

IMPACT OF WIND FARMS ON RESIDENTIAL PROPERTY PRICES - CRYSTAL RIG CASE STUDY

INTRODUCTION

1. The threat of global warming has led to growing pressure in the UK for a reduction in carbon dioxide emissions. Having ratified the Kyoto Protocol, the UK government is committed to reducing CO₂ emissions by 20% by 2020. North of the border the Scottish Executive aims to obtain 40% of electricity from renewable energy sources by 2020.
2. With the United Kingdom officially the windiest country in Europe¹, wind farms are intended to play a significant role in meeting these targets. Prior to 1989 there were no wind farms in operations in Scotland. By the end of 2005 however, 473 turbines were in operation producing some 562MW of power, and by 2010 this output level is targeted to rise to 2.5GW of wind power from Scotland².
3. Despite the potential benefits afforded by wind farms in terms of reduced CO₂ emissions, it has been suggested that they may have a detrimental effect on residential property prices. Previous studies by the Royal Institution of Chartered Surveyors (RICS) and the Scottish Executive into the relationship between wind farms and house prices have found no conclusive evidence to suggest a correlation between the two.
4. These studies though, focused on assessing the opinions of surveyors and homeowners respectively. Wind energy remains a comparatively new technology, and consequently has been little research in the UK based on empirical evidence of property price trends in areas neighbouring wind farms.
5. This study seeks to begin addressing this issue through consideration of the case of the Crystal Rig wind farm in the Scottish Borders. Planning permission for the farm was applied for in September 2001, before being granted in June 2002. The farm then opened on 24 June 2004.
6. The study concentrates purely on investigating the effects, if any, which the wind farm has had on property prices in the surrounding area at each stage of development. The study does not seek to assess the more wide ranging impact of wind farms, nor is it intended to support or condemn, the use of wind technology as compared to other energy sources.

¹ Source: British Wind Energy Association (BWEA)

² Source: Scottish Renewables

EXECUTIVE SUMMARY

6. The study finds no evidence of a relationship between proximity to a wind farm and changes in property prices. Over the seven-year study period the average price of property in Dunbar grew by 132.8%, slightly above the level of 125.0% recorded across East Lothian.
7. Shifts in the average price of property in Dunbar also closely followed those witnessed across East Lothian throughout the study period, again suggesting the Crystal Rig farm had not impacted property prices. Over the seven years from 2000 to 2006, the correlation coefficient between the average price in Dunbar and that in East Lothian stood at 0.959.
8. There is some evidence to suggest that property price inflation in Dunbar was accelerated once plans for the Crystal Rig farm were approved. In the twelve months after planning permission for the farm was granted, the average price of property rose in the town rose by 53.2% as compared to 24.0% overall in East Lothian.
9. Since the wind farm began operation, property price inflation in Dunbar has continued to exceed that achieved across East Lothian. Between the fourth quarter of 2004 and the fourth quarter of 2006 a 33.3% rise was recorded in Dunbar, as compared to a 25.9% rise across East Lothian
10. It is not possible to definitively conclude there is a positive causal relationship between proximity to Crystal Rig and property prices. The study does however indicate the need for further research of this nature in other regions to determine whether similar positive effects have been observed across the UK.

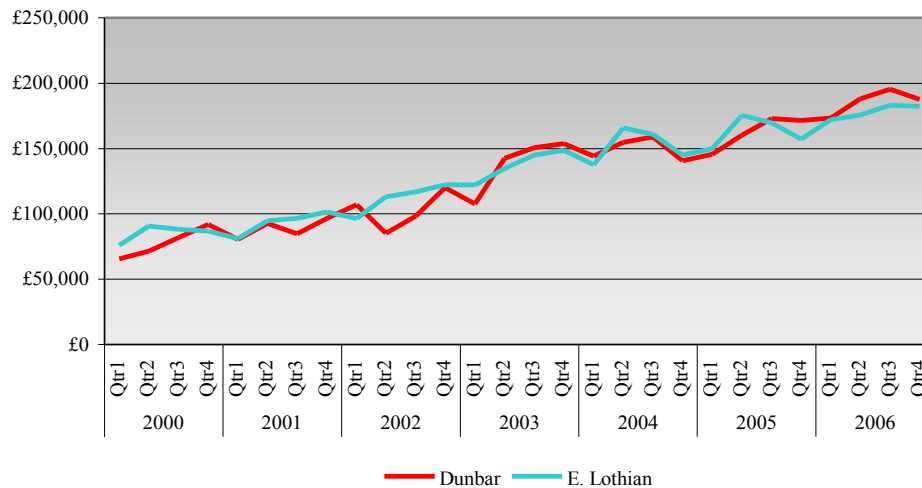
METHODOLOGY

11. Edinburgh Solicitors' Property Centre (ESPC) conducted analysis of relative movements in residential property prices in areas surrounding Crystal Rig over a seven year period from 2000 to 2006. Trends observed in the nearby town of Dunbar (approximately 10km north of the farm) were compared with those witnessed overall in the East Lothian region.
12. Such analysis was used to examine whether Dunbar's proximity to Crystal Rig had impacted property prices at each stage of development of the farm, or conversely whether prices continued to vary in line with changes witnessed in the wider region. To control for changes in the mix of properties selling, the variances in price of specific property types were also investigated in addition to shifts in the overall average witnessed in each area.

RESULTS

13. The average price of residential property in East Lothian as compared to that in Dunbar between 2000 and 2006 is depicted in Figure 1 below. Full results are tabulated in Annex A.

Figure 1- Average Residential Property Price: 2000 to 2006



14. Figure 1 indicates the market in Dunbar closely followed trends in the East Lothian region between 2000 and 2006. The consistency with which the average price in Dunbar varied in line with trends in East Lothian throughout the study period is also revealed by the correlation between results from the two areas. A correlation coefficient of 0.959 was witnessed between the two over the study period, further indicating that Dunbar's proximity to Crystal Rig had not had a negative impact on property prices.
15. Over the full study period from Q1 2000 to Q4 2006, the average price of property in Dunbar rose in line with the overall rise recorded in East Lothian. A 132.8% rise took the average price of residential property in Dunbar from £65,769 to £187,557. This slightly exceeds the rise of 125.0% in East Lothian which saw the average price in the region increase from to £182,303 over the same period £76,089.
16. To avoid changes in the mix of properties selling in each area over time, it is possible to focus on price shifts among specific property types. Figure 2 depicts change in property prices among one and two bedroom flats, while Figure 3 charts the same information for three and four bedroom houses. Full results for both are tabulated an Annexes B and C.

Figure 2 - Average Price 1/2 Bedroom Flats: 2000 to 2006

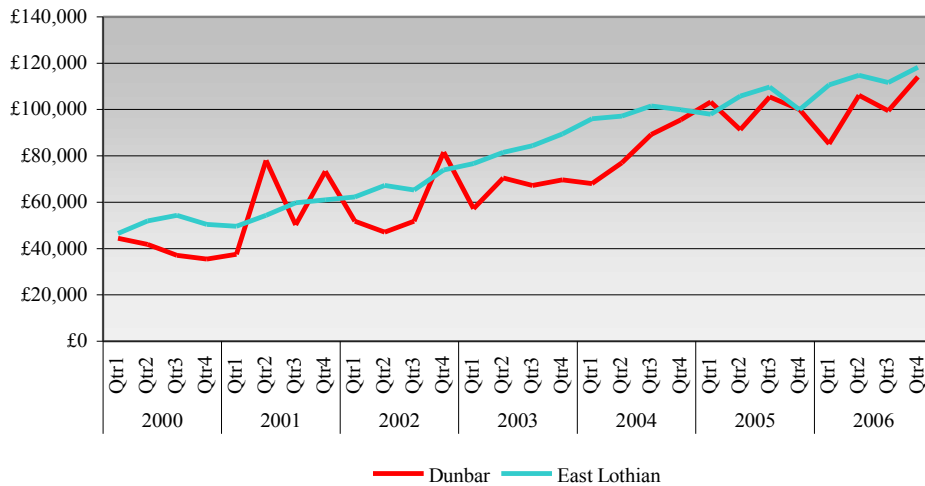
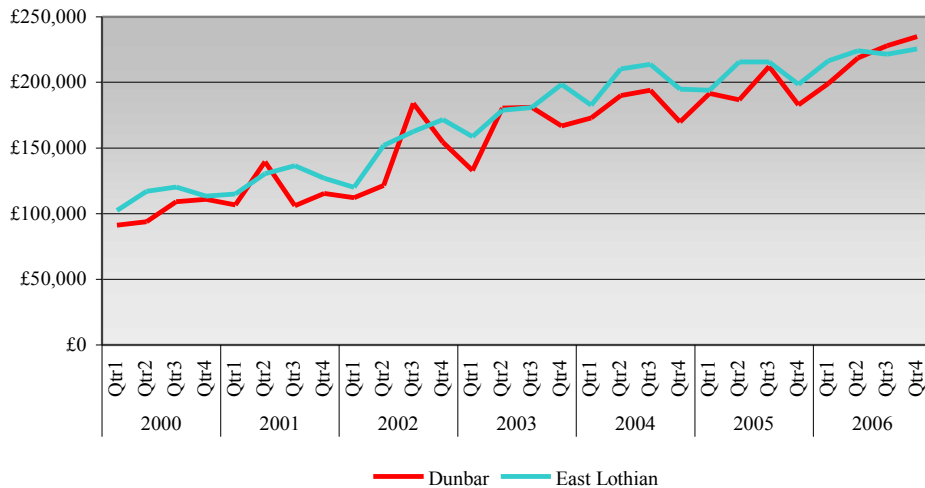


Figure 3 - Average Price 3/4 bedroom house: 2000 to 2006



17. The preceding charts show results similar to those observed for the shift in overall average prices depicted in Figure 1, with prices in Dunbar varying in line with those across East Lothian.
18. The degree to which trends in Dunbar mirrored those in East Lothian is again reflected in the correlation coefficients between the two for both property types investigated. One and two bed flats returned a coefficient of 0.837 between prices in Dunbar and East Lothian, with three and four bedroom houses revealing a figure of 0.927. This further supports the theory that the Crystal Rig farm has not negatively impacted property values in nearby Dunbar.

19. The RICS survey in 2004 had indicated wind farms may have a slight negative effect on nearby property prices when a planning application is made. The need for further research was cited by RICS to establish whether an adverse effect existed, and if so how it varied over time.
20. The Crystal Rig case study does not offer evidence to support this hypothesis. Following application for planning permission in September 2001, the average price of property in Dunbar, 11km north of the proposed site rose by 24.3%. In comparison the average price of property across East Lothian rose by a more modest 20.6%.
21. Planning permission for the Crystal Rig farm was granted in June 2002. In the following 12 months between Q3 2002 and Q3 2003, the average price of property in Dunbar rose markedly by over 53%. This compared to a rise of only 24% overall in East Lothian. Such results suggest acceptance of planning permission for Crystal Rig may have had a positive effect on property prices in nearby Dunbar.
22. Since the opening of the Crystal Rig wind farm in August 2004, property price inflation in Dunbar has continued to exceed that across East Lothian. In Dunbar a rise of 33.3% was observed between Q4 2004 and Q4 2006 as compared to a rise of 25.9% in East Lothian.

CONCLUSIONS

23. Wind energy is still a technology in its infancy, and wind farms are generally built near areas with low population densities. Consequently obtaining significant depth and breadth of data on house prices near wind farms remains problematic.
24. The Crystal Rig study offers no evidence to support the theory that property prices are adversely affected by proximity to a wind farm.
25. There is some evidence to suggest that property prices in Dunbar may have been positively affected by the Crystal Rig development. This effect appears to have been greatest immediately following acceptance of planning permission. In the 12 months after planning permission was granted for Crystal Rig, the average price of property in Dunbar rose by 53.2% as compared to a rise of 24.0% across East Lothian.
26. The potential for wind farms to have a positive effect on property prices is in line with findings of a 2003 study commissioned by the Scottish Executive. This research revealed residents within a 20km radius of a wind farm were three times as likely to consider the farm to have a positive overall effect on the area as they were to say it had a negative overall effect.
27. There is a need for further research of a similar nature to be conducted at other wind farm developments in the UK to establish whether the results observed in the Crystal Rig case study are replicated elsewhere.

ANNEX A

Average Residential Property Price			
Year	Period	Dunbar	East Lothian
2000	Qtr1	£65,769	£76,089
	Qtr2	£71,369	£90,669
	Qtr3	£82,032	£88,082
	Qtr4	£91,797	£86,728
2001	Qtr1	£80,583	£81,040
	Qtr2	£92,690	£94,870
	Qtr3	£84,686	£96,571
	Qtr4	£96,656	£101,538
2002	Qtr1	£106,949	£96,324
	Qtr2	£85,144	£113,108
	Qtr3	£98,359	£116,878
	Qtr4	£120,106	£122,441
2003	Qtr1	£107,758	£122,032
	Qtr2	£142,605	£134,762
	Qtr3	£150,642	£144,927
	Qtr4	£153,891	£148,789
2004	Qtr1	£144,069	£137,429
	Qtr2	£154,704	£165,691
	Qtr3	£158,771	£160,862
	Qtr4	£140,718	£144,787
2005	Qtr1	£145,576	£149,878
	Qtr2	£160,209	£175,428
	Qtr3	£172,863	£169,594
	Qtr4	£171,591	£157,229
2006	Qtr1	£173,238	£172,204
	Qtr2	£187,921	£175,549
	Qtr3	£195,338	£183,280
	Qtr4	£187,557	£182,302

All averages are based on residential property sales recorded by ESPC and ESPC members over the quoted period

ANNEX B

Average Price 1/2 bedroom flat			
Year	Period	Dunbar	East Lothian
2000	Qtr1	£44,340	£46,488
	Qtr2	£41,721	£51,931
	Qtr3	£37,033	£54,416
	Qtr4	£35,375	£50,409
2001	Qtr1	£37,499	£49,588
	Qtr2	£78,125	£54,390
	Qtr3	£50,209	£59,700
	Qtr4	£73,378	£61,085
2002	Qtr1	£51,758	£62,196
	Qtr2	£47,156	£67,292
	Qtr3	£51,734	£65,123
	Qtr4	£81,574	£73,882
2003	Qtr1	£57,218	£76,598
	Qtr2	£70,356	£81,404
	Qtr3	£67,316	£84,326
	Qtr4	£69,625	£89,441
2004	Qtr1	£68,057	£96,000
	Qtr2	£76,975	£97,256
	Qtr3	£89,231	£101,459
	Qtr4	£95,492	£99,872
2005	Qtr1	£103,288	£97,973
	Qtr2	£91,362	£105,807
	Qtr3	£105,455	£109,639
	Qtr4	£100,036	£99,889
2006	Qtr1	£85,271	£110,583
	Qtr2	£106,216	£114,763
	Qtr3	£99,466	£111,688
	Qtr4	£114,118	£118,297

All averages are based on residential property sales recorded by ESPC and ESPC members over the quoted period_

ANNEX C

Average Price 3/4 bedroom house			
Year	Period	Dunbar	East Lothian
2000	Qtr1	£91,054	£102,177
	Qtr2	£93,743	£116,857
	Qtr3	£109,100	£120,410
	Qtr4	£111,026	£113,191
2001	Qtr1	£106,690	£114,915
	Qtr2	£139,583	£130,427
	Qtr3	£105,894	£136,566
	Qtr4	£115,187	£126,877
2002	Qtr1	£111,999	£120,146
	Qtr2	£121,355	£152,039
	Qtr3	£184,092	£162,539
	Qtr4	£154,256	£171,582
2003	Qtr1	£132,863	£158,691
	Qtr2	£180,364	£178,769
	Qtr3	£180,986	£180,750
	Qtr4	£166,720	£198,362
2004	Qtr1	£172,761	£182,559
	Qtr2	£189,975	£210,385
	Qtr3	£194,094	£213,804
	Qtr4	£169,812	£194,682
2005	Qtr1	£191,516	£194,026
	Qtr2	£186,858	£215,614
	Qtr3	£212,186	£215,516
	Qtr4	£182,797	£198,405
2006	Qtr1	£199,102	£216,480
	Qtr2	£218,564	£224,273
	Qtr3	£227,786	£221,570
	Qtr4	£234,819	£225,683

All averages are based on residential property sales recorded by ESPC and ESPC members over the quoted period