

Table 3 Details of the multi-criteria analysis

Criterion	Description	Wetland/Complex	Necessary data	Geomatic manipulation	Indicator for multi-criteria analysis	DB attribute
Surface area of wetlands and retention capacity	Surface area of wetland complexes	complex	SHP of wetlands	Based on information layer on wetlands, connect adjacent wetlands to define complexes, number them and calculate their surface area in ha	Surface area in ha, calculated	zsupMH
Connectivity to other natural environments	Connectivity is evaluated based on the percentage of the natural environment within a defined strip of land adjacent to the wetland	complex	SHP of land occupation, SHP of wetlands.	SHP natural environments, make three buffers around wetland complexes (0-100, 100-200, 200-300 m) and calculate the percentage of the surface area occupied by natural areas in each of these buffers, and establish the weighted average of the three buffers. The weighting of the buffers is 3 for the 0-100 m buffer, 2 for the 100-200 buffer and 1 for the 200-300 buffer.	Weighted average percentage of surface area occupied by natural areas intercepted and z score	zmilnat
Diversity;	The diversity of wetlands has a direct relation to their specific or relative wealth of species or habitats. The greater the number of habitats, the more ecological niches are present and the more capable the environment is of supporting multiple species. In this case, diversity is based on the type of wetland	complex and sub-categories	SHP of wetland complexes and subcategories of wetlands (7 subcategories: Marsh (MS), Swamp (ME), Wooded peatland (TB), Fen (FN), Bog (BG), Humid prairie (PH), Shallow water (EP))	Calculate the Shannon Index based on the surface areas of wetland subcategories. $H' = - \sum_{i=1}^S p_i \log_2 p_i$ <p style="text-align: center;">$p_i = n_i / N$ where n_i = the surface area occupied by category i and N = the surface area of the complex</p>	Shannon Index, z score	zdivers
Relative rarity of the type of wetland	Refers to the type of wetland and its presence within a given area. Development of criteria based on wetland data to date	complex and sub-categories	Wetland SHP and limits of the reference framework, and ensure that you have the information necessary on wetlands throughout the territory covered by the reference framework. The reference framework may be the ecological district, the study zone of the catchment area, the urbanization perimeter, the agricultural zone, etc. In this case, it will be the urbanization perimeter.	In the reference framework, determine the percentage of surface area occupied by each type. Classify types of wetlands in reverse order of importance (e.g. 100 %), determine the type of wetland of the study zone, associate the classification of the type of wetland with the reference framework for each corresponding wetland within the study zone (in this case, the urbanization perimeter)	Classification of types of wetlands, association of the classification and z score	zrarsup
Occupation of high adjacent lands or the integrity of the ecotone	Assessment of development pressure: Percentage of surface area occupied by the different types of land occupation weighted by intensity categories	complex	SHP land occupation, SHP wetlands	100 m buffer, calculate the percentages of surface area occupied by each land occupation category; weight according to the corresponding intensity category, calculate the average and then the z score	Weighted average based on anthropogenic activity and z score	zterhte
Fragmentation	refers to the division of the natural environment into different fragments created by infrastructure, modifying the biological and hydrological functioning of the environment. In the present analysis, roads and railways are included within sources of fragmentation. The more an area is fragmented, the more significant the impact on the integrity of the area, and the lower the value presented by the indicator.	complex	SHP land occupation, SHP wetlands	calculate the integrity Index based on the number of fragments and their size $\text{Indice d'intégrité} = \sum_{i=0}^n \left(\frac{\text{Superficie du fragment } i}{\text{Superficie totale du milieu}} \right)^2$	integrity index, z score	zfragsup

Note:

A wetland complex represents the border of wetlands, the distance of which is less than 30 m from one another.