An Investigation into the Potential Relationship between Property Values and High Voltage Overhead Transmission Lines in Ireland

An independent report prepared for

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Non-Technical Summary

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1.0   Background

1.1   The purpose of this document is to summarise and analyse in non-technical language the main findings of the 2016 property study - *An Investigation into the Potential Relationship between Property Values and High Voltage Overhead Transmission Lines in Ireland*.

2.0   Reasons for carrying out the Study?

2.1   When EirGrid start to define a new route for an electricity line, there are understandable concerns about the potential effect on land and property values. EirGrid decided to commission independent research to address property owners concerns.

3.0   The External Research Team

3.1   The research team consisted of property and agricultural consultants working with specialists in the area of statistics and market research.

4.0   The Research Approach

4.1   The research is divided into three sections. These are:

(i)   <u>Literature Review – International Research</u>
       The main body of published research was reviewed and summarised.
(ii)   <u>Survey of Estate Agents</u>
       A survey of estate agents was undertaken to obtain opinions on whether lines affect property values.
(iii) <u>Statistical Analysis of Actual Sales Data</u>
       Actual sales information on houses and farmland sold in the vicinity of lines was statistically assessed using sales data from the agents surveyed.

5.0   What can we learn from International Research?

5.1   <u>Residential Properties</u>
       Most of the research has been carried out in the U.S. and Canada on urban and suburban houses. In this research about half of the studies did not find a negative impact. Where negative impacts were found, they were generally low, in the order of 3% to 6%. A study undertaken in Scotland found higher impacts with an 11% average price reduction on houses.

5.2   <u>Farmland</u>
       Again, most of the research on rural properties was conducted in the U.S. and Canada. The research generally found little or no impact on farmland type properties.

5.3   In the studies where impacts were found, there is evidence to suggest the following:

(i) The impact from pylons was greater than from lines.

(ii) Impacts drop rapidly as the distance from the lines increases and, beyond 150 to 200 metres, there was no devaluation.

(iii) Increased media coverage of health concerns from 1992 onwards has not led to any major changes in study findings.

(iv) Impacts tend to fade over time. Some studies found that impacts that occurred around planning and construction had disappeared after ten years. The growth of trees and shrubs is believed to be a factor in this.

6.0   Results from the survey of Estate Agents

6.1   <u>Residential Property Impacts</u>
A detailed survey questionnaire was put together by the research team. Estate agents were asked for their opinion regarding the change in values on a house that had a line supported on pylons 50 metres from it. Estate agents estimated an 18% drop in value if the house was only 50 metres from a line.

6.2   In total, nine infrastructure types were included in the survey. The estate agents indicated that all infrastructural developments would devalue residential property if it is in close proximity. They indicated a 25% drop in values for landfills, followed closely by waste water treatment plants at 23%. Power lines were rated similar to nearby airfields, mainline railway lines and motorways.

6.3   Estate agents were then asked for their opinions using actual photographs of a house with lines and support structures clearly visible and in close proximity. The impact from 110kV high-voltage lines carried on timber poles was a modest 3%. The impacts estimated for 220kV and 400kV lines carried on pylons was indicated as 13% and 20% respectively.

7.0   Possible Agricultural Land Impacts

7.1   When asked for their opinion in relation to agricultural land affected by power lines, the indicated impacts were relatively modest. For the three line types the median opinion of impacts was:

(i)   110kV lines – no impact

(ii)   220kV lines - 5% reduction

(iii)   400kV lines - 6% reduction

7.2   When asked for their opinions on other infrastructure, high-pressure mains natural gas pipelines, waste water treatment plants and airfields were all at a similar level of impact to power lines.

8.0   Do Impacts vary over time?

8.1   The estate agents expected impacts to decrease over time from the initial planning and construction period. In the case of houses in close proximity to lines, they believed the negative impacts on values to have decreased ten years post construction. This is consistent with the literature review findings.

9.0   Commercial Property Value Impacts

9.1   Impacts on the value of commercial property were found to be virtually non-existent in the survey. This is consistent with the findings of the Dean Chapman (2005) survey in Northern California, Salt Lake City and Las Vegas.

10.0   What does the Analysis of the Actual Sales Data Tell Us?

10.1   The estate agents were asked to provide actual sales information for houses and agricultural land. The prices and property addresses were kept separate due to data protection requirements.

10.2   The data collected was analysed using the most relevant statistical analysis method known as Hedonic Price Regression.

10.3   Hedonic Price Regression is a sophisticated statistical model commonly used in economic research to explore the impact of different factors on property prices and how these factors interact. The variables included for houses in the model were:

(i)   The area of the house site;
(ii)   The floor area of the house;
(iii)   The decade in which the house was built;
(iv)   The number of bedrooms;
(v)   House Type – detached, semi-detached or terraced;
(vi)   Location; and
(vii)   Year sold – 2002 to 2011.

10.4   Using the above information, the model worked very well in explaining the variation in house prices. In a similar manner, the model for agricultural land also worked well in explaining variations in sales prices. The variables used for farms were area, house area, location, land quality and year of sale. The data collected produced robust models that described the potential relationship between sale prices achieved and the varying underlying property characteristics for both houses and farms.

10.5   To test whether power lines influence sale prices, proximity to the three line types was added as an additional variable. No evidence of a statistically significant impact was found from power lines. Furthermore, there was no evidence that the different types of line or structure types had a statistically significant negative effect on the selling prices of either houses or farms.

11.0   What can we learn from the three study components?

11.1   The results of the actual statistical analysis of the sales of houses and farms in the study found no evidence of lines having an impact on sale prices of either houses or farms. This is consistent with a large portion of the research from the U.S. and Canada over many decades. Therefore the literature review and the analysis of actual sales data are compatible.

11.2   It is notable that the estate agents' opinions are out of line with similar international surveys, where agents believe the impact on property values to be in the range of 5% to 10%. Furthermore there was a huge range in the opinions expressed.

11.3   There was also a wide variation in the opinions of estate agents in relation to the impacts of other types of infrastructure on house prices. The range of opinions was similarly wide in relation to proximity to a motorway, airfield, phone masts and waste water treatment plants. In the international research literature there is frequent reference made to the fact that statistical analysis of actual sales data is a much more accurate and useful indicator of possible impacts. What people say they will do in a hypothetical survey scenario, versus a real-life situation, is in many cases significantly different. This goes some way to explaining the discrepancy in the opinions of the agents versus the international research and the analysis of the data in the study itself.

11.4   It is important to note that the data analysis which found no statistically significant impact on house prices used the actual sales data from the same agents that were surveyed. It is also noteworthy that estate agents believe that all infrastructure types have a negative impact on property prices with motorways, airfields, and high voltage lines all being similar in their impacts and range of impacts.