Topic 7: Energy and Resources

Engagement version March 2025

Requirements addressed in this section:

Information required by the Town and Country Planning (Scotland) Act 1997, as amended, regarding the issue addressed in this section

Town and Country Planning (Scotland) Act 1997, as amended

Section	Requirement
Section 15(5)(a)	the principal physical, cultural, economic, social, built heritage and environmental characteristics of the district,
Section 15(5)(d)	the infrastructure of the district (including communications, transport and drainage systems, systems for the supply of water and energy, and health care and education facilities
Section 15(5)(e)	how that infrastructure is used

National Planning Framework 4

Energy

Local Development Plans (LDPs) should 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.

Heating and Cooling

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

Minerals

LDPs should support a landbank of construction aggregates of at least 10-years at all times in the relevant market areas, whilst promoting sustainable resource management, safeguarding important workable mineral resources, which are of economic or conservation value, and take steps to ensure these are not sterilised by other types of development.

Zero Waste

LDPs should identify appropriate locations for new waste management infrastructure to support the circular economy and meet identified needs in a way that moves waste as high up the waste hierarchy as possible.

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Links to Evidence

Energy

- Scottish Government Draft Energy Strategy and Just Transition Plan (2023)
- Scottish Government Onshore Wind Policy Statement
- Scottish Government Offshore Wind Policy Statement
- Scotland's National Marine Plan: A Single Framework for Managing Our Seas
- Sectoral Marine Plan for Offshore Wind Energy
- Initial Plan Framework Sectoral Marine Plan for Offshore Wind for Innovation and Targeted Oil and Gas Decarbonisation (INTOG)
- marine.gov.scot
- ScotWind leasing round | Crown Estate Scotland
- Scottish Government Hydrogen Policy Statement
- Development of early, clean hydrogen production in Scotland
- Hydrogen Action Plan
- Scotland Hydrogen Assets (arcgis.com)
- Net Zero Aberdeen: Energy Supply Strategy
- SensitivityStudyFinal2021.pdf (aberdeencity.gov.uk)
- ETZ_Draft_Masterplan_January_2024 (aberdeencity.gov.uk)
- Aberdeen City Region Hydrogen Strategy & Action Plan 2015-2025
- ETZ | Hydrogen (etzltd.com)
- Homepage - Aberdeen (bpaberdeenhydrogenhub.com)
- Anaerobic Digestion at Aberdeen – Anaerobic Digestion at Aberdeen (adatab.org)

Heating and Cooling

- Scottish Government Heat in Buildings Strategy: Achieving Net Zero Emissions in Scotland's Buildings
- New Build Heat Standard - gov.scot
- Social housing net zero standard: consultation - gov.scot
- Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update - gov.scot (www.gov.scot)
- Scotland Heat Map
- GHiGs Settlement Dashboard (arcgis.com)
- Net Zero Aberdeen: Buildings and Heat Strategy
- District heating | Aberdeen City Council
- Heatnet: delivering low carbon district heat | Aberdeen City Council

Minerals

- 10th Annual Mineral Planning Survey 2022
- Aggregates demand and supply in Great Britain Scenarios for 2035
- Collation of the results of the 2019 Aggregate Minerals Survey for Scotland (www.gov.scot)

Zero Waste

- Zero Waste Plan
- Circular Economy (Scotland) Act 2024
- Stop, Sort, Burn, Bury - incineration in the waste hierarchy: independent review
- Decarbonisation of residual waste infrastructure: report - gov.scot
- Circular Economy and Waste Route Map to 2030
- Household waste generated and managed 2023
- spp-waste-capacity-infrastructure.xlsx (live.com)
- SPP Waste Capacity Infrastructure
- Aberdeen City Waste Strategy 2014-2025
- Net Zero Aberdeen: Circular Economy Strategy
- 240304 State-of-the-art technology and opportunities for young people at the heart of rebuild of Aberdeens recycling centre - SUEZ in UK
- Anaerobic Digestion @ Aberdeen
- NESS Energy From Waste - Aberdeen - Indaver

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Summary of Evidence

Policy context

Purpose and Scope of Evidence Report Chapter

Navigating the transition towards a sustainable, low-carbon future requires careful consideration of Aberdeen's energy and resources. Aberdeen, known for its historic linkages to the oil and gas industry, is now at the forefront of energy transition initiatives. The Net Zero Aberdeen Routemap outlines the city's approach towards reducing greenhouse gas emissions, through rapid decarbonisation across all sectors with changes to the ways in which both power and heat is generated and used. As such, investment in low-carbon energy opportunities and strategic assessment of current resource availability is central to achieving an energy system that delivers affordable, resilient and clean energy supplies for Aberdeen's households, communities and businesses. The use of energy and resources in planning will play a vital role in delivering an energy system that provides maximum community and economic benefits that are aligned with Scotland's net zero ambitions.

This will be discussed in further detail below. This section is structured in the following order:

- Energy
- Heating and Cooling
- Minerals
- Zero Waste

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Energy

Scottish Government Draft Energy Strategy and Just Transition Plan
The strategy provides the vision for Scotland's future decarbonised energy system. It outlines a route map of actions towards the Scottish Government's targets for 2030. Targets include:

- Delivery of greater than 20GW of additional renewable electricity onshore and offshore by 2030
- 5GW of hydrogen production by 2030, and 25GW of hydrogen production by 2045
- Oil and gas production levels expected to be around 35% of 2019 levels by 2035
- 2GW of community and locally owned energy
- Phase out the need for new petrol and diesel cars and vans by 2030
- The equivalent of 50% of the energy for Scotland's heat, transport and electricity use to come from renewable sources

Net Zero Aberdeen: Energy Supply Strategy
The Net Zero Aberdeen: Energy Supply Strategy outlines Aberdeen's approach towards developing low-carbon energy choices for Aberdeen citizens. It identifies the key challenges, and risks within Aberdeen's energy transition.

The Strategy sets out the challenges for the city as follows:

1. Support national grid decarbonisation and ensure that all new and existing networks city networks are zero carbon.
2. Ensure affordable energy and reduce fuel poverty in the move to net zero.
3. Support network growth for local decentralised and micro-renewable systems across all energy sectors.
4. Support growth of green hydrogen production and usage, including local demand and export
5. Capitalise on North Sea skills from industries to grow the supply chain and net zero economy.
6. Secure maximum economic benefit and output from Scotwind leasing round and Innovation to Oil and Gas (INTOG) projects.
7. Support Carbon Capture Usage and Storage (CCUS) development, financing, ownership, and funding models appropriate for new types of energy projects.

The Strategy outlines the following outcomes:

Key Outcomes	About the Approach
Fuel Poverty	Work with generators and utilities to ensure that prices do not rise for those in fuel poverty or at risk of it
	Support the creation of an “at risk of fuel poverty” register
Decentralised energy	Develop decentralised energy master plans to cover area-specific opportunities including existing and new projects
	Work with generators and utilities to develop decentralised generation/consumption projects
	Identify and promote opportunities for community ownership/participation
Green Hydrogen	Deliver Aberdeen Hydrogen Hub (AHH) production and distribution infrastructure
	Develop integrated training and accreditation offer (AHH)
	Marketing campaign to promote Aberdeen as a global centre of excellence in hydrogen (AHH and partners)
Micro Renewables	Undertake an assessment of micro renewable deployment opportunities at commercial, residential, and industrial and public sector sites
	Define technologies and ownership and funding options
Skills Transition	Explore facilities/policy needed to secure jobs in Aberdeen
	Produce integrated training and accreditation offer to be marketed globally (AHH and partners)
Carbon Capture, and Utilization and Storage	Support local projects
	Encourage transfer of skills, expertise and assets from our oil and gas industry
	Develop small scale CCS deployment opportunities in Aberdeen
Offshore Wind	Offshore Wind and Floating Offshore Wind Centres of Excellence
	Support transfer of skills from oil and gas and supply chain development programmes
	Innovation and commercialisation
	Secure maximum local content in Scotwind 1 and 2
Investment	Development of ownership, investment, and funding models suitable for new types of projects
	Support investor understanding of new types of energy project

	Access public funding sources for new technology and project development, skills and training
Supply Chain	Support the supply chain in diversification and accessing new business
	Ensure that the supply chain is linked to skills, training, skills transfer and project opportunities
	Support the supply chain in the development of marketable new technology, products and services
	Promote international business opportunities to the supply chain and promote supply chain capabilities in new markets

Table 1: Net Zero Aberdeen: Energy Supply Strategy Outcomes

The Strategy sets out the following theme 'synergies'.

Mobility	Link to green hydrogen, carbon capture/utilisation and storage
Energy Supply	Link to fuel poverty, decentralised energy, green hydrogen, micro renewables
Circular Economy	Link to decentralised energy (Energy from solid waste and wastewater)
Natural Environment	Link to decentralised energy, green hydrogen, micro renewables and carbon capture/storage (embed green infrastructure)
Empowerment	Skills transition and green jobs across; carbon capture, utilisation and storage, offshore wind and supply chain (green jobs)

Table 2: Net Zero: Energy Supply Strategy Theme Synergies

The Aberdeen Landscape Sensitivity Study (2021)

The Aberdeen Landscape Sensitivity Study can assist in understanding appropriate locations energy development. The Study sets out which areas of the city's landscape are sensitive to residential, business and industrial development. The study can be used to effectively inform development plans and provide robust evidence in assessing development applications.

Energy Distribution and Transmission

SSEN Distribution functions as the Distribution Network Operator covering Aberdeen City. Its sister organisation, SSEN Transmission is the owner and operator of all high-voltage electricity network assets within the city council area. Details of Aberdeen's electricity supply is covered in the Infrastructure Frist Topic Paper.

Energy Transition Zone

Aberdeen's Energy Transition Zone (ETZ) is identified within the current Local Development Plan as designated land wherein there will be a presumption in favour of the development, production, assembly, storage and/or distribution of infrastructure required to support renewable energy related industries.

The Energy Transition Zone masterplan document supports the delivery of sites OP61, OP62 and OP56 which are allocated in the 2023 LDP as land for ETZ. The masterplan also includes the area within which OP64 sits, this site being allocated as a solar farm (see hydrogen and solar sections).

The ETZ is the largest dedicated energy transition industrial complex in Scotland, focused on delivery of energy through hydrogen, offshore wind, carbon capture and storage. The ETZ seeks to take advantage of the new adjacent Aberdeen South Harbour. It is expected to directly support 2,500 green jobs by 2030, alongside a further 10,000 transition related jobs.

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Wind Energy

Scottish Government Onshore Wind Policy Statement
The Scottish Government's Onshore Wind Policy Statement (2022) sets out Scotland's ambition to achieve a minimum installed capacity of 20GW of onshore wind by 2030.

Scottish Government Offshore Wind Policy Statement
The Scottish Government Offshore Wind Policy Statement (2020) sets out Scotland's ambitions to achieve 8-11GW of offshore wind in Scottish waters by 2030.

Scotland's National Marine Plan
Scotland's National Marine Plan (2015) provides the framework for managing Scotland's marine resources. Future development of offshore wind projects will need to give consideration to the strategic development zones and grid infrastructure planning identified within the plan. Additionally, consideration will be given to the Sectoral Marine Plan for Offshore Wind Energy (2020), and any future iterations, and the Initial Plan Framework for Innovation and Targeted Oil and Gas (INTOG) (2022). These documents identify sustainable plan options for commercial-scale offshore wind energy in Scotland while identifying potential risks and constraints.
Further, the National Maine Plan interactive (NMPi) is a mapping software provides spatial information about the Scottish marine environment. This can be used to identify various types of data about the marine environment relevant to planning.

There is no specific regional marine plan that is relevant to Aberdeen.

Aberdeen Offshore Wind Developments
Aberdeen has three important offshore wind developments in the nearby area; Hywind, EOWDC and Kincardine Floating Offshore Wind Farm. The ScotWind sites numbers one to six directly east of Aberdeen also provide significant new potential. 12 of the 20 offshore wind sites, which were leased by Crown Estate Scotland in January 2022, are situated within 100 nautical miles of Aberdeen. These 12 sites have a potential capacity of 17GW.

Included within the Energy Transition Zone Masterplan, and the Aberdeen Net Zero Energy Supply Strategy, is space for a planned Offshore Wind Campus. Situated on brownfield land at the eastern edge of Altens, the Offshore Wind Campus would provide a cluster of commercial, manufacturing, test and demonstration, and innovation facilities anchored by the National Floating Wind Innovation Centre (FLOWIC). The Campus will support the growth of a strong offshore wind supply chain as well as opportunities for complementary energy transition activities.

Hydrogen

Scottish Government Hydrogen Policy Statement
The Scottish Government Hydrogen Policy Statement (2020) outlines Scotland's commitment to ensuring hydrogen plays a key role within Scotland's energy transition. Recognising the growth of the hydrogen market globally, the policy statement encourages investment in technology to support capacity for deployment of green hydrogen and the generation of new economic opportunities in Scotland.

The "Development of Early, Clean Hydrogen Production in Scotland" (2021) document from Scottish Enterprise provides further assessment of Scotland's potential for early adoption of hydrogen production opportunities. It highlights the increased demand for blue and green hydrogen production and identifies sites across Scotland suitable for further development of hydrogen production.

Hydrogen Action Plan
The Hydrogen Action Plan (2022) details the Scottish Government's plan to ensure hydrogen plays an increasingly important role in Scotland's energy system. It commits to a target of achieving 5GW of low-carbon hydrogen production capacity by 2030, and 25GW of low-carbon hydrogen production capacity by 2045. Additionally, it aims to support the growth of Regional Hydrogen Energy Hubs. Of the 13 Regional Hydrogen Hubs identified, 1 is located in Aberdeen.

Hydrogen Projects in Aberdeen
Scotland's Hydrogen Assets map identifies 4 hydrogen projects in Aberdeen (The Events Complex Aberdeen, Kittybrewster Refuelling station, Aberdeen H2 Hub, Aberdeen City Hydrogen Energy Storage). The Energy Transition Zone Masterplan states the following with regards to hydrogen: 'Hydrogen is rapidly emerging as central to the future net zero economy. Aberdeen and North East Scotland has already emerged as a leading hub of hydrogen activity, with current and planned projects expected to generate 200 MW+ by 2025-27, and potential for up to 1GW of production by 2030-32. The city's wealth of experience in the oil & gas sector is capable of being re-utilised for hydrogen-based activity, with identified potential for up to 29,000 jobs in the sector by 2040. There is already significant interest and planned activity in the Zone to support hydrogen production, distribution, and use – including BP, ERM Dolphyn, and Vatenfall among others who are seeking to base leading edge technologies and projects within Aberdeen.'

Aberdeen City Region Hydrogen Strategy

The Aberdeen City Region Hydrogen Strategy and Action Plan (2015-2025) states that the Aberdeen Local Development Plan must consider and support hydrogen technology.

It sets out the following key objectives:

	Objective	Action
1	Vehicle Deployments	A range of local stakeholders deploy hydrogen vehicles.
2	Renewable Hydrogen	Hydrogen produced from renewable energy sources is widespread throughout the region.
3	Refuelling Infrastructure	An accessible, convenient, and safe refuelling infrastructure network is deployed across the City and beyond.
4	Non-Transport Applications	Non-transport applications are tried and tested including stationary power.
5	Supply Chain / Market Development	A robust, local hydrogen supply chain is developed which utilises the areas existing energy expertise.
6	Communication and Education	A greater understanding and acceptance of hydrogen technologies encourages widespread adoption.
7	Policy and Regulation	Hydrogen technologies are embedded in all relevant areas of policy and supported at a national level.

Table 3: Aberdeen City Region Hydrogen Strategy and Action Plan Key Objectives

It sets out in the following table the locally available production pathways which might supply hydrogen refuelling stations:

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Source	Chemistry	Description	Local availability
Steam methane reforming	Methane reformation $CH_4 + H_2O \leftrightarrow CO + 3H_2$ Water gas shift (WGS) reaction $CO + H_2O \leftrightarrow CO_2 + H_2$	Methane reformation to produce syngas and subsequently H_2 following the WGS reaction is the most common H_2 production pathway	No large centralised SMR production nearby Peterhead CCS CO_2 pipeline could facilitate a new 'green' SMR H production facility
Renewable energy & water electrolysis	Water electrolysis (WE) $2H_2O \leftrightarrow O_2 + 2H_2$	WE systems split water into H_2 and O_2 Cheap electricity can be sourced from local renewable generators	Significant grid-constrained renewables
Waste gasification	Municipal solid waste gasification $CH_xO_y + \alpha O_2 + \beta H_2O \leftrightarrow \gamma CH_4 + \delta CO_2 + \mu CO + \sigma CH_xO_y + \rho H_2O + \varepsilon H_2$	Plasma reactors used to convert non-recyclable landfill waste into syngas which is treated for impurities Syngas can be combusted for electricity generation, or purified to give H_2	Currently no active projects in the region New waste processing plant coming online c. 2020
Chemical plant by-product	Brine electrolysis $2NaCl + 2H_2O \leftrightarrow 2NaOH + H_2 + Cl_2$ Naptha (ethane) cracking $C_2H_6 \rightarrow C_2H_4 + H_2$	Many processes in the chemical industry produce H_2 as a by-product Often this H_2 is recycled on-site via combustion	Mossmorran ethylene cracking plant is the major regional producer
Anaerobic digestion (AD)	Overall Process $(CH_2O)_n \rightarrow \frac{n}{2}CH_4 + \frac{n}{2}CO_2$ Methane reformation $CH_4 + H_2O \leftrightarrow CO + 3H_2$	Bacteria used to convert biodegradable waste into biogas (CH4 and CO_2) CH4 product can be reformed to produce H_2	Small AD projects, inc. at AECC development due to come online in 2018

Table 4: Aberdeen City Region Hydrogen Strategy and Action Plan Locally Available Production Pathways

ETZ Hydrogen Campus

Included within the Energy Transition Zone Masterplan is space for a planned Hydrogen Campus. The Hydrogen Campus is planned to support the significant low carbon hydrogen production growth opportunity across the region. Green Hydrogen Test and Demonstration Facilities will form the transforaminal anchor project to provide "on demand" hydrogen to industrial users and accelerate commercialisation and innovation. The high-quality campus design will be suitable for attracting new high-value manufacturing opportunities and supporting supply chain companies.

Aberdeen Hydrogen Hub

BP Aberdeen Hydrogen Energy Limited is a joint venture between BP and Aberdeen City Council formed in March 2022 which intends to deliver a scalable green hydrogen production, storage and distribution facility in the city powered by renewable energy. The Aberdeen Hydrogen Hub project is central to Aberdeen City Council's H2 vision to expand the supply and demand for hydrogen in support of the city's net zero vision. It aims to harness the natural resources, skills and capacity in the North East of Scotland to create jobs in an exciting new energy sector that builds on our oil and gas heritage. A planning application (230299/DPP) was approved in June 2023 for a hydrogen production and vehicle re-fueling facility at Hareness Road, with an associated solar farm by Coast Road. It has not as of yet been implemented. It is intended for this facility to act as a refuelling site for vehicles. There are also existing refuelling stations at Cove (dispenses 130kg hydrogen per day, stores up to 150kg hydrogen onsite) and Kittybrewster (dispenses 360kg hydrogen per day, stores up to 420kg hydrogen onsite) which both produce hydrogen onsite via electrolysis using a green electricity tariff.

The Aberdeen Hydrogen booklet (2021) includes the following diagram to illustrate the phases of the Aberdeen Hydrogen Hub.

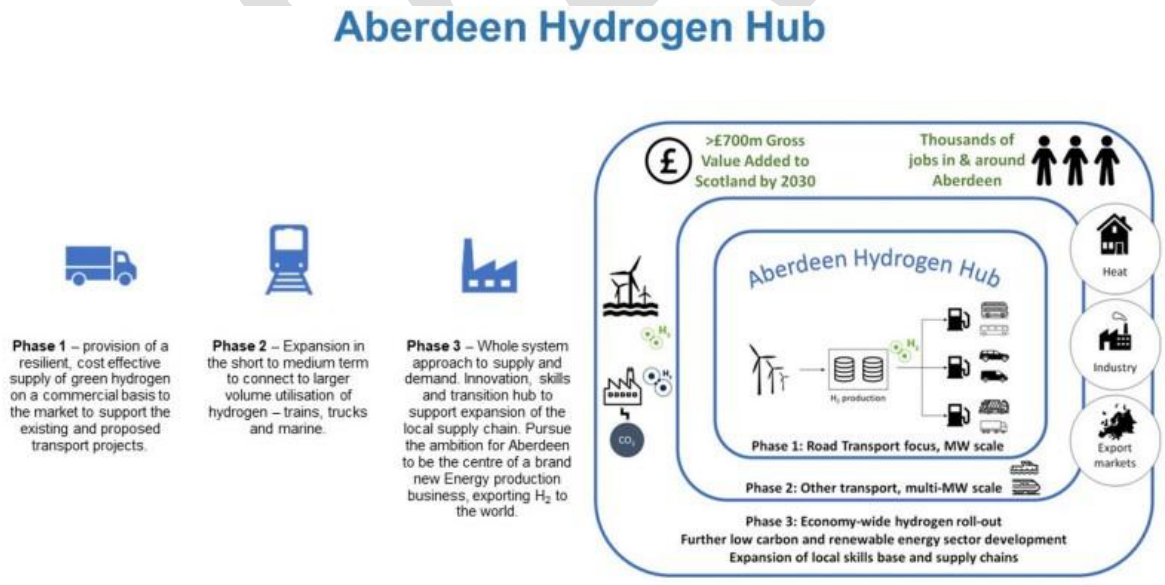


Figure 1: Illustration of phases of the Aberdeen Hydrogen Hub

Energy from Waste

The city's energy from waste plant was developed on the former gas holder site in East Tullos. The facility is designed to treat non-recyclable waste from Aberdeen, Aberdeenshire and Moray Council areas and generates electricity which is sold back to the National Grid and heat is supplied to the local Torry Heat Network. This is outlined in further detail under the 'Zero Waste' section of this Topic Paper.

Biogas

There is an anaerobic digestion plant at The Event Complex Aberdeen (TECA) which has been developed by Aberdeen City Council. The facility meets the heat and power demands of the TECA facility. Some gas is exported to the grid. Some gas is also used as an energy source for hydrogen systems to power city buses. This is outlined in further detail under the 'Zero Waste' section of this Topic Paper.

Solar Energy

The vast majority of solar power developments in Aberdeen come from domestic scale installations. In terms of ground mounted solar arrays, these are limited due to Aberdeen being an urban authority.

There is a significant ground array at the Mannofield Water Treatment Works (St. John's Terrace) operated by Scottish Water. OP64 is an allocated site within the Aberdeen Local Development Plan 2023 for a solar farm and an application has been approved at this 49ha site (230299/DPP). This seeks to implement a ground mounted solar PV system at the Ness Landfill site. There is a 54ha solar array built at Chapel Works, Bucksburn. An EIA screening was also sought in 2023 for a solar array covering a total area of 85.9ha at Perwinnes Hill, Bridge of Don (230797/ESC). Evidence suggests there has been, so far, limited appetite for large scale ground mounted solar array farms within Aberdeen City's boundary, though the interest in developing two very large sites recently may suggest that could change.

Battery Energy Storage Systems

A number of planning applications have come forward seeking approval for battery storage schemes within Aberdeen City's authority boundary. These are all applications (5.4ha total) that have been submitted September 2023 or later. This is displayed in the following table:

Planning ref.	Location	Capacity	Note
240614/DDP	1.9ha site at Newton of Pitfodels, Craigton	40MW	
240313/DPP	1.8ha site at Craigshaw Drive	>20MW	Includes EV charging.
231336/DPP	1ha site at Rigifa Farm, Cove Road	Up to 49.9MW	
231134/DPP	0.7ha site at Persley Croft Parkway	Up to 49.9MW	

Table 5: Aberdeen City BESS Planning Applications

In addition to this, Proposal of Application Notices have been submitted for the following:

Planning ref.	Location	Capacity	Note
230869/PAN	Aryburn Farm, Dyce	33MW	Further consultation required.
211081/PAN	Raiths Industrial Estate, Kirkton Drive / Pitmedden Road, Dyce	50MW	Further consultation required.
201599/PAN	Farburn Place, Dyce	Unlisted	Further consultation required.

Table 6: Aberdeen City BESS Proposal of Application Notices

Furthermore, screening opinions have been sought for the following:

Planning ref.	Location	Capacity	Note
230797/ESC	Perwinnes Hill, Bridge of Don	45MW	Includes 84MW Solar Arrays. EIA not required (screening opinion).
170822/ESC	Mains of Charleston, Old Stonehaven Road	Unlisted	Includes 6MW Solar Arrays. EIA not required (screening opinion).

Table 7: Aberdeen City BESS Proposals for Screening Opinions

Heating and Cooling

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 sets the target for Scotland to achieve net zero greenhouse gas emissions by 2045, with interim targets of a 75% reduction by 2030 and 90% by 2030, and 90% by 2040.

Heat in Buildings Strategy: Achieving Net Zero Emissions in Scotland's Buildings

Scotland's Heat in Buildings Strategy (2021) outlines the Scottish Government's plan to achieve the net zero target set by the Climate Change (Scotland) Act 2019 and Climate Change Plan. It outlines the Scottish Government's ambition to see a 68% reduction in emissions from buildings by 2030 against a 2020 baseline as set out in the Climate Change Plan Update. It aims to see at least 22% of heat in buildings to be directly supplied from renewable sources by 2030. The strategy calls for deployment of zero emissions heating systems and increased use of 'No and Low Regrets Strategic Technologies' to heat Scotland's homes.

As part of the strategy, the Scottish Government's New Build Heat Standard (NBHS) (2025) requires all new buildings to install climate-friendly heating systems instead of oil and gas boilers. This applies to all systems used for heating and cooling, and hot water. This is expected within all new buildings, and some conversions wherein the building warrant was sought on or after 1 April 2024. While this sits within the remit of Building Standards, consideration of this will be required when developing the next Local Development Plan.

Further, the Scottish Government have proposed a new Social Housing Net Zero Standard (SHNZS) (2023). At the time of writing, the Social Housing Net Zero Standard has been consulted on and is being considered. This new standard will replace the second Energy Efficiency Standard for Social Housing (EESSH2). Following a review of EESSH2, the new SHNZS seeks to implement refined requirements that are more aligned with Scottish Government's net zero targets. Similarly, these standards will need to be considered when developing the next Local Development Plan.

Net Zero Aberdeen: Buildings and Heat Strategy

The Net Zero Aberdeen: Buildings and Heat Strategy recognises the centrality of energy use in Aberdeen's buildings towards the pursuit of net zero targets. In Aberdeen, the built environment comprises 19% of Aberdeen's emissions. The strategy aims to achieve net zero greenhouse gas emissions by 2045 through rapid decarbonisation across all sectors through changes to the ways in which power and heat are generated and used. Additionally, it states a commitment to 'Plan expansion in infrastructure for existing and new heating networks, such as the Aberdeen Heat &

Power (AHP) model. Expanding connections to different property types and to privately owned domestic and commercial properties.'

Key Outcomes identified in the Strategy include:

- Improved energy performance data
- Improved plans, policies, and standards
- Improved energy efficiency of buildings
- Improve energy management controls
- Expand low and zero emissions heating
- Increased connections to decentralised energy
- Reduced fuel poverty

Scotland Heat Data

The Scottish Heat Map provides estimates of annual heat demand. Demand is given in kilowatt-hours per year (kWh/yr). Areas of higher heat demand are predominantly concentrated around central areas of Aberdeen. In particular, greatest heat demand is recorded near Old Aberdeen, Bridge of Don and Gilcomston.

Greenspace Scotland provides data regarding heat usage and offers spatial data reflecting the suitability of a given area for the use of heating systems in locations across Scotland. This is demonstrated in the Green Heat in Greenspaces settlement profile. It states that Aberdeen's total heat demand sits at 2,642,706 MWh per year. Aberdeen achieves a 'high' ranking for suitability for district heat networks.

Heat Networks (Scotland) Act 2021

The Heat Networks (Scotland) Act requires local authorities to carry out a review of potential areas for the installation of heat networks. Targets outlined within the Act require the combined supply of thermal energy by heat networks to reach 2.6 TWh of output by 2027 and 6 TWh of output by 2030.

Aberdeen Local Heat and Energy Efficiency Strategy

Aberdeen City Council is required to prepare a Local Heat Energy Efficiency Strategy (LHEES). At the time of writing, the Aberdeen City Council LHEES is being produced. The LHEES will identify Heat Network Zones, which will be incorporated into the next Aberdeen Local Development Plan in accordance with the Heat Networks (Scotland) Act 2021. The LHEES will provide indication of where future heat networks are to be installed.

City Combined Heat and Power Network

The City Combined Heat and Power (CHP) Network is a project that seeks to build

a city-wide heat network. It currently provides energy efficient, low cost, low carbon heating in 52 multistorey blocks, 2 sheltered housing blocks and 31 public and commercial buildings in the city. The schemes are managed by Aberdeen Heat and Power Co Ltd (AHP) and export electricity to the national grid or to local buildings and to the district heating networks energy centres. They provide more affordable energy tariffs and maintenance costs and reduce the CO2 emissions to properties connected within the schemes.

There are seven CHP operating schemes at:

- Stockethill
- Hazlehead
- Seaton
- Tillydrone
- City Centre
- Wellheads
- Sillerton Lane

Buildings connected to the schemes have seen emissions reduced by approximately 56%, while reducing residents fuel bills by up to 50%.

Heatnet

Aberdeen City Council is a project partner in the delivery of Interreg Heatnet NWE, a European funded project, which aims to increase the provision of district heating networks and affordable warmth within North West European countries.

As part of the Heatnet NWE project, Aberdeen City Council is completing a pilot project in Torry. An existing district heating network within this area currently serves three multi storey blocks. The pilot will expand this existing network, linking in three municipal buildings; Balnagask House, Provost Hogg Court and Deeside Family Centre. Nicol of Skene have been appointed to deliver the project.

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Aberdeen Heat Networks

There are a number of heat networks across Aberdeen. See details below:

Location	Description
Tillydrone	Tillydrone Energy Centre supplies 7 multi-storey blocks and 79 new build properties with heat, as well as Riverbank new and existing Schools, Tillydrone Nursery, St Machar Academy, Lighthouse Family Centre, Lads' Club Tillydrone, St George's Church and Tillydrone Health Hub. The Tillydrone Energy Centre currently uses around 1,277 MW of natural gas taken from the grid per month, but can be converted to use alternative renewable supplies as these become available in the future. It generates an average monthly output of 702MW in heat and 362MW in electricity. The goal is to eventually supply all properties in the Tillydrone Energy Centre catchment area as well as connecting to other Energy Centre's to create an even more robust, low carbon heat network.
Hazlehead	Hazlehead Energy Centre delivers heat and power to Hazlehead Academy, heat to 4 multi-storey blocks, a sheltered housing scheme, and Aberdeen City Council-owned premises within Hazlehead Park. The Hazlehead Energy Centre currently uses around 742MW of natural gas taken from the grid per month, but can be converted to use alternative renewable supplies as these become available in the future. It generates an average monthly output of 423MW in heat and 131MW in electricity. Development plans for a new Low Carbon Energy Centre utilizing waster heat and heat pumps are at an advanced design stage.
Seaton/Ice Arena (City Centre)	Seaton Energy Centre delivers heat to 14 multi-storey blocks, The Town House, Marischal College, Aberdeen Sports Village and Aquatic Centre, Aberdeen Beach Leisure Centre, Aberdeen Health Village, Aberdeen Central Mosque, North East Scotland College, Aulton Football Pavillion, Beach Ballroom,

Table 8: Abeerdeen City Heat Networks

Torry Energy from Waste Heat Network

Aberdeen City Council has developed a Heat Network in the Torry of the city to connect both domestic and public buildings. The network utilizes very low carbon waste heat from EfW plant in Tullos. Phase 1 & 2 of the project has recently been completed and connections continue. Future plans are to expand the heat transmission line into the city centre to connect to the current AHP heat network, this will allow the full capacity of waste heat to be utilized. Further opportunities to enhance the waste heat capacity are being investigated as the area around Torry continues to be developed.

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Minerals

10th Annual Mineral Planning Survey 2022
Across the UK, analysis of reserve replenishment rates and annual sales illustrates declining reserve trends. Given the growing demand for aggregates to support the delivery of major infrastructure projects, the pressure on reserve availability and supply can be expected to increase. This needs to be closely monitored, given the time required for any corrective action to take effect. The future supply of essential minerals cannot be assumed and it requires effective planning, management and monitoring to ensure sustainable and cost-effective supply.

As of the end of 2021 the rolling 10-year average for replenishment of sand & gravel and crushed rock reserves was 63% and 52% respectively. The report indicates that aggregate sales (both sand and gravel and crushed rock) in Scotland were greater than permitted reserves between 2012 and 2021.

Aggregates Demand and Supply in Great Britain Scenarios for 2035
The Mineral Products Association's report, 'Aggregate Demand and Supply in Great Britain Scenarios for 2025', indicates that between 3.8 and 4.1 billion tonnes of aggregates will be required in the UK between 2022 and 2035 to support construction needs. This compares to a total of 3.2 billion tonnes of aggregates supplied in the previous 14-year period, between 2008 and 2021. It suggests that approximately 250 million tonnes of aggregates are used each year in the UK, and a further 20 million tonnes in Northern Ireland.

The report concludes that less than one third of total aggregates demand, 28% in 2021, is supplied from recycled and secondary sources, the remainder requires the extraction of primary aggregates. It states that approximately 90% of all aggregates are used by the construction industry. Recycled and secondary sources of aggregates will provide a valuable source of supply, however they cannot fulfil the demands of construction activity. Therefore, significant tonnages of primary extraction will be expected to provide the majority of supply and meet overall demand. Primary aggregates are projected to supply between 68% and 72% of total demand by 2035.

There is no national mechanism to provide an overall assessment of future construction aggregate needs.

Collation of the Results of the 2019 Aggregate Minerals Survey for Scotland (2023)

The Aggregate Minerals Survey by Scottish Government and British Geological Survey (BGS) provides understandings of national and regional sales, inter-regional flows, transportation, consumption and permitted reserves of primary aggregates. It demonstrates that the total permitted reserves in active and inactive sites in Scotland for aggregates use as at 31/12/2019 were 1298 Mt, of which crushed rock accounted for 95% (1229 Mt), and sand and gravel accounted for 5% (69 Mt). As of 2019, sand and gravel reserves were equivalent to approximately 18-years output with crushed rock reserves equivalent to approximately 72-years.

Of the 1298 Mt permitted reserves of primary aggregates in active and inactive sites in Scotland in 2019, the North East reserve was 145.6 Mt.

The North East distribution area comprises Aberdeen City, Aberdeenshire and Moray. As of 2019, the permitted reserve of active and inactive sites were 145,567 thousand tonnes (11% of Scotland's total).

Of the 20.8 Mt of sand and gravel and crushed rock sold in 2019 in Scotland, 1.6 Mt (8%) was from North East Scotland. The majority of which was transported by road, however a small proportion was transported by water. Of the 13.7 Mt consumed in 2019 in Scotland 1.5 Mt was in North East Scotland.

The following table reflects a summary of exports and imports of primary aggregates in 2019 in the North East and Scotland. (Table adapted from Table 8 (page 29 of report)).

	Export (Thousand tonnes)		Imports (Thousand tonnes)	
Region	Sand and gravel	Crushed rock	Sand and gravel	Crushed rock
North East Scotland	85	52	0	19
Scotland	1142	8482	608	1902

Table 9: Collation of the Results of the 2019 Aggregate Minerals Survey for Scotland (2023), North East and Scotland Imports and Exports of Primary Aggregates

Notably, while the above table indicates there are no sand and gravel imports to North East Scotland, the British Geological Survey confirms that sand and gravel is currently imported to North East Scotland and Aberdeen.

It is estimated that supply in Scotland from active sites as 13 years at 2019 sales levels for sand and gravel and 10 years for North East Scotland. It is estimated that

supply in Scotland from active sites as 70 years at 2019 sales levels for crushed rock and 121 years for North East Scotland.

Aberdeen Context

Aberdeen has a small hinterland within its administrative boundaries and thus opportunities for quarrying are much more limited here than they would be in a rural authority. There are two active hard rock quarries at Blackhills, Cove (Easting 394655 Northing 799895) and North Lasts, Peterculter (Easting 382700 Northing 804025) and both have historically been identified and reserved for mineral extraction in Local Development Plans.

North Lasts Quarry

North Lasts Quarry has been in operation since the late 1970s and an extension granted in 2017 has permission until 30th April 2047. This application was recommended for approval on the basis that it would ensure a land bank of permitted reserves for a period exceeding 10 years (30 years in total).

Blackhills Quarry

Blackhills Quarry was granted an extension in 2015 until 28 November 2050. This application was recommended for approval on the basis that it would ensure a land bank of permitted reserves for a period exceeding 10 years.

There are 2 operational sites for the Aberdeen Harbour (Easting 397545 Northing 805860) and Aberdeen South Harbour (Easting 397000 Northing 804730). However, Aberdeen City Council is only responsible for the inland infrastructure associated with these harbour operations and Marine Scotland is responsible for licensing (and monitoring) any operations such as dredging.

Coal, Onshore Gas and Peat

The north east does not have a history of coal extraction, nor are there any Petroleum, Exploration and Development Licenses (PEDL) in place for onshore unconventional oil and gas. Peat extraction does not take place within the Local Authority boundary.

Aggregates

The extent of landbank of permitted reserves for construction aggregates in the North-East is satisfied by the recent permissions to extend the operations of two quarries within the administrative area. This is further supported by materials imported from quarries located in neighbouring local authorities in the North-East.

There are sufficient mineral and aggregate resources available to meet demand. The effective Scottish Government moratorium on unconventional oil and gas remains in place.

Zero Waste

Zero Waste Plan
Scotland has taken significant steps towards achieving zero waste. In 2010, the Scottish Government launched the Zero Waste Plan, which set a number of targets including recycling 70% of all waste and sending no more than 5% of waste to landfill by 2025.

The Circular Economy (Scotland) Act 2024 underlines Scotland's commitment to a circular economy based on sustainable consumption, production, and resource management. The Act provides a legislative framework to support Scotland's transition to zero waste and circular economy, increasing reuse and recycling rates, and modernising and improving waste and recycling services.

The 'Stop, Sort, Burn, Bury - Incineration in the Waste Hierarchy: Independent Review for Scotland' (2022) identified 14 recommendations for the Scottish Government, industry and Local Authorities. The review indicates that planned incineration capacity in Scotland would be sufficient to manage current and projected residual waste at a national level to 2050. A second report was published: 'Decarbonisation of Residual Waste Infrastructure: Report' (2023). This report provides a further 9 recommendations focussing on decarbonising residual waste.

Circular Economy and Waste Routemap to 2030
Actions outlined in the 'Circular Economy and Waste Route Map to 2030' are designed to align with and support the provisions in the Circular Economy (Scotland) Act. The Route Map is structured around four strategic action areas:

- Reduce and Reuse;
- Modernise Recycling;
- Decarbonise Disposal; and
- Strengthen the Circular Economy.

The Route Map prioritises several key areas: reducing food waste from both households and businesses; enhancing recycling efforts in household and commercial sectors; establishing new circular economy targets; minimising the environmental impact of waste that cannot be reused or recycled; and promoting responsible production and consumption practices. This includes a focus on reducing the use of single-use items and encouraging the reuse of products.

SEPA Household Waste Generated and Managed Commentary

SEPA's 'Household Waste Generated and Managed Commentary' reflects data regarding Scotland's consumption. It demonstrates that the total amount of household waste generated in Scotland in 2023 was 2.30 MT which represents a decrease of 26,000 tonnes (1.1%) from 2022. This is the lowest recorded amount of Scottish household waste generated since 2011. Whilst the overall Scottish household waste recycling rate has marginally increased from 43.3% in 2022 to 43.5%, the overall amount of household waste recycled has fallen by 0.8% to 1.00MT in line with reduction in household waste generated. The long-term trend of household waste landfilled continues with a 30.2% decrease from 2022 to a total amount of 409,000 tonnes in 2023. In 2023, 894,000 tonnes was diverted from landfill. The majority of diverted waste from landfill was managed by incineration (746,000 tonnes or 83.5%). Similarly, the carbon impact of Scottish household waste generated and managed in 2023 decreased by 3.2% from 2022. In 2023, the carbon dioxide equivalent (TCO2e) per person in Scotland was 0.98 TCO2e.

Aberdeen City Waste Strategy

The 'Aberdeen City Waste Strategy 2014-2025' sets out the future requirements for waste management policy, infrastructure and services for the city. It sets themes, goals and objectives that will transition waste management towards a system reflecting the waste hierarchy. Currently Aberdeen City Council operate a fortnightly collection of general waste, mixed recycling and garden/food waste to all eligible domestic properties. Business waste collections are also undertaken by Aberdeen City Council. Where kerbside collection is not possible, on-street facilities, household waste recycling centres and recycling points are available for public use.

A new Waste Strategy is being developed, which will set the scene for coming years and take account of changing regulatory requirements.

Net Zero Aberdeen: Circular Economy Strategy

The 'Net Zero Aberdeen Circular Economy Strategy' presents the model for systematic change that will benefit the local economy, help to drive social change and contribute to the delivery of net zero ambitions. It highlights the importance of maximising the value from waste by recycling at the end of life and contribute to the delivery of net zero ambitions. It seeks to look at ways to reduce levels of waste generated and find better ways to reuse, remanufacture and recycle waste produced in Aberdeen.

Aberdeen Data

According to Regional Capacity calculations for Scottish Planning Policy (SPP), in 2018, Aberdeen City and Aberdeenshire had a 10 year capacity of existing landfill infrastructure of 2,940,000 tonnes, and a 10 year landfill required capacity of 1,700,000. Notably, Biodegradable Municipal Waste cannot be landfilled after 2025 due to the Scottish BMW landfill ban.

The household waste generated and managed change data for Aberdeen between 2022 and 2023 is displayed in the table below. (Table adapted from SEPA's 'Household Waste Generated and Managed Commentary 2023' Table S1).

Local Authority	Generated (tonnes)	Recycled (tonnes)	Recycled (%)	Other diversion from landfill (tonnes)	Other diversion from landfill (%)	Landfilled (tonnes)	Landfilled (%)	Carbon Impact (TCO2e)
Aberdeen 2022	88,802	37,091	41.8	22,007	24.8	29,706	33.5	227,309
Aberdeen 2023	89,314	37,314	41.8	41,070	46.0	10,930	12.2	219,570
Change	+512	-223	+0	+19,063	+21.2	-18,776	-21.3	-7,739

Table 10: Aberdeen Generated Household Waste 2022 and 2023, adapted from SEPA's 'Household Waste Generated and Managed Commentary 2023'

Household Waste Recycling Centres in Aberdeen City

There are 4 public household waste recycling centres across Aberdeen in Bridge of Don, Bucksburn, Hazlehead and Tullos. The centres accept a range of household waste and recycling items. All of the facilities operate 363 days a year closing only on Christmas Day and New Year's Day. From Hazlehead the "Reuse Shop" operates and sells pre-loved items donated by Aberdeen residents. All facilities are operated by SUEZ in partnership with Aberdeen City Council. Business and trade waste is not accepted at these facilities.

At the time of writing, construction has commenced to replace the existing Bridge of Don household waste recycling centre at a new location, Claymore Drive, a site identified within the Aberdeen Local Development Plan 2023. The facility is anticipated to provide improved layout and facilities that accept a broader range of recyclable materials and will include reuse facilities. Construction is expected to be completed in spring 2025.

Altens East Materials Recovery Facility
In 2017 the Altens East Materials Recovery Facility opened. The plant is capable of processing 20 tonnes of mixed recycling an hour and is part of Aberdeen City Council's Zero Waste Project aimed at increasing recycling rates and reducing the amount of waste that goes to landfill. The plant is operated by SUEZ. However, in 2022 the facility was seriously damaged by a fire. This has meant that Aberdeen's dry recycling is currently being transported to Hartlepool. A rebuild project commenced in March 2024 and, whilst the exterior of the plant will look the same, the rebuild will see newer technology and improved efficiency at the plant. It is anticipated that the rebuilt plant will be fully operational in 2025.

TECA Anaerobic Digestion Plant
In 2019, an energy centre (combined cooling heat and power (CCHP)) went live at The Event Complex Aberdeen (TECA). It utilises a variety of technologies to provide power, heat and cooling to TECA including a hydrogen fuel cell installation. An anaerobic digestion plant uses both agricultural and food waste to produce biogas which is then conditioned providing 100% renewable energy as gas to the natural gas grid or TECA energy centre. The system uses a series of large tanks which are kept sealed and odour free. Inside the tanks, the material is gently stirred to make sure the microorganisms can turn waste into renewable energy.

NESS Energy from Waste Facility
In December 2023, the NESS Energy from Waste Facility, located in East Tullos became fully operational. The plant processes non-recyclable waste from Aberdeen City, Aberdeenshire and Moray Councils and produces electricity for the national grid and heat for a district heating network. The facility is capable of processing 150,000 tonnes of municipal solid waste per year for the three council areas combined. The councils will not only meet their requirements under the landfill ban legislation, but reduce carbon emissions (compared to landfill) and provide low-cost heating for schools, care facilities and housing in the vicinity. Income generated from the electricity that is produced for the national grid will also assist in offsetting the cost of waste disposal.

Waste enters the bunker where it is fed into a combustion chamber. Electricity and heat are generated and sent to the national grid and to local heat networks. Waste from Aberdeenshire and Moray is transported by bulk haulage via the Aberdeen Western Peripheral Route and the remainder is direct delivered by the City Councils' refuse collection fleet.

Summary of Implications for Proposed Plan

Energy

The Proposed Plan should consider a tailored local policy approach to maximise renewable, and low-carbon energy opportunities in Aberdeen.

The Proposed Plan should support development of renewable, and low-carbon energy opportunities, which may include identifying energy opportunities.

Heating and Cooling

The Proposed Plan should consider the location of Heat Network Zones, as identified in Aberdeen's Local Heat and Energy Efficiency Strategy when published to inform heat distribution across the City. It should support the development of future heat generation schemes that seek to connect to the network.

The Heat Network Zones will be a consideration during the Proposed Plan site selection process.

With a detailed heating and cooling policy now included in National Planning Framework 4, consideration will need to be given on the continued need or amendment of local policies.

Minerals

The Proposed Plan should identify and safeguard the locations of important workable mineral resources which are of economic or conservation value.

With a detailed policy now included in National Planning Framework 4, consideration will need to be given on the continued need or amendment of local policies.

Zero Waste

With a detailed policy now included in National Planning Framework 4, consideration will need to be given on the continued need or amendment of local policies.

The Proposed Plan will take account of the forthcoming Waste Strategy.

The Proposed Plan will consider how to support Aberdeen's Circular Economy Strategy.

Marmot Places

Aberdeen, along with North Ayrshire and South Lanarkshire, has been confirmed as one of three Marmot Places in Scotland. Aberdeen will seek to embed the eight Marmot Principles within the Proposed Plan. The table below identifies where the topic paper aligns with the Marmot Principles.

Principle	**Potential implication for the Plan**
Give every child the best start in life.	
Enable all children, young people and adults to maximise their capabilities and control over their lives.	
Create fair employment and good work for all.	X
Ensure a healthy standard of living for all.	X
Create and develop healthy and sustainable places and communities.	X
Strengthen the role and impact of ill health prevention.	X
Tackle racism, discrimination and their outcomes.	
Pursue environmental sustainability and health equity together.	

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