

Natural Heritage

Natural heritage encompasses the variety of life (biodiversity) and the non-living components of earth's systems, such as landforms and the biosphere. The term 'heritage' represents society's ethical remit and responsibilities to pass on a healthy environment, together with its inextricable biological components, to future generations.

Geology	The Maltese Islands are composed of sedimentary rocks, mostly limestones, deposited during the Oligo-Miocene period. The oldest rock formation is the Lower Coralline Limestone (Zonqor): 25-30 million years; followed by Glogiberina Limestone (Franka); Blue Clay (Tafal); Greensand (Il-Gebla s-Safra); and Upper Coralline Limestone (Qawwi): c. 10 million years.
Site of Scientific Importance (SSI)	A site encompassing either the habitat of a particular species or a feature of conservation value (or both) or its associated buffer zone(s). Sites of Scientific Importance (SSIs) are designated to regulate their conservation in accordance with Section 46 of the Development Planning Act 1992. Development within these areas will only be permitted in accordance with the assigned level of protection (sections 15.34–15.40 of the Structure Plan Explanatory Memorandum), and as specified in applicable Supplementary Planning Policy Guidance (Policy and Design Guidance).
Buffer Zone [geology]	An area that surrounds or borders a scheduled geological feature to safeguard and protect its overall integrity and context. A buffer zone may thus encompass features that are not of conservation value per se. The delineation of buffer zones for natural heritage is not constrained by a specific distance—each buffer zone is unique in form and extent according to the context of the feature for which overall protection is paramount. In line with Structure Plan policies buffer zones are afforded a Level 3 degree of protection, but a Level 4 degree of protection may be assigned instead, depending on the overall context.
A lithostratigraphical type section	A geographical section of sedimentary rock exhibiting unique or important physical characteristics.
Cave(s)	There are two distinct categories of caves in the Maltese Islands—sea caves and karstic caves. Sea caves are located beneath or partially above sea level. Elevated sea caves also exist—caves formed by the erosion effects of sea waves and were later elevated from the sea level due to tectonic movements. Karstic caves and phreatic tubes are formed by freshwater percolation and associated dissolving of calcareous rock. Deep natural caves are not frequent in the Maltese Islands, despite its geological formation.
Island	An area of land surrounded by a body of water. Apart from Malta, Gozo, Comino and Filfla, the Maltese archipelago contains several near-shore islands and islets most of which harbour unique (endemic) species of flora and fauna.
Palaeontology	The science and study of past geological periods and fossil records.
Shingle Beach	A geological landform along the shoreline of a body of water consisting of loose shingles and pebbles.
Other specific feature	A specific feature of scientific importance not listed in Structure Plan policy RCO 11.

Geomorphology	The study of the evolution and configuration of landforms.
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Buffer Zone [geomorphology]	An area that surrounds or borders a scheduled geomorphological area to safeguard and protect its overall integrity and context. A buffer zone may thus encompass features that are not of conservation value per se. The delineation of buffer zones for natural heritage is not constrained by a specific distance—each buffer zone is unique in form and extent according to the geomorphology and/or hydrology of the area and the overall setting. Buffer zones may also be aligned with the development zone boundary. In line with Structure Plan policies buffer zones are afforded a Level 3 degree of protection, but a Level 4 degree of protection may be assigned instead, depending on the overall context.
A locality of particular geomorphological interest	A geological formation exhibiting particular morphological features of conservation value.
Cave(s)	There are two distinct categories of caves in the Maltese Islands—sea caves and karstic caves. Sea caves are located beneath or partially above sea level. Elevated sea caves also exist. Elevated sea caves were formed by the erosion effects of sea waves, like all other sea caves, but were later elevated from sea level due to tectonic movements. Karstic caves and phreatic tubes are formed by freshwater percolation and associated dissolving of calcareous rock. Deep natural caves are not frequent in the Maltese Islands, despite its geological formation. A number of caves are characterised by a subterranean complex of interconnected chambers and passageways.
Cliff	A landmass consisting of geological strata of sedimentary rocks often near-vertical along the north-western side of Malta and Gozo. Sheer cliffs were formed as a result of historic plate tectonics and tilt. Cliffs can be found along the coast (coastal cliffs) some of which are associated with boulder scree formations; or located further inland (inland cliffs).
Escarpment	A steep descent or declivity; steep face or edge of a ridge.
Island	An area of land surrounded by a body of water. Apart from Malta, Gozo, Comino and Filfla, the Maltese archipelago contains several near-shore islands and islets most of which harbour unique (endemic) species of flora and fauna.
Karstic Plateau	A relatively flat natural rocky platform composed of limestone terrain and vegetation communities (typically garigue or phrygana) located on top of a ridge and bordered by the underlying escarpment. In Maltese most karstic plateaus are normally referred to as “Qortin”, especially in Gozo.
Phreatic Tube(s)	Very narrow and inaccessible subterranean structures formed by the erosion of

	calcareous rocks by freshwater percolation.
Solution Subsidence Structure	Also known as a sinkhole or doline. Solution subsidence structures are formed by the corrosive solution of subterranean limestone by rainwater; when a cave grows there may be a point where the roof of the cavern becomes unstable and collapses.
Valley Systems	Geomorphological areas formed by horst (up-thrown side) and graben (down-thrown side) faulting and/or through hydrological influences during a much wetter (pluvial) period. Valleys serve as natural water channels—water collects from associated water catchment areas, which is then channelled through watercourses and discharged at the valley mouths (lower reaches).
Other specific feature	A specific feature of scientific importance not listed in Structure Plan policy RCO 11.
Ecology	The multidisciplinary scientific study of the distribution and abundance of organisms and their interactions with their living (biotic) and non-living (abiotic) environment. Ecology incorporates many other branches including geology and geography, meteorology, soil science, genetics, chemistry, physics, mathematics and statistics. Due to its breadth of scope, ecology is considered a holistic science, one that over-arches other disciplines such as biology which become sub-disciplines contributing to ecological knowledge.
Area of Ecological Importance (AEI)	An area encompassing habitats of conservation value and its associated buffer zone(s). Areas of Ecological Importance (AEIs) are designated to regulate their conservation in accordance with Section 46 of the Development Planning Act 1992. Development within these areas will only be permitted in accordance with the assigned level of protection (sections 15.34–15.40 of the Structure Plan Explanatory Memorandum), and as specified in applicable Supplementary Planning Policy Guidance (Policy and Design Guidance).
Buffer Zone [ecology]	An area that surrounds or borders an ecosystem or an important feature of conservation value to safeguard and protect its overall integrity and context. Ecosystems cannot and do not function in isolation from the rest of their wider landscape, which typically consists of a matrix of land uses, predominantly (but not exclusively) agriculture. Buffer zones therefore promote holistic conservation of ecosystems through habitat connectivity and a sustainable-use matrix within a wider landscape context and setting. A buffer zone may thus encompass features that are not of conservation value per se. The delineation of buffer zones for natural heritage is not constrained by a specific distance—each buffer zone is unique in form and extent according to the geomorphology and/or hydrology of the area and the overall setting. Buffer zones may also be aligned with the development zone boundary. In line with Structure Plan policies buffer zones are afforded a Level 3 degree of protection, but a Level 4 degree of protection may be assigned instead, depending on the overall context.
Boulder Scree	A geomorphological feature associated with the presence of Blue Clay beneath the Upper Coralline Limestone formation along the periphery of promontories. Erosion of Blue Clay results in the undercutting of the Upper Coralline Limestone which breaks and collapses into smaller blocks that slide down the clay slopes. Boulder screes are an important habitat to many coastal species.

Cave(s)	Natural caves are home to specialized organisms from the most well-known, such as bats, to micro-flora and micro-fauna, including endemic invertebrates that are of significant scientific importance.
Clay Slopes	Due to their unstable nature and their water-retention characteristics, clay slopes are exploited by particular vegetation assemblages that are adapted to such environmental conditions. Very steep slopes are subject to major erosional processes and are usually void of vegetation. However, in some parts of the Maltese Islands clay slopes are considered to be very species-rich.
Coastal	Part of the littoral zone that is bound by the shoreline, foreshore, backshore and coast.
Coastal Cliffs	Coastal cliffs harbour one of the most important concentrations of native flora and fauna, including endemic species that are of considerable biogeographical and evolutionary significance.
Ecosystem	<p>An ecosystem is a natural assemblage of fauna and flora, including micro-organisms (biotic factors), in an area functioning together with all of the physical (abiotic) factors of the environment. The sum total of an ecosystem is worth more than the value of its individual components—ecosystem processes provide essential life-supporting services including <i>inter alia</i> air and water purification, soil stability and regeneration, nutrient cycling, and pollination. Such services cannot be carried out if the components of an ecosystem were separated from each other.</p> <p>The UN Convention on Biological Diversity defines ecosystems as: 'a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit'.</p>
Escarpment	Steep face or edge of a ridge exploited by vegetation species that can thrive on these particular geomorphological features.
Fields	Fields (cultivated arable land or abandoned agricultural land) are an intrinsic part of the Maltese rural landscape and valley systems (terraced fields). Many abandoned fields show positive signs of regeneration and harbour species of conservation value, such as orchid species. Cultivated fields together with their peripheral rubble walls and archaeophytic trees along their margins (such as carobs, almonds and fig trees) contribute not only to the overall landscape value of an area but are also equally important in terms of watershed protection, soil stability and regeneration, and are important ecological corridors that connect natural areas.
Forest Remnant	Forest remnants within the Maltese Islands refer to the last representatives of a former more widespread climax community consisting of a natural population of evergreen trees (predominantly Holm/Holly Oak: <i>Quercus ilex</i>) with well-developed undergrowth. These are now restricted to a handful of localities within mainland Malta.
Freshwater Rock Pools	Also called kamenitzas. Natural karstic depressions in which rainwater collects during the dry season, eventually drying up completely before the onset of the peak dry season. Rock pools harbour specialised biota with a restricted distribution, some endemic to the Maltese Islands.
Freshwater Spring	An outflow of freshwater that seeps from the interface between the porous Upper

	Coralline Limestone and the impermeable Blue Clay at various points of intersection of these two formations along the land surface. Permanent freshwater springs are very rare in the Maltese Islands. See also 'Watercourse'.
Freshwater Wetland	Freshwater wetlands can be located along coastal areas as well as further inland. Coastal wetlands are transitional ecosystems in view of their location at the interface between the land and the sea. During the dry season coastal freshwater wetlands revert to a brackish composition owing to a skewed ratio between freshwater input and evaporation, particularly if entirely dependent on rainwater runoff. Inland freshwater wetlands are typically sustained by a permanent source of freshwater from an aquifer outflow. Compare 'Marshland'.
Garigue	An ecosystem that develops on karstic landscapes consisting of low-lying shrubs that co-exist to form communities and populations. Garigue communities often include aromatic species but vary in species composition, consisting of a dominant species or co-dominated by two or more species. Phrygana is one of several assemblages of garigue communities.
Inland Cliffs	Cliff formations located away from coastal areas, overlooking lowlands rather than the sea.
Karstic Plateau	A relatively flat natural rocky platform composed of limestone terrain and vegetation communities (typically garigue or phrygana) located on top of a ridge and bordered by the underlying escarpment. In Maltese, most karstic plateaus are referred to as "Qortin", especially in Gozo.
Karstland	A rocky landscape composed of limestone and vegetation communities, such as garigue or steppic grassland.
Maquis	Maquis habitats consist of small to medium-sized trees and large shrubs along valley sides, deep valley basins and along boulder screes.
Maritime Communities	Vegetation communities associated with coastal areas including salt-tolerant (halophytic) species.
Marshland	A marshland is a coastal wetland that represents an interface between the terrestrial and marine environments. While they are ecologically different from either, marshlands are highly dependent on both the surrounding land and sea. Marshlands are dynamic systems and are characterised by frequent fluctuations in environmental parameters. These factors make such habitats unique places, thriving with a large diversity of organisms, which in turn tolerate highly fluctuating harsh environments, and are thus generally restricted to such habitats. The water regime of marshlands varies from freshwater in winter to brackish and hyper-saline during the dry season, eventually drying up completely.
Phrygana	A type of garigue community so defined due to the presence of particular species that dominate the assemblage, typically but not exclusively, the Shrubby Kidney Vetch (<i>Anthyllis hermanniae</i>).
Plateau	Any land surface that is predominantly flat and often elevated from the rest of the surrounding landscape. Plateaus may be predominantly composed of arable land or grassland. See also 'Karstic Plateau'.
Promontory	A prominent rock formation overlooking the surrounding lowlands, typically

	consisting of a karstic plateau and escarpment.
Rocky Coast	Rock formations along the coastline usually having a gentle slope towards the sea. Rocky coasts can sustain several species of halophytic (salt tolerant) species and other maritime communities, whilst others may be completely void of vegetation.
Rupestrial Communities	Species assemblages associated with rock formations, particularly cliff faces. Floral species in this category are also known as chasmophytic vegetation.
Sand Dunes	Sand dunes form through aeolian (wind-borne) transport and accumulation of sand along sandy beaches. Sand dunes host the rarest ecosystems in the Maltese Islands. Extant sand dunes are located a short distance from sandy beaches, supporting specialized biota.
Sandy Beach	A geological landform along the shoreline of a body of water consisting of loose sand.
Solution Subsidence Structure	Also known as a sinkhole or doline. Solution subsidence structures are formed by the corrosive solution of subterranean limestone by rainwater; when a cave grows there may be a point where the roof of a cavern is not stable enough and collapses. Solution subsidence structures can host a diverse array of species assemblages and communities, some very rare in the Maltese Islands, such as those found at Il-Maqluba.
Steppic Communities	There are two distinct categories of steppic communities: a) climax vegetation communities that can develop on clay slopes, and b) communities of opportunistic herbaceous plants usually following pioneer colonisation as a result of degradation of maquis and garigue communities.
Valley System	Valley systems consist of a valley bed, valley sides and the entire stretch from the upper reaches to the lower reaches. Valleys can be steep-sided or relatively flat. The ecology within valley systems is associated with freshwater communities along the valley beds and maquis vegetation along the valley sides, both having an important role to play in terms of the overall hydrology and watershed protection. A significant number of valley sides, including some valley beds, have been historically moulded by cropping systems, including terracing and rubble wall construction to control soil erosion.
Watercourse	Watercourses within the Maltese Islands are influenced by seasonal precipitation, the majority of which dry up completely during the dry season. Watercourses are typically associated with valley systems. Permanent watercourses are rare in the Maltese Islands. See also 'Freshwater Spring'.
Woodland	Naturally-occurring woodland communities in the Maltese Islands are rare. The predominant communities are semi-natural afforested areas, usually consisting of Aleppo pines and other trees typical of the Mediterranean region, showing positive signs of regeneration (seed from such trees are dispersed through natural processes and forming new growth).
Site of Scientific Importance (SSI)	A site encompassing either a particular species or a feature of conservation value (or both) and its associated buffer zone(s). Sites of Scientific Interest (SSIs) are designated to regulate their conservation in accordance with Section 46 of the Development Planning Act 1992. Development within these areas will

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Cave(s)	Natural caves are home to specialized organisms from the most well-known, such as bats, to micro-flora and micro-fauna, including endemic invertebrates that are of significant scientific importance.
Clay Slopes	Due to their unstable nature and their water-retention characteristics, clay slopes are exploited by particular vegetation assemblages that are adapted to such environmental conditions. Very steep slopes are subject to major erosional processes and are usually void of vegetation. However, in some parts of the Maltese Islands clay slopes are considered to be very species-rich.
Coastal	Part of the littoral zone that is bound by the shoreline, foreshore, backshore and coast.
Endemic Species	Species of fauna and flora whose natural range is tied to a specific area or region. Maltese endemics only occur within the territory of the Maltese Islands and nowhere else in the world. Some species are defined as ‘Siculo-Maltese endemics’, meaning that they are found within the Maltese Islands as well as Sicily, but nowhere else. Unless explicitly stated otherwise, all reference to ‘endemic species’ refers to taxa whose geographical distribution is confined to the Maltese Islands. Our national plant, the Maltese Rock Centaury (<i>Palaeocyanus crassifolius</i>), is one of several endemic species of flora. Some endemics may be relatively widespread within the Maltese Islands, such as the Maltese Salt Tree (<i>Darniella melitensis</i>), whilst others may be confined to just a few square metres, such as the endemic sub-species of the Maltese Door Snail (<i>Lampedusa imitatrix melitensis</i>). Endemism provides a wealth of knowledge on the biogeography of a region and contributes to the unique species diversity at national and global levels. Scheduling that incorporates endemic species is subdivided into two categories:

	<ol style="list-style-type: none"> 1. Sites supporting endemic species with a restricted distribution (occurrence of an endemic species in five localities or less); 2. The type locality of an endemic species (the location where an endemic type specimen, or holotype, was recorded and published in a scientific journal). <p>A third category is also aimed at species protection but is not restricted to endemics, provided the site/area is the only locality where the target species are known to occur, based on current distributional data, literature and scientific information.</p>
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Marshland	A marshland is a coastal wetland that represents an interface between the terrestrial and marine environments. While they are ecologically different from either, marshlands are highly dependent on both the surrounding land and sea. Marshlands are dynamic systems and are characterised by frequent fluctuations

	in environmental parameters. These factors make such habitats unique places, thriving with a large diversity of organisms, which in turn tolerate highly fluctuating harsh environments, and are thus generally restricted to such habitats. The water regime of marshlands varies from freshwater in winter to brackish and hyper-saline during the dry season, eventually drying up completely.
Ornithology	A scientific discipline focusing on the study of avian species. Ornithology has a long history and studies on birds have helped develop several key concepts in evolution, behavior and ecology. Within the scheduling process an important bird nesting site or an area/site of major ornithological interest can be protected as a Site of Scientific Importance.
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Sandy Beach	A geological landform along the shoreline of a body of water consisting of loose sand.
Solution Subsidence Structure	Also known as a sinkhole or doline. Solution subsidence structures are formed by the corrosive solution of subterranean limestone by rainwater; when a cave grows there may be a point where the roof of a cavern is not stable enough and collapses. Solution subsidence structures host a diverse array of species assemblages and communities, some very rare in the Maltese Islands, such as those found at Il-Maqluba.
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Watercourse	Watercourses within the Maltese Islands are influenced by seasonal precipitation, the majority of which dry up completely during the dry season. Watercourses are typically associated with valley systems. Permanent watercourses are rare in the Maltese Islands. See also 'Freshwater Spring'.
Woodland	Naturally-occurring woodland communities in the Maltese Islands are rare. The

	predominant communities are semi-natural afforested areas, usually consisting of Aleppo pines and other trees typical of the Mediterranean region that show positive signs of regeneration (seed from such trees are dispersed through natural processes and forming new growth).
Other specific feature	A specific feature of scientific importance not listed in Structure Plan policy RCO 11.
Scheduled Trees	Individual trees, groups of trees and woodlands, scheduled under the provisions of Section 48 of the Development Planning Act, 1992.
Natural / Semi-Natural Landscapes (Rural)	A rural or coastal area of conservation value that is distinguished by its geographical and biotic features, which may also encompass agricultural landscapes and rural settlements within its wider context. Landscapes not only impart high scenic value but are also vital for the overall integrity of ecosystems of which they are part. The conservation value of the combined features of a landscape exceeds that of its individual components.
Area of High Landscape Value (AHLV) [natural heritage/rural]	A rural and/or coastal area of conservation value that encompasses an array of diverse components such as geological formations, geomorphological and/or semi-natural terrain and ecosystems. Semi-natural refers to the anthropogenic influence that moulds natural landscapes due to various rural activities and/or features, such as agriculture. AHLV boundaries are typically aligned along the peripheral margins of buffer zones but they can also extent further outwards depending on the context and setting of the specific area.