Where do we spend our money?

The Irish approach to characterising catchments and targeting programmes of measures

J Deakin, M Archbold, D Daly, E Mockler, I Packham

Catchment Science and Management Unit, EPA

jdeakin@epa.ie

- Context
- Approach
- 2 case study examples
- Future?

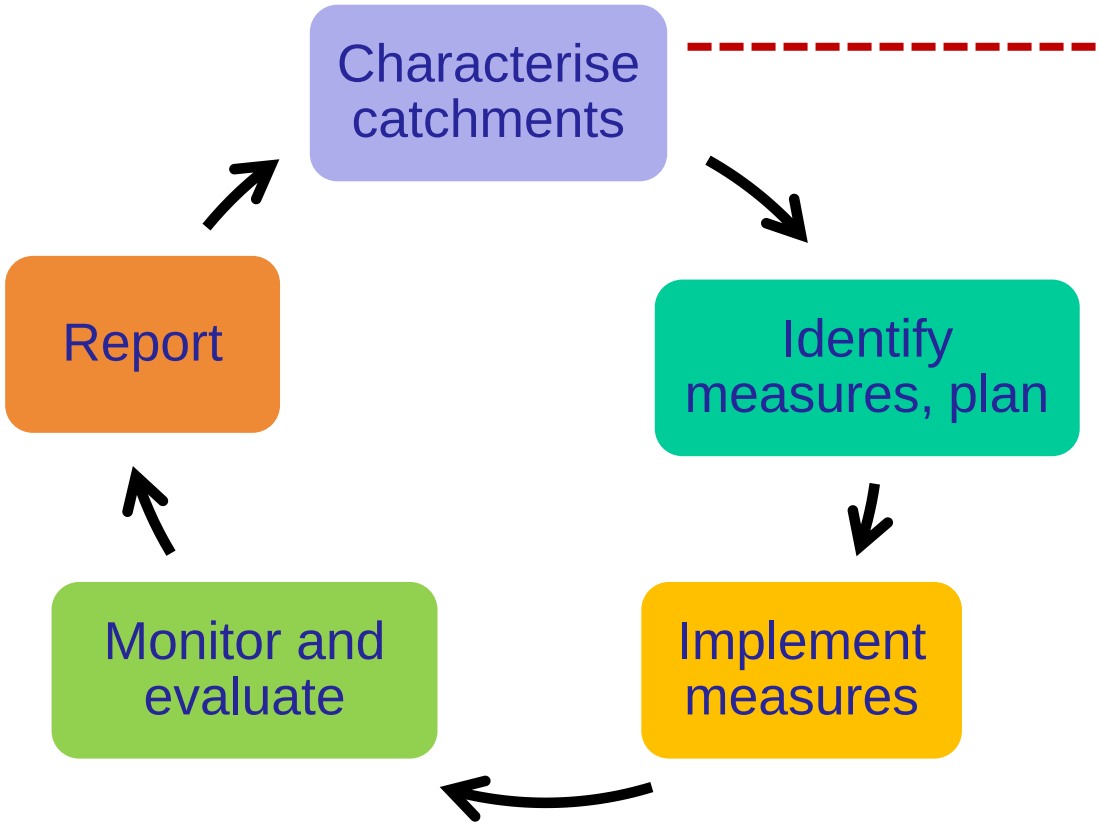
Context

- Bedrock aquifers, range of soils/subsoils
- 400 – 2000 mm/a effective rainfall
- Overland flow, land drainage, shallow groundwater
- Agriculture = 64% land area. 140,000 farms, 7% GDP
- 80% pasture based farming, 10% arable, 10% forestry
- Phosphate the key water quality issue – ecological status

Targeted action needed !

- Reduction in pristine High Status WBs
- Pollution sources: 53% agriculture; 33% WWTPs
- €8Bn spent in last 15 years on measures, for 5% improvement
- 2 years late with our RBMPs

Plan of attack



WFD 6-year cycle

Characterisation Approach

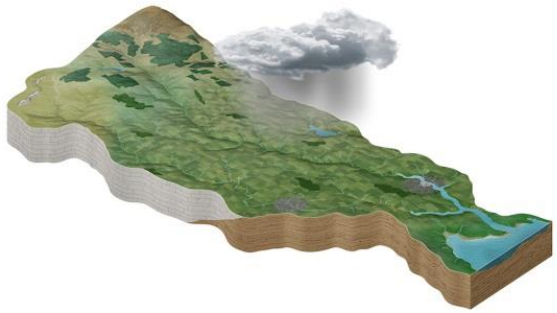
Three TIERS of

risk characterisation

so that the level of assessment is appropriate for the risk posed

1: Preliminary risk screening
2: Initial characterisation
3: Further characterisation

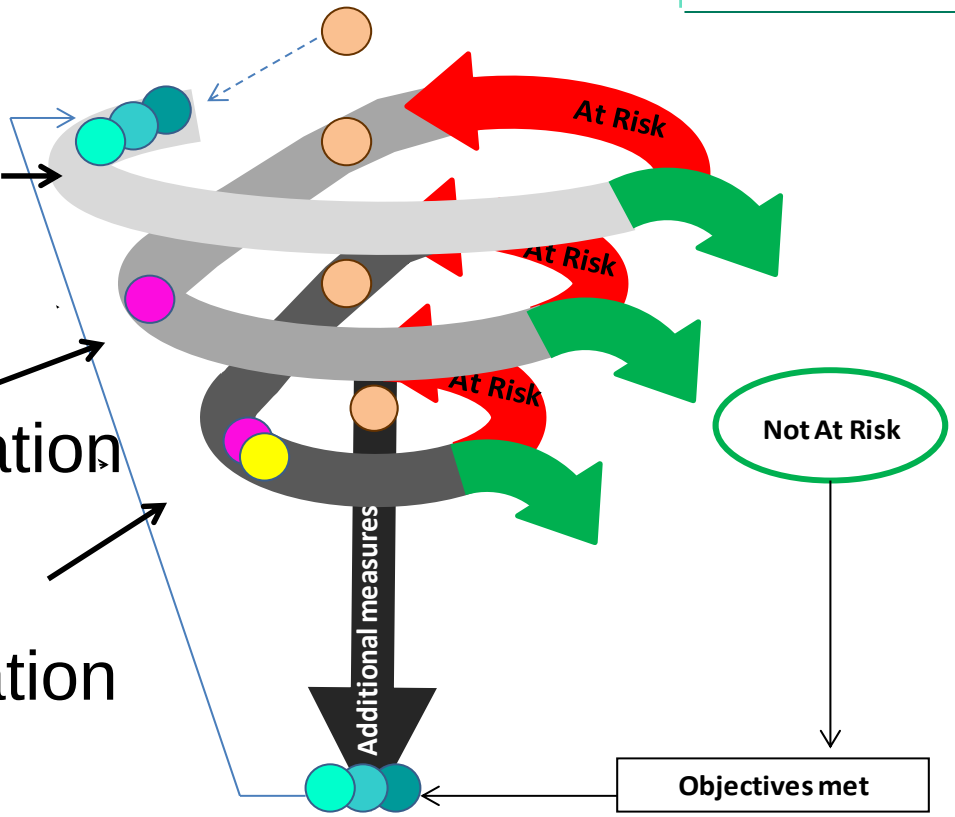
WFD Characterisation Tiers



1st : Preliminary Screening

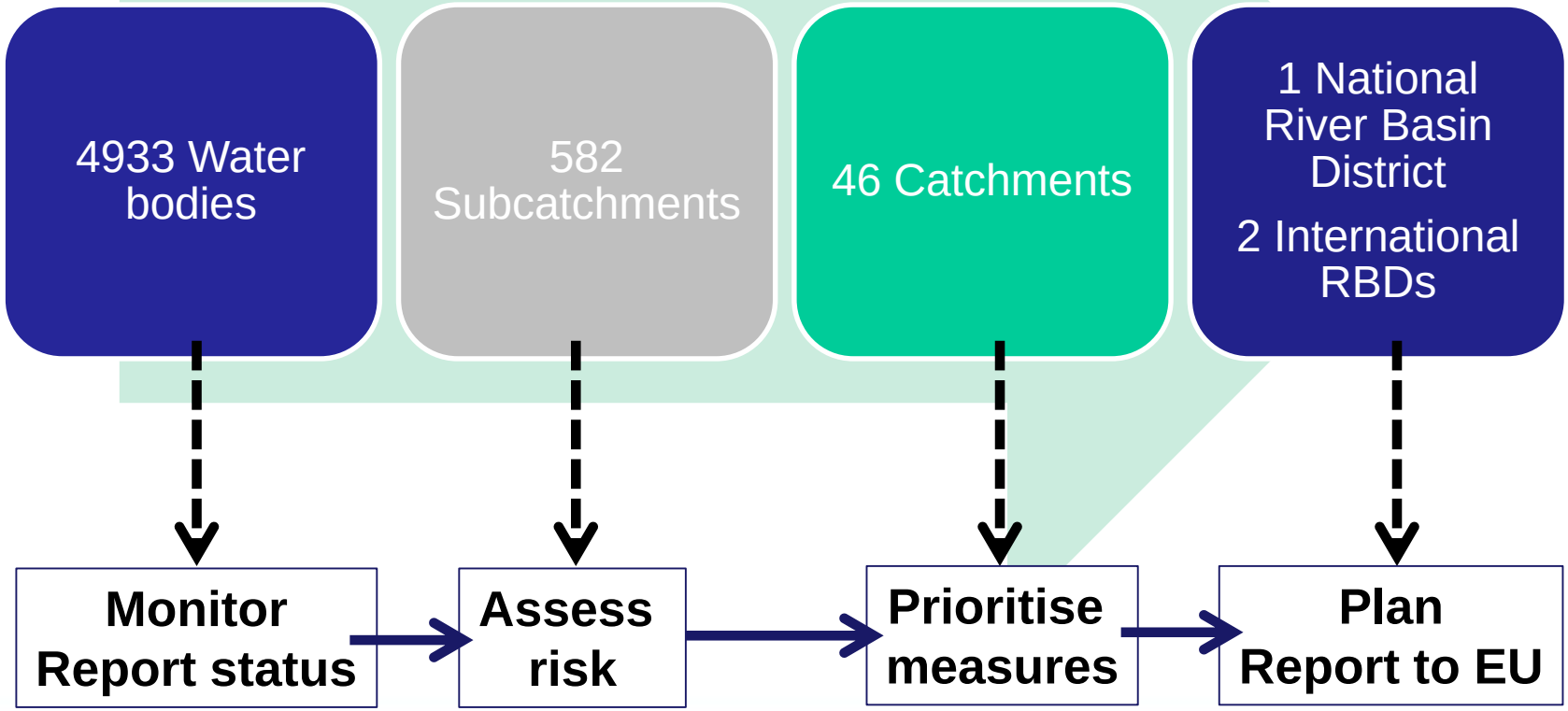
2nd : Initial characterisation

3rd : Further characterisation



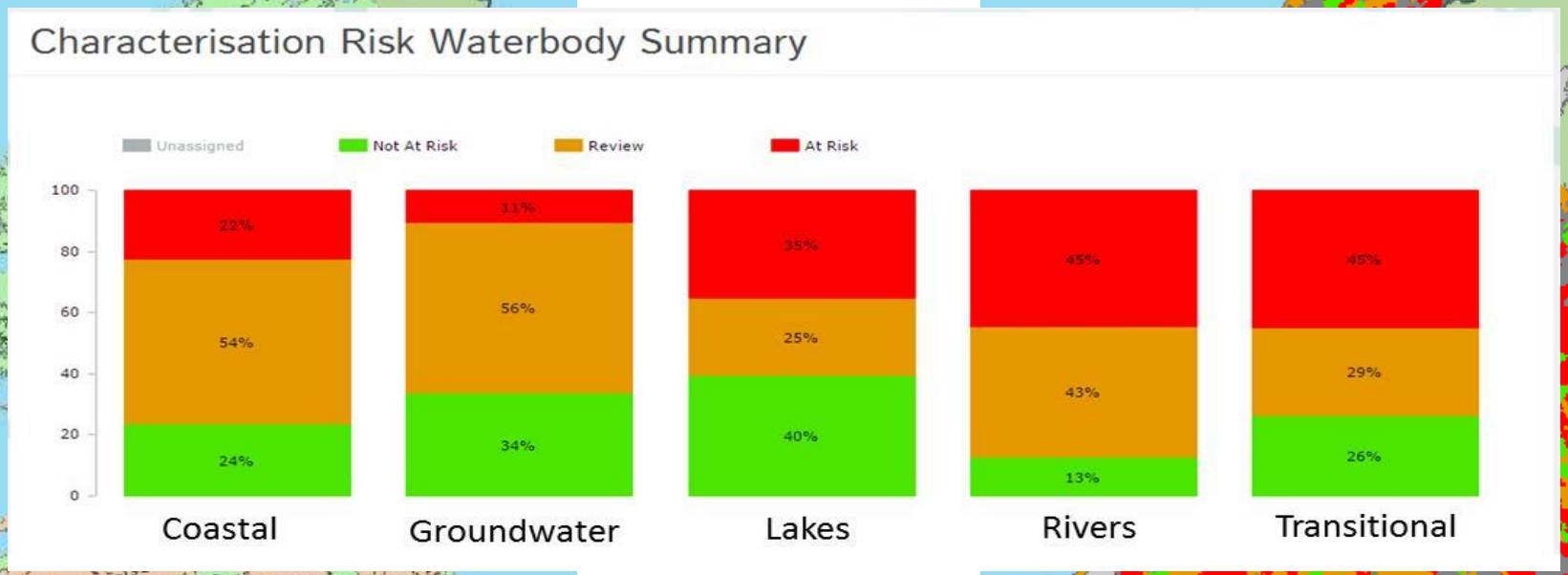
Increasing cost, resources, detail, confidence

Water management unit scales



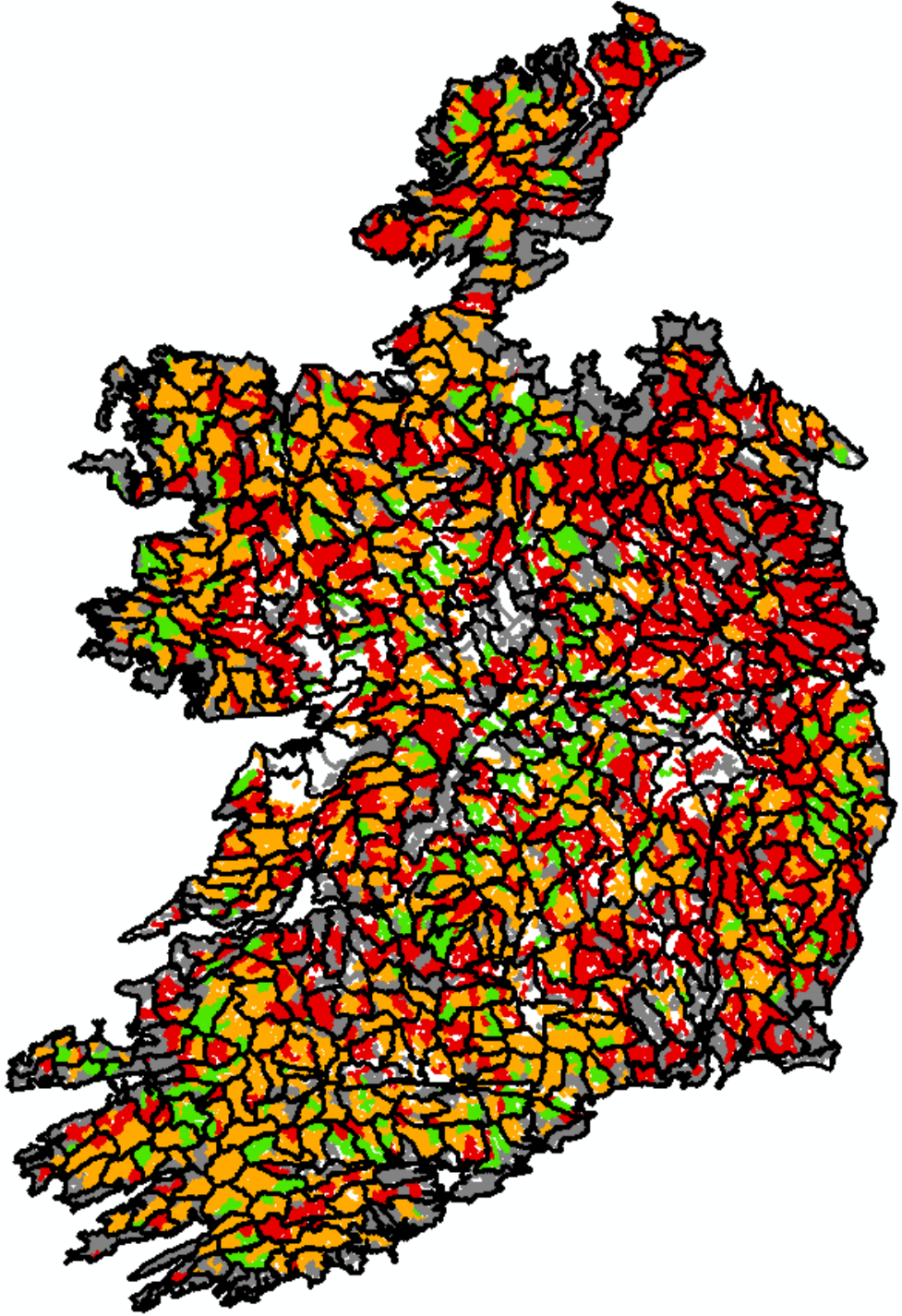
Preliminary risk screening

Status + Trend + Distance to threshold = Risk



GW

SW



Initial characterisation

Subcatchment delineation

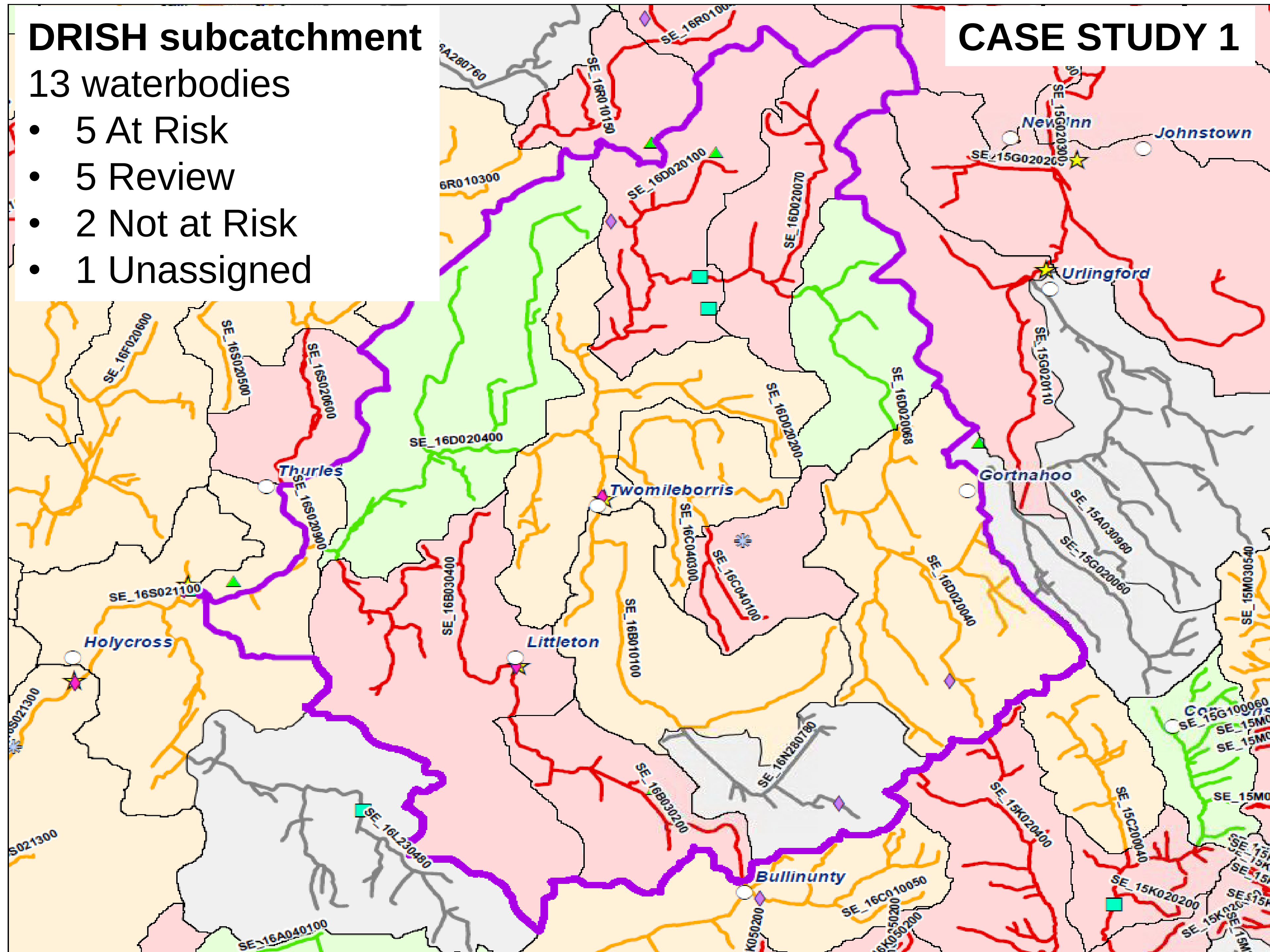
- 582 subcatchments
- 100-200 km^2
- 3-15 WBs in each
- Reviewed with LA's / other public bodies

DRISH subcatchment

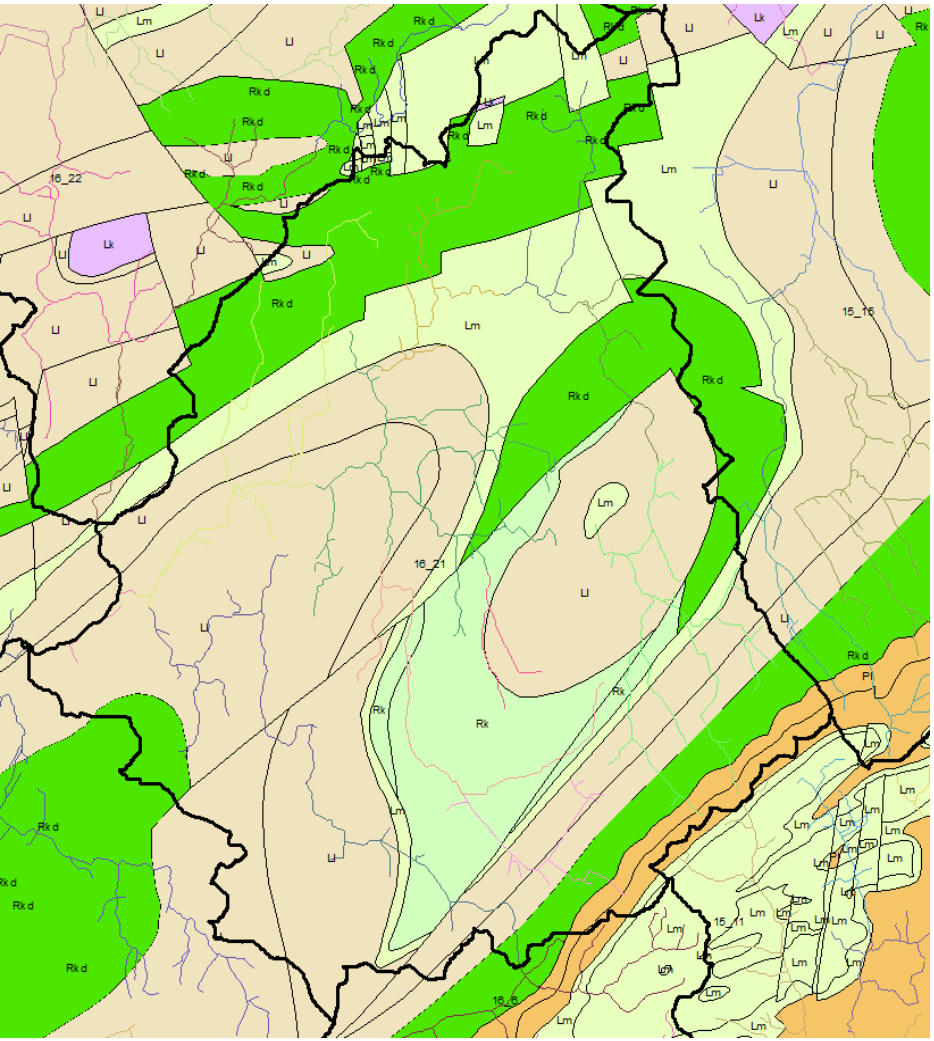
13 waterbodies

- 5 At Risk
- 5 Review
- 2 Not at Risk
- 1 Unassigned

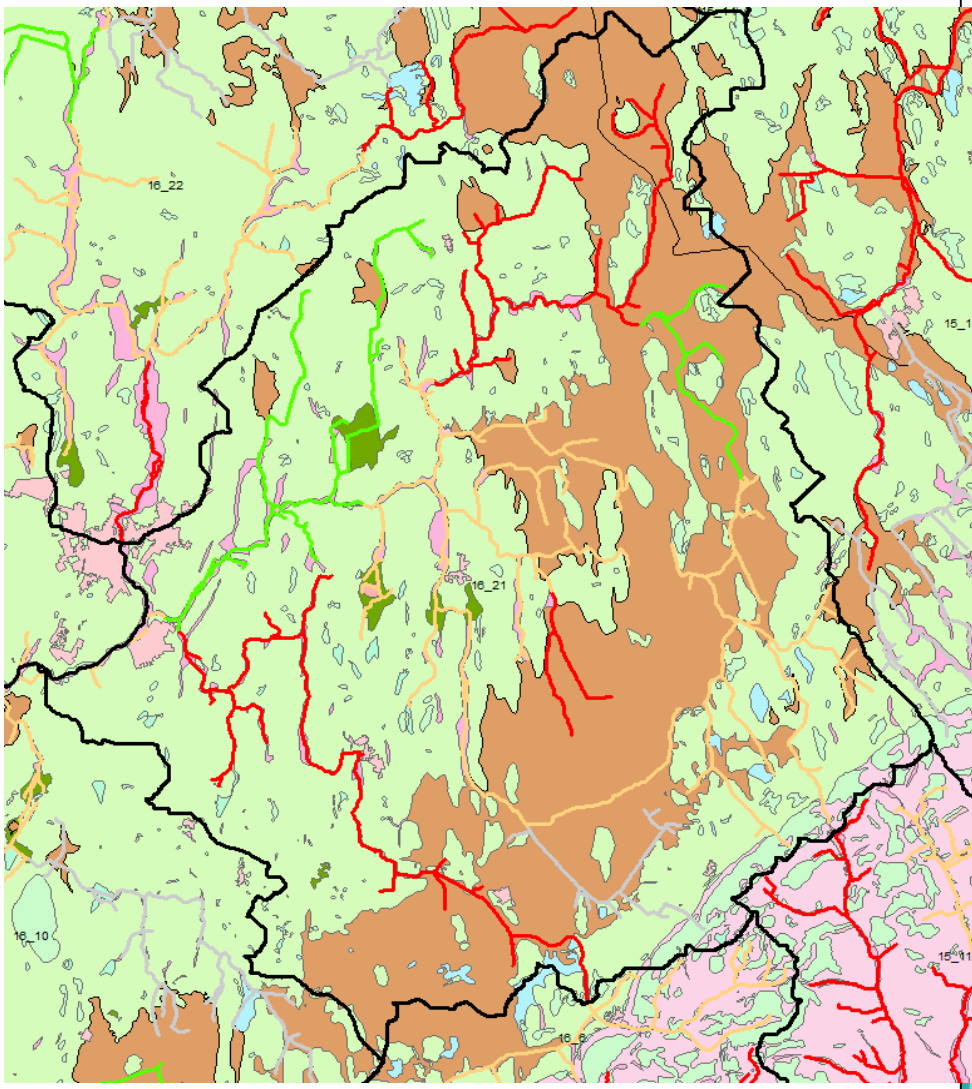
CASE STUDY 1



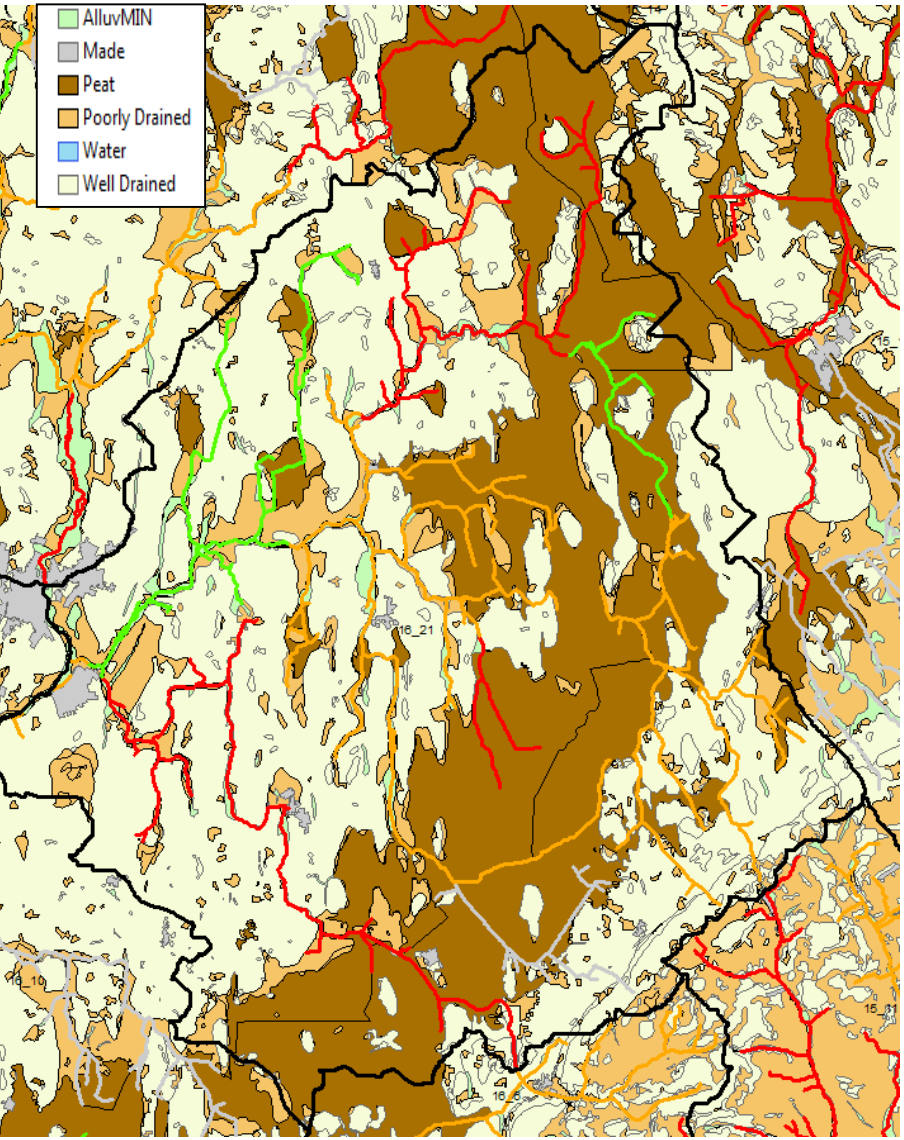
Aquifer Classification



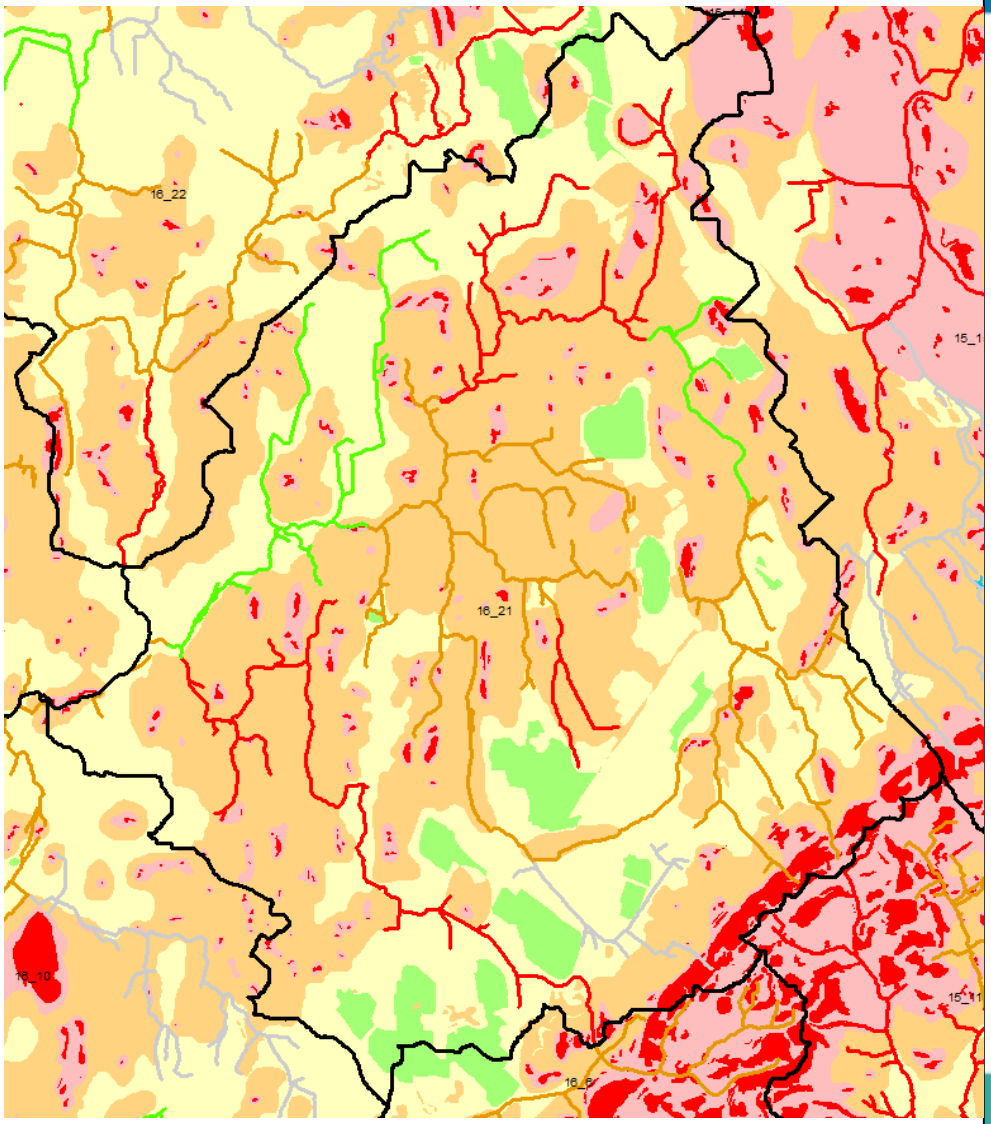
Subsoils



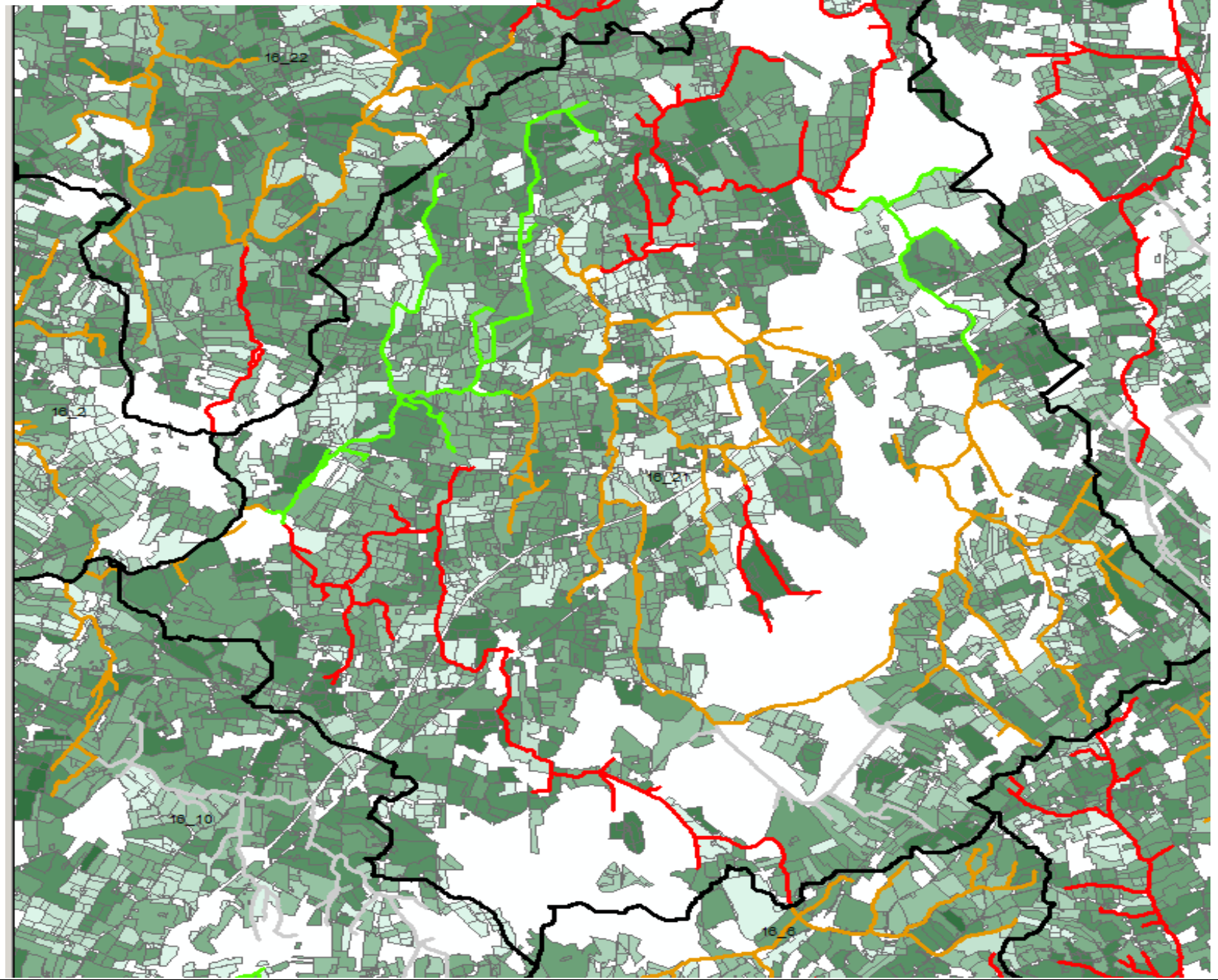
Soil drainage



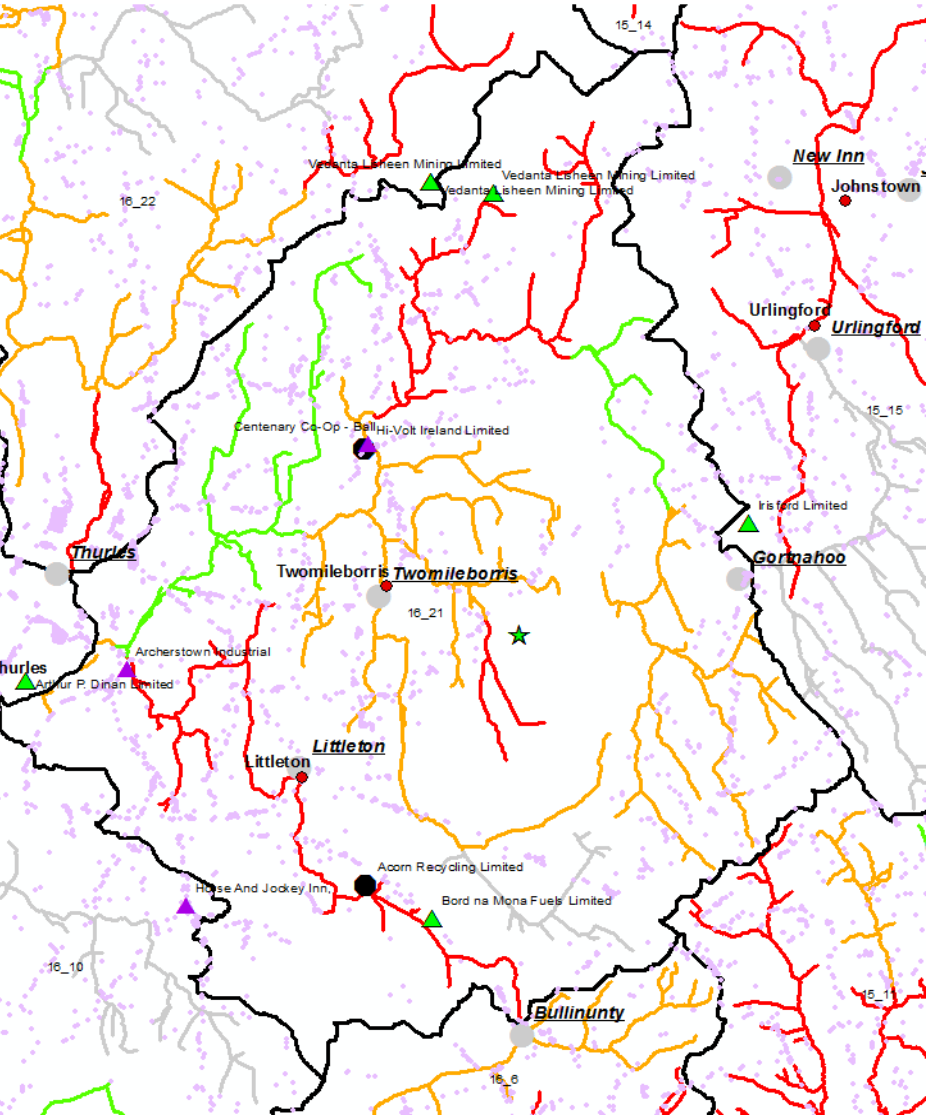
Vulnerability



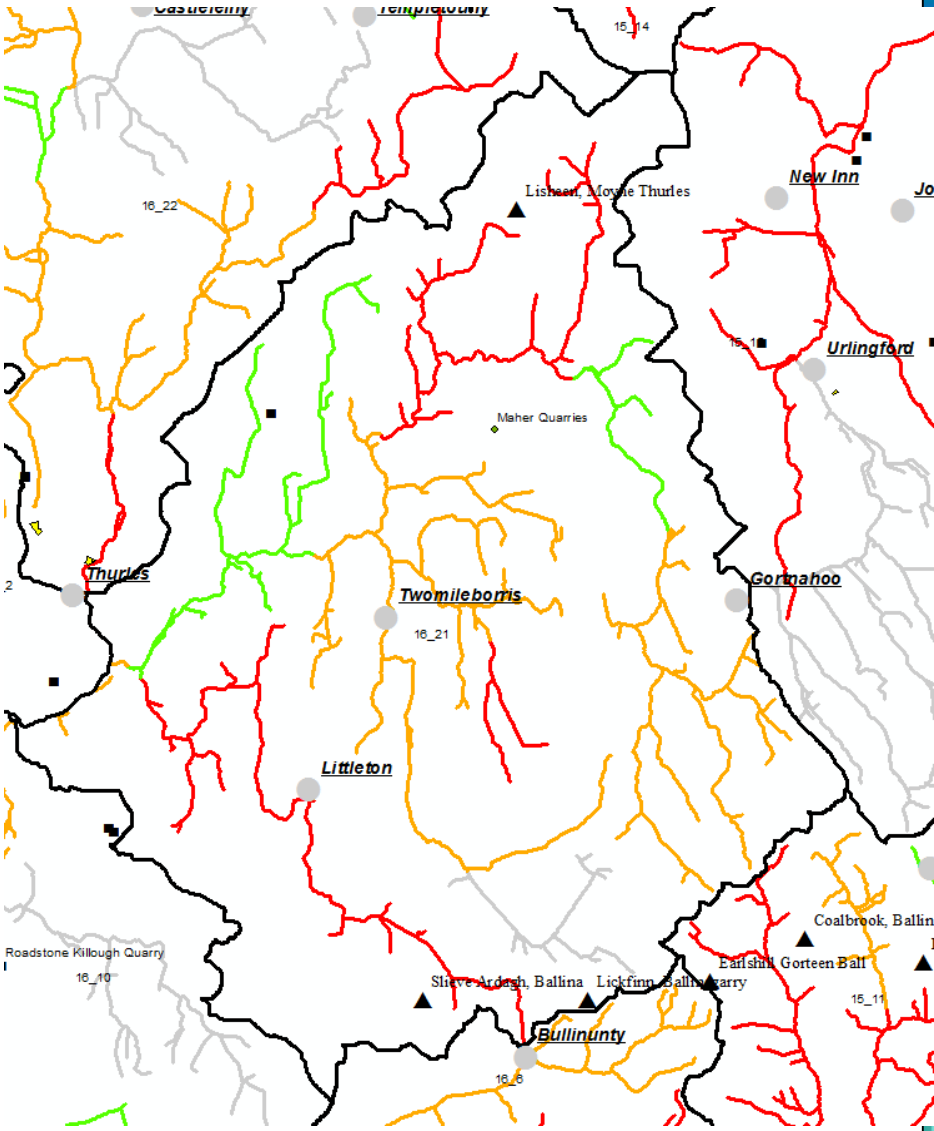
Stocking Density



Point sources



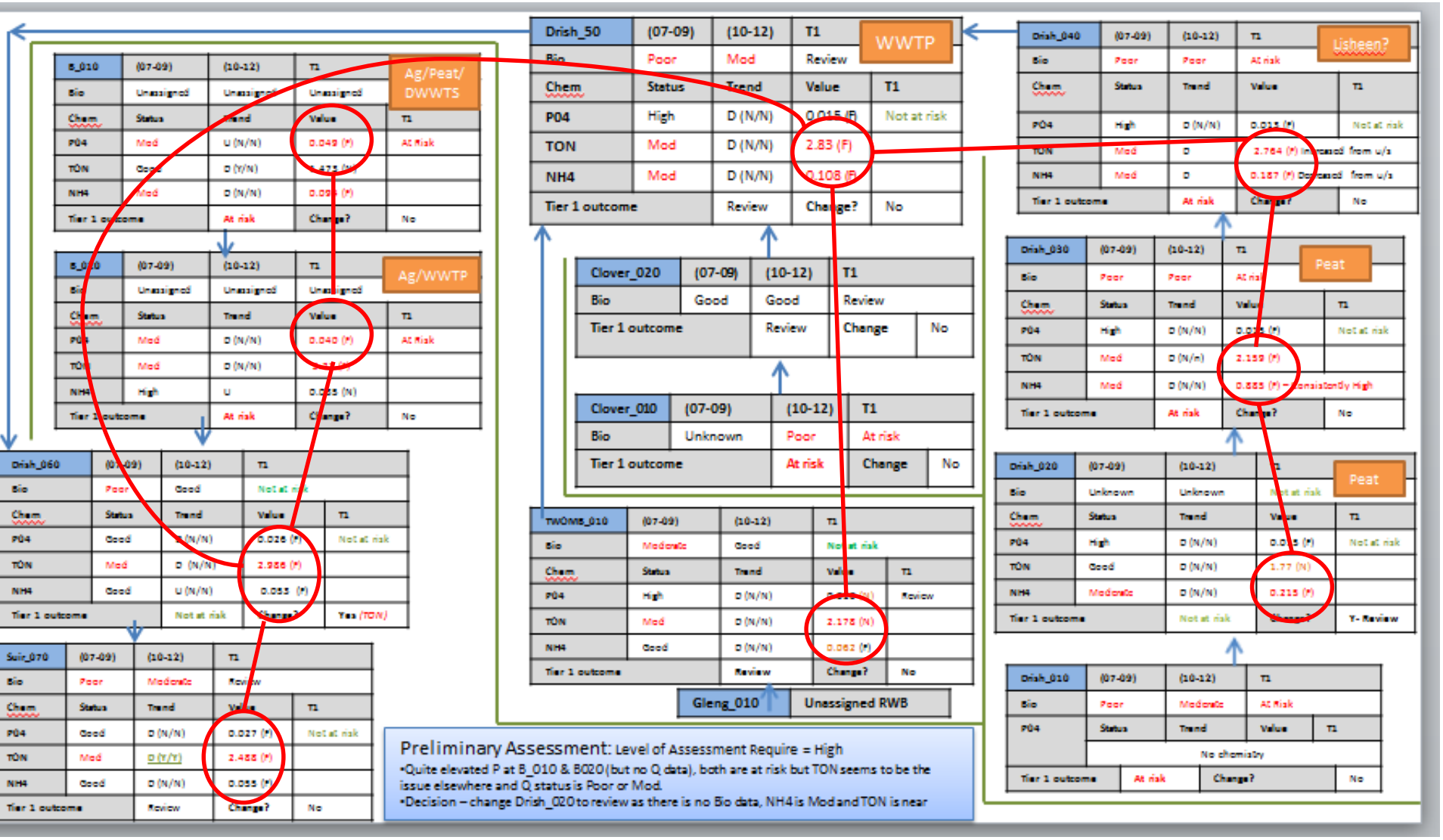
Mines, quarries & historic landfills



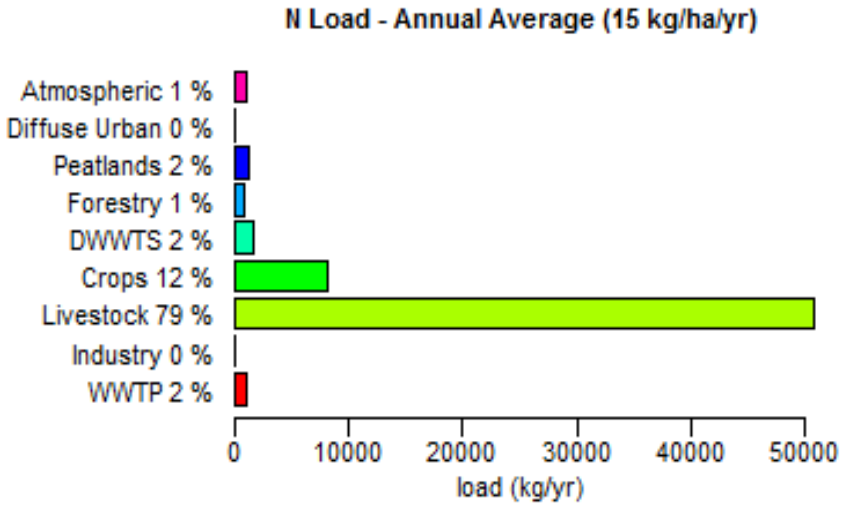
Waterbody storyboard

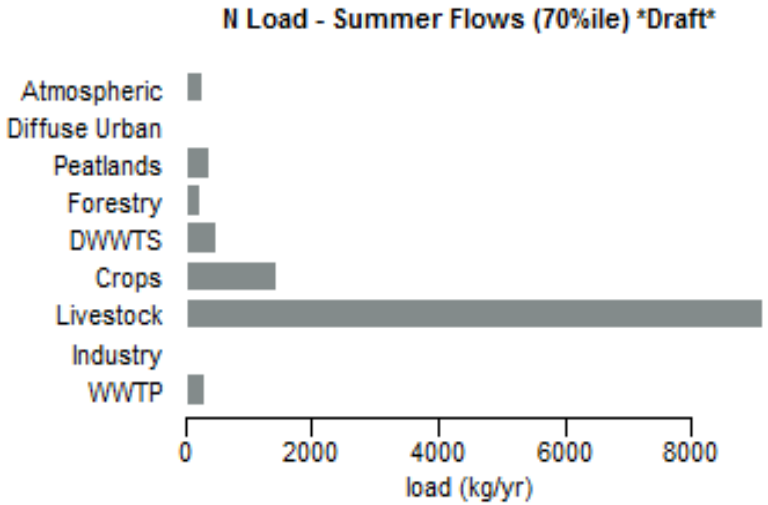
Drish_020	**(07-09)**	**(10-12)**	**Prelim risk**	
Bio	Moderate	Good	**Review**	
Eco	Moderate	Good		
Chem	**Status indicator**	**Trend (significance)**	**Value (threshold)**	**Prelim risk**
P04	High	D (N/N)	0.015 (F)	**Not at risk**
TON	Good	D (N/N)	1.77 (N)	
NH4	Moderate	D (N/N)	0.215 (F)	
Prelim risk outcome		**Review**	**Change?**	**Y- Not at Risk**

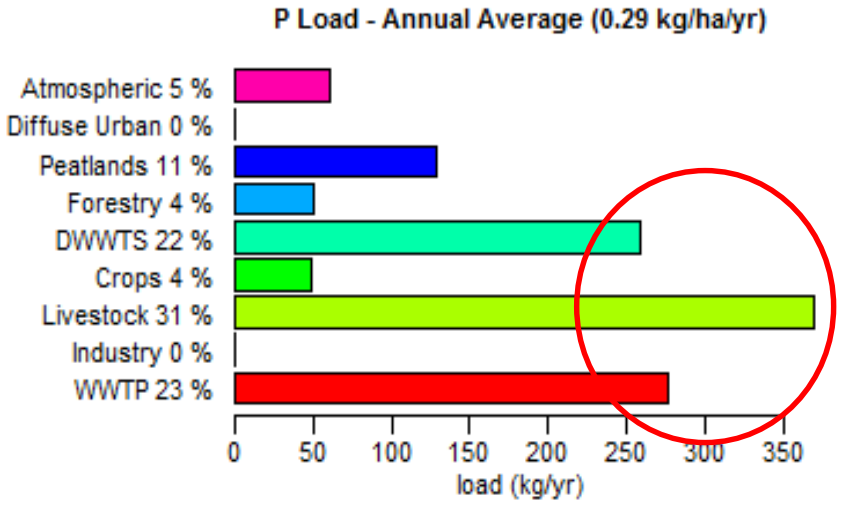
Subcatchment storyboard

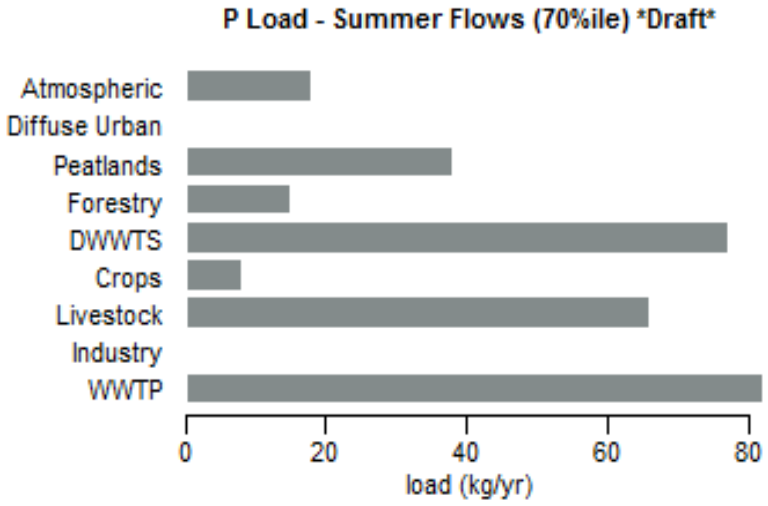


Load apportionment modelling
Southern tributary





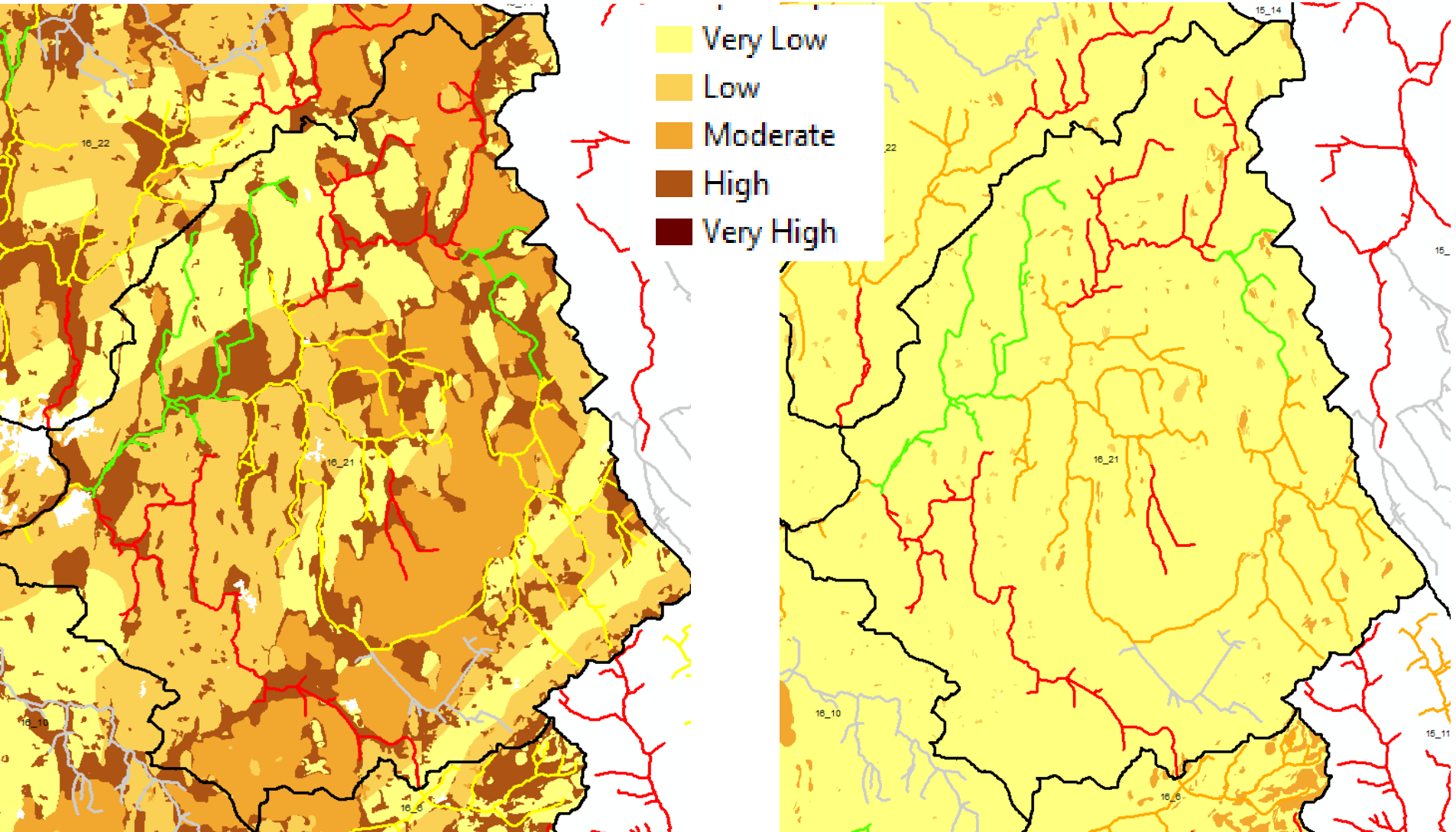




P Susceptibility Maps

SW

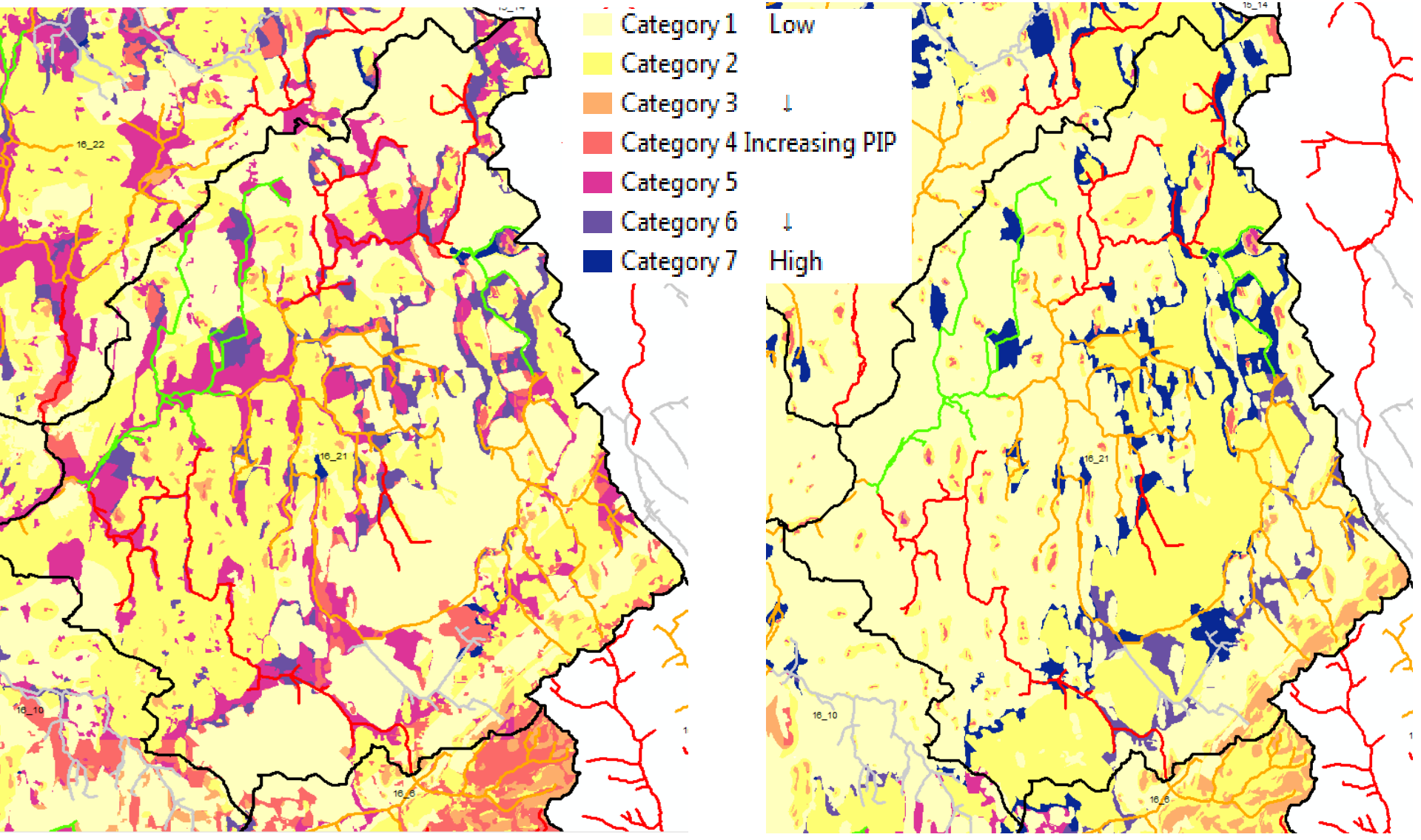
GW



Pollution Impact Potential Maps (CSAs)

SW

GW



DRISH Summary and actions

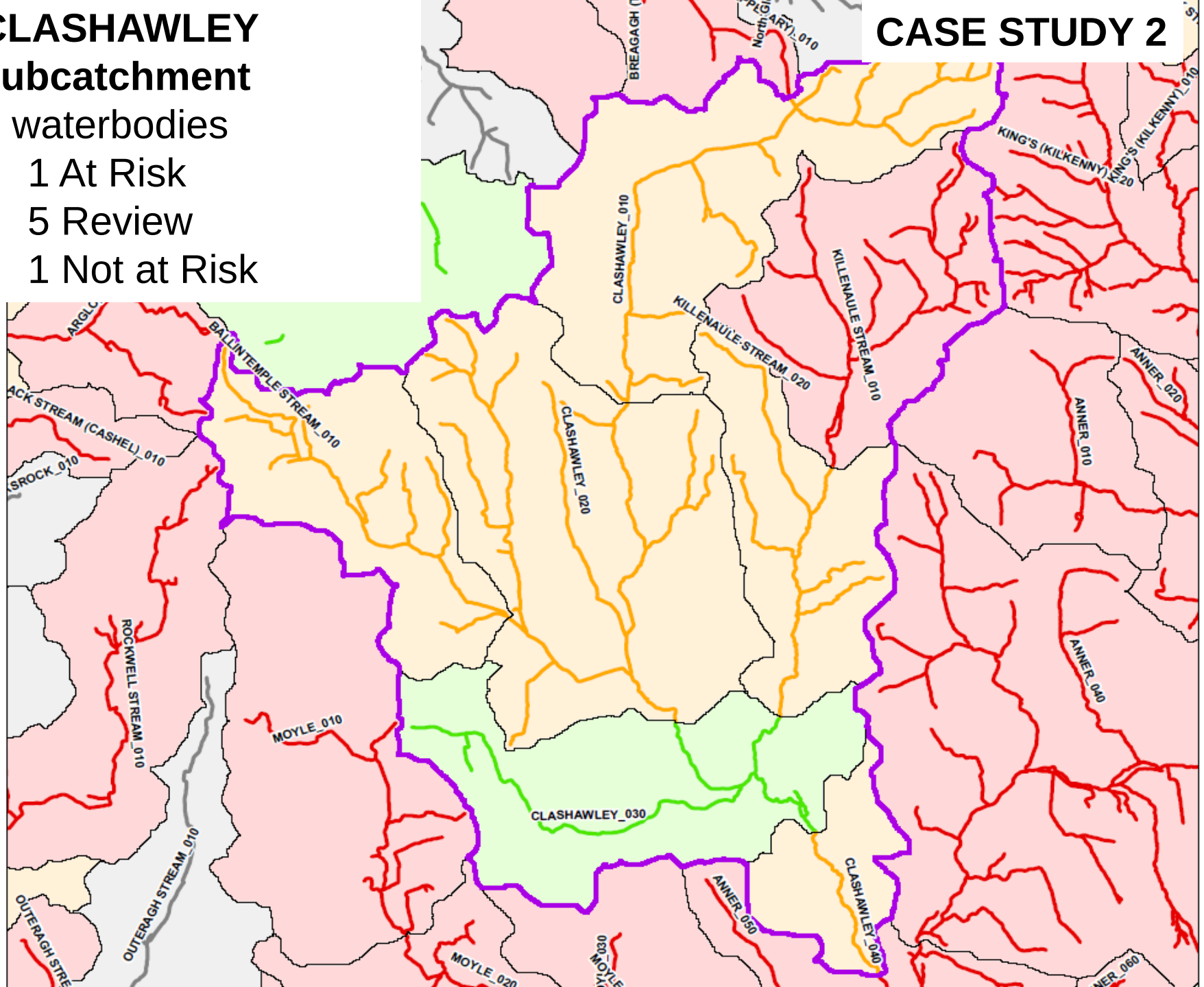
- Confirm with LAs, biologists
- Further characterisation in the peat
  - Forestry? Drainage? Extraction?
  - Hydromorphology surveys and measures
- Further characterisation in southern trib (P)
  - Catchment walks, compliance checks, higher density sampling, farm visits
  - Load reduction calculations and options
  - Measures likely to be agricultural, waste water and septic tank related

CLASHAWLEY subcatchment

7 waterbodies

- 1 At Risk
- 5 Review
- 1 Not at Risk

CASE STUDY 2



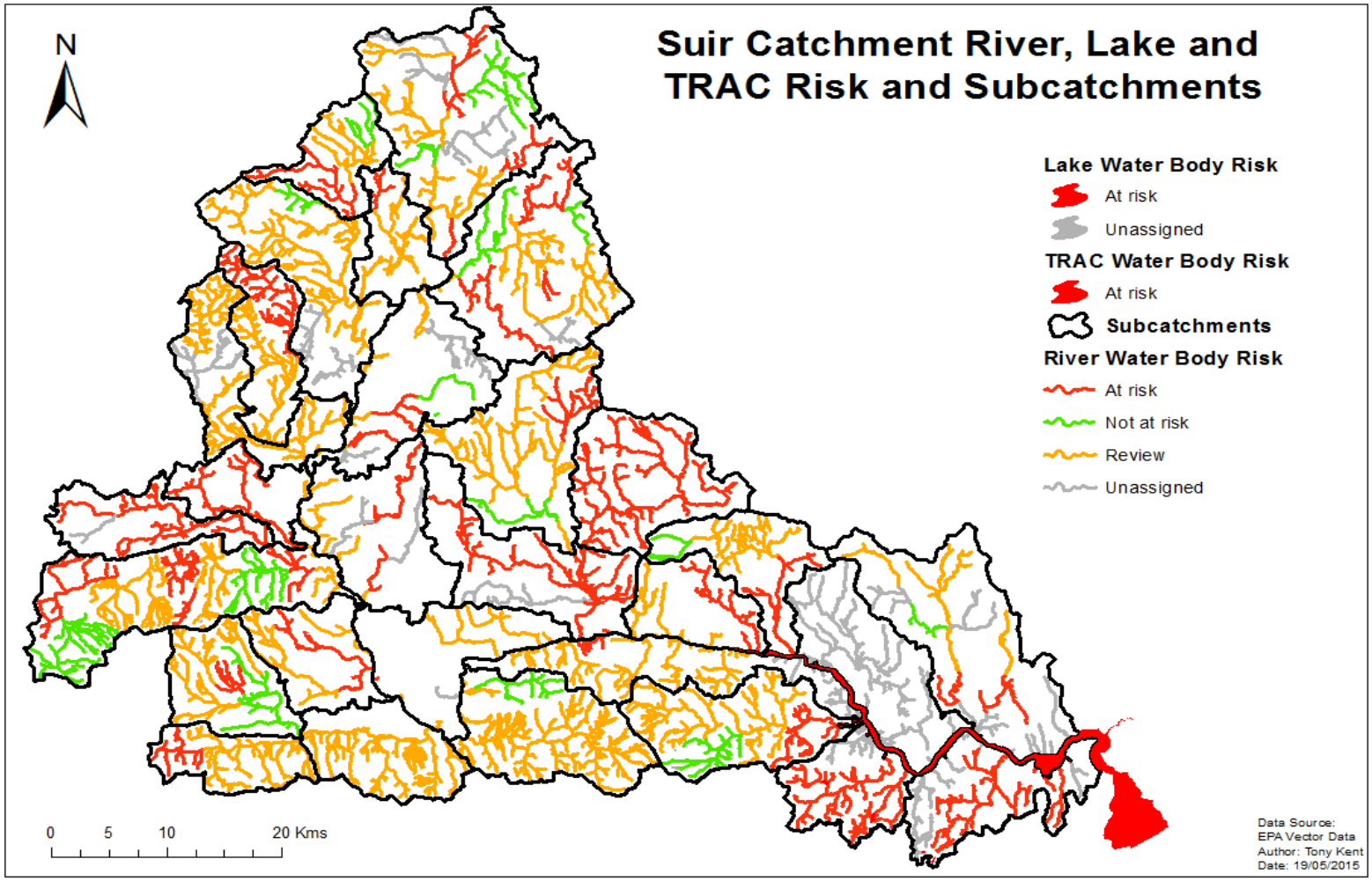
Waterbody storyboard

16K050200 Killenaule_010	(07-09)	(10-12)	T1	Pressures
Bio	Poor	Poor	At Risk	WWTP
Eco	Poor	Poor		
Chem	Indic status	Trend	Value	T1
Ortho-P (P)	Poor Mod	D (N/N) D (N/N)	0.082 (F) 0.045 (F)	At Risk
TON (N)	Mod Mod	D (N/N) D (N/N)	3.318 (F) 1.878 (F)	
Tot Am (N)	Good High	U (N/N) U (N/N)	0.042 (F) 0.02 (F)	
T1 Risk	At Risk	Change	No – At Risk	
Actions	Review with LAs (focus on WWTP)			

CLASHAWLEY Summary/actions

- Review WWTP operations with LA
- Review temporal/spatial P data
- No further investigations necessary elsewhere
- Current agricultural measures adequate

Repeat at catchment scale for groundwaters, transitional/coastal, protected areas



River basin management plan

- All measures will be costed in view of effectiveness
- Preferred potential measures will be recommended by sectoral specific working groups
- Minister to select final measures for 2017-21 plan, supported by a National high level working group
- Emphasis on implementation at all levels

Looking forward…

- Building for the long term
- Targeted, weight of evidence approach
- The right measure in the right place
- Cooperation amongst public bodies, joint decisions
- Further development of models and tools
- Sharing information publically
- New community water engagement officers to encourage community initiatives

Will this make the difference?


Thank you!
jdeakin@epa.ie