

POLICE SERVICE OF NORTHERN IRELAND (PSNI)

Geographic Information Systems (GIS) As a Core Component of Emergency Planning

**“USING GIS WE CAN PROVIDE A FASTER AND
MORE EFFECTIVE EMERGENCY RESPONSE.”**

Chief Inspector Mike Baird, Head of Emergency Planning, PSNI

Producing Emergency Plans: Pre-Planning

It is impossible to predict when an emergency event will happen or how severe it will be. Our emergency services plan standard responses to crisis scenarios, but these responses cannot take into account the endless possibilities of the type, location and scale of the emergency.

The Emergency Planning Unit (EPU) is responsible for producing emergency plans for the PSNI. These plans ensure that the police can respond quickly and effectively to emergency incidents.

In this case study we will look at how the EPU's use of GIS to simulate different crisis scenarios brings a whole new level of sophistication, speed and accuracy to the emergency plans.

Producing Emergency Plans: The Challenges

While we can never know when a crisis will hit, we do know that accidents and emergency incidents will happen.

The EPU has criteria that determine what emergency plans are produced. The big challenge for those producing such plans is they must accurately predict the impact of an emergency on the public and on the environment. They do this by considering various factors, including:

- weather,
- wind direction,
- location in relation to transport links,
- location in relation to areas of dense population,
- proximity of emergency services, and
- other potential hazards.

Useful Terms

What is a Geographic Information System (GIS)?

GIS is a software information system that finds, analyses and displays geographical information. GIS tools visualise the layout of a location to aid the user in their decision making.

Northern Ireland Office Mapping Agreement (NIOMA)

NIOMA is a supply agreement between Ordnance Survey of Northern Ireland (OSNI) and the Northern Ireland Office (NIO). It provides NIO's core department, its Agencies and Non Departmental Bodies (NDPBs) with unrestricted access to eighteen Geographic Information (GI) products from OSNI.

**Producing Emergency Plans:
The GIS Solution**

Using GIS, the EPU can get a visual on the area of the emergency based on spatial data. Below is an extract from an emergency plan produced to deal with a chemical spill at a water treatment plant. It shows a simple OSNI map of the location of the plant and the surrounding area.



Figure 1 – Map of a water treatment plant in Co Antrim.

GIS enables EPU to consider the:

- extent of potential areas affected in differing scenarios, considering factors such as the severity of the emergency, weather, winds etc;
- potential local population evacuation;
- impact on Antrim Town and the International Airport by buffering distance zones away from potential problem areas;
- cordons, potential road closures and traffic disruption.

GIS analysis of elements such as road access, population density and health indicators helps users provide optimum locations for emergency service centres.

GIS network analysis pinpoints the best routes – such as the shortest and fastest – accessible for emergency service vehicles.

**Producing Emergency Plans:
Benefits of GIS**

Faster response

Pre-planned responses to an emergency situation will save time, which is vital to the success of the emergency services.

More effective response

Using current and accurate spatial data ensures that the PSNI produces the best possible plan of action to deal with an emergency scenario.

More control

We plan for emergencies in the knowledge that we can track and control each situation using our GI system.



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