Aligning Afforestation with Water Management in Gozo

What is the River Basin Management Plan?

The **3rd River Basin Management Plan for Malta** is a comprehensive document required by the European Union's Water Framework Directive. Its main goal is to ensure the **sustainable management of all water resources** in the Maltese Islands, including groundwater, inland surface waters, transitional waters, and coastal waters, and to protect their associated aquatic ecosystems. The plan assesses the current status of these water bodies, identifies the pressures they face, and lays out a **Programme of Measures** to protect and, where necessary, restore them. Given Malta's semi-arid climate and permanent water scarcity, the plan also addresses these prevailing conditions.

era.org.mt/topic/river-basin-management-plan/

era.org.mt/wp-content/uploads/2024/07/Malta_3rd_River_Basin_Management_Plan.pdf

How does it apply to Gozo?

Specifically regarding **Gozo**, the River Basin Management Plan treats it as an integral part of the Malta Water Catchment District. Several aspects of the plan apply to Gozo:

- The plan specifically identifies and assesses the status of the **"Gozo Mean Sea Level groundwater body (MT013)"**. It notes that this groundwater body is more extensively capped with perched groundwater bodies than the Malta Mean Sea Level body and is in **poor quantitative status**. High nitrate levels are also a reason for it failing good qualitative status. Furthermore, it shows an upward trend in parameters indicating saline water intrusion.
- Gozo has its own identified groundwater bodies, including the "Gozo Mean Sea Level" and perched bodies like "Għajnsielem Perched," "Nadur Perched," "Xagħra Perched," and "Żebbuġ Perched," all of which are included in the monitoring networks and status assessments.
- Two of Malta's designated **freshwater pools**, "Il-Qattara (MTSW01)" and "L-Għadira ta' Sarraflu (MTSW02)," are located on Gozo and are subject to monitoring and assessment under the plan.
- Measure Code **043, "Rehabilitation works in Valley Systems,"** includes the undertaking of rehabilitation works in at least one valley system in Gozo.
- Measure Code **024** focuses on the dissemination of information regarding the use of **"New Water" (reclaimed water) for irrigation at the Government Experimental Farm in Gozo** to encourage the agricultural sector to use this as a substitute for groundwater.

- The "Gozo Mean Sea Level" is identified as a **"Drinking Water Protected Area,"** requiring an added level of protection.
- Like the rest of Malta, Gozo is designated as a **Nitrate Vulnerable Zone** under the Nitrates Directive.
- The LIFE 16 IPE MT 008 project, which supports the implementation of the RBMP, includes actions that cover both Malta and Gozo, such as the assessment of sectoral water demand and potential valley management plans.

Why is this needed?

Malta & Gozo's groundwater status is poor and needs urgent improvement, with additional pressures of reducing rain levels and increasing population & urbanization.

The 3rd River Basin Management Plan for Malta

Table 49 *Results of the Qualitative Status Assessment Test for groundwater bodies.*

GROUND WATER BODY ID	GROUNDWATER BODY	GENERAL QUALITATIVE TEST	SALINE INTRUSION TEST	ASSOCIATED SURFACE WATERS TEST	DRINKING WATER TEST	STATUS ASSESSMENT
MT001	Malta Mean Sea Level	Fail	Pass	n/a	Pass	Fail
MT002	Rabat-Dingli Perched	Fail	Fail	Pass[117]	n/a	Fail
MT003	Mġarr-Wardija Perched	Fail	Fail	n/a	Pass	Fail
MT005	Pwales Coastal	Fail	Fail	n/a	n/a	Fail
MT006	Miżieb Mean Sea Level	Fail	Fail	n/a	Pass	Fail
MT008	Mellieħa Perched	Fail	Fail	n/a	n/a	Fail
MT009	Mellieħa Coastal	Fail	Fail	n/a	n/a	Fail
MT010	Marfa Coastal	Fail	Fail	n/a	n/a	Fail
MT012	Comino Mean Sea Level	Fail	Fail	n/a	n/a	Fail
MT013	Gozo Mean Sea Level	Fail	Pass	n/a	Pass	Fail
MT014	Għajnsielem Perched	Fail	Fail	n/a	n/a	Fail
MT015	Nadur Perched	Fail	Pass	n/a	n/a	Fail
MT016	Xagħra Perched	Fail	Fail	n/a	n/a	Fail
MT017	Żebbuġ Perched	Fail	Fail	n/a	n/a	Fail
MT018	Victoria-Kerċem Perched	Fail	Fail	Pass[26]	n/a	Fail

How can trees or micro forests support Gozo ground-water improvement strategies?

Trees, forests and micro forests are not explicitly mentioned in the excerpts from Malta's 3rd River Basin Management Plan. However, several aspects of the plan suggest how they could contribute to its objectives.

- **Natural Water Retention:** The plan highlights the importance of "Measures addressing natural water retention". Trees and microforests, especially when integrated into valley systems and urban areas, can enhance natural water retention by intercepting rainfall, increasing infiltration into the ground, and reducing surface runoff [Not from sources]. This can help with aquifer recharge, which is crucial in Malta due to its water scarcity. Measure Code 042 focuses on the "Development of a National Valley Management Plan" with the aim to "optimise their water retention

capacity". Trees and vegetation would be a key component of such management.

- **Valley Rehabilitation:** Measure Code 043 concerns "Rehabilitation works in Valley Systems," including protecting local flora and fauna and detailing invasive species for removal. Planting native trees and creating micro forests could be part of these rehabilitation efforts, contributing to the ecological health of valley systems and improving their water management functions. This can also support the conservation status of water-dependent habitats and species within terrestrial Special Areas of Conservation and Special Protection Areas, as mentioned in Section 4.6.

- **Sustainable Urban Drainage Systems (SUDS) and Nature-Based Solutions:** The plan discusses an "integrated approach towards the planning and implementation of Sustainable Urban Drainage Systems (SUDS) and Nature Based Solutions". This includes developing a Strategic Framework on Stormwater management and implementing demonstration projects. Trees and micro forests are integral to many SUDS and nature-based solutions. They can help manage stormwater runoff, improve its quality through natural filtration, and increase groundwater recharge in urban environments [Not from sources]. Measure Code 004 aims for "Nature Based Solutions targeting improvement of water quality" and notes that this is aligned with Malta's second Flood Risk Management Plan (FRMP) and will address pressures beyond flooding, including surface water and groundwater quality. Measure Code 044 specifically mentions "The development of technical guidelines for stormwater management and use of SUDS in the Maltese islands together with the implementation of demonstration projects," aiming to "increase recharge to groundwater through the impermeabilization of hard standing areas transformed into green infrastructure".

- **Riparian Zone Enhancement:** While not explicitly about large-scale afforestation, the plan mentions the "Structure of the Riparian Zone" as a hydromorphological quality element for watercourses. Planting appropriate vegetation, including trees, along watercourses can help stabilise banks, reduce erosion, filter pollutants from runoff, and provide shade, all of which contribute to better water quality and ecosystem health [Not from sources]. Measure Code 014, "Enabling restoration of watercourses delineated as WFD water bodies," aims to engage stakeholders in identifying feasible management and/or restoration approaches, including options for the control of non-indigenous species and replacement with typical riparian species.

- **Ecosystem Services:** Action A8 of the LIFE 16 IPE MT 008 project involves "Catchment modelling" to develop a long-term vision for the protection, conservation, and rehabilitation of Malta's valleys and to "identify, assess, and categorise ecosystem services provided by each catchment". Trees and micro forests contribute significantly to various ecosystem services, including water regulation, water purification, and habitat provision [Not from sources], which align with the overall goals of the RBMP.

In summary, while "trees" and "micro forests" are not explicitly mentioned, the principles and measures within Malta's 3rd River Basin Management Plan, particularly those concerning natural water retention, valley rehabilitation, SUDS, riparian zones, and ecosystem services,

strongly suggest that **incorporating trees and establishing micro forests could be valuable strategies for achieving the plan's objectives of sustainable water resource management and the protection of aquatic ecosystems**. These actions would need to align with local conditions, native species, and integrated water management approaches.