Experience considering Ground Water Dependent Ecosystems (GWDTE) during the EIA process

Groundwater dependent terrestrial ecosystems (GWDTE) are wetland habitats that depend on groundwater flows or chemistries. GWDTE are protected under the Water Framework Directive (WFD) and as they are sensitive to change, they require specific consideration as part of the Environmental Impact Assessment (EIA) process. This article presents Natural Power’s experience and approach to assessing the impacts of projects on these sensitive habitats. Consideration is given to the type of project and the differences in what statutory consultees expect to be provided.

Consideration of GWDTE utilises the expertise of ecologists to map the habitats that have the potential to be groundwater dependent and hydrologists to consider the hydrological and hydrogeological setting to determine the actual groundwater dependency of the communities.

For an ecosystem to be groundwater dependent there needs to be connectivity between the underlying aquifer and the surface habitat. For example, in areas with extensive peat cover, located on slopes or summits with an underlying aquifer with low productivity and with no evidence of springs, the ecosystem is largely going to be ombrotrophic, where the majority of water contributing to the habitat is from rainwater or surface water sources. Such ecosystems would therefore not be considered to be groundwater dependent and would not pose a constraint to the design of a project or require detailed assessment to mitigate risk during the EIA.

Conversely, should the habitat surveys identify GWDTE and favourable hydrogeological conditions supporting these habitats, then detailed consideration within the EIA is required. An example of favourable hydrogeological conditions would be the presence of flushes or springs that indicate shallow groundwater contributions to the habitats.

Regardless of the presence or absence of GWDTE, evidence must be presented within the EIA to allow the regulators (e.g. Scottish Environment Protection Agency (SEPA) and Forestry Commission (FC)) to provide a meaningful and favourable response to the planning application. The design of the project infrastructure should consider the presence of GWDTE to support the level of detail provided within the EIA.

SEPA Land Use Planning System Guidance Note 31 (LUPS 31) provides a clear context on the expectations to consider GWDTE. This includes carrying out Phase 1 habitat and National Vegetation Survey (NVC) surveys to identify and map the extent of particular communities that SEPA consider being groundwater dependent. It is also recognised within this guidance that the actual groundwater dependency of these habitats is dependent upon the underlying hydrogeological characteristics.

To support the EIA requirements, SEPA adopt the use of set buffers to identify particular GWDTE needing considered. Natural Power utilise these buffers to determine the level of assessment required and information presented within the EIA.
Should there be no GWDTE identified through the completion of the surveys highlighted above, or within the buffers, then no detailed consideration is required. This evidence must still be presented within the EIA.

Should GWDTE be identified within these buffers, then a number of additional considerations are required. This includes mapping the contribution zone (catchment area) of the GWDTE to identify the direction of groundwater flow to these habitats. This informs whether or not the project will have a direct impact (where infrastructure is designed on GWDTE) or indirect impact (where infrastructure has the potential to disrupt groundwater flow or quality to the GWDTE).

As well as identification and mapping extent of habitats and consideration of hydrogeological conditions, the FC also considers the botanical importance of GWDTE as part of forestry design plans and subsequent considerations in EIA. Botanically rich GWDTE are often a result of base-rich groundwater discharge, therefore the connection to hydrogeological conditions remains a critical consideration in determining the actual groundwater dependency of habitats for forestry projects. This information also helps to inform the mitigation recommendations, including areas for exclusion from planting.

As GWDTE are protected under the WFD, Natural Power identifies these as High sensitivity receptors. The magnitude of any impact is dependent upon the consideration of GWDTE in the design of the project. Natural Power advocates avoidance of impact through good design but acknowledges this is not always possible and therefore specific mitigation and monitoring is also recommended.

In summary, regardless of the type of projects, evidence to support the conclusions on the presence or absence of GWDTE must be presented within the EIA. This evidence is often noted through the provision of desktop surveys to understand hydrogeological context as well as the completion of and site surveys to allow an informed EIA to be presented as part of the planning application.

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