

A Brief Assessment of Project Actions envisaged for the LIFE Saving Buskett Project

Report on Actions C3, C4, and C5

prepared by

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Introduction

This report was commissioned from Ecoserv Ltd by the Ministry for Sustainable Development, The Environment and Climate Change (MSDEC) as part of a programme for the provision of monitoring services for the removal of silt/boulders, removal of invasive alien species and planting of new trees for the EU Life Saving Buskett Project, executed by the P.A.R.K. Directorate of the Ministry for Sustainable Development, the Environment and Climate Change.

Terms of reference for this report

A Tender for Works (document reference: MSDEC/Advert №. 23/2014) was published by the MSDEC in October 2014, and the requirements listed in the tender document have been taken as the Terms of Reference (ToR) for this assignment. The present brief report addresses Sections 8.3.3 (a), 8.3.4 (a), and 8.3.5 (a) of the ToR which concern three of five 'Actions' (designated as Action C1 through Action C5) envisaged for the project. The Actions discussed in this report are Action C3, Action C4 and Action C5. Action C3 concerns the monitoring of the removal of silt and debris from the watercourse at Wied il-Luq, Buskett, Action C4 concerns the monitoring and removal of invasive alien species from designated areas, and Action C5 is concerned with the monitoring of the planting of new trees at Buskett. A map outlining the areas designated for each Action is shown in Figure 1.

The specific ToR were the following:

- (a) Action C3: *Before works commence, the contractor is required to carry out an assessment of the vegetation colonising the watercourse (a length of 1,208m, representing an area of approximately 9,023m²). This assessment should ensure that vegetation colonising newly deposited silts is of an opportunistic nature.*
- (b) Action C4: *Before works commence, the contractor is required to carry out an assessment of the vegetation in the targeted area (an area of approximately 241,742 m²).*
- (c) Action C5: *Before works commence, the contractor is required to determine suitable sites where relevant restoration ecology interventions can take place in the targeted area (an area of approximately 241,742 m²).*

Method

This study is based on site visits made by the author during February and March 2015 and is supplemented by material from the literature and the consultant's previous knowledge of the area. Assessment of the plant communities within the area of study was carried out through a straightforward census of species in a vegetative, flowering or fruiting stage. The survey was low-resolution in its scope, and focused on the most characteristic species in each part of the area of study.

Assessment of Actions

Action C3: removal of silt/debris from watercourse

Identification of 'newly-deposited' sediment accumulations

Sedimentary deposits along the watercourse bed were assessed according to the nature and density of biotic coverage on their surfaces. It was assumed that stable sediments would gradually accrue a surface layer of microalgae and small embryophytes, such as mosses, and the complexity and density of the biotic covering would presumably be expected to increase with time for as long as the sediment was stable. As such, deposits were considered to be 'fresh' if they were not covered by microalgae or small embryophytes.

Principal floristic assemblages along the watercourse

The dominant vegetation colonizing the bed and margins of the watercourse varied along its length. Dominant species, in terms of biomass and abundance, in the western sectors of the bed (Figure 2) included Bear's Breeches (*Acanthus mollis*), Bramble (*Rubus ulmifolius*), and Alexanders (*Smyrniololus atrum*). Further eastward, vegetation along the bed was dominated by Clustered Dock (*Rumex conglomeratus*) in association with Goosegrass (*Galium aparine*), Italian Lords and Ladies (*Arum italicum*), and Friar's Cowl (*Arisarum vulgare*). The vegetation in these areas was characteristic of humid, shaded environments but not, in general, of a perennial aquatic habitat. The central portion of the watercourse (Figure 3, Figure 4) was characterised by relatively restricted patches of species requiring longer hydroperiods, including Lesser Celandine (*Ranunculus ficaria*), Scilly Buttercup (*Ranunculus muricatus*), Water Speedwell (*Veronica anagallis-aquatica*), and Pale Speedwell (*Veronica cymbalaria*). Small patches of Stinking iris (*Iris foetidissima*) and Sticky Fleabane (*Dittrichia viscosa*) were also noted along the banks of the watercourse in this area. The eastern sector of the watercourse bed was largely occupied by a monospecific bed of Great Reed (*Arundo donax*) (Figure 5).

Sedimentary deposits along the watercourse bed

Throughout most of its surveyed length, the watercourse was reduced to a relatively narrow channel, seldom wider than 1-2m. In general, the immediate margins of the watercourse comprised compacted soil that was, in many places, consolidated by vegetation cover. Parts of the stream bed were partially obstructed by large pieces of masonry (Figure 6) that detached from surrounding structures (dry stone walls, etc). Much of this masonry was colonised by a surface covering of mosses, indicating a long residence time in the bed. A relatively unweathered (suggesting recent introduction) concrete building brick was also noted from the central segment of the watercourse (Figure 7). Although these blocks may obstruct water flow, their inclusion increases habitat diversity by creating smaller microhabitats that may provide refuge for stream-dwelling organisms. Some parts of the stream bed were also obstructed by large accumulations of dry twigs and branches (Figure 8). These accumulations were a relatively permeable barrier, and did not appear to provide a significant obstruction to water flow.

Action C4: Removal of invasive alien species

The vegetation colonising the areas indicated for Action C4 (Figure 1) was surveyed during February and March 2015.

Principal vegetation assemblages in designated areas

The areas designated for Action C4 were generally colonised by open Mediterranean woodland (Figure 9) dominated by Aleppo Pine (*Pinus halepensis*) and Cypress (*Cupressus sempervirens*). Localised areas dominated by other species, particularly Olive (*Olea europaea*) and Laurel (*Laurus nobilis*) were noted (Figure 10). Small stands comprising species that are uncharacteristic of Mediterranean woodland, including *Araucaria heterophylla*, were noted. Undergrowth varied across the designated areas, and mainly consisted of Lentisk (*Pistacia lentiscus*), Hawthorn (*Crataegus* spp.), Honeysuckle (*Lonicera implexa*), Bear's Breeches (*Acanthus mollis*) and Alexanders (*Smyrniolum olusatrum*).

Various stands of invasive alien species were noted throughout the area of study.

Agave americana

Small stands of *Agave americana*, some of which comprised plants that attained considerable size and that were characterised by inflorescences, were noted from the western sector of the area of study. No consistent stands were noted from other parts of the area of study.

Vitis vinifera

Extensive and dense stands of *Vitis vinifera* were mainly noted in the eastern sector of the Area of Study, where, in some cases, entire parcels of land were overgrown. A very large number of juvenile plants were also noted, suggesting that further infiltration of habitat is ongoing. A stand of relatively restricted extent was also noted from the western sector of the AoS.

Ailanthus altissima

This species was mainly localised in the southwestern portion of the Area of Study, including along the banks and in the bed of Wied il-Luq. Apart from the mature plants, a large number of juvenile plants were also noted, suggesting that that extensive regeneration is occurring.

Ricinus communis

A single stand of *Ricinus communis* was noted along the northeastern boundary of the area of study. No other stands were noted and this occurrence should therefore be considered an isolated one.

Arundo donax

Small and isolated stands of *Arundo donax* were noted in the eastern sector of the Area of Study. Conversely, a large and dense population was observed along much of the reed bed of Wied il-Luq. An extended stand of reeds that was noted along the roadside in the eastern part of the AoS may be attributable to *Arundo plinii* rather than to *Arundo donax* and is in need for further study.

Action C5: Seed collection and planting of saplings of characteristic trees

The vegetation colonising the areas indicated for Action C5 was surveyed during February and March 2015. These areas mainly comprised wooded tracts and derelict and disturbed agricultural land.

Vegetation assemblages in derelict and disturbed agricultural land

Macrophyte assemblages in land indicated for Action C5 was dominated by ruderal species and segetal species, and was consistent with assemblages of disturbed agricultural margins (Figure 11). The most abundant species in these areas included Crown Daisy (*Glebionis coronarium*), Cape Sorrel (*Oxalis pes-caprae*), Friar's Cowl (*Arisarum vulgare*), Alexanders (*Smyrnum olusatrum*), Giant Fennel (*Foeniculum vulgare*), Mallow (*Malva* sp.) and White Mignonette (*Reseda alba*). The species noted in the designated areas at the time of survey have a widespread distribution in the Maltese Islands, and are not protected by legislation.

Vegetation assemblages in wooded tracts

Much of the areas indicated for Action C5 were colonised by an open woodland at the time of survey. Most of these areas were dominated by Aleppo Pine (*Pinus halepensis*) and Cypress (*Cupressus sempervirens*) with localised patches in which other species, including Olive (*Olea europaea*), and Laurel (*Laurus nobilis*) were abundant. Undergrowth varied across the areas and included Lentisk (*Pistacia lentiscus*), Honeysuckle (*Lonicera implexa*), Hawthorn (*Crataegus* sp.), White Hedge-nettle (*Prasium majus*) and Olive-leaved Germander (*Teucrium fruticans*). In various parts of the project area, particularly towards the west, stands of species that are not characteristics of Mediterranean woodland were noted. These included Norfolk Island Pine (*Araucaria heterophylla*) and Pecan (*Carya illinoensis*).

General note

It should be emphasised that the wooded areas described above are characterised by dense vegetation cover. Any planting would presumably need to be carried out in clearings, in areas where undergrowth has been cleared or where alien or uncharacteristic trees have been removed. All such interventions should be considered carefully and carried out with maximum care, as removal of trees or undergrowth may change the illumination characteristics of the site, modify the hydrological dynamics and create opportunities for soil erosion.

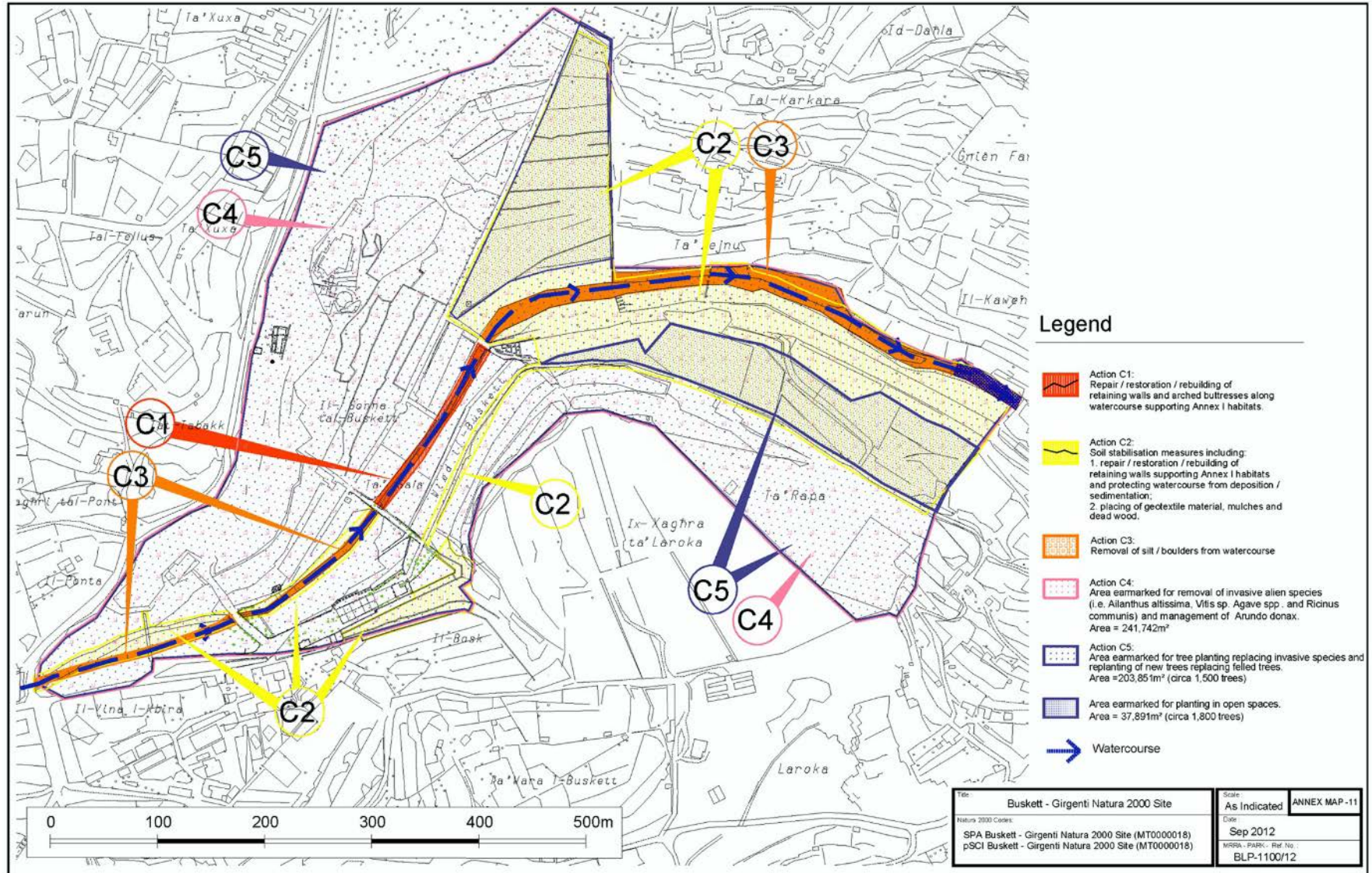


Figure 1: Map of the Buskett area showing the areas designated for each of the five project 'Actions'.



Figure 2: Part of the watercourse bed in the Western sector of the area of study. The dominant species is Bear's Breeches (*Acanthus mollis*).



Figure 3: Lesser Celandine (*Ranunculus ficaria*) colonising the watercourse bed in the Western segment of the area of study.



Figure 4: Part of the watercourse bed in the central segment of the area of study, showing Scilly Buttercup (*Ranunculus muricatus*), Water Speedwell (*Veronica anagallis-aquatica*) and Friar's Cowl (*Arisarum vulgare*).



Figure 5: Dense, monospecific bed of Great Reed (*Arundo donax*) colonising the watercourse bed in the eastern segment of the area of study.



Figure 6: Blocks derived from fallen masonry in the watercourse bed. The blocks were characterised by surface coverings of mosses and microalgae.



Figure 7: Relatively unweathered concrete building brick obstructing part of the central segment of the watercourse.



Figure 8: Accumulations of twigs obstructing the watercourse bed in the central segment of the area of study.



Figure 9: Wooded area designated for Action C4. Dominant species were Aleppo Pine (*Pinus halepensis*) and Cypress (*Cupressus sempervirens*).



Figure 10: General view of a sector designated for Action C4 in the western segment of the area of study, Dominant species were Aleppo Pine (*Pinus halepensis*) and Olive (*Olea europaea*).



Figure 11: Area designated for Action C5. Dominant species included Crown Daisy (*Glebionis coronarium*), White Mignonette (*Reseda alba*), and Alexanders (*Smyrnum olusatrum*).