

Delivering solutions for the Department of Education and Science



Primary Schools in the Louth area

“ Due to the success of the initial project with ESRI Ireland we have recently taken a decision to commission a Web GIS solution for the dissemination of GI data throughout the whole department.”

Richard Dolan, Assistant Principal Officer, Department of Education & Science.

The forward planning team, who were tasked with undertaking this analysis using the GIS attended an Education & Learning Program consisting of desktop training on-site (ArcGIS Desktop Levels 1 and 2) as well as a detailed on-site knowledge transfer session to ensure there was complete understanding of the processes involved. This appealed greatly to the DES, as it provided ownership of the various workflows to the internal staff. Once deployment of the solution was completed, the Department had the autonomy to undertake this work for themselves in the future.

The Benefits

The development and introduction of the Geographic Information System (GIS) has greatly improved the capacity of the Department to identify the location and quantity of new school accommodation needed to cater for population changes and to better inform the decision making processes for the school building programme.

The GIS allows detailed analysis to be conducted on the demographics of each part of the country utilising data such as planned and recent housing developments, school enrolment trends, census information, as well as birth rates and child benefit statistics. This facilitates the modelling of a range of forecast scenarios for each area for the coming years and the likely changes to the school going population in those areas, to predict the level of school provision that will be required in an area.

Utilising the GIS, the Forward Planning Unit Planning & Building Unit has carried out a study of the country to identify the areas where, due to demographic changes, there may be a requirement for significant additional school provision at both primary and post-primary levels over the coming years. This was the department's first use of GI Technology for forward planning, but the benefits of GI are now being recognised and filtering out into other sections. ESRI Ireland is currently developing a Web Map Viewer using ArcGIS Server to disseminate the geographic and attribute outputs throughout the DES. The Forward Planning

Unit now has the remit to identify the areas where significant additional accommodation will be required at primary and post-primary level in the future and is benefitting greatly by having this valuable information at its fingertips.

The Planning & Building Unit also works closely with local authorities in identifying where new schools are needed and in ensuring that they are delivered as quickly as possible.

‘During the installation of GIS ESRI Ireland provided excellent back up to us and we found that the training and knowledge transfer phase of the process were excellent in that thereafter we had the skills to operate the system ourselves. This was an essential element in that we need to be able to run demographic scenarios based on changing base data’ commented Richard Dolan, Assistant Principal Officer, Department of Education & Science, ‘...due to the success of the initial project with ESRI Ireland we have recently taken a decision to commission a Web GIS solution for the dissemination of GI data throughout the whole department’.

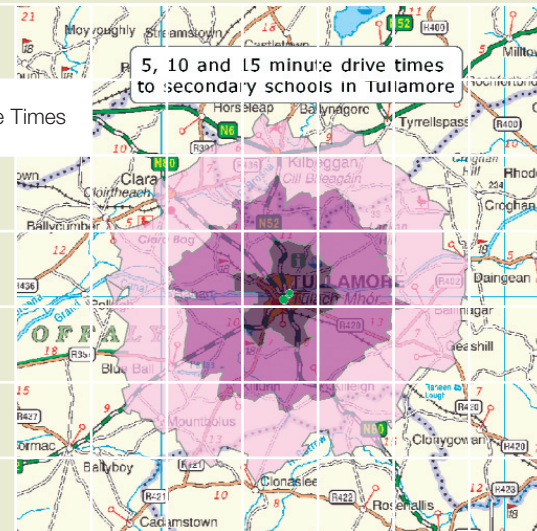


Visionary thinking delivered

Delivering services in Education

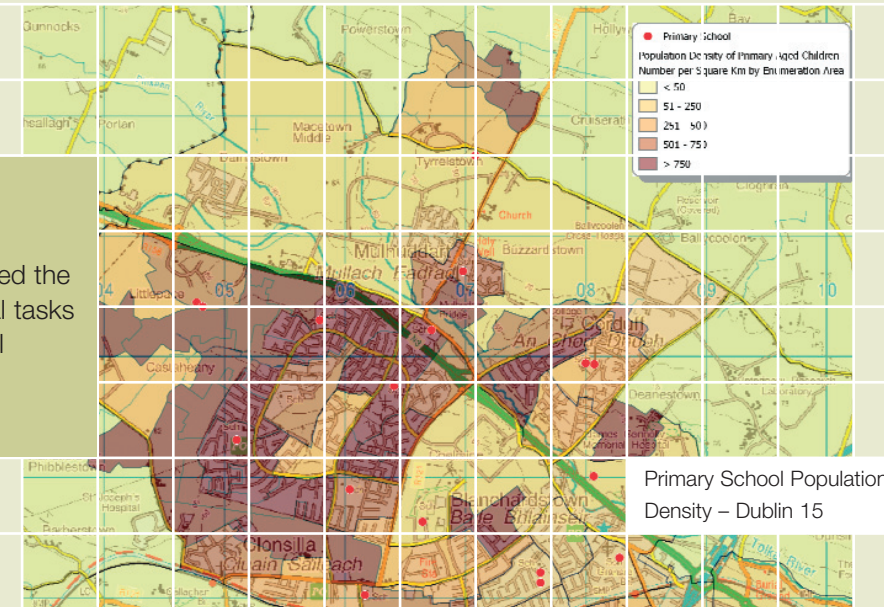
The Department is using GIS as a key tool in their decision making processes – to anticipate where new school places will be needed over the next 7 years.

Tullamore Secondary Schools - Drive Times



“The Department’s Mission – To provide high-quality education to (a) enable individuals to achieve their full potential and to participate fully as members of society; and (b) contribute to Ireland’s social, cultural and economic development. The Department’s Mission”

ESRI Ireland applied and was successful through open tender for the Design and Development of a GIS. The GIS has helped the Department in their day to day operational tasks & their approach to planning future school accommodation throughout the country.



The Client

The Department of Education & Science is a Public Sector Government Department. Its headquarters is located in Dublin with substantial offices in Tullamore and Athlone. It services the Irish school going population at all levels. The principal functions of the Department are outlined in its Mission Statement - 'To provide high-quality education to (a) enable individuals to achieve their full potential and to participate fully as members of society; and (b) contribute to Ireland's social, cultural and economic development'.

In pursuit of this mission, the Department has a number of high-level goals which include: the promotion of equity and inclusion, quality outcomes and lifelong learning; planning for education that is relevant to personal, social, cultural and economic needs; and enhancement of the capacity of the Department for service delivery, policy formulation, research and evaluation.

In support of these high-level goals, the Department is engaged in a wide range of activities covering the key elements of policy planning, quality assurance, resourcing, regulation and evaluation, as well as providing a broad range of support services for the education sector. The Planning and Building Unit within the Department for Education and Science is

responsible for providing the necessary education infrastructure to support the delivery of quality education at all levels. The Department must identify, quantify and prioritise the need for educational provision in order to deliver cost-effective, high quality accommodation to meet that need. Delivery depends on sustained and adequate capital allocations provided within a multi-annual framework.

It is in this context that the Planning and Building Unit of the Department of Education & Science (DES) sought to put in place a Geographic Information System (GIS).

The Problem

The latest publication by the Central Statistics Office (30 April 2008) on Population and Labour Force projections indicates that the population aged 5-12 years, corresponding to children of primary school-going age, is projected to increase by at least 10 per cent in the next decade. The annual total of births in Ireland has been increasing since 1995 and as a direct consequence enrolments at Primary level have been increasing since 2001/02 and are projected to continue increasing for the foreseeable future. The 2007 figure for births of 70,620 was the highest since 1982 and is approximately 30% higher than the figure for 2000. In fact the number of births in 2008 set a 113 year record (the highest

birth rate in Ireland since 1896 totalling 75,065 births).

This will have consequences for enrolments, initially in Junior Infant classes, in the future and meeting all of this heightened demand on schools presents a major challenge for the Department. A major issue highlighted by the Forward Planning Section within the Planning and Building Unit of the DES, was the absence of an accurate map of Ireland with the location of schools and regionalised demographic data linked to school feeder areas. Their task was to plan for future demographic growth and decline and to understand and predict where school places are and will be required.

The Challenge

The whole area of GIS was not well known nor had it ever been used before in any sections within the Department to analyse school accommodation needs. School locations had never been completely geo-coded. Furthermore there was limited knowledge of where and what demographic changes had taken place and where and by how much they were likely to change in the future. What was clear was the strategic objectives that the DES wanted to achieve by using GIS as a key tool in their decision making processes namely: to complete a spatial and demographic evaluation of potential

schools locations, to perform a location analysis concerning school accommodation; to find out the precise location of all existing school accommodation; to ascertain where potential gaps in current provision may arise based on relevant population data and the ability to analyse population data in the future. In this way the Department can make evidenced based decisions on where and when to build new schools and understand the resources required to service those schools in terms of school teachers etc.

The Solution

ESRI Ireland applied and was successful through open tender for the 'Design and Development of a Geographical Information System'. The GIS which displays the data spatially has helped them enormously in their day to day operational tasks and in their approach to planning future school accommodation throughout the country.

The Department is now using GIS to help anticipate where 100,000 new school places will need to be created over the next seven years. The GIS allows the Planning and Building Unit to use an up-to-date technical solution to help in planning the location of schools in the future. The thematic maps show where the most pressing demand for places are currently and will be in future years so that

the DES can more accurately plan for future accommodation needs based on identified and understood demographic trends.

All of the school locations have been geo-coded. The forward planning team within the DES now has easy access to on a national basis, the differing age cohorts of the school going population (ages 0-18) residing within each Electoral District and Enumeration Area as per the 2006 census; how many schools are within each of the Electoral District and Enumeration Areas; the total school enrolment for each school, the likely demand within each area and, most importantly, where there may be a surplus and deficit of school accommodation.

Further analysis is currently being undertaken on data from the General Register office (GRO) and the child benefit statistics by the forward planning team to ensure the DES understand gain a fuller understanding of the complete demographic picture in Ireland. This further ensures that the future of the school going population is catered for.

The Technology

Initially ESRI Ireland completed a consultancy task to map the schools and the demographic analysis of the school going population. All analysis was undertaken using ArcGIS desktop (ArcView) which is also the software that is now used on a daily basis by the forward planning team within the DES.

The GIS solution delivered by ESRI Ireland delivers the functionality to run demographic reports of the analysis undertaken. These reports are made available and utilised by the relevant senior management within the DES. Furthermore ArcGIS Desktop can produce datasets on an on-going basis as required that enable the tracking of the constant changes in local populations. In this way, the Department is able to feed relevant population and school-related information into the system and produce data illustrating the demographic profile for any given area as well as feeder areas of each school and the rate of population growth in their area. In addition, the Forward Planning Unit can now select any single location in Ireland (mainly schools) and using the Network Analyst extension for ArcGIS analyse a catchment area that follows the road network (not as the crow flies), the output is used by the DES in many areas including school transport.