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**RURAL SETTLEMENT PATTERNS AND
ACCESS TO DEVELOPMENT LAND:
DEVELOPING THE EVIDENCE BASE**

Prepared for
Friends of the Earth Northern Ireland

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1. INTRODUCTION

The publication of PPS14 (“Sustainable Development in the Countryside”) in March 2006 has stimulated a heated debate over the future of Northern Ireland’s rural areas. The debate over this policy has focused on the need for environmental protection and sustainability on the one hand and the impact development restrictions will have on rural communities on the other. The controversial nature of the policy is reflected in the fact that it has been subject to legal challenge¹, resulting in the policy being re-issued by the Department of the Environment², and subsequent to this, the Minister for the Environment announced that she would lead a review of the policy. In setting out her objectives of the review, the Minister stated that:

“I and my Executive colleagues wish to develop a policy based on the principles of sustainability that strikes a balance between the need to protect our countryside from unnecessary development, but that supports and allows our rural communities to flourish, socially and economically.”³

It is the balance between environmental protection and the needs of the rural community that is central to this debate. However, while there is some comparative evidence relating to the impact of dispersed housing on the environment and on the cost of rural services, there is little to support the many claims that PPS14 would have an impact on the nature of rural communities, such as breaking up family networks, threatening services such as small schools and undermining the strong sense of belonging or attachment to a local area.

There is no easy way to measure many of these issues, but a critical test is how the distribution of development land under PPS14 would restrict localised supply of housing, with consequences for social networks and the local economy. This report aims to provide important evidence for this debate. It provides an analysis of the proportion of Northern Ireland’s land area and population that lies within given distances and/or travel times of existing settlement development limits. Given that local development plans provide for the development of housing and other activities within settlement development limits, this therefore allows an assessment of whether there are any areas in Northern Ireland where housing will become relatively inaccessible under PPS14.

The rest of the paper is divided into three sections. The first explains the methodology that has been used in this analysis, the second explains the findings of the research, while a final section points to the implications this has for policy for housing in the countryside in Northern Ireland.

2. METHODOLOGY

The key objective in this analysis is to identify what proportion of Northern Ireland’s land area and population (in 2001) are within given walking and travel distances from the existing settlement development limits. It is aimed to have two outputs: land areas and population number, with walking distance and travel distances as the two criteria. Broadly similar methods of spatial analysis have been applied for both criteria using ArcGIS 9.2 software, with the travel-based output supplemented with additional travel data and analysis.

The walking distance has been measured in terms of aerial distance from the edge to the development limits. Two arbitrary distance levels have been used: 0-0.5 mile; and 0.5-1.0 mile. The basis for this assumption is that the average walking speed is about 2 mph and 30 minutes is a reasonable walk for most people. The land area within these distance limits has been calculated

¹ Omagh District Council, Re Judicial Review [2007] NIQB 61 (25 October 2007)

² Foster, A. (2007) *Rural Planning Policy and PPS 14: A Statement by Arlene Foster Minister of the Environment*, DoE, Belfast. 25 October 2007

³ DoENI (2008) *Findings emerging from the Review of Draft PPS14*, DoENI, Belfast.

using standard spatial analysis techniques, such as *Buffer*, *Union*, *Subtract* and *Merge* within ArcGIS. The basic data set is the development limits GIS file, which has been obtained from the Planning Service (see Table 1). Two buffers (corresponding to the above two distance levels) around the existing development limits have been generated first. Initially, the buffer areas overlap with various potential development constraints. In the next step three kinds of development constraints have been subtracted from the buffer areas. These are: water bodies, vegetation cover and land with elevation above 250m. The assumption here is that these are critical natural features and deserve to remain uninhabitable. The relevant data sets have been collected from the Ordnance Survey Northern Ireland (OSNI). The resulting buffer area represents the land area within up to 1 mile walking distance from the edge of the existing development limits.

The travel-based output has been produced using two sub-criteria: travel distance and travel time. This is to reflect the two common aspects (distance and time) associated with travel behaviour. In each case three arbitrary values have been applied. Measured from the centre of the existing development limits, these are:

- for travel distance: 0-2; 2-3; and 3-5 miles;
- for travel time: 0-5; 5-8; and 8-10 minutes.

Road network and average travel speed by travel modes are the critical data sets for these analyses. The road network has been obtained from OSNI sources, and data on travel speed has been compiled from two other sources (see Table 1). There has been some additional data generation and assembly, such as the generation of centroids of existing development limits, and to connect them to the transport network. It should be recognised that the use of centroids as the origin of travel can create unrealistic results especially when the development limits are very large, such as Belfast or L/Derry. To avoid this issue, for urban areas with 2001 population 20,000+, a multiple origins approach has been followed, with a series of centroids created from the associated Ward boundaries. Finally, the *network analyst* tool of ArcGIS has been applied to generate the area within the above travel values. The development constraints similar to walking distance have then been considered before estimating the relevant land area. No one way traffic has been considered, which may be considered as a potential limitation of the analysis.

Table 1: Data requirement and sources

SI No.	Data items	Source
1	Administrative boundaries, contours, water, vegetation, transportation network and settlement	OSNI
2	Development limits	Planning Service ⁴
3	Average travel speed (except railway)	Department of Health, Social Services and Public Safety ⁵
4	Average rail speed	NI Railways, 2004 ⁶

The calculation of the population figure within the land areas designated above is based on the Output Area (OA) of the 2001 population survey obtained from the Northern Ireland Statistics and Research Agency (NISRA). However, OA boundaries do not match either with the boundaries of

⁴ The Planning Service does not accept liability for any loss incurred or damage to any person or property caused as a result of any inaccuracy in their data.

⁵ Department of Health, Social Services and Public Safety. Unspecified. Average travel speeds in Northern Ireland. Project support analysis branch. Available at <http://www.dhsspsni.gov.uk/paperspeeds.pdf>. Last accessed 17th April 2008.

⁶ Northern Ireland Railways (NIRailways). 2004. Northern Ireland Railways: Strategic Reviews. Dublin: Booz Allen Hamilton Ltd. Available at <http://www.ulsterbus.co.uk/resources/pdfs/NorthernIrelandRailwaysStrategicReviewFinalMainReportMay2004.pdf>, last accessed 17th April 2008.

settlement development limits or the area generated through the analysis described above. To overcome this, a population-density based approach has been followed. It is assumed that at the OA level the population density is uniform, except for water bodies and land with elevation above 250m where it is assumed there is no population. With this generalization and adjustment, the population figure within the above designated areas have been calculated using a combination of *Union* and *Spatial Selection* tools in ArcGIS. The results are summarized the next section.

3. KEY FINDINGS

This analysis provides three sets of data;

- The area and population of Northern Ireland located within walking distance (i.e. up to one mile of the established settlement limits), shown in table 2 and map 1 (available on request).
- The area and population of Northern Ireland located up to 5 miles driving distance of the established settlement limits, shown in table 3 and map 2 (available on request).
- The area and population of Northern Ireland located up to 10 minutes travel time of the established settlement limits, shown in table 4 and map 3 (available on request).

A detailed breakdown of the findings are provided in the Appendix.

Table 2: Walking Distance: This table shows how much of Northern Ireland’s land area and population live within walking distance of the edge of existing settlements with capacity for new housing.

Distance settlements	%age of land area	%age of rural population
Within ½ mile	24%	33%
Within 1 mile	52%	60%

Table 3: Driving Distance: This table shows how much of Northern Ireland’s land area and population live within up to 5 miles travel distance by road from the centre of existing settlements.

Distance from settlements	%age of land area	%age of rural population
Within 2 miles	60%	65%
Within 3 miles	75%	87%
Within 5 miles	97%	97%

Table 4: Travel Time: This table shows how much of Northern Ireland’s land area and population live within up 10 minutes travel time from the centre of existing settlements.

Travel time from settlements	%age of land area	%age of rural population
Within 5 minutes	78%	82%
Within 8 minutes	95%	95%
Within 10 minutes	98%	98%

This conclusively indicates that virtually all Northern Ireland lies within close proximity to land available for development for housing and that there are only a very few areas, the most remote, such as the Mourne and the Sperrins where this lies more than 10 minutes driving time. Indeed, most (60%) of people live within short walking distance of a settlement, or 5 minutes drive (82%). Given the average distances people now spend travelling to work or to shop, it is possible to suggest that most people would regard a 10 minute drive as being extremely local.

These findings lead to the suggestion that the Minister's aim to strike a balance between the protection of the countryside by restricting housing development to within settlement limits, and allowing rural communities to flourish, socially and economically, can be achieved using the approach suggested in PPS14. Indeed, if it is assumed that people are willing to travel up to 10 minutes to avail of rural services, meet family and friends etc, it suggests that there is no conflict between flourishing rural communities and the presumption against development suggested in PPS14.

Indeed, this underlines the simplified notions of a rural community that is often used in such policy debates. The data clearly highlights a close inter-relationship of the open countryside with the villages, towns and cities of Northern Ireland, rather than a strong polarised division between "rural" and "urban". Although such concepts may have cultural significance, in functional terms taking into account, transport, rural services and the economy, it is more appropriate to consider Northern Ireland as a single dispersed settlement pattern of differing densities, and to plan for this accordingly.

While it is recognised that this has applied a relatively simplistic analysis to the issue of rural planning, it is nevertheless highly enlightening for the PPS14 debate. This clearly highlights the value of an evidence base to research and it is suggested that an even more robust policy for housing in the countryside could be developed with a more detailed spatial analysis of Northern Ireland's rural communities, as well as further research into the impacts of different development scenarios in terms of carbon footprint, cost of rural services, effect on the rural economic activity and water quality.

4. CONCLUSION

This analysis suggests that there is little basis in the claim that PPS14 will undermine the social and economic structure of Northern Ireland's rural areas, on the assumption that 98% of the land area and 98% of the population are located within a 10 minute drive of land available for development for housing. This suggests that through adoption of the current draft PPS14, the Minister can uphold the principles of sustainability by both protecting the countryside from unnecessary development while not constraining the social and economic development of Northern Ireland's rural communities.

The debate over PPS14 has exhibited much passion, but has been based on a fragile evidence base. The findings of this simple analysis illuminate the weaknesses over some of the claims made within this debate. In particular, the argument that PPS14 would devastate rural communities and result in housing shortages with local communities cannot be sustained. In the absence of robust evidence to the contrary, this analysis suggests that the current draft PPS14 offers the most sustainable future for rural Northern Ireland.

APPENDIX:
DETAILED STATISTICAL FINDINGS

Table A1: Area within up to 1 mile aerial distance from the edge of the existing development limits

Aerial distance from the edge of development limits (miles)	Gross land area outside existing development limit (A, acre)	Ratio of A to total NI land area (%)	Gross land area excluding water, vegetation and land over 250m (B, acre)	Ratio of B to total NI land area excluding water, vegetation and land above 250m (%)
0-0.5	669,937.71	20.06	638,624.52	23.65
0.5-1.0	815,912.32	24.43	757,681.91	28.06
Total	1,485,850.03	44.49	1,396,306.43	51.71

Table A2: 2001 population within up to 1 mile aerial distance from the edge of the existing development limits

Distance from the edge of development limits (miles)	Gross land area outside existing development limit (A, acre)	2001 Population in A (B, no.)	Ratio of B to the total NI population in 2001 who live outside the development limits (%)
0-0.5	669,937.71	343,975	33.25
0.5-1.0	815,912.32	275,820	26.66
Total	1,485,850.03	619,795	59.91

Table B1: Area within up to 5 miles travel distance from the centre of existing development limits

Travel distance from the centre of existing development limits (miles)	Gross land area outside existing development limit (A, acre)	Ratio of A to total NI land area (%)	Gross land area excluding water, vegetation and land over 250m (B, acre)	Ratio of B to total NI land area excluding water, vegetation and land above 250m (%)
0-2	1,725,433.09	51.66	1,631,308.18	60.40
2-3	771,803.87	23.11	673,821.64	24.95
3-5	541,515.29	16.21	321,774.36	11.91
Total	3,038,752.25	90.99	2,626,904.18	97.27

Table B2: 2001 population outside the existing development limits but within up to 5 miles travel distance from the centre of the existing development limits

Travel distance from the centre of existing development limits (miles)	Gross land area outside existing development limit (A, acre)	2001 Population in A (B, no.)	Ratio of B to the total NI population in 2001 who live outside the development limits (%)
0-2	1,725,433.09	68,7000	66.41
2-3	771,803.87	216,383	20.92
3-5	541,515.29	99,140	9.58
Total	3,038,752.25	1,002,523	96.91

Table C1: Area within up to 10 minutes travel time from the centre of existing development limits

Travel time from the centre of existing development limits (minutes)	Gross land area outside existing development limit (A, acre)	Ratio of A to total NI land area (%)	Gross land area excluding water, vegetation and land over 250m (B, acre)	Ratio of B to total NI land area excluding water, vegetation and land above 250m (%)
0-5	2,285,727.38	68.44	2,115,721.35	78.34
5-8	671,620.16	20.11	462,690.09	17.13
8-10	158,963.95	4.76	58,636.69	2.17
Total	3,116,311.49	93.31	2,637,048.13	97.65

Table C2: 2001 population outside the existing development limits but within up to 10 minutes travel time from the centre of the existing development limits

Travel time from the centre of existing development limits (minutes)	Gross land area outside existing development limit (A, acre)	2001 Population in A (B, no.)	Ratio of B to the total NI population in 2001 who live outside the development limits (%)
0-5	2,285,727.38	846913	81.86
5-8	671,620.16	142760	13.80
8-10	158,963.95	19458	1.88
Total	3,116,311.49	1,009,131	97.55