THE EFFECT OF HIGH VOLTAGE TRANSMISSION LINES ON PROPERTY VALUES: A CONTINGENT VALUATION APPROACH

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ABSTRACT
This research investigates whether Contingent Valuation is meaningful in assessing the effect that High Voltage Transmission Lines (HVOTLs) have on property values. The research uses a Contingent Valuation approach, in conjunction with a hedonic pricing model and an attitudinal study.

The results show a disparity between the discount in purchase price and how much owners would be prepared to pay to remove the HVOTLs. The hedonic pricing model results in a negative effect on those properties that are adjacent to the HVOTLs. However, the majority of owners opposed any form of contribution towards removing the HVOTLs.

This research highlights that even though buyers believe the HVOTLs have a negative impact on their property values, they are not prepared to pay anything to have them removed and realise the increased value.

Keywords: willingness to pay, high voltage transmission lines, effect on property value, contingent valuation

INTRODUCTION

This paper highlights the disparity that exists between what property owners say the negative value effect is from High Voltage Overhead Transmission Lines (HVOTLs) and their reluctance to contribute in any way towards removing them and subsequently increasing their property's value. This research will help improve property valuers' understanding of the attitude of residents towards the presence of transmission lines and towers using a case study in Auckland, New Zealand.

The results presented in this paper are the result of work carried out on behalf of a private company who, in conjunction with Transpower, Origin Energy (local power distributor) and the local City Council, wanted to determine whether local residents would contribute towards the cost of removing the HVOTLs.

The impact that HVOTLs have on property values is of importance to existing and potential owners. There is also a financial interest by the power suppliers/operators who own the HVOTLs and may be investigating either adding, removing or upgrading the lines and need to know the levels of compensation or effect on value of any properties affected. The main interest in this paper is from property valuers who are faced with the problem of how to value this effect. There is no formal methodology for valuing this effect, although the NZ Government Valuation Department produced a report in 1984 which suggested using a rule of thumb of negative 10% (NZ Government Valuation Department 1984). This in itself can cause problems, with valuers who are familiar with valuing properties that are in close proximity applying a lower discount than those that are unfamiliar with the externality (Delaney and Timmons 1992).

The case study area that the HVOTLs traverse consists of heavily populated residential suburbs in Auckland. These lines are part of the National Grid, which is owned and operated by Transpower NZ. They provide for:

- the main electricity supply into Central Auckland;
- support to the electricity supply to West Auckland, North Shore and the balance of the North Island located north of Auckland; and
- provision of the electricity supply to the rapidly expanding adjoining suburbs.

New Zealand currently uses two types of high voltage transmission lines structures: 110kV lines are carried on traditional steel lattice towers that are approximately 20m to 33m high, and 220kV lines are carried on more substantial traditional steel lattice towers that are approximately 33m to 46m high. Three sets of 110 kV lines and one set of 220kV lines pass through the case study area.

The following literature review highlights the findings from current literature relating to using regression and attitudinal surveys, which have been the traditional techniques for determining any detrimental effect on property values. That literature reviewed relating to the Contingent Valuation approach for this paper has predominantly concentrated on the problems with the willingness to pay in relation to determining an appropriate bidding starting point and also whether respondents are being 'realistic' in their bids.

Three different techniques were investigated to enhance the understanding of HVOTLs on property values. An econometric analysis technique was used to determine a suitable regression equation to quantify any transmission line or tower effects. A survey has also been carried out to determine the attitudes of residents to the high voltage transmission lines and thirdly a Contingent Valuation approach using a willingness to pay survey to determine whether residents are prepared to have the HVOTLs removed or the numbers reduced.

LITERATURE REVIEW

Econometric analysis and attitudinal studies

An econometric analysis undertaken by Callanan (1994, 1995) on the Newlands suburb of Wellington, New Zealand was the first of its kind published in New Zealand using econometric analysis to estimate the impact of the HVOTLs on property values. The study area had two sets of 110kv lines running through it, with the lines converging at the southern end of the suburb and then splitting out with one line going to the west and the other to the north. The results from this study showed that there was a 27% reduction for properties within 10m of the pylon, 5% at 50m, 2% at 100m and reducing to less than 1% at 200m. It is noted that the pylons were located in the backyard of some of the sales within 10m of the house. This situation is unique to New Zealand and probably the most extreme case, as most countries provide for a transmission corridor and easements over private property, which restricts how close residential properties can be located.

The findings by Pitts and Jackson (2007) are in contradiction with earlier studies by Kinnard et al (1994) and Delaney and Timmons (1992) which conclude that respondents who had no experience in appraising HVOTLs estimated much larger negative price impacts than did designated residential valuers experienced in valuing such properties. Kinnard (1997) analysed over 700 sales in conjunction with a survey of local valuers, real estate agents and owners. The results found that opinions of the 'professionals' were a lot more negative than the owners, and both groups were more negative than that which the actual sales data indicated. Kinnard (1997) concluded "the literature of opinion research indicates that respondents commonly do not behave in the way that they say they would, when confronted with an actual purchase or sale decision, instead of a hypothetical choice".

Contingent valuation

Contingent Valuation is a technique that has been used by natural resource and environmental economists since the 1970s to estimate value. The method requires analysis of a survey to determine how much respondents are willing to pay for a service, utility or resource. This method has been used in such cases as the Exxon Valdez oil spill (Carson et al 1992) to measure the cost to the environment and how much people were prepared to pay to maintain that environment. It has not commonly been used in the measurement of HVOTL impacts or within the traditional valuation approach; however, in this paper it is used to measure the amount residents are willing to pay (WTP) to have the environmental effect, being an existing HVOTL, placed underground or removed. The other measure that is part of the Contingent Valuation is 'willingness to accept" (WTA). The WTA was not appropriate in this study which looks at removing the HVOTLs. It can be argued that residents have already accepted a discount on their purchase price at the time of buying the property, which is a level of WTA.

Mundy and McLean (1998) list eight common criticisms of the Contingent Valuation method as:

- monopoly money - the reported willingness to pay to improve or protect natural resources is significantly greater than actual willingness to pay;
- extreme hypothetical nature of the questions;
- embedding - the value given for part of a resource was essentially the same as for the entire resource;
- so many spills - so little money - responses to Contingent Valuation (CV) studies seem unrealistically large in view of the many problems for which individuals might be asked to contribute money. Few CV studies remind respondents of the budget constraints under which they must live;
- respondents pre-existing bias;
- funny money – CV studies may improperly determine the extent of the market; and
- warm glow - the respondents in the studies may be expressing their public support for (or the "warm glow") associated with charitable giving rather than indicating their willingness to pay for the program in question.

These criticisms were reinforced in the case study undertaken in this research, where respondents did not appear to fully weigh up the level of financial benefits against the amount of money they were prepared to pay to achieve that gain.

Pearce and Turner (1990) suggest that to examine the negative effect or damage caused by an environmental project is to measure the total economic value lost. The authors have used the following rule as to whether a development is acceptable or not:

$(B_D - C_D - B_P) > 0$ To proceed
$(B_D - C_D - B_P) < 0$ Not to proceed

where:

B_D refers to the benefits of development.
C_D refers to the costs associated with the development.
B_P refers to the benefits of preserving the status quo of the area.

It is the last variable that is the hardest to measure. Pearce and Turner (1990) carry the equation a step further by trying to measure the 'willingness to pay' of each household. In order to do this, a demand curve is created. This WTP is then extended to see the effect of variation in household income and other household characteristics. For this case study there are limitations in obtaining personal information relating to the individual households, as the majority of respondents refused to disclose this, which therefore made it difficult to correlate the amount people were willing to pay against the household income. However, the average incomes for the area were obtained and were able to be compared in a general sense.

The WTP procedure has been applied in this research to analyse whether owners were prepared to contribute to having the HVOTLs removed. The hypothesis is that if they have paid a discounted amount for their property due to the presence of the HVOTL, then would they be prepared to pay anything to have them removed and therefore realise the increased value?

Pearce and Turner (1990) used a hypothetical subdivision for their research, which used a bidding process, where the surveyor sets the first bid as a starting point. The starting point is then increased or decreased accordingly to a point where the respondent would be WTP or WTA the development. Bias may be introduced to the survey through the surveyor setting the opening bid. The other source of bias would be if there was a difference between the hypothetical market and the actual market. A third source of bias can arise from the respondents not wishing to reveal the truth in case it in some way disadvantages them. Within this case study the WTA is not applicable as the HVOTLs are already in place and the study is trying to find out how much owners are WTP to have them removed.

An assumption is made that people are prepared to put more weight on any loss of property value, than a similar sized gain.

The hedonic price function is the most commonly used method applied to environmental valuation. "First, a hedonic price function is estimated: second, implicit prices are calculated for the environmental variable of interest: third, a demand curve for this variable may be estimated." (Hanley 1997) Each one of these steps holds problems for the analyst.

Freeman (1982) examines the theory of the WTP and WTA principle. WTP is the amount of money loss that would just offset the gain in utility due to moving from situation A to situation B. In this research, situation A is to leave the HVOTLs in place whereas situation B is to remove them and place the HVOTLs underground. One of the constraints of the Contingent Valuation method is that an owner is going to base their WTP figure on the constraints of their income, rather than the true value of the utility gained. "The definition of benefits as willingness to pay implies the existence of a demand curve for the effects of the environmental improvement". (Freeman 1982) Freeman cites a study by Randal et al (1974) that deals with aesthetic impacts of a power plant including air pollution, effects of landscape and visual impact of the transmission lines. "Respondents indicated an average bid per household of $50 per year to move to a somewhat improved aesthetic state and an additional $85 per year to go beyond that to a substantially improved state". There is no indication within the paper as to how they were to pay the money, or the options that they were presented with. This example illustrates that the respondents recognised the improvement in their living environment by removing the impact.

METHODOLOGY

Study area and data description

The study area used is Pakuranga, which is a predominantly residential area in Auckland, New Zealand. The majority of homes date from 1950 or later and HVOTLs were already in place in the area in 1950. Housing is predominantly in the low to medium cost range. The topography is relatively flat with a gentle slope throughout the suburb The towers and transmission lines are clearly visible throughout the area. Both the lot land size and floor areas are similar to other suburbs around New Zealand that were developed around the same era, with the average land area being 723sqm and the average floor area being 129sqm.

As reported by Callanan (2010), the regression analysis used six years of house sales in order to eliminate both large changes the market might have experienced over time and changing perceptions of transmission line effects on health. Six years data produced 860 sales of owner occupied family homes that stood within 400 metres of the transmission lines This number of sales is sufficient to make the regression equation statistically reliable and to give confidence in the results. Due to the suburb's location, with an estuary on one side and the motorway on the other, there was a very clear delineation for the suburb, which put the HVOTLs at approximately 400 metres to the boundary.

For each sale the property specific variables were analysed, in addition to sale price, sale date and location. The HVOTL distance variable was measured as both the distance from the centre of each lot to the transmission line, and the distance from the centre of the lot to the nearest tower. A "view" variable was not incorporated as it would provide no additional clarification as all properties in the suburb have a view of the HVOTLs.

To collect data for the perception study and Contingent Valuation, a questionnaire was posted to the registered owner(s) of 887 residential properties within the study area. To carry out a face to face survey, visits were made to a further 50 properties within close proximity to the HVOTLs. The combined responses to the postal survey and the face to face survey provided a large number of comments and considerable feedback. The questionnaire collected demographic information and comments and used a Likert scale for ten items. The majority of respondents completed the questionnaire in full, including making comments. The willingness to pay questions intentionally left the starting bid price blank so that no bias was introduced.

Regression analysis

The sales analysis is based on a quantitative analysis using multiple regression analysis. Calculations were also carried out to pick up any trends and to gain a better understanding of the area and data, including average property sale value according to the distance from HVOTLs. This data showed that the average price was 17% lower for properties adjacent to the HVOTLs as compared to those over 100m away.

Testing of the location and quality factors was performed through the use of dummy variables. The distance to the closest transmission line or tower was firstly measured and then a number of different transformations were used to find the most appropriate measure, which was a reciprocal of the distance.

RESULTS

Regression analysis

A number of regression models were tested using different variable transformations, in order to obtain the most appropriate specification with the best line of fit. Different methods were used to find the best fit for the distance to the transmission line and tower as well as for the house area and lot size.

Regression equations were then run on all the different alternatives. Once the best model was achieved the regression was carried out at varying distances from the line. In all the equations certain variables consistently appeared as significant, including the presence of the HVTOLs (Figure 1).

Property Features:	Land Area, Floor Area, Exterior Construction, Roof Construction, Condition of Building, Year of Construction
Location:	Based on Quotable Value roll numbers
Market:	Year of Sale
HVOTLs:	Distance from closest transmission line Distance from closest tower Log of Distance to closest transmission line Log of Distance to closest tower Reciprocal of Distance to closest transmission line Reciprocal of Distance to closest tower
Dependent Variable:	Sales Price, adjusted to 31 March 2002 dollars by the NZ Consumer Price Index.

Variables used in the analysis
Source: Author
Figure 1

Constant (Intercept)		$96,369
Floor Area		$625
Roll No 2580		$47,563
Land Area		$59
Built 1990s		$38,897
Roll No 2600		($56,825)
Reciprocal of distance to line		($64,547)
Sold 1997		$17,866
Roll No 35320		$23,097
Sold 1996		$12,136
Built 1940s		($27,027)
Excellent condition		$8,311
Concrete construction		($29,157)
Built 2000s		$52,700
Number of Observations	=	860 sales
Adjusted R-Squared	=	.43
Durbin Watson test	=	1.96

Independent variables: statistically significant at the 95% confidence level
Source: Author
Figure 2

The goodness of fit statistics generated by the model indicate that it is well specified, with the model error, as a percentage of average sales price, being about 10%. The effect of the towers and lines on sales price is significant up to 400 metres from the closest tower or line. The level of confidence was set at 95% to determine the final equation, which is set out in Figure 2.

All data was obtained from Headway Systems (New Zealand sales database), excluding the distance to the HVOTLs and views of HVOTLs. The variables adopted may be discussed as follows:

Floor area
This is the total floor area of the house expressed in square metres. This data will not take into account any additions made to the house since the Government Rating Valuation was carried out. The floor area is rounded to the nearest 10 metres, which may introduce a small degree of error. However this is the most precise measurement available without physically measuring each house. The model provides that an amount of $625 is added per sqm of house size.

Land area
This is the total land area expressed in square metres. The final model provides that an amount of $59 psqm is added for each metre of land area.

Year of construction
This variable shows the decade in which the house was constructed. Houses built in the 1990s proved to be a significant factor with an addition of $38,897. Houses built in the 1940s had a deduction of $27,027 and houses built in the last two years (2000s) an addition of $52,700.

Condition of exterior cladding and roof
The houses were grouped into three categories:

Excellent condition	-	very good, above average
Average condition	-	average
Poor condition	-	poor, below average
Unknown condition	-	condition not recorded

The model indicates that the condition is an important variable and has added $8,311 to properties in excellent condition.

Location
The study area was divided into eight locations, which aimed to separate any neighbourhood features. The locations were defined by the government rating rolls, which provide a different roll number for each neighbourhood/location.

The model indicates an additional amount of $47,563 for those houses in roll 2580 – the Panmure basin, an addition of $23,097 for properties in roll 35320 – Pakuranga North and a deduction of $56,825 for those properties in roll 2600 - Mount Wellington North (this area is predominantly lower cost housing close to an industrial area).

Year of sale
A variable was introduced to indicate at which time period over the six years the sale was made.

The model has indicated the following amounts for houses sold in the following time periods:

1996 - +$12,136
1997 - +$17,866

The Auckland housing market had experienced strong growth in the period 1996 and 1997 followed by a period of weakening sales prices to recover again in late 2001, which explains the significance of this variable.

Construction
A variable for construction type was used which indicates a reduction of $29,157 for those houses constructed of concrete. This would require further investigation of those houses that are categorised as 'concrete' as it appears the majority of these are actually stucco render over timber frame and wrongly classified as concrete.

Transmission line - related variables
A number of different data transformations were assessed to best describe the effect distance from the transmission line and towers has on property values. The best fit was found to be the reciprocal of the distance (in metres) to both the lines and the towers. This indicates a diminishing effect on property values, which disappears to 1% at 400m.

The different models tested showed a consistent negative result from the transmission lines and towers. The final equation indicates an effect from the lines only, however the correlation is very high between the distance from the towers against the lines and when one is removed from the equation the other becomes statistically significant. This indicates a reduction in house prices of around 20% of the average sale price for houses very close to a tower or lines and dropping off to 5% at 50m and a negligible amount from 100m.

The results outlined in this paper apply to an area consisting of all house sales within 400m of the HVOTL transmission corridor. A separate regression equation was developed, as a control measure for the area, of properties within the same suburbs but located 1 kilometre or more from the HVOTL transmission lines. This equation shows very similar variables as being significant excluding the HVOTLs.

Attitudinal survey
The owner details and rating values for each property were obtained from Quotable Value who hold details of property particulars and hold the most up to date database for this information. The area chosen for the survey is bounded by the Ti Rakau bridge to the south, the Southern Motorway to the west, and the Ellerslie Panmure highway to the north. These are natural boundaries to the suburb.

The questionnaire was posted to 887 properties, which could be identified as owner occupied within the area, with a follow up letter posted two weeks later. The response rate was 40% giving 350 replies. A further 50 properties were visited within close proximity to the transmission lines within the Pakuranga South area which has the highest density of HVOTLs. The combined postal survey and the visits provided a high level of comments and feedback.

The survey asked owners what the important features were in their decision to purchase, along with what impact the HVOTLs had on their property values. In addition questions were asked in relation to their perception of changes to value relating to the removal of one of the lines (there are three HVOTL lines in the area running parallel) and also the impact of increasing the height of the lines.

For the majority of respondents, the increased affordability due to the presence of the transmission lines was not an important feature in their decision to purchase the property they now live in. The

most important feature was the house and lot land size, followed by proximity to schools and shops and the overall Neighbourhood. Table 1 illustrates the breakdown of the importance of each feature.

	Extremely important	Very important	Somewhat important	Not important
The presence of Transpower overhead transmission lines/towers made our purchase affordable	11%	7.6%	27.9%	53.4%
Neighbourhood	25.9%	44.3%	26.6%	3.3%
Close to schools/shops	27.3%	30.5%	24.4%	17.7%
Close to work	19.8%	28.1%	28.4%	23.8%
Close to friends/family	15.5%	18.9%	31.6%	34%
Land area	26%	32.1%	30.4%	11.5%
House size	31.5%	41%	20%	7.5%

Important feature in the decision to purchase
(figures are shown as the percentage of respondents)
Source: Author
Table 1

A further question was asked in relation to whether respondents believed the HVOTLs have an effect on their property value. 72% of the respondents believe that the towers and the transmission lines do have an effect on their property values with only 22% disagreeing and the majority of these living further than 300m from the lines or towers.

The replies in regard to whether respondents believe that the proximity of the HVOTLs has an effect on property values has been cross-referenced to the distance from the HVOTLs. The percentage increase indicated by respondents is between 10% and 19% for those respondents within 300m. Interestingly, of the respondents who live further away 25% believe that their property values would increase if the HVOTLs (over 300m from their property) were removed. This can possibly be explained by a change in demographics and higher property values in this neighbouring area.

However, respondents were not as positive when asked if the multiple sets of transmission lines and towers were reduced to a single set of lines with taller towers, would they expect someone to pay more for their property? 74% expect that the price would remain the same and 26% expect the price would increase, with this increase being less than $10,000 (39%) or between $10,000 and $20,000 (35%).

The comments received from respondents can be summarised as follows:

- towers and lines are ugly;
- lines are noisy;
- lines create interference with television and radio reception; and
- fear of health problems created by presence of lines.

There were also positive comments in regard to the properties being cheaper to purchase due to the proximity of the towers or lines.

Willingness to pay – Contingent Valuation
The survey that was sent to 887 properties for the attitudinal study also included questions in relation to their willingness to pay to have the HVOTLs removed. The face-to-face interviews of 50 property owners asked the owners to complete the survey, as well as additional information in relation to their willingness to pay and how they would pay.

A Contingent Valuation approach was also undertaken with the questionnaire to determine whether residents were willing to contribute towards the cost of removing the transmission lines and towers. A range of options were provided and each of the options allowed the respondent to then stipulate how much they were willing to pay for that option. The options provided were to either pay a one off lump sum amount or have a pre-defined amount added to a monthly bill (such as the utilities account) or pay a percentage of potential capital gains on the sale of the property. This last option provided for a direct correlation to the assumption that the removal of the HVOTLs would result in a capital gain. The exact formula for how this would be calculated was not included, which may have presented a limitation, with respondents not having a clear idea as to what it was going to cost them. However, in this part of the WTP process the study is trying to determine the amount without introducing a bias by setting the amount.

The following summarises the overall response:

- lump sum contribution 80.5% oppose
- monthly bill payment 73.8% oppose
- capital gains percentage 67.7% oppose

Of those respondents that approved a lump sum payment, the amount they were prepared to pay varied from $50 to $5000. The monthly bill sum supported was between $5 and $200 per month. A flaw in the questionnaire arose with this question as some respondents indicated a time frame had not been stipulated and the dollar amount would depend on how long they had to pay for. The capital gains percentage that respondents were prepared to pay varied from 1% through to 100% of the capital gain portion of the sale price.

These dollar amounts have to be read with the knowledge that only a very small number of respondents were prepared to indicate any percentage or dollar amounts they would be prepared to pay.

DISCUSSION
The attitude of buyers to the presence of a HVOTL will vary over time. Changes may be due to new information regarding the health effects of the electromagnetic field produced by the transmission lines. If a buyer is convinced that transmission lines have a negative health or safety effect, it would be expected that their perception of what the property is worth will be altered. Alternatively if a conclusive paper was to be issued stating there was no health risk, a whole new set of buyers could enter the market for those properties near the HVOTLs and thereby affect the value. Changes in consumer attitude to new technology or the acceptance of the visual impact of the transmission corridor may also impact on the value. Therefore the impact of the transmission corridor on property value is subject to change, either positive or negative, according to changing attitudes.

A general limitation on carrying out any regression analysis is the lack of properties sold within close proximity of the HVOTL as compared to the proportionately larger number of sales further away. This causes a problem in obtaining a statistically significant equation without going back over a number of years to obtain sufficient sales. Therefore a suitable methodology has to be developed to provide a mechanism to isolate the ‘proximity to the HVOTL’ variable within the regression analysis. This

paper builds on the premise that the reciprocal of the distance is the most suitable transformation to identify this variable.

Fifty residents located within twenty metres of the HVOTLs corridor were selected for a follow up to the Contingent Valuation with a face to face survey. As the Contingent Valuation survey was asking for the owner occupier to complete the questionnaire a limitation occurred in the large number of rental properties which are either under or adjacent to the HVOTLs. The owners were then contacted by phone to carry out the survey over the phone rather than face-to-face.

The WTP Contingent Valuation is an additional method to build on the understanding of what the owners perception is of the effect on value and also to understand if the owners are prepared to contribute towards the removal of an externality that they believe will subsequently increase the value of their property.

The limitations outlined in the results in relation to using the Contingent Valuation approach highlight the difficulty in using this method. However, the results contribute to the understanding of how property owners perceive the presence of the HVOTLs. The sales indicate a reduction in value of those properties in very close proximity, whereas the attitudinal survey results say that owners see the HVOTLs as reducing value by 10%. The Contingent Valuation approach then contradicts the results by saying that although there is a negative impact with the proximity of the HVOTLs, the substantial majority of owners are not prepared to pay anything to have them removed.

CONCLUSION

Three different methods were used within one case study area to endeavour to provide a better understanding of the effects of HVOTLs on property values. The results from using the different methods have provided three different answers:

- the sales analysis shows a negative effect of 20% for those properties within close proximity (up to 10m). This effect drops to 5% at 50m and to a negligible 1% at 100m;
- the majority (70%) of owners perceive that the HVOTLs have an effect on their property value and 60% believe the removal of all the towers and lines would increase their property value by around 10% of what they consider to be the current market value. 74% of respondents did not feel that reducing the multiple sets of lines to a single set would increase their property value; and
- the Contingent Valuation WTP shows the majority of people oppose any payment contribution to be made and, of those that were prepared to pay, it was at a minimal amount but inconclusive as there was insufficient response as to how much they would pay.

These results are unique to these areas, as each area has its own distinguishing features. However, the results do coincide with similar HVOTL studies undertaken by Kinnard (1997), Sims (2005) and Callanan (2010) and therefore build on the literature. These studies have been a mixture of quantitative and qualitative studies, but do not include any Contingent Valuation analysis. The Contingent Valuation approach has limitations as described by Mundy and McLean (1998) with the main criticism within this study being the lack of connection by respondents between the potential financial benefit in the removal of the externality and how much they are prepared to pay to receive that benefit.

A further hypothesis that was not tested within the study was that the nature of the purchase process means that only people who are prepared to live near the HVOTLs will purchase and therefore they will not feel the same desire to pay to have them removed, This was highlighted by the results showing the few people that were prepared to pay lived in the control area which was further than 300m from the HVOTLs.

In summary, the results show that property values are reduced in close proximity to the HVOTLs and residents perceptions back this up. The Contingent Valuation approach then confirms that although owners accept there is a negative impact through the presence of the HVOTLs, they are not prepared to pay anything to have them removed.

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