

## Analysis of Rural Housing in Kildare

## Carried out on behalf of Kildare County Council by

# All-Island Research Observatory (AIRO), Maynooth University: Improving Evidence Informed Planning in Ireland





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#### 1. Introduction

The All-Ireland Research Observatory (AIRO) based in the National Institute for Regional and Spatial Analysis (NIRSA), Maynooth University carried out a review of rural one-off housing in County Kildare on behalf of Kildare County Council to inform the preparation of the Kildare County Development Plan 2017-2023.

Based on the review, this report identifies the location and distribution of rural one-off housing in County Kildare and illustrates the extent of new development carried out between 1998 and 2015. The report also sets out details of an accessibility study undertaken by AIRO, which compares the accessibility of key services to rural one-off housing in Kildare relative to dwellings that are located in designated towns, villages and settlements in the county. The report also provides a summary of the economic costs associated with servicing rural housing in Ireland.

#### 2. Definition of Rural One-Off Housing:

For the purposes of this study rural one-off housing is defined as any housing unit that is outside the 54 Settlement Areas in the current Kildare County Development Plan (CDP) 2011-2017. These settlements are grouped into the following hierarchy: Large Growth Town I (1), Large Growth Town II (3), Moderate Sustainable Growth Town (6), Small Town (8), Villages (14) and Rural Settlements (22). All Rural Nodes (23) are also classed as rural one-off dwellings as low density rural housing is permitted in such nodes and no boundaries have been outlined for rural nodes in the CDP.

To identify and analyse the location, distribution and density of rural one-off housing in Kildare the project team undertook an analysis of GeoDirectory – Ireland's official address database. This database contains a listing of all residential properties in Ireland and also includes a 'Create Date' field that provides an accurate time-stamp as to when the property was built. However, it should be noted that it is expected that there may be a certain time-lag between the official 'planning approval' date from Kildare County Council and the GeoDirectory 'Create Date' and as such a year by year analysis is not recommended.

The primary source of information on housing in Ireland comes from the Central Statistics Office (CSO) via the Census. According to Census 2011, there were 78,794 permanent housing units in Kildare. The census provides a useful benchmark with the analysis carried out for this study as it is possible to cross-check the census returns with the data available from GeoDirectory for the same period. According to the latest extract from GeoDirectory, using the CreateDate as the time stamp, there were a total of 78,563 residential address points within in Kildare in 2011 – a 99.5% accurate rate with the Census returns. This level of accuracy provides the project team with a high level of confidence in using GeoDirectory as the main source of information to analyse the growth of Rural one-off housing units over the period from 1999 to 2015.

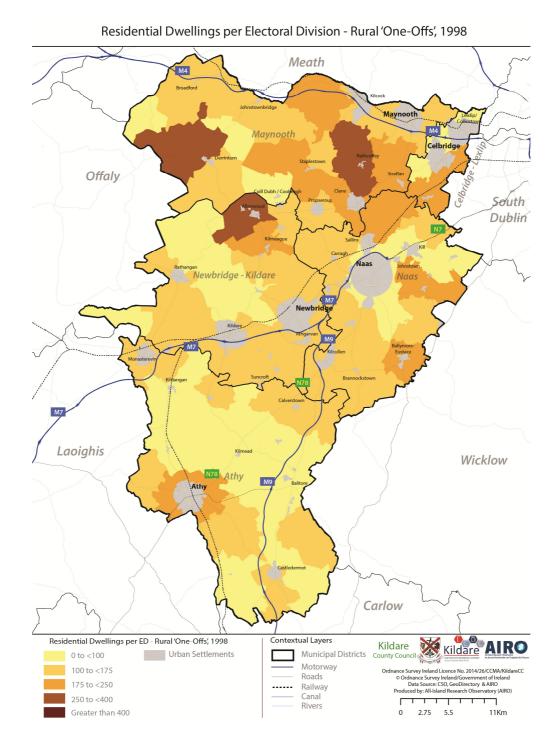
#### 3. Baseline Data: Residential Dwellings (urban and rural) in Kildare in 1998:

As a starting point, the analysis initially looks at the scale and distribution of residential dwellings and rural one-offs in 1998, just prior to the CDP 1999-2005 coming into operation. According to GeoDirectory, there were a total of 36,924 individual housing units in Kildare in 1998. Of these, **26,460 (71.7%)** can be classified as within the 54 Settlement Areas while the remaining **10,464 (28.3%)** can be classified as rural one-offs. An analysis of the location of rural one-offs dwellings across Kildare EDs (Map 1) highlights that the highest number of such dwellings are primarily concentrated in areas in the north of the county with some other pockets in the south and eastern border areas. It is also clear from this map that the distribution of rural one-off housing in Kildare was widespread in 1998 with a high number of EDs with numbers greater than 175 units. In total, 3 ED have numbers greater than 250 units; Carbury (269), Balraheen (271) and Kilmeage North (253). At the Municipal District (MD) level, the distribution is quite different with both the Maynooth MD (2,974) and the Athy MD (2,829) having the highest number of units.

With this baseline in place it is possible to look at the development that has occurred during the period from 1999 to Q4 2015.

Municipal District	Residential Address Points (% of Kildare)	Rural One-Off Housing (% of Kildare)	% Rural One-Off Housing
Athy	5,777 (15.6%)	2,829 (27%)	49%
Celbridge-Leixlip	6,774 (18.3%)	327 (3.1%)	4.8%
Maynooth	7,513 (20.3%)	2,974 (28.4%)	39.6%
Naas	7,916 (21.4%)	2,058 (19.7%)	26%
Newbridge-Kildare	8,944 (24.2%)	2,276 (21.8%)	25.4%
Kildare	36,924	10,464	28.3%

Table 1: Residential Address Points and Rural One-Off Housing, 1998



#### Map 1: Rural One-Off Dwellings in 1998 (by Electoral Division)

### 4. Rural One-Off development between 1999 and Q4 2015

With a baseline of **36,924** residential housing units (including **10,464** rural one-offs) in place in 1998, Kildare underwent a major transformation in residential development during the following two County Development Plan periods. Figure 1 below details the level of rural one-offs developed on an annual basis between 1999 and 2015. Over the 6 year period of CDP 1999 to 2005, the housing stock in the county increased by **29,455** (+79.8%) to a new total of **66,379**. Of these new developments, a total of **4,888** housing units (+46.7%) can be classified as rural one-offs, representative of **16.6%** of all developments during the lifetime of the plan. At the end of the 1999 to 2005 CDP there were a total of **15,353** rural one-offs in Kildare, equating to **23.1%** of all residential housing in the county.

During the lifetime of the 2006 to 2011 CDP there was also some significant housing development within the county although a lot of this was completed during the early years of the plan (**approximately 85% in the first 3 years**). Over the course of the CDP the total number of residential dwellings in the county increased by **12,184 (+18.4%)** to a new total of **78,563**. Of these new developments a total of **3,365** were classed as rural one-offs. This is representative of **27.6%** of all developments during the plan period – a much higher rate than in the 1999 to 2005 CDP period (16.6%). As of 2011, the total number of rural one-offs in Kildare stood at **18,717** and equates to **23.8%** of all residential dwellings in the county.

As of Q4 2015, the total number of residential dwellings in Kildare was **80,096**. As such, there have been a total of **1,553** residential dwellings completed during the lifetime of the current plan, an increase of only **1,533** (+1.9%) from the total at the completion of the 2006 to 2011 CDP. In general, there has been very little urban development across the county and therefore a much higher proportion of developments can be classed as rural one-offs. To date, a total of **654** rural one-offs have been developed between 2012 and Q4 2015 representing **42.7%** of all housing developments within the county. The total number of rural one-offs in the county is now **19,371** and represents **24.2%** of all residential developments – a marginal increase on the rate of **23.1%** at the completion of the 1999 to 2005 CDP.

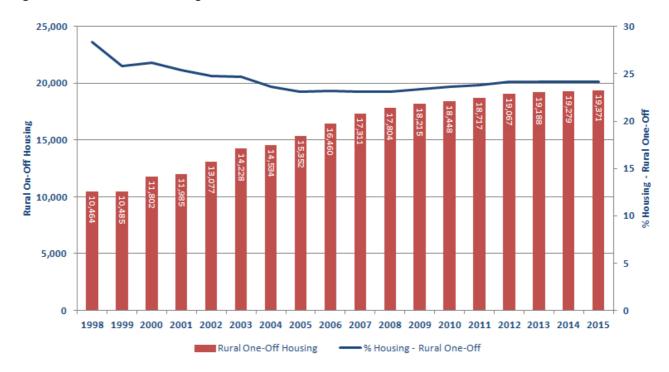


Figure 1: Rural One-Off Housing in Kildare, 1998 to 2015

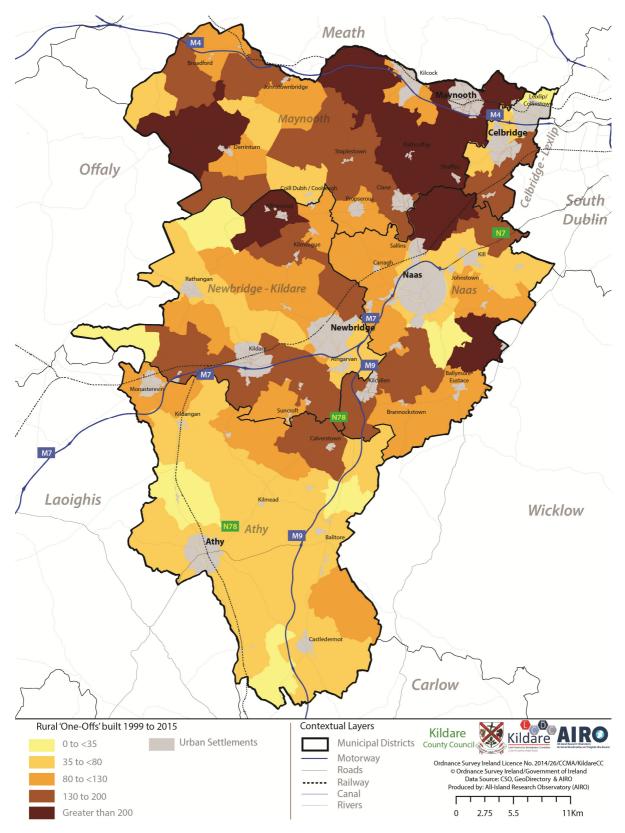
Municipal District	Residential Address Points (% of Kildare)	Rural One-Off Housing (% of Kildare)	% Rural One-Off Housing
Athy	12,558 (15.7%)	4,624 (27%)	36.8%
Celbridge-Leixlip	13,126 (16.4%)	521 (3.1%)	4%
Maynooth	17,788 (22.2%)	5,785 (28.4%)	32.5%
Naas	17,542 (21.9%)	3,923 (19.7%)	22.4%
Newbridge-Kildare	19,082 (23.8%)	4,518 (21.8%)	23.7%
Kildare	80,096	19,371	24.2%

**Table 2**: Residential Address Points and Rural One-off Housing, Q4 2015

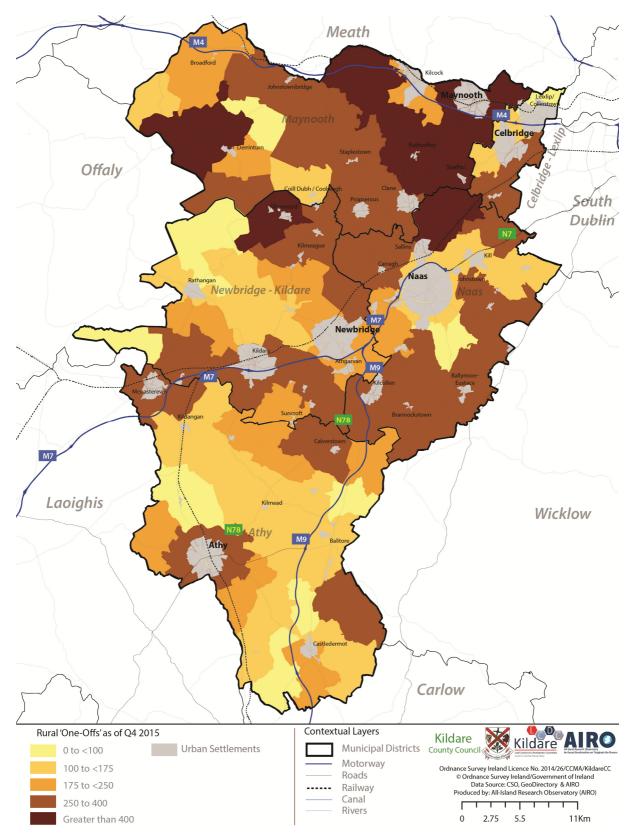
Map 2 below provides an illustration of the geographical location of rural one-off housing development between 1999 and Q4 2015. A significant level of development is evident in the northeast and north-west of the county with Electoral Divisions (EDs) surrounding Rathcoffey, Straffan, Kilcock, Derrinturn, Maynooth, Celbridge and Leixlip experiencing significant growth of greater than 200 new rural one-off dwellings during the period. Almost the entire central area of the county has also experienced growth of up to 200 new rural one-offs per ED in areas such as Naas, Kildare, Monasterevin, Newbridge, Kilcullen and Calverstown.

Map 3 provides an overview of the number of rural one-off dwellings per ED in Kildare as of Q4 2015. In sharp contrast to the spatial distribution and aggregate number of rural one-offs as highlighted in Map 1, it is clear that the scale and distribution of rural One-offs in Kildare has changed dramatically in the last 15 years. This map illustrates a much more widespread pattern with highest concentrations of rural one-off houses i.e. over 250 units, in a much greater number of EDs than in 1998. As of Q4 2015 there were a total of 34 EDs with greater than 250 rural one-off dwellings and of these 7 EDs had a total greater than 400; Maynooth (401), Carbury (472), Straffan (508), Cloncurry (515) Bodenstown (531), Kilmeage North (547) and Balraheen (581).

Appendix 1 of this report details eight study areas of rural ED's located throughout the county. The study sets out the socio economic profile of each area and the number of one off dwellings built between the years 1999 to 2015.



#### Map 2: Rural One-Off Dwellings built between 1999 and Q4 2015 (by Electoral Division)

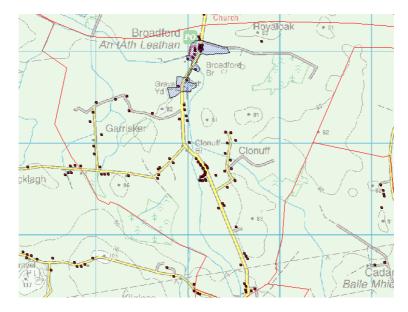


#### Map 3: Rural One-Off Dwellings as of Q4 2015 (by Electoral Division)

#### 5. Statistical Profile of occupants of urban and rural One-Off Dwellings

The development of a statistical profile of those residing in rural one-off housing in Kildare resulted in the development of a very detailed analysis of the Small Area (SA) population data from the 2011 Census. This was a difficult process as the underlying CDP Settlement boundaries supplied by Kildare County Council did not correspond with the SA boundaries (the basic building blocks for a statistical analysis) available from the CSO. As a result of this the project team were required to split many of the SAs across Kildare as they were either a) only partially within a Settlement boundary or b) intersected with two or more Settlement boundaries (e.g., Naas and Sallins).

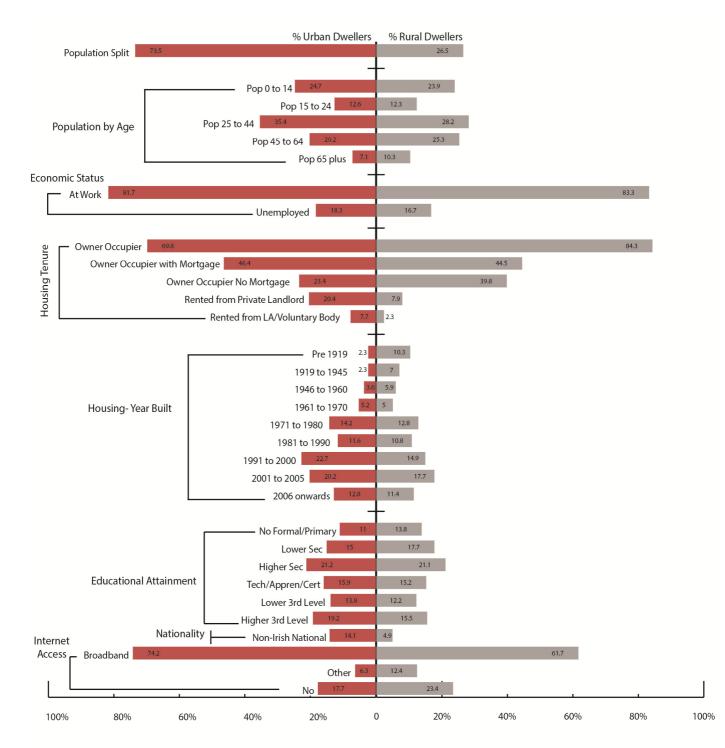
This process was guided by the use of GeoDirectory. For instance, if we look at the Rural Settlement of Broadford (see Map 4 below) we know that it sits within the Small Area '087007002'. This Small Area has a population of 261. We also know from GeoDirectory that there is a total of 100 residential addresses within the Small Area and only 20 residential addresses within the Settlement boundary. Using this information we then assign 20% of the population (and all other indicators) of the Small Area total to Broadford i.e., a population of 52.



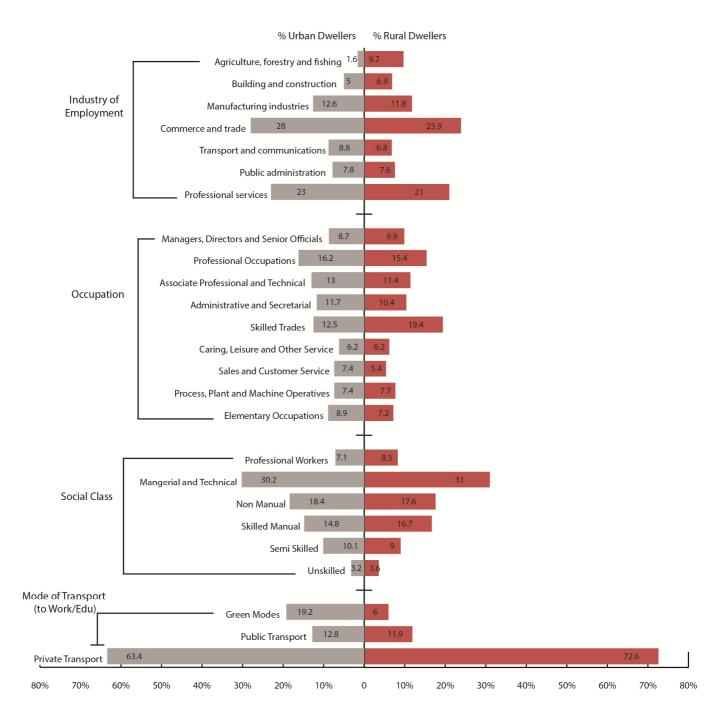
Map 4: Broadford Settlement within Census Small Area.

With this methodology in place it was possible to develop a series of demographic estimates for each of the 54 Settlement Areas within the county. By subtracting this 'urban' population from the Kildare county total it was therefore possible to develop an estimate of the total population for those residing in rural one-off housing. A detailed demographic statistical profile has been developed on themes including: Population Profile, Housing Tenure, Year of Housing Build, Economic Status, Mode of Transport, Education Attainment, Industry of Employment, and Access to Broadband.

Based on the SA level analysis it is estimated that the total urban population in Kildare is **154,537** (73.5%) and the rural one-off population is **55,775 (26.5%)**. The following graphics provide an overview of the different socio-economic characteristics of both Urban and rural one-off dwellers within Kildare.



#### Figure 3 Demographic profile of occupants of urban and rural dwellings



#### Figure 4 Socio Economic Profile of occupants of urban and rural dwellings

#### 6. Accessibility

Ireland, despite its very small size, is amongst the most private car dependent countries in Europe and the World. The average car in Ireland travels **24,000 km per annum**. This is 70% higher than France and Germany and even 30% higher than the United States of America. Rural travel accounts for some 80% of all vehicle miles travelled in Ireland each year. Our extreme car dependency primarily arises from our highly dispersed settlement pattern; the consequent high costs of providing reliable and efficient public transport; and historical public policy favouring road transport. As a county, Kildare is also highly dependent on Private Transport usage for employment. Kildare is now the **10th most dependent county on Private Transport**. Rates vary within Kildare with private mode share increasing in more rural areas and locations with poor access to Public Transport.

An analysis to provide an insight into the higher level of commuting (car based) associated with residing in rural areas has been carried out. This analysis was based on accessibility to education, health and retail services. The accessibility analysis is based on road network drive-times from 250m grid cells containing residences (8,431) across Kildare to the nearest service. The analysis calculates travel times by using the average travel time on the network and also includes a 20% congestion charge plus an additional 3 minutes to account for time accrued during departure. Results have been generated for a variety of geographical levels across Kildare. The following series of maps provide an analysis of the approximate drive-time from Small Areas in Kildare to the nearest service and outlines the major difference between urban, peri-urban and rural areas in Kildare. The maps also show quite a variation in levels of service available across different parts of Kildare.

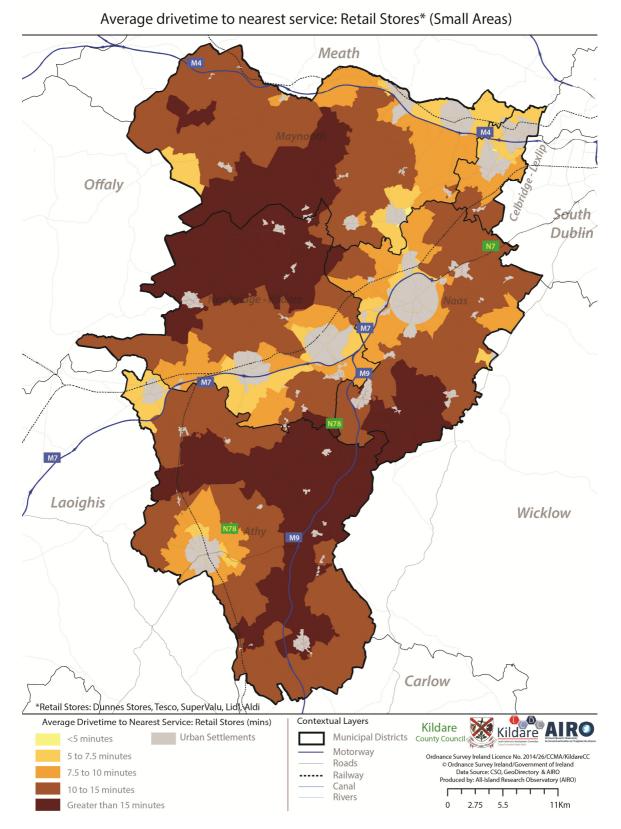
Table 3 below also provides an outline of the approximate travel time for urban and rural one-off housing in the county. In general, and based on an average accessibility to all services, **rural one-off housing, have a 64% higher travel time to services** than those residing in urban areas. This is based on an average of all Rural One-off housing and as such there are high levels of variation in scores from areas just outside settlements to extremely remote areas. For instance, rural one-off housing in the north-west of the Maynooth EA have an average proximity travel time that is almost **3 times higher** than similar rural one-off areas between Maynooth and Straffan.

Service	% Increase in rural one-off travel time
Pre-Schools	+54%
Primary Schools	+31%
Secondary Schools	+69.5%
GPs	+71%
Dentists	+82%
Retails Stores*	+62%
Daily School Run**	+28%
Average to all services	+64%

Table 3: % Increase in rural one off travel time compared to urban areas

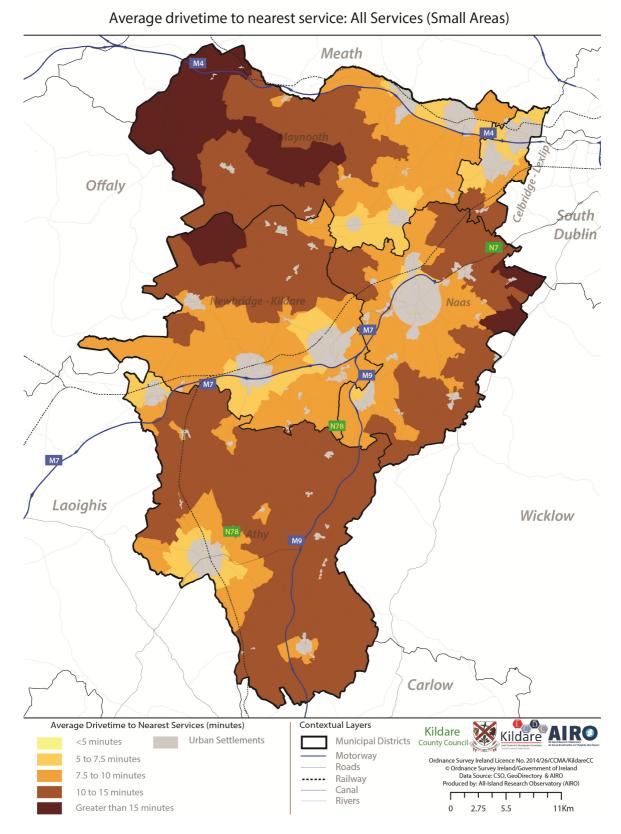
\*Access times to nearest Retail store such as Dunnes Stores, Tesco, SuperValu, Aldi and Lidl.

\*\*School run is based on family with children in both primary and pre-school. Drive-times estimated for the following trips: home to drop off at primary school, primary school to nearest pre-school to home and return home, return trip to pre-school (lunchtime), return trip to primary school (mid-afternoon).



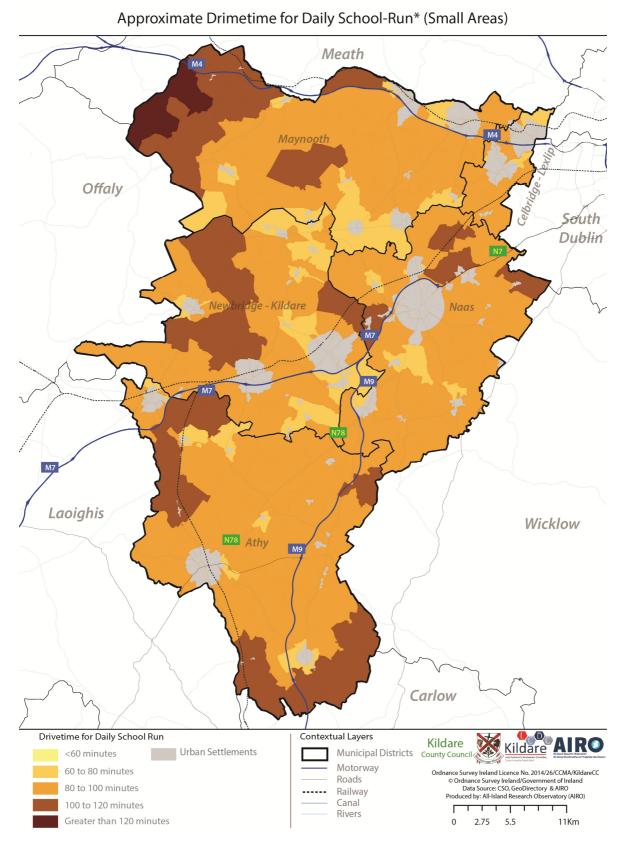
#### Map 5: Average drive time to nearest service: Retail (Small Areas)

Rural one-off average drive time: +62% higher





Rural one-off average drive time: +64% higher



#### Map 7: Average drive time for Daily School-Run (Small Areas)

Rural one-off average drive time: +28% higher)

#### 7. Economic Cost of Rural Housing at a National Level

The cost of providing infrastructure and services to dispersed rural housing is significantly more than to close knit communities in villages, towns and cities. A considerable amount of research has been carried out to identify some of the economic costs associated with rural one-off housing in Ireland. The following section provides an overview of the economic cost of rural one-off housing in relation to (i) Road provision; (ii) Public Transport; (iii) Postal Services; (iv) Electricity; and (v) Communications. Much of this work is based on research carried out by recent NIRSA research affiliate, Gavin Daly (https://oneoffireland.wordpress.com) and research undertaken by UCD as part of an Environmental Protection Agency Strive project. The details below are to be viewed at a national level rather than Kildare specific.

#### (i) Road provision

Providing access to dispersed rural housing places a heavy burden on roads and local government budgets. Ireland has 91,000 kilometres of non-national roads representing 94% of the total length of all the country's roads and carrying around 60% of total traffic. Ireland's road network per head of population (25.68 km per 1,000 population) is considerably greater than the EU average and twice that of the Member State with the next highest road length (8.5 km per 1,000 population). Many of these minor roads are laneways that evolved with farming practice and are unsuited to significant traffic movements.

Reviewing Ireland's road maintenance budget demonstrates that the more population is dispersed, the greater the amount of road spending that is required. According to the latest data on local authority financial spends (http://localauthorityfinances.com/) per capita spending in 2015 on roads in County Leitrim (highest spend) was €336 compared with €56 across the four Dublin local authorities. An analysis of this data and an approximate local authority one-off housing rate based on 2011 POWCAR data reveals that there is a clear correlation between high levels of per capita spend on road maintenance and high rates of rural one-off housing within local authority areas. For example, 10 of the 31 local authorities in Ireland are estimated to have greater than half of housing classed as rural one-offs. All of these local authorities have an annual per capita spend on road maintenance of between €144 and €336 (€194 average). In contrast to this, 6 local authorities have a rural one-off rate less than 4% with per capita annual spend on road maintenance of between €49 and €92 (€60 average).

Road Infrastructure	Rural Cost v Urban Cost
Non-national Road per capita expenditure	Approx 3 times higher (€194 v €60)

#### (ii) Public Transport

The provision of public transport services in rural areas with highly dispersed settlement patterns is evidently much more expensive and inefficient often running at a net loss and requiring significant or complete subsidisation by the State. Some expensive services are essentially rural. They include the rural transport scheme which costs €16 million euro annually and mostly addresses the unmet transport needs of elderly and disabled rural residents and the school transport scheme that costs approximately €200m a year. In order to qualify for school transport, a child must be living more that 3.2 km from the nearest school in the case of primary students and 4.8 km in the case of post primary schools. Of the 135,000 pupils carried annually, about 8,000 are students with special needs, and 30% of the cost is attributable to these pupils. Contributions make up 5% of the overall cost. Therefore, around €130 million a year is attributable to mainstream primary and secondary pupils. The annual subsidy per pupil works out at €1,025 per year, which equates to around €2.80 per journey for each student.

Public Transport	Rural Cost v Urban Cost
School Transport Subsidy (per journey)	> 3 times higher (€2.80 v €0.57 per journey)

Source: http://oneoffireland.wordpress.com

#### (iii) Postal Services

Postal services to dispersed rural households are estimated to cost four times as much when compared to urban households. Consequently, there is a high level of cross-subsidisation between urban and rural customers. People living within three miles of another delivery point are entitled to a door-to-door collection and delivery service, a definition which includes almost every rural resident. Delivery in Dublin is estimated to cost half the price of a postage stamp, but that in rural areas is argued to be double this amount.

Postal Cost	Rural Cost v Urban Cost
Postal Delivery Cost	4 times higher

Source: http://oneoffireland.wordpress.com

#### (iv) Electricity

Electricity provision to rural areas is high due to the average fixed cost of capital investment and the cost of subsequent maintenance of a considerable length of power line. In addition, electricity is lost due to the length of the distribution network while voltage quality can also be adversely affected. There do not appear to be any publicly available estimates of these relative costs, but it is possible to provide a relative indicator through comparison.

Due to the low density of population and housing, Ireland has the most extensive network per customer in the EU, resulting in high transmission losses. ESB networks is forced to maintain more than three times the length of distribution circuit per customer as compared to, for example, the UK. To avoid voltage drop over this extended network, at least one transformer for every square kilometre is needed in almost 75% of Ireland. This means that Ireland has almost one-third the number of transformers as in the UK despite having a total distribution network of just half the size and 6% of its population. Even if a comparison is drawn with Scotland, a country of similar size of population and with a low overall population density, ESB networks must supply an average of 8.5 customers per kilometre compared with 11.3 for Scottish Hydro. Ireland has five times the length of overhead line to supply and maintain (154,000 km) compared with Scottish Hydro (30,000 km) despite only having two and a half times as many customers (Scott and Brereton, 2010).

The condition of the rural network is a cause for concern and voltage quality standard is not being met for a significant proportion of the rural population. The low proportion of underground cable (approximately 8% underground compared with 57% in the UK) also has a significant impact on continuity of supply. Of the approximately 1.7 million wooden poles on the system, one third are over forty years old and pole rot is becoming a significant factor. Meter reading is also more expensive due to the higher rates per house paid to rural inspectors, equivalent to 134%. Meter reading is believed to cost three times more in rural areas than in urban areas.

In recognition of these high costs, electricity is the only utility where a cost differential between rural and urban homes applies. Currently, the cost differential between the standing charge in Urban and Rural areas is +53%. In short, although a proportion of costs are recouped, the higher price paid by rural customers falls wells short of the actual cost incurred in providing and maintaining the service.

Electricity Cost	Rural Cost v Urban Cost
Domestic Connection Charge:	+186%
Rural Single Dwelling (€1,975) V's	
8 Dwelling Development (€689)	
Standing Charge (Standard Meter or Day and Night Meter)	+53%
Meter Reading Cost	3 times higher

Source: ESB and http://oneoffireland.wordpress.com

#### (v) Communications

Costs for the provision of communications infrastructure are much higher per user in dispersed rural areas than for urban areas, but are borne by private operators rather than the public utility companies. Companies must cover this cost through their customer income and so this is largely transferred to all users irrespective of need. Consequently, one-off settlement adds to the costs borne by the wider population. High speed broadband, for example, is essential to the social inclusion of rural communities. Delivering high speed broadband therefore presents a significant challenge. With only 67 people per km<sup>2</sup>, Ireland has one of the lowest population densities in Europe. Some counties in Ireland have a population density as low as 19 people per km<sup>2</sup>. This low population density, coupled with a thinly distributed rural population makes the deployment of a high speed broadband network infrastructure difficult and costly. As a result, a rural/urban differential, or "digital divide" arises in terms of access to, and quality of, service. The higher cost of provision of broadband to rural areas has meant that service providers have been reluctant to provide services to many rural areas. Instead, costs must be borne directly by private individuals and companies who have to sign up to more expensive and inferior satellite based services. In response, the Government has had to intervene with various broadband schemes, with the current scheme estimated to cost the tax payer in the region of €350 million euro over the period to 2020 – a direct subsidy of €460 for each of the 757,000 addresses covered.

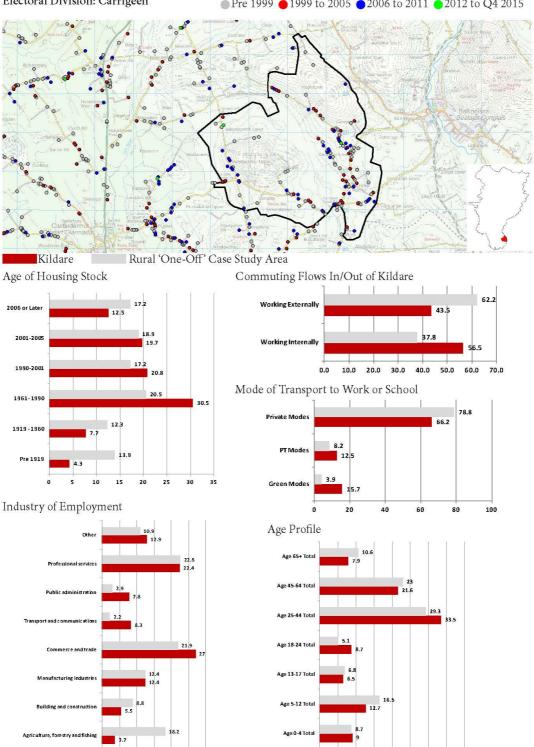
#### Analysis of Rural Housing in Kildare

#### <u>Key Points</u>

- > In 1998, there were 10,464 rural one-off houses in County Kildare.
- > In 2015 (Q4), there were 19,371 rural one-off houses in County Kildare.
- In 1998 a total of 3 EDs had more than 250 rural one-off dwellings and no ED has more than 400 rural one-off dwellings.
- In 2015 a total of 34 EDs had more than 250 rural one-off dwellings and of these 7 EDs had more than 400 rural one-off dwellings.
- Occupants of rural dwellings have a 64% higher travel time to key services when compared to occupants of dwellings in designated towns, villages or settlements in County Kildare.
- > 9.7% of rural dwellers state that agriculture is their main industry of employment.

Appendix 1

**Case Studies (by Electoral Divisions)** 



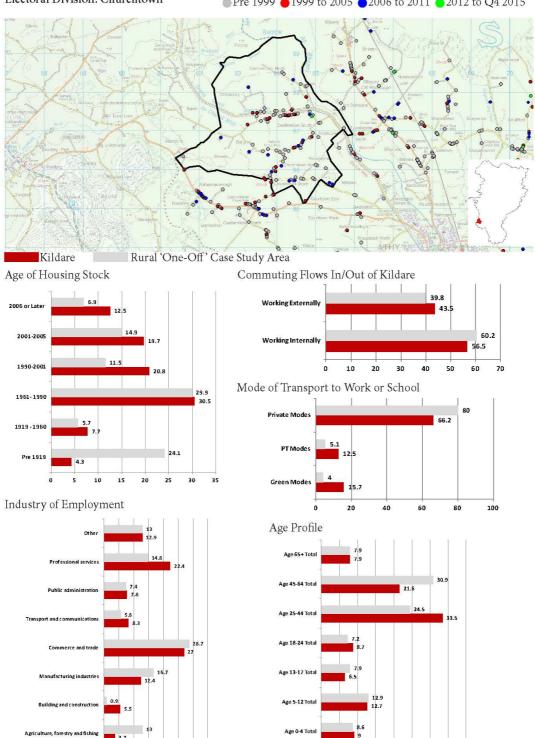
0 5 10 15 20 25 30 35 40

 Small Area: 87021002 - Total Population: 369, Housing Units 1998: 62, Housing Units 2015: 141

 Electoral Division: Carrigeen

 Pre 1999 • 1999 to 2005 • 2006 to 2011 • 2012 to Q4 2015

10 15 20 25 30



10

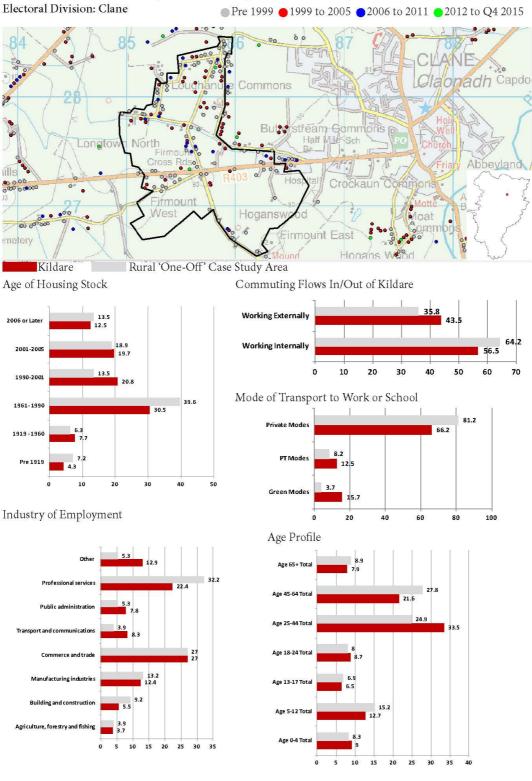
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0 5

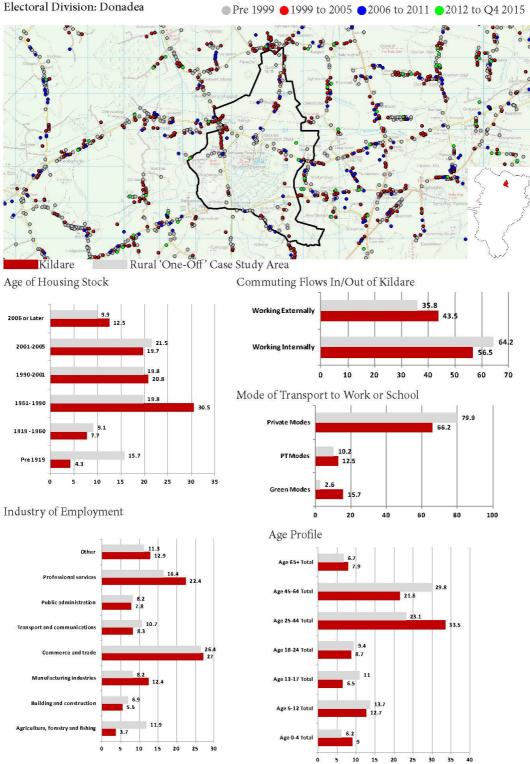
# Small Area: 87024002 - Total Population: 278, Housing Units 1998: 63, Housing Units 2015: 99Electoral Division: ChurchtownPre 1999 • 1999 to 2005 • 2006 to 2011 • 2012 to Q4 2015

10 15

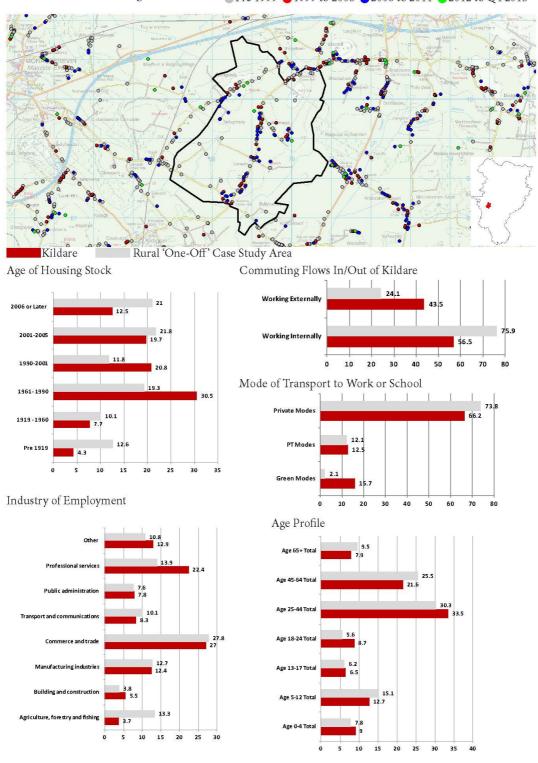
20 25 30 35



Small Area: 87025007 - Total Population: 349, Housing Units 1998: 77, Housing Units 2015: 127



Small Area: 87028002 - Total Population: 372, Housing Units 1998: 66, Housing Units 2015: 125 Electoral Division: Donadea



 Small Area: 87049001 - Total Population: 357, Housing Units 1998: 56, Housing Units 2015: 123

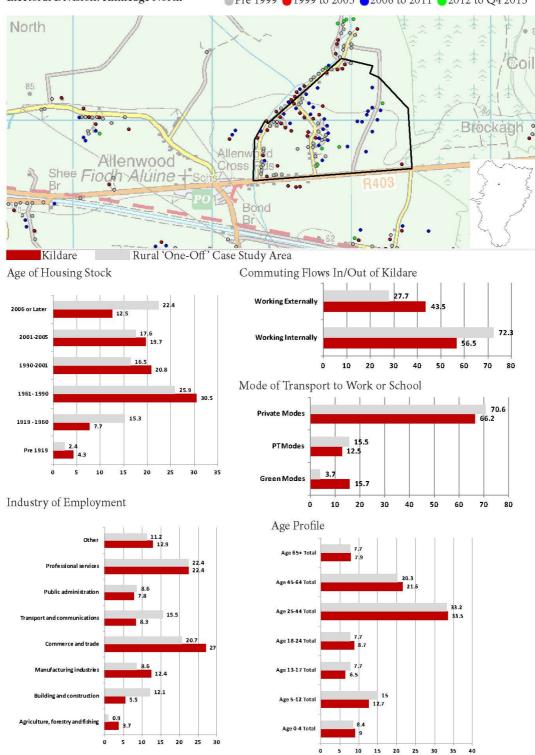
 Electoral Division: Kildangan

 Pre 1999

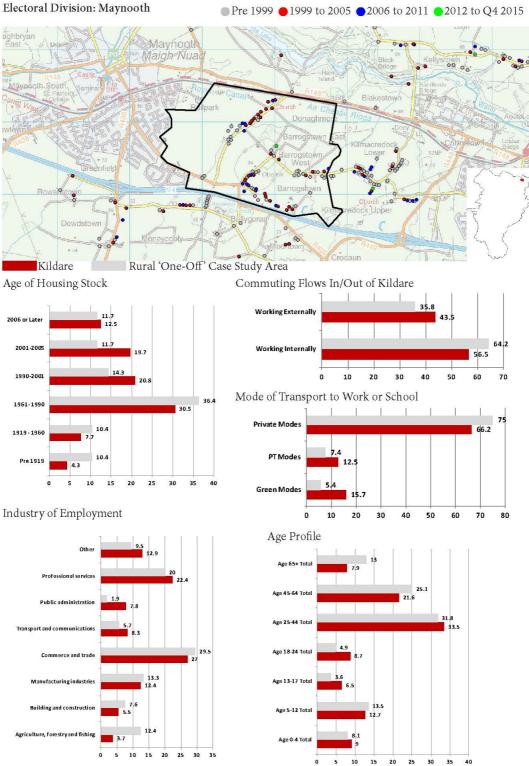
 Pre 1999

 1999 to 2005

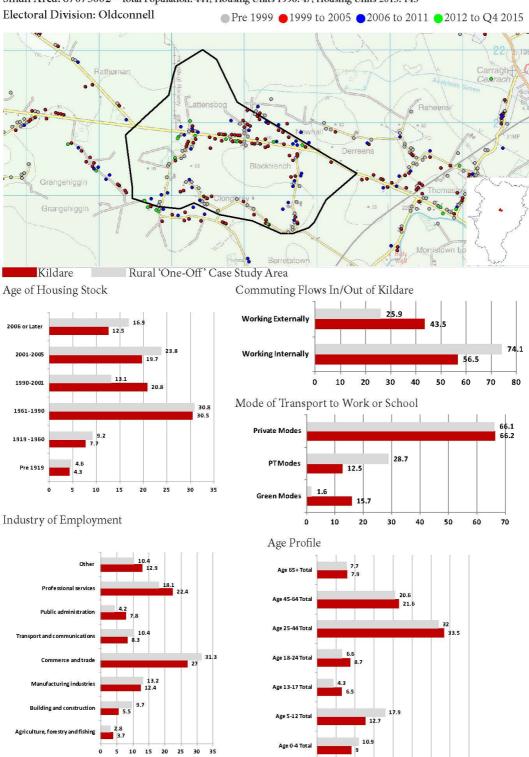
 2012 to Q4 2015



Small Area: 87055006 - Total Population: 286, Housing Units 1998: 31, Housing Units 2015: 87Electoral Division: Kilmeage NorthPre 1999 • 1999 to 2005 • 2006 to 2011 • 2012 to Q4 2015



Small Area: 87066036 - Total Population: 369, Housing Units 1998: 37, Housing Units 2015: 79 Electoral Division: Maynooth



## Small Area: 87075002 - Total Population: 441, Housing Units 1998: 47, Housing Units 2015: 145