GIS as a tool for Planning

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What is Planning?

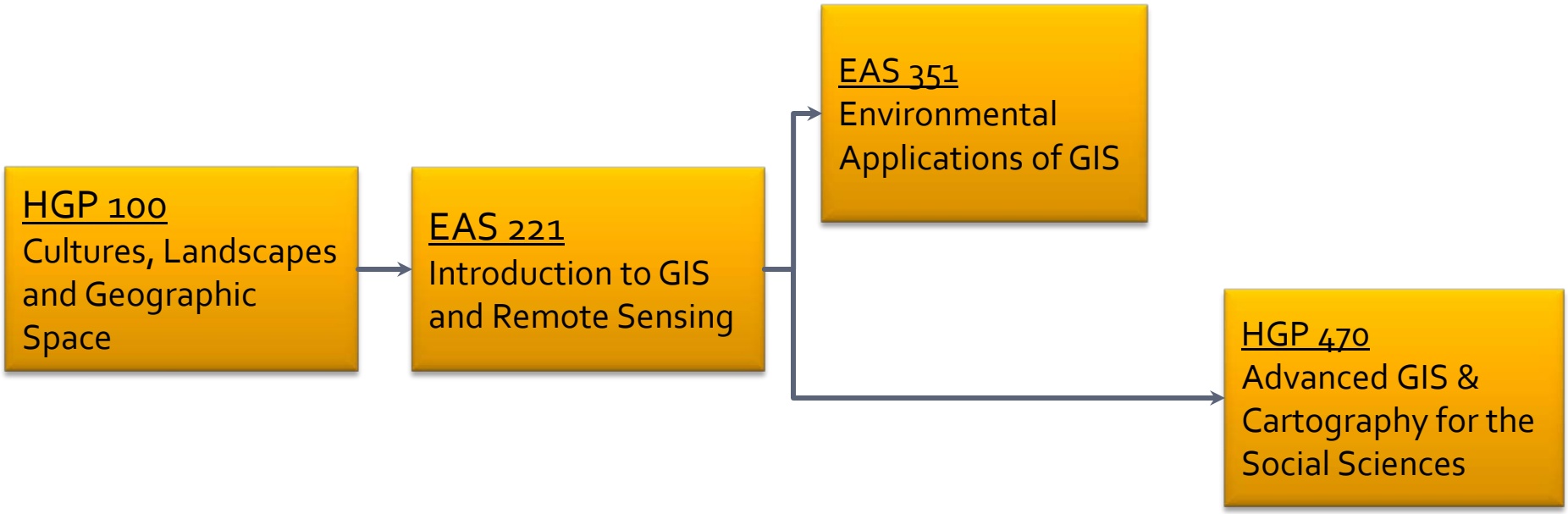
- *"Planning"* means the scientific, aesthetic, and orderly disposition of land, resources, facilities and services with a view to securing the physical, economic and social efficiency, health and well-being of urban and rural communities.

CANADIAN INSTITUTE OF PLANNERS

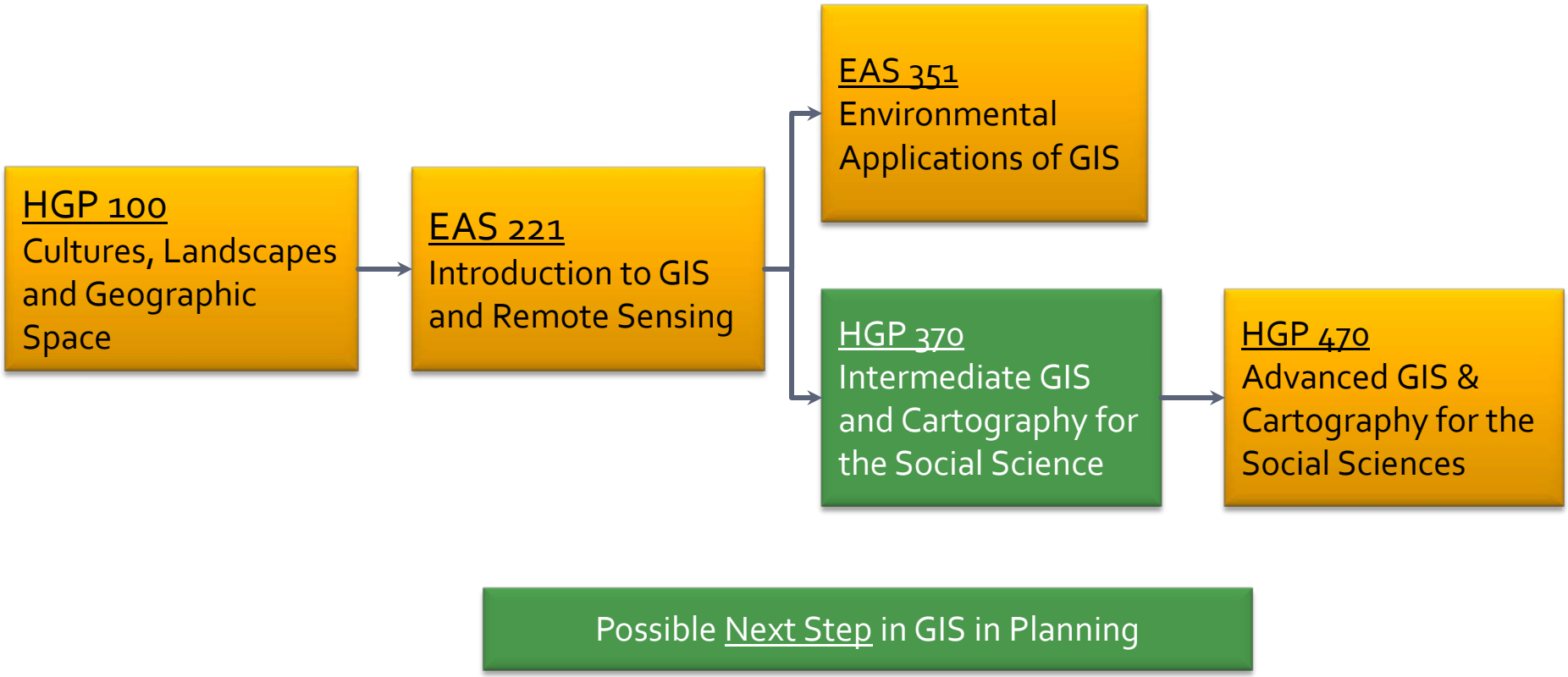
Planning at the U of A

- New Undergrad Program launched Sept 2012
- BA and BSc
- 21 Students this year, expanding to 45 next year and 60 the following year (enrollment is currently limited to 15 per year).
- Message from industry is that GIS skills are becoming increasingly important for Professional Planners

GIS in Planning Program



GIS in Planning Program



HGP 100

Cultures, Landscapes and Geographic Space

- Understand the basic properties of maps and how they show data.
- Appreciate the power of geography information systems.
- Know how population is distributed.
- Understand the concept of population density and overpopulation
- Understand the types and extent of migration.
- Identify and clarify primary economic activities.
- Etc.

EAS 221

Introduction to GIS and Remote Sensing

- Basic computing skills and introduction to ArcExplorer
- Introduction to ArcMap
- Map projections
- Spatial data collection
- Creating and manipulating geodatabases
- Spatial analysis

EAS 351
Environmental Applications of GIS

- Fundamentals of ARCINFO: Basic concepts related to ARCGIS.
- Building a Map from GPS coordinates.
- Water resources application. (DEM data structure and DEM Creation; Hydrological modeling)
- Integration of Raster GIS and phenology concepts. Regression analysis

HGP 470
Advanced GIS & Cartography for the Social Sciences

- Understand the difference between GIS as a tool and GIS as a science
  - Geovisualisation
  - The GeoWeb
  - Spatial Data Infrastructure
  - Public participation GIS
  - Managing GIS
  - Spatial multi-criteria decision analysis
  - Spatial decision support systems

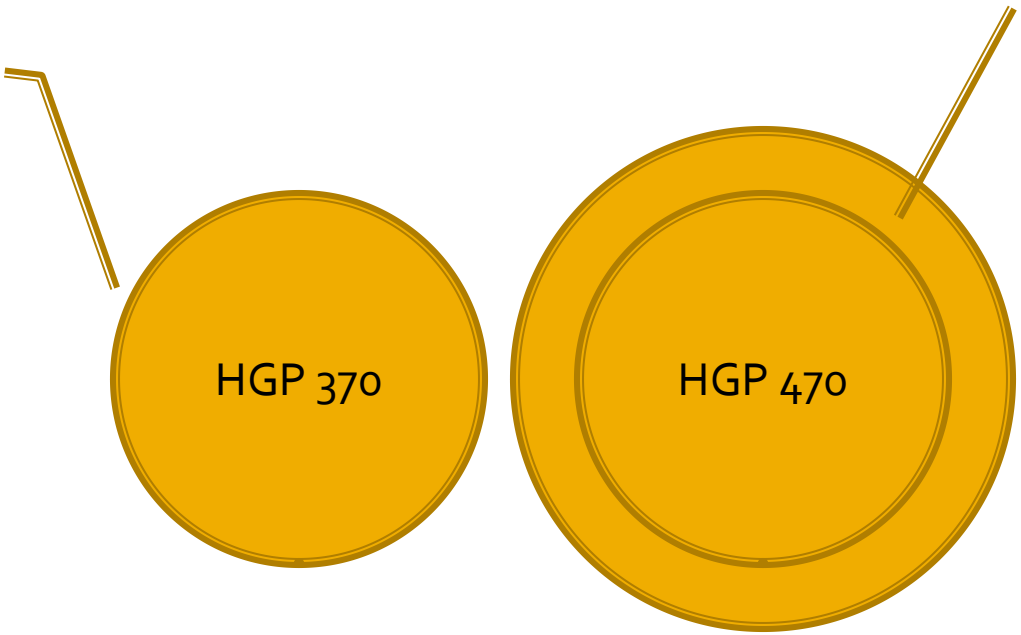
HGP 470
Advanced GIS & Cartography for the Social Sciences

- GIS in population analysis
- GIS in health geography
- GIS in land use planning
- GIS in environmental assessment (SEA)
- GIS in landscape assessment (Landscape strategy)

HGP 370

Intermediate GIS and Cartography for the Social Science

1. GIS in population analysis
2. GIS in urban growth analysis
3. GIS in environmental assessment
4. GIS in landscape assessment
5. …



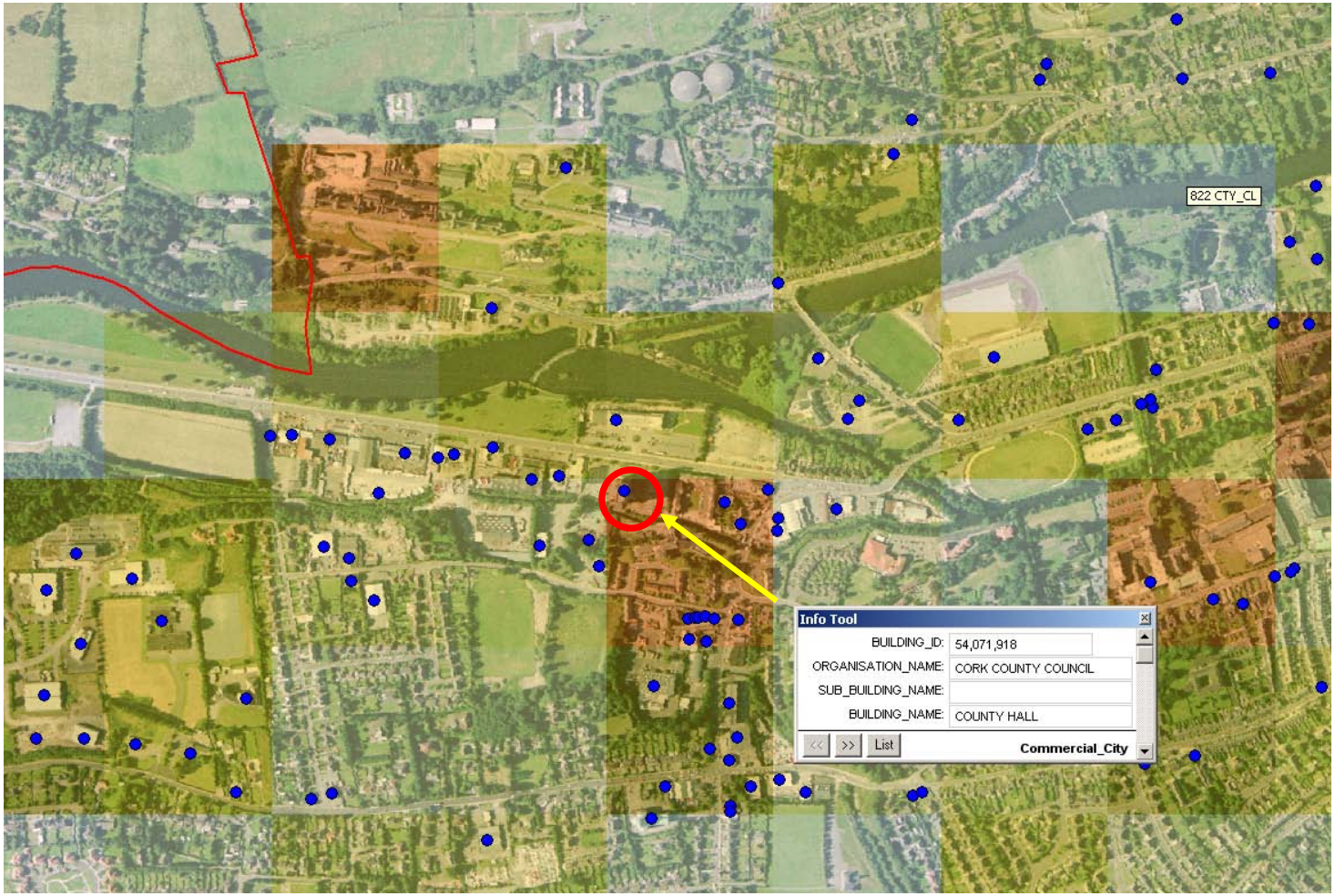
Multi-criteria analysis in Land Use Planning

Planning and Decision Support Systems

J.O'Looney, 2000, ESRI press

	HGP 370		HGP 470
	Inventory Application – *retrieving some basic information about location*	**Policy analysis applications –** *performing some analysis*	**Management/ policy-making applications –** *making a decision*
Economic development	Location of major businesses and their primary resource demands	Analysis of resource demand by potential local supplier	Informing businesses of availability of local suppliers
Housing	Inventory of housing stock age, condition, status (public, private, rental, etc.)	Analysis of public support for housing by geographic area	Planning for capital investment in housing based on population growth projections

ECONOMIC DEVELOPMENT



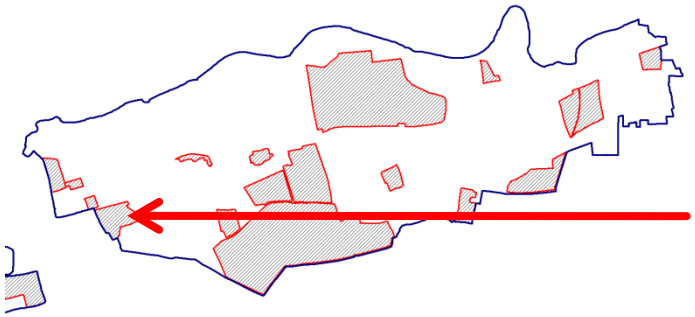
Inventory application
- jobs distribution

Policy analysis application
- jobs density graph

Decision making application
- balanced economic growth

HOUSING

Housing Land Availability Study dataset



Info Tool

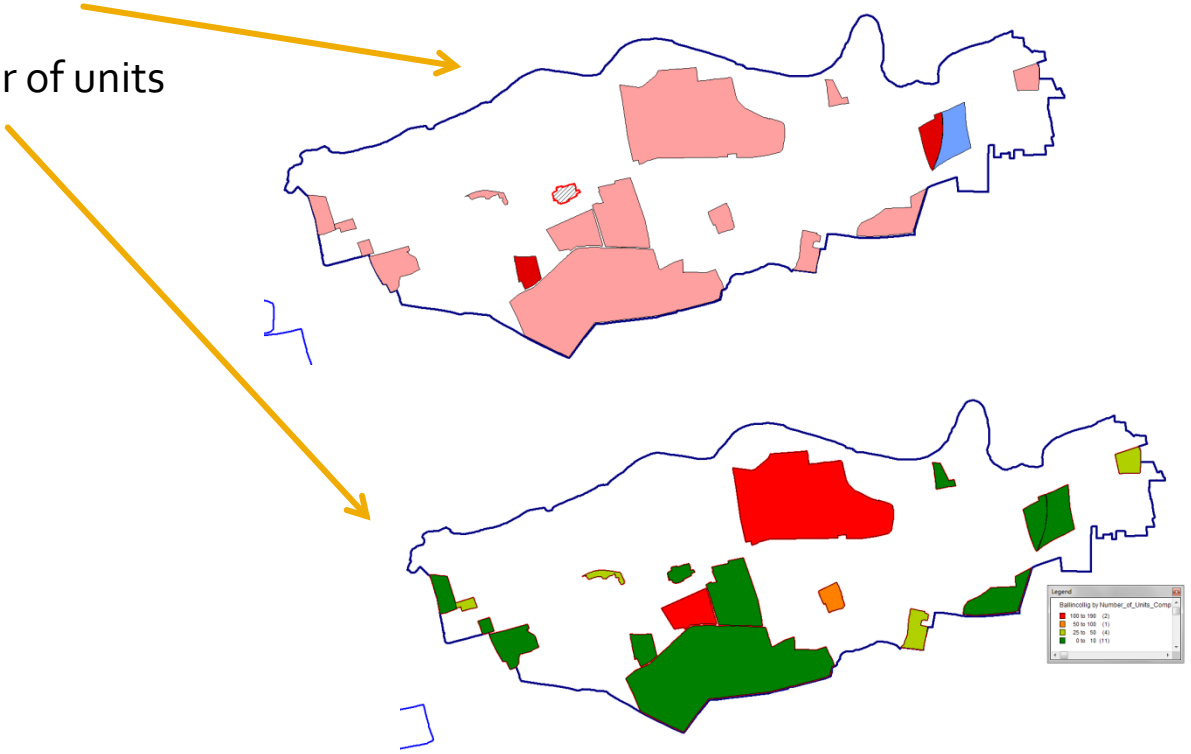
Zoning_ID:	234
ParcelId:	R-04
Settlement:	Ballincollig
AreaHa:	6.43
Easting:	-8.624563
Northing:	51.880361
Division:	South
Electoral_Area:	Carrigaline
LAP_SLAP:	Carrigaline Electoral Area Local Area Plan
Description_Of_Development:	Residential
Zoning_Status:	
Permission_Status:	Full
Key_Planning_Permission_Referen:	046300
Other_Permission_References:	F
Greenfield___Brownfield:	Greenfield
Ownership_Status:	Private
Gross_AreaHa:	6.43
Net_housing_Area:	6.43
Estimated_Density__DW_Ha_:	35
Permitted_Density__DW_Ha___full:	0
Estimated_Number_of_Units:	0
Permitted_Number_of_Units:	218
Total_Number_of_Units:	0
Number_of_Units_Completed:	0
Number_of_Units_Under_Construct:	0
Number_of_Units_not_started_but:	218
Estimated_number_of_units_on_re:	2
Road_Constraints:	F
Drinking_Water_Constraints:	F
Surface_Water_Constraints:	F
Waste_Water_Disposal_Constraint:	F
Number_of_Units_which_can_comme:	218
Number_of_Units_which_can_2:	2
Number_of_Units_which_can_3:	0
Number_of_Units_which_can_4:	0

<< >> List

Combined_Final_Cork_HLAS_Jan31

HOUSING

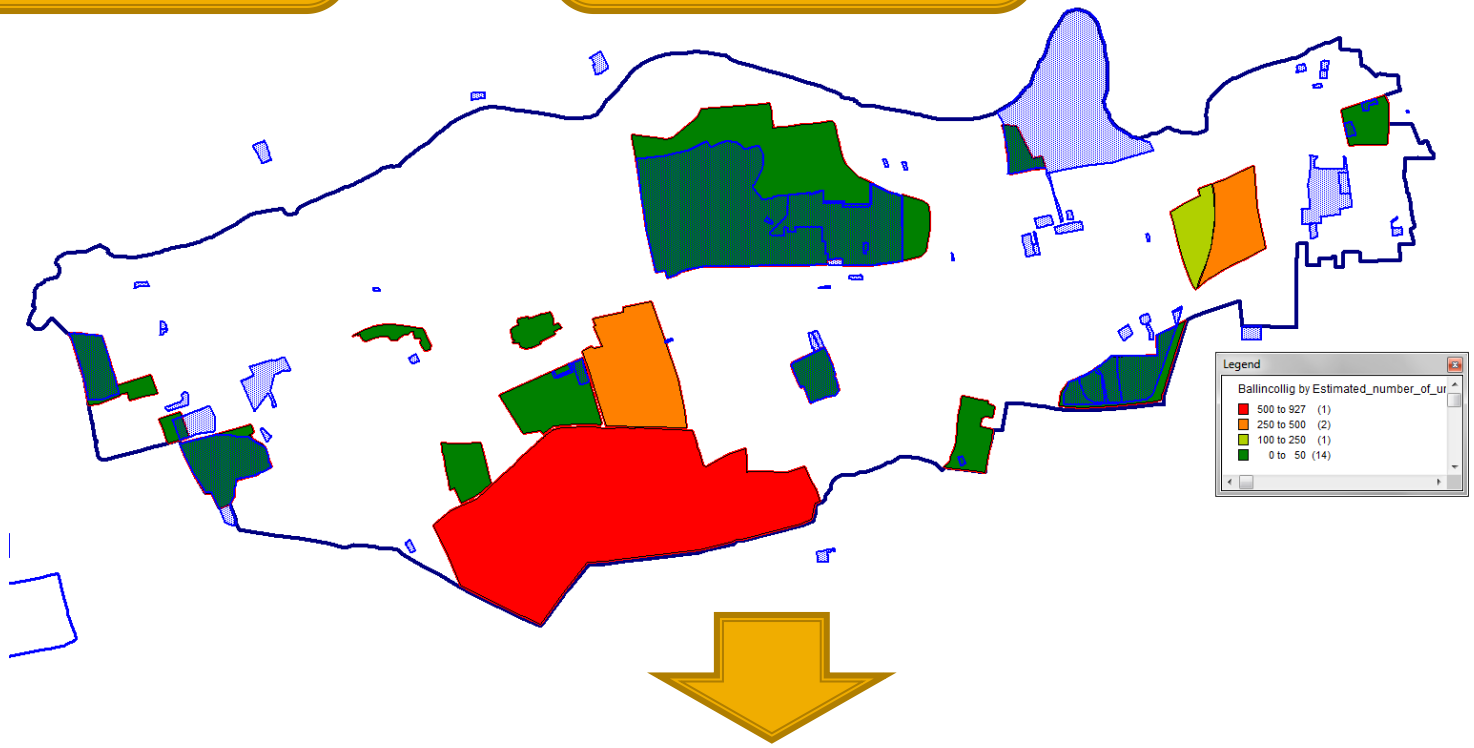
- Spatial analysis:
  - Select by attribute/select by location – to get data only for one settlement
  - Thematic mapping:
    - Ownership status
    - Completed number of units



HOUSING – LAND USE

Estimating number of units on remaining land

Granted planning applications for new residential units

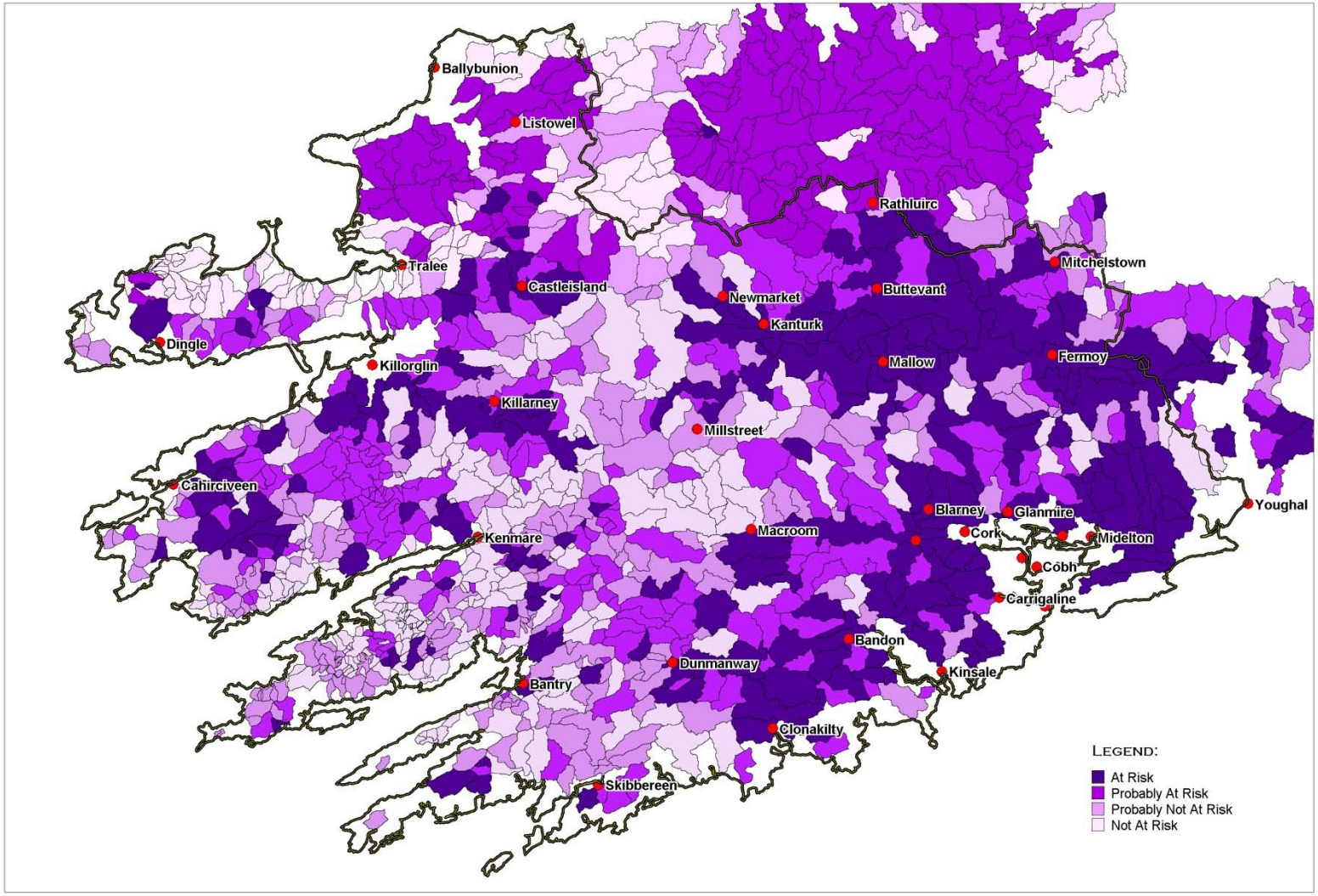


New Land Use Policy

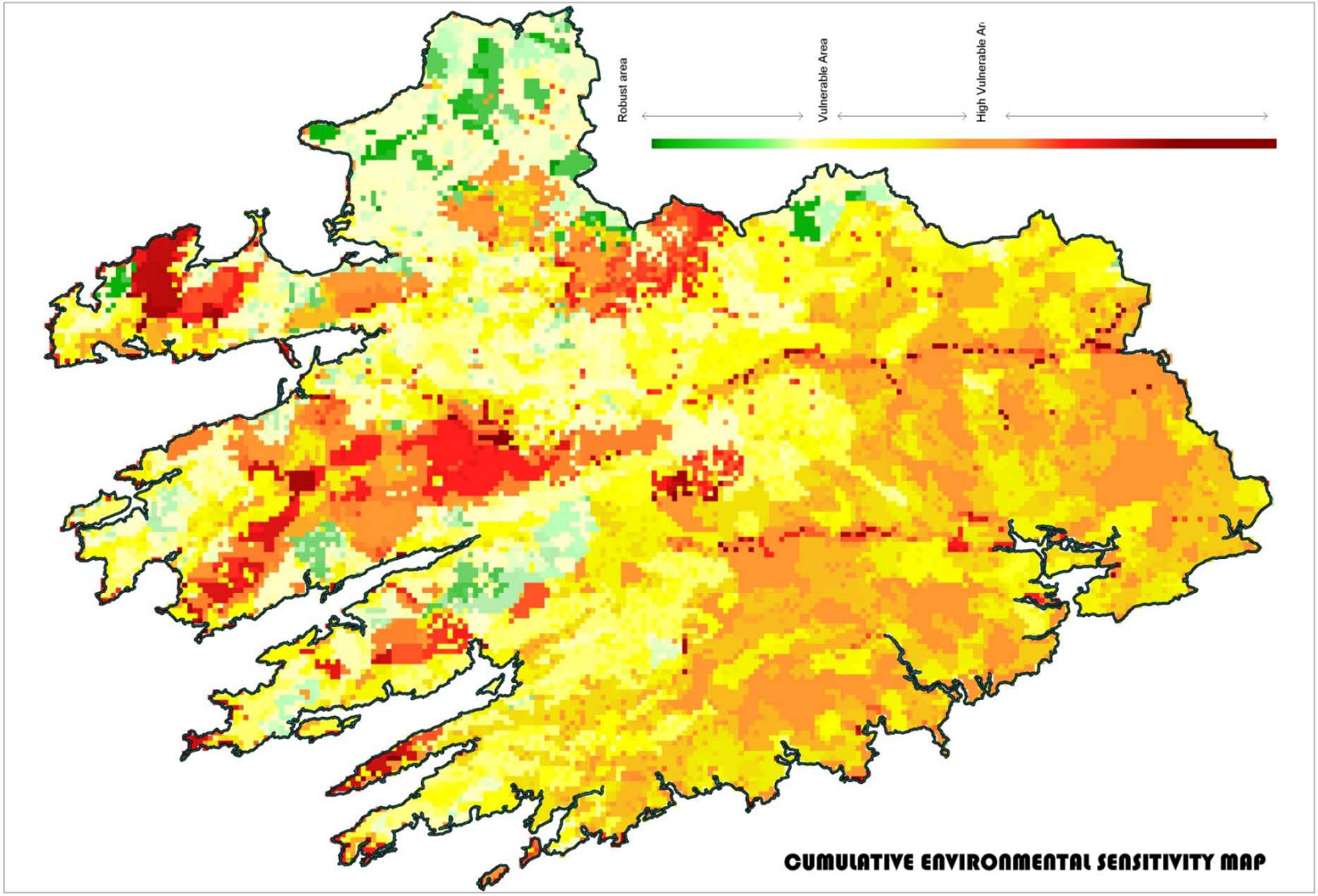
ENVIRONMENTAL ISSUES

	HGP 370		HGP 470
	Inventory Application – *retrieving some basic information about location*	**Policy analysis applications –** *performing some analysis*	**Management/ policy-making applications –** *making a decision*
EAS 351			
Environmental monitoring	Inventory of environmental hazards in relation to groundwater, coastal water, etc.	Analysis of spread rates and cumulative pollution levels	Modelling potential environmental harm to specific local areas
Emergency management	Location of key emergency exit routes	Analysis of potential effects of emergencies of various magnitudes on exit routes, traffic flows, etc.	Modelling effect of placing emergency facilities and response capacities in particular location

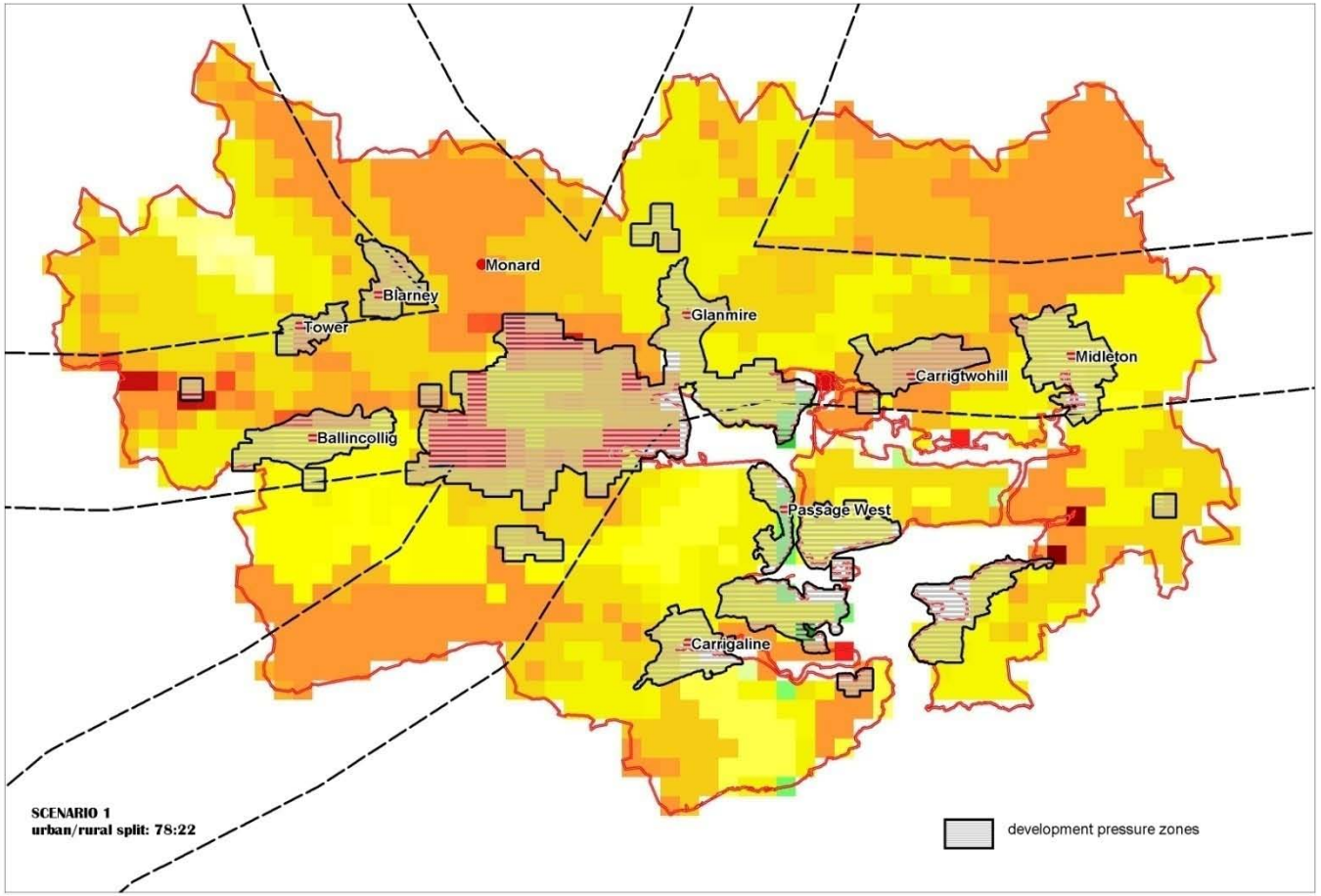
RIVER RISK ASSESSMENT



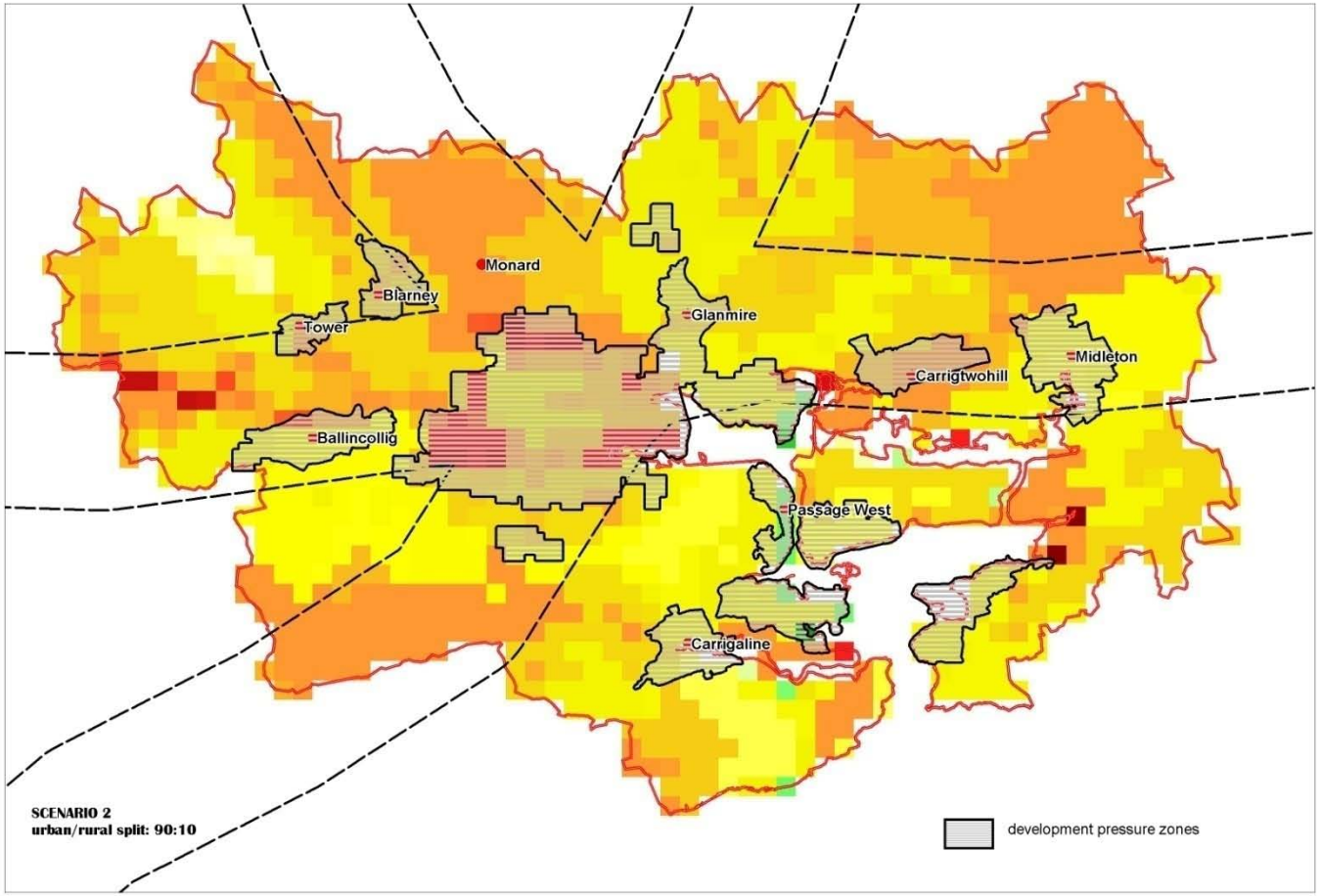
CUMULATIVE ENVIRONMENTAL SENSITIVITY MAP



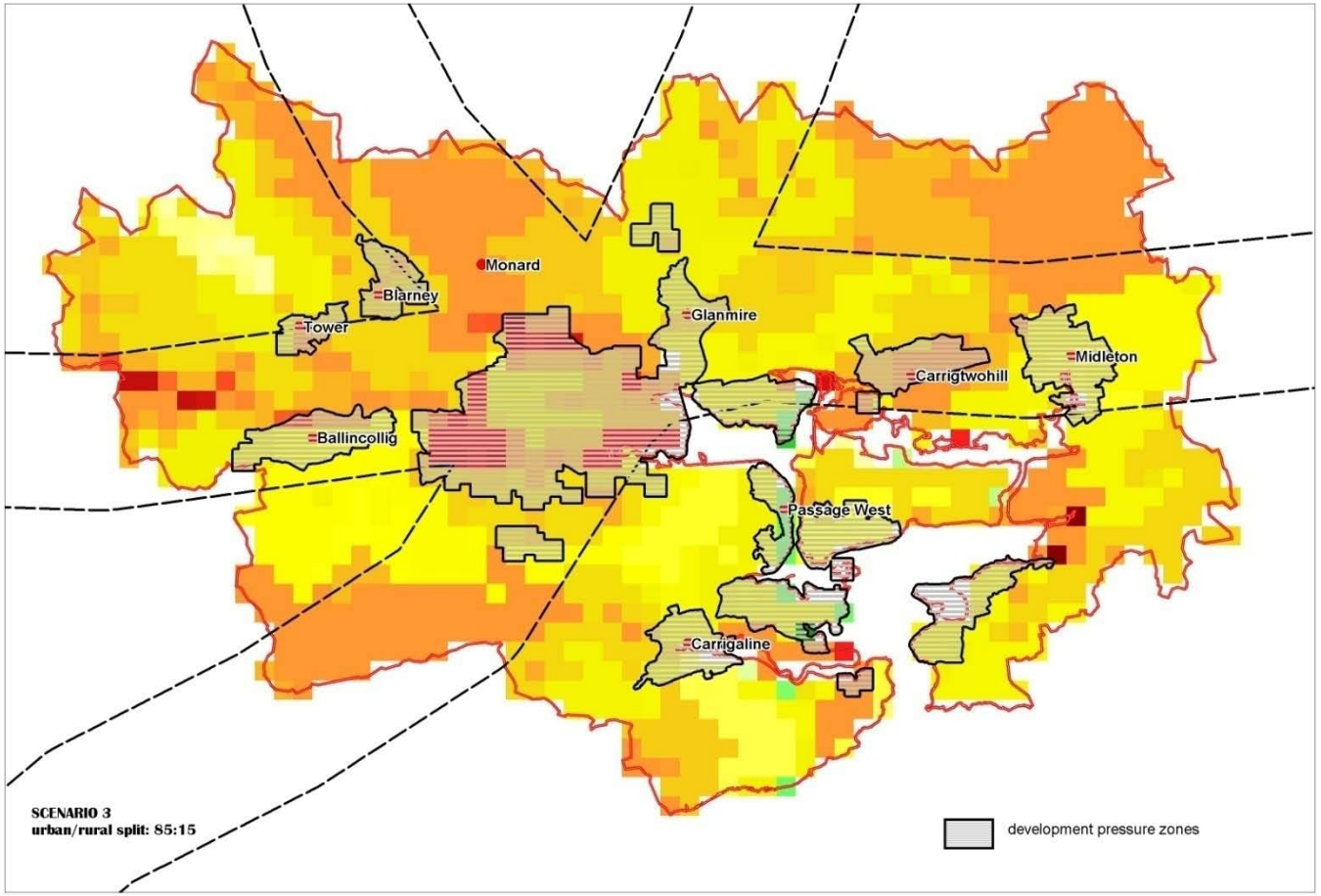
Scenario 1
"Continuation of Current Trends"



Scenario 2
"High Urban Growth"



Scenario 3
"Moderate Urban Growth"



Thank you!

"PLANNERS DO MORE THAN JUST BUILD CITIES" – and GIS helps them in that!