

Ensuring Safe MAR to address Water Scarcity under the EU Water Framework Directive

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Introduction

The MARSOL Project under WP17 addressed Legal, Policy and Governance issues related to MAR.

In particular MARSOL delivered:

- A proposal for a regulatory framework for MAR, based on the requirements of the EU Water Acquis
- A Policy Paper to promote MAR as a (safe) water supply tool.



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Background

The **Water Framework Directive (Dir 2000/60/EC)** considers ARTIFICIAL RECHARGE as one of the management tools which can be utilised by EU Member States to support the achievement of good groundwater quantitative status.

The provisions of the Directive in this regard, are directed to ensure that the necessary controls are in place to eliminate the possibility of any degradation in the qualitative status of the receiving body of groundwater.

Background

In fact, whilst listing ARTIFICIAL RECHARGE as one of the basic measures to be considered by EU Member States in their River Basin Management Plans, Article 11 of the WFD requires the establishment of:

“controls, including a requirement for prior authorisation of artificial recharge or augmentation of groundwater bodies.”

This in order to ensure that such practice does not

“compromise the achievement of the environmental objectives established for the source or the recharged or augmented body of groundwater”.

Background

The protection of the qualitative status of the receiving bodies of groundwater is further considered in the **Groundwater Directive (Dir 2006/118/EC)**.

By introducing the concept of preventing **'inputs'** instead of **'discharges'**, this Directive widens the scope of pollution prevention to cover all pollutants that enter groundwater.

The Groundwater Directive thus requires the enactment of all measures deemed necessary and reasonable to avoid the entry of hazardous substances into groundwater and to avoid any significant increase in the concentration of such substances in groundwater, even at a local scale.

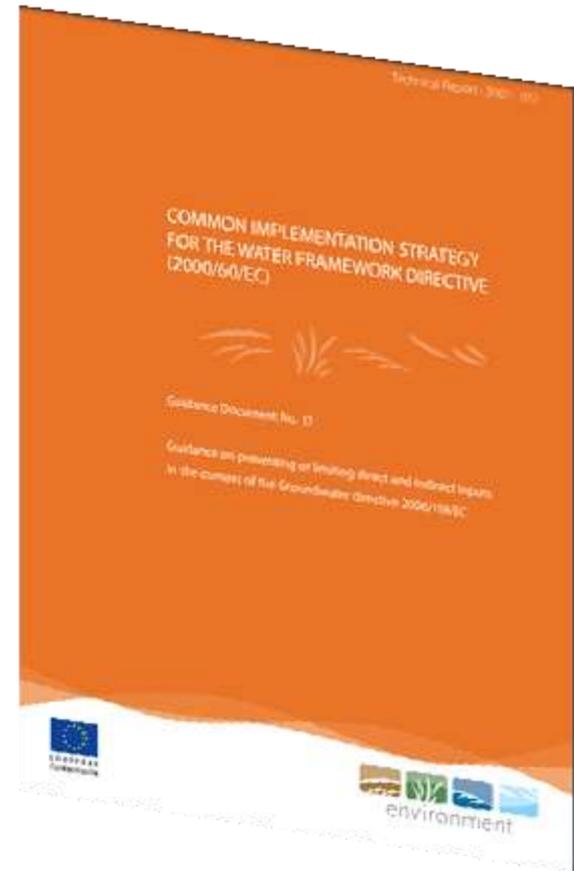
Background

WFD Common Implementation Strategy

Guidance Document 17

“Guidance on preventing or limiting direct and indirect inputs in the context of the Groundwater directive 2006/118/EC”

Document defines direct and indirect inputs, and sets recommendations for compliance with GWD requirements for both input typologies.



Background

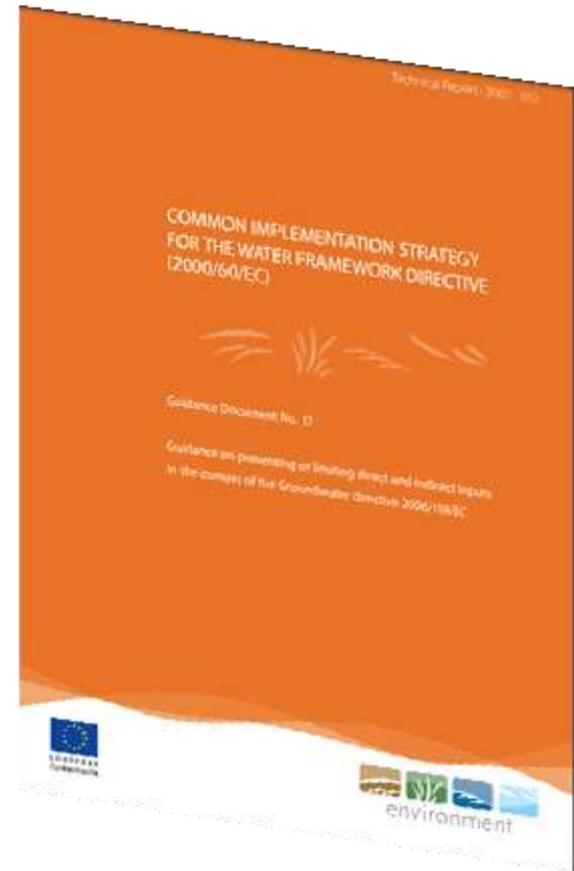
Other relevant CIS Guidance Documents:

Guidance Document 18

Guidance on Groundwater Status and Trend Assessment

Guidance Document 26

Guidance on Risk Assessment and the use of conceptual models for Groundwater



Regulatory Framework

The Water Framework Directive under Article 11(3)(f) introduces a requirement for prior authorisation subjecting MAR to a prevent and limit assessment (in line with Article 4(1)(b)(i)) to ensure that the activity does not hamper the achievement of the Directive's Environmental Objectives.

The Groundwater Directive under Article 6(3)(d) introduces an exemption from the prevent and limit requirements of the Directive for those MAR activities permitted under the WFD, which under Article 4 requires that consideration is taken to the prevent and limit objectives.

The requirement to adhere to the Prevent and Limit objectives therefore still stand under the original WFD requirement. The 'prevent and limit assessment' requirements under the WFD however are not clearly defined. This is a "Regulatory Grey Area" in the EU Legislative framework.

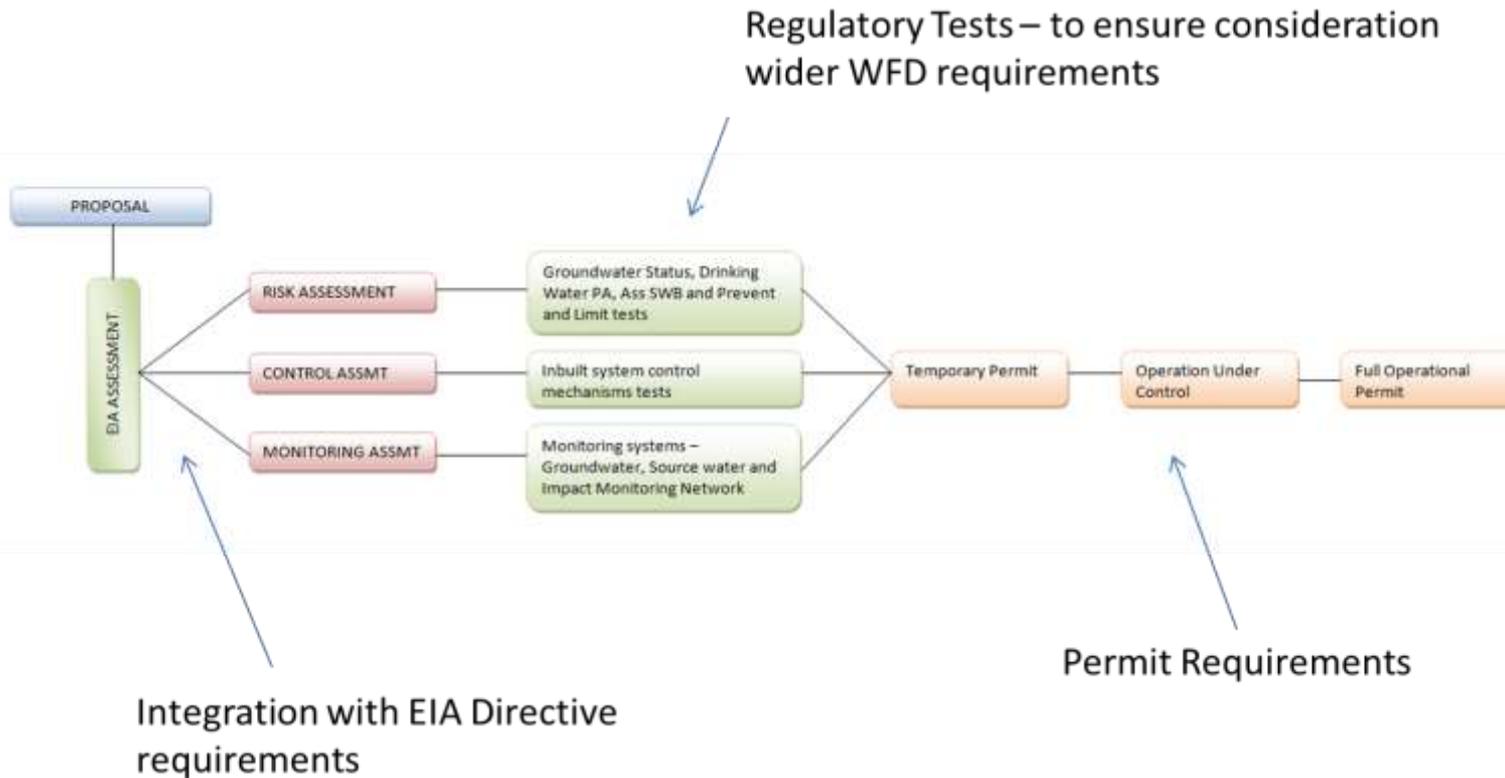
Regulatory Framework

MARSOL addressed this “regulatory grey area” by proposing regulatory framework attempts to integrate the WFD requirements into an Environmental Impact Assessment of the proposed MAR scheme:

The proposed regulatory structure is based on the following principles:

- (i) The undertaking of a **risk assessment** to assess the potential adverse impacts on the status of the groundwater body.
- (ii) The establishment of **control mechanisms** to ensure the reliable performance of the MAR scheme
- (iii) **Monitoring** of the performance of the MAR scheme and its impact on the augmented body of groundwater.

Regulatory Framework



Way Forward

CIS Work Programme 2019 – 2021

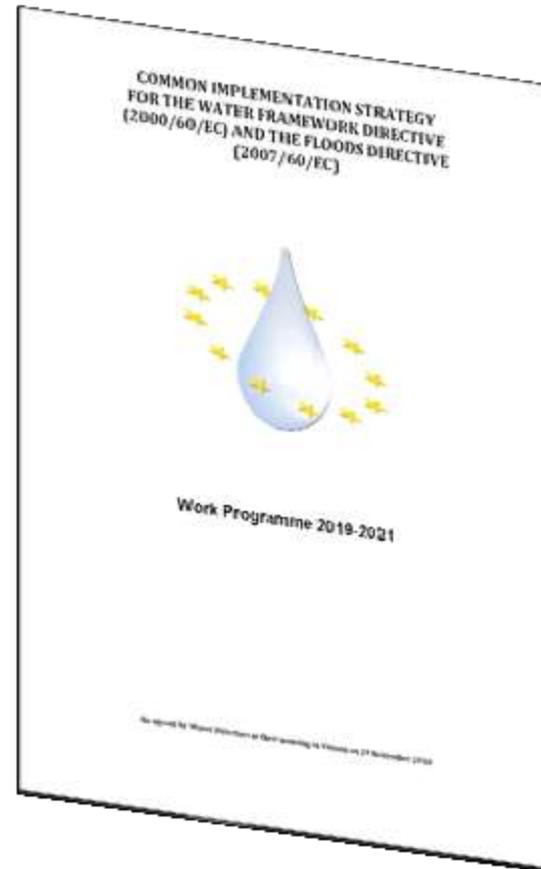
Working Group on Groundwater

Task:

Explore the need and, if necessary, develop a guidance document on aquifer recharge practices that comply with the WFD and Groundwater Directive, in cooperation with the Ad-hoc Task Group on Water Reuse

Deliverables:

CIS guidance on aquifer recharge



Way Forward

CIS Guidance Document on Aquifer Recharge:

1. Aquifer Recharge under the WFD, GWD and EIA Directives
2. MAR under the CIS Guidance Documents
3. Developing a correct understanding of Managed Aquifer Recharge
4. Regulatory Assessment (Requirements of EU Legislation)
5. Gap Analysis
6. Recommendations
7. MAR Project References

Way Forward

A Common Understanding of Artificial Recharge

Recharge technique	Main MAR type	Specific MAR type
Enhanced infiltration	Surface spreading methods (Areal recharge)	Infiltration ponds
		Soil-Aquifer treatment
		Excess irrigation, ditches, trenches
	Point or line recharge	Well/borehole infiltration
		Reverse drainage, shaft recharge
	In-channel modifications	Check dams
		Riverbed scarification
Sand dams		
Induced bank filtration (IBF)		Riverbank filtration
		Lakebank filtration
Well injection		Aquifer storage and recovery
		Aquifer storage, transfer and recovery
		Aquifer storage (hydraulic barriers)
Enhanced storage		Sub-surface dams

Conclusion

1. Importance of MAR being undertaken in a way which is safe to human health and the environment (and that the required regulatory structures are in place to ensure this).
2. Highlight the need for the necessary regulatory controls to be established to ensure the application of good MAR practice.
3. Outline that a wide economic framework is required for the application of the Cost Recovery Principle in MAR, which takes into consideration the environmental and resource benefits generated by MAR activities
4. Highlight the need of a Guidance on MAR risk assessment from both a quantitative and qualitative perspective – outlining how safe MAR can contribute to the achievement of WFD Environmental Objectives

Thank you for your attention

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