bond fund is converted into an ethical climate impact fund to support companies with credible decarbonisation plans, sustainability solutions and low carbon intensity. The carbon intensity of the portfolio halves.
- ▶ The Duchy is a signatory to Terra Carta, committing to furthering, and where possible exceeding, the goals and targets outlined in the Paris Climate Agreement, and supporting the protection and restoration of a minimum of 30% of biodiversity by 2030 and 50% by 2050.



2023

- ▶ We invest £1.4million for the Net Zero Carbon Programme and £830k for the Natural Capital Project.
- ▶ Staff Carbon Literacy Programme reaches platinum standard, with over 80% of staff trained.
- ▶ The Duchy's emissions reduction targets are assessed under the Science Based Targets initiative.



2025

- ▶ Along with partners in the South West Peatland Partnership, a project started in 2021, part-funded by the UK Government's Nature for Climate Fund, South West Water and the Duchy, which contributed £700,000, completes the restoration of 809 hectares of damaged peatland, reducing emissions by over 20,000 tCO₂e per year.

2033

- ▶ 75% reduction in emissions from developments, with a focus on reduced embodied emissions.
- ▶ 47% increase in sequestration from woodland and other carbon sinks.

2034

- ▶ 95% reduction in net carbon emissions from farming, through a combination of reduced emissions and increased sequestration.

2018

- ▶ The average gCO₂/km of cars driven by office-based staff has fallen from 167 in 2009/10 to 140.
- ▶ The Duchy is part of Smart Energy Islands, a partnership supported by Hitachi and the European Regional Development Fund that aims to cut electricity bills and increase the proportion of renewable energy of the Isles of Scilly.



2020

- ▶ A major research project assesses how net zero could be achieved. A net zero strategy is endorsed by The Prince's Council.
- ▶ A significant farm in Devon becomes available. New applicants are assessed on their plans to enhance environmental management objectives.

2022

- ▶ A Head of Sustainability is appointed, building on work done in 2021 by our consultant net zero programme manager.
- ▶ Staff Carbon Literacy Programme launches.



2024

- ▶ The net zero team now comprises a Head of Sustainability, a Future Farming Team Lead, a Woodland Creation Officer, a Senior Sustainability Analyst, a Communication and Education Officer, a Net Zero Buildings and Development Officer and other supporting roles.

Early 2030s

- ▶ Duchy estate achieves net zero.

2030

- ▶ 90% reduction in emissions from peatland.

Project governance and risk management

GOVERNANCE STRUCTURE

A Net Zero Task Force was established in January 2021. This is chaired by Ian Marchant, a member of The Prince’s Council and Finance & Audit Committee. Its members are The Secretary, Land Steward, Estate Development Director, Head of Sustainability, Finance Director and Rural Director of Finance. In September 2022, the Task Force will be joined by Emma Howard Boyd CBE, retiring Chair of the Environment Agency, who will act as a critical friend. The Task Force reports to the Finance & Audit Committee and the work of the programme is considered by other Committees as required.

The day-to-day delivery of the programme is the responsibility of an Operational Programme Board. It is chaired by the Rural Director of Finance. Its members are lead staff members for each project and initiative.

RISKS AND CHALLENGES

The main risks to achieving our ambitions are:

- 1 **Degree of control:** by their very nature, Scope 3 emissions are indirect and out of our control. If we cannot engage and persuade the major emitters in our supply chain, there is little we can do.
- 2 **Human resource:** new resource is being recruited, but finding the right people and getting them in soon enough cannot be taken for granted. Failure in this respect will delay early reductions in emissions.
- 3 **Financial cost of future farming transition:** we have committed substantial budgets for this project, but the costs of change to some farming enterprises may be significant. We are designing a toolkit that will be provided to tenant farmers to support them with this transition to net zero. Without government and market support, change could be limited.
- 4 **Increasing sequestration:** our Natural Capital Project, tree-planting programme and other nature-based solutions will increase the rate of sequestration on Duchy land. We recognise that nature-based solutions have risks associated with the permanence of carbon removals.

These risks are actively monitored and managed through the Operational Programme Board and Task Force.

COMMITMENT – TIME AND MONEY

A substantial commitment in human and financial resource has been made. We have recruited new staff to work directly on the programme: a Head of Sustainability, a Future Farming Team Lead, a Senior Sustainability Analyst, a Communication and Education Officer for the future farming project and a Sustainable Built Environment Officer. Other new roles will be recruited within the land agency teams to free up existing staff who know the tenants and properties so well and can be the best agents for change.

We have made a financial commitment of £1.4million for the Net Zero Programme for 2022/23.

Reporting and technical notes

INTRODUCTION: SOURCES OF GREENHOUSE GASES AND OUR REPORTING BOUNDARY

The Duchy of Cornwall is a private estate that provides an income to The Duke of Cornwall. It consists of 53,000 hectares of land across 20 counties predominantly in the South West of England. Most of this comprises let land and farmland, together with areas of high moorland on Dartmoor and in-hand woodland.

The Greenhouse Gas Protocol Corporate Standard separates emissions into three Scopes: Scope 1 emissions are those generated directly by an organisation as a result of fuels consumed in buildings and owned vehicles; Scope 2 emissions are those related to the generation of electricity used by the organisation; and Scope 3 emissions are those generated by the value chain (suppliers, tenants and customers) as they relate to the organisation's goods and services. We have been reporting Scope 1 and 2 emissions since 2006 and are now additionally

reporting on Scope 3 emissions in line with the Greenhouse Gas Protocol issued by the World Resources Institute and World Business Council for Sustainable Development. Our work has been supported by Eunomia Research and Consulting, specialists in GHG inventories. Eunomia reviewed the Duchy's GHG inventory boundaries, advised on data collection required within the Duchy, carried out the GHG calculations and advised on content for the Duchy's GHG reporting. Additional specialist input is described below when considering each category of emissions.

The Corporate Value Chain (Scope 3) Accounting and Reporting Standard sets the principles governing the boundary of responsibility for each organisation setting a Scope 3 baseline. Despite having widely acknowledged and adopted principles, setting such a boundary baseline is often uncertain and judgement is required. To complicate matters further, the Duchy's unique status means that in many instances its assets and activities do not

neatly fit into conventional guidance. Our aim is to be as comprehensive and transparent as possible. We are keen to learn from others and adopt best practice as this develops.

We have taken as our reporting boundary emissions arising from property in our ownership from which an income is or could be derived. There are two areas that are currently out of scope, where we have no influence or control: i) Nothing is included for emissions associated with buildings that belong to the tenant and for which the Duchy only receives a ground rent; ii) Nothing is included for emissions from the activities taking place within or on our property, except for energy used to heat and light buildings, farming activities, and on-site emissions for woodlands and marine assets. From our boundary screening exercise it was apparent that farming is a material part of the emissions within our supply chain, so these are included within our Scope 3 calculations. We have described earlier in this document what we are trying to do to effect change.

In due course we will undertake a further review to consider the possible materiality of activities currently out of scope.

The boundary therefore includes all Scope 1 and 2 emissions from our offices and trading enterprises (a holiday cottage portfolio, the Duchy Nursery at Lostwithiel, Cornwall, St Mary's harbour, and in-hand woodlands operations), and Scope 3 emissions from all let property and investments – farms and other land, residential property, commercial property, financial investments, and mineral and marine assets. Sequestration (mainly from woodland, on-farm nature-based solutions and marine assets) is also assessed.

A baseline year of 2019/20 has generally been adopted (see note 3 on page 34). This has allowed sufficient time to collect data for the baselining work. Currently, the sources and sinks of emissions change only negligibly year on year.

GHG EMISSIONS SUMMARY

tCO ₂ e	2017/18	2018/19	2019/20 (baseline year)	2020/21
Scopes 1 and 2	35	26	46	33
Scope 3			234,814	
Total GHG emissions			234,860	
Sequestration			-26,040	
Net			208,820	

SCOPE 1 AND 2 EMISSIONS FOR DUCHY OFFICES AND TRADING ENTERPRISES

tCO ₂ e	2017/18	2018/19	2019/20 (baseline year)	2020/21
Scope 1 – operations	25	20	32	26
Scope 2 – electricity consumption	10	6	14	7
Total (tCO₂e)	35	26	46	33
Carbon intensity: Scopes 1 and 2 tCO ₂ e per person (full-time equivalent)	0.33	0.24	0.42	0.27
Energy use in properties				
Gas – gross	66	59	60	66
Gas – net	0	0	0	0
Electricity – gross	249	203	195	147
Electricity – net	10	6	14	7
Oil	25	20	32	26
Total – net (tCO₂e)	35	26	46	33
Total (MWh)	1,042	1,125	1,106	1,093

RECONCILIATION TO PREVIOUSLY PUBLISHED CARBON DATA

The Duchy has previously published annual carbon statements covering its operational management and trading activities. This included what are now categorised as Scope 1 and 2 data, and some Scope 3 data, category 6 Business Travel and category 7 Staff Commuting. Note 1 on page 33 reconciles the reporting under the previous and current reporting practices.

OPERATIONAL PROPERTY

The Duchy operates out of eight offices, in London, Bath, Restormel, Princetown (Dartmoor), Herefordshire, St Mary’s (the Isles of Scilly), Nansledan and Poundbury. Also included is property that is temporarily in hand awaiting re-letting or sale, for the period in which it is vacant and our direct responsibility. Trading enterprise properties include the nursery, holiday let cottages and St Mary’s Harbour.

ENERGY USED IN PROPERTIES

GHG emissions reductions are achieved a) for gas, through purchases via the Green Gas Certification Scheme of biomethane credits from the Rainbarrow Farm AD and Biomethane Plant, and b) for electricity, through purchases of renewable electricity generated from renewable sources backed by Renewable Energy Guarantee of Origin Certificates.

MWh data is reported in line with SECR recommendations and includes the MWh of energy from gas, electricity and oil.

SCOPE 3 EMISSIONS

Scope 3 emissions by GHG category	GHG emissions (tCO ₂ e)	GHG emissions (%)
1: Purchased goods and services	3,230	1%
2: Capital goods	11,320	5%
3: Fuel- and energy-related activities (FERA)	22	<1%
4: Upstream transportation and distribution	<i>Out of scope as immaterial</i>	
5: Waste generated in operations	<i>Covered in category 1</i>	
6: Business travel	98	<1%
7: Employee commuting	74	<1%
8: Upstream leased assets	<i>Out of scope as immaterial</i>	
9: Downstream transportation and distribution	<i>Out of scope as immaterial</i>	
10: Processing of sold products	<i>Out of scope as immaterial</i>	
11: Use of sold productions	<i>Out of scope as immaterial</i>	
12: End-of-life treatment of sold products	<i>Out of scope as immaterial</i>	
13: Downstream leased assets	211,184	90%
14: Franchises	<i>Out of scope as immaterial</i>	
15: Investments	8,886	4%
Total	234,814	

Scope 3 emissions by Duchy asset type	GHG emissions (tCO ₂ e)	GHG emissions (%)
Land use and farming	144,783	62%
Peatland	55,400	24%
Construction	11,323	5%
Financial investments	8,886	4%
Rural commercial property	6,580	3%
Residential property	3,487	1%
Urban commercial property	3,324	1%
Trading enterprises	451	<1%
Other rural and marine assets	349	<1%
Duchy operational	231	<1%
Total	234,814	

These emissions are calculated using a market-based approach, excluding biogenic CO₂ emissions. Note 2 on page 33 contains the results calculated using alternative approaches.

Carbon reporting policy

CATEGORY 1: PURCHASED GOODS AND SERVICES

Accounts for 1.4% of Scope 3 GHG emissions. Includes all purchased goods and services associated with buildings owned and operated by the Duchy. To avoid double counting, we have excluded spend on items such as construction and fuel spend where that is covered by separate (more accurate) calculations.

In a typical year the Duchy may trade with over 1,500 suppliers. Two-thirds of spend is with just 50 of these suppliers, consisting of construction, building and property maintenance companies, professional services companies (lawyers, accountants, IT consultants, architects) and county councils.

A spend-based method was used to quantify GHG emissions from purchased goods and services. Firstly, the top 80% of the Duchy's spend was categorised into activity categories (e.g. building repairs, professional services, etc.). Those categories were then matched to relevant Environmentally Extended Input-Output (EEIO) emissions factors. Finally, the total GHG emissions were uplifted to account for the remaining 20% of spend.

CATEGORY 2: CAPITAL GOODS (DEVELOPMENTS)

Accounts for 5% of Scope 3 GHG emissions. Activities related to the construction of new developments in Nansledan and Poundbury are included in this category, along with the emissions from the first year of operational emissions. Both the embodied GHG emissions of buildings materials and the GHG emissions from construction activities themselves are included.

Carbon emissions from the main Duchy new-build developments were calculated by the Development Consultancy team at PRP Architects, using design and build data provided by the Duchy of Cornwall and its development partners, CG Fry & Son Ltd, Wain Homes Ltd and Morrish Homes Ltd. The most up-to-date and trusted software was deployed for the modelling related to embodied carbon (both residential and external works) and operational carbon, such as Tally, 1 click LCA, PHPP and SAP 10.

CATEGORY 3: FUEL- AND ENERGY-RELATED ACTIVITIES (FERA)

Accounts for 0.01% of Scope 3 GHG emissions. Includes GHG emissions associated with the extraction, production and transportation of fuels and energy consumed by the trading enterprises and in-hand operations. GHG emissions were calculated by combining Scope 1 and 2 energy consumption with the relevant transmission and distribution (T&D) and Well-to-Tank (WTT) emission factors from the [Greenhouse gas reporting conversion factors \(2019\)](#) (BEIS/Defra).

CATEGORY 6: BUSINESS TRAVEL

Accounts for 0.04% of Scope 3 GHG emissions. Business travel includes emissions from the Duchy's vehicles, staff-owned vehicles, hire cars, trains, boats, taxis, planes and estate maintenance vehicles. Travel data is obtained from the personal expense claim system and invoicing system, which are retained in the accounts reporting system and consolidated through the carbon reporting processes. The journey details, including distance and/or fuel consumed, are used as the basis for determining emissions.

For a small number of journeys, insufficient data is available from the expense records to confirm the mode of travel and/or distance travelled. However, the cost of these journeys is known, so an estimate for the associated emissions has been included in the total based on the average emissions per GBP of travel from journeys where precise details are known. The distance of taxi journeys is not recorded in the expense records, so emissions have been estimated on an average journey basis. Conversion factors are taken from BEIS/Defra, apart from the factors used for individual car models, which are taken either from the car manufacturers or from the Vehicle Certification Agency.

CATEGORY 7: EMPLOYEE COMMUTING

Accounts for 0.03% of Scope 3 GHG emissions. During the baseline year (2019/20) the average number of full-time equivalent staff employed by the Duchy was 108 (administrative 65, estate workers 12, nursery 24, housekeepers 7), based in our offices and trading enterprise sites.

Most staff in London commute using public transport, while those in the regional offices use private transport. Data is obtained from an annual staff survey. Emissions are calculated based on the distance travelled, mode of transport and each individual’s own estimation of the number of commutes undertaken annually. Where the make and age of any car used are known, specific emissions factors are used. Where these details are not known, the nearest equivalent or a default average value is used. For public transport, annual distances travelled are multiplied by the relevant emissions factors from BEIS/Defra.

CATEGORY 13: DOWNSTREAM LEASED ASSETS

Accounts for 90% of Scope 3 GHG emissions. This category includes the bulk of the Duchy estate that is let to tenants, the farms, land, residential and commercial property, and marine and mineral assets.

The methodologies and data sources used differ by category, as set out below.

Land use and farming

Accounts for 62% of Scope 3 GHG emissions. GHG emissions from all farms owned and let by the Duchy are included. This includes land-based GHG emissions as well as activity-

based GHG emissions (mainly from fertilisers and livestock). Farming GHG emissions were calculated either using farm-specific Farm Carbon Toolkit assessments or, where these have yet to be undertaken, by in-house agricultural experts using primary livestock and land coverage data combined with secondary British Farm Business Survey data.

Peatland

Accounts for 24% of Scope 3 GHG emissions. GHG emissions were calculated by reference to a study of Dartmoor’s peatland extent and condition undertaken in 2016 by the University of Exeter. The condition of the peatland – whether wet, cut, drained or bare – has a significant impact on the associated emissions. In addition to Dartmoor, it is likely that peat soils also exist on Duchy-owned land on Bodmin Moor and the Somerset Levels. These have yet to be assessed. As they form part of let farms, data will be collected when the farm carbon footprint is carried out.

Emissions from buildings and land (residential, urban commercial and rural commercial property)

Accounts for 5% of Scope 3 GHG emissions. For buildings, where primary energy-consumption data was available, emissions were calculated by combining energy data

with the relevant GHG emissions factors from BEIS/Defra. Where primary energy consumption data was not available (for the majority of properties), electricity and natural gas consumption per building was estimated using floor area or EPC code data based on the National Energy Efficiency Data-Framework (NEED) data tables. Where it was more appropriate (e.g. for large or energy-intensive properties), bespoke estimates of energy consumption were calculated. Once energy consumption was calculated, the same method as for primary data was followed to convert into GHG emissions. Emissions from land were calculated by combining hectareage (by land covering type) with the relevant factors from the Carbon Storage and Sequestration by Habitat 2021 report.

Foreshore and riverbed

Accounts for -1% of Scope 3 GHG emissions (i.e. representing a sequestration). Carbon sequestration in the Duchy’s intertidal habitats was calculated by Professor Rick Stafford, Professor of Marine Biology and Conservation at Bournemouth University using data provided by the Duchy and from published sequestration rates in 2021 reports from Natural England and the British Ecological Society.

Trees, woodlands and forest

Accounts for -6% of Scope 3 GHG emissions (i.e. representing a sequestration). Carbon sequestration from woodland was independently calculated by Pryor & Rickett Silviculture using the standards set down in the Woodland Carbon Code.

CATEGORY 15: FINANCIAL INVESTMENTS

Accounts for 4% of Scope 3 GHG emissions. This is composed partly of investments in share and bond portfolios, and partly of the Duchy’s share of an investment in the Rainbarrow Farm AD plant at Poundbury, Dorchester.

GHG category	Duchy investment	GHG emissions (tCO ₂ e)
15: Investments	Ethical Global Equity Index Fund	1,454
	Ethical Global High Yield Bond Fund	5,585
	AD plant operational emissions	1,847
Total		8,886

More information regarding reporting GHG emissions from the Rainbarrow Farm AD plant (a financial investment) is provided below under Renewable Energy Generation.

RENEWABLE ENERGY GENERATION

Our Scope 3 boundary includes the following sources of renewable energy generation:

Solar PV to produce renewable electricity

We have 15 small and medium-scale solar PV installations on the roofs of farm buildings. In the baseline year, 2019/20, these generated 848MWh of renewable electricity, for which the standard Feed-In Tariff was claimed and REGOs were sold. No credit for this generation is included in our Scope 3 calculations.

Anaerobic digestion to produce renewable electricity and biomethane

In 2011 the Duchy invested in a start-up, JV Energen LLP, a partnership that built and runs an AD plant at Rainbarrow Farm, Dorchester. The plant generates renewable electricity and injects biomethane into the local gas distribution network. As we are following an operational control approach (as opposed to a financial control approach), emissions are included within Scope 3, category 15 Financial investments. The Duchy owns 54% of the LLP, so 54% of emissions are included.

The existing data used for the Renewable Heat Incentive and Feed-In Tariff reporting was translated into an organisational GHG Inventory for the plant. This includes the impacts associated with crop cultivation, biogas production and GHG emissions (excluding biogenic emissions) of the biogas during eventual combustion by consumers.

In 2019/20, the baseline year, 3,183MWh of renewable electricity was generated (enough for 1,100 typical households), and 31,998MWh of biomethane was injected (enough for 2,700 typical households).

In line with the Corporate Value Chain (Scope 3) Accounting & Reporting Standard, avoided emissions from displaced fossil natural gas are not included within our organisational boundary. However, it is interesting to note that our calculations suggest that around 6,000 tCO₂e is avoided due to our investment in the Rainbarrow Farm facility (approximately 2.5% of the Duchy's total Scope 3 GHG emissions).

The emissions figure included in Scope 3 for the AD plant excludes biogenic carbon released at the point of combustion because that carbon has recently been sequestered and is part of a short-term carbon cycle.

Hydroelectricity

In 2019 a small-scale hydroelectric scheme was completed at Merrivale Quarry on Dartmoor, using water from a leat constructed hundreds of years ago. This project is still undergoing engineering refinement: in the baseline year it generated 23MWh, but when operating to capacity it should generate around 70MWh per year. No credit for this generation is included in our Scope 3 calculations.

OFFSETTING AND SEQUESTRATION

Sequestration category	Annual sequestration (tCO ₂ e)
Trees, woodland and forest	14,098
Land use and farming	9,212
Foreshore and riverbed	2,173
Rural commercial land lettings	548
Other	9
	26,040

Trees, woodland and forest

The Duchy owns 2,830 hectares of woodland. Third-party silviculture experts have been engaged to assess the sequestration rates of these woodlands using the standard approach set out in the Woodland Carbon Code.

Land use and farming

Some farms have overall negative estimated or assessed emissions. These results are extracted and included in the sequestration figures, rather than being netted off gross emissions from land use and farming.

However, there are some occasions where sequestration and offsetting are included within the Scope 3 figures. On-farm sequestration forms part of the specific farm calculations where these have been undertaken. Such sequestration

typically comes from biomass growth (woodland, trees, hedgerows) and from increasing soil organic matter. The effect of sequestration is calculated by the Farm Carbon Toolkit being used to assess the farm’s net footprint.

Foreshore and riverbed

As discussed above, Bournemouth University was engaged to undertake an estimate of the sequestration of our marine ownership.

Rural commercial land lettings

Some commercial leases include areas of land. Depending on the way this land is being used, net sequestration may be happening. Where this is the case, these results are extracted and included in the sequestration figures, rather than being netted off gross emissions from rural commercial land and buildings.

Scope 1 and 2 emissions offsetting

Since we started calculating Scope 1 and 2 emissions in 2006, offsets have been used to neutralise these emissions. From 2008, externally sourced offsets were replaced with specific tree planting on Duchy land. The costs associated with this planting are capitalised and then amortised each year to offset annual Scope 1 and 2 emissions. The sequestration associated with these plantings was assessed by third-party silviculture experts. Some of these additional offsets have been sold at cost to a sister organisation. None have been sold on the open market.

NOTE 1: RECONCILIATION TO PREVIOUS CARBON REPORTS

The Duchy has previously published annual carbon statements covering its operational management and trading activities. This included what are now categorised as Scope 1 and 2 data, and some Scope 3 data, category 6 Business travel and category 7 Employee commuting. Note 2 below reconciles the reporting under the old and new reporting practices.

tCO ₂ e	2017/18	2018/19	2019/20 (baseline year)	2020/21
Scope 1 – operations	25	20	32	26
Scope 2 – electricity consumption	10	6	14	7
Total – emissions (as reported above)	35	26	46	33
Add back elements now reported under Scope 3:				
Category 6: Business travel	110	97	98	48
Category 7: Employee commuting	72	75	74	35
Total emissions (as previously reported in the carbon statements of Integrated Annual Reports)	218	198	218	117

NOTE 2: ALTERNATIVE CALCULATION METHODOLOGIES

The Scope 3 total provided in each of the tables above is calculated using a market-based approach, excluding biogenic CO₂ emissions (i.e. where combustion of biomass has been measured). The results calculated under each of these methods are as follows:

	GHG emissions (tCO ₂ e)
Market-based emissions only (as reported)	234,814
Location-based	242,648
Including biogenic CO ₂ (market-based)	240,706

NOTE 3: BASELINING

The main time period selected for the baseline year was our financial year 2019/20 (1st April 2019 to 31st March 2020). This year was selected as the most recent full year without the possibility that COVID-19 altered standard operating practices across the portfolio. Nonetheless, due to the availability of data it was not possible to consistently use this time period in all instances, and in these cases data from a year as close to 2019 as possible was sourced. Data from calendar year 2020 was used for developments (properties completed in that year). Data from 2020/21 was used for urban commercial properties (where primary data was provided by tenants) and the AD plant. The woodland and foreshore assessments were conducted based on 2021 habitat extent, whilst were based on the nature of farming activities in 2019, with a small number of more recent assessments included from 2021 (which used a more accurate GHG calculation method). Woodland, foreshore and peatland GHG fluxes are considered a fair representation of a typical year.

NOTE 4: KNOWN GAPS IN DATA AND AREAS OF UNCERTAINTY

All GHG assessments are estimates, with varying levels of uncertainty. Scope 3 GHG assessments, due to the often “arms-length” nature of the GHG sources, commonly have higher levels of uncertainty than Scope 1 and 2 GHG assessments. Part of the GHG calculation process involves minimising uncertainty where possible, taking into consideration the practical constraints associated with achieving higher levels of data granularity. In our calculations uncertainty is introduced as a result of data gaps and uncertainty in emission factors.

Regarding data gaps, we have been able to source primary data for some building energy consumption, some farming inputs and activities, the inputs and outputs of the AD plant, spend by the Duchy on goods and services, and the area of land use for non-agricultural purposes. In instances where primary activity data was not available, estimates have been used from third-party datasets. The main data gaps introducing uncertainty into the results are i) Primary building energy consumption data from properties we are yet to collect data for, and ii) Primary agricultural activity data from farms we are yet to collect data for.

Regarding emission factors, a large source of uncertainty relates to farming activities and other land uses such as peatland and foreshore habitats. These are land uses with complex GHG fluxes that vary over time and are subject to ongoing scientific assessment. While there is enough consensus to include these GHG estimates in our reporting, it is widely understood that emission factors relating to these subjects will continue to evolve. Emission factors relating to spend also introduce uncertainty into the results as these factors are fairly generic economy-wide factors for categories of goods and services.

The emission factors used to calculate GHGs arising from our financial investments also vary in their accuracy, with some based on the activities of individual companies, and others based on estimates for particular sectors.

The Duchy will continue to work on all these areas of uncertainty in its future Scope 3 GHG reporting, using the implementation of decarbonisation activities as a means to fill data gaps and source more accurate and relevant emission factors where these are available.