



Where do we spend our money?

The Irish approach to characterising catchments and targeting programmes of measures

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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
- Dhoenhate the key water quality issue ecological status

Pollution sources: 53% agriculture; 33% WWTPs

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€8Bn spent in last 15 years on measures, for 5% improvement

Targeted action needed !

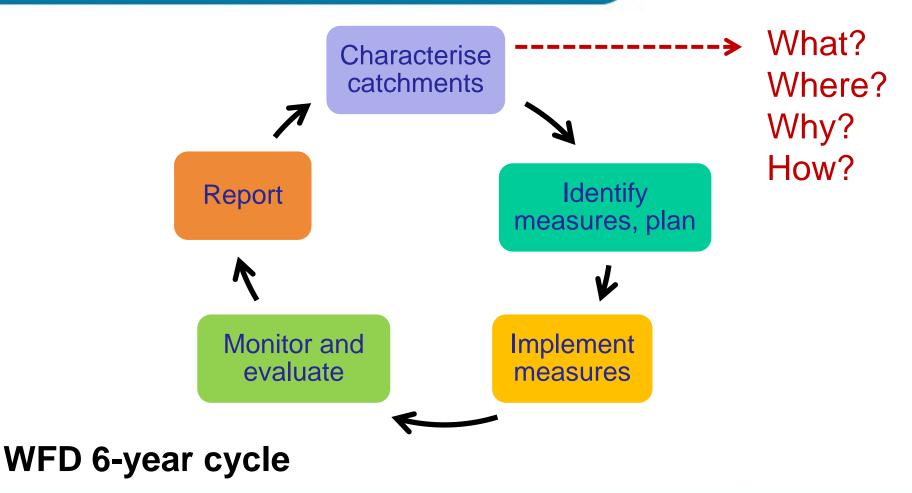
2 years late with our RBMPs





Plan of attack



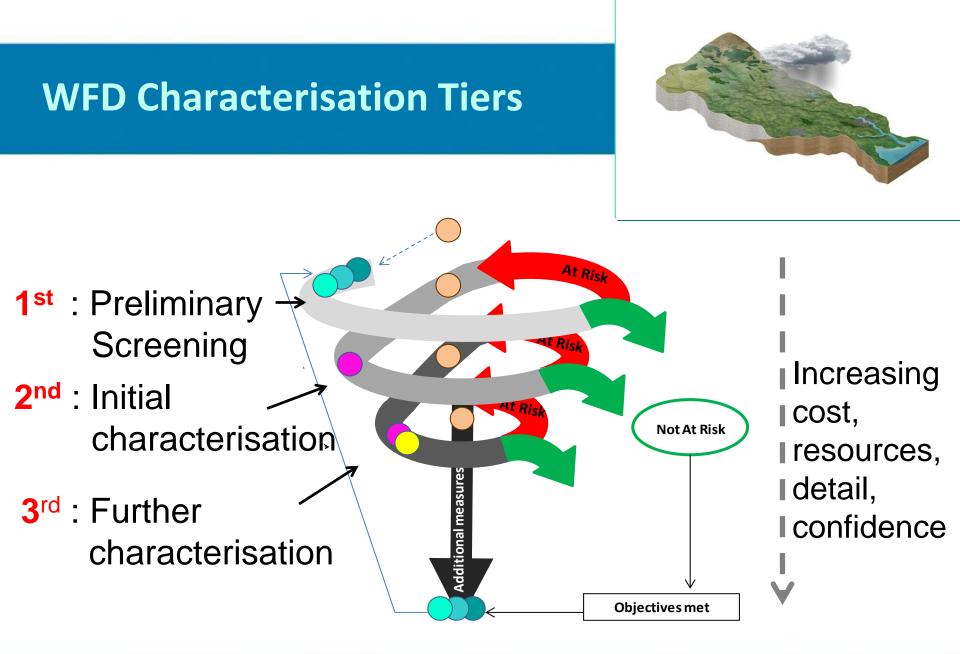




Characterisation Approach

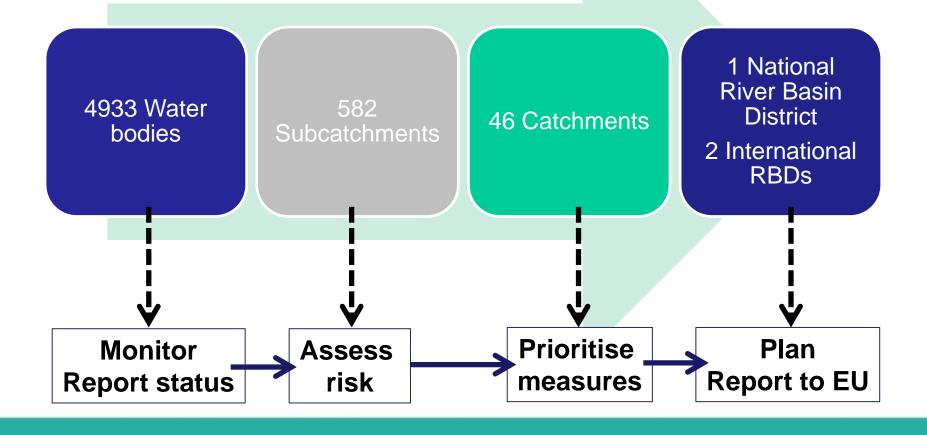
Three TIERS of risk characterisation so that the level of assessment is appropriate for the risk posed

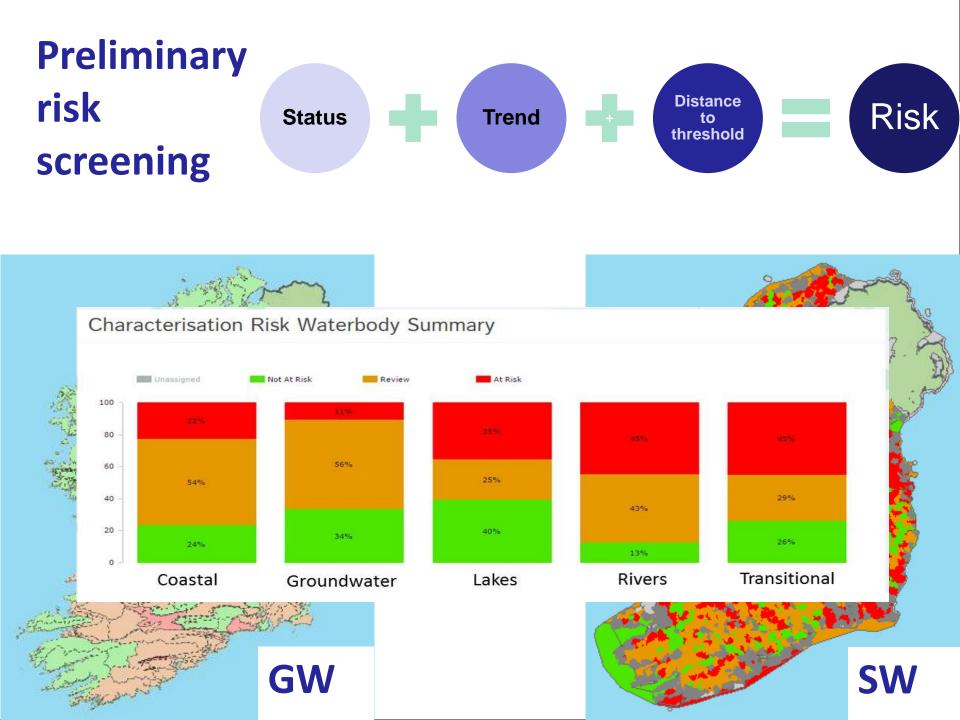
- 1: Preliminary risk screening
- 2: Initial characterisation
- 3: Further characterisation

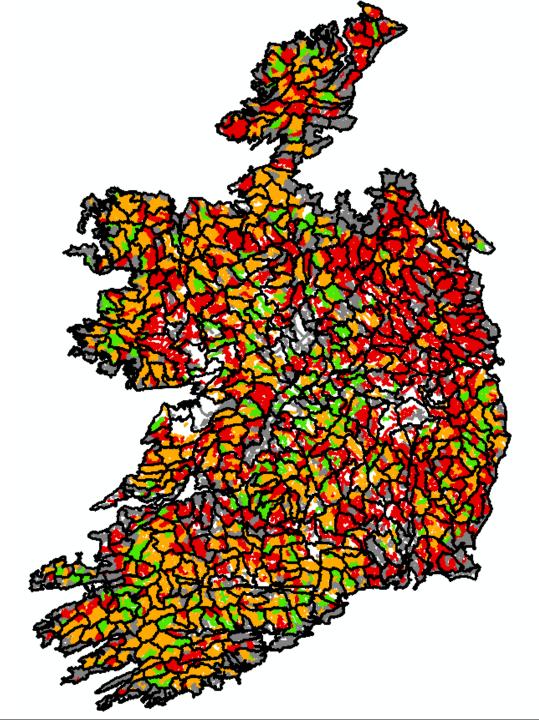




Water management unit scales



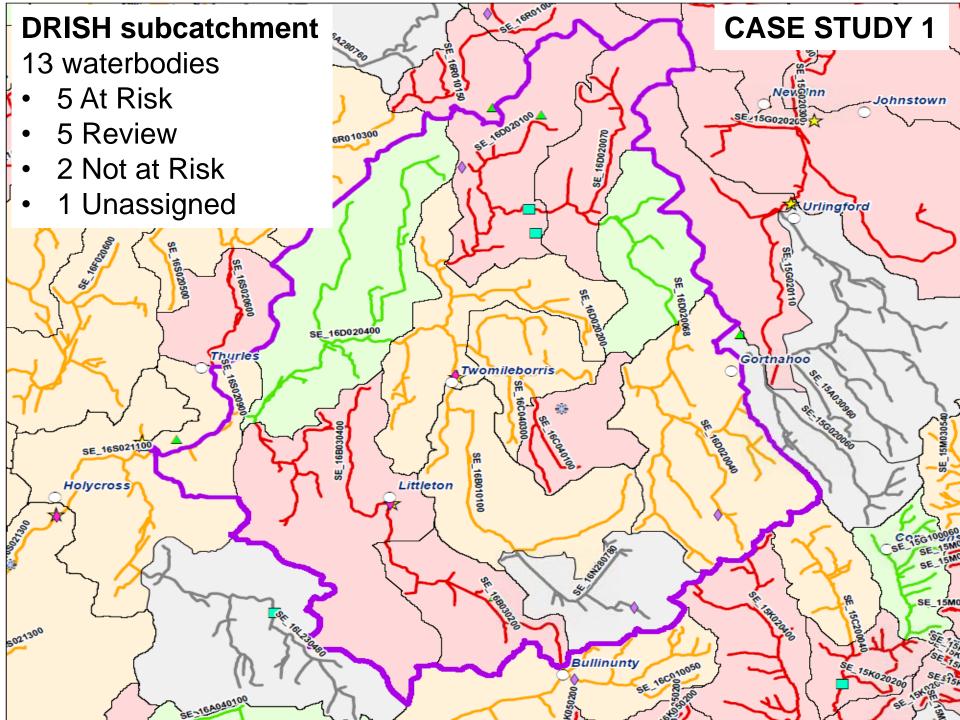




Initial characterisation

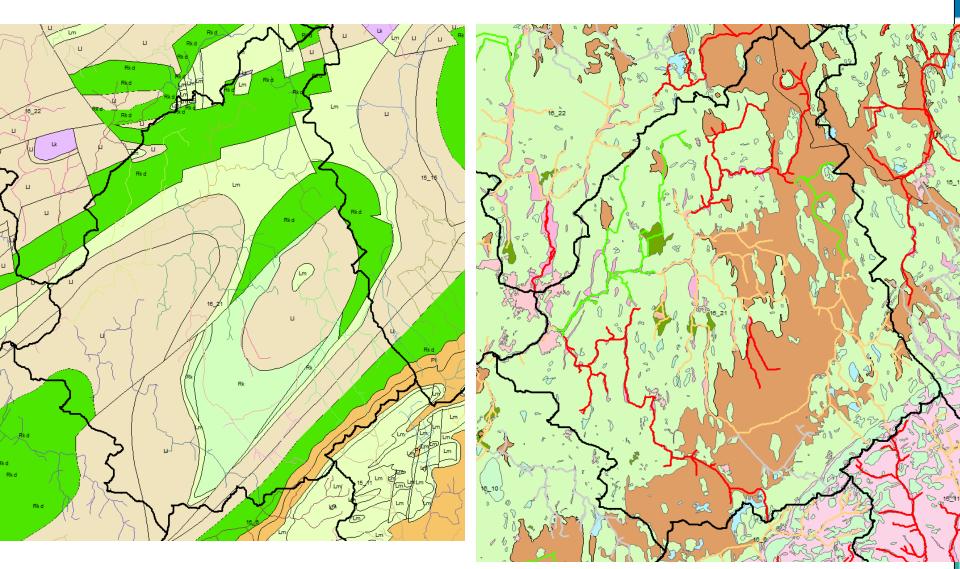
Subcatchment delineation

- 582 subcatchments
- 100-200 km²
- 3-15 WBs in each
- Reviewed with LA's / other public bodies



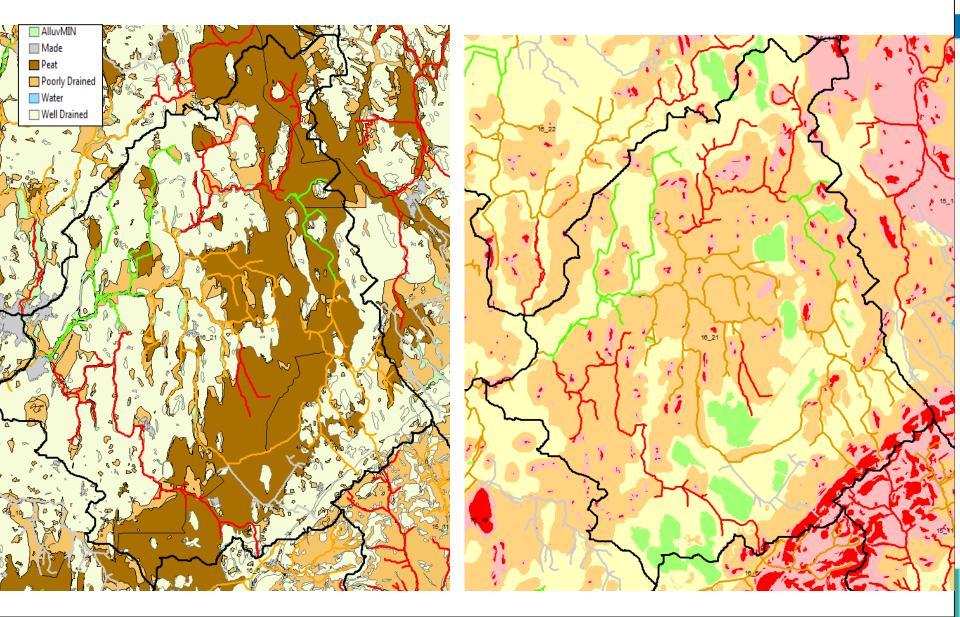
Aquifer Classification





Soil drainage

Vulnerability



Stocking Density 10 10

Point sources

Mines, quarries & historic landfills

New Inn

Gormahoo

<u>Urlingford</u>

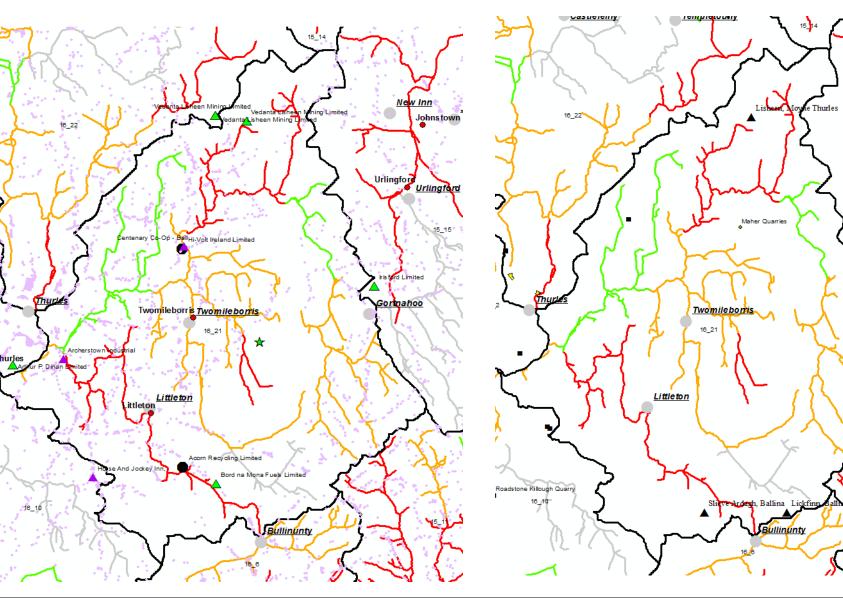
Coalbrook, Ball

Gorteen Ball

Earlshi

arry

Jo



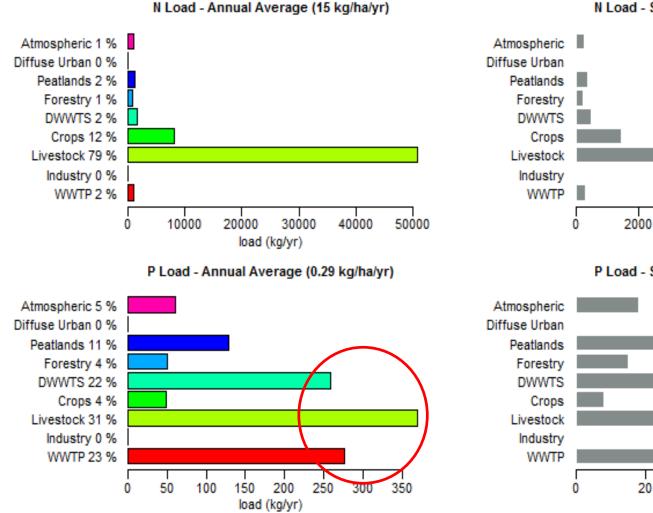
Waterbody storyboard

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

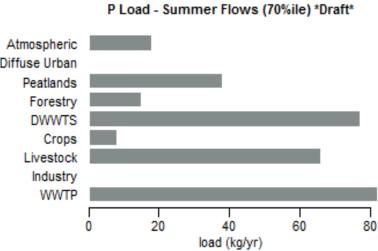
Subcatchment storyboard

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	5_010	(07-09)	(10-12)	n	1-10	_	Rio		Poor	Mod		Review	" L				Sie	2	oor	Poor	At risk	8406800	4
	Sie		Unassigned	Unasignet	Unassigned	Ag/Peat/ DWWTS		Che	n .	Status	Iter	ıd	Value		T1			Stem.	9	latus	Trend	Value	n	
	Chem.	5	Status	mend	Value	71		P04 TON		High	D (N	I/N)	0.015	/ Ð	Not at risk		P04	н	a)	D (N/N)	0.015 (*)	Not at risk		
	P04		Ved	U (N/N)	0.049 (*)	At Nisk				Mod	D (N	i/N)	2.83 (F)				TUN	N	led	D	2.764 (*) 1	rosod from u/s	
	TÛN	•	317	D (Y/N)	473/04			NH4	L	Mod	D (N	i/N)	0.108	F				NH4	N	led	D	0.187 (*) D	cased from u/s	
	NH4		Ved	D (N/N)	0.09+ (*)		1	Tier	1 outcome		Revi	ew	Charles	e?	No			Tier 1 outo	ome		At risk	Charger	No	
	Tier 1 ou	com	•	At risk	Charge?	No	1	•						_			Ι.				1	V		
	8_0/0		(07-09)	(10-12)	п			Τ,				T						Drish_030	(07-0	(90)	(10-12)	п	Peat	
	5_010 5ic	-	(07-09) Unassigned	(10-12) Unassigned	T1 Unatigned	Ag/WWTP			Clover	020	(07-09)	(10-:	12)	T1				Sio	Poor		7oor	At risk	reat	
	Chem.	-	Status	Trend	Value	n			Bio		Good	Good	a	Revie	w .			Shem.	Statu	a 1	Trend	Value	n	
	P0 8	-	Med	P (N/N)	0.040 (*)	AS Riak			Tier 1 d	outcome		Revie	w	Chan	8e	No		PÚ4	tigh		D (N/N)	0.011 (*)	Not at risk	
111	τÜI		Med	D (N/N)								٨						TÛN	Med		0 (N/n)	2.159 (*)		
t	NH4		righ	U	D.035 (N)							<u> </u>					1	NH4	Med		0 (N/N)	0.885 (*) - Xor	sistently High	
l l t	Tier 2 ou	utcom	• •	At risk	Clange?	No			Clover	_010	(07-09)	(10-12)	T	L		1	Tier 1 outcom			At risk	Change?	No	
↓ ' •					-				Bio		Unknown	P	oor	At	risk		1					个		·
Drish_060	ih_060 (01,09) (10-12) T1		Tier 1 outcome			А	t rísk	C	hange	No	IΓ	Drish_020	(07-09))	(10-12)	* P		1						
Sie	2	/oor	Good	Notat	ńk			Ι ι	L							Sio	Unknov	wn	Unknown	Not at r	Peat	Π		
Chem.	9	itatus	Trend	Value	n			TWO	NS_010	(07-09)	(10-	-12)	п					Chem.	Status		Trend	Vaca	n	
P04	•	Sood	N(N/N)	0.026	(r) Not at ris	k		Sie		Medicate	. Coo	đ	No	at ris	k .			P04	righ		D (N/N)	0.0.5 ()) Not at risk	
TÛN	N	Ved	D (N/N)	2.955	(*)	_		Chem Status		True	nd	Value		п			TON	Good		0 (N/N)	1.77 (N			
NH4	0	Sood	U (N/N)			_		PÜ4	P04 High		D (N	D (N/N)		(II) Review			NH4	Meden	6c	D (N/N)	0.215 ()	•		
Tier 1 outcome Not at risk Vengel Yes (TON)					TÛN		Med	D (N/N)		2.178 (N)				1L	Tier 1 outcome			Not at ris		Y- Neview				
Suir_070	(07-09)	n Í	(10-12)	п			NH4 Good D (N/N) D.				0.0	162 (F)							∧					
Sio	Poor		Mederate	Review				Tier (outcome		Rev	iew	Change?		17 No			Drish_010 (07-09)		99)	(10-12)	n		
Chem	Status	+	Trend	Vile	п						Gleng_01	eng_010 Unassigned RWB					Sio	Poor		Moderate	At Risk			
PÜ4	Good		D (N/N)	0.027 (*)	Not at risk	L												P04	Statu	3	Trend	Value	n	
TÛN	Med	+	<u>p (Y/Y)</u>	2.488 (*)			Ary Assessment: Level of Assessment Require = High No chemistry d P at 8 010 & 8020 (but no Q data), both are at risk but TON seems to be the																	
NH4	Good		D (N/N)	0.055 (*)		issue elsewhere a	and Q	status	is Poor or l	Mod.								Tier 1 outcom		At risk	Ch	anga?	No	
Tier 1 outo	ome		Review	Change?	No	 Decision – chang 	ge Dri	sh_020) to review :	as there is	s no Bio dat	a, NH4	is Moda	andTO)N is near	·								-1

Load apportionment modelling Southern tributary



N Load - Summer Flows (70%ile) *Draft*



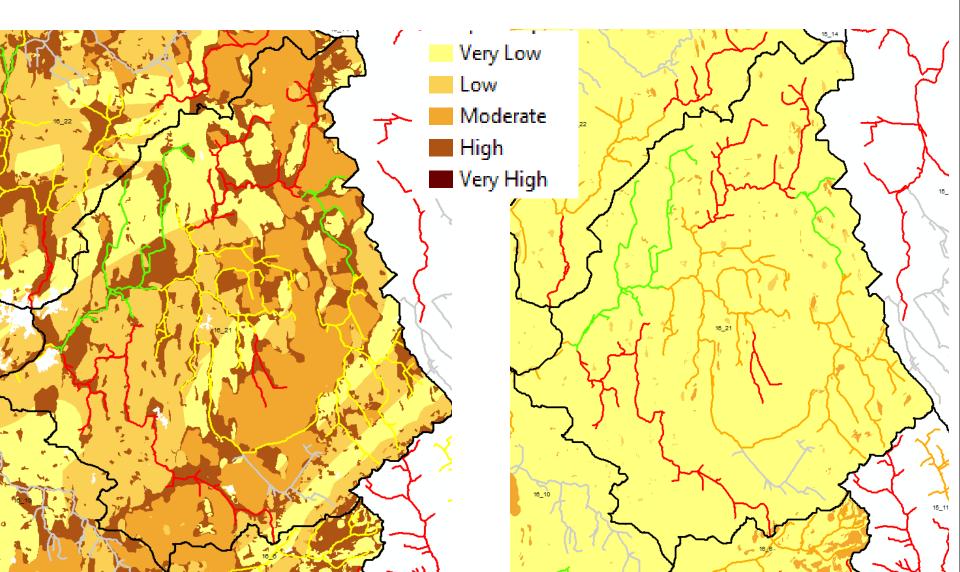
4000

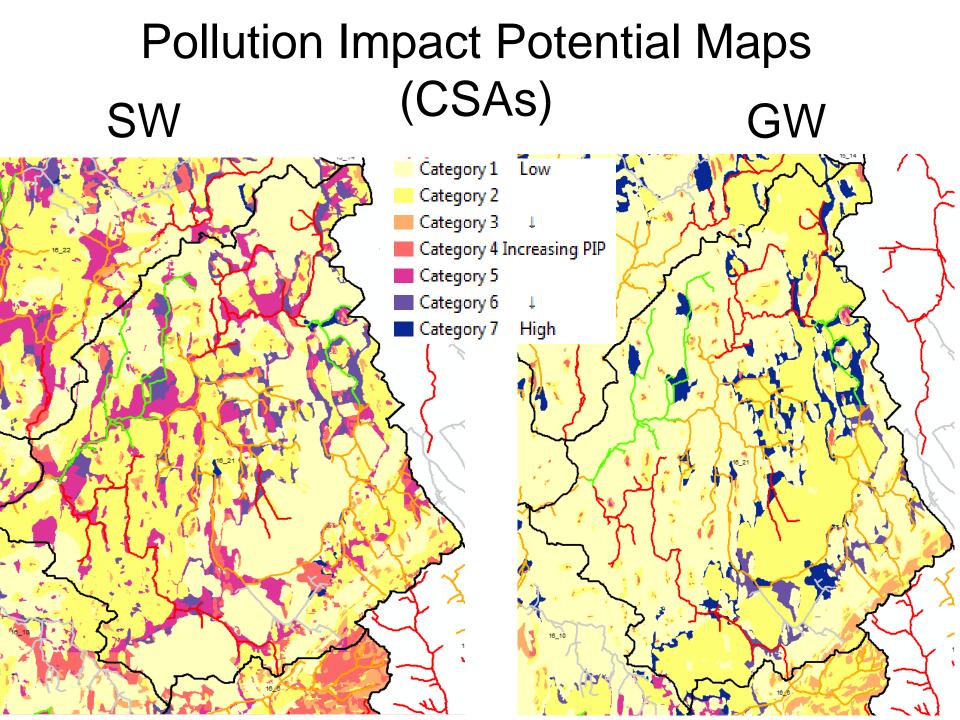
load (kg/yr)

6000

8000

P Susceptibility Maps SW GW

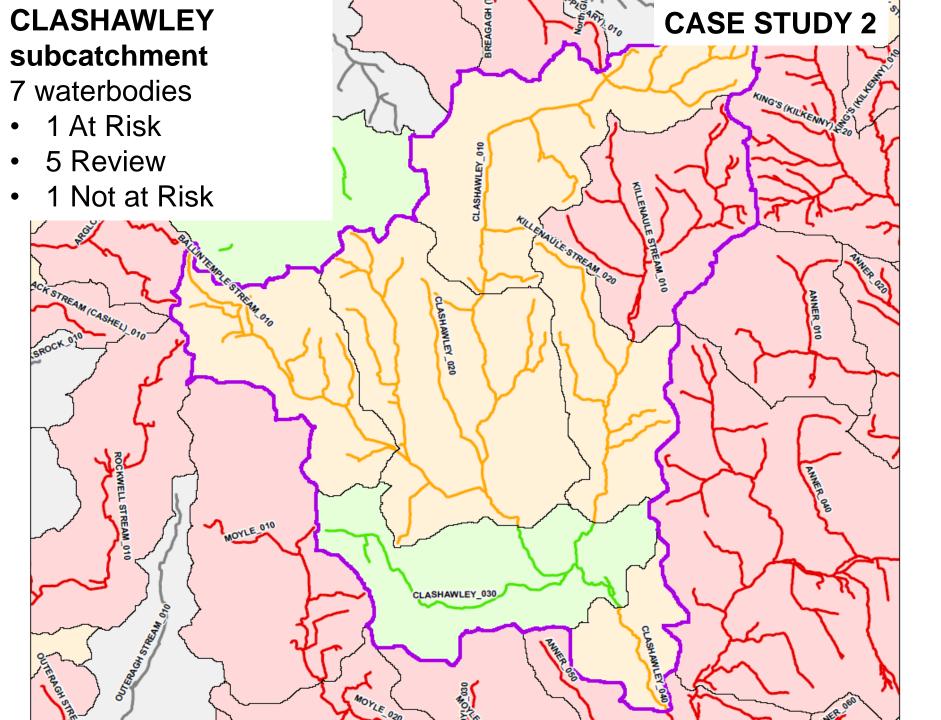






DRISH Summary and actions

- 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



Waterbody storyboard

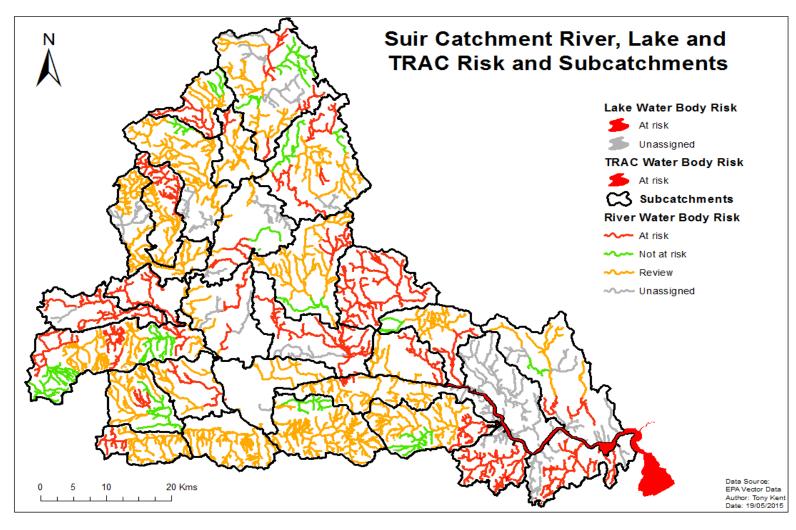
16K050200 Killenaule_0 10	(07-09)	(10-12)	T1	Pressures					
Bio	Poor	Poor	At Risk	WWTP					
Eco	Poor	Poor							
Chem	Indic status	Trend	Value	T1					
Ortho-P (P)	Poor	D (N/N)	0.082 (F)	At Risk					
	Mod	D (N/N)	0.045 (F)						
TON (N)	Mod	D (N/N)	3.318 (F)						
	Mod	D (N/N)	1.878 (F)						
Tot Am (N)	Good	U (N/N)	0.042 (F)						
	High	U (N/N)	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

CPC CPC Environmental Protection Agency As instantional war Standard

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!

A CAMPAGE

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