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Norwich to Tilbury

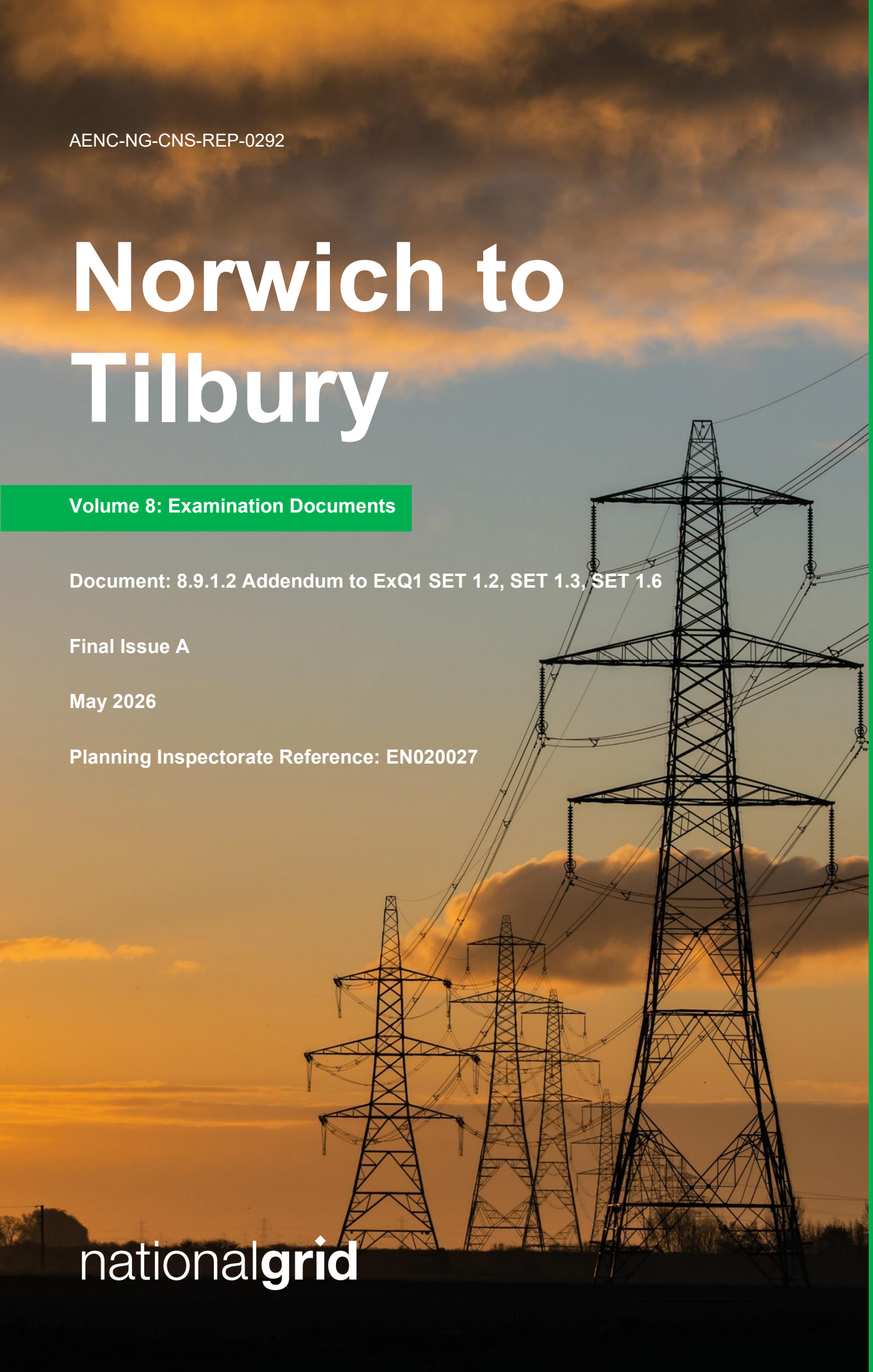
Volume 8: Examination Documents

Document: 8.9.1.2 Addendum to ExQ1 SET 1.2, SET 1.3, SET 1.6

Final Issue A

May 2026

Planning Inspectorate Reference: EN020027



nationalgrid

1. Addendum to ExQ1 SET 1.2 SET 1.3 SET 1.6

Reference	Question	Updated Applicant's Response
SET 1.2	Study commissioned by Scottish Renewables entitled 'house prices: impact of Beauly Denny grid infrastructure' (BiGGAR Economics, 2024). **ES Chapter 15 [APP-265]** at paragraph 15.3.7 refers to a study commissioned by Scottish Renewables in relation to the operation of the Beauly-Denny power line entitled 'house prices: impact of Beauly Denny grid infrastructure' (BiGGAR Economics, 2024). The ExA asks you to: a) signpost where this document has been provided in the application submission or provide this document. In either case provide a synopsis of the findings of the document; and b) advise whether any similar study has been undertaken in relation to the impact on non-residential properties, whether in relation to the Beauly-Denny power line or other similar development. If such a study or studies have been undertaken please signpost where that information has been	a) The referenced document is provided in the Appendix: **A synopsis of the findings of the document:** The ES refers to the 'House Prices: Impact of Beauly-Denny Grid Infrastructure' (BiGGAR Economics, 2024) study that was commissioned by Scottish Renewables to consider the effects on property values arising from the operation of the Beauly-Denny OHL in paragraphs 15.3.7-12 of Document **6.15 Environmental Statement Chapter 15 - Socio-economics Recreation and Tourism [APP-265]**. Those paragraphs of the ES confirm that the conclusion of that study was that the Beauly-Denny OHL, a 130-mile-long electricity transmission line that became fully operational in 2015, with properties located very close to the OHL, where visual impacts could not be mitigated by screening and where there was an audible hum and/or a perceived health risk, had limited effects on properties offered for sale. The study also concluded that those limited effects were not an issue for all purchasers, such that the actual effect was a matter of individual perception. The study looked at house prices along the route of the OHL and compared them to house prices in both the local regions and in Scotland between 2004 and 2022. This enabled consideration of effects during the construction phase and during the first seven years of operation. It also detailed discussions with local estate agents along the line of the route to understand their views. The study demonstrated that while there had been a 14% reduction in the volume of house sales in the area of the OHL route, compared to Scotland (where there was a 4% increase), house price growth in the area was greater since 2015 (41%) when compared to the rest of Scotland (30%). The study also concluded that once the OHL had been constructed, and could be seen by potential house purchasers, effects fell away to be replaced by more usual considerations for house purchasers, such as interest rates, cost of living and supply

Reference	Question	Updated Applicant's Response
	submitted into the examination or provide that study, along with a synopsis of the findings.	of houses. As such, the overall conclusion of the study was that there was no discernible effect as a result of the operation of the Beauly Denny OHL. b) The Applicant is not aware of any similar study to that commissioned by Scottish Renewables entitled 'house prices: impact of Beauly Denny grid infrastructure' (BiGGAR Economics, 2024) that looks at the impact on non-residential properties such as agricultural land, development land or commercial property. In relation to these non-residential land uses, the Applicant's standard procedure involves collaborating directly with individual landowners, farmers and their agents, aiming to accommodate normal activities during the construction phase wherever practicable. This approach is supported by ongoing engagement to agree holding-specific mitigation measures. The Applicant's Land Agents, Fisher German, are actively meeting with all affected landowners and their appointed representatives to discuss and agree upon such matters. Any losses resulting from disturbance or temporary possession will be addressed in line with the statutory compensation code, ensuring affected parties are appropriately compensated for impacts experienced.
SET 1.3	Key parameters for assessment and assumptions **ES chapter 15 [APP-265]** at Paragraph 15.4.7 (Key Parameters for Assessment and Assumptions) indicates a number of assumptions based on National Grids previous experience of similar projects. For example construction workers who travel to the area (ie non local workers) the assumption is made that such workers would spend an average of £65 per day on accommodation, food and other local services. Furthermore, in terms of visitor accommodation bed space, the assumption is made that non local workers would use camping and caravan sites 50%; stay in short term let's 20%; would using hotels/ bed and breakfast	The ExAs written question SET 1.3 requested the Applicant to signpost where within the submitted documentation National Grids assumptions are evidenced with regard to '… *construction workers who travel to the area (ie non local workers) the assumption is made that such workers would spend an average of £65 per day on accommodation, food and other local services. Furthermore, in terms of visitor accommodation bed space, the assumption is made that non local workers would use camping and caravan sites 50%; stay in short term let's 20%; would using hotels/ bed and breakfast facilities 20% and 10% would commute from home into the area.'* The Applicants response provided a sign-post to both National Grid's Bramford to Twinstead and Yorkshire GREEN projects which are both Nationally Significant Infrastructure Projects with documents available on the Planning Inspectorates website. However, a Rule 17 letter dated 17 April 2026 (EN020027) requested that *'…the ExA requests the documents referred to in the responses to the above questions [SET 1.3], or the relevant extracts from them, along with, where relevant, an explanation of how they answer the ExA's original question is sought. These are to be submitted by deadline 4 (Tuesday 12 May 2026).*'

Reference	Question	Updated Applicant's Response
	facilities 20% and 10% would commute from home into the area. Please signpost where within the submitted documentation National Grids assumptions are evidenced (ie – what schemes constitute National Grids previous experience of similar projects and what is the evidence that demonstrates the assumptions made) or provide such documentary evidence.	Relevant extracts that provide the evidence of where previous experience is drawn from includes (note document references are to documents on the Planning Inspectorates website for the two projects listed): • Bramford to Twinstead – Document 5.9 Socio Economics and Tourism Report EN020002-000492-5.9 Socio Economics and Tourism Report.pdf – Paragraph 5.4.7 states *'…From previous project experience (National Grid, 2016), National Grid anticipates that of the staff employed during construction of the project:* ○ *50% would stay in caravan and camping accommodation;* ○ *20% would stay in short-term let properties (such as through the private rented market);* ○ *20% would stay in serviced accommodation (bed and breakfasts, hotels); and* ○ *10% would travel to the area from home.'* – Paragraph 4.3.20 states *'Previous National Grid project experience indicates that … National Grid estimates that they would each spend £60-70 per day on accommodation, food and other local services.'* • Yorkshire GREEN - Document 5.2.16 **ES Chapter 16 Socio-economics [APP-88]** EN020024-000265-5.2.16 ES Chapter 16 Socio economics.pdf – Paragraph 16.8.36 states *'The non-local workers will require accommodation in the local area, and this demand would be serviced from hotels/B&Bs, camping and caravan sites and short term let properties. Previous experience shows that the breakdown of accommodations is of the order of:* ○ *50%: camping and caravan sites;* ○ *20%: short-term lets;* ○ *20%: hotels / B&Bs; and* ○ *10% travel into the area from home.'* – Paragraph 16.8.35 states *'…For those workers who would travel into the area, the applicant estimates that they would each spend £60-70 per day on accommodation, food and other local services.'*

Reference	Question	Updated Applicant's Response
SET 1.6	Key parameters for assessment and assumptions **ES chapter 15 [APP-265]** at paragraph 15.7.3 (Local economy) indicates assumptions related to Project Costs based on National Grids previous experience of similar projects. For example National Grid is assuming 65% would be spent on civil engineering works, with the remainder spent on plant and equipment. Signpost where within the submitted documentation National Grids assumptions are evidenced. (ie – what schemes and what is the evidence that demonstrated the assumptions made).	The ExAs written question SET 1.6 requested the Applicant to signpost where within the submitted documentation National Grid's assumptions are evidenced with regard to '*…assumptions related to Project Costs based on National Grid's previous experience of similar projects. For example National Grid is assuming 65% would be spent on civil engineering works, with the remainder spent on plant and equipment*'. The Applicant's response provided a sign-post to both National Grid's Bramford to Twinstead and Yorkshire GREEN projects. However, a Rule 17 letter dated 17 April 2026 (EN020027) requested that *'…the ExA requests the documents referred to in the responses to the above questions [SET 1.6], or the relevant extracts from them, along with, where relevant, an explanation of how they answer the ExA's original question is sought. These are to be submitted by deadline 4 (Tuesday 12 May 2026).'* Relevant extracts that provide the evidence of where previous experience is drawn from includes (note document references are to documents on the Planning Inspectorates website for the two projects listed): • Bramford to Twinstead – Document 5.9 Socio Economics and Tourism Report EN020002-000492-5.9 Socio Economics and Tourism Report.pdf – Paragraph 4.3.8 states *'From National Grid's previous experience of similar projects, it is expected that around 65% of the project cost would be spent on civil engineering works (e.g. excavations, foundations, construction and reinstatement) and around 35% on plant and equipment (e.g. pylon materials, conductors and cables).'* • Yorkshire GREEN - Document 5.2.16 **ES Chapter 16 Socio-economics [APP-88]** EN020024-000265-5.2.16 ES Chapter 16 Socio economics.pdf – Paragraph 16.8.34 states *'From this previous experience, it is expected that around 65% of this amount would be spent on civil engineering works (e.g. excavations, foundations, construction and reinstatement) and around 35% on plant and equipment (e.g. pylon materials, conductors and cables).'* Both Bramford to Twinstead and Yorkshire GREEN are consented Nationally Significant Infrastructure Projects.

Appendix
Report on the Impact of the Beauly-Denny Line Power Line on House Prices BiGGAR Economics

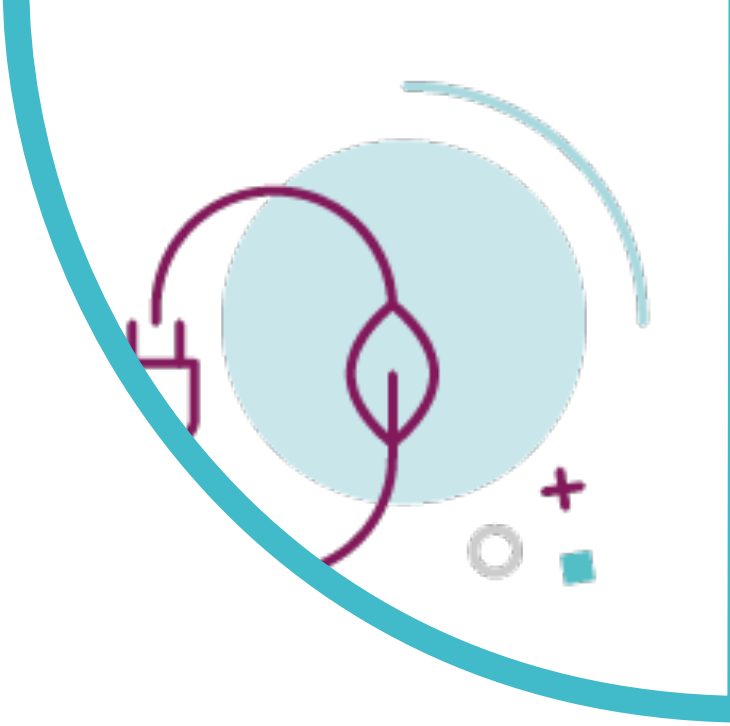
nationalgrid

BiGGAR Economics

House Prices: Impact of Beauly-Denny Grid Infrastructure

A Report to Scottish Renewables
September 2024

BiGGAR Economics



Contents

1. Executive Summary

Housing market trends along the Beauly-Denny power line have mirrored those of the wider local authorities. Macroeconomic factors have been the principal drivers of house price growth and the power line has had no noticeable impact on house prices.

In Scotland and the broader UK's pursuit of Net Zero, significant expansion in both onshore and offshore renewable energy production is proceeding across the Northern regions of Scotland and in the North Sea. Essential investments in enhancing network infrastructure will be crucial to effectively link this generated renewable energy and transport it to the regions of demand throughout the country.

Without sustained investment in grid infrastructure, the nation's Net Zero ambitions will not be met. Yet, there has been huge resistance to grid infrastructure proposals. Among the raised objections is the concern about the potential adverse effects transmission infrastructure might exert on property values.

The Beauly-Denny power line presents an opportunity to investigate this concern. The Beauly-Denny is a substantial electricity transmission line that became fully operational in 2015 and extends over 130 miles stretching from the town of Beauly, north of Inverness, to the town of Denny near Falkirk. It passes through the local authorities of Highland, Perth and Kinross, Stirling, and Falkirk with substations and related grid infrastructure at each end.

This study investigated house price trends of properties in close proximity to the Beauly-Denny electricity transmission line and compared this to the housing market trends of the wider local authorities. House prices along the Beauly-Denny power line have mirrored those of the wider local authorities since 2015, with macroeconomic drivers having overpowered any potential effects from the transmission line. House prices have surged since 2015 across the local authorities of Highland, Perth and Kinross, Stirling, and Falkirk. House prices along the Beauly-Denny power line have matched this growth since the transmission line became operational in 2015.

This suggests that the Beauly-Denny power line has not had a prominent influence on local house prices and that the national macroeconomic factors driving house prices have also been the primary determinant of house prices along the power line. However, this alone does not conclusively prove the absence of a detrimental impact on house prices. A synthetic control regression was performed to isolate the effect the power line had on properties within the immediate vicinity and found that there was no significant impact detectable.

While the power line was found to have no discernible numerical impact on aggregate house prices, the perspective of a potential buyer is fundamentally subjective to their individual preferences. To provide context to the numerical analysis, we referred to the expert opinion of rural estate agents with experience in buying and selling houses in the Beauly, Crieff, and Denny areas. The consultees reported that:

- There has been no noticeable impact on local housing markets, and drivers such as interest rates, cost of living and supply of houses have a greater impact. In general, no significant issues have arisen in recent years as a result of the Beauly-Denny power line;
- Concerns are more likely to arise when a property is in very close proximity to pylons or a substation. The main concern would likely be the visual impact that affects the amenity of a property. However, individual preferences vary hugely among different buyers and opinions on certain properties are entirely subjective. Some potential buyers could be deterred while others are entirely unbothered; and
- The impact of perception is important in the housing market. The fear of the unknown can have a greater impact than the later reality when the development is completed, so during the planning stage a proposed power line could be more likely to be seen as an issue by sellers and buyers than when the power line is built.

Overall, the expert opinion of the estate agent consultees complements the quantitative analysis undertaken. House prices along the Beauly-Denny transmission line have mirrored the house price trends across the wider local authorities of Highland, Perth and Kinross, Stirling, and Falkirk. The macroeconomic drivers have propelled house prices in all these areas in recent years, with no discernible impact on house prices being detectable from the Beauly-Denny transmission line.

2. Introduction

BiGGAR Economics was commissioned by Scottish Renewables to provide evidence of the impact of the Beauly-Denny grid infrastructure on the housing market.

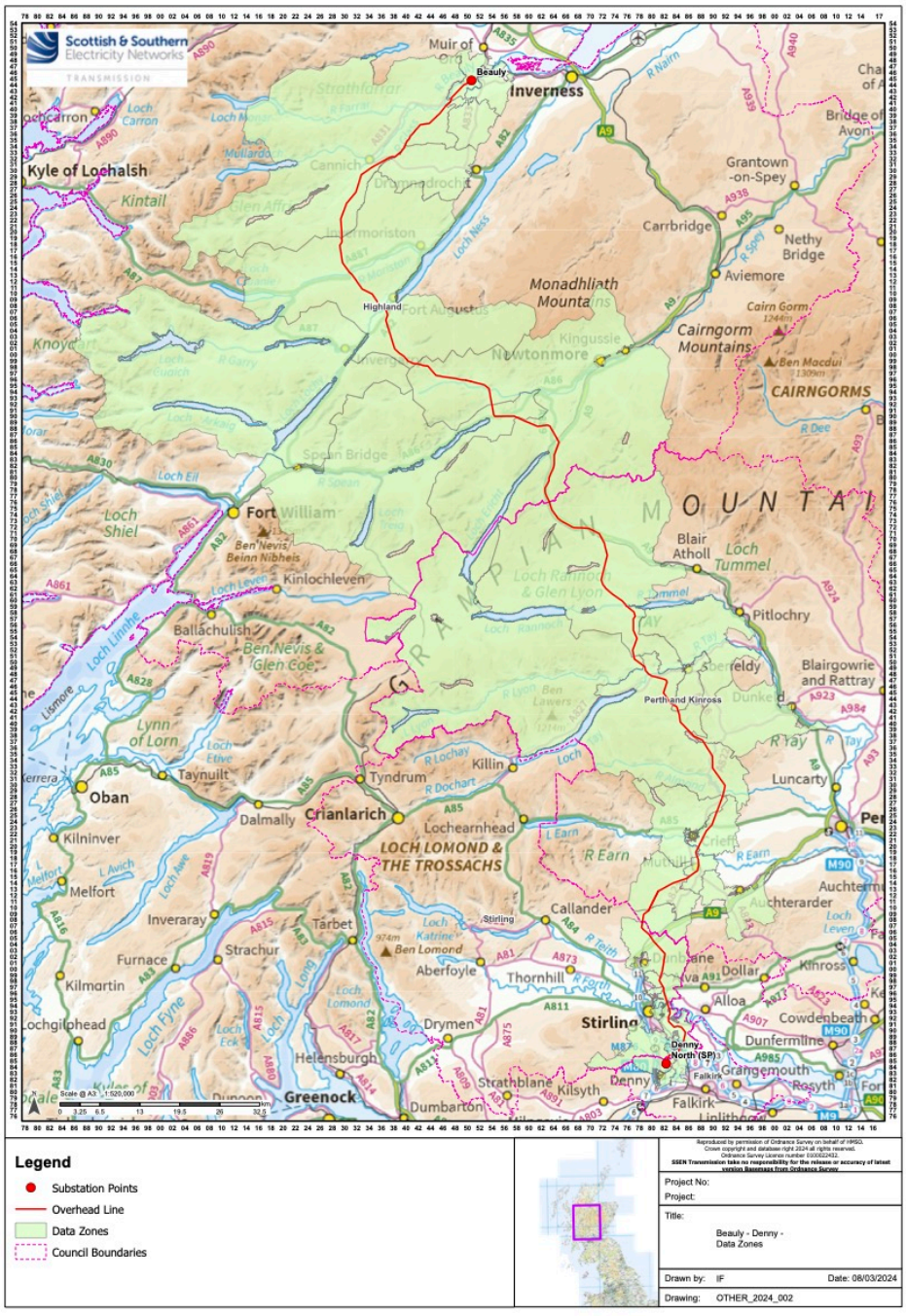
2.1 Background

In Scotland and the UK's drive towards Net Zero, there will continue to be considerable growth in onshore and offshore renewable energy generation across the North of Scotland. Investment to expand the network infrastructure is critical to connect this renewable energy supply and transport it to the areas of demand across the country.

To support this continued growth in renewable energy across the North of Scotland, the Beauly-Denny electricity transmission line upgrade proposals were announced in 2005. The plans aimed to balance cost effectiveness with social, environmental, and economic impacts. Following the announcement to upgrade the Beauly-Denny power line, the proposals received almost 18,000 objections, which led to the opening of a public inquiry in 2007. At the time it was Scotland's longest and most expensive public inquiry, which heard 300 witnesses and cost an estimated £10 million. In 2010, the Scottish Government granted approval and the power line became fully operational in 2015.

One of the objections raised was the potential negative impact the power line could have on house prices and the ability of homeowners to sell properties within the vicinity of the power line. The objective of this study is to investigate how house prices have been affected along the Beauly-Denny power line, and whether they have experienced differing trends to that of the wider local authorities. This has focused on an analysis of datazones along the route. Datazones are the primary geography for the release of small area statistics in Scotland and typically cover between 500 – 1,000 households. A map of the route and the datazones used in the analysis is shown in Figure 2-1.

Figure 2-1: Beauly-Denny Grid Infrastructure Route through Scotland



Source: SSEN Transmission.

2.2 Beauly-Denny Grid Infrastructure

The Beauly-Denny power line is an overhead line that is 137 miles long and runs from the town of Beauly, north of Inverness, to the town of Denny near Falkirk. It was the first 400kV overhead line built in the north of Scotland and became fully operational in 2015. The power line is supported by approximately 615 pylons with an average height of 53 metres which pass through some of Scotland's inaccessible terrain.

Substations and related grid infrastructure were also constructed at both ends of the power line near Beauly and Denny. Figure 2-2 below displays the route of the Beauly-Denny power line and substations, which passes through the local authorities of Highland, Perth and Kinross, Stirling, and Falkirk.

Figure 2-2: Beauly-Denny Grid Infrastructure (SSEN Transmission)

Source: SSEN Transmission (2023) Pathway 2030 projects.

2.3 Report Structure

The report is structured as follows:

- Chapter 3 provides an overview of housing price trends and transaction volumes across Scotland's housing market in recent years;
- Chapter 4 examines housing market trends of properties along the Beauly-Denny power line in Highland compared to the wider local authority housing trends;
- Chapter 5 examines housing market trends of properties along the Beauly-Denny power line in Perth and Kinross compared to the wider local authority housing trends;
- Chapter 6 examines housing market trends of properties along the Beauly-Denny power line in Stirling compared to the wider local authority housing trends;

- Chapter 7 examines housing market trends of properties along the Beauly-Denny power line in Falkirk compared to the wider local authority housing trends;
- Chapter 8 examines expert opinion from estate agents that were consulted;
- Chapter 9 presents the results of a synthetic control regression; and
- the appendix provides additional details.

3. Scotland's Housing Market

House prices in Scotland have increased considerably in recent years. However, the number of transactions has not recovered to levels seen before 2008.

3.1 Context

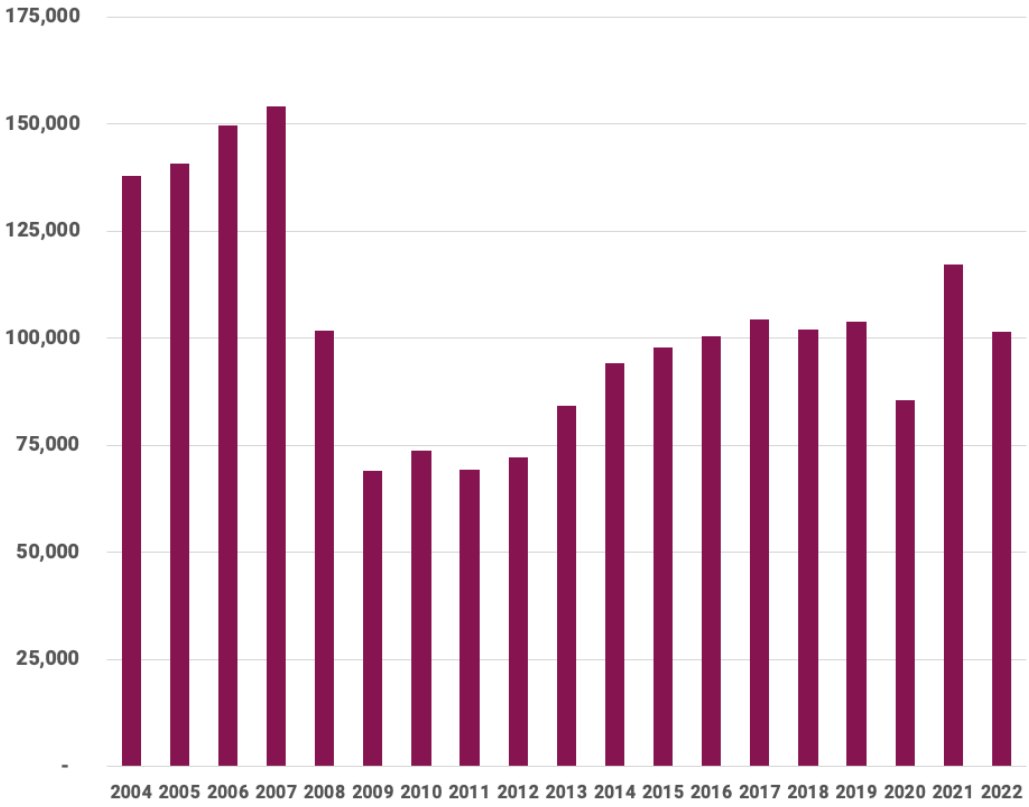
This study aims to provide evidence of the impact of the Beauly-Denny grid infrastructure on local housing markets. It is important to put this analysis into the context of the national housing market trends. This chapter outlines the trends in housing transactions and sale prices across Scotland's housing market between 2004 and 2022. This allows the later chapters investigating the impact of the Beauly-Denny power line to be placed within the greater context of the national and regional housing market trends.

3.2 Residential Property Transactions

In 2022, the total number of residential property transactions in Scotland was 101,563. Between 2004 and 2022, the total number of residential housing sales averaged 103,141. The peak year with the highest number of housing sales was in 2007 (154,134), and the lowest year for housing sales was in 2009 (68,991). Before the global financial crisis (GFC), property transactions were steadily increasing before collapsing to the lowest level in 2009. Residential property transactions in Scotland have never recovered to the pre-GFC levels.

Figure 3-1 below shows the total annual residential property sales in Scotland from 2004 to 2022.

Figure 3-1: Residential Property Transactions: Scotland

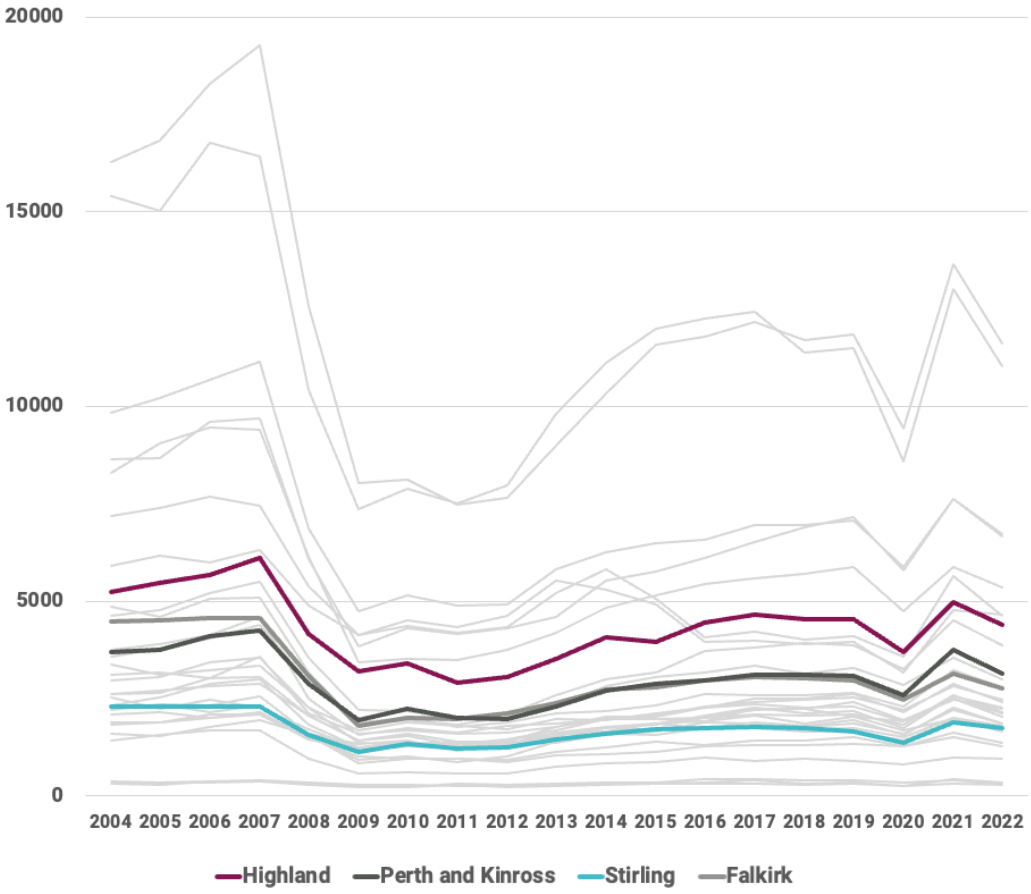


Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

Figure 3-2 below shows the total annual residential property sales for all the local authorities in Scotland from 2004 to 2022. The local authorities of Highland, Perth and Kinross, Stirling and Falkirk that the Beauly-Denny grid infrastructure passes through have been highlighted.

All the local authorities in Scotland experienced dramatic declines in transaction volumes in 2008, which have never recovered. Glasgow City and the City of Edinburgh have the highest number of property transactions among all local authorities, with the Orkney and Shetland Islands having the lowest number of housing sales.

Figure 3-2: Residential Property Transactions: All Local Authorities

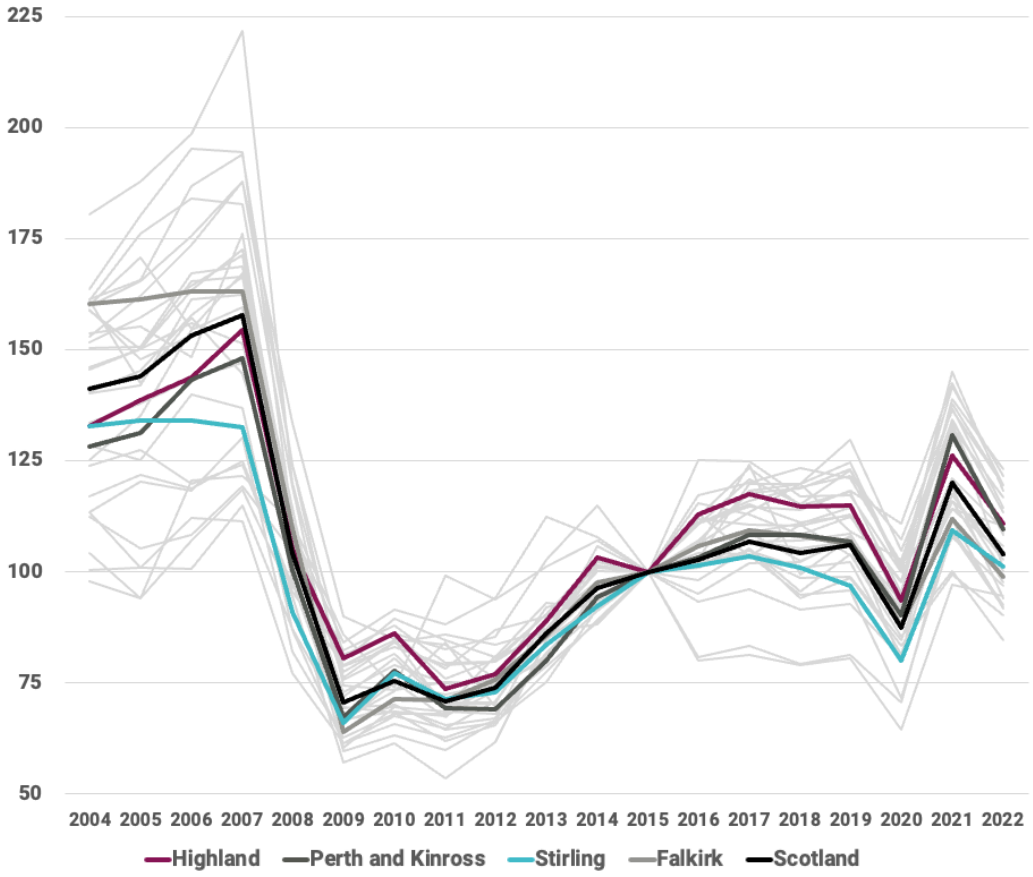


Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

Figure 3-3 below shows the total annual residential property sales for all the local authorities in Scotland from 2004 to 2022, indexed to 2015. The base year of 2015 when the Beauly-Denny power line became fully operational has been made equal to 100, to show how transaction volumes have changed relative to this year. The local authorities of Highland, Perth and Kinross, Stirling and Falkirk that the Beauly-Denny grid infrastructure passes through have been highlighted.

Scotland as a whole has seen the number of residential property transactions increase by 4% since 2015. Of all the 32 local authorities in Scotland, 22 have seen an increase in property sales between 2015 and 2022. East Ayrshire has seen the greatest increase in transactions with a 23% increase since 2015, and East Dunbartonshire has since the greatest reduction in sales with a 15% decrease since 2015. Property transactions are volatile with large changes in volumes of sales from year to year. The Covid lockdowns resulted in a sharp decline in transactions in 2020, which was then followed by a marked increase in sales in 2021.

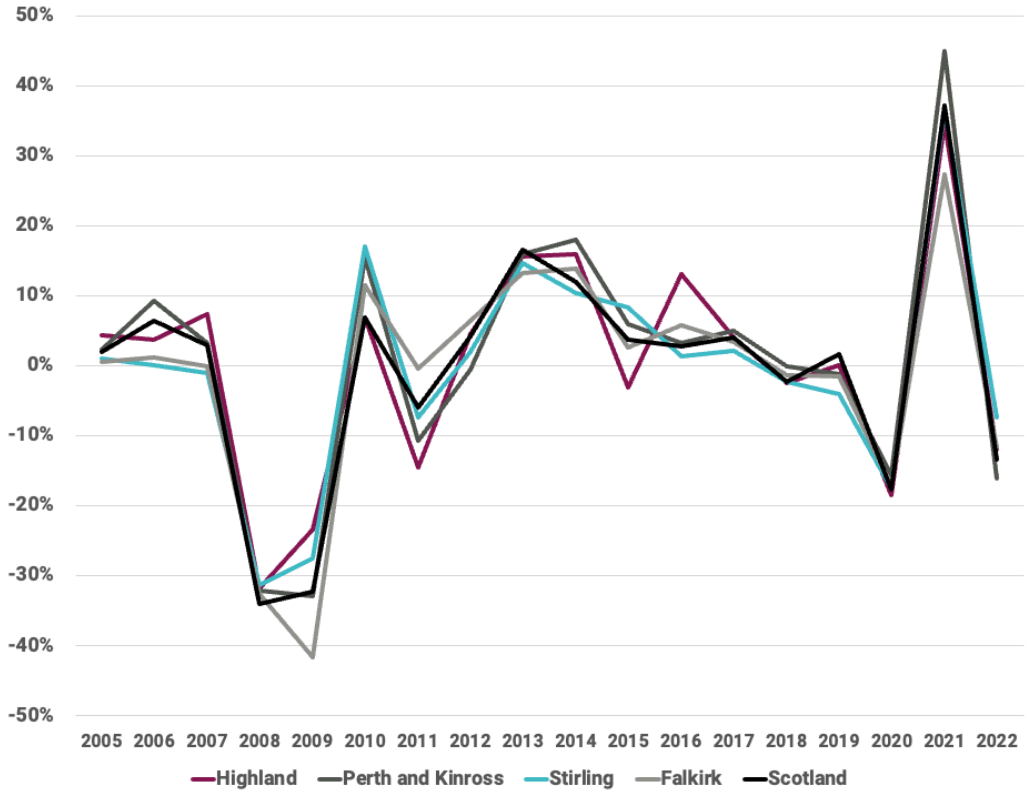
Figure 3-3: Residential Property Transactions (2015=100): All Local Authorities



Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

Figure 3-4 below shows the annual percentage change in residential property transactions for selected local authorities (Highland, Perth and Kinross, Stirling, and Falkirk) from 2005 to 2022. Following the collapse in property sales during the global financial crisis, transactions have generally increased in recent years. However, the Covid lockdown led to a reduction, followed by a sharp increase in transactions in 2021 when the restrictions were lifted.

Figure 3-4: Annual % Change in Residential Property Transactions: Selected Local Authorities

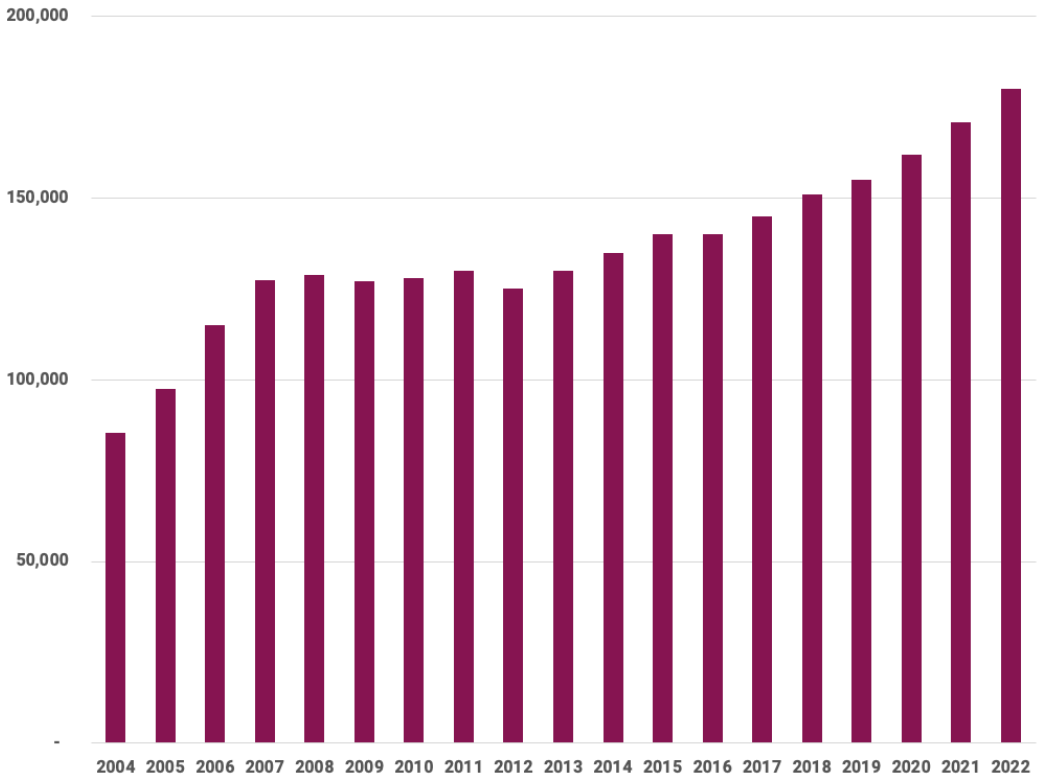


Source: Scottish Government Statistics (2023), Residential Properties Sales from 2005 to 2022.

3.3 Residential Property Prices

In 2022, the median residential property price in Scotland was £180,000. Between 2004 and 2022, the median house price in Scotland has increased from £85,550 to £180,000 with property prices increasing every year except in 2009 and 2012. Figure 3-5 below shows the median residential property prices in Scotland from 2004 to 2022.

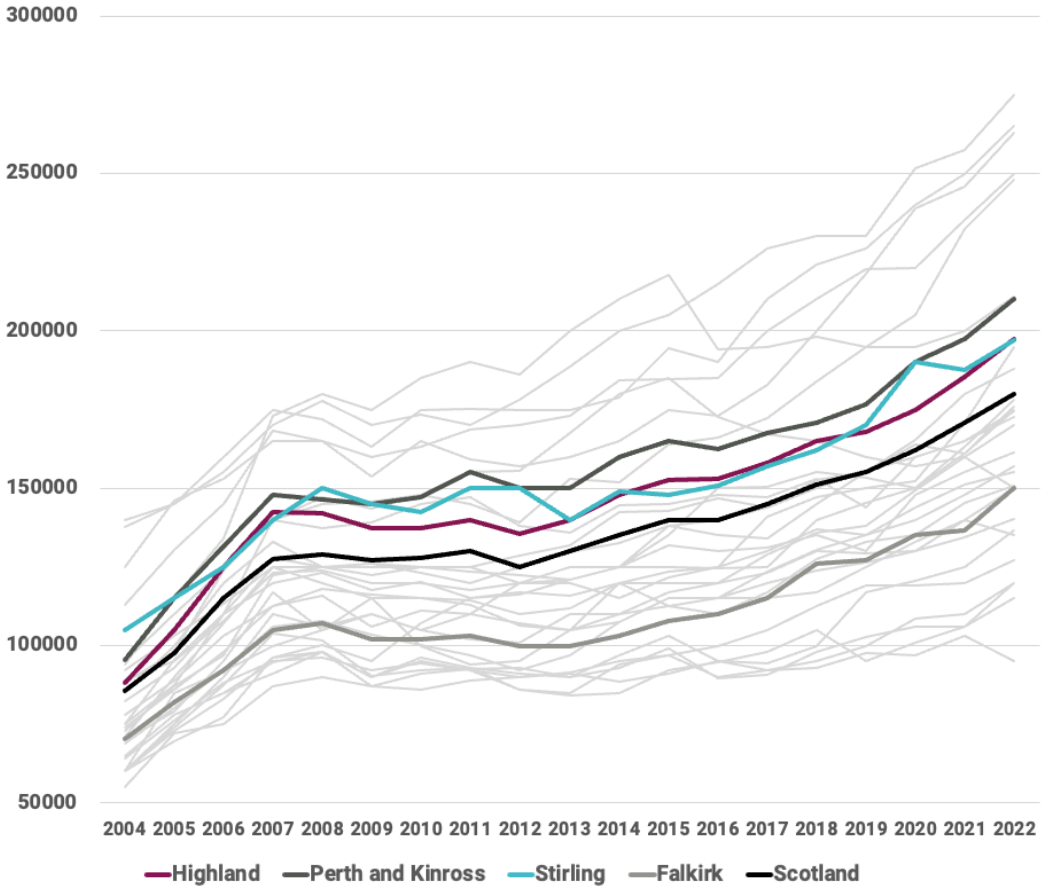
Figure 3-5: Median Residential Property Prices: Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Figure 3-6 below shows the median residential property prices for all the local authorities in Scotland from 2004 to 2022. In 2022, the City of Edinburgh had the highest median house price (£265,000), closely followed by East Lothian (£262,995). Inverclyde had the lowest median property price (£95,000) in 2022 across Scotland. Median residential property prices have significantly increased across all 32 local authorities in Scotland since 2004.

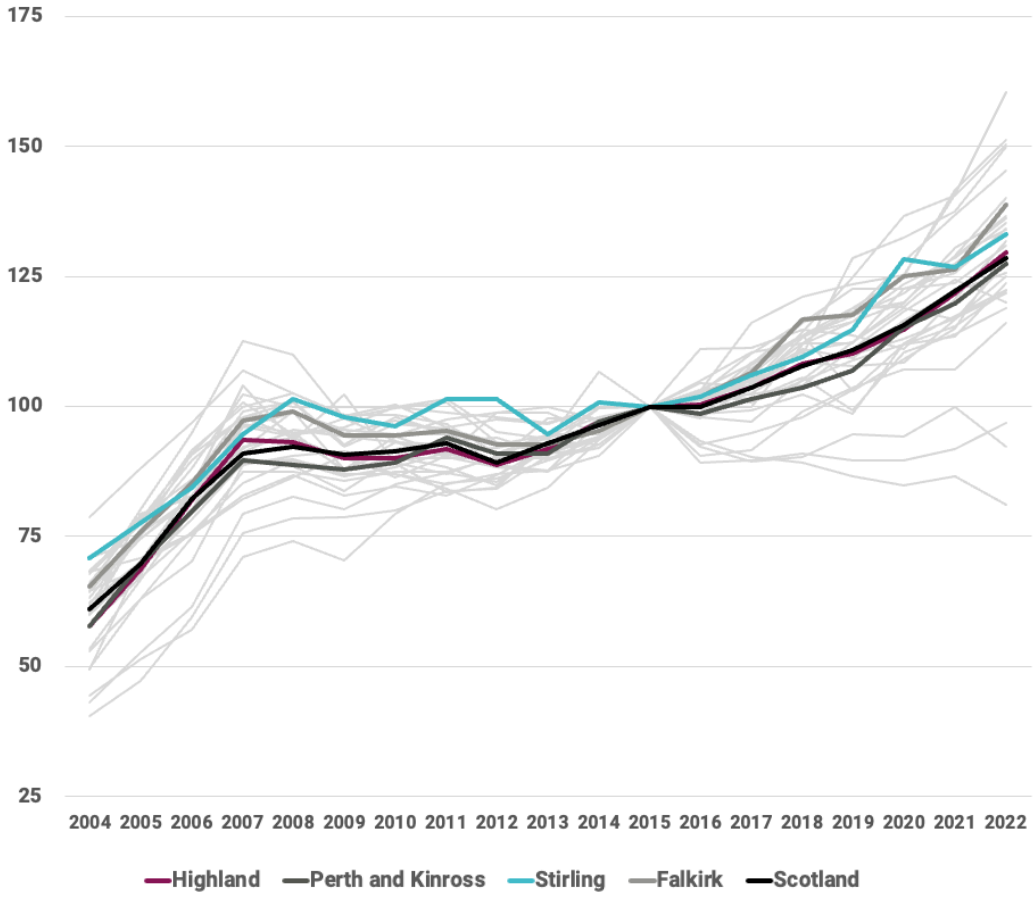
Figure 3-6: Median Residential Property Prices: All Local Authorities



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.Figure 3-7 below shows the annual change in median residential property prices compared with the base year of 2015 for all local authorities. The selected local authorities of Highland, Perth and Kinross, Stirling, and Falkirk have been highlighted

Scotland as a whole has seen residential property prices increase by 29% since 2015. Of all the 32 local authorities in Scotland, 29 have seen an increase in property prices between 2015 and 2022. The Orkney Islands has seen the greatest increase in median house prices with a 60% increase since 2015, and Aberdeen City has seen the greatest reduction in prices with a 19% decrease since 2015. Property prices have consistently seen large price increases across the majority of local authorities in Scotland.

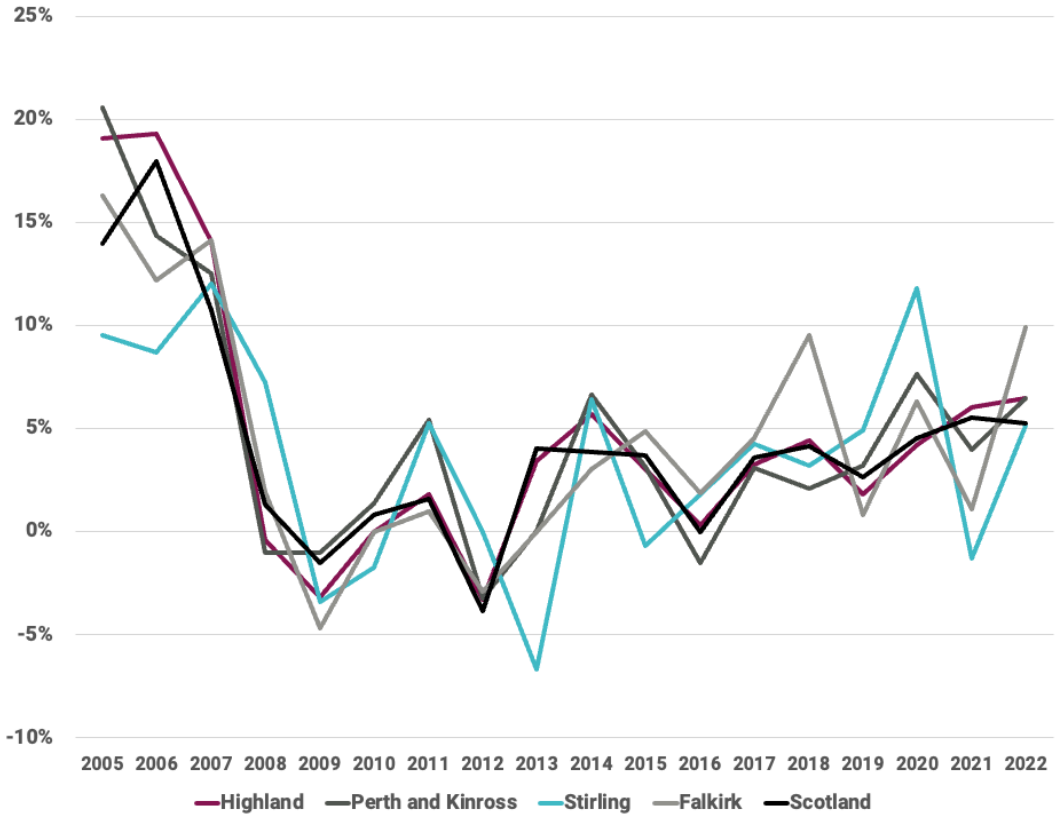
Figure 3-7: Median Residential Property Prices (2015=100): All Local Authorities



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Figure 3-8 below shows the annual percentage change in residential property prices for selected local authorities (Highland, Perth and Kinross, Stirling, and Falkirk) from 2005 to 2022. There has been very strong growth in property prices since 2015 across all of the local authorities.

Figure 3-8: Annual % Change in Median Residential Property Prices: Selected Local Authorities



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2005 to 2022.

3.4 Summary

Residential property transaction volumes across Scotland dropped dramatically in the period from 2008 to 2012 during the global financial crisis. Property sales have generally increased every year since then, except during the covid lockdown in 2020 but have never recovered to the transaction volumes before the global financial crisis.

The median residential property price across Scotland has increased considerably in the period from 2004 to 2022, rising in every year except 2009 and 2012. House prices grew particularly quickly after 2015 across Scotland, reaching their highest value in 2022.

4. Highland Housing Market

This section examines housing market trends of properties along the Beauly-Denny power line in Highland and compares that to the trends of the wider local authority.

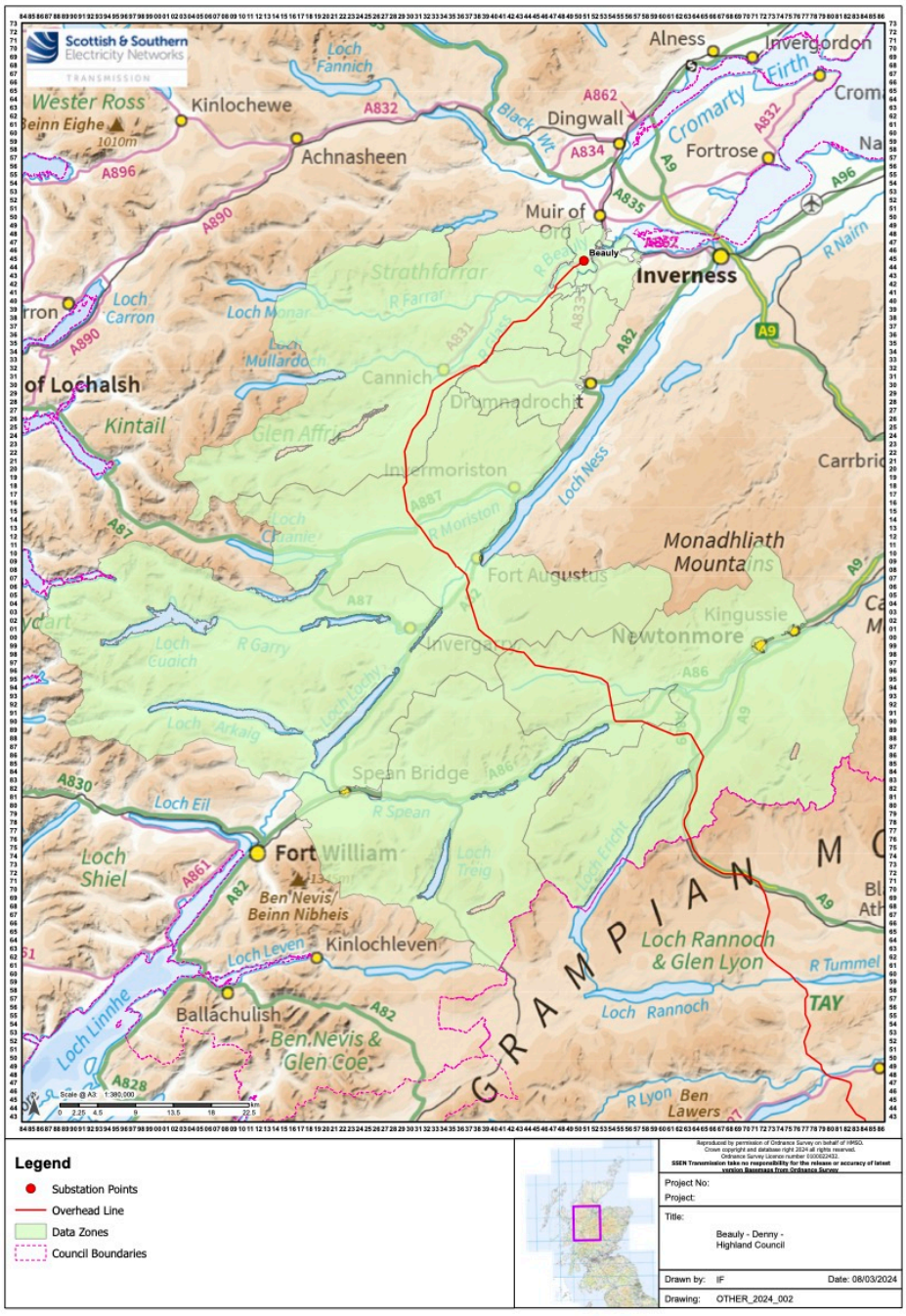
The Beauly-Denny overhead power line runs from a substation south of the town of Beauly, passing through Highland Council. Figure 4-1 shows the route of the Beauly-Denny power line through Highland Council.

The Beauly-Denny overhead line passes directly through or in very close proximity to the Highland Council geographic data zones[1] of:

- Inverness West Rural – 09;
- Inverness West Rural – 05;
- Inverness West Rural – 06;
- Inverness West Rural – 07;
- Inverness West Rural – 01;
- Inverness West Rural – 02;
- Inverness West Rural – 03;
- Loch Ness – 01;
- Loch Ness – 05;
- Lochaber East and North – 07;
- Badenoch and Strathspey South – 02; and
- Lochaber East and North – 05.

[1] Data zones are the key geography for the dissemination of small area statistics in Scotland. Data zones are large enough that statistics can be presented accurately without fear of disclosure and yet small enough that they can be used to represent communities. They typically have populations of 500-1000 households.

Figure 4-1: Beauly-Denny Grid Infrastructure Route through Highland Council



Source: SSEN Transmission.

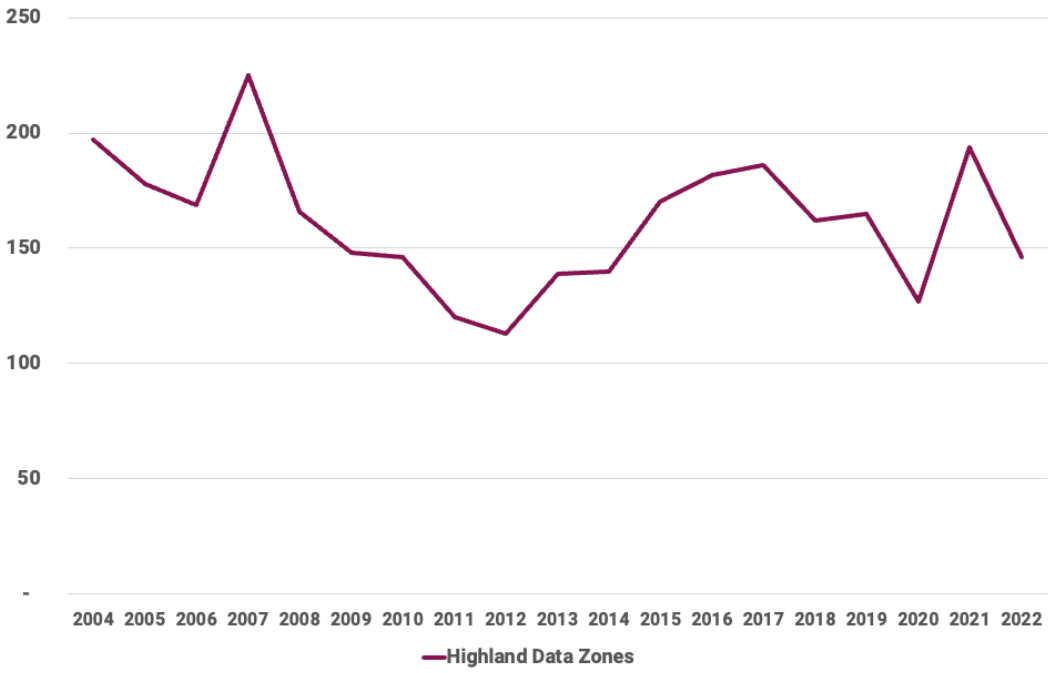
These data zones were combined to form the area titled 'Highland Data Zones', representing the geographic area in which the power line passes directly through or in very close proximity to. The housing market trends of 'Highland Data Zones' were then compared to the trends of the wider Highland Council region.

4.1 Highland Housing Market

4.1.1 Residential Property Transactions

In 2022, the total number of residential property sales in the combined 'Highland Data Zones' was 146. Between 2004 and 2022, the number of housing transactions has averaged 162. The highest number of housing sales was 225 in 2007, and the lowest volume of transactions was 113 in 2012. Figure 4-2 below shows the total annual residential property sales in 'Highland Data Zones' from 2004 to 2022.

Figure 4-2: Residential Property Transactions: 'Highland Data Zones'



Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

Figure 4-3 below shows the annual change in residential property transactions compared with the base year of 2015 for the 'Highland Data Zones', Highland Council, and Scotland. The combined 'Highland Data Zones' has seen a reduction in transaction volumes since 2015, whereas Highland Council and Scotland as a whole has experienced an increase in sales during this time period. The 'Highland Data Zones' have seen a 14% reduction in transaction volumes since 2015, while sales have increased by 11% and 4% in Highland Council and Scotland respectively.

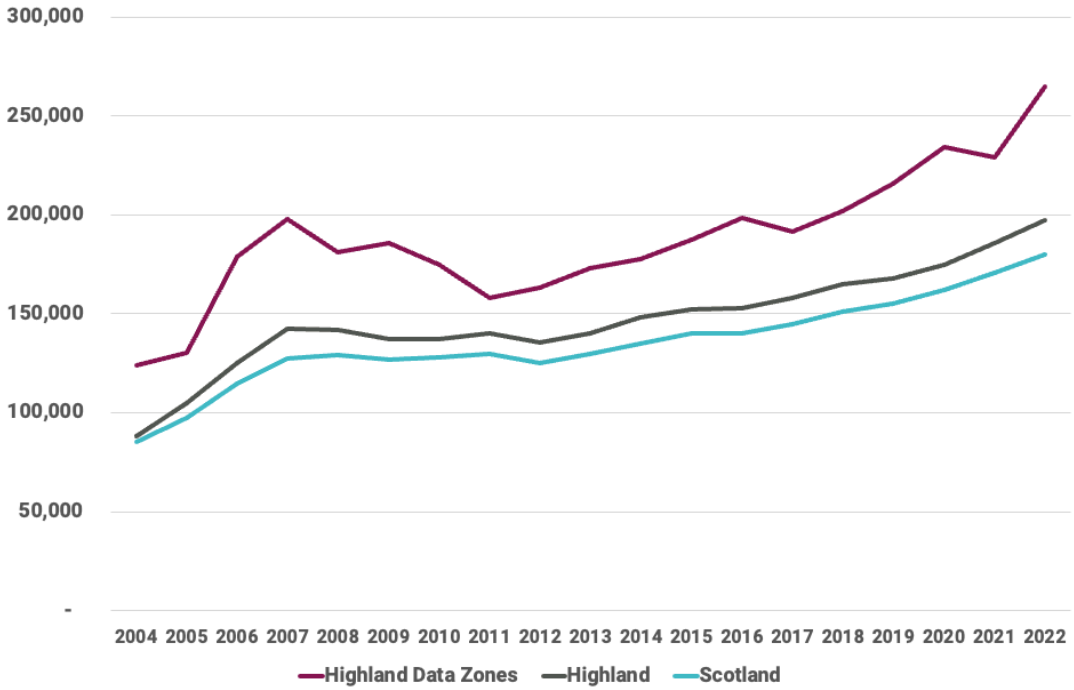
Figure 4-3: Residential Property Transactions (2015=100): 'Highland Data Zones', Highland Council, and Scotland

Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

4.1.2 Residential Property Prices

In 2022, the median residential property price in the combined 'Highland Data Zones' was £264,769. Between 2004 and 2022, the median house price more than doubled from £123,685 to £264,769 with prices increasing in 12 of the 18 years. The median property price is higher in the 'Highland Data Zones' than in the wider Highland Council, and Scotland as a whole. Figure 4-4 below shows the median residential property prices for the 'Highland Data Zones', Highland Council, and Scotland from 2004 to 2022.

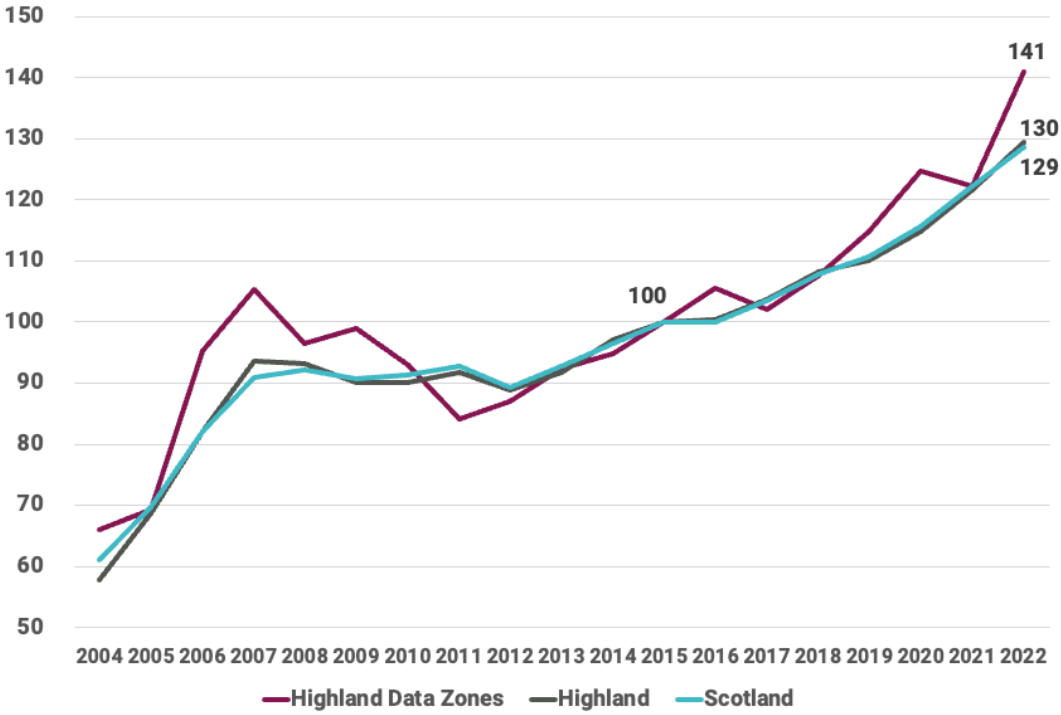
Figure 4-4: Median Residential Property Prices: 'Highland Data Zones', Highland Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Property prices in the 'Highland Data Zones' are not only higher than in the wider Highland Council – they also have seen greater growth in price since 2015. Figure 4-5 below shows the annual change in residential property prices compared with the base year of 2015 for the 'Highland Data Zones', Highland Council, and Scotland. House prices in 'Highland Data Zones' have grown 41% since 2015, compared to 30% and 29% across Highland Council and Scotland respectively.

Figure 4-5: Median Residential Property Prices (2015=100): 'Highland Data Zones', Highland Council, and Scotland



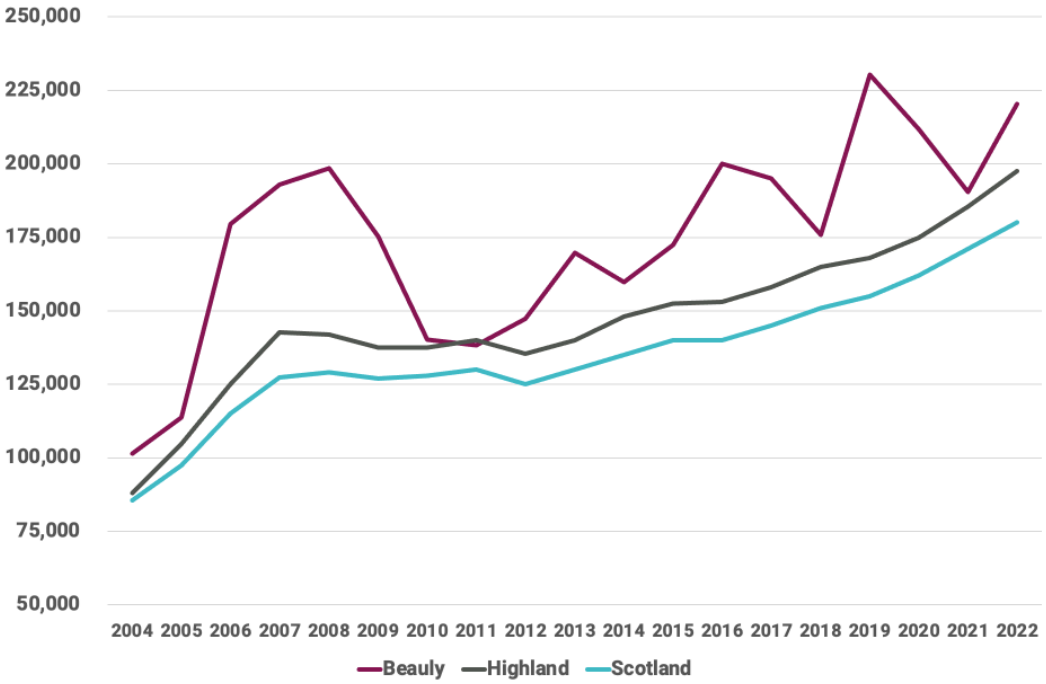
Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

4.2 Case Study: Beauly

The town of Beauly in Highland Council is where the Beauly-Denny power line begins and is situated next to the large substation and related grid infrastructure. This section examines house price and transaction trends in the town of Beauly and compares them to the wider local authority.

In 2022, the median residential property price in Beauly was £220,344. Between 2004 and 2022, the median house price more than doubled from £101,511 to £220,344 with a rapid increase in property prices since 2015. The median property price is higher in Beauly than in the wider Highland Council, and Scotland as a whole. Figure 4-6 below shows the median residential property prices for the Beauly, Highland Council, and Scotland from 2004 to 2022.

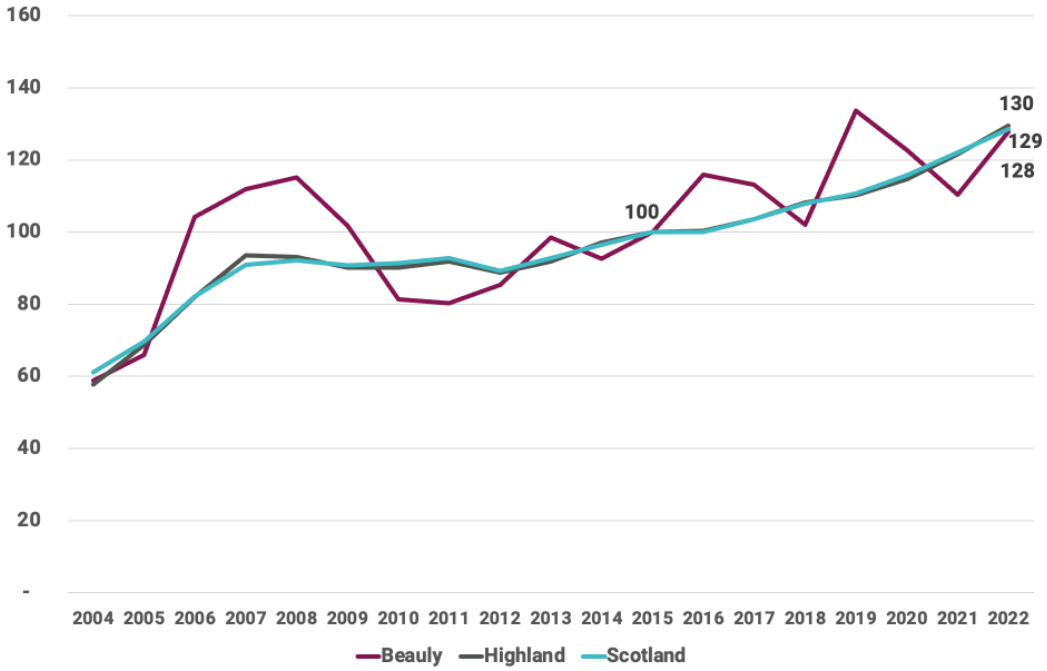
Figure 4-6: Median Residential Property Prices: Beauly, Highland Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Property price growth in Beauly has matched that of wider local authority since 2015 when the power line became fully operational. Figure 4-7 below shows the annual change in residential property prices compared with the base year of 2015 for the Beauly, Highland Council, and Scotland. House prices in Beauly have grown 28% since 2015, compared to 30% and 29% across Highland Council and Scotland respectively.

Figure 4-7: Median Residential Property Prices (2015=100): Beauly, Highland Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

4.3 Summary

The 'Highland Data Zones' is the study area representing the geography that the Beauly-Denny power line passes through in Highland Council. Since the power line became fully operational in 2015, house prices in these locations have experienced rapid rises, and have increased at a greater rate than that of the wider Highland Council and national average. Additionally, the key town of Beauly situated near the substation has also seen considerable house price increases since 2015 which have matched the house price growth of the wider Highland Council.

5. Perth and Kinross Housing Market

This section examines housing market trends of properties along the Beauly-Denny power line in Perth and Kinross and compares that to the trends of the wider local authority.

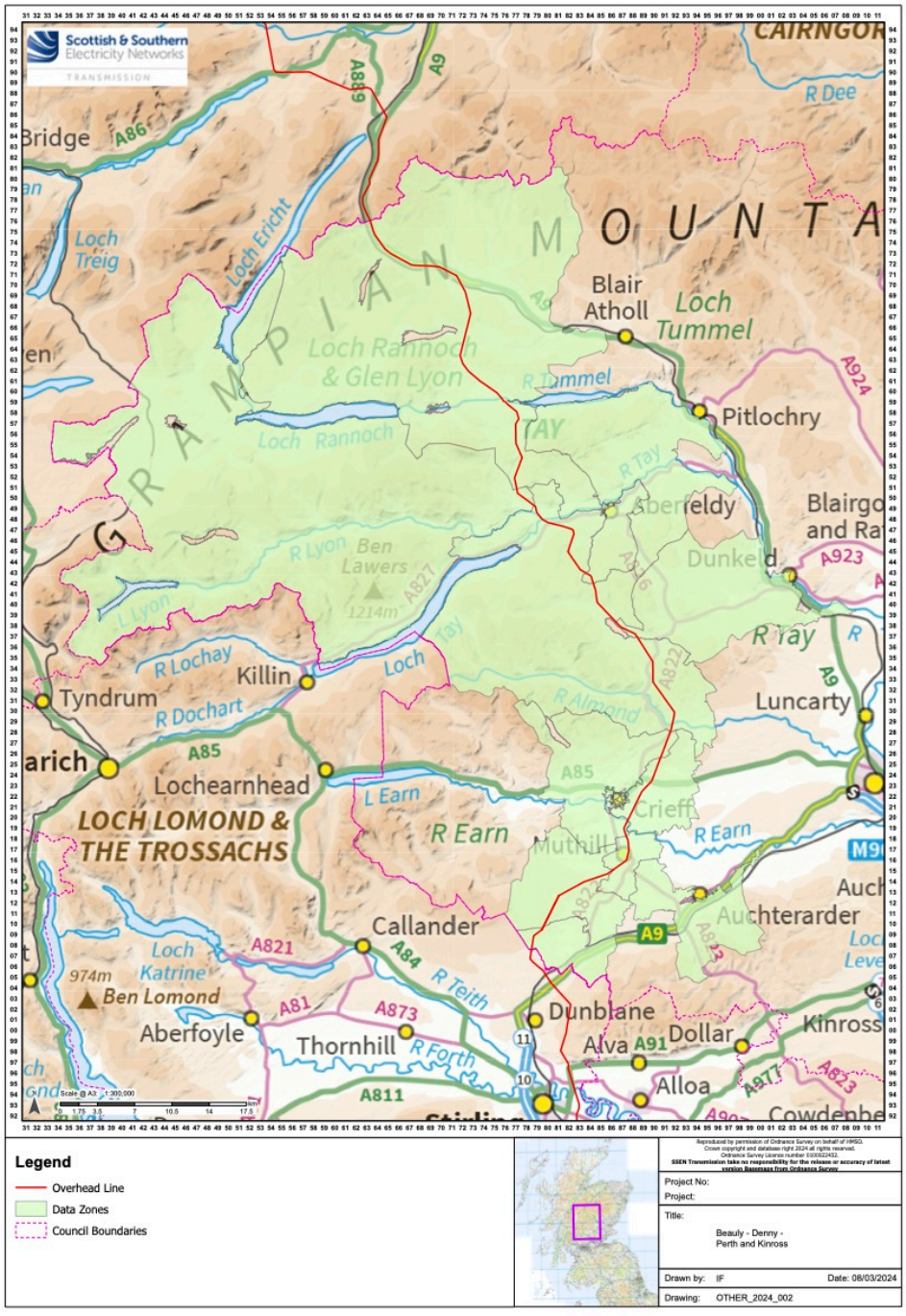
Figure 5-1 shows the route of the Beauly-Denny power line through Perth and Kinross Council.

The Beauly-Denny overhead line passes directly through or in very close proximity to the Perth and Kinross Council geographic data zones[2] of:

- Rannoch and Aberfeldy – 04;
- Rannoch and Aberfeldy – 01;
- Rannoch and Aberfeldy – 05;
- Rannoch and Aberfeldy – 06;
- Rannoch and Aberfeldy – 03;
- Rannoch and Aberfeldy – 02;
- Luncarty and Dunkeld – 07;
- Comrie, Gilmerton and St Fillans – 04;
- Comrie, Gilmerton and St Fillans – 01;
- Crieff North – 01;
- Crieff North – 02;
- Crieff North – 03;
- Crieff North – 04;
- Crieff South – 03;
- Crieff South – 01;
- Crieff South – 02;
- Crieff South – 04;
- Crieff South – 05;
- Muthill, Greenloaning and Gleneagles – 05;
- Muthill, Greenloaning and Gleneagles – 04;
- Muthill, Greenloaning and Gleneagles – 02; and
- Muthill, Greenloaning and Gleneagles – 01.

[2] Data zones are the key geography for the dissemination of small area statistics in Scotland. Data zones are large enough that statistics can be presented accurately without fear of disclosure and yet small enough that they can be used to represent communities. They typically have populations of 500-1000 households.

Figure 5-1: Beauly-Denny Grid Infrastructure Route through Perth and Kinross Council



Source: SSEN Transmission (2023) Pathway 2030 projects.

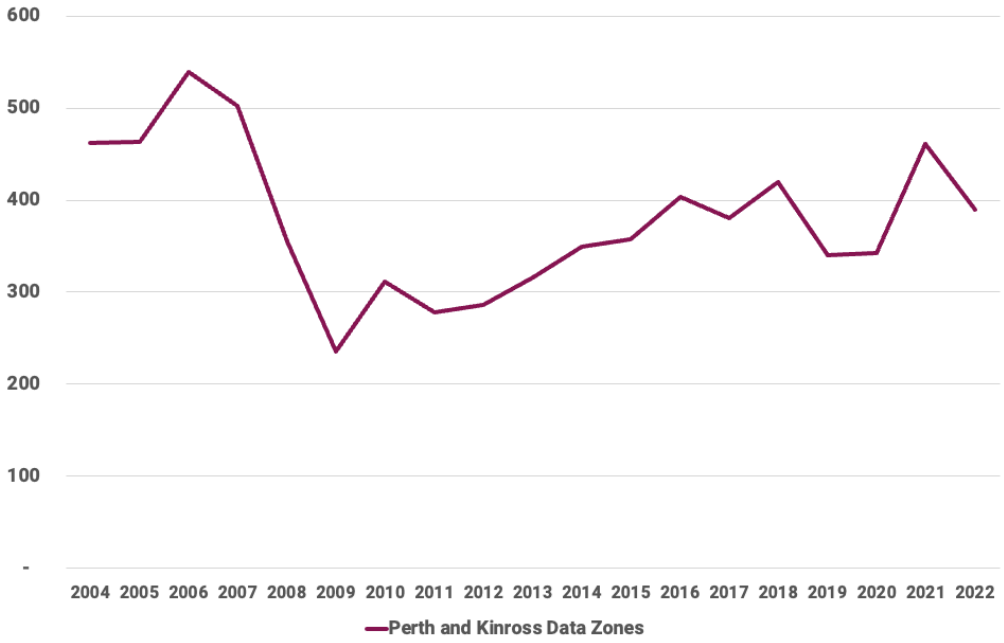
These data zones were combined to form the area titled 'Perth and Kinross Data Zones', representing the geographic area in which the power line passes directly through or in very close proximity to. The housing market trends of 'Perth and Kinross Data Zones' were then compared to the trends of the wider Perth and Kinross Council region.

5.1 Perth and Kinross Housing Market

5.1.1 Residential Property Transactions

In 2022, the total number of residential property sales in the combined 'Perth and Kinross Data Zones' was 390. Between 2004 and 2022, the number of housing transactions has averaged 372. The highest number of housing sales was 539 in 2006, and the lowest number of transactions was 235 in 2009. Figure 5-2 below shows the total annual residential property sales in 'Perth and Kinross Data Zones' from 2004 to 2022.

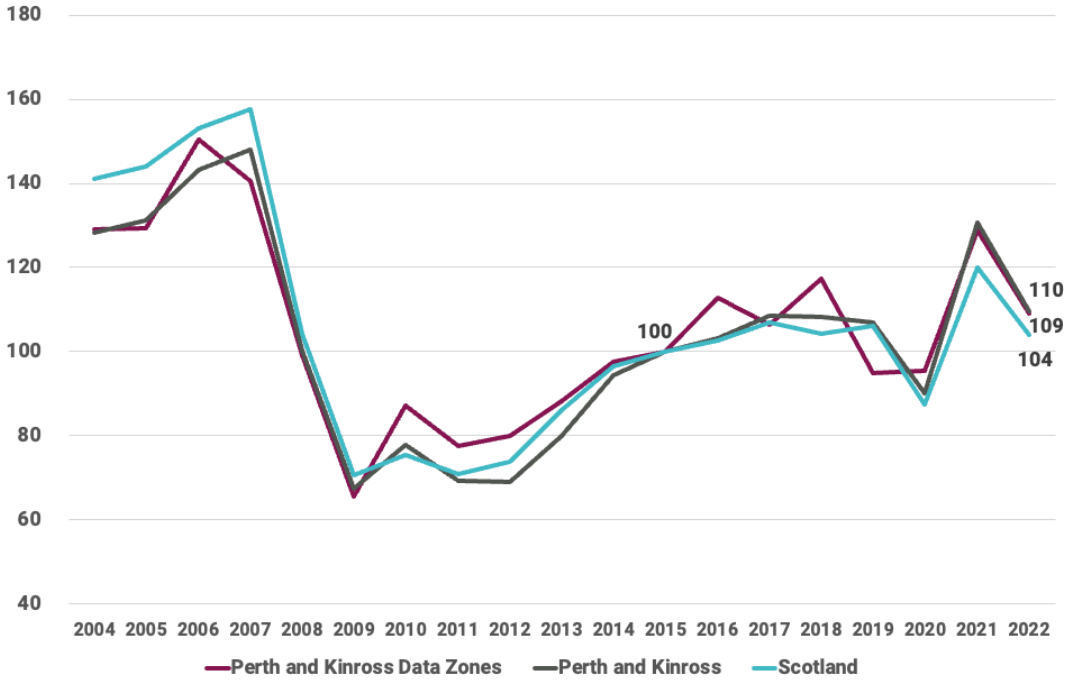
Figure 5-2: Residential Property Transactions: 'Perth and Kinross Data Zones'



Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

Figure 5-3 below shows the annual change in residential property transactions compared with the base year of 2015 for the 'Perth and Kinross Data Zones', Perth and Kinross Council, and Scotland. The combined 'Perth and Kinross Data Zones', along with the wider local authority of Perth and Kinross have seen increases in transaction volumes since 2015 that are above the national average. The 'Perth and Kinross Data Zones' and Perth and Kinross Council have experienced an increase in transaction volumes of 9% and 10% since 2015 respectively, while Scotland has seen a 4% increase in transaction volumes.

Figure 5-3: Residential Property Transactions (2015=100): 'Perth and Kinross Data Zones', Perth and Kinross Council, and Scotland

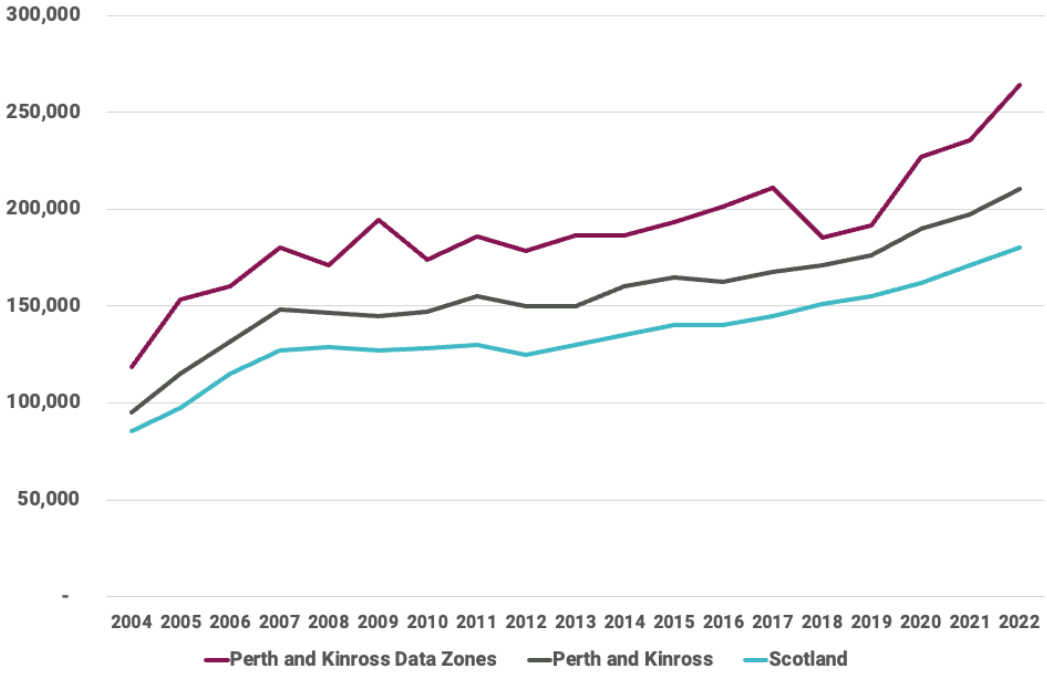


Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

5.1.2 Residential Property Prices

In 2022, the median residential property price in the combined 'Perth and Kinross Data Zones' was £264,094. Between 2004 and 2022, the median house price more than doubled from £118,700 to £264,769 with prices rapidly increasing in recent years. The median property price is higher in the 'Perth and Kinross Data Zones' than in wider Perth and Kinross Council, and Scotland as a whole. Figure 5-4 below shows the median residential property prices for the 'Perth and Kinross Data Zones', Perth and Kinross Council, and Scotland from 2004 to 2022.

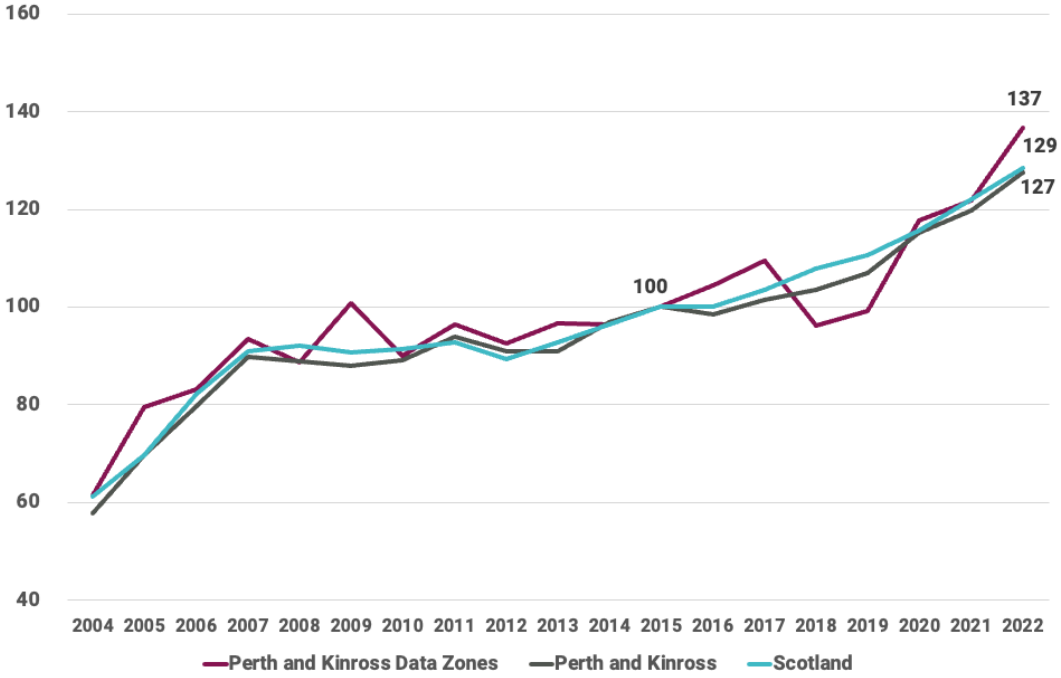
Figure 5-4: Median Residential Property Prices: 'Perth and Kinross Data Zones', Perth and Kinross Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Property prices in the 'Perth and Kinross Data Zones' are not only higher than in the wider Perth and Kinross Council – they also have seen greater price growth since 2015. Figure 5-5 below shows the annual change in residential property prices compared with the base year of 2015 for the 'Perth and Kinross Data Zones', Perth and Kinross Council, and Scotland. House prices in 'Perth and Kinross Data Zones' have grown 37% since 2015, compared to 27% and 29% across Perth and Kinross Council and Scotland respectively.

Figure 5-5: Median Residential Property Prices (2015=100): 'Perth and Kinross Data Zones', Perth and Kinross Council, and Scotland



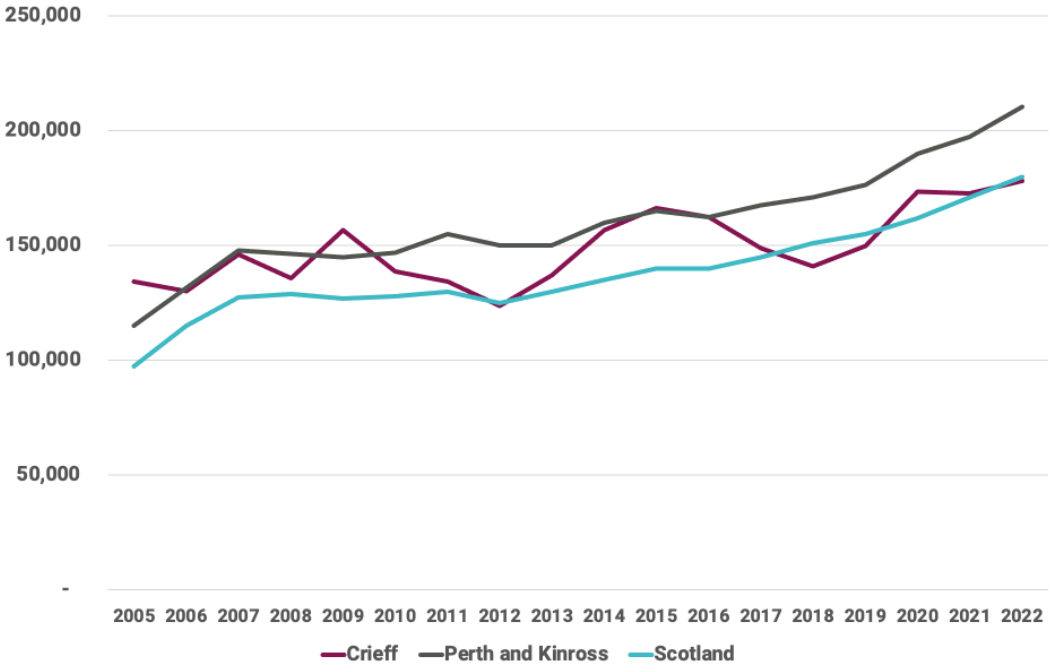
Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

5.2 Case Study: Crieff

The town of Crieff in Perth and Kinross Council is next to the Beauly-Denny power line and was chosen as a case study. This section examines house price and transaction trends in the town of Crieff and compares it to the wider local authority.

In 2022, the median residential property price in Crieff was £178,226. Between 2004 and 2022, the median house price has increased by 74% from £102,150 to £178,226. The median property price is lower in Crieff than in the wider Perth and Kinross Council, and Scotland as a whole. Figure 5-6 below shows the median residential property prices for the Crieff, Perth and Kinross Council, and Scotland from 2004 to 2022.

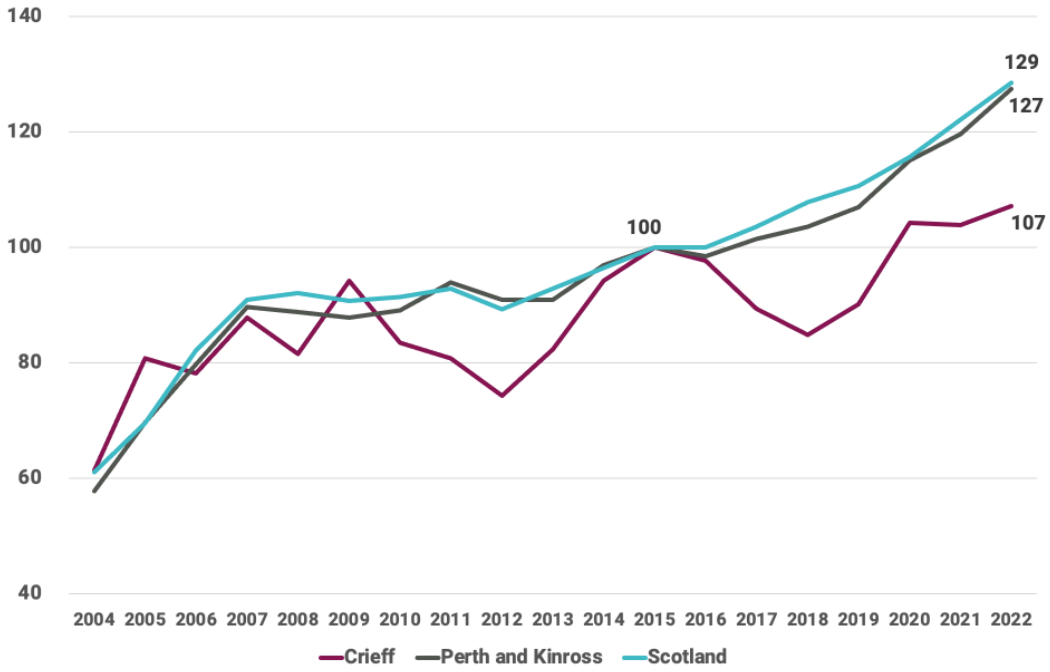
Figure 5-6: Median Residential Property Prices: Crieff, Perth and Kinross Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Property price growth in Crieff has been lower than that of the wider Perth and Kinross Council since 2015 when the power line became fully operational. Figure 5-7 below shows the annual change in residential property prices compared with the base year of 2015 for Crieff, Perth and Kinross Council, and Scotland. House prices in Crieff have grown 7% since 2015, compared to 27% and 29% across Perth and Kinross Council and Scotland respectively.

Figure 5-7: Median Residential Property Prices (2015=100): Crieff, Perth and Kinross Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

5.3 Summary

The 'Perth and Kinross Data Zones' is the study area representing the geography that the Beauly-Denny power line passes through in Perth and Kinross Council. Since the power line became fully operational in 2015, house prices in these locations have experienced significant increases, and have increased at a greater rate than that of the wider Perth and Kinross Council and national average. However, the key town of Crieff situated near the power line in Perth and Kinross has had an increase in house prices since 2015, but at a slower rate than that of the wider local authority.

6. Stirling Housing Market

This section examines housing market trends of properties along the Beauly-Denny power line in Stirling and compares that to the trends of the wider local authority.

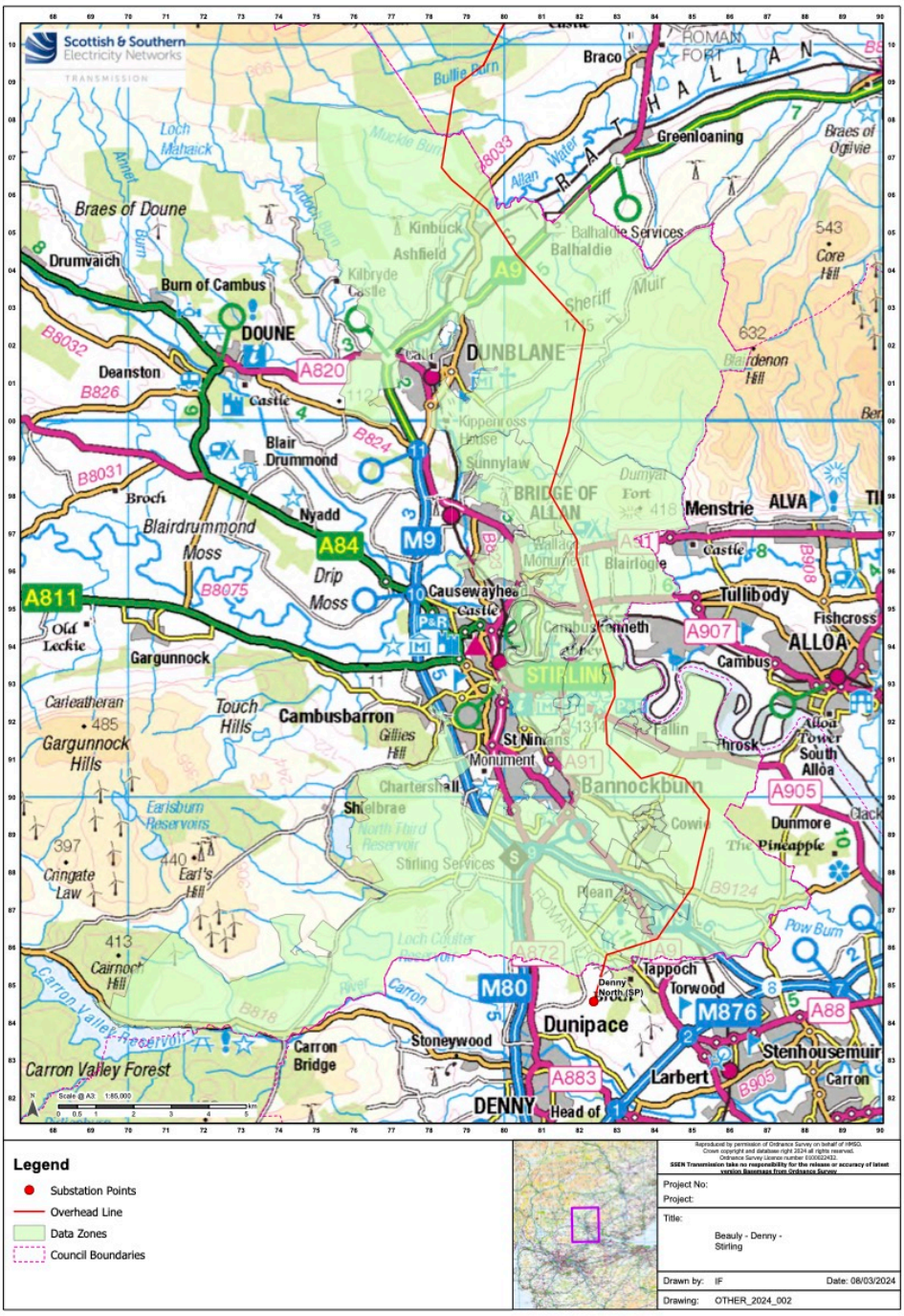
The Beauly-Denny overhead line passes directly through or in very close proximity to the Stirling Council geographic data zones[3] of:

- Dunblane East – 04;
- Forth – 04;
- Bridge of Allan and University – 01;
- Plean and Rural SE – 04;
- Braehead – 03;
- Causewayhead – 01;
- Forth – 03;
- Fallin – 01;
- Fallin – 02;
- Fallin – 03;
- Fallin – 04;
- Cowie – 01;
- Cowie – 02;
- Cowie – 03;
- Cowie – 04;
- Plean and Rural SE – 01;
- Plean and Rural SE – 02; and
- Plean and Rural SE – 03.

Figure 6-1 shows the route of the Beauly-Denny power line through Stirling Council.

[3] Data zones are the key geography for the dissemination of small area statistics in Scotland. Data zones are large enough that statistics can be presented accurately without fear of disclosure and yet small enough that they can be used to represent communities. They typically have populations of 500-1000 households.

Figure 6-1: Beauly-Denny Grid Infrastructure Route through Stirling Council



Source: SSEN Transmission (2023) Pathway 2030 projects.

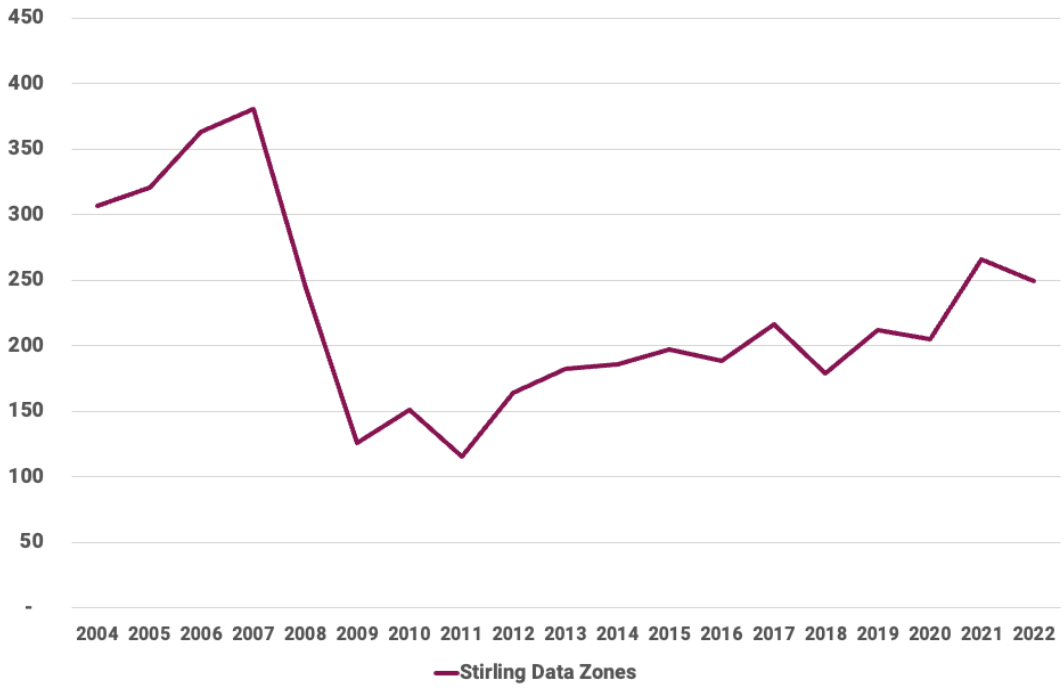
These data zones were combined to form the area titled 'Stirling Data Zones', representing the geographic area in which the power line passes directly through or in very close proximity to. The housing market trends of 'Stirling Data Zones' were then compared to the trends of the wider Stirling Council region.

6.1 Stirling Housing Market

6.1.1 Residential Property Transactions

In 2022, the total number of residential property sales in the combined 'Stirling Data Zones' was 249. Between 2004 and 2022, the number of housing transactions has averaged 224. The highest number of housing sales was 381 in 2007, and the lowest number of transactions was 115 in 2011. Figure 6-2 below shows the total annual residential property sales in 'Stirling Data Zones' from 2004 to 2022.

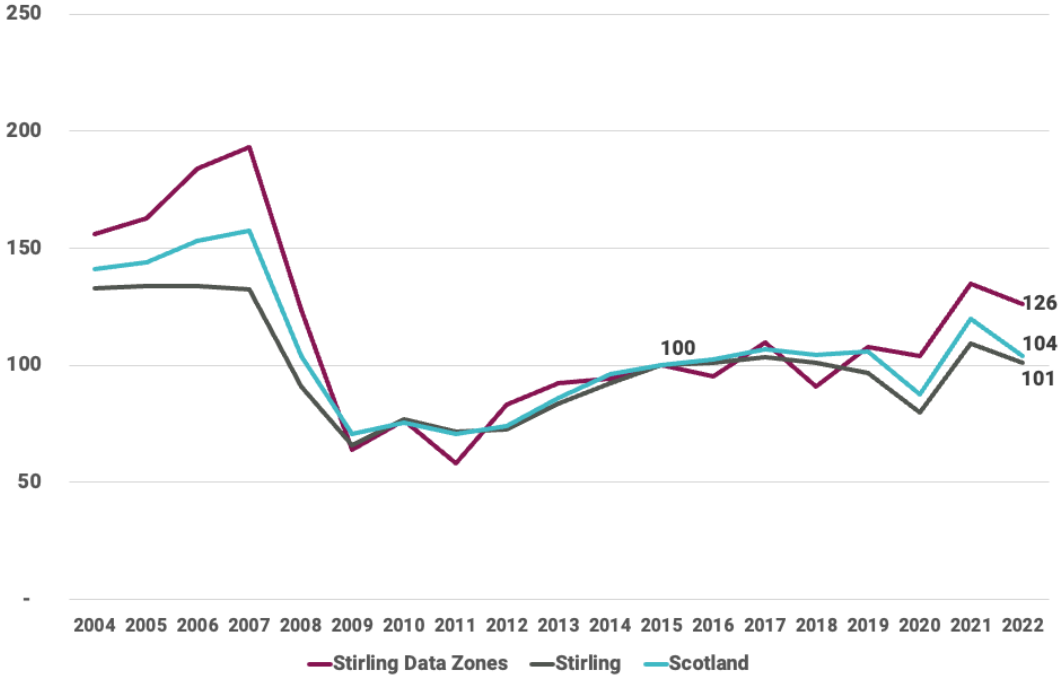
Figure 6-2: Residential Property Transactions: 'Stirling Data Zones'



Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

Figure 6-3 below shows the annual change in residential property transactions compared with the base year of 2015 for the 'Stirling Data Zones', Stirling Council, and Scotland. The combined 'Stirling Data Zones' has seen an increase of 26% in transaction volumes since 2015, while Stirling Council and Scotland have experienced minimal increases of 1% and 4% respectively.

Figure 6-3: Residential Property Transactions (2015=100): 'Stirling Data Zones', Stirling Council, and Scotland

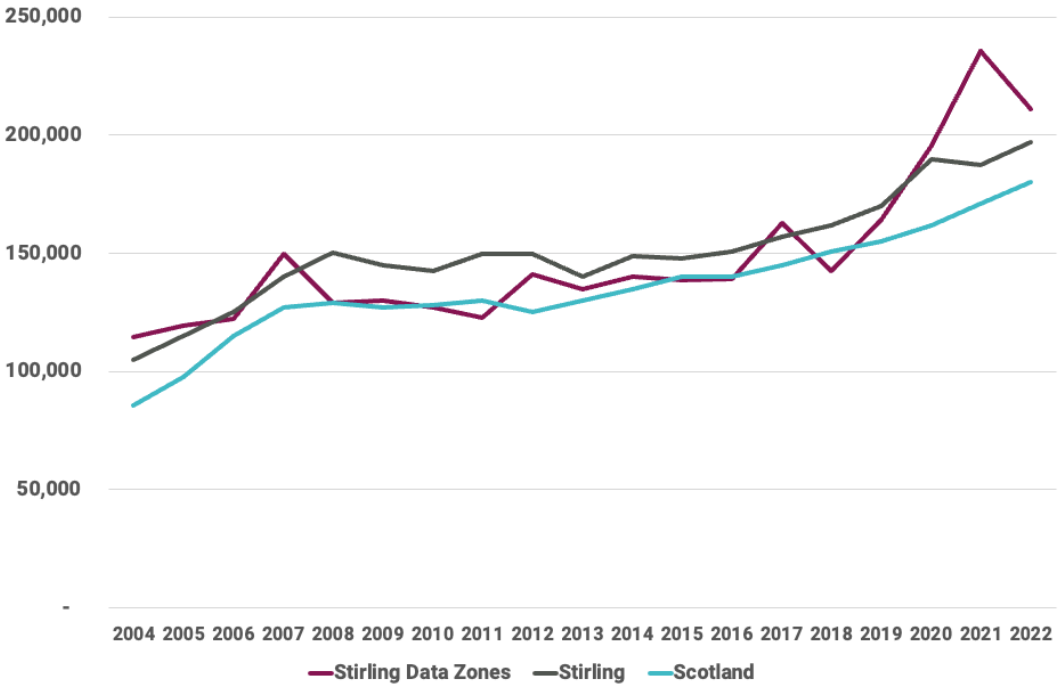


Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

6.1.2 Residential Property Prices

In 2022, the median residential property price in the combined 'Stirling Data Zones' was £211,043. Between 2004 and 2022, the median house price has almost doubled from £114,672 to £211,043 with prices surging in recent years. The median property price is higher in the 'Stirling Data Zones' than in wider Stirling Council, and Scotland as a whole. Figure 6-4 below shows the median residential property prices for the 'Stirling Data Zones', Stirling Council, and Scotland from 2004 to 2022.

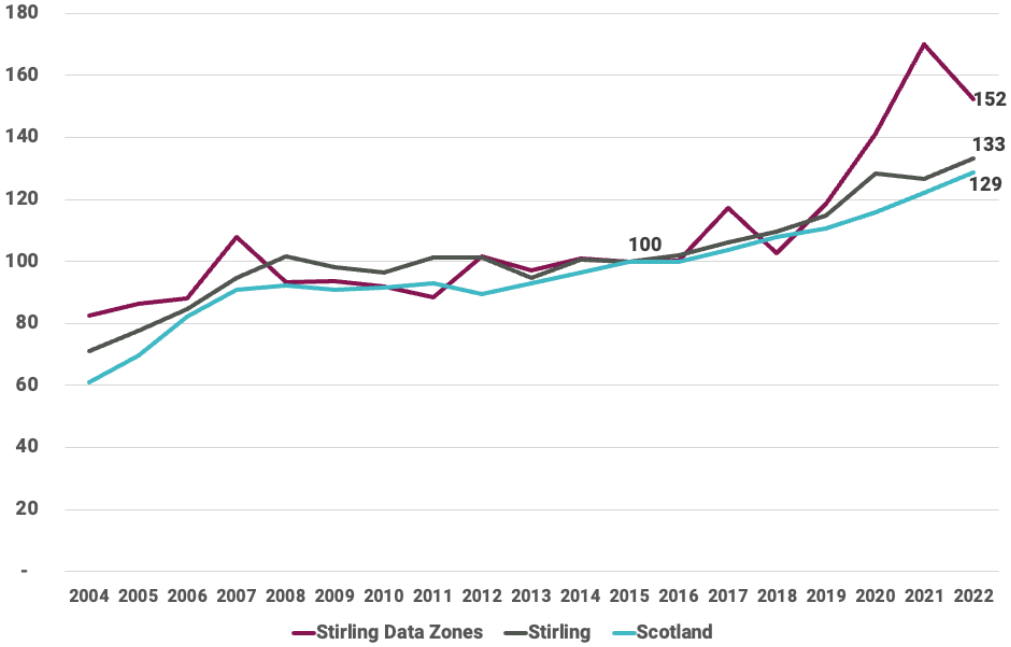
Figure 6-4: Median Residential Property Prices: 'Stirling Data Zones', Stirling Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Property prices in the 'Stirling Data Zones' are not only higher than in the wider Stirling Council – they also have seen more rapid price increases since 2015. Figure 6-5 below shows the annual change in residential property prices compared with the base year of 2015 for the 'Stirling Data Zones', Stirling Council, and Scotland. House prices in 'Stirling Data Zones' have grown 52% since 2015, compared to 33% and 29% across Stirling Council and Scotland respectively.

Figure 6-5: Median Residential Property Prices (2015=100): 'Stirling Data Zones', Stirling Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

6.2 Summary

The 'Stirling Data Zones' is the study area representing the geography that the Beauly-Denny power line passes through in Stirling Council. Since the power line became fully operational in 2015, house prices in these locations have experienced considerable increases, and have risen at a greater rate than that of the wider Stirling Council and national average.

7. Falkirk Housing Market

This section examines housing market trends of properties along the Beauly-Denny power line in Falkirk and compares that to the trends of the wider local authority.

The Beauly-Denny overhead line passes directly through or in very close proximity to the Falkirk Council geographic data zones[4] of:

- Dunipace – 01;
- Larbert - North Broomage and Inches – 01;
- High Bonnybridge and Greenhill – 02;
- Fankerton, Stoneywood and Denny Town – 06;
- Fankerton, Stoneywood and Denny Town – 05;
- Fankerton, Stoneywood and Denny Town – 04;
- Dunipace – 03;
- Dunipace – 02;
- Dunipace – 05;
- Dunipace – 04;
- Fankerton, Stoneywood and Denny Town – 03;
- Fankerton, Stoneywood and Denny Town – 02;
- Denny - Nethermains – 06;
- Denny - Nethermains – 02;
- Denny - Nethermains – 05;
- Denny - Nethermains – 04;
- Denny - Nethermains – 03;
- Denny - Nethermains – 01;
- Head of Muir and Dennyloanhead – 04;
- Head of Muir and Dennyloanhead – 03; and
- Head of Muir and Dennyloanhead – 02.

Figure 7-1 shows the route of Beauly-Denny grid infrastructure through Falkirk Council.

[4] Data zones are the key geography for the dissemination of small area statistics in Scotland. Data zones are large enough that statistics can be presented accurately without fear of disclosure and yet small enough that they can be used to represent communities. They typically have populations of 500-1000 households.

Figure 7-1: Beauly-Denny Grid Infrastructure Route through Falkirk Council

Source: SSEN Transmission

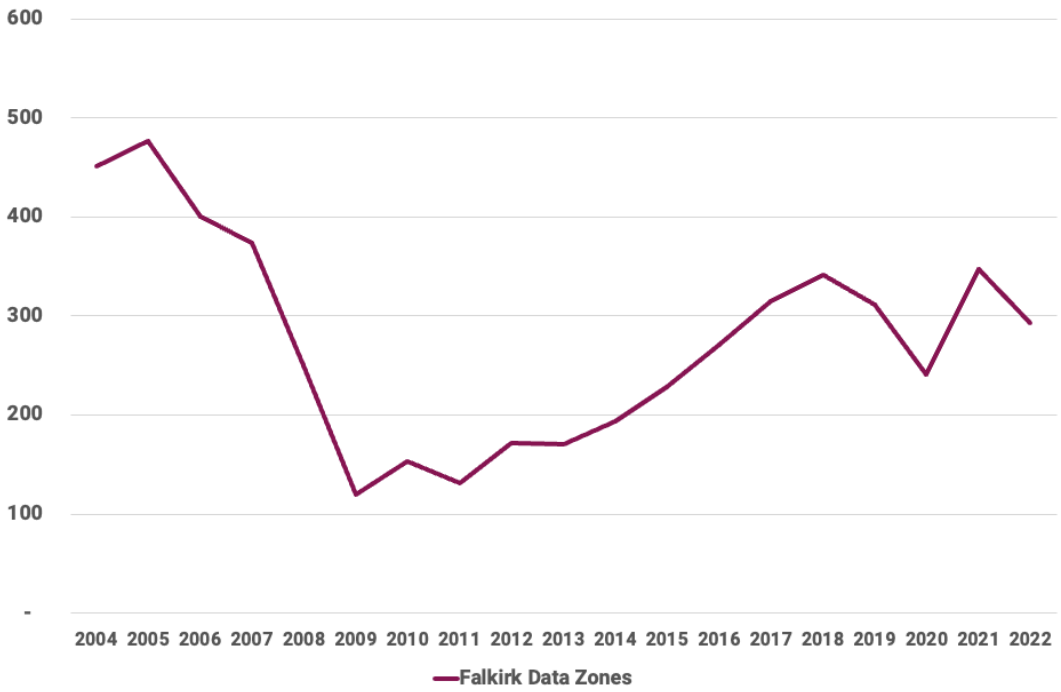
These data zones were combined to form the area titled ‘Falkirk Data Zones’, representing the geographic area in which the power line passes directly through or in very close proximity to. The housing market trends of ‘Falkirk Data Zones’ were then compared to the trends of the wider Falkirk Council region.

7.1 Falkirk Housing Market

7.1.1 Residential Property Transactions

In 2022, the total number of residential property sales in the combined 'Falkirk Data Zones' was 293. Between 2004 and 2022, the number of housing transactions has averaged 276. The highest number of housing sales was 477 in 2005, and the lowest volume of transactions was 120 in 2009. Figure 7-2 below shows the total annual residential property sales in 'Falkirk Data Zones' from 2004 to 2022.

Figure 7-2: Residential Property Transactions: 'Falkirk Data Zones'

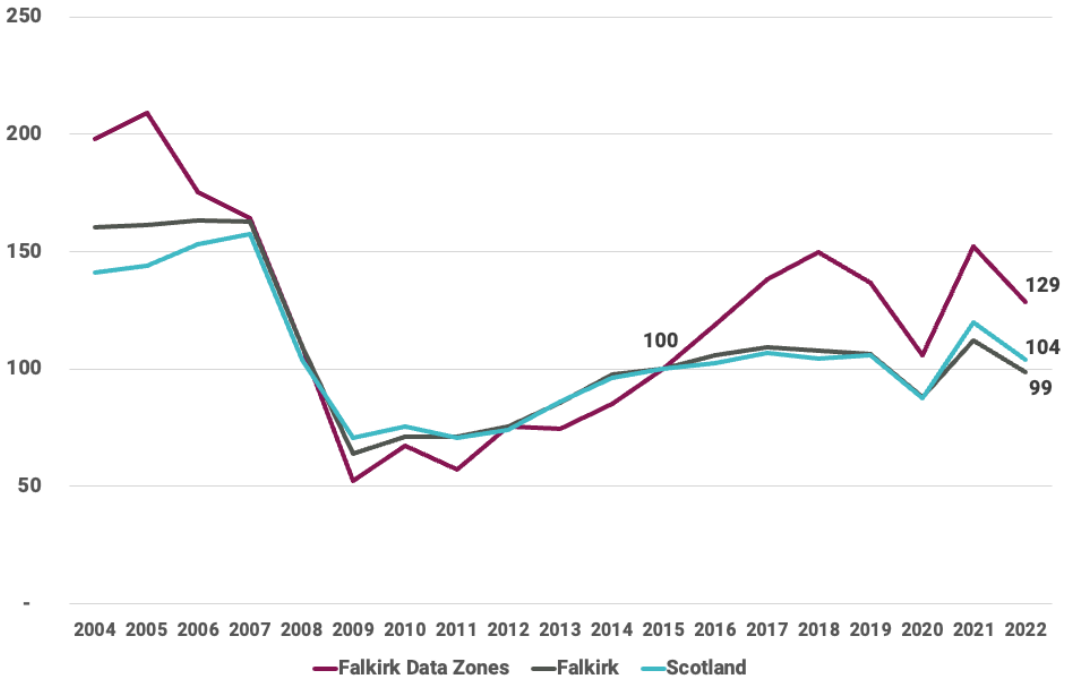


Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

Figure 7-3Figure 4-3 below shows the annual change in residential property transactions compared with the base year of 2015 for the 'Falkirk Data Zones', Falkirk Council, and Scotland. The combined 'Falkirk Data Zones' has seen an increase in transaction volumes of 29% since 2015, whereas Falkirk Council has

seen a decrease of 1% during this time period. The 'Falkirk Data Zones' have also outperformed the national average of a 4% increase in housing sales since 2015.

Figure 7-3: Residential Property Transactions (2015=100): 'Falkirk Data Zones', Falkirk Council, and Scotland



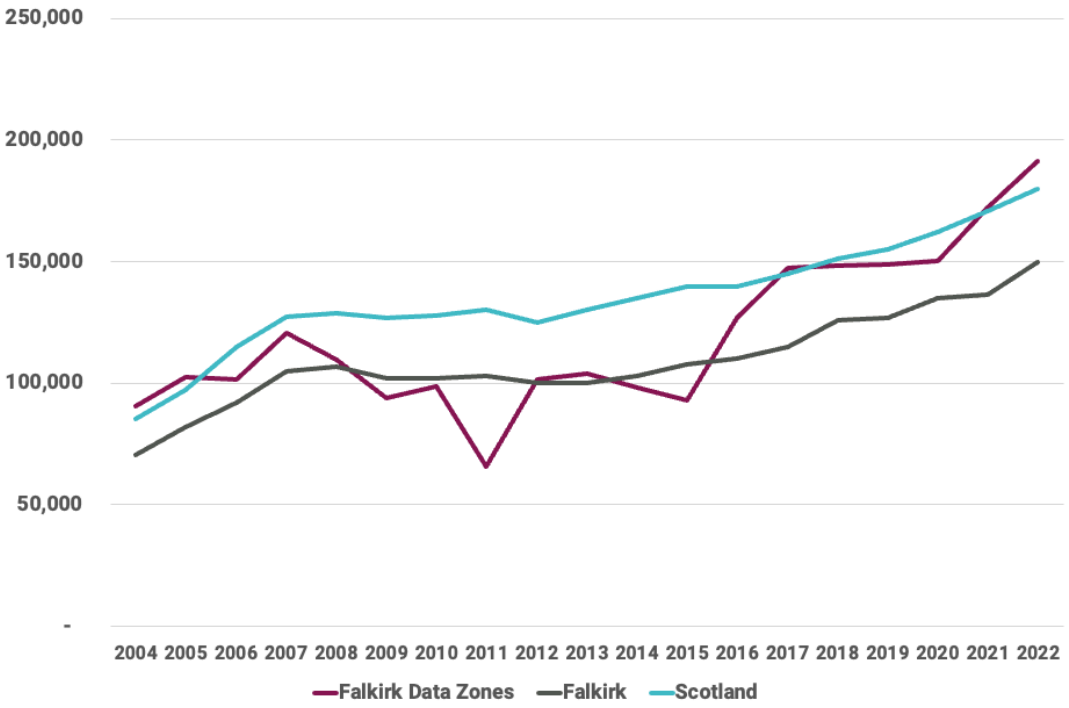
Source: Scottish Government Statistics (2023), Residential Properties Sales from 2004 to 2022.

7.1.2 Residential Property Prices

In 2022, the median residential property price in the combined 'Falkirk Data Zones' was £191,252. Between 2004 and 2022, the median house price more than doubled from £90,378 to £191,252 with prices significantly increasing in recent years. The median property price is higher in the 'Falkirk Data Zones' than in the wider Falkirk Council, and Scotland as a whole. Figure 7-4 below shows the median residential

property prices for the 'Falkirk Data Zones', Falkirk Council, and Scotland from 2004 to 2022.

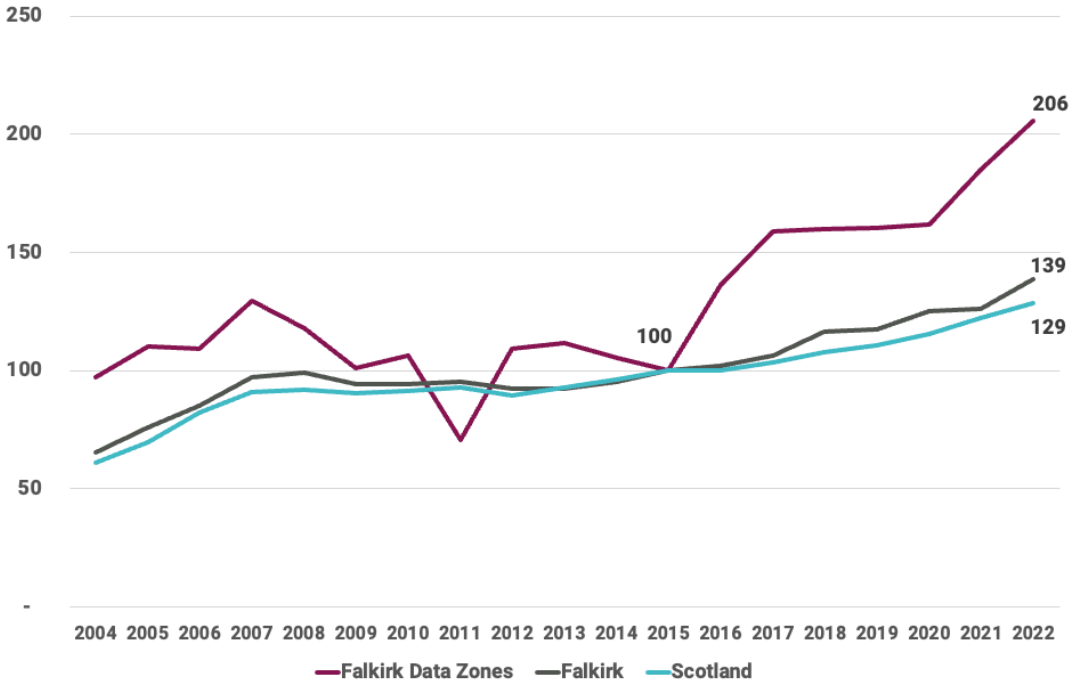
Figure 7-4: Median Residential Property Prices: 'Falkirk Data Zones', Falkirk Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Property prices in the 'Falkirk Data Zones' are not only higher than in the wider Falkirk Council – they also have seen greater growth in price since 2015. Figure 7-5 below shows the annual change in residential property prices compared with the base year of 2015 for the 'Falkirk Data Zones', Falkirk Council, and Scotland. House prices in 'Falkirk Data Zones' have grown 106% since 2015, compared to 39% and 29% across Falkirk Council and Scotland respectively.

Figure 7-5: Median Residential Property Prices (2015=100): 'Falkirk Data Zones', Falkirk Council, and Scotland



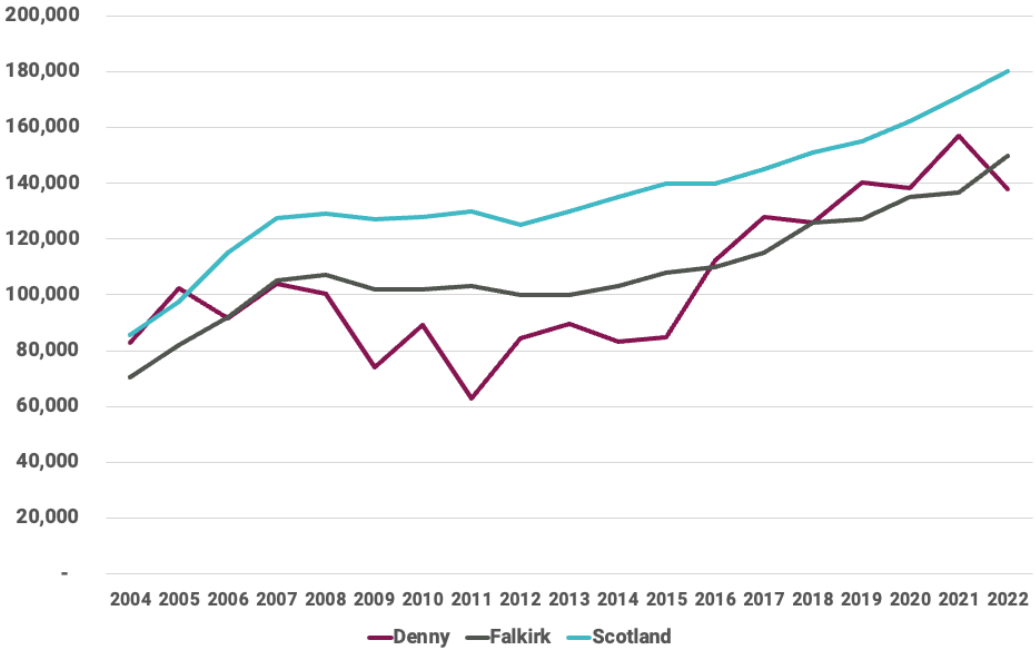
Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

7.2 Case Study: Denny

The town of Denny in Falkirk Council is where the Beauly-Denny power line ends and is situated next to the large substation and related grid infrastructure. This section examines house price and transaction trends in the town of Denny and compares them to the wider local authority.

In 2022, the median residential property price in Denny was £137,815. Between 2004 and 2022, the median house price has increased by 66% from £82,990 to £137,815. The median property price is lower in Denny than in the wider Falkirk Council, and Scotland as a whole. Figure 7-6 below shows the median residential property prices for the Denny, Falkirk Council, and Scotland from 2004 to 2022.

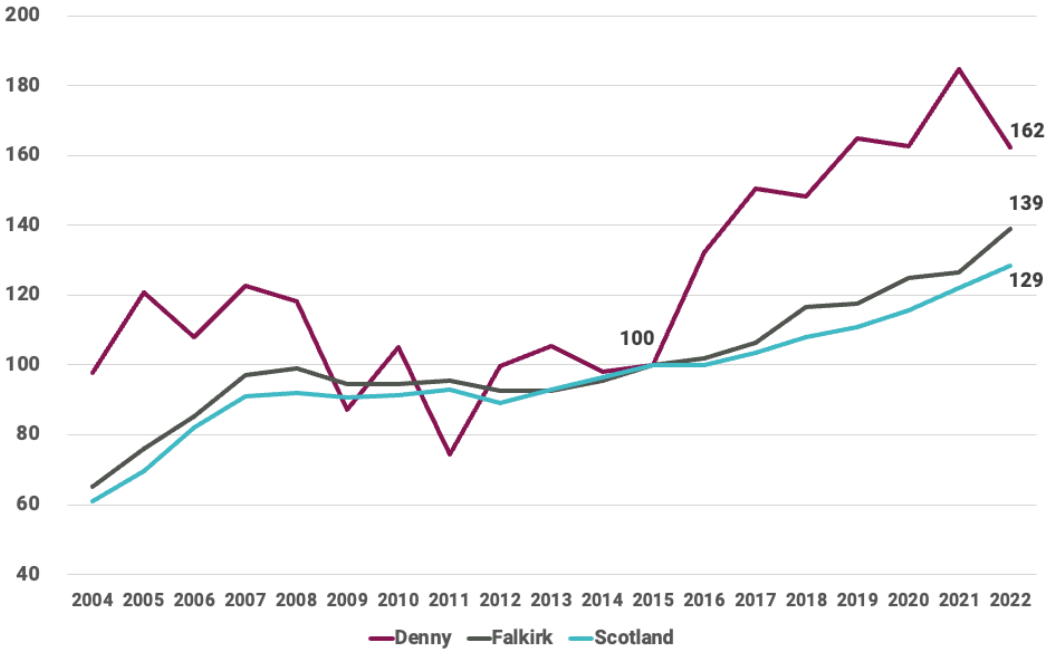
Figure 7-6: Median Residential Property Prices: Denny, Falkirk Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

Property price growth in Denny has exceeded that of the wider Falkirk Council since 2015 when the power line became fully operational. Figure 7-7 below shows the annual change in residential property prices compared with the base year of 2015 for Denny, Falkirk Council, and Scotland. House prices in Denny have grown 62% since 2015, compared to 39% and 29% across Falkirk Council and Scotland respectively.

Figure 7-7: Median Residential Property Prices (2015=100): Denny, Falkirk Council, and Scotland



Source: Scottish Government Statistics (2023), Residential Properties Prices from 2004 to 2022.

7.3 Summary

The 'Falkirk Data Zones' is the study area representing the geography that the Beauly-Denny power line passes through in Falkirk Council. Since the power line became fully operational in 2015, house prices in these locations have experienced exceptional price rises and have increased at a greater rate than that of the wider Falkirk Council and national average. Additionally, the key town of Denny situated near the substation has also seen considerable house price increases since 2015 which have also outpaced the house price growth of the wider Falkirk Council.

8. Estate Agent Consultations

Expert opinion suggests that the Beauly Denny power line does not generally impact house prices. Some buyers may find a property close to the power line less desirable, but this is only likely to impact on price where a pylon or substation is so close that it affects the immediate amenity of the property.

8.1 Introduction

To provide context for our quantitative analysis we consulted rural estate agents and estate agents who have experience of buying and selling houses in the Beauly, Crieff, and Denny areas. The purpose of these discussions was to seek insight from experts on their experience of whether the power line has affected the local housing market. We specifically sought views on what sort of concerns arise in house sales near the power line, how often concerns are raised, and whether this has an impact on house prices and saleability.

Whilst the number of consultees was limited (7) there was no discernible difference in opinion due to geographical location and this was supported by a rural estate agent with oversight of an area covering the full length of the power line.

8.2 Issues Raised

Consultees said that no issues in general had been raised about the power line in recent years, however, they noted that concerns were likely to arise where a house is in very close proximity to the power line. This would be where a pylon or substation is sufficiently close to affect the immediate amenity of a property.

The main concern likely to be raised is visual impact but could also be where disturbance from noise is noticeable (one consultee mentioned a “hum” from a pylon and another from a substation), or where there is a perceived health risk associated with living very close to the infrastructure.

8.3 Impact on Saleability and Price

Consultees suggested that close-up sight of the power line could in theory limit interest in property and possibly provide a reason for a buyer offering under valuation, however, consultees were not able to cite any experience of the power line’s current impact on house prices or saleability.

Pylons running across a field within farms or sporting estates may restrict operations for felling trees or sporting interests, but consultees felt that generally, they did not have an impact on the sale price. However, it was noted that the impact is likely to be greater on a smallholding where the impact is more confined and with less opportunity to manage mitigation of any impact on management practices.

People looking for a rural property generally want to have a sense of living in the countryside avoiding human development, and consultees agreed that a house in a nice position is always going to sell better than an equivalent one in a less attractive location. It was suggested that proximity to the power line sits alongside a number of situations that can have a potential impact on desirability in a house buyer's mind. Houses that have a field next door with development potential, planning permission in the garden, located adjacent to a busy road or a proposed bypass, or have a wind turbine in view may similarly be less desirable to some buyers; but not to all. It is a matter of personal opinion - some things are acceptable to one person, but not another.

Consultees were of the opinion that these differences in personal opinion do not generally result in an impact on house prices, and there is generally no problem selling property in these areas. The market is buoyant, there is enough interest in all types of property, and Beauly, Crieff and Denny are popular locations.

Regarding valuations, the general consensus was that the power line has no impact on valuations as this is based on other factors, notably size of the property. However, as valuations also use comparable property prices, there could be an impact where comparable properties have sold at a reduced value.

Impacts on saleability and price are likely to arise in the very few situations where a pylon or substation is so close to a property that it impacts on its amenity. Examples of the impact were provided in isolated properties which were on the market at the time of the power line construction. In these cases, the visual impact of the groundworks and specifically the felling of trees had a negative impact on price and saleability.

There is not an increase in people trying to sell property associated with the Beauly Denny power line with the suggestion that those that didn't like living with the pylon have moved on and those that are still living near have adjusted to it.

8.4 The Impact of Perception

Consultees advised that a power line in the planning system is likely to have more impact on the attractiveness of properties than one that is already in situ. Once a power line is constructed and visible people can make their own mind up as to whether it influences their decision to buy a house. This would imply that not being able to see a planned power line has a greater negative impact than one that is constructed and embedded in the landscape.

8.5 Summary

Consultees noted that it is difficult to quantify or qualify individual specific impacts on the property market as big drivers such as interest rates, cost of living and supply of houses override lesser considerations. Before Covid, house prices in these areas tended to be below home report valuation but after Covid prices tended to be above valuation; the housing market was booming last year and this year the market has changed. The power line has no influence.

The estate agents we consulted have limited experience of the power line having any impact on house prices. There is the suggestion that some buyers may find a property close to the power line less desirable, but this is could only impact on saleability or price where a pylon or substation is so close that is affects the immediate amenity of the property – either visually, audibly or through a perceived health risk.

Once the power line has blended into the landscape house buyers can readily consider whether it impacts on their purchase of a property. Our consultations suggest that the impacts are more significant during the planning and construction phases of a power line compared with 10 years later, and that the perception of a development has a more negative impact than the reality.

9. Synthetic Control Regression

This section presents the regression analysis performed to estimate the impact of the power line on local housing markets.

9.1 Synthetic Control Method

The Synthetic Control Method (SCM) is an advanced statistical technique used to evaluate the impact of a policy or event. In this study, SCM helps to understand how the installation of the Beauly-Denny power line affected house prices in nearby areas, these areas are selected as the treatment group. Instead of using a traditional experimental approach, SCM constructs a "synthetic" version of the treatment group by combining data from other areas that did not receive the treatment but are similar in other aspects. This synthetic group acts as a counterfactual, helping us compare what happened in the treated areas with what could have happened had the power line not been installed.

9.2 The Data

The analysis model incorporated three key variables: the median residential price, the mean average residential price, and the number of property transactions. These metrics were derived from the "Scottish Residential Property Sales and Prices" dataset. To discern the influence of the power line installation on each variable, separate regressions were executed.

Residential price data and transaction volumes were available by data zone. The treated cohort consisted of data zones intersected by the power line, while the control group, used to construct the synthetic control, comprised data zones from the four local authority areas traversed by the line: Highland, Perth and Kinross, Stirling, and Falkirk excluding the data zones allocated in the treatment group.

The treatment set encompassed 73 data zones, and the control set contained 728. The temporal scope of the study spanned from 2004 to 2019. It is important to note that instances of missing data were omitted from the sample. The table below encapsulates the final count of data zones utilised for each variable post-exclusion of missing values.

Table 9-1 Sample size by group and by variable

Variables	Residential Prices - Mean	Residential Prices - Median	Residential Transactions
Treated	32	32	70
Control	406	406	703
Total	**438**	**438**	**773**

9.3 The Results

Figure 9-1 Effect of the Power Line on Median Residential Prices in affected data zones

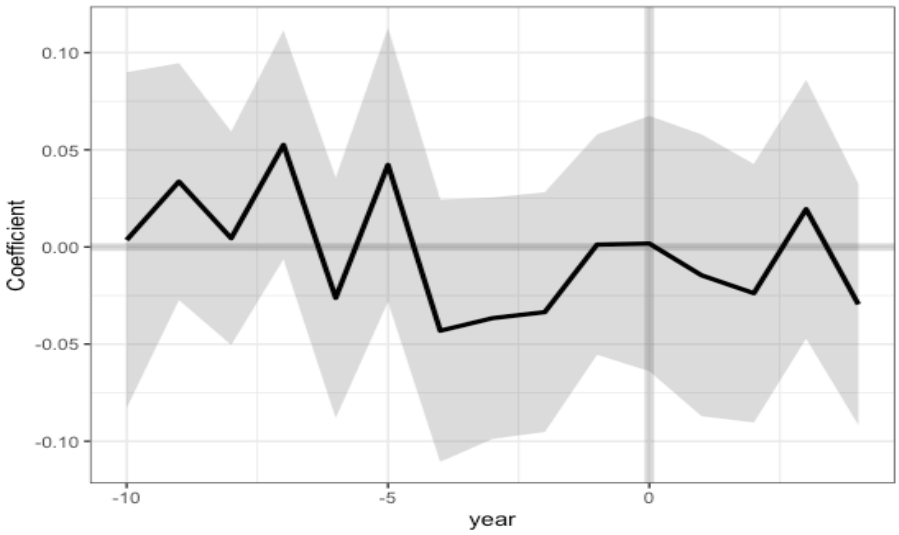


Figure 9-2 Effect of the Power Line on Mean Residential Prices in affected data zones

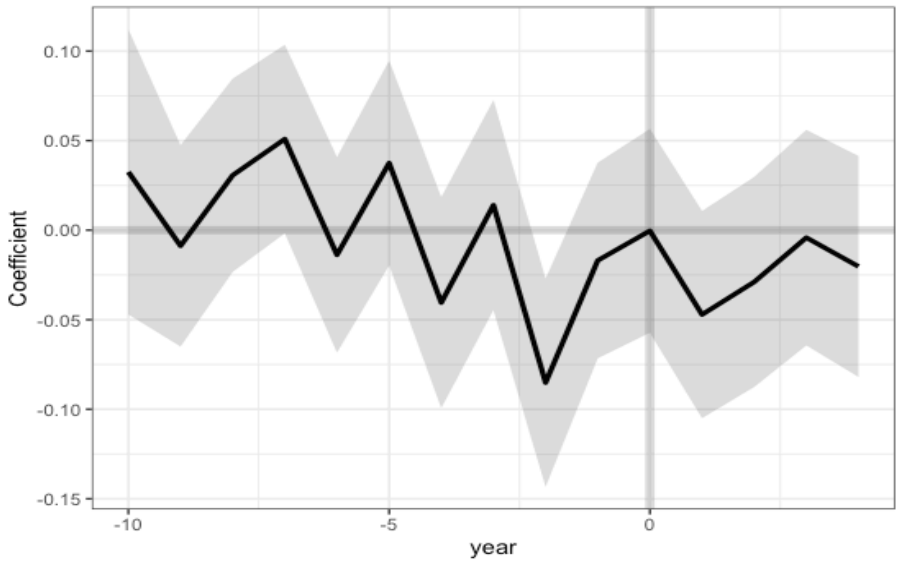


Figure 9-3 Effect of the Power Line on Number of Residential Transactions in affected data zones

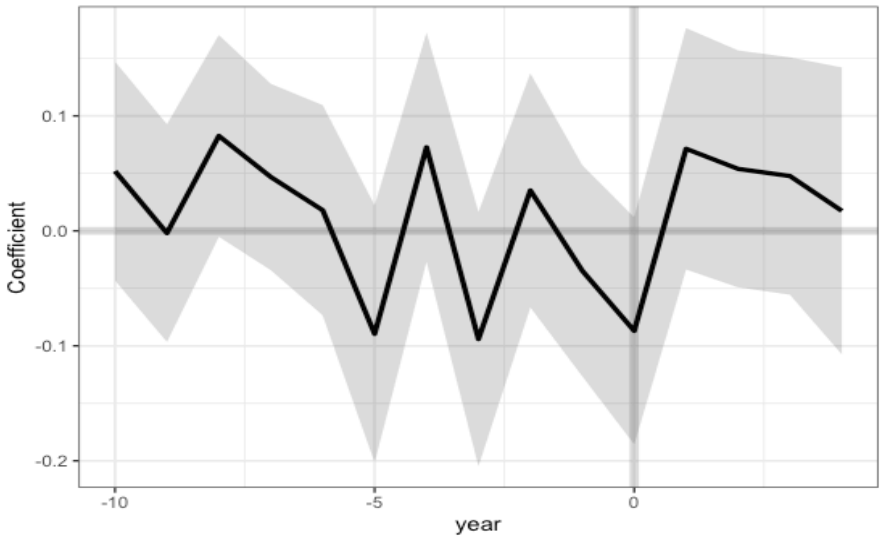


Figure 9-1 and

Figure 9-2 show the difference in house prices in areas where the new power line was installed. The line on the graph shows if there was any change in the average price of houses in places with the new power line compared to places without it.

- **Before Installation (Left Side of the Graph)**: In the years leading up to the installation of the power line (indicated by the negative years on the x-axis) the dark line is close to zero, and the shaded areas, which are the confident intervals, include zero. This tells us that before the power line was installed, the prices of houses in areas with the power line were similar to house prices in areas without it.
- **After Installation (Right Side of the Graph)**: After the installation of the power line, the results are similar. The dark line denotating the size of the impact on affected areas fluctuates around zero. Additionally, since the confidence intervals include zero, we can't say for sure that the power line had any real effect on house prices. In economic terms the effects estimated from the model are not statistically different from zero.

The same analysis is true for Figure 9-3, which represents the effect of the power line on the number of transactions in the data zones impacted by the new infrastructure.

9.4 Limitations

While the SCM offers valuable insights, it is important to note its limitations.

The method assumes that the synthetic control—our constructed comparison group—is a close match to the real-world scenario without the power line installation. If there are unseen factors at play that affect house prices differently in the treatment and control zones, our conclusions might not hold.

Additionally, this model does not incorporate certain variables at the data zone level, due to data limitations. While this might raise the issue of omitted variable bias, it is mitigated by the inclusion of fixed effects in the model. These fixed effects account for both time-specific and unit-specific variations, such as changes in macroeconomic indicators and house characteristics like size or location, which are common to both the treatment and control groups. Therefore, the necessity to include additional control variables that fluctuate solely across units or time is irrelevant, as their influence is captured by the fixed effects. This approach aligns with the rigorous standards of leading academic research, where two-way fixed effects are a foundational aspect of the analytical framework.

However, this methodological choice does not entirely eliminate the potential for bias, particularly if there are distinct factors influencing the treatment and control zones differently. Moreover, the robustness of the method does not preclude all biases, such as those that may arise from the exclusion of unavailable data or from the selection of control zones.

Furthermore, while the analysis does not find statistically significant effects of the power line installation on average house prices and transactions, this does not rule out all possible impacts. Subtle effects, perhaps on specific segments of the housing market or in the longer term, could exist but are not captured by this study.

Therefore, while the findings suggest that the Beauly-Denny power line installation has not significantly impacted house prices or transaction volumes, this conclusion is specific to the context and time frame of this study. It remains important to approach each infrastructure project with a fresh analysis, considering the unique characteristics and potential impacts it may have.

9.5 Robustness Tests

In the chase of rigorous and reliable findings, it is essential to subject our analysis to a series of robustness tests. These tests serve as a means to validate the integrity and stability of our results under varying conditions and assumptions. The primary objective of conducting robustness checks is to ensure that our conclusions are not artefacts of specific model specifications or sample selections.

For this estimation, we have implemented two types of robustness checks, as outlined in the Appendix, which also presents the graphical results of these new estimations.

Adjustment of Event Date

Our first robustness check involved altering the event date from 2015 to 2011 in our analysis. This time-shift test allows us to determine if the timing of the event significantly influences our results. The reassessment has been applied to the same three variables as in the original results, leading to conclusions that are consistent with those previously discussed in detail.

Sample Reduction Test

The second robustness check entailed a random exclusion of 10% from the treatment group. This method tests the resilience of our findings against variations in the composition of our sample. Across all three variables examined, the revised outcomes remain in line with the initial analysis. The observed effects on the variables continue to hover around the zero line, with confidence intervals that encompass zero, reinforcing the stability of our initial conclusions.

9.6 Takeaways

No Significant Price Changes. The installation of the power line has not led to any substantial changes in house prices. The data analysed from 2004 to 2019 shows that the trend in house prices for zones with the power line stayed in line with those without it, both before and after the installation.

Consistent Transaction Numbers. The number of property transactions did not exhibit significant variation due to the power line's installation. This suggests that the presence of the power line did not alter the buying and selling activity in the housing market within the treatment data zones.

10. Appendix

This section contains the robustness checks for the synthetic control regression analysis.

10.1 Robustness checks

Figure 10-1 Effect of the Power Line on Median Residential Prices in affected data zones. Date event = 2011

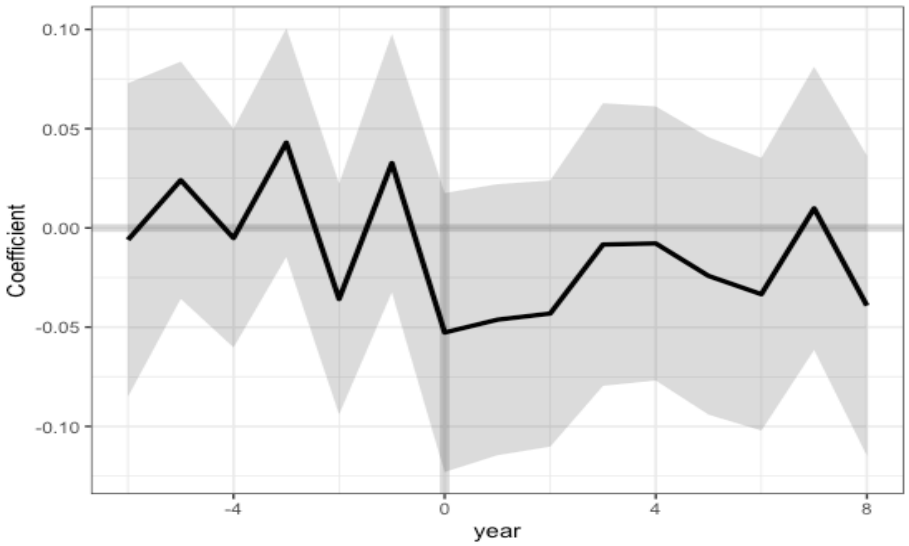


Figure 10-2 Effect of the Power Line on Mean Residential Prices in affected data zones. Date event = 2011

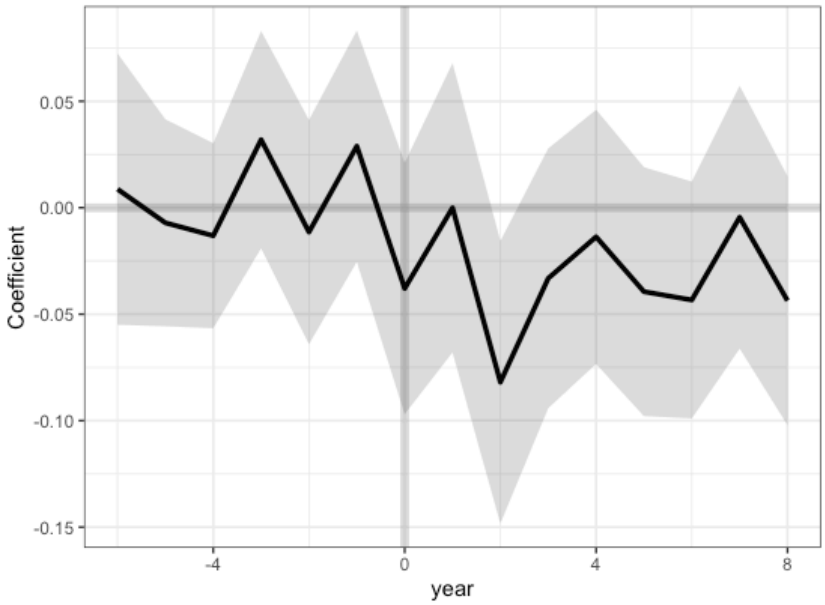


Figure 10-3 Effect of the Power Line on Number of Residential Transaction in affected data zones. Date event = 2011

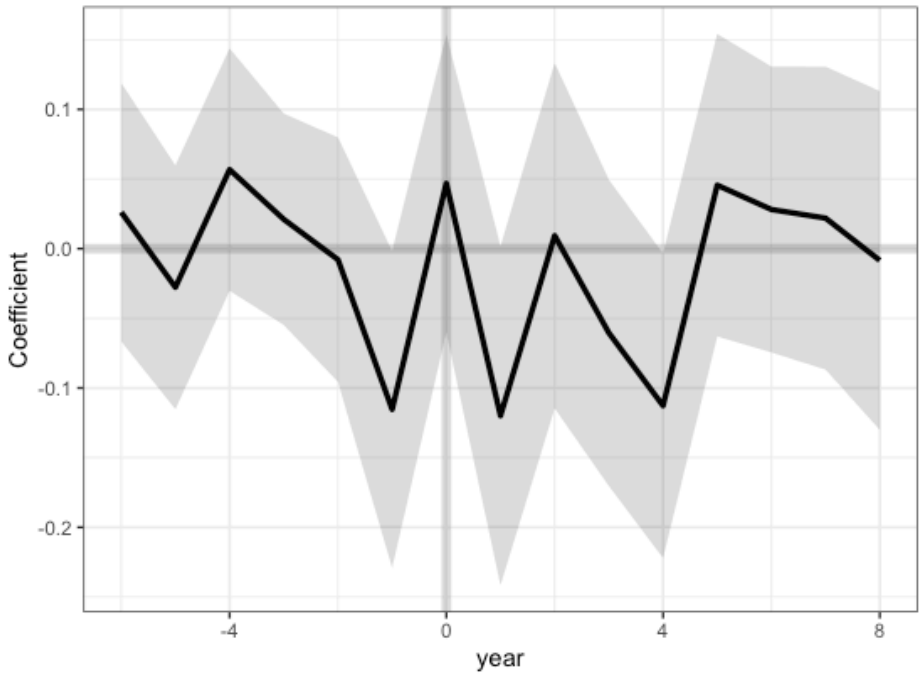


Figure 10-4 Effect of the Power Line on Median Residential Prices in affected data zones. Re-sample

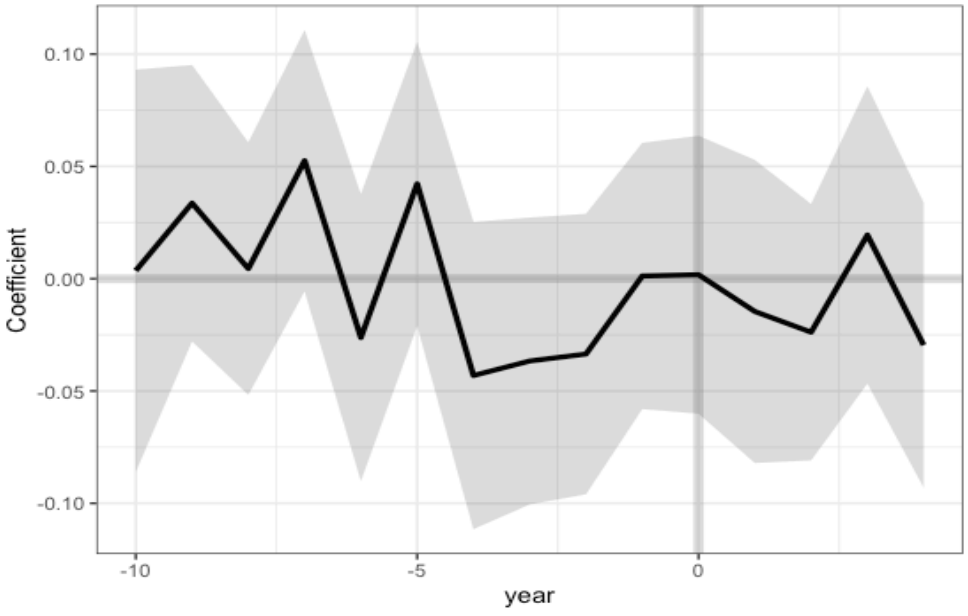


Figure 10-6 Effect of the Power Line on Mean Residential Prices in affected data zones. Re-sample

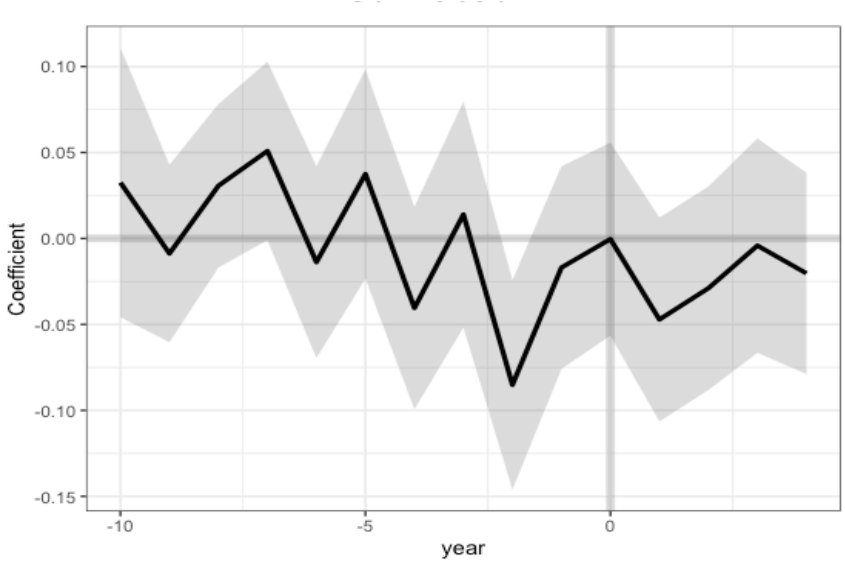
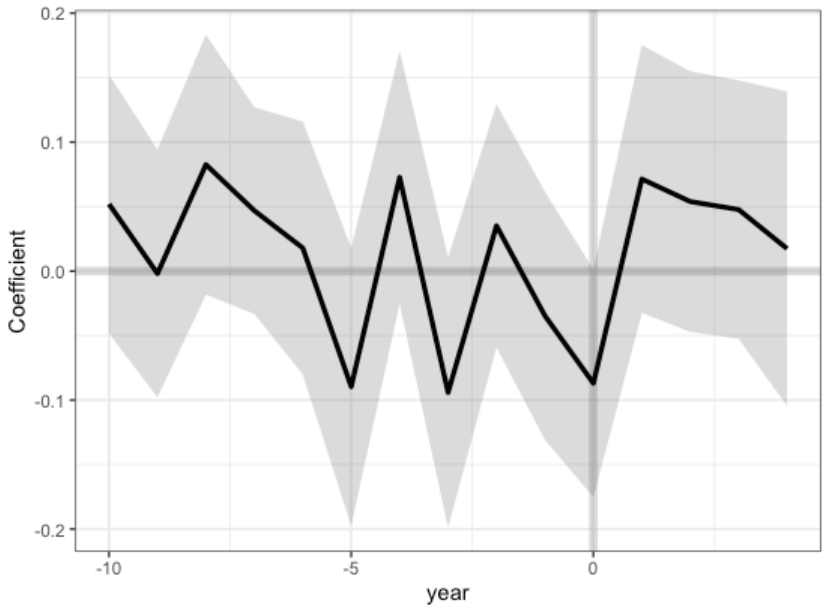


Figure 10-5 Effect of the Power Line on Number of Residential Transaction in affected data zones. Re-sample



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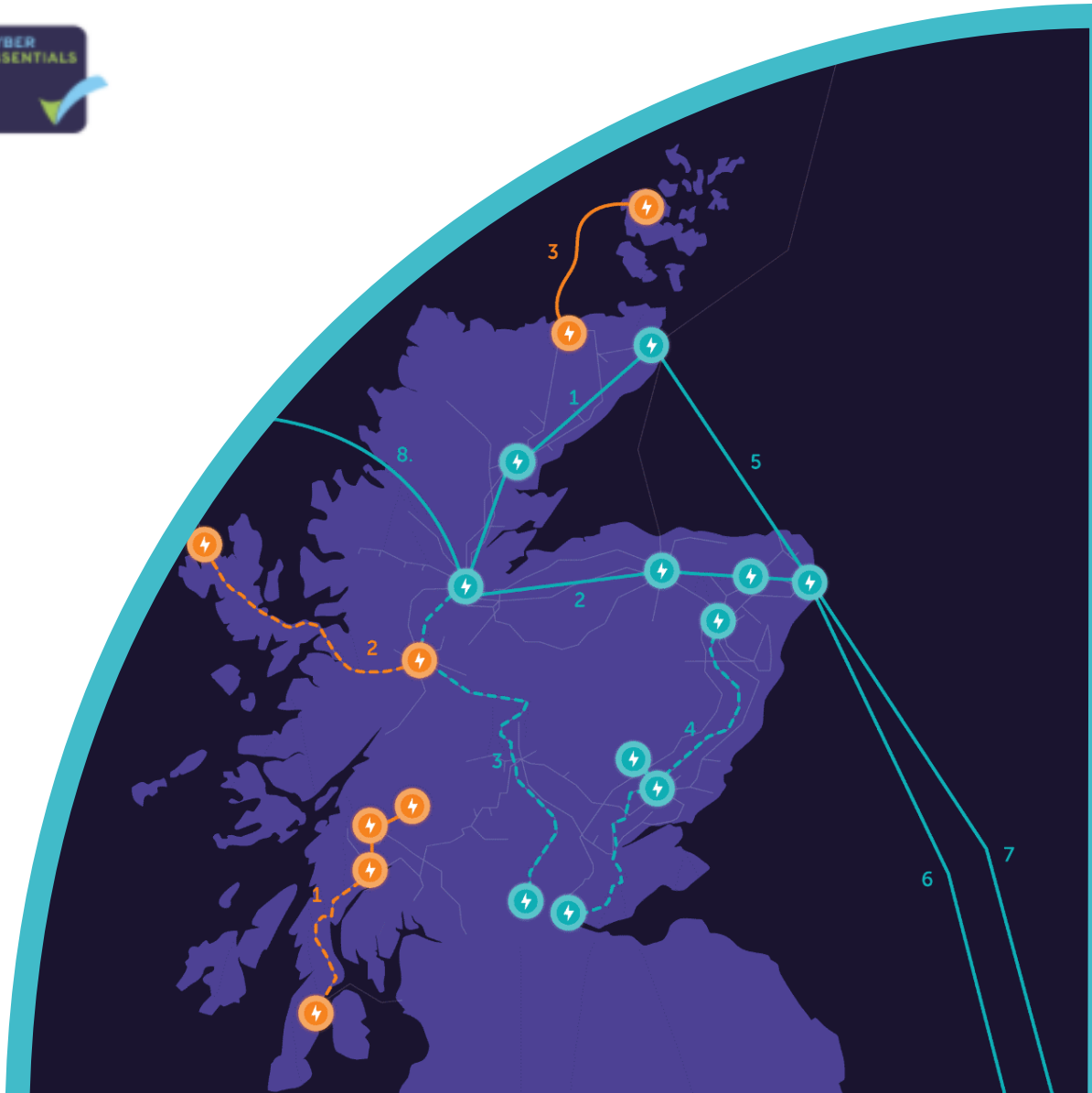

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