

# Perth and Kinross LDP3 2027 - Evidence Report

## TOPIC PAPER NO. 012: Energy, Heat and Cooling

July 2024





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# 1 Introduction

1.1 This topic paper sets out the key information relating to **energy including heating and cooling** which will be covered by the Perth and Kinross Local Development Plan 3 (LDP3), as required under the provisions of Section 16B of the Act<sup>1</sup>. It will, alongside a range of other topic papers, contribute towards the preparation of the Council's Evidence Report, which is programmed to be submitted to the Scottish Government's Planning and Environmental Appeals Division in Autumn 2024 for the 'Gatecheck' process.

1.2 The purpose of an Evidence Report is to provide the local authority's interpretation of the evidence it has gathered and the likely implications of that evidence for the preparation of the Local Development Plan (LDP). The Report will provide a summary of what the evidence means for the plan, rather than contain all the detail of evidence collected.

## Relevant Policies

1.3 This topic is covered by the following policies in National Planning Framework 4 (NPF4):

- Policy 11 (Energy),
- Policy 18 (Infrastructure),
- Policy 19 (Heat and Cooling).

## Legal and National Policy Requirements / Expectations

1.4 In line with the requirements of the Act, this paper will provide important background information for the Plan area regarding the:

- The infrastructure of the district in terms of systems for the supply of energy,
- How that infrastructure is used,
- Particular land available for the development and use of facilities for renewable sources of energy.

1.5 Under NPF4 Policy 11 (Energy), LDPs are expected to:

- seek to realise their area's full potential for electricity and heat from renewable, low carbon and zero emission sources by identifying a range of opportunities for energy development.

1.6 Under NPF4 Policy 18 (specifically relating to the supply of energy), LDPs are expected to:

- be informed by evidence on infrastructure capacity, condition, needs and deliverability within the plan area, including cross boundary infrastructure,
- set out the infrastructure requirements to deliver the spatial strategy, informed by the evidence base, identifying the infrastructure priorities, and where, how, when and by whom they will be delivered,

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<sup>1</sup> The Town and Country Planning (Scotland) Act 1997, as amended by the Planning (Scotland) Act 2019

- align with relevant national, regional and local infrastructure plans and policies.

1.7 Under NPF4 Policy 19 (Heat and Cooling), LDPs are expected to:

- take into account the area’s Local Heat & Energy Efficiency Strategy (LHEES); and
- the spatial strategy should take into account areas of heat network potential and any designated Heat Network Zones (HNZ).

1.8 This topic paper also provides information relating to the policy subject of energy, heat and cooling as contained in the ‘[Local Development Planning Guidance](#)’ (2023, p.51, 67-71). This includes information relating to the NPF4 Policy Advice & considerations referenced in the Evidence Report Guidance for NPF4 Policies 11, 18 (energy) and 19.

1.9 This information will help to provide an overview of evidence relating to energy, heat and cooling within the Perth and Kinross Council area, setting the context within which LDP3 should be prepared.

1.10 To inform this topic paper, a range of datasets and information sources have been reviewed, and where relevant, analysed. A breakdown of the datasets/information sources included are noted in Appendix 1.

## 2 Information Analysis on Energy, Heat and Cooling

### National & Local Policy Context

2.1 In 2019, the Scottish Government declared a climate emergency. The [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#) aims to ensure that Scotland’s contribution to climate change will end within a generation, being fully net-zero by 2045 (compared to a 1990 baseline). An [update to the Scottish Government Climate Change Plan 2018-2032](#) followed on from this, which directs the pathway for the targets set within the Climate Change Act. In 2023, the Scottish Government published the [Draft Energy Strategy and Just Transition Plan](#) which includes a draft route map of actions to support a flourishing net zero energy system that supplies affordable, resilient and clean energy for Scotland. In April 2024, a Scottish Government announcement was made to remove annual and the interim 2030 targets for carbon emission reductions.

2.2 Following consultation on the [Heat in Buildings Strategy](#) in 2021, the Scottish Government set out ambitions for net zero buildings through the [Heat in Buildings Bill](#) which was consulted on between November 2023 and March 2024. The Bill sets out proposals to make new laws around energy efficiency of our homes and buildings and the way we heat those buildings. The [Heat Networks \(Scotland\) Act 2021](#) also sets out provisions for the deployment of heat networks across Scotland, including requirements around heat network zoning where these have most potential.

2.3 At the local level, the Topic Paper links to the following priorities from the Perth and Kinross Council [Corporate Plan \(2022-2027\)](#):

- Developing a resilient, stronger and greener economy.
- Tackling climate change and supporting sustainable places.
- Working in partnership with communities.

The Spatial Strategy of the next LDP is of particular relevance to, and will take into account, the following key actions contained in the Corporate Plan linked directly to the policy topic of energy/heat:

- Improve the energy efficiency of our Council housing stock and public buildings, and encourage our partners and private householders to consider where they can make improvements.
- To conserve and enhance the biodiversity of our natural environment.
- To adopt to and mitigate the impact of climate change on the way we operate.
- Support and promote business growth, business and place innovation and investment in both our urban and rural areas.
- Invest in innovative green power and smart technology solutions to reduce reliance on electricity from the national grid and create opportunities for business growth and regeneration.

- Develop and expand our approach to working with communities to identify local actions and priorities and deliver on these together.

2.4 Perth and Kinross Council has declared a climate emergency and prepared a [Climate Change Strategy and Action Plan](#). The Climate Change Strategy sets out 6 overarching principles that will shape the Council's long-term approach to climate change:

- Achieving Net Zero aligned with the Paris Agreement and the Scottish Government Targets, with the ambition of achieving them sooner.
- Building a more resilient Perth and Kinross.
- Ensuring climate action is fair and benefits all and we deliver a green recovery to Covid-19.
- Enhancing biodiversity to help avoid an ecological emergency.
- Engaging and empowering children and young people to take action on climate change.
- Empowering our communities and businesses to take climate action in line with the Perth and Kinross Offer.

The Council's Action Plan sets out the necessary action to make both the Perth and Kinross Council area and the Council itself net zero and climate resilient. Specific actions are included under eight thematic areas including buildings and energy.

- 2.5 The Council – with support from consultants Arup – published a [Local Area Energy Plan \(LAEP\)](#) in February 2024. The LAEP provides an understanding of the nature, scale, rate, and timings of changes needed for the transition to a net zero energy system within Perth and Kinross. The LAEP includes a series of potential pathways for the area’s energy transition including priorities and actions around whole building retrofits, heat networks, decentralised heat pumps in rural areas, transport related actions, and a shift in the energy system towards local generation to balance local supply and demand.
- 2.6 In a joined-up approach, the Council’s LAEP has been prepared in alignment with the [Local Heat and Energy Efficiency Strategy \(LHEES\)](#). The LHEES Strategy and Delivery Plan – a new statutory duty for local authorities – provides a strategy for the long-term decarbonisation and improvement of energy efficiency for all buildings. The LHEES includes a Delivery Plan that sets out key actions in the short term to support priorities identified by the Council and stakeholders. Further consideration of the LAEP and LHEES are provided later in the document.
- 2.7 In terms of domestic buildings, the Council’s [Local Housing Strategy \(2022-2027\)](#) has one of its four main priorities to “deliver quality homes with affordable warmth, zero emissions and SMART technology” including setting a road map for the reduction of domestic carbon emissions. As noted further in the LAEP/LHEES section below, the Council also has a green investment programme across its non-domestic property portfolio.

## **Data sets and sources: how they are relevant and implications for Proposed Plan**

- 2.8 The following section sets out the evidence which is needed so that the Proposed Plan (including the Spatial Strategy) can address the issues raised in the Act, NPF4 and associated guidance.

### **Energy Infrastructure**

#### **Electricity Infrastructure**

- 2.9 National Grid is the National Energy System Operator (ESO) for the United Kingdom. Scottish and Southern Energy Networks (SSEN) are the Transmission and Distribution Network Operators (TNOs/DNOs) within the Perth and Kinross Council Area.

#### **National Grid**

- 2.10 As Energy System Operator for the UK, National Grid are responsible for balancing the national electricity grid. Part of the role of National Grid is to ensure that the grid is future-proofed in terms of both supply and demand. National Grid recently announced plans for ‘[Beyond 2030](#)’ which includes outline proposals for onshore and offshore grid infrastructure upgrades in the 2030s to accommodate offshore wind energy generation as part of the ScotWind programme. Working with the Transmission Network Operators across the UK, detailed infrastructure projects including routes will be further developed.
- 2.11 In line with the [Energy Act](#), National Grid will also become the new National Energy System Operator (NESO) under a reformed energy

system governance structure. There are also Ofgem [proposals for Local Energy system governance](#) reform including the introduction of Regional Energy Strategic Planners (RESPs). The development of UK energy governance will continue to be monitored, with any implications considered at the Proposed Plan stage, including the future role of Regional Energy Strategic Planners and implications on how energy is planned at the regional level.

### Electricity Transmission & Distribution Networks

- 2.12 Scotland's Transmission network has a strategic role to play in supporting delivery of the UK and Scotland's Net Zero targets. [Further information](#) is available on the Transmission Network and the role of SSEN.
- 2.13 Existing [SSEN transmission network infrastructure](#) includes data on the tower, overhead lines, substation, and pole infrastructure that SSEN currently manages. SSEN has the operational role in managing the capacity of existing infrastructure and managing upgrades/new connections.
- 2.14 The capacity of existing infrastructure and generation availability is available on the [network map tool](#).
- 2.15 SSEN's [Pathway to 2030 projects](#) include future plans to the transmission network to help deliver net zero. For the PKC area, there are future plans for the [Central Highlands](#) and [East Coast](#) areas.
- 2.16 SSEN Transmission has a [projects map](#) that outlines key projects across its operational area. Within the PKC area, the following key projects are outlined:
- Beauldy Denny 400kV Upgrade (Transmission reinforcement)
  - East Coast 400kV Upgrade (Transmission reinforcement)
  - Alyth 275kV substation & reactive compensation (transmission reinforcement)
  - Alyth – Tealing Overhead Line 400kV Upgrade (reconductoring of Overhead Line)
  - Tealing – Westfield Overhead Line 400kV Upgrade (reconductoring of Overhead Line)
  - Abernethy Substation Extension (transmission reinforcement)
  - Kinardochoy Substation (transmission reinforcement)
  - Errochty Grid Supply Point (GSP, transmission reinforcement)
- 2.17 Scotland's Distribution Network plays an important role in distributing electricity from the transmission network to people's homes and businesses. [Further information](#) is available on the Distribution Network and the role of SSEN.
- 2.18 Existing [SSEN distribution network infrastructure](#) includes data on asset management including information on substations and grid/bulk supply points. The data portal also includes information ([embedded capacity](#), [SHEPD Long Term Development Statement](#), and



[SEPD Long Term Development Statement](#)) to inform consideration of existing capacity and opportunities for future connections to the distribution network. SSEN's [Distribution Network Future Energy Scenario \(DFES\) Report \(2024\)](#) supports future forecasting, network analysis and investment planning to aid in the long term planning of the distribution network. The [SSEN DFES Report \(2024\) for the North of Scotland](#) licence area considers a wide range of potential impacts on the distribution network including responding to net zero and implications on the grid from new developments.

- 2.19 To support strategic planning for net zero, SSEN – in collaboration with key stakeholders including PKC – has developed the Local Energy Net Zero Accelerator ([LENZA](#)) tool. The tool provides granular data and modelling tools to support informed decision-making, including information on network typology and capacity, building stock, and energy consumption. The LENZA tool will be used as the platform to support the Local Area Energy Plan / Local Heat & Energy Efficiency Strategy project delivery, aligning with strategic investment decision making and DFES scenarios. Where relevant for land use planning, the tool could be used to inform the evidence base for the preparation of the Proposed Plan including the consideration of network typology/capacity and how the Spatial Strategy can inform, and be informed by, plans regarding the utility network.
- 2.20 In terms of cross-boundary infrastructure, Scottish Power Energy Networks (SPEN) operate the [transmission](#) and [distribution](#)

infrastructure network in the South of Scotland region. SPEN will be a key stakeholder to consider any cross-boundary infrastructure issues.

- 2.21 As well as supporting the strategic planning of the transmission and distribution networks, there will an increasing role for local generation of energy (and heat) with expected advancements in decentralising energy generation and use including through the use of heat pumps, excess heat opportunities, and heat storage. Further consideration of heat is included below.
- 2.22 The Proposed Plan will be required to take into account where existing transmission and distribution infrastructure exists, and its capacity, as well as future plans for upgraded and new infrastructure. It is important to note that network capacity is dynamic and close collaboration will be required with SSEN on existing network capacity and planned upgrades to help inform the Spatial Strategy of the Proposed Plan. The development of the network will be crucial to enabling net zero as well as ensuring stability of connection for communities and businesses across the licence area. The next Plan will be important in helping to shape how and where any future network infrastructure is developed, taking into account the importance of the network to enabling net zero and supporting existing communities and opportunities for growth.

### **Existing Renewable Energy Generation**

- 2.23 Using the UK Government Department for Energy Security and Net Zero [statistics](#), Table 1 below outlines the installed renewable energy generation data for the PKC area in 2022:

Table 1: Renewable Energy Installed Capacity in PKC area (2022)

Renewable Energy Source	Installed Capacity (MW)
Photovoltaics (solar)	33.9
Onshore Wind	319.8
Hydro	277.8
Anaerobic Digestion	2.8
Landfill Gas	3.4
Plant Biomass	1.6

2.24 The Council maps the [location of renewable energy proposals](#) submitted through the planning process. This map includes proposals for wind, biomass and solar. This information provides a useful baseline of the renewable energy proposals submitted, and the planning status of these proposals. This information is also included in the LENZA tool.

2.25 The Council’s LAEP (p.22) also includes a summary and map of existing renewable energy generation assets. A map of existing renewable energy generation assets is included in Appendix 2.

2.26 Due to the large rural area and natural resources available in the PKC area, there are several existing renewable generation assets that are feeding into the energy system. Perth and Kinross’ renewable energy

asset mix is primarily hydroelectric plants, onshore wind sites and solar PV.

2.27 Hydroelectric schemes include Breadalbane (100.3 MW), Rannoch (44 MW), Tummel Bridge (34MW), and Pitlochry (15 MW). SSE Renewables have [planned upgrades](#) to existing sites. Early plans for a large-scale pumped hydro storage facility (Corrievarkie Hydro) in the north of the Highland Perthshire area are also being developed.

2.28 Wind installations include Griffin Wind Farm (204MW), Calliachar (32.2MW), Drumderg (36 MW), Tullymurdoch (14.4MW), and Lochelbank (9.6 MW). Several large-scale wind proposals are also in the process of being considered or at pre-application stage including:

- Craighead, Brunthill and Windburn wind farms, located in the Ochil Hills
- Glentarken and Glen Lednock wind farms, located in the hills north/north-east of Loch Earn

2.29 There is a mix of rooftop and ground mounted solar PV installations in the PKC area. A 13 MW ground mounted solar PV farm located in Errol was Scotland’s largest solar farm at time of construction. A number of solar farm proposals have also been consented including Keithick Farm (nr Coupar Angus), Bardrill Farm (nr Blackford), Carey and Cordon Farms (nr Abernethy), Binn Farm (nr Glenfarg), and Standingfauld Farm (nr Muthill). Several large-scale proposals are also currently being considered, at appeal or at pre-application stage including Kinnon Park Farm (Methven), Kinrossie, and Coupar Angus.

2.30 The Council is also experiencing an increasing number of proposals for battery storage developments, typically located close to existing/planned substations, and/or forming hybrid proposals i.e. adjacent to other generation sources. Examples include schemes at Keithick, Alyth, Rannoch, and Abernethy. The 'Green Assets' map (as considered further below) outlines existing/future planned grid-balancing battery storage developments.

2.31 Heat supply options for potential heat networks are also likely to be a key consideration in the future. This may include:

- High temperature, recoverable heat sources (e.g. Energy from Waste)
- Low temperature, 'near constant' heat sources (e.g. wastewater)
- Intermittent, recoverable heat sources (e.g. distilleries)
- Ambient heat sources (e.g. water and ground source heat pumps).
- Large-scale heat sources (e.g. River Tay or Binn Farm EfW plant)

2.32 The impact of growth in renewables on local grid constraints will be a key consideration in future energy system planning. This evidence will support in the consideration of where future proposals may be most sustainably located, including consideration of any cumulative effects.

## Gas Infrastructure Network

2.33 The gas network in Scotland is operated by SGN. The existing [gas network](#) includes data on the various pipe infrastructure including low to regional high pressure pipes.

2.34 Most of the Council area is supplied by the gas network, however there are areas, particularly in rural locations, where properties are off gas grid. As noted on page 18 of the LAEP, SGN "operate the gas network in the area, which currently supplies 63% of homes in Perth and Kinross." This is lower than the Scottish average – in terms of proportion of gas heated homes – and is most likely due to the number of rural properties across the PKC area. Properties off the gas grid will typically use one or more alternative forms of heating including: oil, LPG, electric storage, and/or biomass.

2.35 As part of the transition to net zero, demand for unabated natural gas is to be phased out and replaced by low carbon and ultimately renewable energy sources. This will require the transition of natural gas connections to low carbon alternatives. In collaboration with other stakeholders, SGN are trialling and exploring the potential role of a hydrogen network to support low carbon ambitions. SGN has plans for the [future of gas](#) including the [H2 Caledonia project](#) which is exploring the opportunity to connect hydrogen project sites into the national transmission system. Future plans for the gas network will be informed by the UK Government decision on the future role of hydrogen, expected in 2026, as well as PKC plans for the decarbonisation of heat.

2.36 The Proposed Plan will be required to take into account where existing gas infrastructure exists, as well as future plans for upgraded, repurposed, and any new infrastructure. There is still a large degree of uncertainty as to the future of the gas network given the drive towards net zero, as well as uncertainty around the role hydrogen may play in the overall energy mix. This will be monitored as part of the Proposed Plan stage to ensure any infrastructure plans are taken into account, including for both implementing relevant policies and any implications for the Spatial Strategy.

#### Summary analysis of evidence – existing energy infrastructure

A range of datasets and information sources have been considered in relation to existing energy infrastructure, its capacity, any planned upgrades, and the range of generation assets across the Council area. This information on existing/planned upgraded infrastructure including existing assets will directly shape the development of the Spatial Strategy of the Proposed Plan as well as supporting the assessment of proposals against relevant policies, particularly NPF4 Policy 11 and 19.

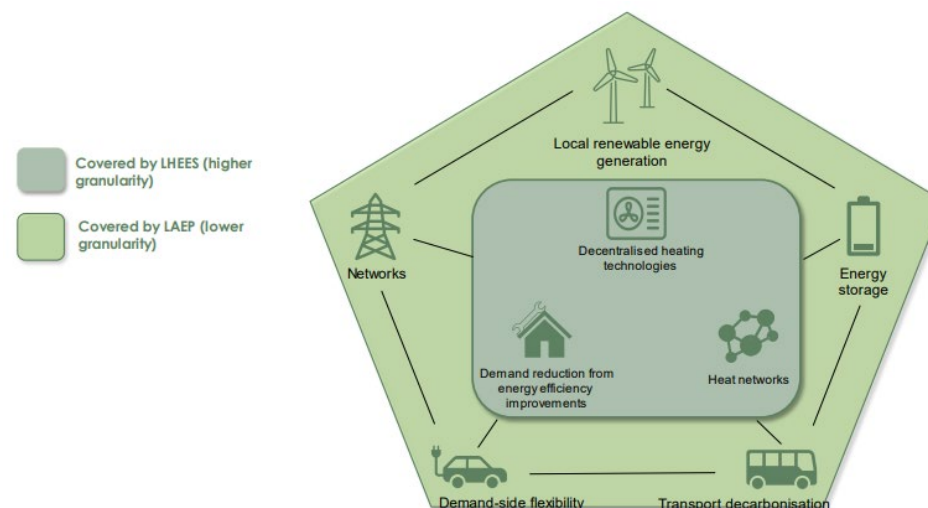
#### Future opportunities - renewable energy and decarbonised heat

##### ‘Whole Energy Systems’ approach to Energy Planning

2.37 As noted above, the Council has jointly prepared a LAEP and LHEES to support a strategic ‘whole systems’ approach to energy planning. Figure 1 provides a helpful overview of the remit of both documents and the interface(s) between these. The LHEES – covering heat and

energy efficiency as key components of the ‘whole energy system’ approach – is embedded within the LAEP. It is intended that the Council’s approach to strategic energy planning will be presented through one shared Delivery Plan given the interconnectedness between the two documents. The following section will highlight the key components of both documents and how they will be used in the preparation of the Proposed Plan.

**Figure 1: Overview of LHEES and LAEP**



##### Local Area Energy Plan (LAEP)

2.38 As noted above a LAEP has been published covering the PKC area. The objectives of the LAEP are:

- To set a well-defined pathway to a resilient, net zero local energy system that meets future demand across all energy vectors.
- To engage with and empower the local community to deliver the energy transition, supporting the creation of local jobs.
- To increase local ownership and participation in the net-zero energy system.
- To develop the evidence base to coordinate energy planning and investment across electricity, heat, and transport to maximise efficiencies and recognises the linkages between energy vectors.
- Ensuring a just transition that makes the benefits of the new energy system affordable and accessible for all, reducing fuel poverty and supporting rural energy consumers.

2.39 The LAEP also sets out a vision for an ‘optimised system for 2045’ setting out a high ambition, net-zero energy system for the PKC area, which is centred around demand reduction, electrification of heat and transport, and smart local energy generation. Figure 3.1 (p.26) of the LAEP sets out a diagram of the energy flows in the optimised energy system, noting that the electricity system is modelled to be 40% larger than baseline. The LAEP uses four transition pathways (deployment models) to identify the impact the rate of change of the energy system has on emissions and energy

consumption: business as usual, regulatory standards, public sector lead, and high ambition

Figure 3.10 (p.33) of the LAEP – as show in Appendix 3 – outlines the annual carbon emissions (ktCO<sub>2</sub>e) compared across the four transition pathways. As outlined in p.36, the LAEP outlines that the Council should aim to follow as closely as possible to the High Ambition scenario. Table 4.1 of the LAEP – as shown in Appendix 4 – outlines the rollout of different technologies and areas of focus for the High Ambition preferred pathway. In order to meet the High Ambition scenario, Figure 2 below outlines the priority intervention areas in Perth and Kinross.

**Figure 2: Local Area Energy Plan – Priority Intervention Areas**

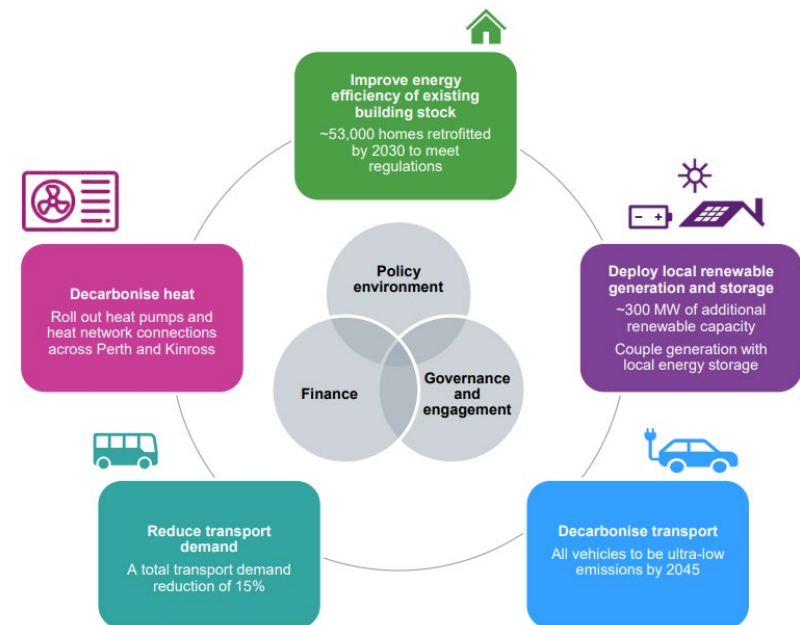


Figure 4.1: Priority intervention areas in Perth and Kinross.

The Proposed Plan will have influence over the priority interventions around deploying local renewable energy generation and storage, decarbonising heat and decarbonising transport (see TP015 Transport). Section 5 of the LAEP sets out key actions and recommendations in relation to the priority intervention areas. The following actions/recommendations are considered to be of particular relevance to the preparation of the Proposed Plan in relation to energy/heat, supported by granular data included in the LENZA tool:

- Action 2.2 - Engage with SSEN on impact of heat pumps and heat networks.
- Action 2.4 - Continue to explore strategic heat network feasibility across Perth City.
- Action 2.6 - Monitor the development of the UK Hydrogen industry.
- Action 5.3 - Reassess potential suitability for renewables.
- Action 5.4 - Engage regularly with Scottish and Southern Electricity Networks (SSEN).
- Action 5.6 Support Community Energy Schemes.

The LAEP will be used as part of the evidence base to develop the Spatial Strategy and to directly address NPF4 Policy 11 requirements around seeking to realise the area's full potential for electricity and heat from renewable, low carbon and zero emission sources by identifying a range of opportunities for energy development. The

LAEP will also help to inform energy infrastructure requirements and future heat network potential, as per NPF4 Policies 18 and 19 respectively.

### **Local Heat and Energy Efficiency Strategy (LHEES)**

2.40 The preparation of a Local Heat and Energy Efficiency Strategy and Delivery Plan is a new [statutory duty](#) for local authorities. The aim of LHEES is to prioritise areas for the delivery of heat decarbonisation actions covering all building sectors (domestic, non-domestic, and public buildings). LHEES is underpinned by a strategic framework for decarbonising heat in these buildings over a 20-year period, supported by a short-term (5-year) delivery plan. Prepared by local authorities, LHEES provide a place-based, locally-led approach to the heat transition. The Strategies and Delivery Plans are a key tool in supporting and coordinating net zero action in relation to buildings, as per the Heat in Buildings Strategy.

2.41 The Council published a draft [LHEES Strategy and Delivery Plan](#) in October 2023. The draft included a draft vision, priorities and actions to shape the first PKC LHEES and accompanying Delivery Plan (2024-2029). The PKC LHEES is driven by Scotland's overarching statutory targets for greenhouse gas emissions reduction and fuel poverty.

2.42 National guidance sets out that LHEES should be drawn around six considerations under two key themes as follows:

Heat decarbonisation

- Off-gas grid buildings



- On-gas grid buildings
- Heat networks

#### Energy Efficiency and other outcomes

- Poor building energy efficiency
- Poor building energy efficiency as a driver for fuel poverty
- Mixed tenure, mixed use and historic buildings

2.43 Sections 1-3 of the LHEES Strategy provide a useful baseline of domestic and non-domestic properties, and fuel poverty likelihood, across the PKC area. Key statistics in relation to the status of domestic and non-domestic properties are noted below:

- 69% of domestic properties will need energy efficiency retrofitting by 2023.
- 58% of domestic properties have an EPC rating of D-G, which is higher than the national average of 51%.
- 63% of domestic properties are currently served by the gas grid, while 36% are known as being off-gas grid.
- Fuel poverty and Extreme Fuel Poverty likelihood levels in PKC are higher than the national averages.
- The estimated total heat demand of all non-domestic buildings in PKC is approximately 810GWh/yr.
- 13% of all non-domestic buildings' heat demand is under control of the Council.

2.44 To help achieve the visions and outcomes set out, the LHEES includes two strategic priorities that forms the basis of the Strategy and Delivery Plan:

- Priority 1: Decarbonising heat within a transitioning energy system focusing on heat networks and heat pumps.
- Priority 2: Improving buildings energy efficiency to aim for affordable warmth and regulatory compliance.

Priority 1 is of particular relevance for the preparation of the Proposed Plan regarding the deployment of heat networks and strategic heat network zoning. Strategic priority 1a is centred around 'Delivering decarbonised heat within a transitioning energy system – heat network zones'. The LHEES has identified potential heat network zones, which are available to view using the [LHEES web map](#). The methodology for identifying potential heat network zones is outlined in the LHEES document, including the identification of stringent (higher potential) and baseline options. The LHEES notes that due to the nature of the PKC area, the potential for heat networks in the local authority area is limited to a few urban areas and towns. The potential heat network zones (as show in Figures 7-10 in the LHEES document) include:

- Perth City Centre
- Perth Inveralmond Industrial Estate
- Perth College/UHI
- Perth Academy

- Auchterarder
- Kinross
- Blairgowrie

2.45 A range of actions have been included to support the further analysis/development of the heat network zones. A key action is to formally designate any heat network zones, as required by the [Heat Networks \(Scotland\) Act 2021](#).

2.46 More generally, the two strategic LHEES priorities are underpinned by a range of ‘delivery priorities’ to support the Delivery Plan actions. The first delivery priority ‘potential heat network zones’ is of particular relevance to the preparation of the Proposed Plan. The Delivery Plan is supported by a range of enabling actions:

- Taking a whole energy systems approach
- Developing green skills and the capacity of the supply chain
- Working in partnership with communities
- Mobilising partners and public / private investments for projects

2.47 The draft LHEES Strategy and Delivery Plan is expected to be finalised and adopted in Summer 2024. Any updates will be considered and incorporated into the Evidence Report submission later this year.

2.48 In addition to the above, a detailed study has been undertaken into the feasibility of a heat network in Perth City Centre. This year, PKC has received additional funding through the Heat Network Support

Unit (HNSU) to further develop this project. The HNSU funded project will explore a concept design for a large-scale, city-wide heat network through expansion and refinement of identified zones as well as the role of a city-wide heat network as a key anchor project for the delivery of a wider strategic energy programme.

2.49 Any further advancement of projects in relation to heat network development will be monitored through the Proposed Plan preparation process.

2.50 As required by NPF4 Policy 19, the Proposed Plan will be expected to align with the LHEES and take into account areas of heat network potential and any designated Heat Network Zones (HNZ). The supply of energy to support potential heat network projects will also need to be considered, including any land use zoning implications. The development of the Spatial Strategy will take these projects into account.

### **Smart Perth and Kinross**

2.51 The Council’s Smart Investment team have developed a ‘Smart Perth & Kinross’ prospectus. The vision identifies that:

- Perth and Kinross will be Net Zero and Beyond by 2045 or sooner.
- Perth will be the most sustainable city in Europe.
- Perth and Kinross economy will be Net Zero, high value and innovation driven.



The vision will be delivered by:

- Building on our key green energy assets,
- Developing key clusters/projects,
- Delivering key green energy and low carbon smart investments.

2.52 The Investment Prospectus includes '[Green Assets](#)' (dated 2020) which includes existing renewable energy assets within the PKC area, potential future strategic opportunities, and how PKC performs in comparison to other local authorities in the UK. The map is included in Appendix 5.

2.53 The Prospectus also includes further detail of low carbon/green energy investment opportunities at:

- Binn Eco Park and the Abernethy Cluster (see Appendix 6)
- Perth West, Broxden & Perth City Cluster (see Appendix 7)

Key smart investments across the region are also identified (Appendix 8), including:

- Perth & Kinross Smart Energy Programme: create a smart local energy system complementing grids and driven by data and economic opportunities.
- Project Sandstone: private green electricity network from Binn Eco Park/Abernethy to Perth City.
- Green hydrogen initiative: harness green electricity to produce green hydrogen for heat and transport.

- Binn Eco park: develop a Centre of Excellence for Circular Economy.
- PK Housing and Estate Green Investment Programmes across the region.

2.54 An Energy from Waste plant is currently under construction at Binn Eco Park, as part of a joint agreement with the Council. Future opportunities for the transmission of heat/electricity from Binn Eco Park is also recognised.

2.55 The Smart Perth and Kinross programme will be supplemented by the establishment of a long-term Strategic Energy Partnership between the Council and relevant private sector partner(s), which is intended to develop and deliver strategic energy and low carbon projects to enable Perth & Kinross to meet net zero by 2045. This project is currently in the procurement stages. This partnership approach has the potential to accelerate and maximise opportunities for strategic energy and low carbon projects in the PKC area. It is noted that the Strategic Energy Partnership is expected to be a long-term programme with projects spanning a 25-year period (including district heating).

2.56 Where any existing/planned project(s) have implications for land use, these will continue to be monitored and included – where relevant – in the development of the Spatial Strategy for the Proposed Plan, subject to associated site assessment(s) and collaboration with relevant stakeholders.

## Hydrogen

2.57 As noted in the LAEP (p.18) there are currently no major hydrogen projects in the area or identified in the Scottish Government Hydrogen Action Plan. There are however potential plans for an electrolyser installation at Binn Eco Park, which will be considered further as part of any associated site assessments at the Proposed Plan stage if relevant.

## Marine Planning

2.58 As the PKC area has limited coastline along a short section of the River Tay, there are no significant implications arising from the following policy documents in terms of energy:

- Sectoral Marine Plan for Offshore Wind Energy.
- Innovation and Targeted Oil and Gas Sectoral Marine Plan.
- National Marine Plan and associated Regional Marine Plans.

## Community Projects

2.59 The Council has mapped existing known [community projects](#) which are taking climate action. Where any existing/planned project(s) have implications for land use, these will continue to be monitored and included – where relevant – in the development of the Spatial Strategy for the Proposed Plan, subject to associated site assessment(s) and collaboration with relevant stakeholders.

### Summary analysis of evidence – opportunities for renewable energy and decarbonised heat

A range of datasets and information sources have been considered in relation to future renewable and low carbon energy development opportunities including decarbonised heat. The Council's LAEP provides a strategic framework to help inform a 'whole energy systems' approach to meet net zero 2045. Alongside this, the Smart Perth & Kinross Programme includes a range of future projects that will shape the region's net zero ambitions.

The range of future renewable energy opportunities identified will be considered in detail as part of the development of the Spatial Strategy of the Proposed Plan. This will help to realise the area's full potential for electricity and heat from renewable, low carbon and zero emission sources by identifying a range of opportunities for energy development (as expected under NPF4 Policy 11).

As per NPF4 Policy 19, the Council's LHEES Strategy and Delivery Plan will inform the consideration of the development of heat networks as part of the next Plan's Spatial Strategy. Of key relevance, the draft LHEES includes 7 potential heat network zones (5 in Perth City, 1 each in Kinross, Blairgowrie and Auchterarder). These will be further assessed during the formal designation process, as required by the Heat Networks (Scotland) Act.

## **Constraints & Environmental Considerations**

2.60 Under Policy 11 of NPF4, there are a range of environmental and other land use considerations that are required to be considered during both project design and the assessment of associated proposals.

### **Landscape Designations**

2.61 In the Perth and Kinross Council area, there are two National Parks – Cairngorms, and Loch Lomond and the Trossachs. There are also a number of National Scenic Areas (NSAs) within and adjacent to the Council boundary. These designations are referenced specifically in relation to wind farm developments, as per NPF4 Policy 11b which states that: “Development proposals for wind farms in National Parks and National Scenic Areas will not be supported.” Appendix 9 includes a map from the Council’s Adopted Landscape Supplementary Guidance (2020) which shows these designations as well as other landscape designations, including PKC Local Landscape Areas and those from neighbouring local authority areas.

### **Other International and National Designations**

2.62 Other relevant international and national designations that will be relevant to the consideration of renewable energy proposals against NPF4 Policy 11 are included in the following topic papers:

- TP 005 – Biodiversity and Natural Places
- TP 006 – Soils

- TP 007 – Forestry, Woodland and Trees
- TP 008 – Historic Assets

### **Landscape Capacity Study for Wind**

2.63 In 2010, the Council commissioned a detailed [Landscape Capacity Study](#) to inform wind energy development in the PKC area. This study predates the NatureScot [Landscape Sensitivity Study](#) approach to assessing landscape impact from specific development types, however it is still considered relevant in highlighting sensitive landscape features within the PKC area. Features such as the Highland Boundary Fault, and important viewpoints and tourist routes are included. The study will assist in the assessment of landscape impact from wind farm developments.

#### **Summary analysis of evidence – environmental & other constraints**

A range of datasets and information sources have been considered in relation to the potential for a range of environmental impacts to arise from renewable and low carbon developments, including on natural heritage and landscape. These constraints, including those considered further under other topic papers, will help to inform the assessment of opportunities for new renewable and low carbon developments, both through the preparation of the Proposed Plan as well as through the assessment of development proposals.

## **Existing Policy & Guidance**

### **Local Development Plan (2019) - Policies 33, 34 and 35**

- 2.64 In terms of local planning policy, the following policies of the [Perth and Kinross Local Development Plan \(2019\)](#) are of relevance to energy and heat. It is important that LDP policies pre-date the adoption of NPF4 policies.
- 2.65 Policy 33 (Renewable and Low Carbon Energy) provides the local policy context for the consideration of renewable and low carbon energy developments.
- 2.66 Policy 34 (Sustainable Heating and Cooling) provides the local policy context for the consideration of proposals in relation to sustainable heating and cooling including district heating.
- 2.67 Policy 35 (Electricity Transmission Infrastructure) provides the local policy context for the consideration of electricity transmission infrastructure proposals including replacement of existing, and development of new, infrastructure.

### **Spatial Framework for Wind – Policy 33D**

- 2.68 As required through the previous Scottish Planning Policy, the current Local Development Plan (2019) includes Policy 33D (Spatial Framework for Wind). The LDP Evidence Report Guidance notes that Spatial Frameworks can be used to help inform future LDPs. The Spatial Framework includes many of the designations noted in the

Environmental Constraints section above as well as a community separation buffer of up to 2km around existing settlements. Whilst NPF4 Policy 11 does not specifically refer to the need to prepare a Spatial Framework for Wind, the existing map included under LDP Policy 33D can be used to inform where specific designations and other environmental assets are located and require further consideration at the application stage. The Spatial Framework for Wind map is available in Appendix 10.

### **Section 3F – Planning Policies on Low /Zero Carbon Technologies**

- 2.69 LDPs are required by Section 3F of the Act<sup>2</sup> (NB: Section 72 of the Climate Change (Scotland) Act) to include policies “requiring all developments in the LDP area to be designed so as to ensure that all new buildings avoid a specified and rising proportion of the projected greenhouse gas emissions from their use, calculated on the basis of the approved design and plans for the specific development, through the installation and operation of low and zero-carbon generating technologies.”
- 2.70 LDP Policy 32 (Embedding Low and Zero Carbon Generating Technologies in New Development) has been adopted to meet this requirement of the Act.
- 2.71 The [Fourteenth Annual Report on the Operation of Section 72 of the Climate Change \(Scotland\) Act 2009](#) notes that with changes in building and heat standards there is now no longer a requirement for

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<sup>2</sup> Town and Country Planning (Scotland) Act 1997

policies related to Section 3F. Section 1.8 of the Annual Report notes that this conclusion enables Scottish Ministers to prepare an Order to repeal the legislation. Until such time as the repeal order is in force, LDP Policy 32 will continue to be implemented. This is unlikely to be a matter for the next LDP, subject to confirmation that the legislative requirements are repealed.

### **New Build Heat Standard (2024)**

2.72 The introduction of the [New Build Heat Standard](#) in April 2024 means that any new build homes and properties will no longer be allowed to be heated through direct emissions heating such as gas. This is controlled through the Building Standards process, however it is expected to give rise to an uptake in electrical heating systems e.g. heat pumps, which will have implications on demand and capacity of the grid.

### **Renewable Energy Supplementary Guidance**

2.73 The Council has prepared and consulted on [draft Supplementary Guidance for Renewable and Low Carbon Energy](#) proposals. In light of the adoption of NPF4 and the significant updates to national planning policy on energy, the Council is programming an update to the Guidance late 2024/early 2025. This will be prepared taking due cognisance of NPF4 and other key national and local policies and strategies. The updated Guidance will help to inform the assessment of renewable energy proposals when adopted.

### **Summary analysis of evidence – existing policy & guidance**

A range of existing policy and guidance documents that are directly relevant have been considered including existing LDP policy and supplementary guidance as well as national legislation and regulation. These provide context and will help to inform the assessment of opportunities for new renewable and low carbon developments, both through the preparation of the Proposed Plan as well as through the assessment of development proposals.

### **Stakeholder Engagement**

- 2.74 We have engaged with SSEN (transmission & distribution), SPEN and SGN in the evidence gathering phase of this topic paper.
- 2.75 We would welcome views from stakeholders on the sufficiency of the evidence to be used to support preparing the Proposed Plan, including where there are disputes with the evidence presented and/or additional evidence should be included.

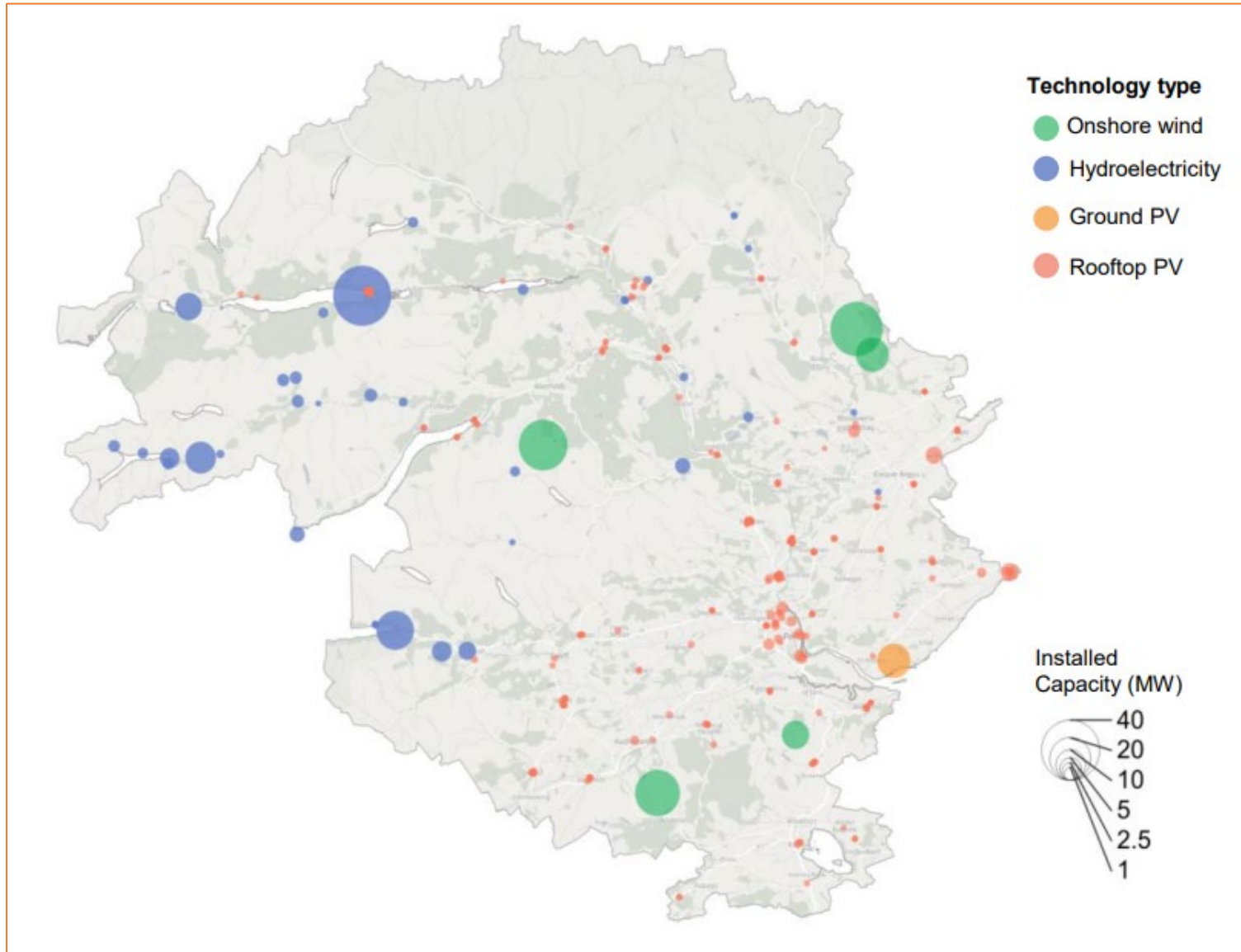
Appendix 1: Summary Table: Links to Evidence Gathered and Analysed

Act or NPF	Requirement or Expectation	Dataset or source	Relevance of evidence and why it is required to inform the Proposed Plan (what it tells us and / or how we will use it?)	Gaps or uncertainties in data	Included?
<p>Act – Section 16B</p> <p>NPF4 Policy 11, 18</p> <p>Local Development Planning Guidance (2023)</p>	<ul style="list-style-type: none"> <li>The infrastructure of the district (including systems for the supply of energy).</li> <li>How that infrastructure is used.</li> <li>evidence on infrastructure capacity, condition, needs and deliverability within the plan area, including cross boundary infrastructure.</li> <li>infrastructure requirements to deliver the spatial strategy, informed by the evidence base, identifying the infrastructure priorities, and where, how, when and by whom they will be delivered.</li> <li>align with relevant national, regional and local infrastructure plans and policies.</li> </ul>	<p><b>SSEN - Transmission</b></p> <ul style="list-style-type: none"> <li><a href="#">SSEN transmission network infrastructure</a></li> <li><a href="#">SSEN network map tool</a></li> <li><a href="#">SSEN Transmission Pathway to 2030 projects</a></li> <li><a href="#">SSEN Transmission projects map</a></li> </ul> <p><b>SSEN - Distribution</b></p> <ul style="list-style-type: none"> <li><a href="#">SSEN distribution network infrastructure</a></li> <li><a href="#">SSEN Distribution embedded capacity</a></li> <li><a href="#">SHEPD Long Term Development Statement</a></li> <li><a href="#">SEPD Long Term Development Statement</a></li> <li><a href="#">Distribution Network Future Energy Scenario (DFES) Report (2024)</a></li> </ul> <p><b>Cross boundary (SPEN)</b></p> <ul style="list-style-type: none"> <li><a href="#">SPEN transmission infrastructure network</a></li> <li><a href="#">SPEN distribution infrastructure network</a></li> </ul> <p><b>Existing/Consented Renewable Energy Assets</b></p> <ul style="list-style-type: none"> <li><a href="#">UK Govt Renewable Energy statistics</a></li> <li><a href="#">PKC mapping - location of renewable energy proposals</a></li> </ul> <p><b>SGN (Gas)</b></p> <ul style="list-style-type: none"> <li><a href="#">SGN gas network infrastructure</a></li> <li><a href="#">The future of the gas network</a></li> </ul>	<p>This information on existing/planned upgraded infrastructure including existing assets will directly shape the development of the Spatial Strategy of the Proposed Plan as well as supporting the assessment of proposals against relevant policies, particularly NPF4 Policy 11 and 19.</p>	<p>N/A</p>	<p>Yes.</p>
<p>Act – Section 16B</p> <p>NPF4 Policy 11</p>	<ul style="list-style-type: none"> <li>Land available for the development and use of</li> </ul>	<p><b>Renewable Energy Generation Opportunities</b></p> <ul style="list-style-type: none"> <li><a href="#">Local Area Energy Plan (LAEP)</a></li> <li><a href="#">LHEES Strategy and Delivery Plan</a></li> <li><a href="#">'Smart Perth &amp; Kinross' Investment Prospectus</a></li> </ul>	<p>In order to consider opportunities for future renewable energy development, a range of information sources, existing LDP</p>	<p>Renewable Energy Supplementary Guidance to be</p>	<p>Yes. Topic Papers 005, 006,</p>

<p>Local Development Planning Guidance (2023)</p>	<p>facilities for renewable sources of energy.</p> <ul style="list-style-type: none"> <li>LDPs are expected to seek to realise their area’s full potential for electricity and heat from renewable, low carbon and zero emission sources by identifying a range of opportunities for energy development.</li> </ul>	<p><b>Constraints &amp; Environmental Considerations</b></p> <ul style="list-style-type: none"> <li><a href="#">Landscape Capacity Study</a></li> </ul> <p><b>Spatial Framework for Wind</b></p> <ul style="list-style-type: none"> <li><a href="#">Local Development Plan, Policy 33D (p.57-8)</a></li> </ul> <p><b>Renewable Energy Supplementary Guidance (draft)</b></p> <ul style="list-style-type: none"> <li><a href="#">draft PKC Supplementary Guidance for Renewable and Low Carbon Energy</a></li> </ul>	<p>policy and guidance as well as existing data on environmental and other constraints have been considered. This information will form the evidence base from which the Spatial Strategy of the Proposed Plan will seek to identify a range of opportunities for energy development.</p>	<p>updated late 2024/early 2025.</p>	<p>007, 008 also refer.</p>
<p>NPF4 Policy 19</p>	<ul style="list-style-type: none"> <li>take into account the area’s Local Heat &amp; Energy Efficiency Strategy (LHEES); and</li> <li>the spatial strategy should take into account areas of heat network potential and any designated Heat Network Zones (HNZ).</li> </ul>	<p><b>Local Heat and Energy Efficiency Strategy</b></p> <ul style="list-style-type: none"> <li><a href="#">LHEES Strategy and Delivery Plan</a></li> </ul>	<p>As per NPF4 Policy 19, the Council’s LHEES Strategy and Delivery Plan will inform the consideration of the development of heat networks as part of the next Plan’s Spatial Strategy. Of key relevance, the draft LHEES includes 7 potential heat network zones (5 in Perth City, 1 each in Kinross, Blairgowrie and Auchterarder). These will be further assessed during the formal designation process, as required by the Heat Networks (Scotland) Act.</p>	<p>LHEES Strategy &amp; Delivery Plan to be finalised Q2/Q3 2024.</p>	<p>Yes.</p>

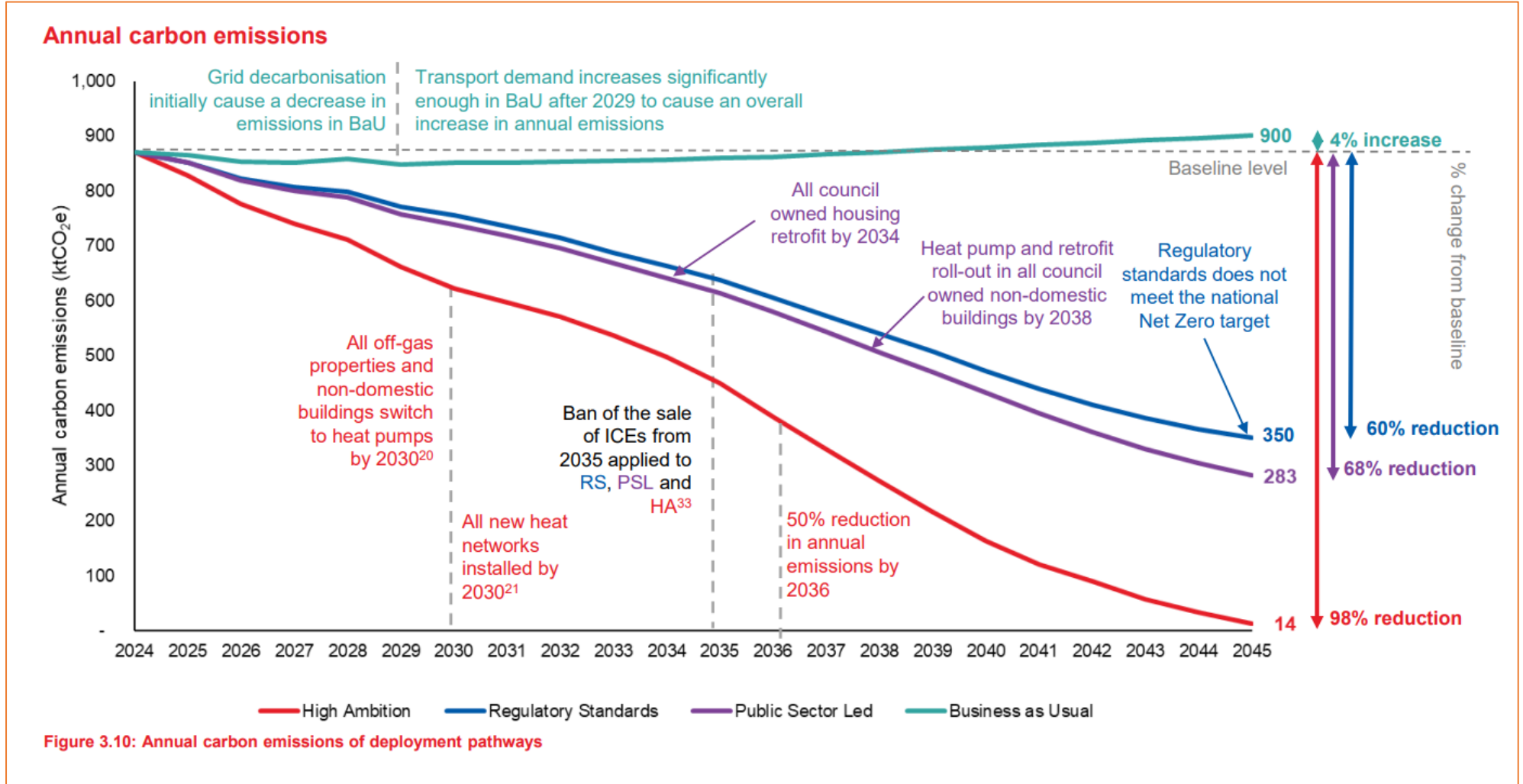


Appendix 2: Map of Existing Renewable Generation Assets<sup>3</sup>



<sup>3</sup> Perth & Kinross Local Area Energy Plan, Fig 2.11 (p.22). Available - [Perth and Kinross LAEP \(pkclimateaction.co.uk\)](http://pkclimateaction.co.uk).


















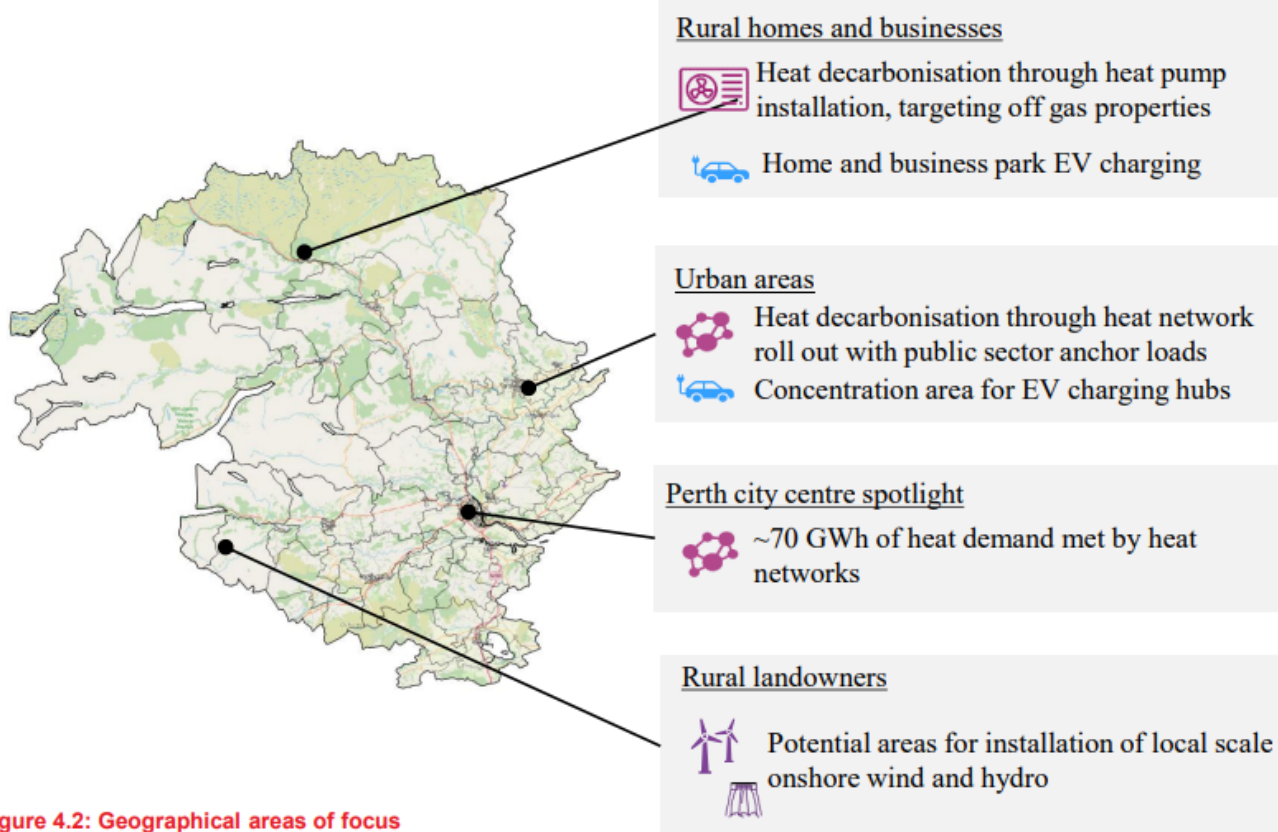
<sup>4</sup> Perth and Kinross Local Area Energy Plan, Figure 3.10. Available - [Perth and Kinross LAEP \(pkclimateaction.co.uk\)](http://pkclimateaction.co.uk)

## Plan on a page

For the High Ambition pathway, the Figure 4.2 has been produced to highlight the rollout of different technologies across Perth and Kinross and areas of focus. From these targets the priority intervention areas and following action plan have been identified. Table 4.1 breaks down the final total targets for interventions by 2045.

**Table 4.1: Area wide rollout needed by 2045.**

Action category		Target
	Homes retrofit	~ 71,900
	Buildings with HPs installed	~ 47,700
	Properties connected to HNs	~ 3,000
	Rooftop PV panels	~ 390,000
	Hydroelectricity sites	~ 117
	Local onshore wind turbines	~ 14
	Home batteries (with PV)	~ 13,500
	Fast chargers installed	~ 10,500
	Hydrogen refuelling stations	~ 5
	HGV mileage reduction	15%
	Bus use increase	10%
	Van mileage increase	5%
	Car mileage decrease	20%



**Figure 4.2: Geographical areas of focus**

<sup>5</sup> Perth and Kinross Local Area Energy Plan, Table 4.1. Available - [Perth and Kinross LAEP \(pkclimateaction.co.uk\)](http://pkclimateaction.co.uk).





<sup>6</sup> 'Smart Perth & Kinross' Programme: [Mapping out low carbon & green energy smart investments](#), 2022.

## Binn Eco Park & Abernethy Cluster



### GENERATION & STORAGE

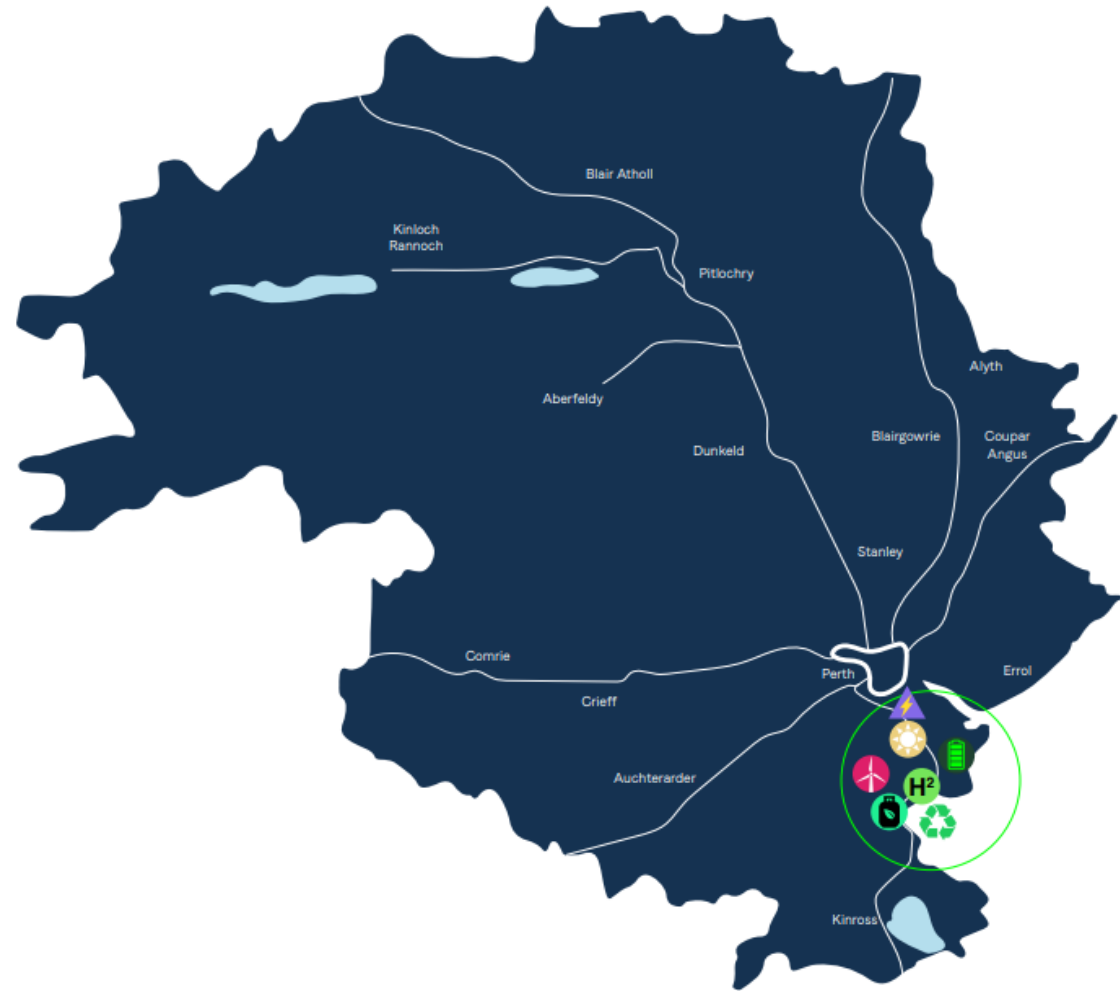
-  Solar 20MW (planned)
-  Wind 9MW (existing)
-  Energy from Waste (planned)
-  Anaerobic Digestion (existing)
-  Landfill Gas 14.5MW (existing)
-  Battery Storage 10MW (planned)

### PROJECTS: DELIVERY STAGE

-  SSEN Abernethy Sub station upgrade
-  Circular Economy/Resource Management hub

### PROJECTS: FEASIBILITY STAGE

-  Project Beacon/Advanced Plastics Recycling
-  H<sup>2</sup> Hydrogen Production



<sup>7</sup> 'Smart Perth & Kinross' Programme: [Mapping out low carbon & green energy smart investments](#), 2022.



## Perth West, Broxden & Perth City Cluster







### GENERATION & STORAGE (INSTALLED)

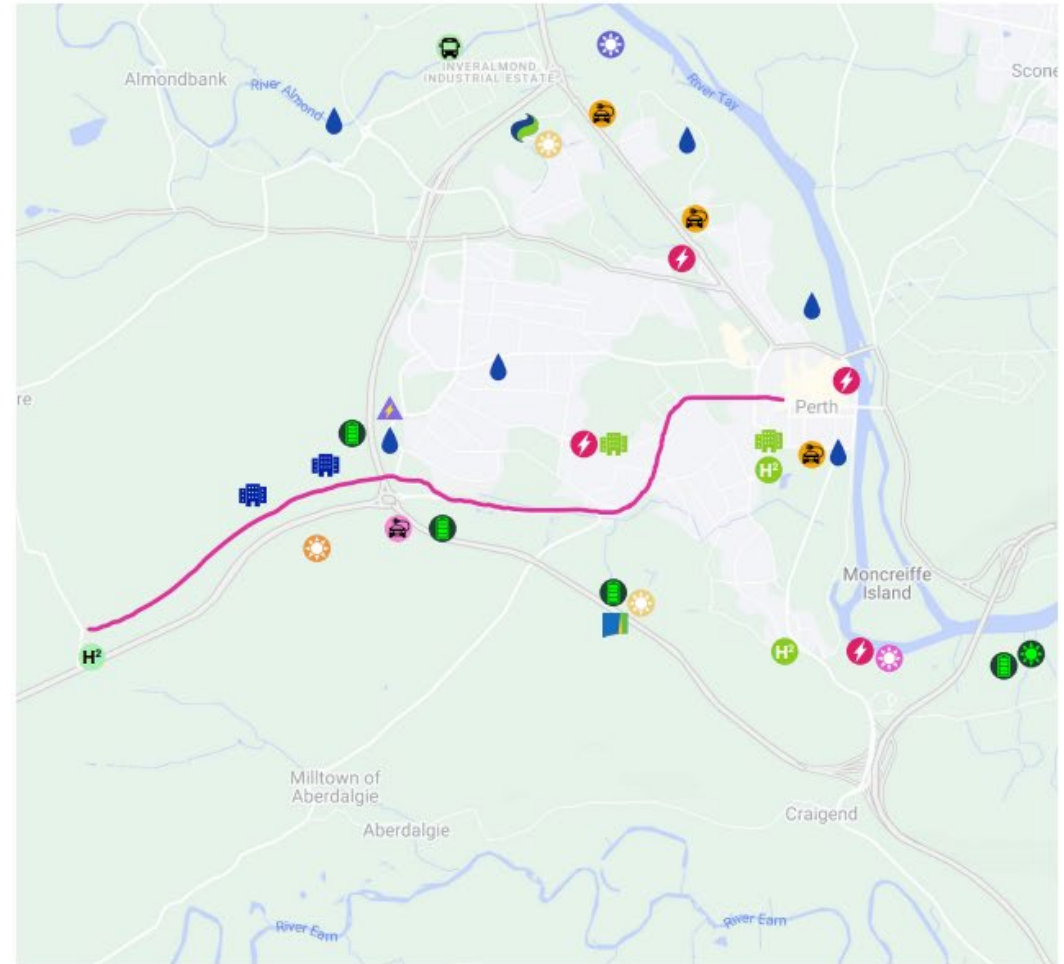
-  49MW Battery Storage
-  1MW Scottish Water Treatment plant solar/battery
-  0.1MW PKC Food and Drink Park solar
-  0.3MW PKC Friarton Depot solar
-  0.9MW SSE Headquarters/depot solar

### PROJECTS: EXISTING / DELIVERY STAGE

-  Broxden Tesla EV charging
-  Broxden P&R Local Carbon Transport Hub (EV/solar/battery)
-  EV Fast Charging
-  Stagecoach/SSE Bus EV charging
-  SSEN Burghmuir sub station upgrade
-  Aviva Local Carbon headquarters
-  PKC Smart Energy Network (Pilots)
-  Scottish Water Waste Water Network upgrade
-  Scottish Water Drinking Water Network upgrade

### PROJECTS: FEASIBILITY STAGE

-  Perth Innovation Highway
-  Perth Eco Innovation Park
-  Hydrogen production/refuelling (HGV/Bus)
-  25MW Solar (Dr Eco)
-  Hydrogen production/refuelling (Fleet/Rail)
-  PassivHaus PH20/Perth Academy/Perth High Net Zero Campus



<sup>8</sup> 'Smart Perth & Kinross' Programme: [Mapping out low carbon & green energy smart investments](#), 2022.

## Key Smart Investments

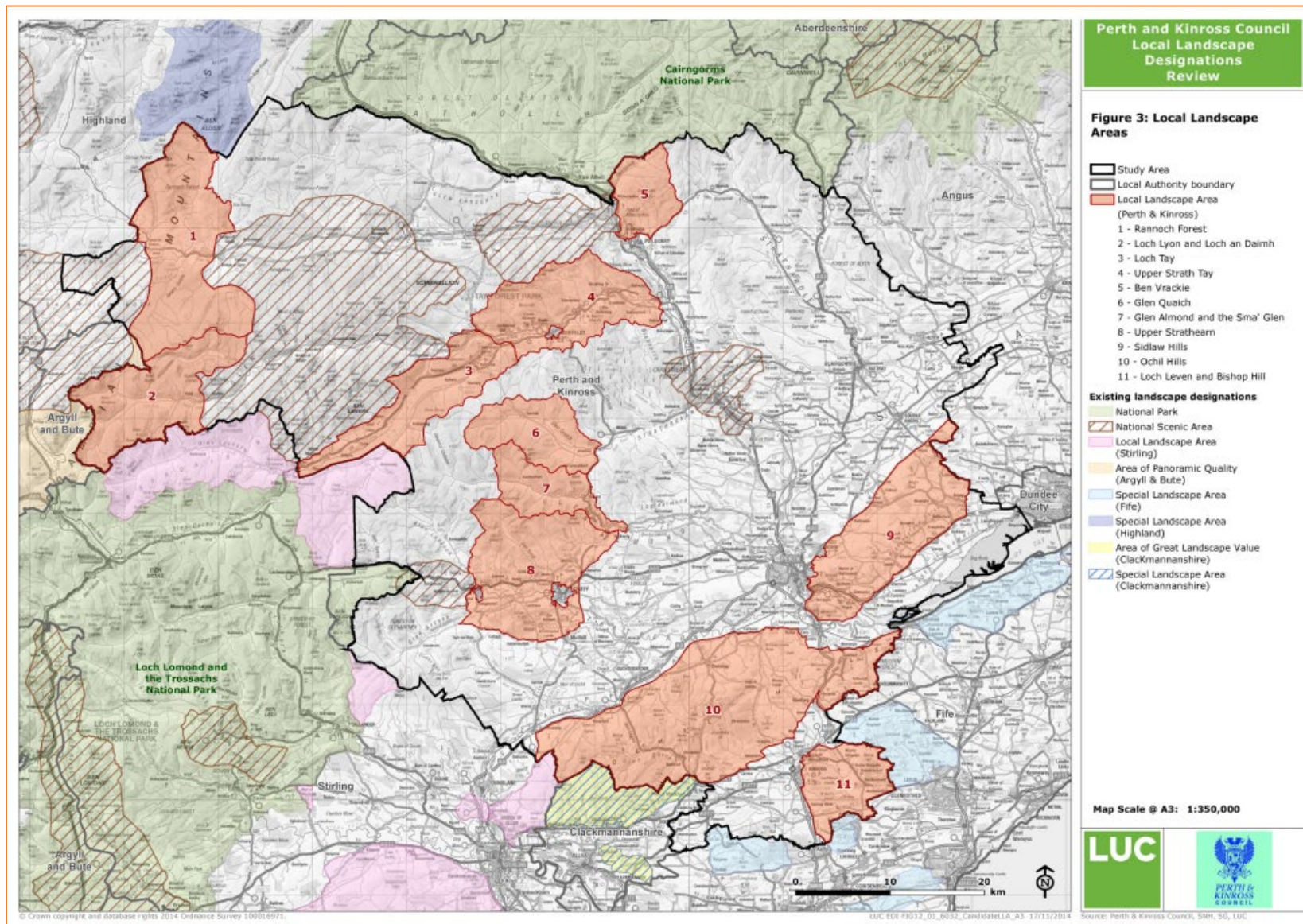
- ⚡ **PK Smart Energy Programme**
  - Create a Smart Local Energy System complementing grids and driven by data and economic opportunities
  
- 🚚 **Perth Green Transport National Hub @ Perth Eco Innovation Park**
  - Decarbonise Scotland Transport Logistics/Supply chains (HGVs, commercial vehicles) and Transport Tourism (coaches)
  
- 📍 **Project Sandstone**
  - Private Green electricity Network from Binn Eco Park/Abernethy to Perth City using Power Purchase Agreements
  
- H<sup>2</sup> **Green hydrogen initiative**
  - Harness green electricity to produce green hydrogen for heat and transport
  
- ♻️ **Binn Eco Park**
  - Develop a Centre of Excellence for Circular Economy
  
- 🏠 **PK Housing and Estate Green Investment Programmes**
  - Across the region



<sup>9</sup> 'Smart Perth & Kinross' Programme: [Mapping out low carbon & green energy smart investments](#), 2022.

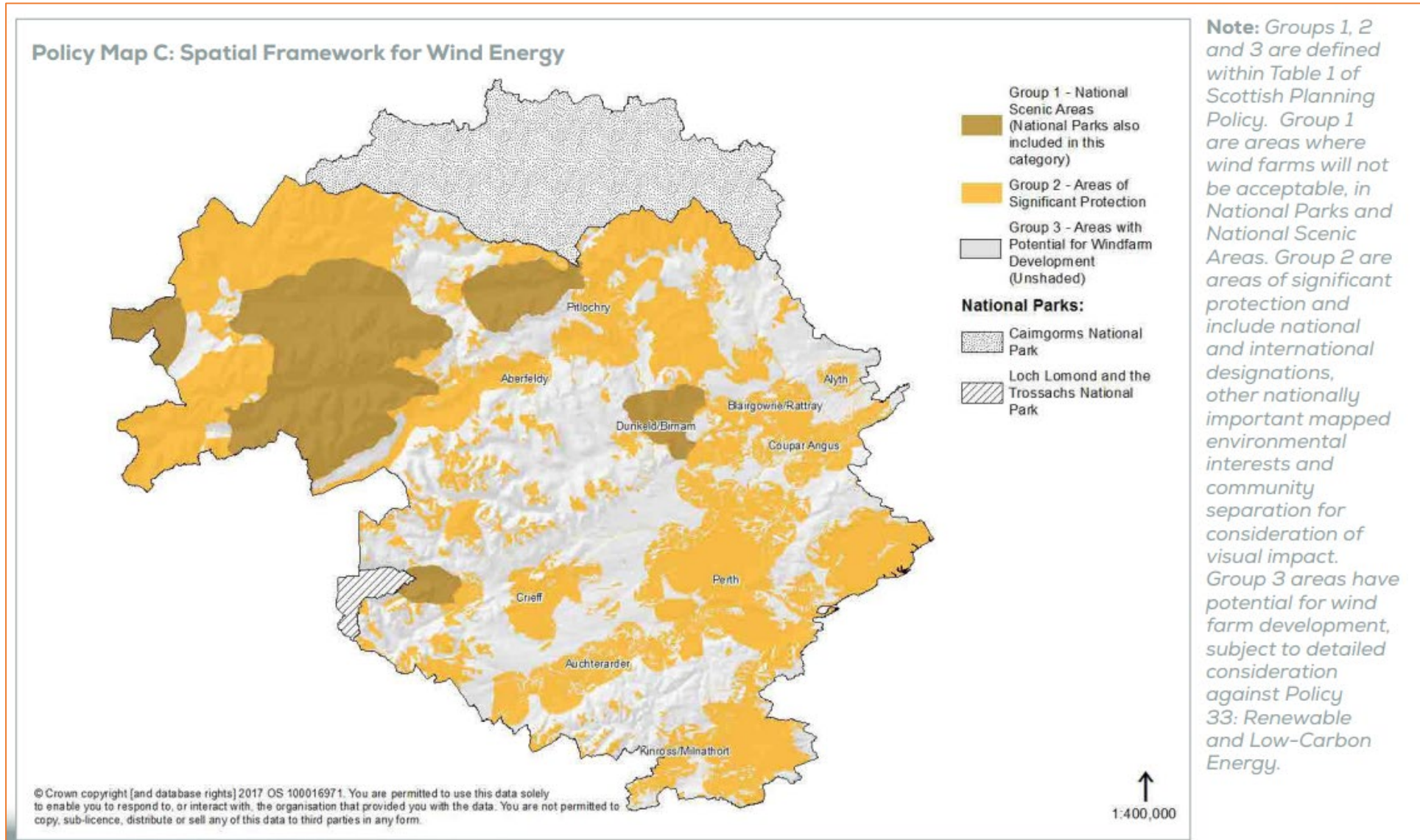


Appendix 9: Map of Landscape Designations in Perth and Kinross<sup>10</sup>



<sup>10</sup> Map of Landscape designations in Perth and Kinross, [‘Landscape’ Supplementary Guidance, 2020](#).





<sup>11</sup> Policy 33D - Spatial Framework for Wind Map: [Perth and Kinross Local Development Plan \(2019\)](#)