

The Water Abstraction and Impoundment (Licensing) Regulations (Northern Ireland) 2006

Where we are now
Challenges for 2008 /09

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The Water Abstraction and Impoundment (Licensing) Regulations (Northern Ireland) 2006 An Overview



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- The Environmental Considerations -
- The Northern Ireland approach -
- The objectives of the control measures
- Who uses water & who is effected in NI?
- EHS activities & responses to date
- WFD challenges



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Environmental Considerations

- Habitats Directive
- Water Framework Directive



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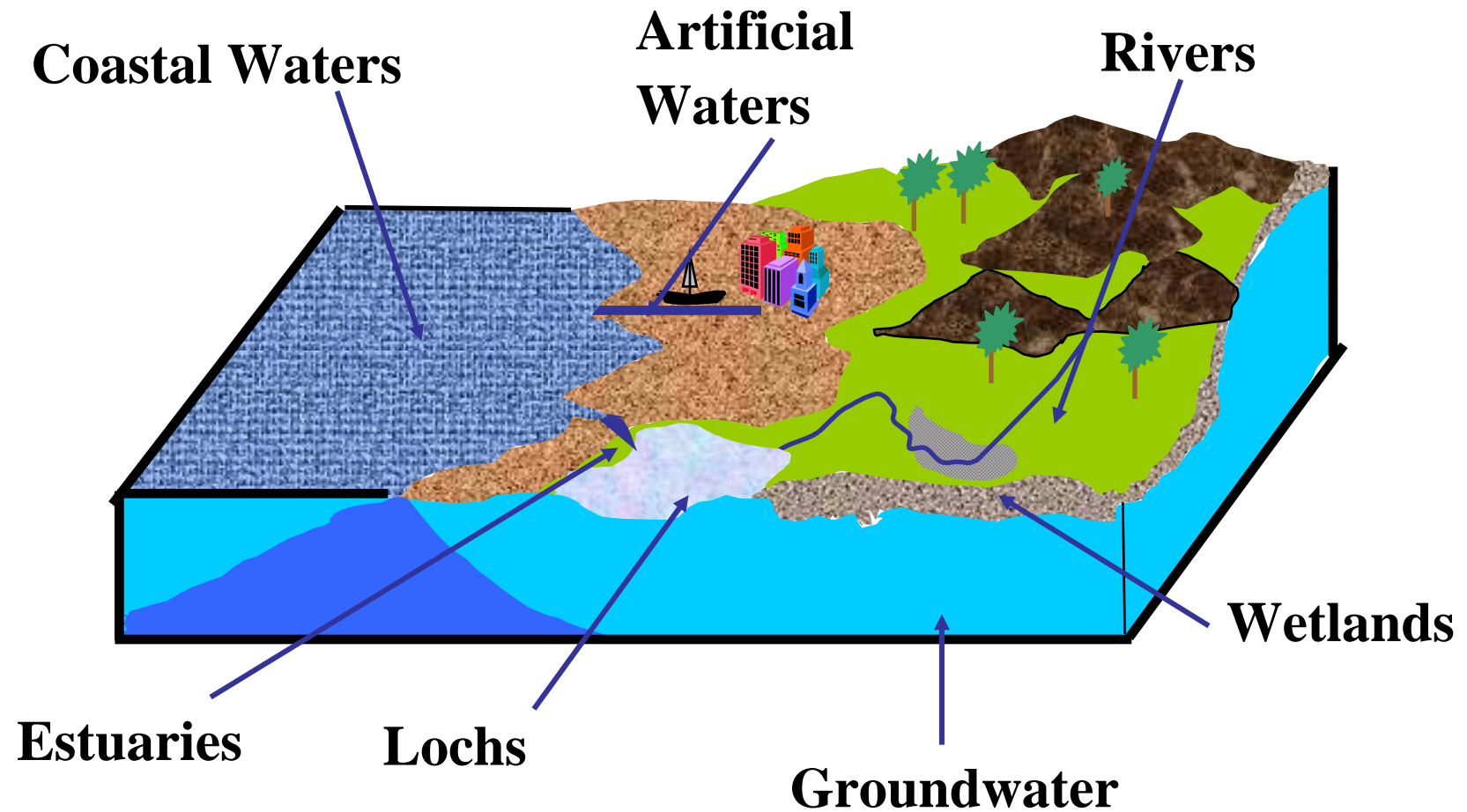


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A source to sea approach



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The Environmental Considerations

- Habitats Directive – “protection” restore and maintain bio-diversity to a favourable conservation status, whilst taking into account the economic, social and cultural requirements and regional and local characteristics.
- Water Framework Directive – “good ecological status; prevent & limit adverse impact” protection, improvement and sustainable use of all water bodies in the environment {all rivers, canals, lakes, estuaries, wetlands, coastal waters and **groundwater**}.
- Environmental Standards - Standards for ecology, hydrology and morphology which define a risk of harm to biology {in development}



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Water Resource Assessment in NI

Article 5

- Current abstraction activity
- River flow; particularly low flow events
- Lake systems
- Transitional Waters
- Groundwater
- Impoundment and/or operation of impounding structures



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Water Resource Assessment in NI

	Historic data	% At risk
Rivers	57 out of 550	10%
Lakes	8 out of 24	33%
Transitional Waters	1 out of 7	14%
Groundwater	6 out 67	9%

Characterisation - Scottish water bodies at risk of failing WFD objectives

Type of Pressure	Proportion of all water bodies at risk
Point source pollution	10%
Diffuse source pollution	11%
Engineering/habitat damage	17%
Abstractions and dams	15%
Total at risk	53%

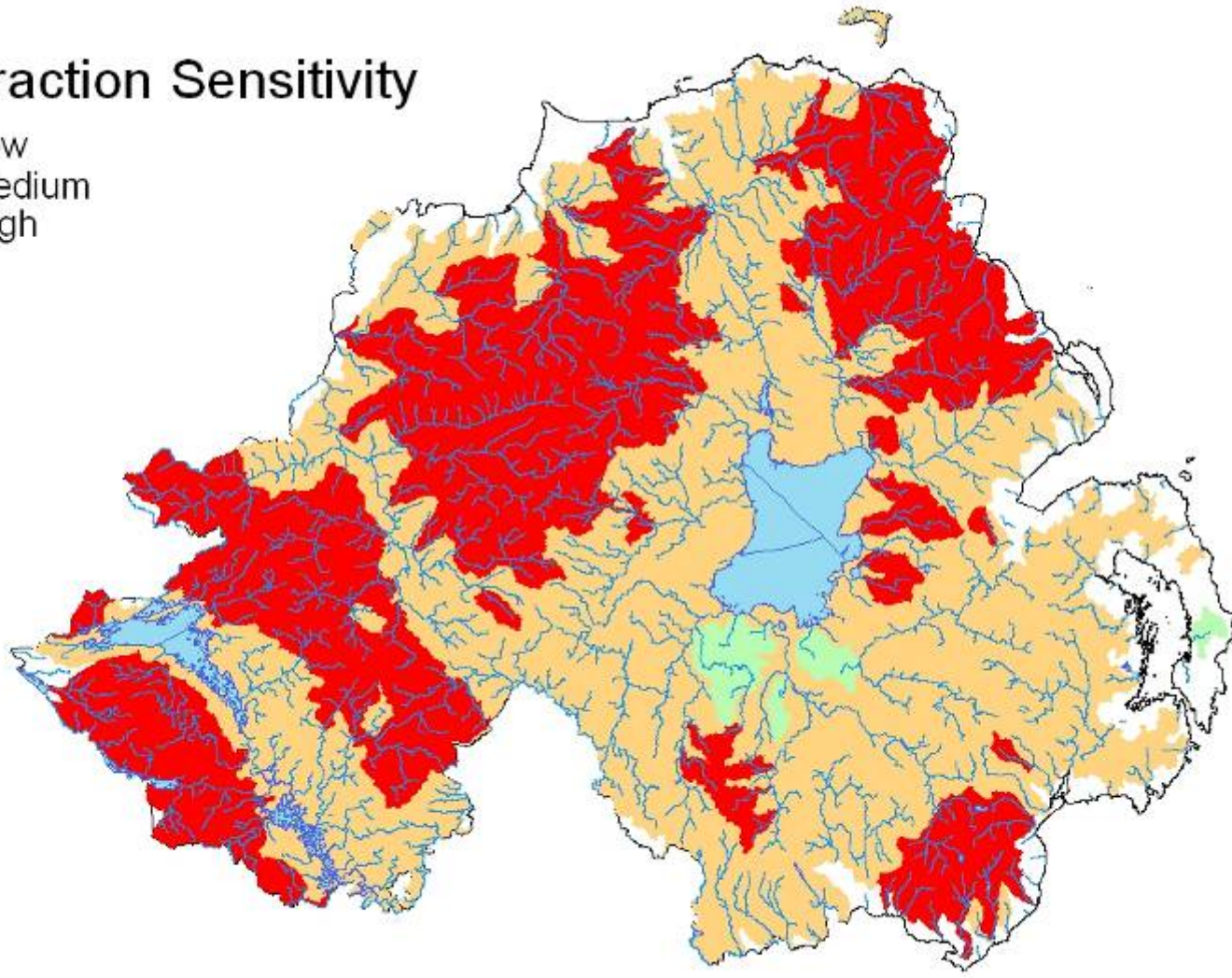
Average cost of improving a kilometre of river is

- £2 million for point source
- £0.2 million for abstraction

Abstraction Sensitivity

Abstraction Sensitivity

- Low
- Medium
- High



What is abstraction ?

“ the doing of anything whereby water is removed from a waterway or underground stratum”



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What is impoundment & impounding structures

“an artificial collection or storage of water, a body of water confined”



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Risk based authorisation

- the assessment of risk factors

- Volume
- % of flow (surface water) or recharge (groundwater)
- Other abstractions within a waterbody (cumulative effects)
- Current status of waterbody
- Proximity to protected areas (ASSI, SAC etc.)
- Consumptiveness
- Morphological impacts (fish migration, sediment)
- Local impacts (saline intrusion, subsidence etc.)



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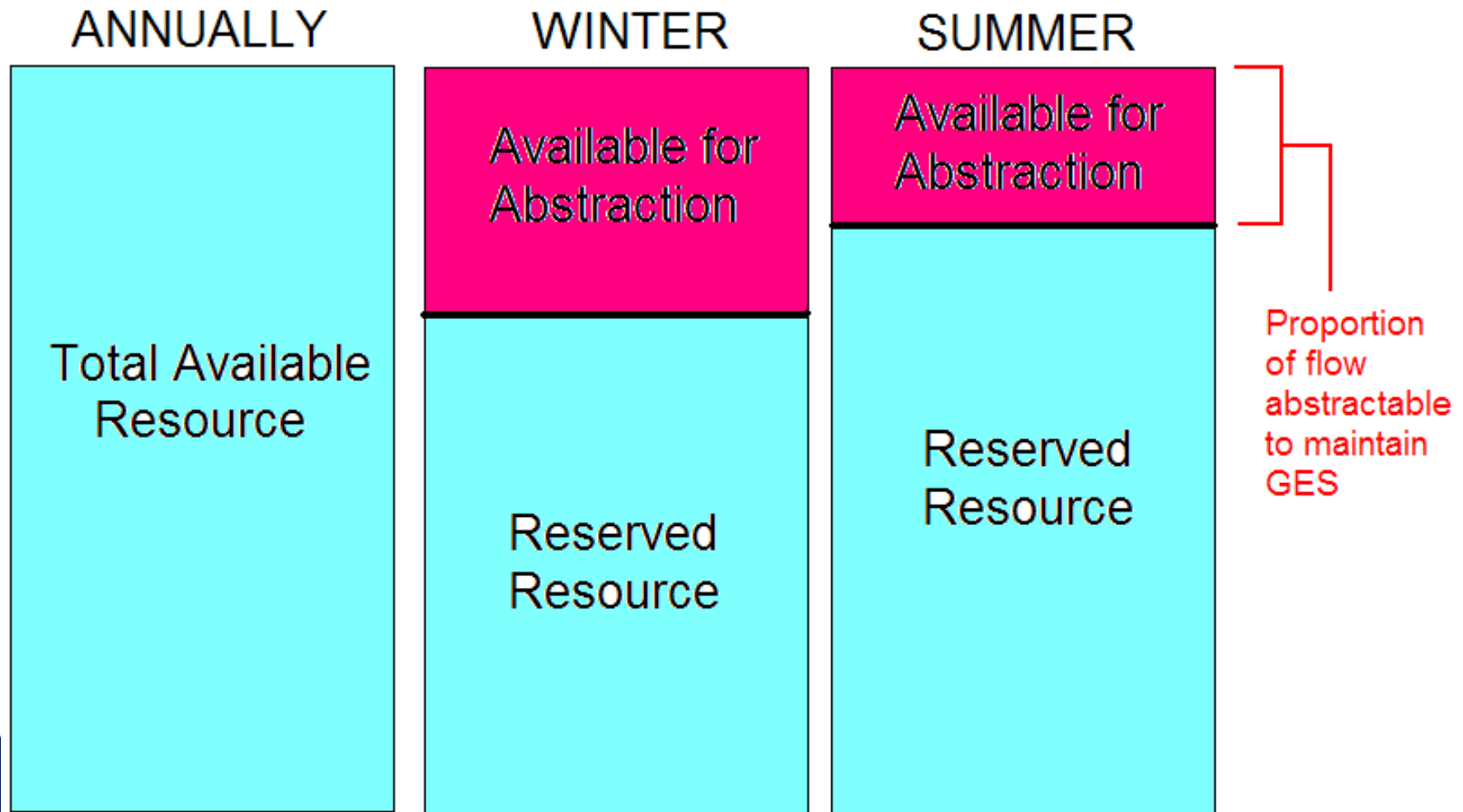


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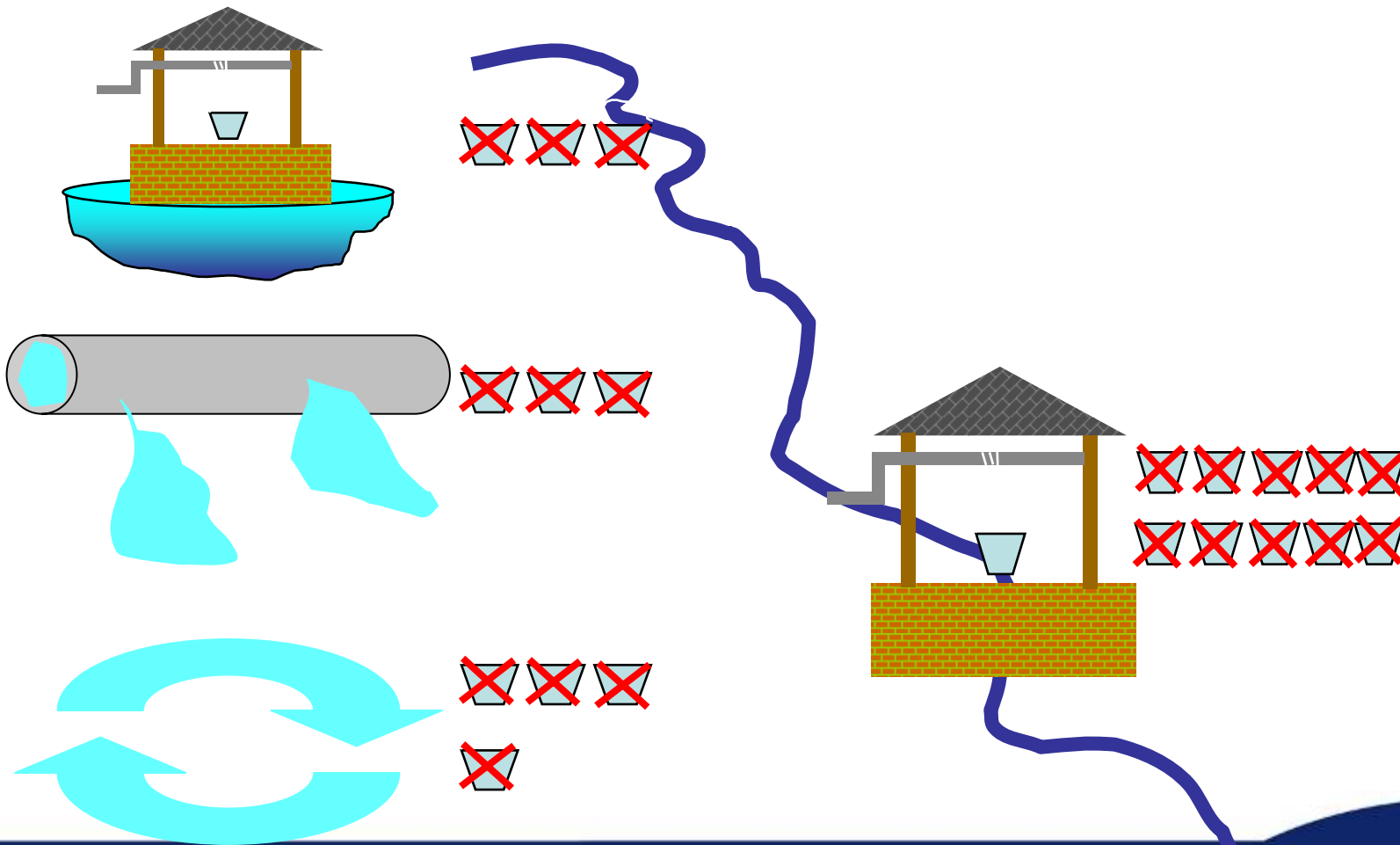


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Resource Availability



Water user can plan compliance measures for 2012



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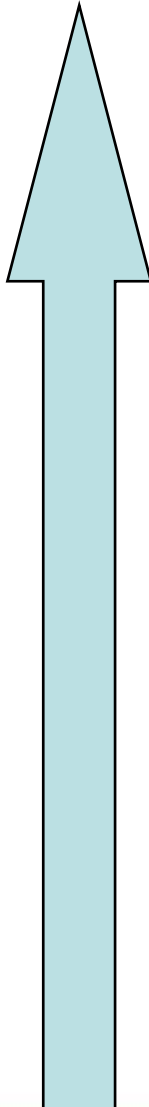
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Risk based authorisation

RISK

High

Low



VOLUME

Over 100 m³/day

20 to 100 m³/day

10 to 20 m³/day

Under 10 m³/day

CONTROL MEASURE

Higher risk
complex license/conditions

Medium risk (possible
cumulative effects) simple
license

Notification
(PCA conditions)

No interaction with EHS
(PCA conditions)

Who uses water in NI

Sector	Number over 20 m ³ /day	% 20-100 m ³ /day	% over 100 m ³ /day
Public Supply	60	0	100
Hydro Power	60 - 80	0	100
Agriculture	1500 - 3000	95	5
Fish Farming	40 -60	0	100
Food Processing	40 - 160	20	80
Quarrying	140-200	30	70

An example of an existing Abstractions/Impoundments water balance assessment.

(River Derg Waterbody)



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River Catchment Water Balance

Mean river flow and low flow (Q95) are determined by:

- **Catchment Area** (effective area drained by river)
- **Effective Rainfall** (proportion of rainfall reaching river)
- **Geology** (nature of bedrock and sub-soil strata)
- **Abstractions, Discharges, Impoundments** (artificial)



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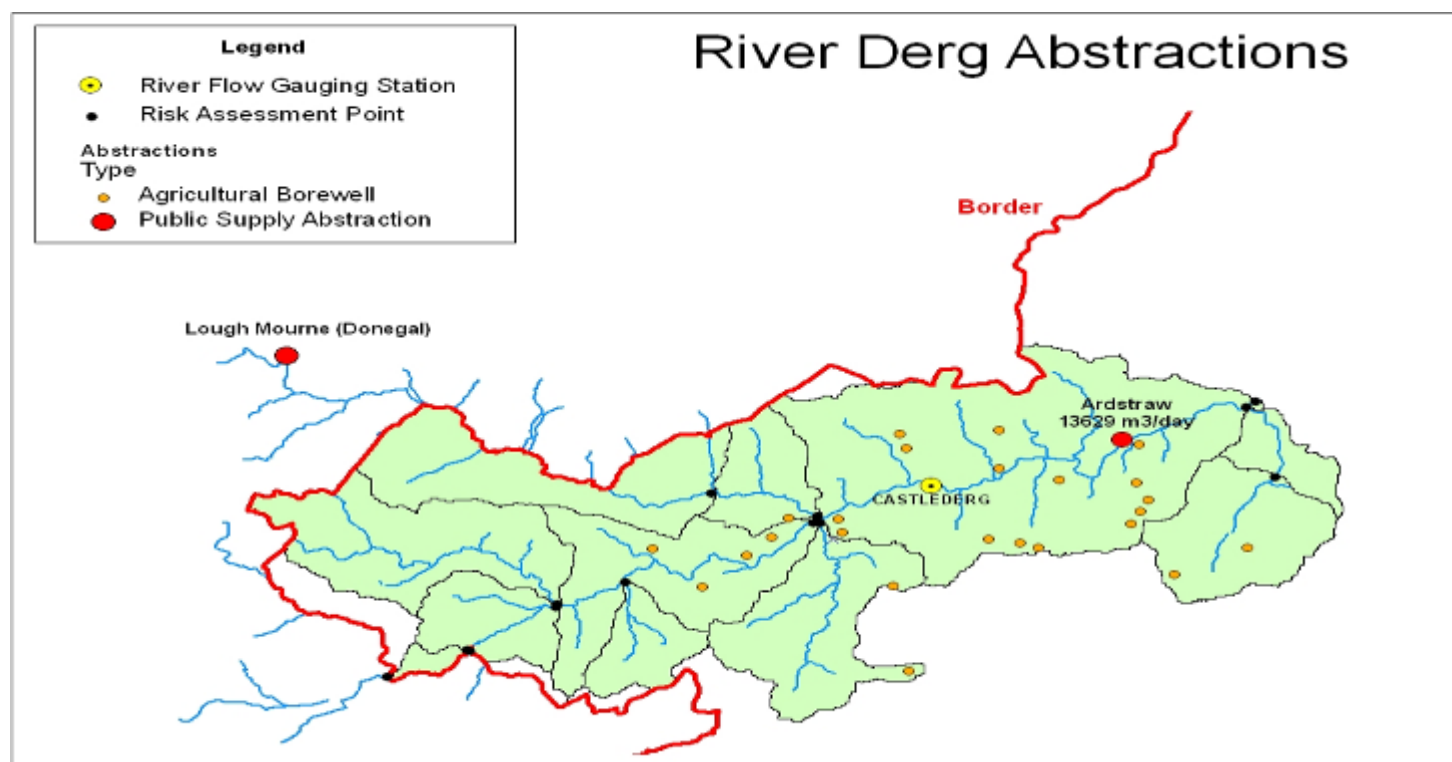
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River Derg Catchment

The assessment is indicating that the combined 'existing' abstraction rates have utilised the available resource at low flow periods for the river.



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Derg Influences

Influence Type	Name	Volume at MDF	Volume at Q95
Abs	Derg River	- 24000	- 24000
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 20	- 20
Abs	Farm-Dairy	- 14	14
Abs	Farm/House	- 5	- 5
Abs	Farm/House	- 5	- 5
Abs	Farm/House	- 5	- 5
Abs	Farm/House	- 5	- 5
Abs	Farm	- 5	- 5
Abs	Farm	- 5	- 5
Abs	Farm-Dairy	- 3	- 3
Abs	Farm-Dairy	- 3	- 3
Dis	Derg (Ards traw)WTW	+ 1800	+ 1800
Dis	Killen	+ 59	+ 74
Dis	Spamount	+ 154	+ 193
Dis	Castlederg	+ 891	+ 1111
Dis	Industrial	+ 1	+ 1
Dis	Industrial	+ 2	+ 2
Dis	Industrial	+ 6	+ 6
Dis	Industrial	+ 15	+ 15

Total Abstraction

24.29 MI/day

at MDF or Q95

Total Discharge

2.929 MI/day at Q95

3.202 MI/day at MDF

Derg Water Balance MDF

- Natural MDF = 1119.053 Ml/d
- Total Abstractions = 24.290 Ml/d
- Total Discharges = 3.202 Ml/d

$$\begin{aligned}\text{Influenced Flow} &= 1119.053 - 24.29 + 3.202 \\ &= 1097.965 \text{ Ml/d}\end{aligned}$$

1.8% Reduction in Flow at Mean Daily Flow

20 – 25% Allowable to maintain GES



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Derg Water Balance Q95

- Natural Q95 = 85.19 Ml/d
- Total Abstractions = 24.290 Ml/d
- Total Discharges = 2.929 Ml/d

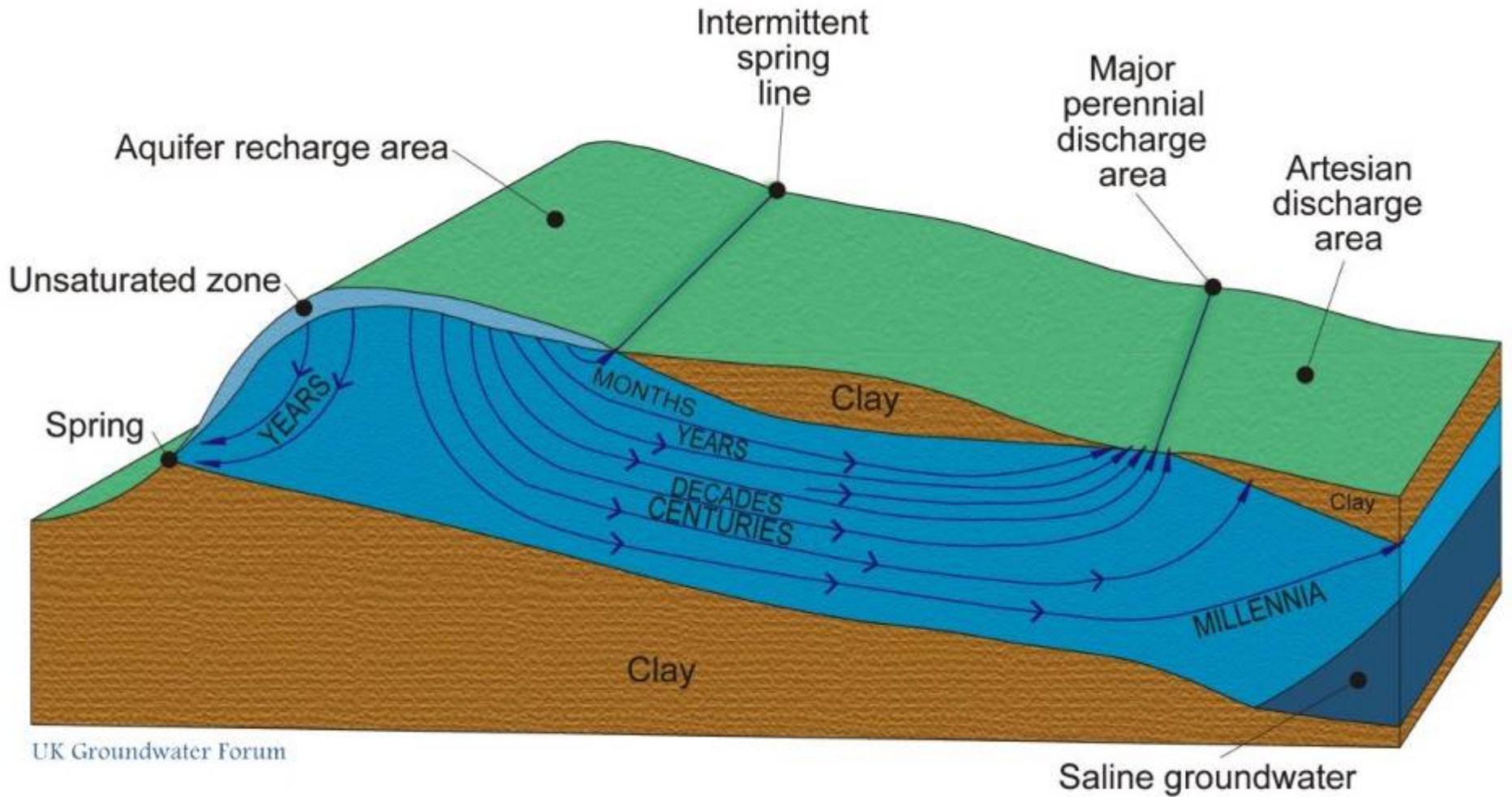
$$\begin{aligned}\text{Influenced Flow} &= 85.19 - 24.29 + 2.929 \\ &= 63.829 \text{ Ml/d}\end{aligned}$$

25.07 % Reduction in Flow at Q95

10 – 15% Allowable to maintain GES

- **FAILS TEST FOR GOOD ECOLOGICAL STATUS**

Groundwater flow



UK Groundwater Forum



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GW Tests

- Volume
- GW Body Balance
- Surface Water Impact (rivers)
- Surface Water Impact (lakes)
- Protected Areas (SAC, ASSI..etc)
- Saline Intrusion
- Other groundwater abstractions
- Cross-border
- Groundwater Level Trend
- Plume (known pollution) Impacts
- Other water features review (OS map/aerial photos)



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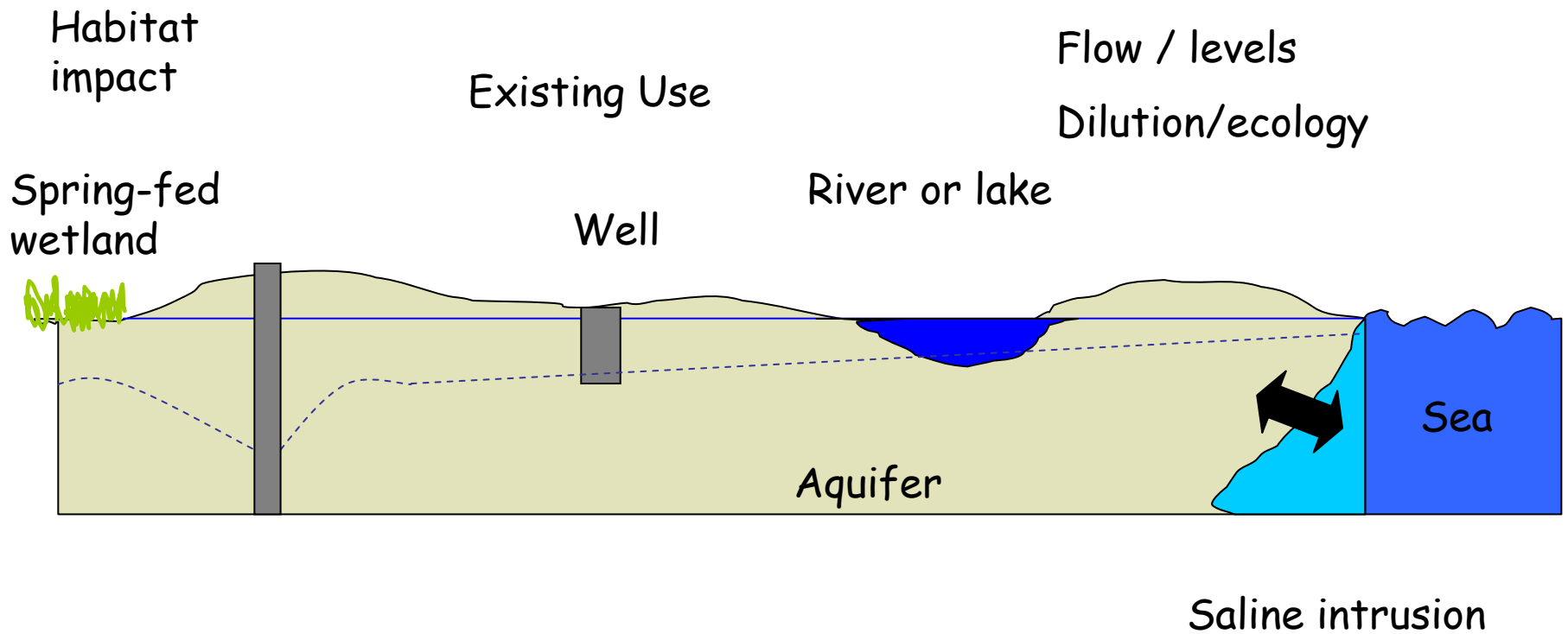


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Potential impacts



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The objectives of the control measures

- To protect the NI water environment
 - including protected ecosystems
- To deliver efficient and sustainable water use
 - prevent & limit adverse impacts
- To create a single & consistent risk based regime - for all abstractions and impoundments
- To comply with EEC Directives



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EHS activities & response

Guidance booklets & Application forms

EHS Website pages

Journal articles (Sustainable Ireland, Farmer's Weekly, Quarrying Today, WaterLine et al.)

Stakeholder Groups – technical sub groups

Ready reckoners

Mail & E- Mail (3,500 contacted)

Public water supply - licences (HMWB project)

200 licenses / authorisations

Fees & Charges

Impoundment/s - WFD



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SUMMARY

- Water Resource Environmental Standards
- Risk based approach to authorisation / compliance visits
- Water balance and ecological assessment to determine applications



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THANK YOU



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