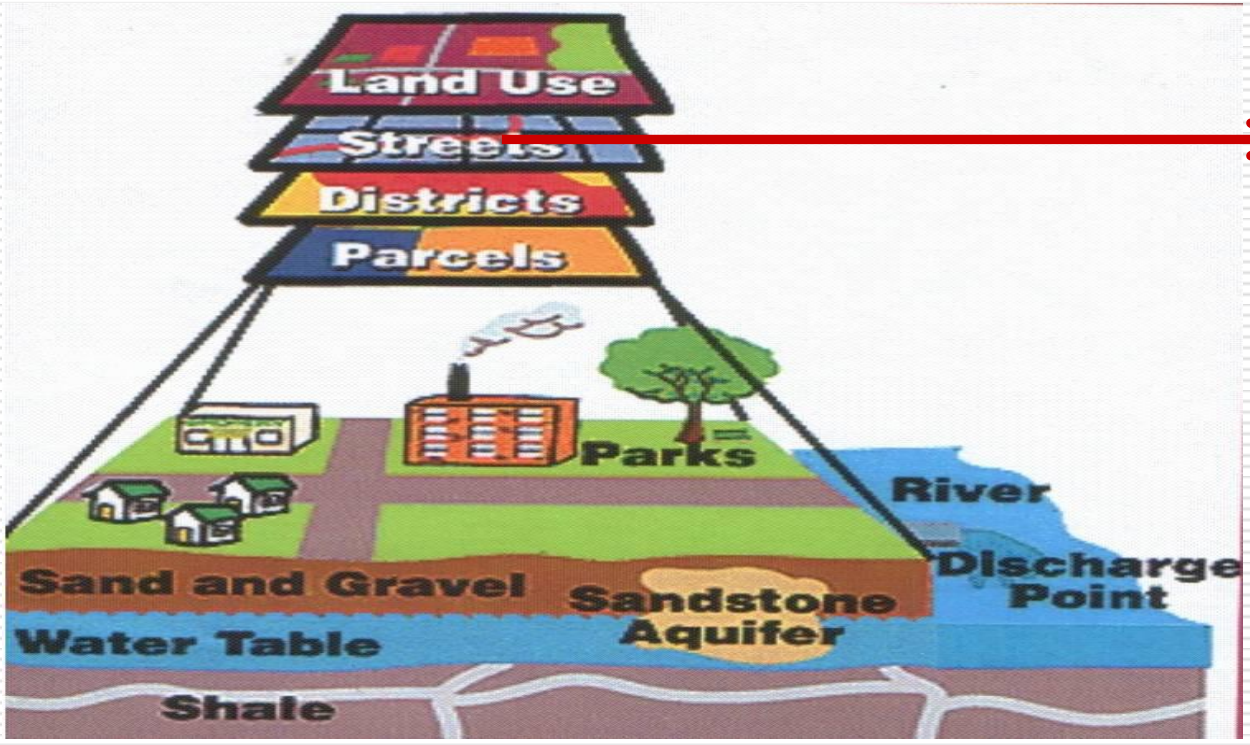
Developing the Real Walkable Network

Outline

- Background to GIS
- Why Develop a RWN?
- How was it created
- RWN v ROAD Centreline Network
- GIS Network Analyst
- Project Constraints
- Questions

Geographic Information Systems

A GIS works with layers of spatial data



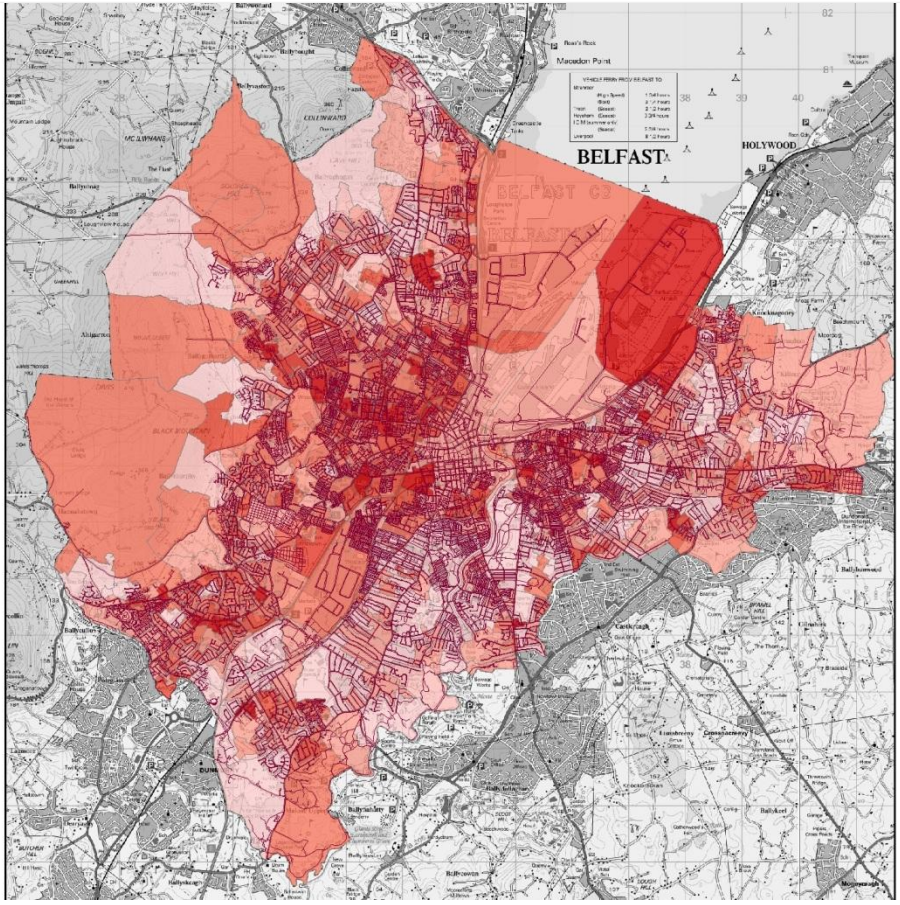
Real Walkable Network – all Footpaths within a City

Each layer is a representation of the Real World. Spatial analysis can provide new insights by combining different layers of data

Integrating Census and Socio Economic Data within a GIS model

GIS can integrate other additional data sources such as:

- Census Data
- Socio Economic Data
- Survey Response Data



Why develop a Real Walkable Network ?

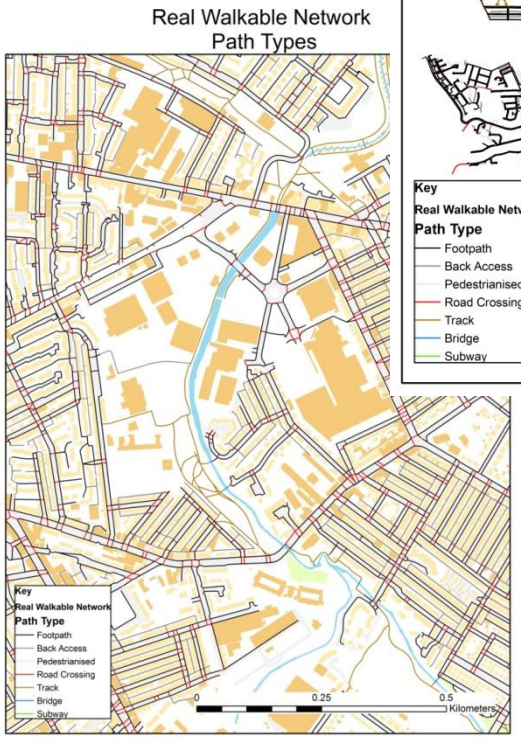
- Existing walkability models tend to use road centre lines - may fail to accurately measure connectivity
- RWN allows the modelling of pedestrian routes across the city
- Measures Walking Distances and Accessibility to any point or facility.
- Can be used for many types of Spatial Analysis

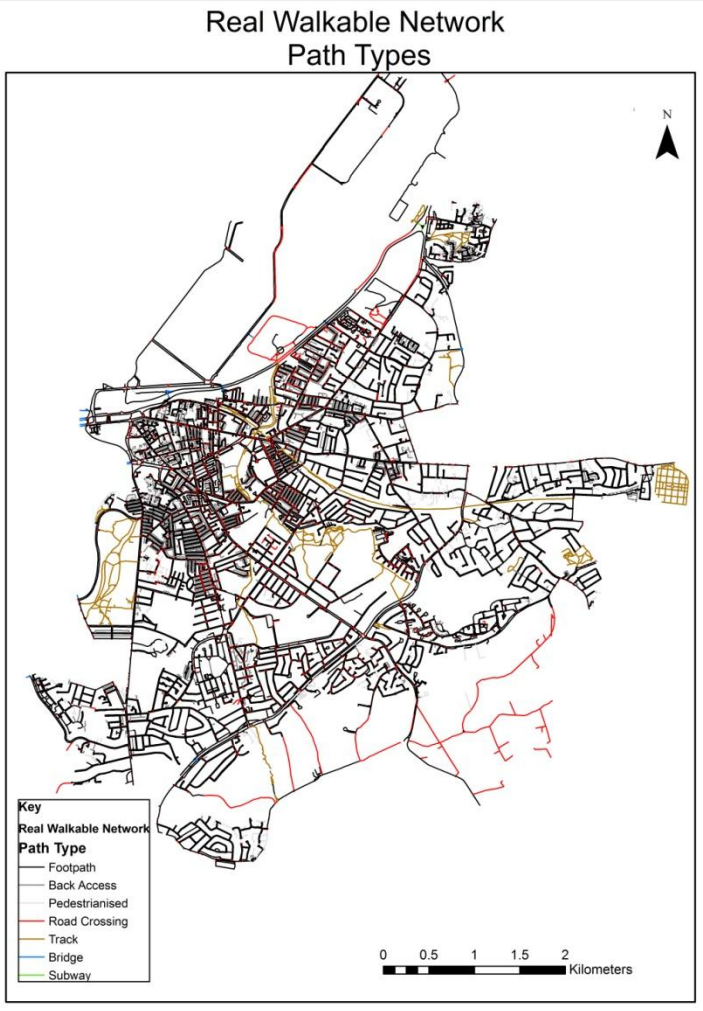
Real Walkable Network-

Key difference is that this is a pedestrian based network, not one which is car orientated

All elements of the RWN classified into 7 distinct classes

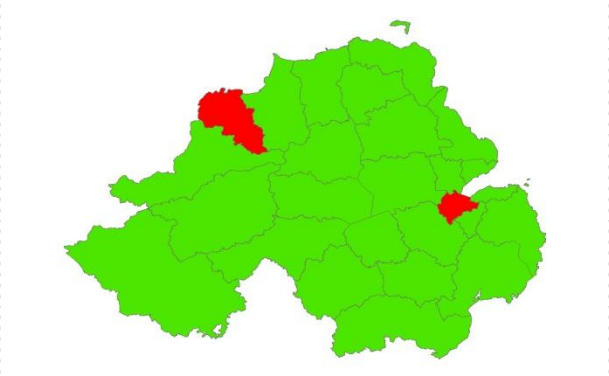
- Footpaths
- Road Crossings
- Shared
- Back Access
- Bridges
- Track
- Subways





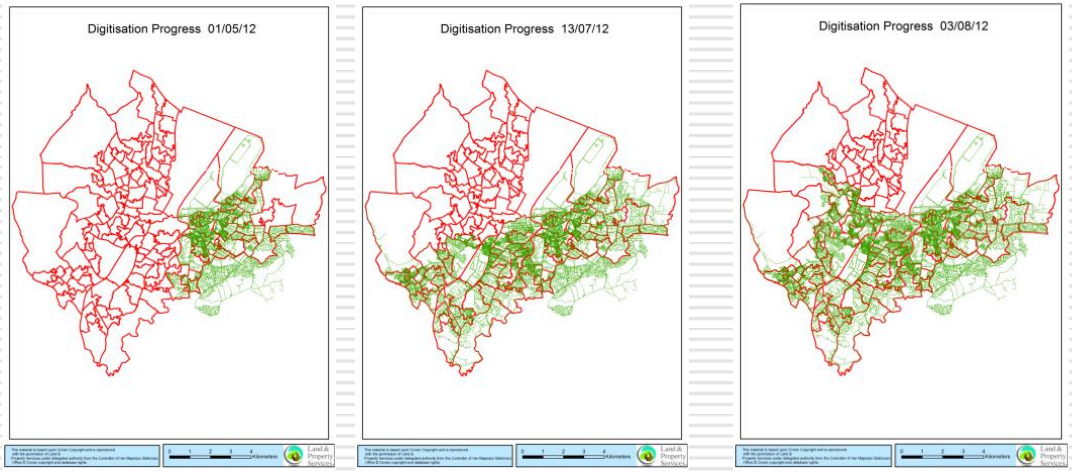
Areas covered by the RWN

- PARC study
- Belfast City Council Area (population c. 580,000, Area 115 km2)
- Derry City Council Area (population c. 90,000, Area 387 km2)
- Combined, this covers 37% of Northern Ireland's population.



How did we develop the RWN?

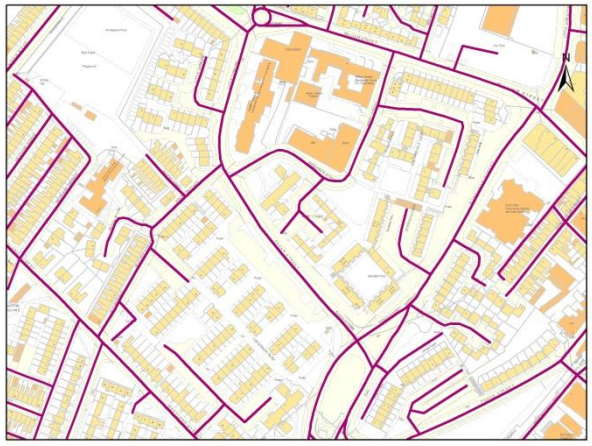
May - November 2012-
Unfortunately this network had to be generated from scratch



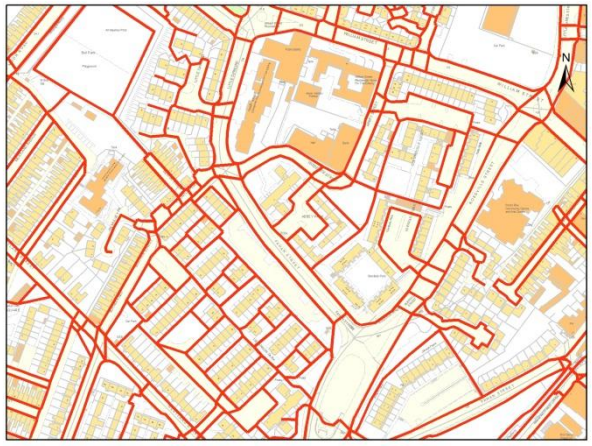
2 Research Assistants
digitised each footpath, trail, alley, road crossing

Real Walkable Network v Road Network

	SOA's	RWN Network Length	RWN Network Elements	OSNI Road Network Length	OSNI Road Network Elements	% Difference Length	% Difference Elements
Belfast	150	2304 km	114491	1317 km	17415	+ 75%	+ 557%
Derry	69	1614 km	54012	1097 km	7381	+ 47%	+ 631%

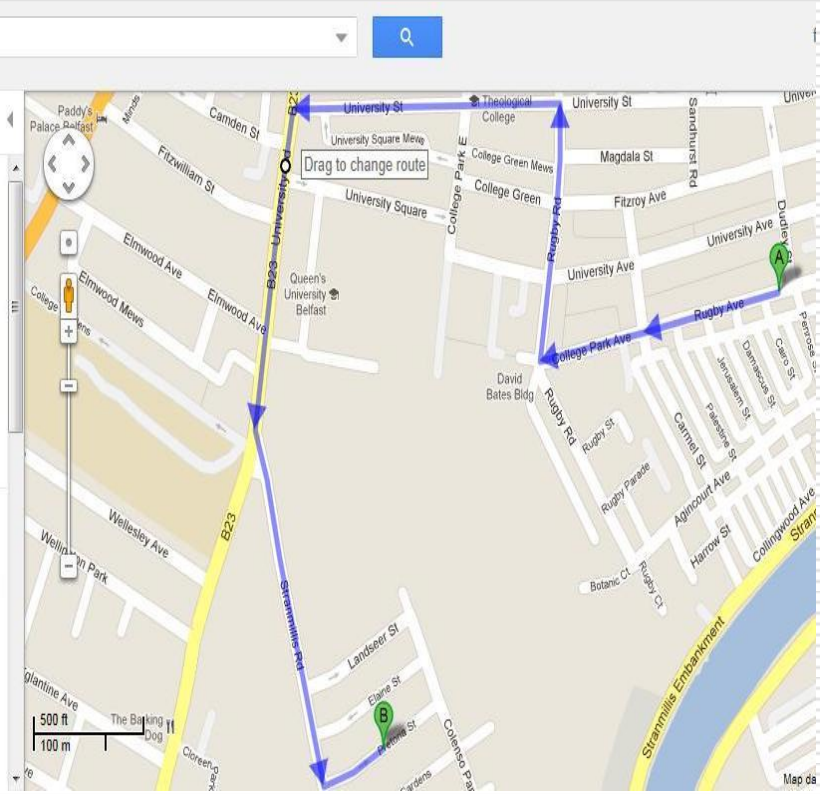


Road Network

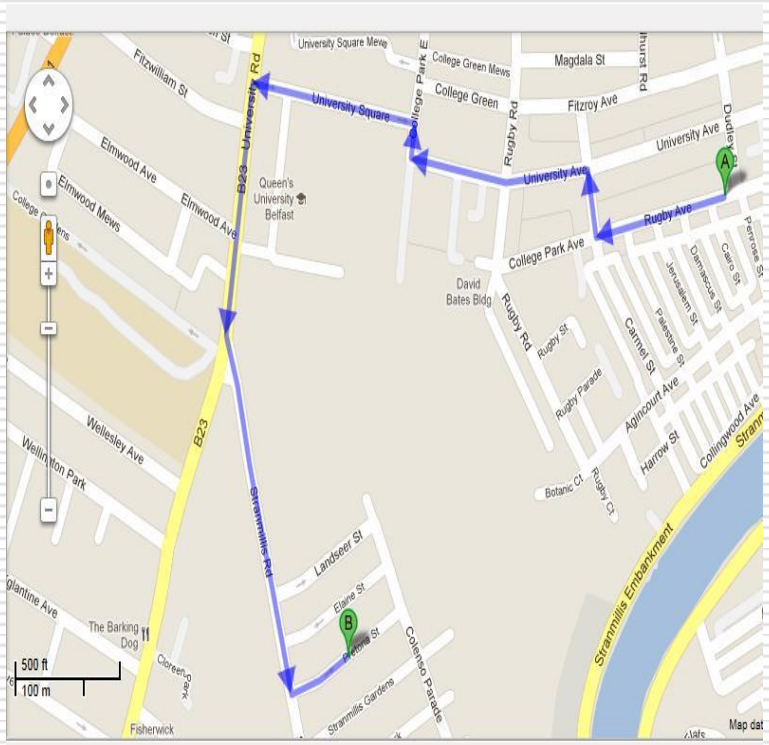


RWN Network

GOOGLE MAP
Walking and Driving Routes

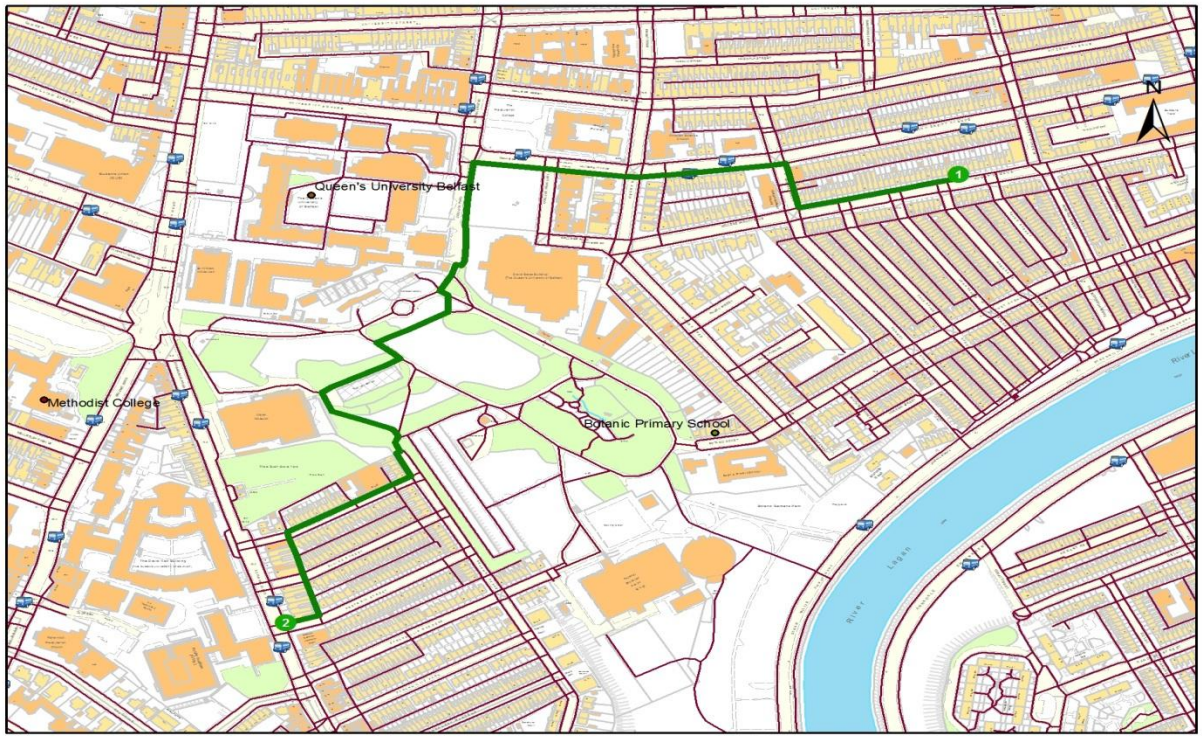


By Car: 1770m



By Foot: 1448m

RWN Route



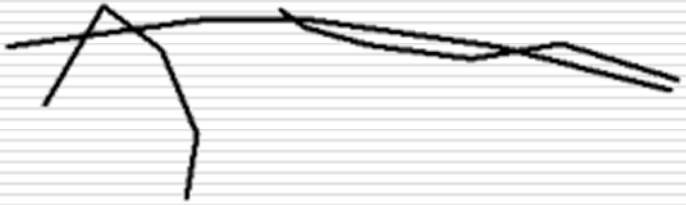
By RWN: 1181m

Common Digitising Errors

Undershoots

Dangles

Spurious polygons



Attribute errors – attribute data entered incorrectly

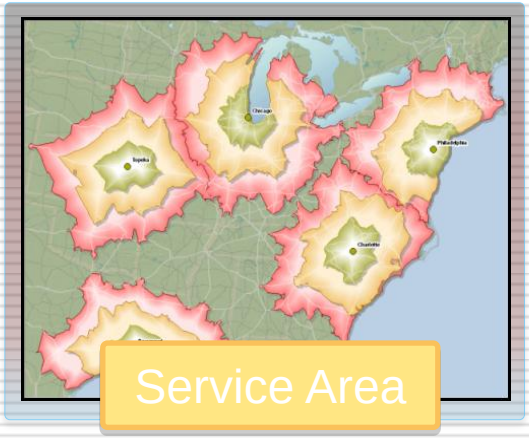
RWN Quality Control Parameters

- 10 % of each RA's Network cross checked for error
- Ground Checks used for new roads/ pre Google Earth Images
- Typology Rules

How to utilise the RWN? ‘Network Analyst ‘

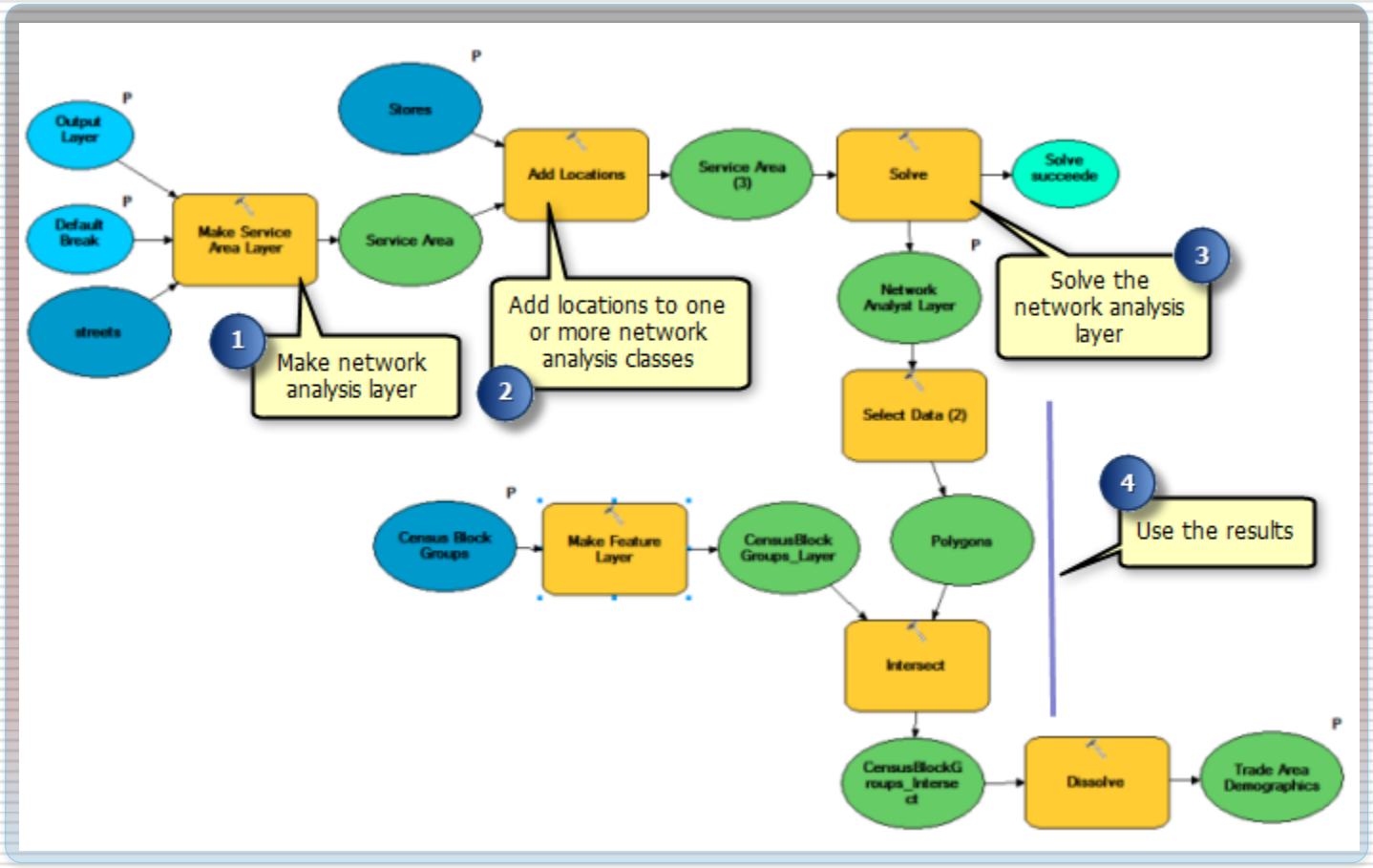
Route


Closest Facility


Service Area

3 CORE NETWORK ANALYST TOOLS USED WITHIN ANALYSIS TASKS

Model Builder for automating iterative processes



RWN: Some current constraints

- Urban based
- Reliant upon Accuracy of Baseline Data
- Not demographically sensitive
- Does Not distinguish between 'Temporal' Accessibility or 'Spaces of Fear'