

Report of Performance and Compliance Co-ordinator

Subject: PCNPA response to Audit Wales - Public Sector Readiness for Net Zero Carbon by 2030 calls for action

Introduction

In July 2022 the Auditor General for Wales published [the Public Sector Readiness for Net Zero Carbon by 2030](#). The report sets out five calls for action for organisations to tackle the common barriers to decarbonisation in the public sector.

The barriers are:

1. Strengthen your leadership and demonstrate your collective responsibility through effective collaboration
2. Clarify your strategic direction and increase your pace of implementation
3. Get to grips with the finances you need
4. Know your skills gaps and increase your capacity
5. Improve data quality and monitoring to support your decision making

The report does not make specific recommendations given the high-level nature of the review. However, it encourages public bodies to consider the messages in this report, and through their internal governance structures, set out publicly how they intend to respond to the calls for action.

This report sets out the Authority's progress to date against these calls for action and future activities that will support it to further deliver against them.

Leadership and Collaboration

The Authority's Senior Management Team and Members have demonstrated their commitment to this agenda through placing Decarbonisation at the heart of PCNPA's new high-level strategy and revised Well-being Objectives. A high-level priority was approved in July 2021 and Well-being Objective solely focused on Climate/ Decarbonisation approved in March 2022. Previously Climate/ Decarbonisation issues were captured under other Well-being Objectives.

High Level Priority	Impacts
Climate – Destination: Net Zero	We're an Authority aiming for net zero and a carbon neutral National Park

Well-being Objective	Outcomes
Climate – To achieve a carbon neutral Authority by 2030 and support the Park to achieve carbon neutrality and adapt to the impact of climate change.	<ul style="list-style-type: none"> • PCNPA to be a carbon neutral Authority by 2030. • PCNPA has supported the Park on its pathway to becoming carbon neutral as near as possible to 2040. • The National Park is made more resilient to the impacts of climate change by working with partners and supporting work led by the Public Services Board. • Engagement activities with staff and wider public have led to behaviour change.

In developing the Authority’s new high-level priorities and Well-being Objectives there was a recognition of the need to consider the interconnectedness of climate and decarbonisation activities with Nature Recovery. This recognition has already played out in practice with officers developing [Tree and Woodland Guidance](#) which is being prepared for public consultation.

To strengthen accountability and leadership in this area through the Authority’s restructure the Authority will now have a Director of Placemaking, Decarbonisation and Engagement and a Head of Decarbonisation.

As the Authority moves forward it will need to ensure governance mechanisms are in place to support its decarbonisation ambitions and priorities. It has started this work through trialling incorporation of decarbonisation and climate impacts in integrated assessments. However, there are further opportunities to look at how to consider climate and decarbonisation impacts as part of the decision-making process and business planning activities. These activities will be led by the new Head of Decarbonisation when in post.

Members have also identified the need to review the Authority’s risk register in terms of enhancing focus on decarbonisation and climate adaptation risks and responses. This work will be carried forward as part of wider work being done on assessing the Authority’s risk appetite.

The Authority also took the decision to refocus its Sustainable Development Fund (SDF) in June 2020. The fund now supports community led projects that contribute towards a reduction in carbon and help respond to climate emergency. Eligible community led projects can access the fund for the following:

- a) Install renewable energy generation facilities to a community building i.e. solar panels
- b) An initiative to promote reduction in carbon emissions in transport i.e. installing an electric charging point for bikes or cars or by supporting access to non-individual travel

- c) Install a community facility that minimises waste, i.e. water fountain
- d) Any other community-based carbon reduction initiative

The Authority has continued to engage with collaborative opportunities to support a collective response to the challenge. Examples include:

- Authority Chief Executive sitting on WLGA Climate Strategy Panel (formerly Decarbonisation Panel.) This Panel has carried out a number of deep dives into priority areas for action under the Welsh Government's [Route Map for Decarbonisation across the Welsh Public Sector](#).
- PCNPA's Buildings Officer sits on the WLGA Climate Change Officers Meetings
- Officers have participated in Pembrokeshire Public Services Boards development of a [Climate Adaptation Strategy](#).
- The Authority has worked in collaboration with Pembrokeshire County Council on delivering a network of fast and rapid EV charging points across the Park and wider Pembrokeshire.
- Worked with other National Parks and AONBs in Wales on 2 collaborative projects - Designated Landscape Baseline Study (Small Worlds) and Designated Landscape Carbon Action Plan (Aquatera).
- Working with local communities through SDF to fund community decarbonisation projects.
- Authority participated in Welsh Government Energy Service Behaviour Change Project with staff participating in travel/ commuting survey and attending workshop.
- The Authority has joined with other planning authorities in South-West Wales to commission consultants to undertake a Regional Strategic Flood Consequence Assessment for the region.
- The Authority is currently tendering for work to develop a strategy to deal with congestion in hot spots in the National Park.

Strategic Direction

The Authority has in place a Responding to Climate Change Emergency (National Park Management Plan) Action Plan that was approved by Members in June 2020. Key developments and achievements under this plan are highlighted in Appendix 1.

This plan will be superseded by the creation of the Decarbonisation Delivery Plan and Climate Adaptation Plan, which will support delivery against outcomes under PCNPA's new Climate Well-being Objective. The aim is that the Head of Decarbonisation will play a central role in ensuring delivery of this plan to increase and maintain pace.

The Decarbonisation Delivery Plan will be informed by Authority's 2021/22 Net Zero submission and cross year data analysis (set out in Appendix 2) and areas of focus

identified within the report from Aquatera as part of the Designated Landscape Carbon Action Plan project.

The Authority has put in place under the new structure a new Decarbonisation team, which will include buildings, estates, IT and the appointment of a Decarbonisation officer. This will help ensure central Authority functions are supported to enhance our decarbonisation offer and practices.

However, it is recognised that decarbonisation activities must not be seen as being the responsibility solely of one department or team. Cross team collaboration will be central, with the Decarbonisation team playing a role in helping to facilitate and drive this collaboration.

The Authority's Local Development Plan 2 clearly sets out its local planning policy commitments to decarbonisation and supporting mitigation actions in terms of climate adaptation through Section C. Climate Change, Sustainable Design, Flooding and Sustainable Energy. With the inclusion of policies on the following areas:

- Policy 29 Sustainable Design (Strategy Policy) with supporting guidance
- Policy 30 Amenity
- Policy 31 Minimising Waste
- Policy 32 Surface Water Drainage
- Policy 33 Renewable Energy and Low Carbon Energy with supporting guidance
- Policy 34 Flooding and Coastal Inundation (Strategy Policy)
- Policy 35 Development in the Coastal Management Area
- Policy 36 Relocation of existing permanent dwellings affected by coastal change
- Policy 37 Relocation and replacement of development (other than residential) affected by coastal change

Finance

The Authority has put in place earmarked reserves for Decarbonisation activities. Its budgets will be realigned to take account of the restructure and formation of Decarbonisation Team.

The Authority has used Sustainable Landscapes Sustainable Places funding and other external funding to increase its ambition and reach in terms of decarbonisation including

- Network of EV charging points across Park and Pembrokeshire
- Decarbonising its fleet
- Greening Agriculture
- Purchasing of land at Trefin for Carbon sequestration purposes

- Funding community decarbonisation projects through SDF fund
- Upgrading IT infrastructure and equipment to support remote working and meetings.

The Authority has secured funding for three year SLSP projects, all of which will help support delivery of activities that promote decarbonisation or climate adaptation activities

- Wild Coast net zero nature trail and coast path resilience (Nature Recovery) - £676,000
- Sustainable Tourism Pembrokeshire (Sustainable Tourism) - £879,000
- National Park Decarbonisation - Including community & agriculture decarbonisation (Decarbonisation) - £945,000

As previously mentioned, the Authority also refocused its SDF fund to focus on funding community decarbonisation projects.

A key part of the Head of Decarbonisation role will be to identify and support the securing of funding for future decarbonisation related projects.

Skills Gaps and Increasing Capacity

As part of the identification of new priority and Well-being Objective focused on Climate/ Decarbonisation it was recognised that the Authority had a skills and capacity gap. The Authority has sought to address this through the creation of Head of Decarbonisation and Decarbonisation Officer role as part of the restructure.

However, there are also great opportunities to nurture decarbonisation and carbon literacy skills of staff across all departments and roles in the Authority. Examples of this in practice to date include:

- Building on previous emission collection work, staff involved in net zero emission reporting have through reading guidance, participating in Welsh Government workshops and practical application gained increased knowledge of emission reporting, methodology and analysis of data.
- Staff have been involved in CEIC (Circular Economy Innovation Communities) programme, including Discovery Education Ranger and Visitor Services Manager West.
- Staff across departments have attended WLGA masterclass sessions on a range of areas relating to Public Sector Decarbonisation Routemap.
- Staff have been developing connections with others, with meetings held with WRAP and NRW staff involved in the Carbon Positive Project.

It's also important that the Authority invests in external expertise or insight when needed. Examples in practice include:

- Reports commissioned and received on UKCP18 Climate Change predictions and implications for future management and adaptation at our Freshwater East and Carew sites

- Capital budget for 2022/23 includes funding for commissioning a detailed survey of our buildings and a report detailing the planned refurbishments and renewals to ensure our buildings contribute to meeting our Net zero objectives.

It is expected that this will be an area that will be further explored as part of wider organisational change and creation of delivery plans and training plans. It is important that training needs of Members and volunteers alongside staff are considered as part of this process going forwards.

Data

Prior to Welsh Government introducing its Net Zero reporting methodology, the Authority had an existing carbon emission reporting methodology in place. This meant that in areas such as energy use the Authority already had strong data collection processes in place.

In May 2021, the Welsh Government published the Welsh Public Sector Net Zero Reporting Guide, which aimed to be a universal guide as a set of instructions for use by Welsh public bodies to estimate baseline emissions. The Authority submitted emission figures under this guide and template for 2019/20 and 2020/21. A new [updated guide and improved template](#) was issued by Welsh Government in June 2022/23 for 2021/22 submission. Data submitted is aggregated by Welsh Government at a public sector wide level, with Welsh Government reporting on public sector wide data.

For 2021/22 template the submission deadline was the 9 of September 2022 and PCNPA Officers submitted in advance of the deadline.

To support co-ordination and collation of data an internal net zero data collectors group is in place made up of relevant officers from across teams. A specific Microsoft Teams channel was set up and utilised to enable staff from different departments to work on the same spreadsheet.

Improved recording meant the Authority was able to record data on fuel consumption for equipment in its 2021/22 submission. It also carried out Travel Commuting survey which enabled it to submit data for new areas within 2021/22 submission on commuting and homeworking.

Further work is ongoing to explore improving collation and recording of waste data to enable recording against waste tab instead of via supply chain. This will support Authority in analysing waste generation and disposal activities against its operations. Officers are exploring the potential for the Authority to adopt more accurate Tier 2 methodology for Land Use and some high emission areas within Supply Chain (Manufacturing, Construction, Agricultural Products and Agriculture, forestry, and fishing supply).

Submission data was modelled for cross year analysis and report provided to Leadership Team on 4th October 2022. The core content from this report is captured in Appendix 2 – PCNPA Carbon Emission 2021/22 and cross year analysis (please note this is based on submitted figures that haven't been reviewed by Welsh Government).

Hand over process for Net Zero reporting has been discussed because of the impact of the restructure. The Performance and Compliance Co-ordinator will continue to support collation and facilitation activities for 2022/23 submission as part of handover process. Collation and submission for 2023/24 onwards will be led by the Decarbonisation Team.

The Authority has also utilised external expertise in terms of data analysis through the Designated Landscape Baseline Study (Small Worlds) and Designated Landscape Carbon Action Plan (Aquaterra).

Risks

The Authority does not achieve its ambitions relating to Net Zero for the Authority and Park, with associated impacts on Welsh Carbon emissions and reputational risks.

Wider global factors particularly relating to supply chains can impact on timescales for decarbonisation projects. For example, delivery of Authority's electric vans have been impacted by worldwide chip shortage which disrupted manufacturing.

Compliance

Authority needs to comply with Welsh Government Net Zero reporting framework including reporting on actions it has carried out to reduce emissions.

Equality/ Socio- Economic Duty

The Authority needs to ensure that its decarbonisation activities align with Public Sector Equality Duty and Socio-Economic Duty. Including assessing impacts and putting in place mitigations if needed when new working practices, behaviour change activities, technology or infrastructure are put in place as part of decarbonisation initiatives.

Biodiversity/ Sustainability Implications

In developing the Authority's new high-level priorities and Well-being Objectives there was a recognition of the need to consider the interconnectedness of climate and decarbonisation activities with Nature Recovery. This recognition has already played out in practice with officers developing Tree and Woodland Guidance.

Decarbonisation activities, including those relating to behaviour changes should support wider implementation of Section 6 Biodiversity duty.

Welsh Language

The Authority will need to ensure any decarbonisation activities and projects comply with Welsh Language Standards.

Recommendation

Members are asked to Note and Comment on Report.

(For further information, please contact Mair Thomas, Performance and Compliance Co-ordinator)

Appendix 1 – Progress Update against PCNPA Responding to Climate Change
Emergency Action Plan

Appendix 2 - PCNPA Carbon Emission 2021/22 and cross year analysis

Appendix 1 – Progress Update against PCNPA Responding to Climate Change Emergency Action Plan

Monitoring

- a) We are monitoring progress and ensuring interventions can be put in place where needed.

Net Zero Reporting to Welsh Government

- Authority has aligned its data recording with Welsh Government Net Zero reporting emissions. It has submitted data for 2019/20, 2020/21 and 2021/22.
- Net Zero Data Collectors Group in place involving relevant officers across Authority and using Teams to facilitate collaborative working.
- Further work is ongoing to explore improving collation and recording of waste data to enable recording against waste tab instead of via supply chain. This will support Authority in analysing waste generation and disposal activities against its operations.
- Improved recording has meant Authority has been able to record data on fuel consumption for 2021/22 in terms of equipment. It also carried out Travel Commuting survey which enabled it to submit data for new areas within 2021/22 submission on commuting and homeworking.
- Officers exploring the potential for the Authority to adopt more accurate Tier 2 methodology for Land Use and some areas within Supply Chain.
- Submission data modelled for cross year analysis and report provided to Leadership Team.

Centres – Green Key Awards and Other Activities

- Annual application/ renewal process in place, with Castell Henllys, Carew and Oriol y Parc all continuing to achieve Green Key Award.
- Range of activities undertaken at Castell Henllys include:
 - Reducing plastic stock, introducing eco-friendly stock as well as books about climate change and sustainability and sourcing more local produce to reduce carbon emissions of transporting products
 - Hosting Sustainable Living Day
 - Hosting zero waste events using natural materials
 - Planting of willow trees on site, which have been incorporated into Domes.
- Range of activities undertaken at Carew Castle and Mill include
 - Planting of approx 400 new native and pollinator friendly trees at the site
 - Carew has been awarded a small grant for trees, plants, seeds, planters to spend before February 2023 to further increase biodiversity of the site.
- Range of activities that have been undertaken at Oriol Y Parc include:
 - OYP have become a Keep Wales Tidy litter picking hub
 - Worked with Local group Eco Dewi to arrange a range of events as part of St Davids Peninsula Great Big Green weekend

- The retail coordinator has been working to reduce single use plastic in the centre and has managed to change the way in which some suppliers package their products to us. A new supplier has been found to provide plastic free bubble wrap and parcel tape for the centre, which is used to wrap delicate items when sold.
 - Prizes for children's summer-fun trail were completely plastic free.
 - The site has now changed to a plastic free toilet paper in the staff area.
- b) We are assessing carbon impact when developing projects or making decisions.
- Integrated assessments have been piloted, with carbon impact considered as part of the assessments. The Performance and Compliance Co-ordinator will review carbon impact aspect of assessments with Head of Decarbonisation once in post, including taking account of wider developments and tools.
 - Decarbonisation projects have been submitted and have been successful in terms of Sustainable Landscapes and Sustainable Places funding.

Transport and Equipment

- a) We are reducing Authority transport and equipment related emissions.

Greening the Fleet

- As of the end of 2021/22, 28% of the fleet was hybrid/ electric, this compares to 10% in 2020/21 and 5% in 2019/20.
- 74% of emissions relating to fleet and equipment came from Authority's Diesel Vans in 2021/22. 2 electric vans were delivered to PCNPA in January 2022 and were in use from February 2022. A further 3 were delivered in October 2022, a further 3 are expected before end of year and 5 more due in 2023. Delays have been experienced due to impact of worldwide chip shortage causing disruption to the manufacturing of electric vehicles.

Promoting Sustainable Travel and Digital Communication Options

- Travel Policy amended to support sustainable and active travel options for staff. Development of wider initiatives continued to be on hold due to the impact of Covid 19 on staff travel. However, staff and Members have become more familiar with virtual meetings because of home working/ travel restrictions which could have positive impacts on this area in the future.
- Staff Travel Commuting survey carried out for 2021/22 with 61 responses. Data from this survey may be useful when looking at developing future initiatives.
- Home working and Hybrid Working Policy agreed at the February NPA 2022. Following this a process for staff to submit flexible working requests was initiated. Requests will be reviewed against Authority service and delivery needs.
- IT have procured equipment including laptops that support staff being able to join video meetings and work from home. Improved VC facilities in place at

Llanion and OYP. Authority agreed to move to Microsoft 365, this move should support remote working and collaboration.

Greening our Equipment

- A demonstration event of electric powered tools and machinery was held at Castell Henllys for the Countryside Management Team. Unfortunately, not all the equipment available was durable enough for some of PCNPA's use. However, PCNPA has invested in a new battery powered mower for Castell Henllys and electric grounds maintenance equipment for Oriel y Parc to replace the petrol equipment used previously.
- b) We are promoting and supporting sustainable transport and active travel opportunities in the Park.

Network of Electric Vehicle Charging Points

- Completion of phase 1 EV charging points, which all became operational in April 2021 (Located at Brewery Meadow Car Park, Oriel y Parc Car Park, Porthgain Hoppers parking areas and Broad Haven Car Park).
- A prioritised list of PCNPA car parks/ site for EV charging points was created and this informed the sites chosen for next phase.
- Further phases were merged following successful funding bids to Welsh Government securing Sustainable, Landscapes, Sustainable Places and Green Recovery funding. These phases saw the installation of electric vehicle charging in all charging car parks, visitor centres and depots plus strategically key sites within PCC ownership. Rapid charger locations have been chosen to be visitor destination "hubs" and are positioned close to the trunk road network and major ferry terminals in Pembrokeshire. The same charging units as PCC have been installed to ensure a coordinated approach and seamless delivery across the county. Delays were experienced at some sites in terms of Western Power Distribution, Legal Agreements and global manufacturing shortage of charging unit components. In October 2023 installation of EV Charging network was fully complete, with some "back office", operational and reporting issues to resolve prior to completion sign off.
- Monitoring data for PCNPA sites only shows that there were 4,171 charging incidents between April – September 2022 (Excluding 0 KWh charge incidents).

Greenways Partnership – Coastal Buses

- Authority has continued to provide financial contribution to Coastal Bus Service through Greenways Partnership. Data for 2020/21 shows that the coastal bus service was still in the process of recovery from impact of Covid 19. All services saw an increase on 2020/21, however numbers had not returned to 2019/20 figures. The total number of passengers for 2021/22 was

46,752. This compares to 8,549 in 2020/21 and 76,107 in 2019/20.

Promoting Sustainable Transport and Active Transport in the Park

- Information included in Coast to Coast on getting around Pembrokeshire using public transport, with information on coastal buses, fflecsi service and TrawsCymru.
- SLSP funding secured to undertake review of transport issues across the National Park.
- Supported Walking activities saw positive recovery from impact of Covid 19 on delivery in 2020/21. 71 Walkability sessions were delivered in 2021/22 compared to 16 in 2020/21. Under Walkability PCNPA also piloted a new programme of Wild Well-being Wanderer Walks in 2021/22. These walks are aimed at supporting those at risk of isolation and giving people of all abilities, including wheelchair users the skills and confidence to enjoy the National Park. In terms of West Wales Walking for Well-being the easing of Covid 19 regulations enabled the project to expand the number of walking opportunities available through its programme. The project reported an increase in referrals from Community Connectors and some GP practices as the number of walks on offer increased.

Energy and Buildings

- a) We are reducing our energy consumption from Authority Sites and producing renewable energy where feasible on our estate.

Greening our Buildings

- Officers met with representatives from Welsh Government about the Re: Fit Scheme early in 2021/22 to assess its suitability. Unfortunately, use of the scheme is not feasible for the Authority. Instead, the Authority will commission in 2022/23 a detailed buildings feasibility study, taking onboard recommendations from Aquatera report. This will set out the programme of work for buildings to meet net zero targets and the costs to achieve this.

PV Generation

- PCNPA identified two potential Authority sites for Photovoltaic installation one at Cilrhedyn Woodland Centre the other in the top field at Castell Henllys. However, following feasibility desk top study Cilrhedyn Woodland Centre was identified as the site suitable for installation. Following receipt of consultant report, Leadership Team approved a revised proposal. Installation has been included in the Capital budget for 2022/23. Consultants have been appointed, tender documents prepared and ready for tender. The project is expected to be tendered before end of 2022 with work commencing in March 2023.

- b) We are contributing through planning permissions to targets on Renewable Electricity and Heat set out in the Local Development Plan (2).
- Renewable Energy, Sustainable Design and Development Supplementary Planning Guidance adopted 5/5/21.
 - Local Development Plan Monitoring Report 2021/22
 - Renewable energy capacity of renewable energy schemes permitted and completed - Planning Permissions to contribute to an overall renewable Heat Target for the National Park of 9.8 GWh. Performance 2021/22: 0.46 GWh from 5 permissions granted since 2016 (base date of Renewable Energy Assessment Update.) There has been a small increase in capacity because of relatively small scale, domestic installations permitted. Renewable Energy from micro household renewable schemes and small scale non domestic schemes generally benefit from Permitted Development Rights and therefore are not included in the overall Heat generation capacity.
 - Renewable energy capacity of renewable energy schemes permitted and completed - Planning Permissions to contribute to an overall Renewable Electricity Target for the National Park of 38.9 GWh. 2021/22: 0.035 GWh from 9 permissions granted since 2016 (base date of the Renewable Energy Assessment Update.) There has been a small increase in capacity because of relatively small scale, domestic installations permitted. Renewable Energy from micro household renewable schemes and small scale non domestic schemes generally benefit from Permitted Development Rights and therefore are not included in the overall Electricity generation capacity.

Procurement and Waste

- a) We are minimising emissions, environmental impact and waste through our procurement practices.

Procurement

- Analysis of 2021/22 supply chain data as part of Welsh Government Net Zero Reporting shows that Manufacturing (39%), Construction (30%) and Agriculture, forestry and fishing (24%) supply chain groups are our highest emitters (tied to spend methodology) – combined they amount to 93% of supply chain emissions. As a result, it is recommended that the Head of Decarbonisation explores if the Authority can develop a more detailed Tier 2 methodology for each of these supply chain groups (Manufacturing, Construction, Agriculture, forestry and fishing.) It is also recommended that they consider doing a deep dive review for these three areas to assess and ensure we are following best practice and looking for/ can evidence we are maximising sustainable/ low carbon options in these procurement areas.

- Meeting held with WRAP and with NRW to find out more about their approach in terms of carbon positive project.

Digital Communication – Reducing Paper Waste

- Potential for Microsoft 365 and in-built functionality of Microsoft Teams to be used to deliver functionality available within Digital Board Meeting package to help reduce printing of paper for Members.
- Range of IT equipment has been procured for teams in response to COVID 19.

b) Reducing waste produced by staff, Authority operations and at centres.

Waste Monitoring and Initiatives

- Staff from Net Zero data collector group are exploring how to improve waste data collected to support moving from supply chain to more accurate waste tab reporting. Information gathering activity initiated with questionnaire sent to site managers in September 2022 to begin this process. Improved data collection and analysis should support development of initiatives to reduce waste across sites.
- Centres have been carrying out a range of activities to reduce plastic sold in their shops and reduce waste relating to events they host.
- Staff have been involved in CEIC (Circular Economy Innovation Communities) programme, including Discovery Education Ranger and Visitor Services Manager West.

Contributing to Refill Nation

- Water refill stations now active (after delay following installation due to COVID 19.) Water refill stations available outside public toilet facilities at Amroth (West), Broad Haven Car Park (Milmoor Way), Freshwater East, Porthclais, Pwllgwaelod, St Brides, Nolton Haven, Abercastle.

Biodiversity – Land and Water Management Activities

a) We are supporting biodiversity and conservation projects and schemes that also enhance and protect Carbon Sequestration and Stores in the Park.

- Conserving the Park: Additional Conservation Officer appointed in 2019/20. 1 additional formal management agreement in 2021/22 as management agreement budget was at full capacity. This reflects that there was insufficient budget to take on new management agreements in addition to those already in place. However, the Authority has been able to take on 49 new sites (256.01 ha) in terms of working with owners for conservation outside formal management agreements. This is a significant number of additional sites compared to previous years.

- Traditional Boundaries: At end of 2021/22 3,678 metres of traditional boundaries had been restored since pilot scheme launched.
- Commons Resilience: Purchase and deployment of NoFence collars for herds of cattle so that they can graze unfenced commons around Mynachlogddu. This should reduce the need for mechanical clearance and will help to stop the peat drying out through scrub encroachment. In October 2021 2km of fencing was repaired/ replaced on the Preseli Commons Northern side helping to manage appropriate grazing and maintaining Bio Security of bordering farms. Peatland Restoration work was carried out through grant from NRW linked to national Peatland Action programme. Activities focused on clearing scrub and getting infrastructure in place to allow grazing to be reintroduced. Scrub was cleared from Wern Common ready for boundary fencing to be put in place. At Cwm Dewi, 1.12 Ha Rhododendron was treated with herbicide. At Rhos Hescwm, 0.48 Ha scrub, rank Molinia and regenerating trees have been cleared and the site in May 2022 reported Twayblade orchids growing again for the first time in 30 years. At Rhydiau, 1165m of scrub has been cleared and fencing put up so that grazing can be introduced for the first time in nearly 20 years.
- Greening Agriculture - Pilot initiated with 4 farms. Two of our pilot farms have completed their solar works and a Site meeting has been arranged to visit both businesses. Funding has been granted for phase 2 of the pilot and a planning meeting has taken place.
- Authority acquired the Grapley End Fields (Trefin) site in 2020/21 for carbon sequestration and nature recovery purposes using Sustainable Places, Sustainable Landscapes funding. During 2021/22 a conservation site plan and work programme was in development. The draft plan was shared with the local community during community walks at the site led by PCNPA Ranger, with positive feedback on the proposed plans. Site meetings were held with Warden team to look at infrastructure and fencing in order to develop a costed plan. Work commenced on infrastructure work at the site including fencing and volunteers participated in planting new hedgerows on the site.
- The Authority secured funding from Sustainable Landscapes, Sustainable Places to purchase an area of land for creation of community woodland. Purchase of an area of land is continuing, final negotiations were concluded during August and its currently with solicitors.
- Further opportunities linked to carbon sequestration are likely to be identified through the SLSP funded Wild Coast, Wild Park Nature Recovery (Wild Coast net zero nature trail and coast path resilience.)
- A Tree and Woodland (supplementary planning) Guidance has been drafted and is being prepared for consultation.
- Paths, Plants and Pollinators Pilot Project - Activities during 2021/22 included: Contractors clearing wind tunnels to widen paths and provide more habitat opportunities for wildlife. Seeding using native hay meadow mix at Broad Haven car park and two car parks in the Gwaun Valley. Supporting implementation of pollinator- friendly management plans at Oriol y Parc, Porthgain Village, Grapley fields (Trefin) and St Davids Airfield. Supporting

Wardens in the West to implement changes to cutting regime. Pollinator Warden site visit with North Warden Team at Goodhope to discuss and provide guidance on how/ where/ why to do jobs along the north coast in advance of the 2022/23 cutting season. Pollinator jobs for warden team and rangers are distributed and recorded on the ArcGis Workforce App developed as part of the digital park project. It recorded in 2021/22, the completion of: 12 ant hill jobs, 15 bee bank jobs, 36 bracken, vegetation control and scrub clearance jobs, 1 dead wood, 2 hay meadow and 1 hedge laying jobs, 8 opening wet areas jobs, 30 scallop edges jobs ,5 other jobs, including alternative cutting arrangements

- Stitch in Time - Invasive species work continued through Stitch in Time, including working with contractors and volunteers at sites. A project toolkit was created.
- Marine Sequestration Opportunities - Seagrass is included within the Natur am Byth! project which is allowing the SAC Officer paid time to continue working on the Dale restoration trial. Potential that additional opportunities in the Marine may be identified through the SLSP funded Wild Coast, Wild Park Nature Recovery (Wild Coast net zero nature trail and coast path resilience.)
- Continued involvement with Pembrokeshire Grazing Network, Pembrokeshire Wildfire Group and delivery of Achub Birth y Gors and Dawnsio ar y Dibyn SMS funded coastal project.

Community Engagement and Innovation

- a) We are collaborating with Communities and supporting innovation to develop responses to the Climate Change Emergency.
- SDF fund was refocused to support community decarbonisation projects. By end of 2021/22 27 community projects awarded funding since the change in focus and 11 projects completed by end of Q1 2022/23. Completed projects include:
 - RSPB renewables on Ramsey Island.
 - Theatr Gwaun solar panel installation.
 - Herbrandston Sports and Recreation Association solar panel installation.
 - Clwb Rygbi Crymych 12kW solar panel installation.
 - Wildlife Trust South and West Wales, 20 new PV panels on Skomer and a new inverter to collect and convert more solar energy to electricity.
 - Pembrokeshire Mencap Ltd, installation of 1.5kW solar panel. Cwm Arian
 - Renewable Energy research study into energy reduction and behaviour change in North Pembrokeshire Communities.
 - Clynfyw CIC Vermicomposting project.
 - Marloes and St Brides Village Hall battery system to supplement PV panels.
 - Solva Community Club house installation of PV panels on club house.

- Tenby United RFC, installation of recycling bins and litter pick stations at each of the sports facilities in the town to minimise waste and increase recycling completed.
- Members at the November 2021 NPA resolved to support a tree planting scheme to commemorate 70 years since the National Park's designation. This followed a proposal being put forward by Authority Member. The Ranger service will look to engage with local community, town and city councils within or partly within the National Park to deliver the scheme over the next three years. 9 out of 49 communities have confirmed projects by end of Q2 2022/23 but conversations are still ongoing with some others.
- PCNPA facilitated volunteer and social action tree planting activities included:
 - Tree planting at Grapley Fields (Trefin) with volunteers from Gwelliant Trefin,
 - PCNPA voluntary wardens and Friends of the National Park. Tree planting and mat fitting activities at Wolfscastle with Youth Rangers and Pathways Volunteers.
 - Tree planting in Sychpant, Cwm Gwaun and Crymych Community Council Area with Ysgol y Preseli Agricultural Group. Tree planting with Year 5 and 6 Johnston community primary school pupils as part of Roots/ Gwreiddiau project.
 - Tree planting with volunteers at Fenton School.
 - Tree planting session at Old Mill Grounds, Haverfordwest with Roots to Recovery volunteer participants.
 - Rangers supporting volunteers to plant trees across a number of Conserving the Park sites.
 - Tree planting with volunteers at Carew Castle, with approx. 400 new native and pollinator friendly trees planted.
- CH has hosted Sustainable Living Day in 2021/22 and 2022/23.
- OYP working with ECO Dewi on Big Green Week 2021 and Big Green Weekend in 2022. OYP launched as Keep Wales Tidy litter picking hub.
- Authority has collaborated with other National Park Authorities and AOBs on joint projects.
 - Designated Landscape Carbon Baseline Study - baseline carbon study for each of the 8 Designated Landscapes. (Small Worlds Reports.)
 - Designated Landscape Carbon Action Plans - support the 8 Designated Landscapes to become carbon neutral by 2030 (Aquaterra Report)

Climate Adaptation

a) We are putting in place mechanisms to support climate adaptation

- Local Development Plan 2 was adopted on 30th September 2020.
- The National Park Authority has joined with other planning authorities in south-west Wales to commission consultants to undertake a Regional Strategic Flood Consequence Assessment for the region.

- Annual Monitoring Report for Local Development Plan shows under indicator 15 that one application was recommended for refusal as it was partially within a C2 flood zone and within a coastal risk management area. Members approved the application contrary to recommendation having considered all relevant planning policies and other material planning considerations. The target of 0 was not achieved. The trigger of 1 approval contrary to recommendation has been breached. The report identified that Further Investigations/ Research is required.
- A range of activities have been undertaken to increase resilience of Coast Path and Inland Rights of Way to Winter Storm and erosion challenges. Examples include:
 - PCNPA responded to impact of Storms Arwen, Barra, Dudley and Eunice which caused widespread damage in terms of multiple fallen trees obstructing dozens of public rights of way. 165 Trees and Ash Dieback jobs were completed under Rights of Way work programme in 2021/22.
 - Work on Coast Path realignment to avoid unstable cliff edge were completed at Westmoor, Manorbier and Angle. Public Path Creation Agreements were put in place to formalise changes.
 - Public Path Creation Agreement for Coast Path at Sandy Haven Coast Path was signed and sealed by all parties to realign 500m section of Coast Path to stable ground. 500m of Coast Path at Sandy Haven has been re-graded by contractor with mini digger and realigned away from eroding cliff. Consultant engineers engaged to design improvements schemes for Coast Path at Whitesands and Dale.
 - Traethllyfyn beach access repairs and Angle byway gabion wall repairs were put out to tender.
 - Four footbridges that were due for replacement have been replaced with more durable structures with steel bearers and plastic decking.
 - Consultant engineers engaged to prepare schemes on Coast Path revetments at Angle and the tidal crossing of the Gann, Dale.
 - Additional opportunities may be identified through the SLSP funded Wild Coast, Wild Park Nature Recovery (Wild Coast net zero nature trail and coast path resilience.)
- Officers participated in workshops held to inform the development of the Public Services Board Pembrokeshire Climate Change Adaptation Strategy.
- Reports commissioned and received on UKCP18 Climate Change predictions and implications for future management and adaptation at our Freshwater East and Carew sites. These reports were shared with consultants drafting Pembrokeshire Climate Change Adaptation Strategy on behalf of Pembrokeshire Public Services Board.
- Youth Committee members have been involved in engagement sessions relating to Newgale Adaptation Strategy.
- Changing Coast Project which involves the crowdsourcing of photos demonstrating coastal change, has continued to see submissions. With 486 submissions in 2021/22.

Appendix 2 – PCNPA Carbon Emission 2021/22 and cross year analysis

1. Net Zero Reporting Requirements

In May 2021, the Welsh Government published the Welsh Public Sector Net Zero Reporting Guide, which aimed to be a universal guide as a set of instructions for use by Welsh public bodies to estimate baseline emissions. The Authority submitted emission figures under this guide and template for 2019/20 and 2020/21.

A [new updated guide](#) and improved template was issued by Welsh Government in June 2022/23 for 2021/22 submission, which includes a summary page. It is recommended that Members familiarise themselves with this document and key terms within it.

Data submitted is aggregated by Welsh Government at a public sector wide level, with Welsh Government reporting on public sector wide data.

For 2021/22 template the submission deadline was the 9 of September 2022 and PCNPA Officers submitted the Authority's submission to Welsh Government in advance of this deadline. In future years, the proposed deadline for reporting for Welsh Government following end of financial year will be 30 June 2021, although this may be extended to August. This will be a challenging deadline for officers to meet and it is important that capacity is built into work programme for Q1 of financial year for relevant officers.

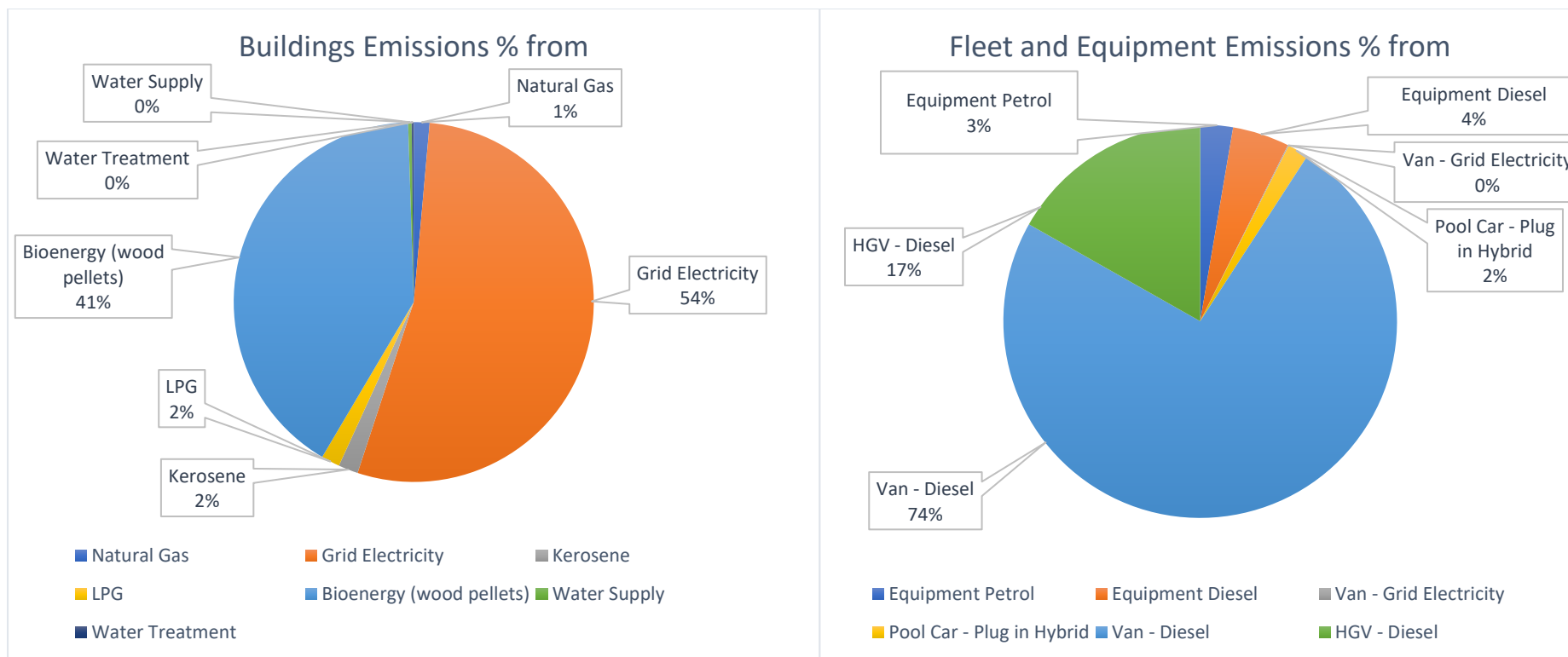
In the guidance the Welsh Government also notes – “Organisations should also report actions to reduce emissions and move to carbon neutral operations by 2030. This may be in the form of an annual report on progress against a published action plan or a separate document.” These activities are currently captured within the Authority's Annual report on meeting Well-being Objectives. A copy of the Authority's progress against current NPMP climate change action plan has been included in Appendix 1. This action plan is likely to be superseded by the creation of Decarbonisation Delivery Plan and Adapting to Climate Change Delivery Plan.

2. Note on Data and Cross Year Analysis

- Welsh Government updated their methodology and made significant changes to their template for 2021/22.
- Data from 2019/21 and 2020/21 has been modelled to enable it to be compared to 2021/22 data, care should be taken when using emission figures from 2019/20 and 2020/21 due to higher error risks relating to manual emission factor entries on Welsh Government template. Figures used relate to original forms submitted to Welsh Government and there may be discrepancies with data reported in Aquatara report for 2019/20 and 2020/21 and figures provided back by Welsh Government.
- Data is only available for 2021/22 for some areas such as Fuel Equipment, Homeworking and Commuting.
- Welsh Government methodology applies RSD factors to capture variations in terms of accuracy.
- In most cases data from 2021/22 has been compared with 2019/20 due to significant impact of Covid 19 on Authority activities in 2020/21.
- Cross year analysis for Supply chain data relates only to revenue spend.
- Emission figures can be affected by change in emission factors which can cause increase in emissions across years despite a decrease in consumption.

3. Buildings, Fleets, and other assets

<i>Summary 2021/22</i>	Units of kgCO ₂ e						
Categories	Direct	Indirect	Indirect	Total	Estimated range	Estimated range	Outside of scopes
	Scope 1	Scope 2	Scope 3		High	Low	
Buildings	9,392	64,385	32,191	105,968	<i>170,634</i>	<i>158,700</i>	58,699
Fleet and equipment	130,233	642	32,199	163,074	<i>171,731</i>	<i>155,382</i>	483
Buildings, fleet & other assets	139,624	65,027	64,390	269,042	<i>342,365</i>	<i>314,082</i>	59,182



**3.1 Buildings - analysis, including cross year analysis where appropriate.
Electricity**

- Grid electricity consumption remains our highest emitter for energy at 54% of buildings emissions in 2021/22. However, it is purchased through REGO (Renewable Energy Guarantee of Origin) agreement.
- There is an increase in usage across all PCNPA sites compared to 2020/21 of 22%, although when compared against 2019/20 usage there was a reduction of 15% with a corresponding reduction in emissions of 24,479.5 KgCO2e.

Year	Kwh	KgCO2e.
2019/20	357,018	112,811

2020/21	247,785	71,394
2021/22	303,232	88,331.5

- Looking at specific sites the notable increases (in excess of 10%) in terms of usage include: -
 - Carew Castle (Tea room) - 12% up (from 2019/20 readings), increased usage can be linked to the opening and success of the tearoom as business grows.
 - Carew Depot - 23% up (from 2019/20 readings), more workshop days to carry out repairs by Warden, Ranger, and volunteer use. LED lamp upgrade to be carried out as part of “greening” budget.
 - Withybush Depot - 12% up (from 2019/20 readings) due to increased use of drying room. Review of energy use of drying facilities to be carried out as part of depot review / refurbishment project.
- Reductions noted at Llanion HQ, and Oriel Y Parc are because of energy efficiency measures following 2019/20 data, overall, the usage trend continues to fall.

Gas

- 1% of our energy emissions from buildings came from Natural Gas in 2021/22.
- An 18% increase in usage compared with 2020/21 across all PCNPA sites can be directly attributed to the closure of buildings during the pandemic in 2020/21 as normal heating levels were not required. However, when compared to 2019/20 data this resulted in a 3% reduction in gas consumed with an 0.2% increase in emissions.

Year	Kwh	KgCO2e.
2019/20	11156	2318
2020/21	9193	1910
2021/22	10827	2,323

- Looking at specific sites Oriel y Parc has shown an 18% increase (from 2019/20 readings). Further investigations to be carried out to understand why the “back up” gas boilers have increase in usage. BMS consultants and Engineer to be consulted.

Note on Energy Procurement:

The procurement of energy has become increasingly complex, with prices volatile and linked to both UK and global factors. To minimise risk, PCNPA uses PCC to procure its energy using Crown Commercial Services Framework Agreements, via the National Procurement Service (NPS), for the vast majority of supplies.

PCC sits on the Welsh Government National Procurement Service (NPS) Energy Subgroup, shaping the NPS energy-procurement strategy. All electricity procured via the NPS comes from renewable energy sources, with about 50% of this being sourced from within Wales (Note: The consumption of this 'green' electricity is already reflected in the [decreasing] UK emission-conversion factor for electricity, and as a consequence we are currently unable to directly benefit from carbon savings resulting from its procurement of 'green' electricity as this would effectively amount to double-counting the carbon savings).

The NPS authorities are part of the seventh-largest purchase (after the 'Big 6') of electricity and gas in UK markets taking advantage of the Crown Commercial Service's professional energy-trading desks. The NPS is actively seeking low-carbon gas sources – e.g., bio methane from Anaerobic Digestion (AD) – and monitoring the hydrogen-gas agenda.

Purchasing occurs across an 18-month buying window, with the aim of buying at market lows.

REGO stats for National Procurement Service customers for Apr 20 – Mar 21 provided to PCNPA from PCC notes: 86% of the REGOS allocated to NPS customers was from Welsh generation sources. This breaks down further as below:

- Hydro: 4,322 Welsh REGOs (1% of the Welsh REGOs)
- Landfill gas: 21,598 Welsh REGOs (7% of the Welsh REGOs)
- Solar: 53,225 Welsh REGOs (17% of the Welsh REGOs)
- Wind: 234,061 Welsh REGOs (75% of the Welsh REGOs)

Oil (Kerosene)

- 2% of our energy emissions from buildings came from Oil in 2021/22.
- There was a marginal increase in usage from 2020/21 which reflects a 27% increase in emissions from oil compared to 2020/21. There was a 70% decrease in emissions and consumption compared to 2019/20. Plans are to replace the oil-fired boiler in Pant Glas, Castell Henllys with a more renewable heating source as part of the current review of net zero targets for our buildings.

LPG

- 2% of our energy emissions from buildings came from LPG in 2021/22.
- Use has increased by 72% in 2021/22 (compared to 2019/20), with 71% increase in emissions from this source. The increase in LPG use for cooking particularly at Castell Henllys Café & Carew Tea room due to increased business during an exceptionally busy season.

Biomass (Wood Pellets)

- 41% of our energy emissions from buildings came from Biomass (wood pellets) in 2021/22.
- Bioenergy Wood Pellets is showing a significant increase in emissions despite a decrease in consumption from 2019/20 and 2020/21 due to increases in the emission factor for this fuel. This increase in emissions of 616.49% compared to 2019/20 and an increase of 438.9% compared to 2020/21. This highlights how changes in emission factors across years can impact on level of emissions even if consumption is reduced for a fuel.
- A reduction of fuel use of 29% from 2020/21, this may be due to the mild Winter, we continue to monitor.

Water Supply & Treatment

- Water supply and treatment emissions play a minimal part in Authority's overall emissions relating to building compared to other areas.
- However, the Authority has seen an increase in water use across the Authority of 105% with 2020/21 figures although this is an increase of 28% based on 2019/20 data. This has not led to increase in emissions due to previous year emission factors for mains supply being higher.

Year	m3	KgCO2e.
2019/20	2703	930
2020/21	1686	580
2021/22	3461	516

- Looking across sites, notable increases (in excess of 10%) include: -

- Castell Henllys Visitor Centre (Café) - 144% up on pre-pandemic 2019/20 usage, increased usage can be linked with the café operation, but further investigation will be necessary across the site to conclude this. It may also be prudent to fit a sub-meter to measure café usage to aid future reporting and where water saving measures can be introduced.
- Cilrhedyn Woodland Centre - 19% up on 2019/20 usage, monitoring and site review proposed. Further investigation has been carried out by site manager which has identified anomalies relating to meter reading and installation that accounts for potential smaller amount of water being recorded in 2019/20 for the site.
- In total 2021/22 water usage across the Authority has been the highest on record and this needs urgent review.
- The Authority has seen a decrease in mains treatment m3 consumption and associated emissions, this reflects improved recording for some sites that has meant more accurate figures could be used for some sites instead of estimation based on 95% of water supply.

3.2 Fleet and Equipment – analysis, including cross year analysis where appropriate Van Fleet (Diesel and Grid – Electricity)

- 74% of our emissions relating to fleet and equipment in 2021/22 came from our Diesel Vans.
- Our overall emission for fleet is higher in 2021/22 than in 2019/20 by 25,372 KgCO₂e. The main cause is an increase in use captured by mileage related to Diesel Vans which saw an increase of 135,813 km between 2019/20 and 2021/22 with subsequent increase in emissions of 28,933 KgCO₂e (overall emissions increase for fleet is less due to reduction in emissions for other fleet vehicle types). This includes use of hire vans for fleet. It potentially reflects change in practices relating to Covid 19 and sharing of vans.

Year	KM	KgCO ₂ e.
2019/20	267,697	92,168
2020/21	310,741	104,813
2021/22	403,510	121,101

- The Authority had delivery of 2 electric vans in 2021/22, however 11 electric van orders were outstanding at the end of 2021/22. Working with supplier to secure build dates and delivery of vans should be one of the immediate priority areas for the new Head of Decarbonisation once in post as this will have significant impact on emissions in this area. Beyond this where electric van replacements are not an option for some vehicles captured by Diesel Van category, it is recommended

that the new Head of Decarbonisation work with relevant teams to see if there is anything further that can be done around scheduling and use to reduce km travelled (potentially ArcGis system could be used to support this analysis). Longer term developments for 4 by 4 related to hydrogen vehicles may also provide alternative options. Moving to electric van fleet will potentially have impact on how teams operate, and it would be beneficial to put in place a mechanism to get feedback from staff as transition occurs in terms of lessons learnt (positives and challenges) to inform future working practices.

- Our emissions from Vans for Grid Electricity are consumption based with 470kwh used amounted to 137 KgCO2e and relates to Q4 of 2021/22. We can expect consumption and emissions to increase in this area going forwards as more of the fleet's vans are converted to electric vans. Comparison with diesel emission will become easier as we are looking to move from the use of distance methodology km for Diesel to consumption-based approach (however at analysis level we will also need to continue to look at mileage).

Minibus (HGV Diesel)

- 17% of our fleet and equipment emissions came from HGV Diesel related to our minibus.
- Our Minibus provides an important role in terms of supporting volunteers and participants in our outreach/ supported walking/ health and well-being projects to access sites in the Park and plays important role in terms of Authority addressing potential transport barriers people face (Equality and Socio-Economic Duty.) It also reduces multiple vehicles being used to access sites. Use has decreased when compared to 2019/20 by 25.5%, however emissions have increased by 31.97% due to what looks like increases in emission factor for HGV - Diesel.

Year	KM	KgCO2e.
2019/20	36,968	20,825
2020/21	10,708	5,953
2021/22	27,541	27,482

- Going forwards it would be beneficial for the Head of Decarbonisation to explore as part of the fleet strategy the potential and feasibility of purchasing an electric minibus (wheelchair accessible electric minibuses are now available) or hydrogen/ other low emission alternative. Consultation will be needed with relevant teams in particular the Engagement and Inclusion Team.

Pool Cars

- 2% of our emissions came from our pool cars, 2,809 KgCO₂e.
- Changes to pool cars, moving to all being hybrid have had positive impact on pool car emissions alongside falls in km travelled by pool cars because of Covid 19 with decrease of 44,005km travelled compared to 2019/20.
- However, although our current pool cars are a lower emission option, they are not carbon neutral and have higher emission factor currently than rail. As a result, it is important to encourage staff to explore options of continuing where possible to attend out of county and other meetings virtually or use rail transport for out of county meetings where feasible in line with Authority's Transport Policy.

Improving Data Accuracy for Fleet

- Officers will trial more accurate method of measuring emissions from fleet for 2022/23, moving to measure amount of fuel used. This may open an interesting behaviour change area of work for the Head of Decarbonisation to explore when in post, in terms of looking not only at distance travelled but also encouraging staff to adopt efficient driving methods to reduce fuel/ electric consumption. Mileage will still need to be looked at to inform analysis on consumption and emissions for fleet.

Equipment (Diesel / Petrol)

- 2021/22 is the first year of recording equipment fuel due to improved recording methods being put in place.
- A small % of our emissions at 7% comes from equipment compared to fleet emissions. 12,208 kgCO₂e came from equipment fuel in 2021/22, with 64% of it relating to Diesel equipment and 36% of it relating to petrol equipment.
- Potential options in this area to reduce emissions should be considered by the new Head of Decarbonisation in partnership with new Head of Nature Recovery/ Head of Engagement and Inclusion in terms of equipment used by Warden (including site wardens) and Ranger teams. However, decarbonisation changes relating to fleet are likely to have a larger impact in terms of reducing the Authority's overall emissions.

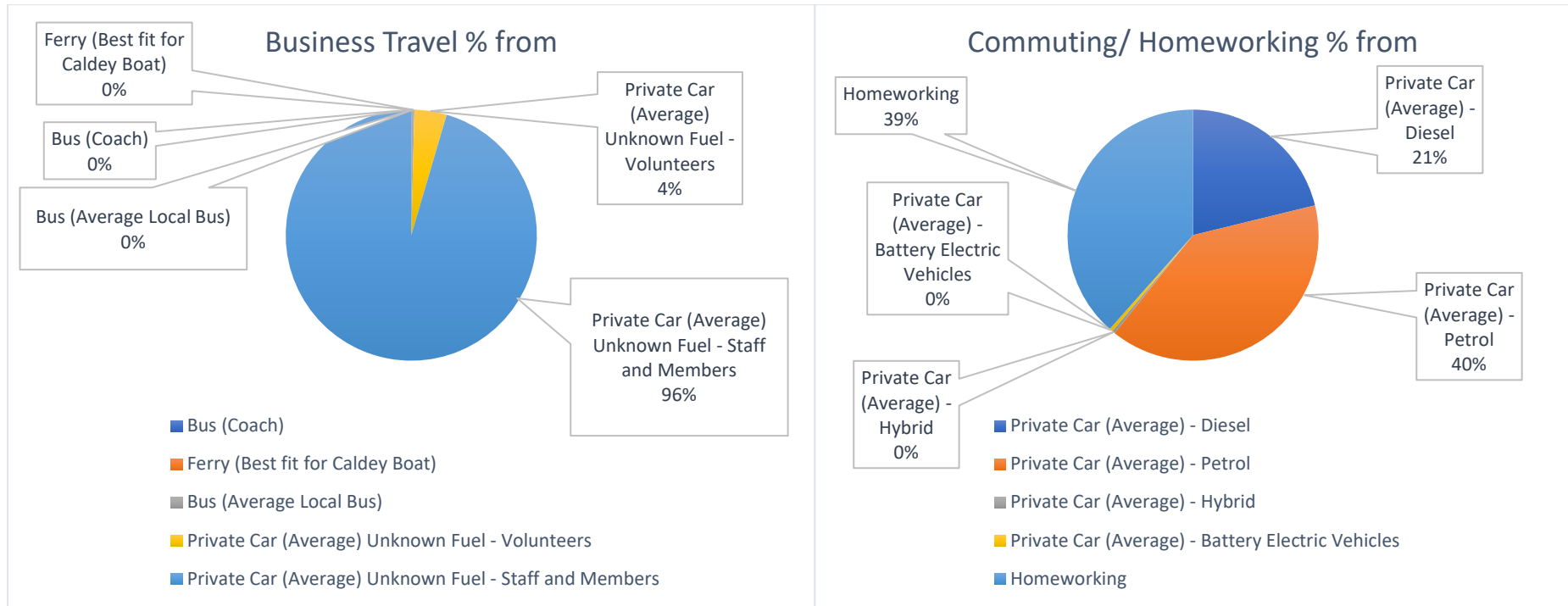
4. Waste

4.1 Note on Waste

Waste is currently recorded via supply chain. Officers are exploring potential to improve recording so that it can be recorded on the waste worksheet. This will provide the Authority with more accurate data and support it to develop interventions to reduce waste across sites and activities and contribute to circular economy. As part of an information gathering exercise a questionnaire has been sent to relevant officers across sites during September 2022.

5. Business Travel, commuting and homeworking

<i>Summary</i>	Units of kgCO _{2e}						
Categories	Direct	Indirect	Indirect	Total	Estimated range	Estimated range	Outside of scopes
	Scope 1	Scope 2	Scope 3		High	Low	
Business travel	-	-	9,493	9,493	10,680	8,305	-
Commuting	-	-	76,428	76,428	82,160	70,696	-
Homeworking	-	-	47,741	47,741	57,290	38,193	-
Business travel, commuting & homeworking	-	-	133,662	133,662	150,130	117,194	-



5.1 Business Travel – analysis, including cross year analysis where appropriate

Business Travel – Private Car (Staff and Members)

- 96% of our business travel emissions comes from private car emissions relating to Staff and Members. The continued promotion of remote meetings has meant that level of km travelled, and emissions remained well below 2019/20 levels. With decrease of 56.12% km travelled and 57.26% decrease in emissions compared to 2019/20. Km travelled in 2020/21 and emissions reflects the impact Covid 19 had on limiting business travel including some site visits during the year.

Year	KM	KgCO2e.
2019/20	95,340	21,197
2020/21	24,600	5,303

2021/22	41,836	9,060
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- However, going forward the Authority will need to monitor impact of return of in person meetings (including out of county meetings) and increased site visits. Travel commuting survey indicates that majority of staff tend to have petrol or diesel cars. As a result, the Authority may need to look at how as it moves to having a low emission fleet, its fleet could be used to help reduce private car travel which in the short term is most likely to be carried out by diesel or petrol car (staff indicated cost was a key barrier in terms of them converting to electric car in staff travel commuting survey).

Business Travel – Private Car (Volunteers)

- 4% of our business travel emissions comes from private car emissions relating to volunteers.
- Emissions from Volunteer private car travel has increased reflecting increase in distance travelled by volunteers in 2021/22 compared to 2019/20. Km travelled in 2020/21 and emissions reflect impact Covid 19 had on volunteering.

Year	KM	KgCO2e.
2019/20	609	135
2020/21	592	128
2021/22	1,821	394

Business Travel – Other Modes of Transports

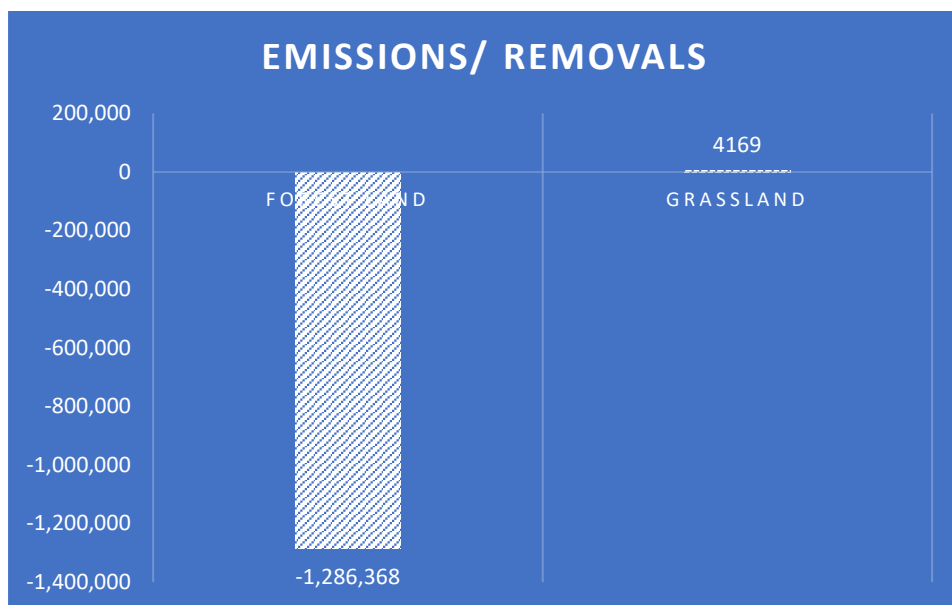
- Other modes of transport under Business Travel had a limited impact on overall Authority business travel emissions in 2021/22. There can be considerable variations in terms of other modes of transports depending on business activities within the year. For example, in 2021/22 we saw inclusion of Coach related transport linked to Roots project and boat trip to Caldey (captured under ferry as best fit option within template) and local bus service. In contrast in previous years, we have had emissions from air, rail, ferry, hire cars and trams.

5.2 Commuting and Homeworking – analysis, including cross year analysis where appropriate

- 2021/22 was the first year PCNPA has estimated commuting and homeworking emissions, reflecting changes within Welsh Government guidance and template. There are potential accuracy issues as figures are based on modelling data from Travel Commuting Survey carried out with staff in April/May 2022 time and scaling up based on FTE (Full Time Equivalent) total for organisation. The survey had 61 responses. Limitations to methodology are also recognised within RSD values for the data in the Welsh Government reporting template, in particular for the Homeworking calculation.
- KgCO₂e emissions from commuting estimated at 76,428 (60%) compared to 47,741 for homeworking (40%). Commuting data shows 64% (49,116 KgCO₂e) of emissions coming from private petrol cars and 34% (26,307 KgCO₂e) coming from private diesel cars. The 10,790 km travelled via hybrid and battery electric vehicle (via the modelled data) reflects a low response rate in terms of these methods being used for commuting by respondents to the survey.
- A large proportion of staff based at Llanion remained working from home in 2021/22.
- Going forward it will be interesting to see impact of implementation of Flexible Working/ Homeworking and Hybrid Working Policy on these figures and whether factors such as ability to use showers again at Llanion will have positive impact on staff looking to cycle to work.
- For staff where home working is an option, cost of living factors relating to fuel cost and energy bills may impact on staff choices and behaviour in this area going forward. Future travel surveys may need to consider seasonal splits in behaviour relating to homeworking and office working.
- In the travel survey a question was asked about whether staff would prefer to use a different mode of transport and if yes what would prevent them. Some of the themes from the responses include:
 - Hybrid, electric or hydrogen car/vehicle – Cost barrier of switching to hybrid, electric or hydrogen car/vehicle
 - Bike / Electric Bike – The need to carry kit (laptop etc), an electric bike identified as potential way to overcome this. Lack of safe cycle routes. Cost of Electric bike. Weather.
 - Public Transport – Lack of suitable public transport options available for commuting in. Where staff could commute via rail there are issues in terms of timings and frequency of trains into Pembroke Dock. Timings not suitable for staff who need to collect children from school/ childcare facilities.

6. Land Based Emissions (Tier 1 Methodology)

<i>Summary</i>	Units of kgCO ₂ e	
	Emissions	Removals
Total land based emissions	4,169	- 1,286,368



6.1 Land Based Emissions – analysis, including cross year analysis where appropriate

- There has been no change between Hectares across land type and emissions between 2020/21 and 2021/22. The Authority did see a change in grassland emissions between 2019/20 and 2020/21 due to purchase of the Trefin site.

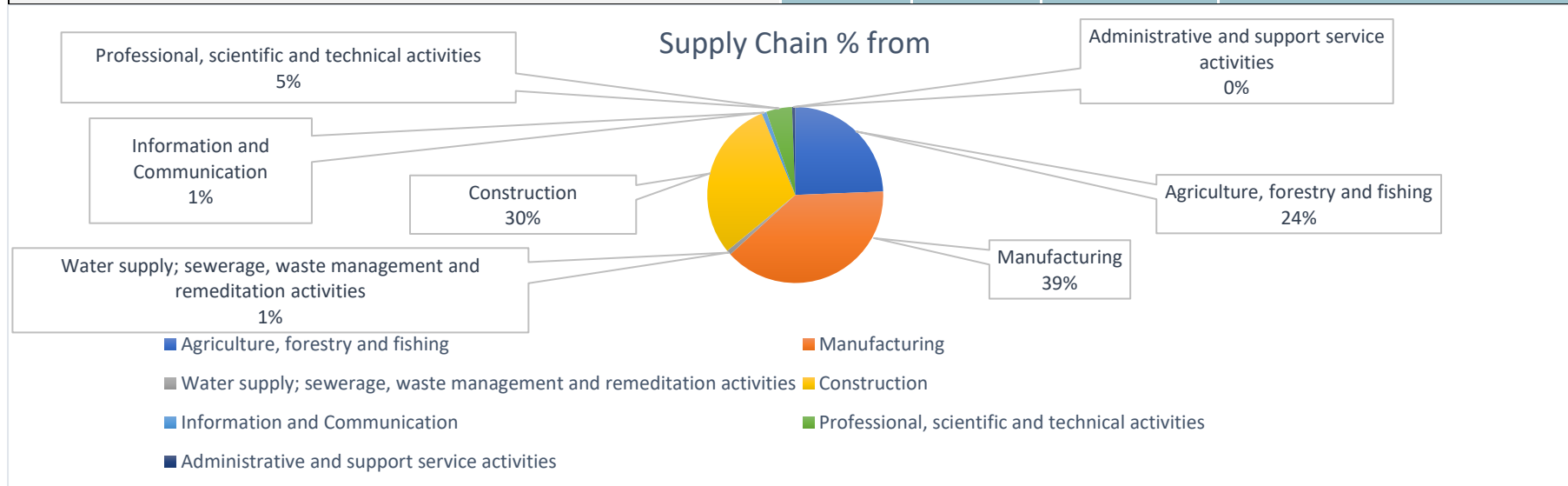
Forest Land		
Year	Hectares	KgCO2e.
2019/20	177	-1,286,368
2020/21	177	-1,286,368
2021/22	177	-1,286,368

Grassland		
Year	Hectares	KgCO2e.
2019/20	256	3,983
2020/21	268	4,169
2021/22	268	4,169

- The Authority's 177 hectares of forest land provides -1,286,368 KgCO2e of negative emissions (removals).
- However, Grassland has a positive emission factor of 0.02 and this is showing a positive emission for 268 hectares of 4,169 KgCO2e. PCNPA grassland is managed for nature conservation, and we would expect these habitats to represent a carbon store (Natural England Research Report NERR094 (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition): <http://publications.naturalengland.org.uk/file/6726246198411264>.)
- Officers are exploring the potential to adopt a Tier 2 Methodology to address this and to also provide option for Heathland. However, this will depend on officer capacity and availability/ access to external data to support creation of Tier 2 model.
- No emission factors are applied within the template for Wetlands (17 ha), Settlements (29 ha) and Other Land (42ha).

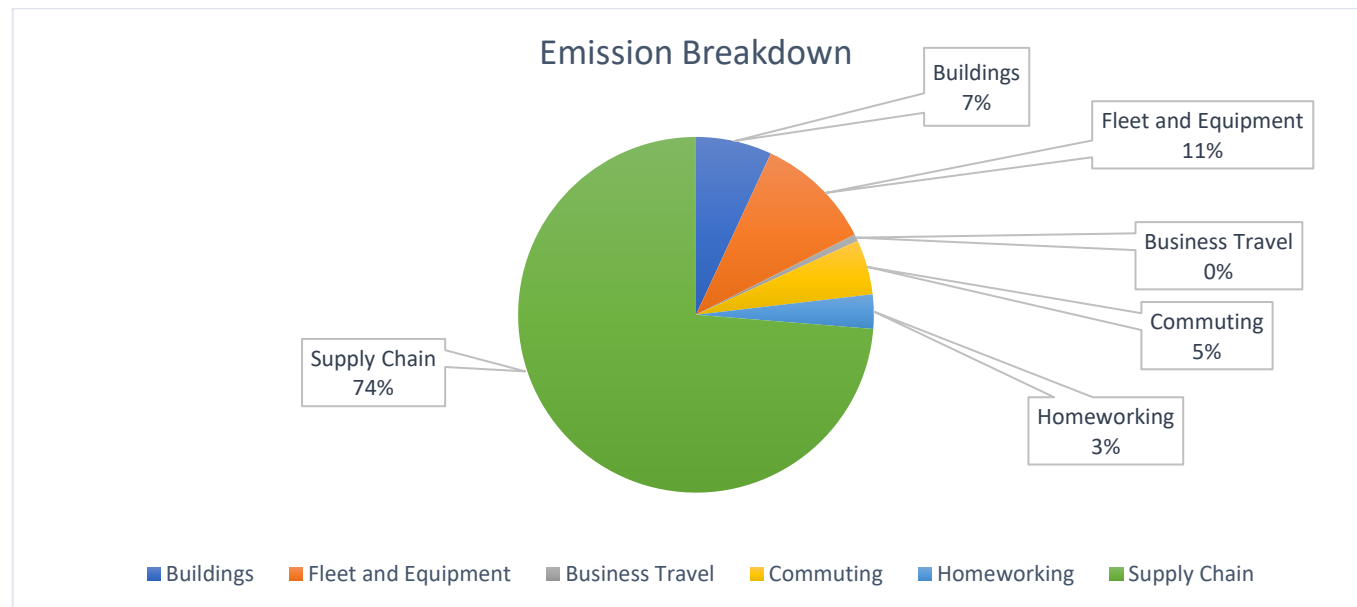
7. Supply Chain (Tier 1) – Spend based methodology

Summary	Units of kgCO ₂ e			
	Direct	Indirect	Indirect	Outside of scopes
	Scope 1	Scope 2	Scope 3	
Agriculture, forestry and fishing			275,433	
Manufacturing			438,969	
Water supply; sewerage, waste management and remediation activities			9,675	
Construction			335,856	
Information and communication			9,995	
Professional, scientific and technical activities			53,681	
Administrative and support service activities			6,514	
Supply chain - Tier 1			1,130,122	



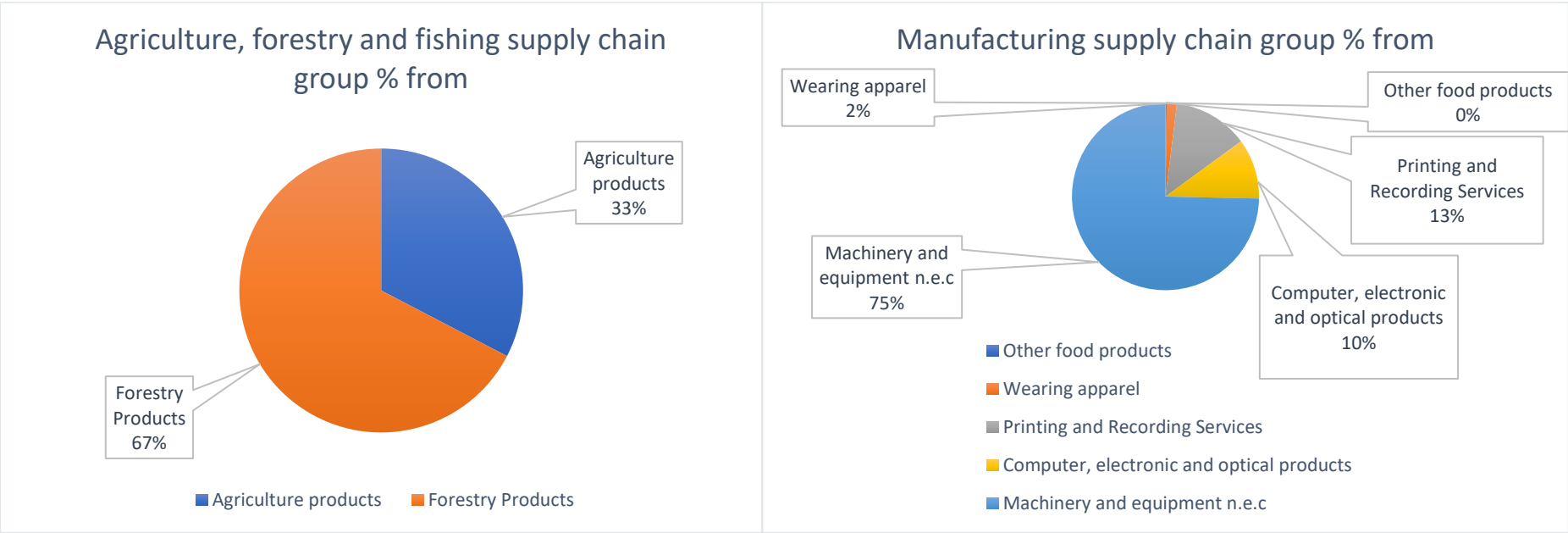
7.1 Supply Chain Emissions – analysis, including cross year analysis where appropriate

- The Tier 1 methodology is based on spend as a result there are limitations in terms of accuracy of emissions data derived from this approach. This is reflected in the 25% RSD value for this methodology within the Welsh Government reporting template.
- Capital expenditure has been included in 2021/22 reporting alongside revenue spend with £137,728 plus VAT of capital expenditure included under manufacturing and £501,751 plus VAT of capital expenditure included under construction.
- The supply chain was the emission source with the highest levels of emissions in 2021/22, amounting to 74% of our emissions in 2021/22:



- The supply chain groups with the highest emissions in 2021/22 are Manufacturing at 39% of supply chain emissions (438,969 KgCO₂e), Construction at 30% of supply chain emissions (335,856 KgCO₂e) and Agriculture, forestry, and fishing at 24% of supply chain emissions (275,433 KgCO₂e). Combined they amount to 93% of supply chain emissions. A further

breakdown is shown below for Manufacturing Supply Chain and Agriculture, forestry, and fishing supply chain against product category (Construction only has one product category – Construction, so no further breakdown is available for this supply group.):



- Under the Agriculture, forestry, and fishing supply chain group 67% of emissions (185,527 KgCO2e) came from Forestry Products and 33% of emissions (89,906 KgCO2e) came from Agricultural products.
- In terms of Manufacturing supply chain group three quarters of emissions came from Machinery and equipment products at 86% (327,778 KgCO2e). The next highest product groups for emissions were Printing and recording services at 13% (57,025 KgCO2e) and Computer, electronic and optical products at 10% (45,594 KgCO2e).
- Cross year analysis is only available based on revenue spend. The highest emissions area by supply chain group remains manufacturing. 2021/22 emissions for manufacturing supply chain group based on revenue spend is 35,602 KgCO2e above 2019/20 levels. This reflects a growth in revenue spend in this area compared to 2019/20 in particular for Machinery and Equipment. The second highest emissions area by supply chain group based on revenue spend remains Agriculture,

Forestry, and fishing. 2021/22 emission levels are 123,587 KgCO2e above 2019/20 level. Although revenue spend is lower than construction, this reflects the higher emission factor for Agriculture and Forestry products which fall within this category compared to the emission factor for Construction. The third highest emissions area by supply chain group remains Construction (for 2021/22 when Capital spend is added in Construction moves to being the second highest emission supply chain group area.) Construction emissions based on revenue spend for 2021/22 are 33,794 KgCO2e above 2019/20 levels. Overall supply chain emissions based on revenue spend have increased as would be expected due to an increase in spend.

- It is recommended that the Head of Decarbonisation explores if the Authority can develop a more detailed Tier 2 methodology in terms of each of these supply chain groups (Manufacturing, Construction, Agriculture, forestry, and fishing.) It is also recommended that they consider doing a deep dive review for these three areas to assess and ensure we are following best practice and looking for/ can evidence we are maximising sustainable/ low carbon options in these procurement areas.

8. Renewables

<i>Summary</i>	Units of kWh	
Categories	Total generated	Total exported
	Scope 1	Scope 2
Onsite renewables - heat	167,994	-
Onsite renewables - electricity	16,436	-
Purchased renewables - electricity	303,232	
Renewables	487,662	-

8.1 Renewables – analysis, including cross year analysis where appropriate

- The Authority has Solar PV at Llanion and OYP. There was a 47% reduction in PV generated electricity on the previous year 2020/21, this is due to an issue at Oriel Y Parc which is to be resolved. Note - reduction in PV generation has not led to an increase in use of grid electricity, this is to be monitored closely going forward. PV installation is planned for Cilrhedyn.

- Currently no measurement methods in place for solar thermal (Llanion and OYP), air source heat pump (Carew) and ground source heat pump (Oriol y Parc).
- Authority's electricity is purchased through Renewable Energy Guarantee of Origin Tariff. Please see earlier note under Buildings on energy procurement for further details.