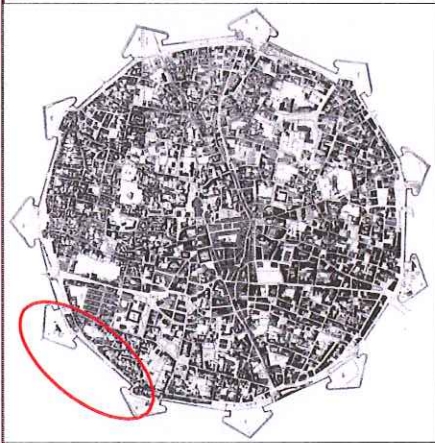


CRITICAL TERRITORIAL ANALYSIS



The Venetian Walls are a series of defensive walls surrounding Nicosia. The 1st walls were built in the Middle Ages, but completely rebuilt in the mid-16th century. The walls are still intact, and are among the best preserved Renaissance fortifications in the Eastern Med. The walls have a circular shape, with a circumference of 3 miles. They contain 11 pentagonal bastions with rounded orillons. All bastions are named after 11 families, pillars of the Italian aristocracy of Nicosia, who donated funds to its construction.

Forming a circle, the walls built by the Venetians were fortified by eleven heart - shaped bastions and protected by an 80 metres wide moat. They were built of mud - brick, with the lower part only buttressed by stone. When the Ottomans occupied Lefkosa (Nicosia), they repaired the walls and covered the upper part with stones. The moat around the walls now has many different uses, serving as sports fields, public gardens, an open - air sculpture exhibition, car parks etc.

The project concerns the vegetation removal on the historic Venetian walls surrounding the old town of Nicosia area and in particular the southern and northern part of the walls between Mula Bastion and Quirini Bastion .



View 1

View 2

View 3

View 4



View 5

View 6

View 7

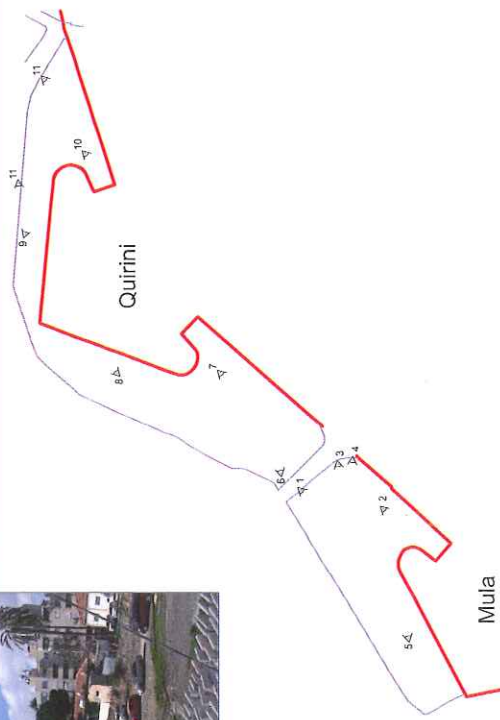


View 8

View 9

View 10

View 11



United Nations Development Programme
This Programme is funded by the EUROPEAN UNION

Project Title:

Walls of Nicosia Vegetation Cleaning
Mula Bastion - Kyrenia Gate

Conservator:

Niki

Conservator:

Lazarou

Date:

January 2018

Scale:

Drawing name:

CRITICAL TERRITORIAL ANALYSIS

Drawing no.:

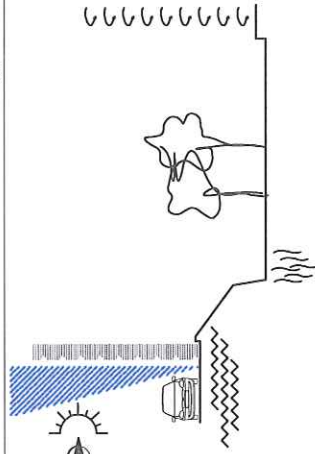
Dr.1

CRITICAL ANALYSIS OF CONTAMINATION

Schematic analysis of the critical situation



Mula section of walls



Quirini section of walls

Critical area, climate study and exposure

- Urban traffic guidelines and development
- Predominant trees (pine, eucalyptus)
- Other trees (Citrus, Olive)
- Facade more exposed on
- Contaminants



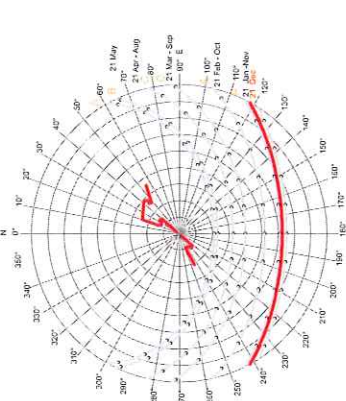
Use of Polar sun path chart program that creates sun path charts using polar coordinate for dates spaced about 30 days apart, from one solstice to the next.

Polar chart sun

Altitude: 148.0 m
12/11/2018 | time | azimuth
Rise: | 06:55:13 | 116.18°
Noon: | 11:54:58 | 180.03°
Set: | 16:54:44 | 243.91°

Agiou Ilarionos, Nicosia, Cyprus
Latitude
35° 10' 49.265" N
33° 21' 25.750" E

A 21 June
B 21 Jul - May
C 21 Aug - Apr
D 21 Sep - Mar
E 21 Oct - Feb
F 21 Nov - Jan



Section of project



- Agricultural area
- Public Park area
- Green area
- Abandoned area
- Residential area
- Public area

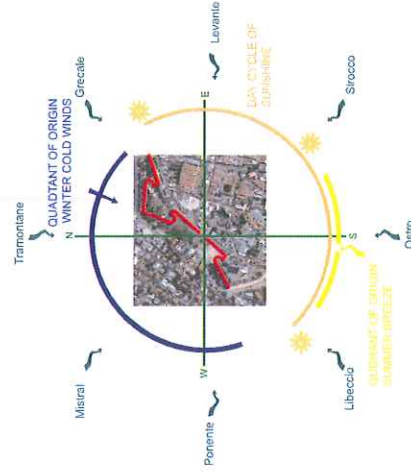


Traffic density

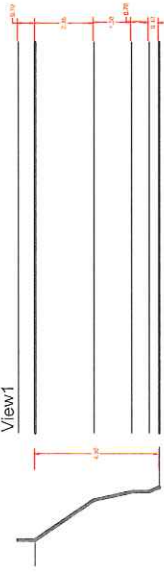


Tree density

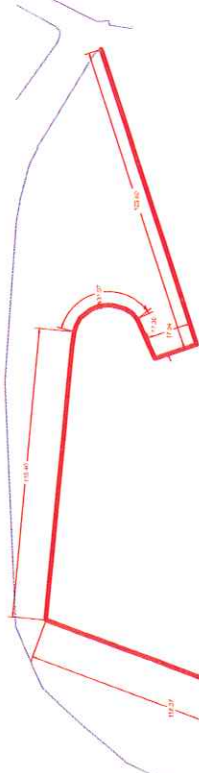
Sunny and prevailing winds throughout the year



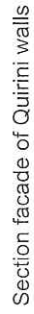
SITE METRIC DRAWINGS

Section of Quirini walls
View1

Length of project : 870m
Area of project :circa 5000sqm



Quirini



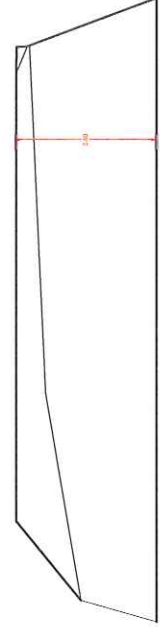
Section of Quirini walls
View2



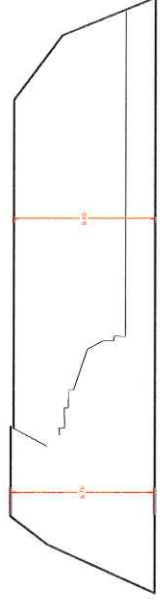
Section of Mula walls
View3



Mula



Quirini facade bastion walls



Mula facade bastion of walls



United Nations Development Programme
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Project Title: **Walls of Nicosia Vegetation Cleaning**
Mula Bastion - Kyrenia Gate

Conservator:	Niki	Lazarou
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Date:	January 2018
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Drawing name:

SITE METRIC DRAWINGS

Drawing no.:

Dr.3

STATE OF CONSERVATION

Abandonment and lack of maintenance caused the proliferation of invasive vegetation .

Masonry joints are often absent or worn out by vegetation that has often overridden the walls becoming part of them.



ANALYSIS

CHEMICAL DETERIORATION CAUSED BY VEGETATION

All living things, including lower order plants such as algae, fungi, and lichens, and large plants like vines, require air to survive - indicating respiration. Respiration of many plants produces acids. These acids - through a process known as chelation - dissolve minerals in stone or extract specific elements out of the minerals comprising stone, resulting in deterioration of the stone's surface.

MECHANICAL DETERIORATION CAUSED BY VEGETATION

All plants that grow on historic buildings attach themselves to the structures in some way. In many cases, the chemical action softens the underlying wall material and provides a pathway for the plant to insert a portion of itself into the stone as an anchor. As the plants grow, the anchors get larger as well. With higher order plants the anchors may actually break off small pieces of masonry or cause a total disintegration of small areas of mortar. Secondly, the anchors provide a pathway for water to run into the building material. Water saturation will cause deterioration of the materials. In cold climates, water in masonry subject to freeze/thaw cycles generally causes spalling. If a plant grows sufficiently large, the main vine can develop into a trunk, which is strong enough to heave stone, unsettle a foundation, or even collapse part of a structure.

WATER RETENTION CAUSED BY VEGETATION

In addition to the mechanical and chemical destruction caused by the growth of vegetation on historic structures, the plants keep water trapped against the structure. Because they need it to survive, plants efficiently collect precipitation on their leaves and elsewhere in their structures. This water will remain against the exterior wall, encouraging rot and insect infestation, as long as the plant remains in place. Particularly dense plants will even prevent sunlight from reaching a moist wall, which limits the beneficial process of natural drying after a rainfall or snow shower.

CHARACTERISTICS OF THE PROJECT

Preservation by Prevention

Allowing various types of vegetation to grow on historic building can be extremely detrimental to its survival. Usually the method by which the plant attaches itself to the building is mechanically harmful to historic building materials. In addition, vegetation holds moisture against buildings and causes chemical deterioration of building materials. Even the growth of such small plants as mosses and lichens on historic buildings has a similar detrimental effect. Finally, substantial growth of vegetation can hide problems in the underlying wall, such as cracking or loss of mortar caused by settlement.

As with any preservation work, the best course of action is to begin with the gentlest means of removal possible and advance to more aggressive techniques in small steps.

Once the vegetation is removed, the wall surface should be checked for needed repairs. Often masonry will require repointing.

If the damage is severe, replacement may be warranted



PATHOLOGY OBSERVED

Widespread presence of vegetation of arboreal and herbaceous species in the area surrounding the building and developed curtain wall of the artifacts. Moss, algae and lichens and deep microflora.

Methodology of the intervention.

1. Cutting and elimination of the vegetation surrounding the area of the intervention limited to the necessary portions, with pruning and trimming operations of the shrubs and trees.
2. Extraction of more invasive bushes, re-filling of the soil holes and leveling at the country level.
3. Minute fractionation of the resulting lumber and removal of the material.
4. Vegetation removal from curtain wall surface, eliminate deep penetrated roots and seeds with suitable chemical methods.

Exfoliation and degradation of mortar beds due to leaching and infiltration of rainwater. Failure and dislocations of the wall texture with marked cracks also due to structural failure. Accumulation of inconsistent deposits, widespread vegetation and stratiform layers of biological microorganisms.

Methodology of the intervention.

1. elimination of weed vegetation between the joints.
2. careful control of joints and removal of incoherent mortars.
3. surface cleaning by brushing with soft brushes to remove dirt, carbon black, etc., followed by washing with deionized water so as to remove residues of material.
4. extraction of loose elements non suitable for ensuring the tightness of the wall structure.
5. fill the gaps and discontinuities present on the wall surface with portions of mortar joints.
6. relocation of the missing stone elements and restoration of the wall surface with the use of mimetic integration; material, size, workmanship and equipment equal to the pre-existence material similar in color and size to the original.
7. closing of the fissures by integrating the stone elements with lime-free mortar.
8. the surface grouting will be done with lime putty charge of the mixture will be of minced stone of suitable granulometry and color to obtain a similar compound of the existing.

ANALYSIS OF THE DEGRADATION

RESTORATION INTERVENTIONS

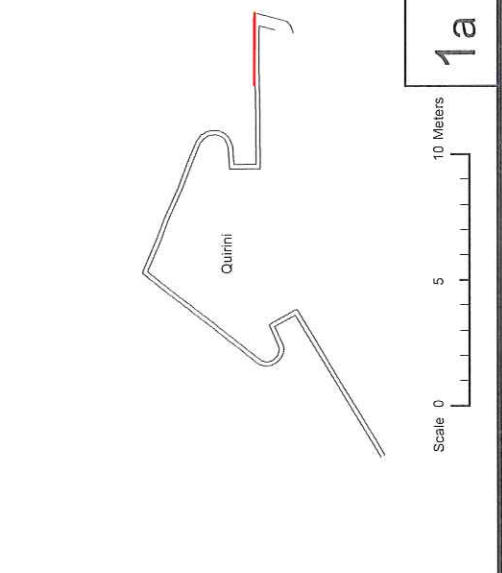
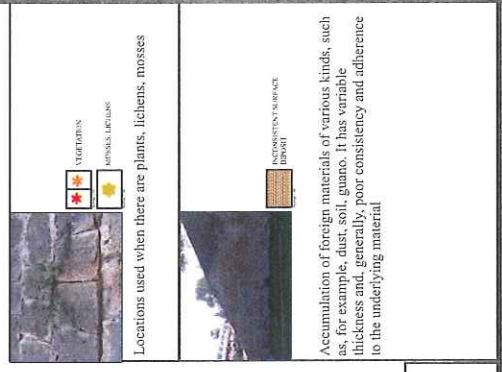
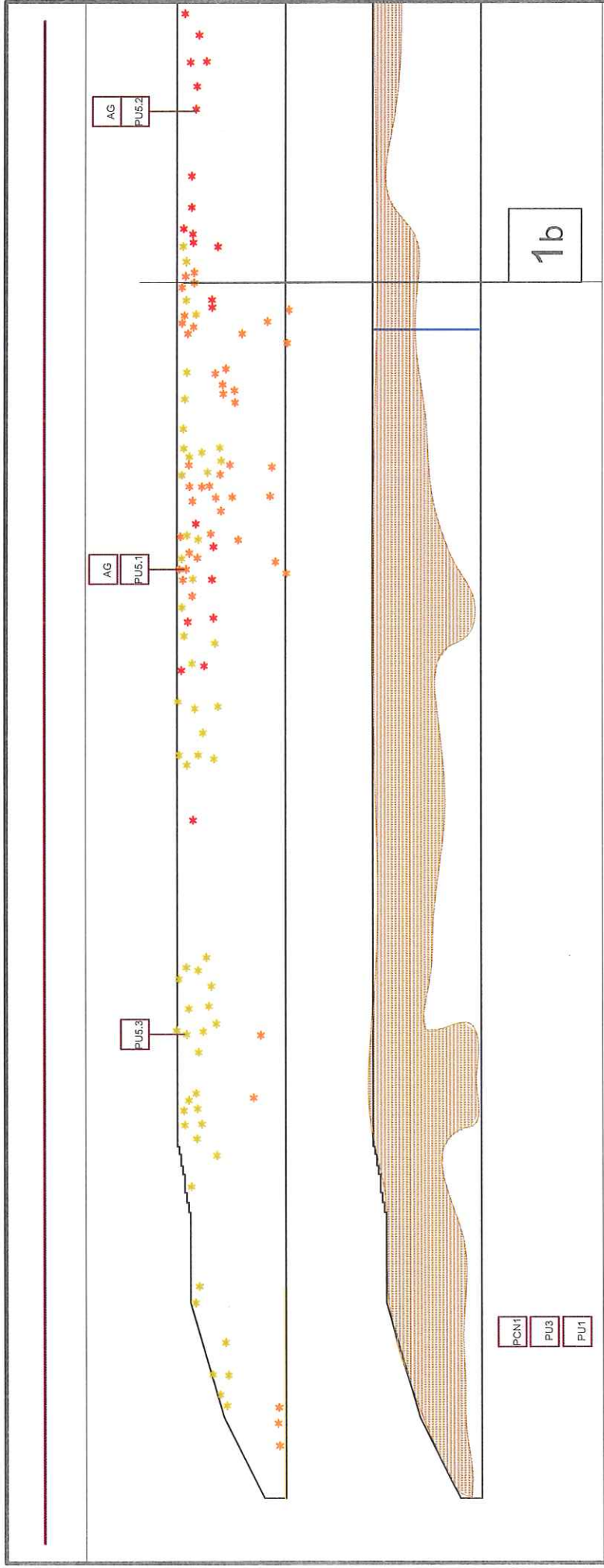
REFERENCE	PATHOLOGY	ETIOLOGY	CHAPTER	OPERATIONAL PHASES
 Normal 1:88 	MOSSES, LICHENS Layer adhering to the smooth and homogeneous surface. Development is favored by the presence of moisture. The layer aggravates the accumulation of moisture and the stagnation of water.	CAUSE -humidity -shading area -meteoric waters MECHANISM -chemical: -patina form -production of organic acids, attack the carbonate substrate.	PU5.3	REMOVAL WITH SCALPELS AND SMALL SPATULAS BIOCIDES APPLICATION WASHES WITH WATER AT MODERATE PRESSURE The cleaning will be performed with manual operations to remove the weeds by using soft brushes and plastic spatulas, if the mechanical intervention is not very effective we will proceed with the spraying of 0.1% -1% diluted biocides in water and the consequent application on vegetation. Irradiation will be carried out with manual sprayers and with specific nebulizers, it is not recommended to use pressure guns.
 Normal 1:88 	PLANTS WITH SUBTLE ROOTS	CAUSE -humidity -north exposure -meteoric waters -terigenous deposits MECHANISM -chemical: disintegration of chemical binders -physical: decohesion and fall of the material	PU5.1	BIOCIDES APPLICATION -HERBICIDE APPLICATION MANUAL EXTERPATION WASHING WITH NON-DEMINERALIZED WATER SPRAYED AT MODERATE PRESSURE Spray treatment: The biocide must be diluted in water (generally 0.1-1%) and the amount of solution depends on the total surface to be treated. Spraying can be carried out with particular watering cans, equipped with manual pumps similar to those for disinfecting the vines or more specific nebulizers; spray treatment is preferable for large surfaces.
 Normal 1:88 	PLANTS WITH HARD ROOTS	CAUSE -humidity -north exposure -meteoric waters -terigenous deposits MECHANISM -chemical: disintegration of chemical binders -physical: decohesion and fall of the material	PU5.2	Injection treatment: To eliminate woody plants of a certain size, so inserted into the substrate that they can not be mechanically removed without damage, we recommend first of all to cut the trunk, in the area of the root collar, and then perform a treatment chemical, with injections of solutions herbicide concentrated in the cut part. To facilitate the penetration of the product, some holes are drilled with a drill with a maximum of 10 mm toes, distributed at short intervals throughout the stump. The desiccation of the entire plant takes place generally 3/4 weeks after treatment. This procedure has the advantage of avoiding the dispersion of the herbicide product outside the treated area and its possible unwanted interference with the article and with its material and constructive components.
NOTES Removal of spontaneous vegetation The intervention will be carried out in coincidence with the period of greatest vegetative activity of the species to be removed. When the growth of the plants is very rich and diffused it is necessary to first thin the biomass with a manual cut, to favor the complete distribution of the herbicide product. The product must be applied in the early morning and not during the hottest hours of the day, in the absence of wind and rain. Health and safety This system, however, must be adopted with due caution, both for operators and for users, who must be equipped with appropriate protective masks with filter, to avoid dangerous inhalation and damage to the respiratory system. When acting on fungal attacks, because fungal spores can easily be spread to the environment and cause new colonization or damage to health			AG	GROUTING WITH A HYDRAULIC BASE MORTAL MADE OF STONE DUST the mixture will be applied in separate and successive layers according to the depth of the gap to be filled: for the rear most parts it will be advisable to use a mortal base on NHL 2 natural hydraulic lime with low content of compound salts following the design indications and the type of stone (sandstone aggregates).

ANALYSIS OF THE DEGRADATION

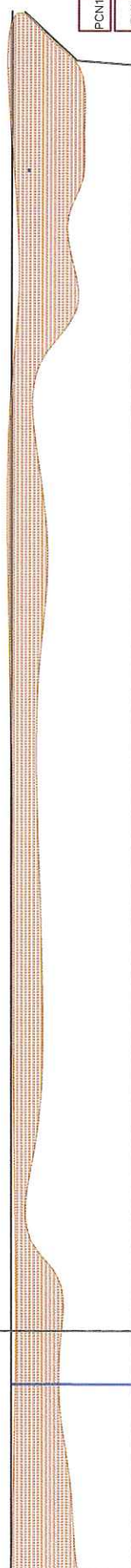
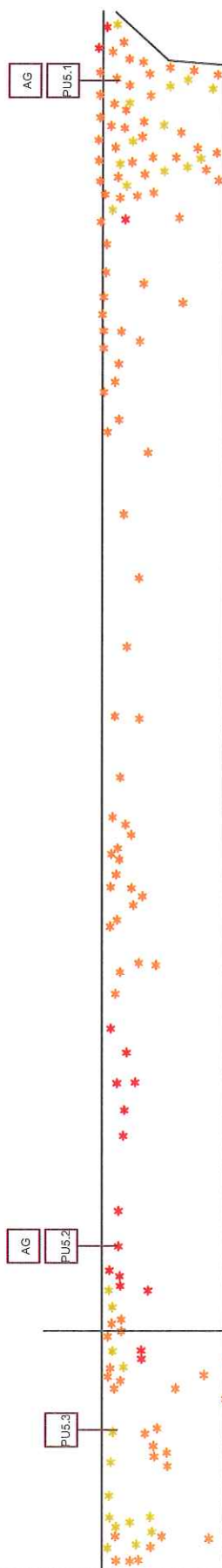
RESTORATION INTERVENTIONS

REFERENCE	PATHOLOGY	ETIOLOGY			CHAPTER	OPERATIONAL PHASES
 Normal 1/88  REF PHOTO	INCONSISTENT SURFACE DEPOSIT Accumulation of foreign materials of various kinds, such as, for example, dust, soil, guano. It has variable thickness and, generally, poor consistency and adherence to the underlying material	CAUSE -pollution -lack of maintenance -wind -guano -anthropic activities	MECHANISM -chemical: corrosion -physical: accumulation of polluting substances	EFFEON BUILDING accumulates in areas protected from the action of atmospheric agents	PCN1 PU3 PU1	SURFACE CLEANING WITH WATER SPRAY Preconsolidation and grouting so that the water does not penetrate into the substrates of the friable material and between the cracks. The cleaning operation must proceed from the top and, on successive levels you should not use the spray during the cold season and you should limit both the volume of fluid used and the pressure of the spray directed towards the surface (max 2.5-3 bar), precisely not launched directly against the face of the wall to be cleaned but reach oriented upwards. At the end of the rubber hoses connected to the fuel system, special atomizing nozzles should be connected. Cleaning with soft or nylon brushes and plastic or wooden spatulas
 Normal 1/88  REF PHOTO	CONSISTENT SURFACE DEPOSIT Stratiform deposit, compact and generally adherent to the substrate, composed of organic substances or biological structures	CAUSE -water -powders -weathering	MECHANISM -chemical: patina formation	EFFEON BUILDING it forms on the humid parts of the building is formed in the areas of thermal shadow	PU4	Biocidal application Removal of the biological patina Remove the colonies by removing fruiting bodies and their colored deposits. The application is carried out by picking up the material gradually removing with wooden or Teflon spatulas, and letting the roots dry with biocide treatments to be applied in aqueous solution at a low concentration of 1 to 3%. For the areas to be treated which are heavily biological colonized the application will be sprayed. For the very deteriorated stone surfaces the application will be with "compressed" system. It is left to act for a period of time ranging from one to three weeks and is subsequently rinsed away by removing the dried organic waste with soft brushes or nylon brushes.
NOTES	Biocide application. Calculate as accurately as possible the quantity of product that will be used for the execution of the intervention. This allows us not to handle unused product, which can not be considered an urban waste and can not be stored pending future application (some active ingredients degrade when placed in contact with water). The dilution should take place in the following phases: place approximately half of the water required for treatment in the equipment container (eg hand pump); measure the correct amount of product and pour it into the water; add the amount of water that is missing to the final volume; shake the container well.					Compressed system: Treatment, which limits the dispersion of the product in the environment and is effective against the lignified plants and the incrustations, it is the so-called "compressed" system. It is mainly used to increase contact times of biocide solutions and to take advantage of the water softening action. It is generally made of paper pulp or clay, to which biocide solutions are added. Covered with polyethylene sheets (or with aluminum foil, cotton wool, gauze ...) to avoid too rapid water evaporation, it is left in situ for a time ranging from one to a few days. Generally at a distance of 24 hours, mechanical cleaning is carried out, with soft brushes and a light washing of the treated surfaces, with distilled water.
Do not apply on protected surfaces without having the necessary authorizations.						

 	Project Title: Walls of Nicosia Vegetation Cleaning Mula Bastion - Kyrenia Gate	Drawing name: ANALYSIS OF THE DEGRADATION RESTORATION INTERVENTIONS	Drawing no.: Dr.7
Conservator: Niki	Lazarou	Date: January 2018	Scale:



 United Nations Development Programme This Programme is funded by the European Union				Project Title: Walls of Nicosia Vegetation Cleaning Mula Bastion - Kyrenia Gate		Drawing name: LOCATIONS OF PLANTS		Drawing no.: Dr.8	
Conservator: Niki		Lazarou		Date: January 2018		Scale: 1a			



1a



Locations used when there are plants, lichens, mosses



Accumulation of foreign materials of various kinds, such as, for example, dust, soil, guano. It has variable thickness and, generally, poor consistency and adherence to the underlying material

Scale 0 5 10 Meters

1b



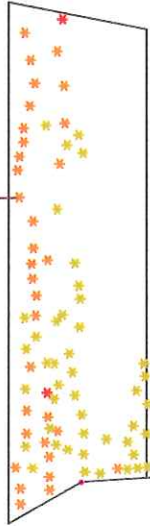
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Mula Bastion - Kyrenia Gate

Conservator: *Niki Lazarou*
Date: *January 2018*

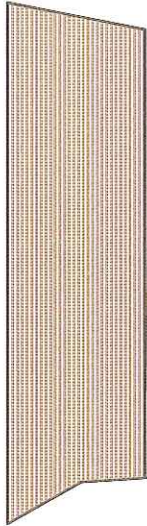
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Drawing no.: **Dr.9**

AG
PUS.1



PCN1
PU3
PU1

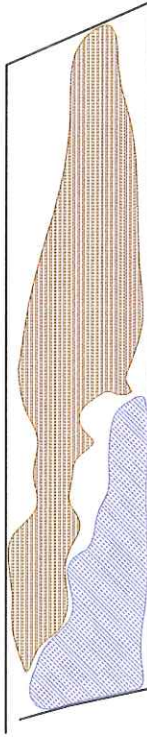


2

AG
PUS.1



PCN1
PU3
PU1



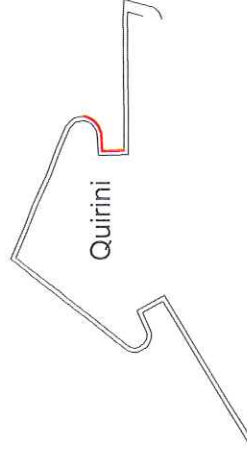
3



Locations used when there are plants, lichens, mosses



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Scale 0 5 10 Meters



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Project Title: Walls of Nicosia Vegetation Cleaning
Mula Bastion - Kyrenia Gate

Conservator: Niki Lazarou

Date: January 2018

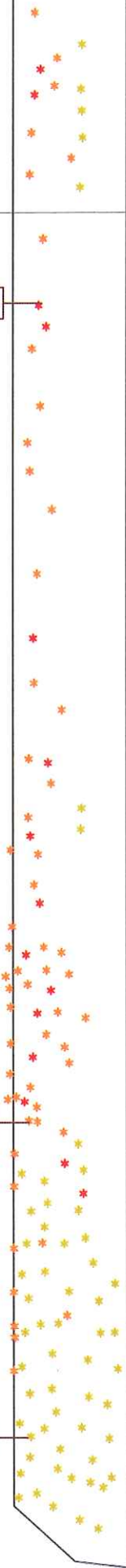
Drawing name: LOCATIONS OF PLANTS

Drawing no.: Dr.10

AG
PU5.1

PU5.3

AG
PU5.2



PU4
PU6



4b



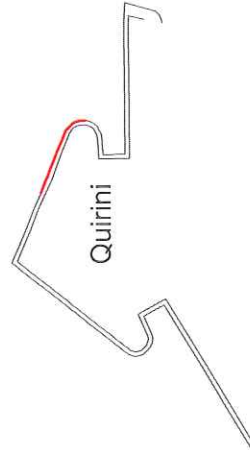
Locations used when there are plants, lichens, mosses



Stratiform deposit, compact and generally adherent to the substrate, composed of organic substances or biological structures



Accumulation of foreign materials of various kinds, such as, for example, dust, soil, guano. It has variable thickness and, generally, poor consistency and adherence to the underlying material



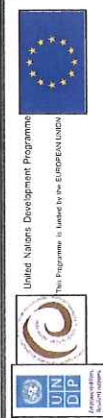
4a

Scale 0 5 10 Meters

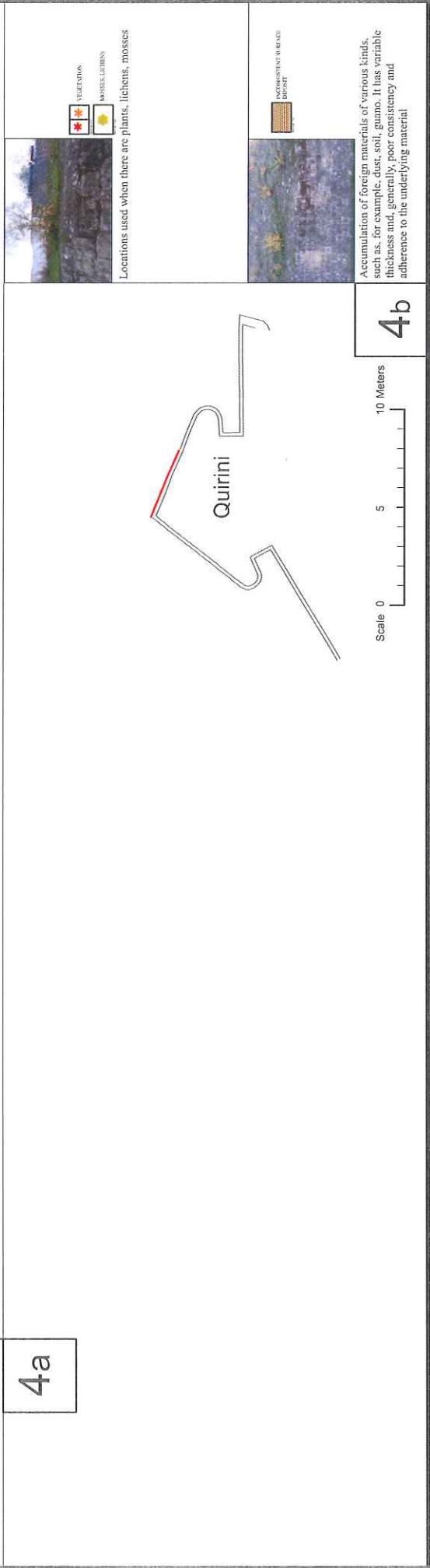
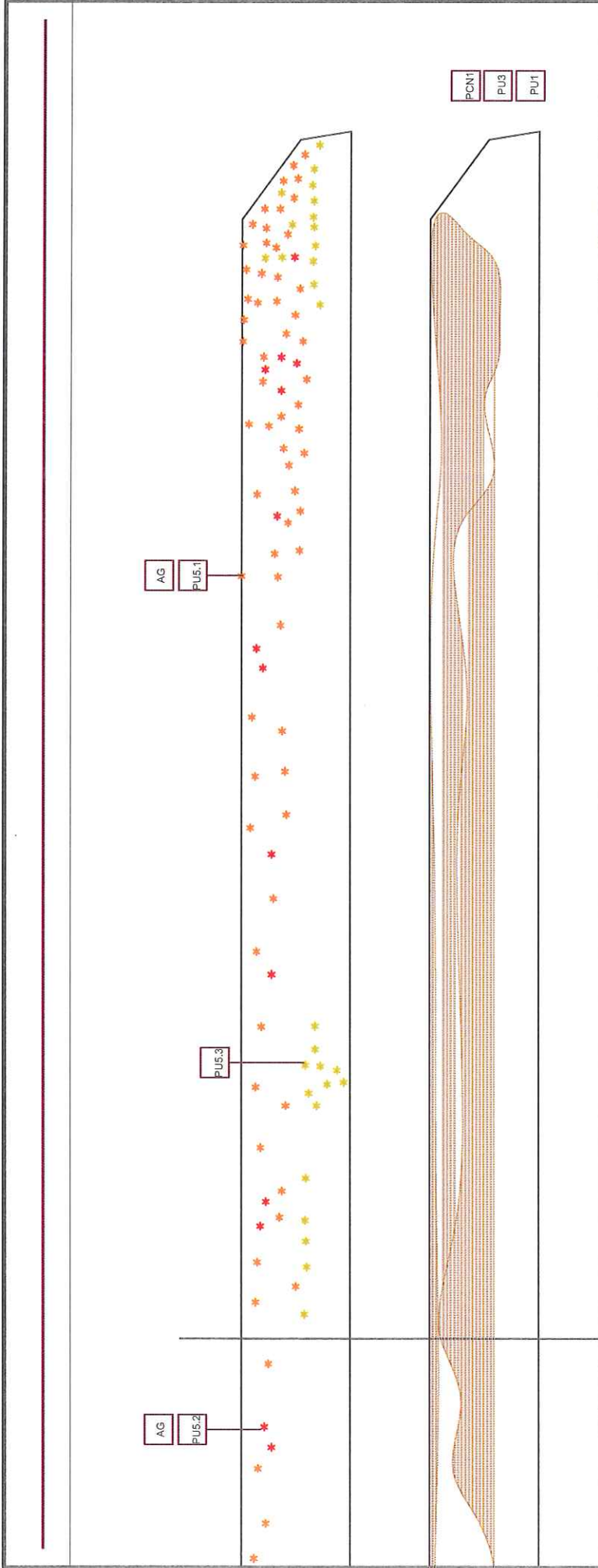
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Conservator: Niki Lazarou
Date: January 2018
Scale:

Project Title: Walls of Nicosia Vegetation Cleaning
Mula Bastion - Kyrenia Gate



Drawing no: Dr.11



  				Project Title: Walls of Nicosia Vegetation Cleaning Mula Bastion - Kyrenia Gate		Drawing name: LOCATIONS OF PLANTS		Drawing no.: Dr.12	
Conservator: Niki		Lazarou		Date: January 2018		Scale:			

AG
PU5.2

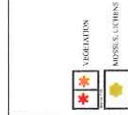
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PU5.1

AG
PU5.2

PU5.3

PCN1
PU3
PU1

5b

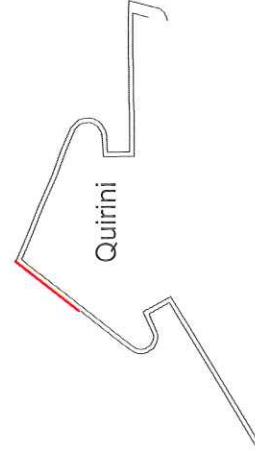


Locations used when there are plants, lichens, mosses



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5a



Scale 0 5 10 Meters

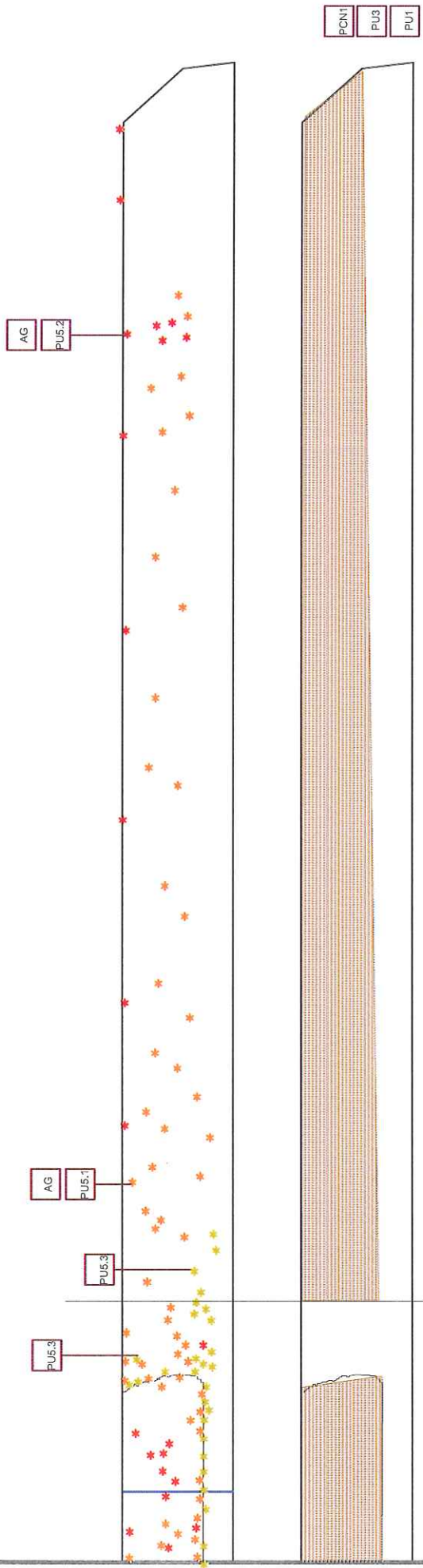


Project Title: **Walls of Nicosia Vegetation Cleaning**
Mula Bastion - Kyrenia Gate

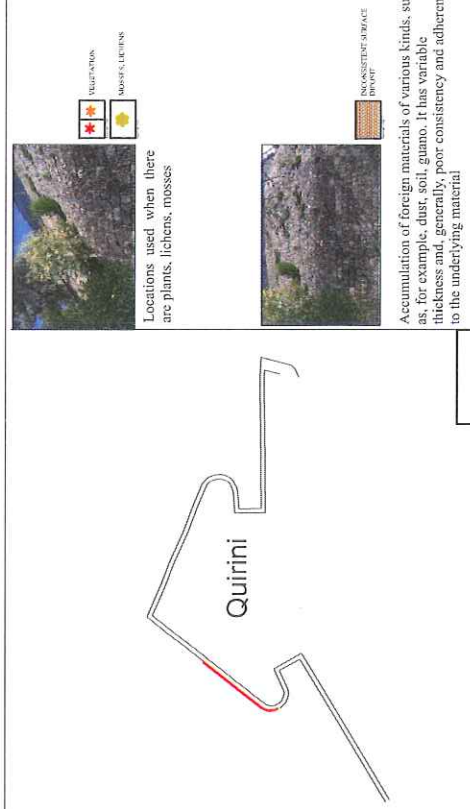
Conservator: **Niki Lazarou**
Date: **January 2018**
Scale:

Drawing name: **LOCATIONS OF PLANTS**

Drawing no.: **Dr.13**



5a



Scale 0 5 10 Meters

5b

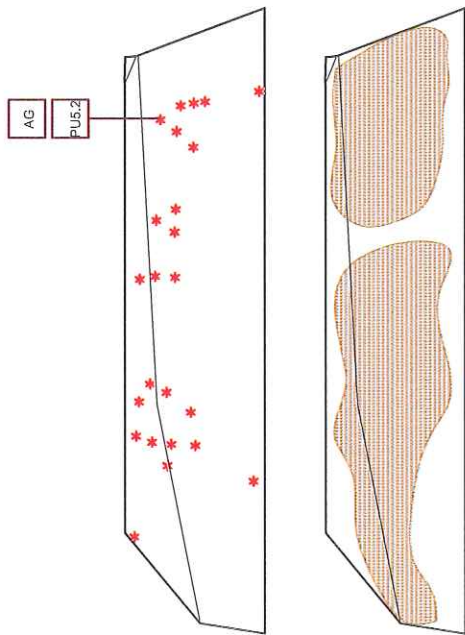


Project Title: **Walls of Nicosia Vegetation Cleaning**
Mula Bastion - Kyrenia Gate

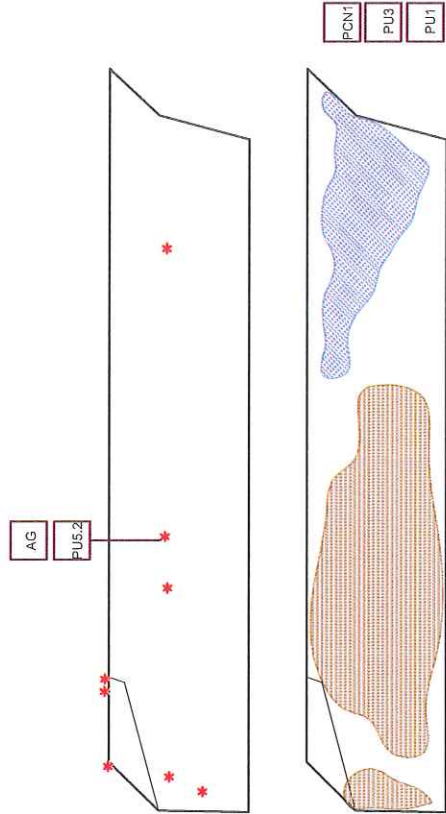
Conservator: *Niki Lazarou*
 Date: *January 2018*
 Scale:

Drawing name: **LOCATIONS OF PLANTS**

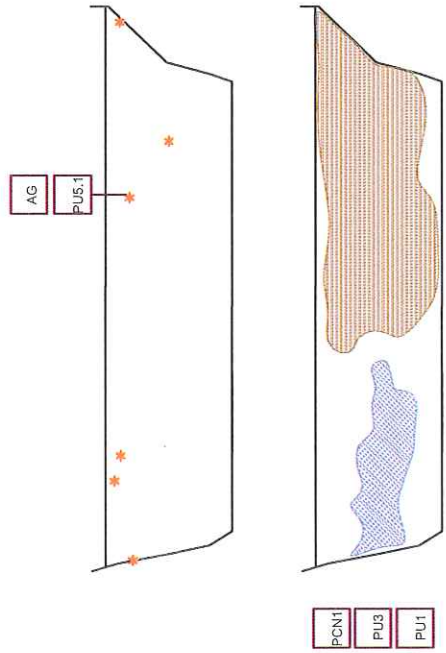
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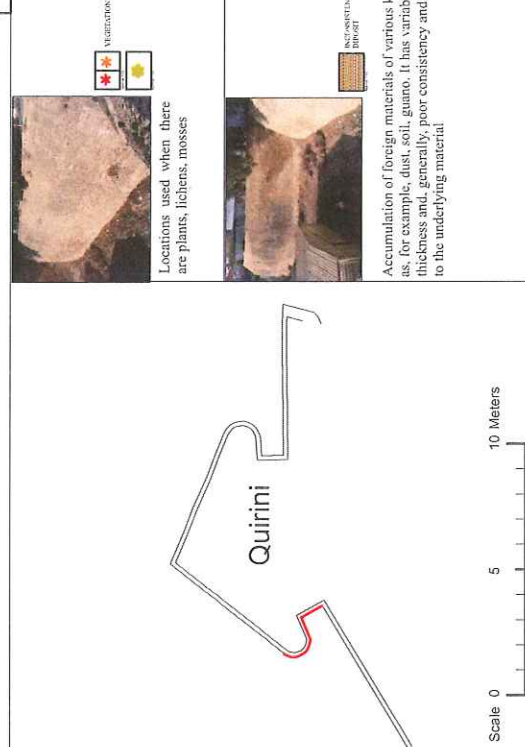
6



7



8



Scale 0 5 10 Meters



Locations used when there are plants, lichens, mosses



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Project Title: Walls of Nicosia Vegetation Cleaning
Mula Bastion - Kyrenia Gate

Conservator: Niki Lazarou
Date: January 2018
Scale:

Drawing name: LOCATIONS OF PLANTS

Drawing no.: Dr.15

AG
PU5.2

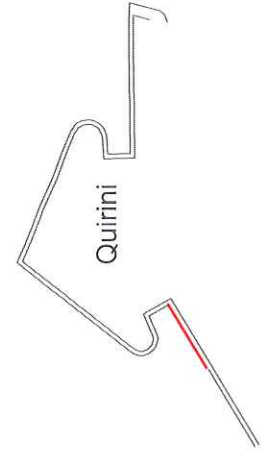
AG
PU5.1

PU5.3

AG
PU5.1

PCN1
PU3
PU1

9b



9a

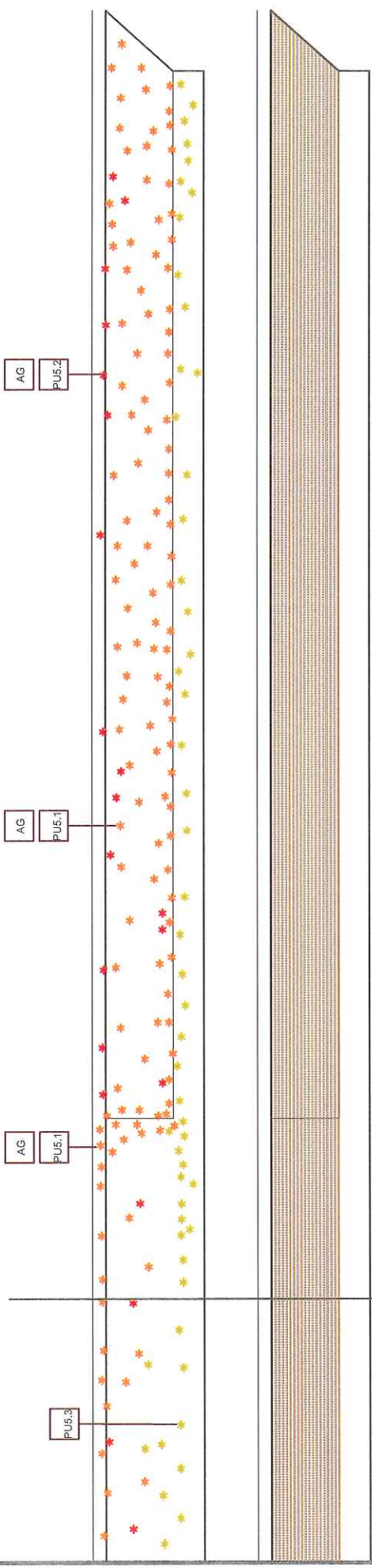
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Locations used when there are plants, lichens, mosses

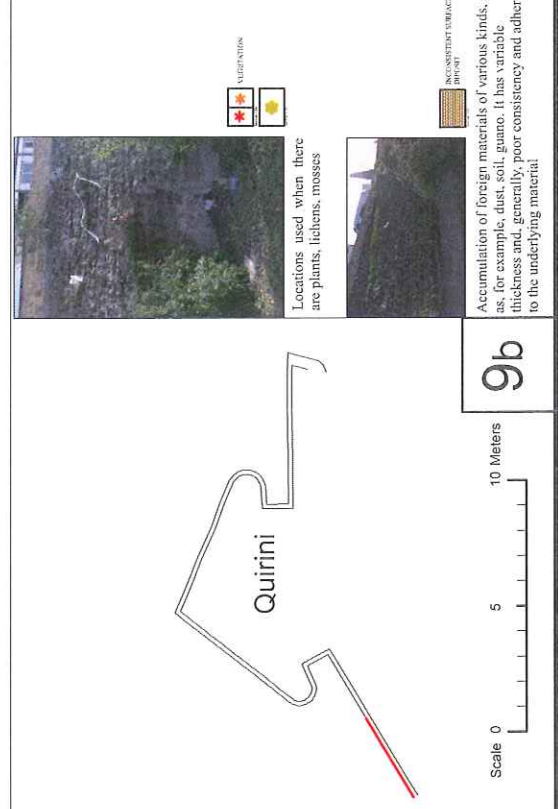


Accumulation of foreign materials of various kinds, such as, for example, dust, soil, guano. It has variable thickness and, generally, poor consistency and adherence to the underlying material



9a

PCN1
PU3
PU1



9b

Scale 0 5 10 Meters



Locations used when there are plants, lichens, mosses



Accumulation of foreign materials of various kinds, such as for example, dust, soil, guano. It has variable thickness and, generally, poor consistency and adherence to the underlying material

VEGETATION

INCONSISTENT SURFACE (PU5.1)

Project Title: Walls of Nicosia Vegetation Cleaning
Mula Bastion - Kyrenia Gate



United Nations Development Programme
This Programme is funded by the EUROPEAN UNION



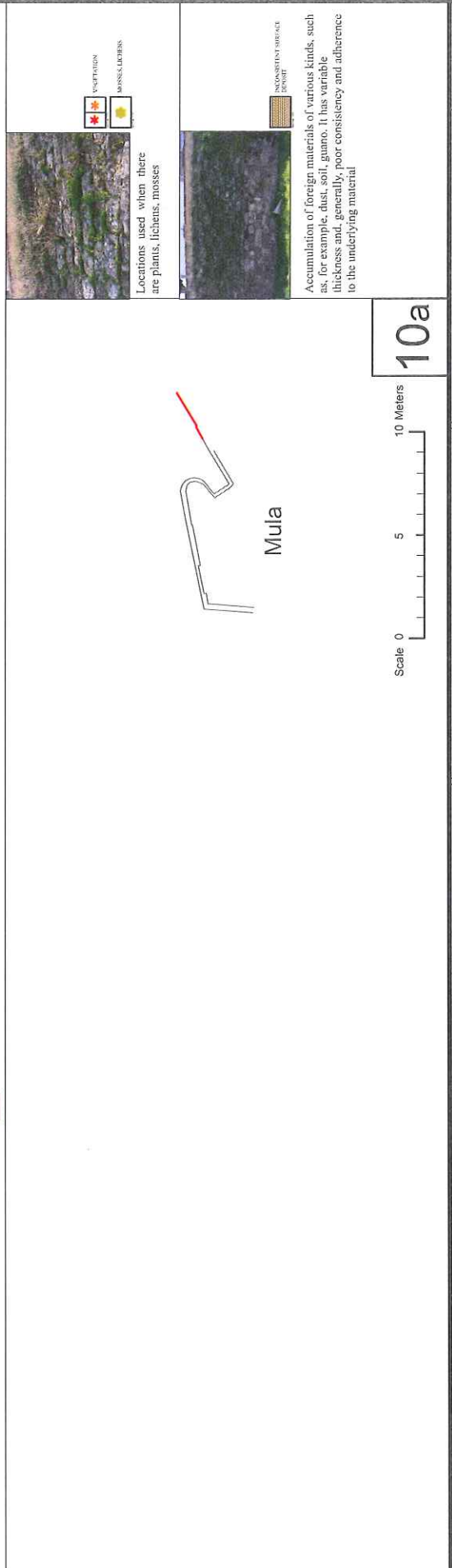
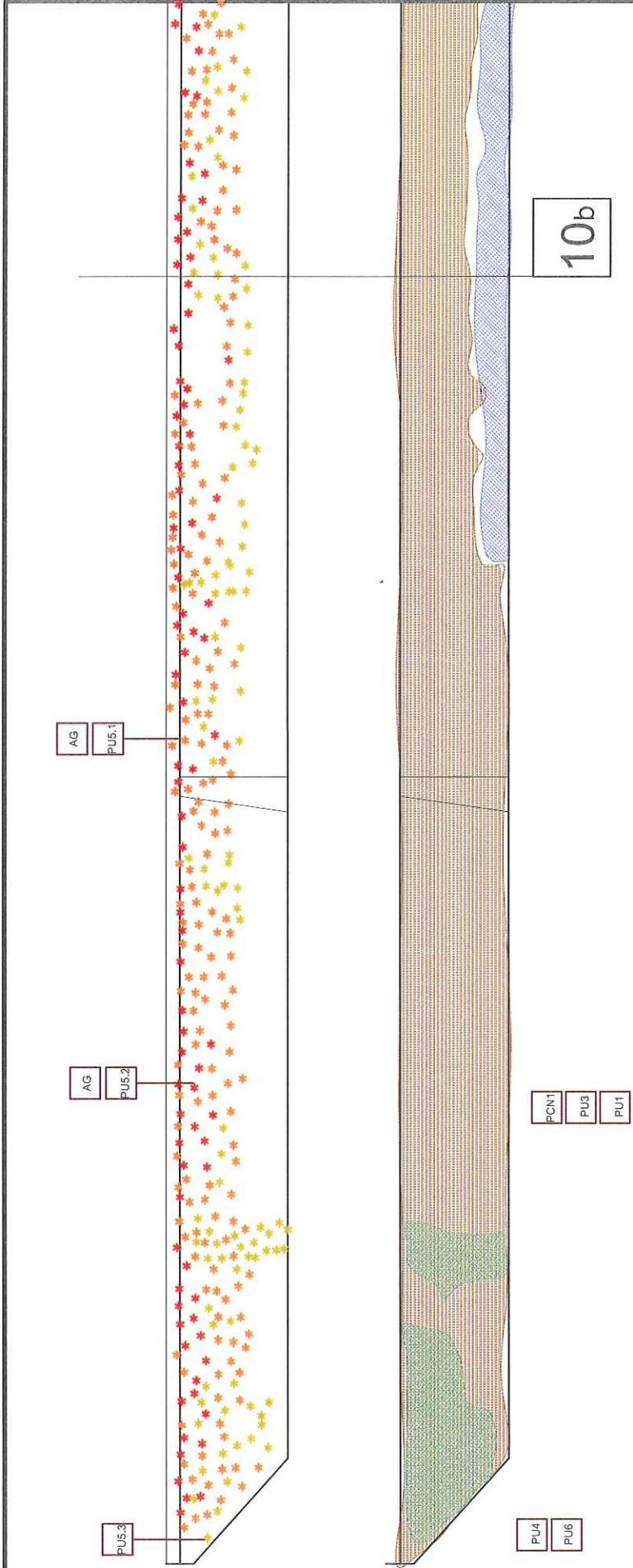
Conservator: Niki Lazarou

Date: January 2018 Scale:

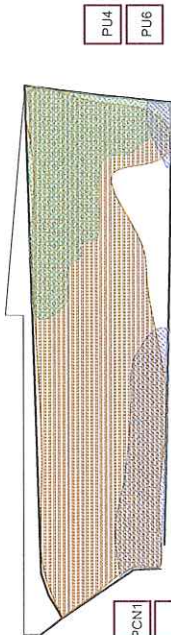
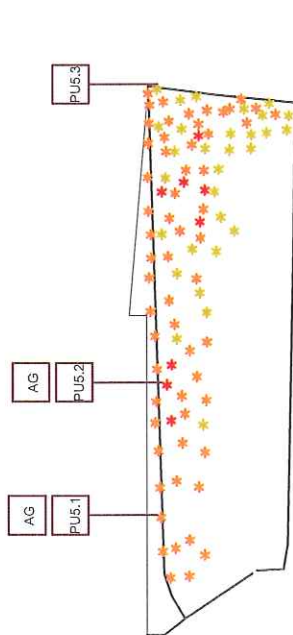
Drawing no:

Dr.17

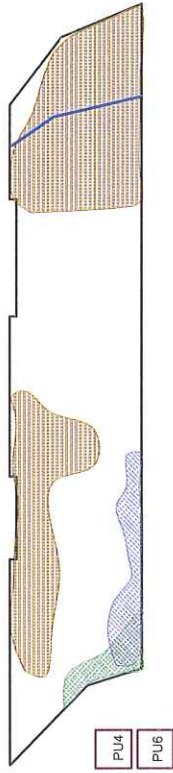
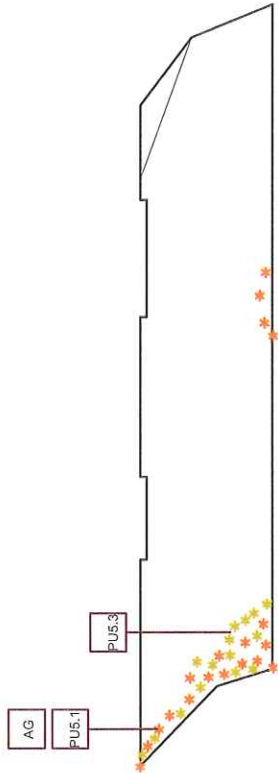
LOCATIONS OF PLANTS



					
Project Title: Walls of Nicosia Vegetation Cleaning Mula Bastion - Kyrenia Gate					
Conservator: <i>Niki</i>		Drawing name: <i>Lazarou</i>		Drawing no.: Dr.18	
Date: <i>January 2018</i>		Scale:		LOCATIONS OF PLANTS	



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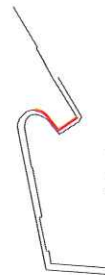
12



Locations used when there are plants, lichens, mosses



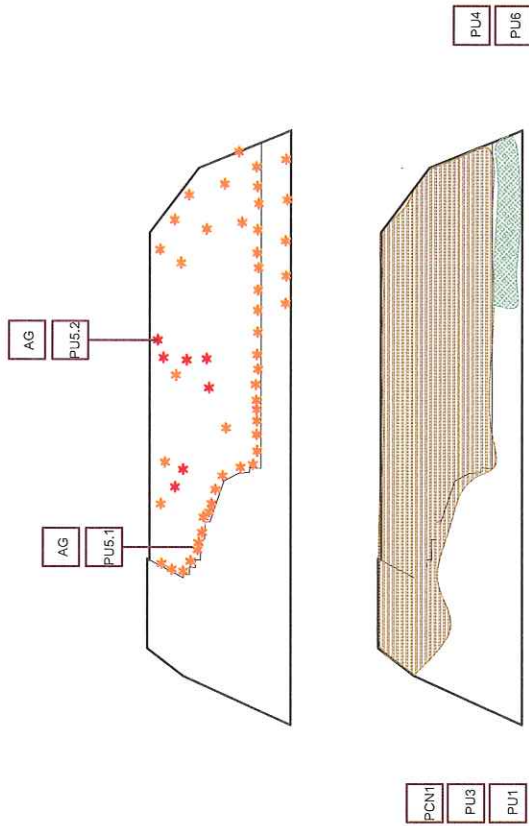
Accumulation of foreign materials of various kinds, such as, for example, dust, soil, guano. It has variable thickness and, generally, poor consistency and adherence to the underlying material



Mula

Scale 0 5 10 Meters

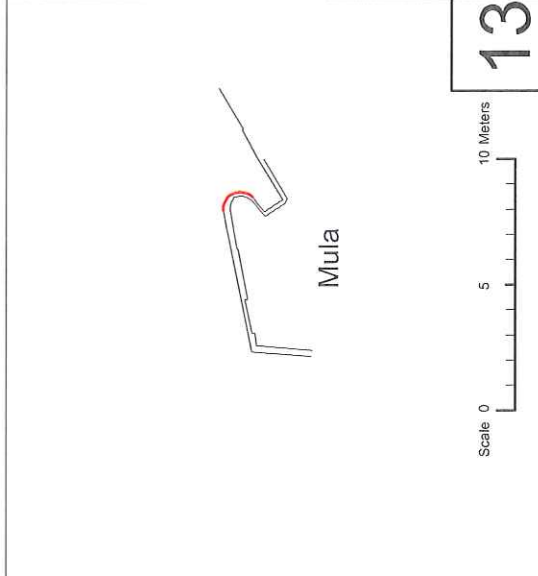
  		Project Title: Walls of Nicosia Vegetation Cleaning Mula Bastion - Kyrenia Gate		Drawing name: LOCATIONS OF PLANTS		Drawing no.: Dr.20	
Conservator: Niki		Lazarou		Date: January 2018		Scale:	



Locations used
 when there are
 plants, lichens,
 mosses

Stratiform deposit,
 compact and generally
 adherent to the substrate,
 composed of organic
 substances or biological
 structures

Accumulation of foreign materials of various kinds, such
 as, for example, dust, soil, guano. It has variable thickness
 and, generally, poor consistency and adherence to the
 underlying material



 United Nations Development Programme This Programme is funded by the European Union		 Project Title: Walls of Nicosia Vegetation Cleaning Mula Bastion - Kyrenia Gate		Drawing no.: Dr.21	
Conservator: Niki Lazarou		Date: January 2018		LOCATIONS OF PLANTS	
Scale: 0 5 10 Meters		13		Drawing name:	

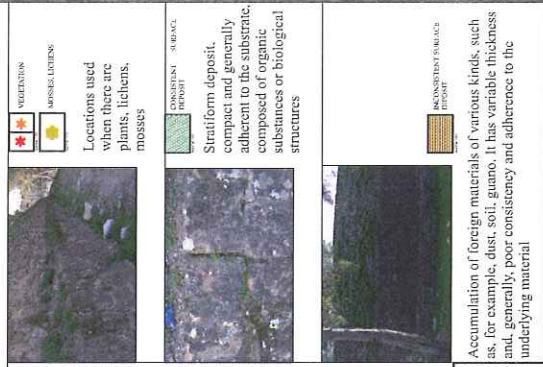
AG
PU5.2

AG
PU5.1

PU5.3

PCN1
PU3
PU1

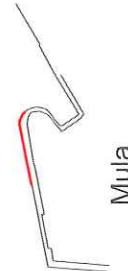
PU4
PU6



VEGETATION
MOSS-LICHENS
Locations used when there are plants, lichens, mosses

CONSISTENT DEPOSIT
Stratiform deposit compact and generally adherent to the substrate, composed of organic substances or biological structures

ACCUMULATED SURFACE DEPOSIT
Accumulation of foreign materials of various kinds, such as, for example, dust, soil, guano. It has variable thickness and, generally, poor consistency and adherence to the underlying material



Mula

Scale 0 5 10 Meters

14



United Nations Development Programme
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Project Title: **Walls of Nicosia Vegetation Cleaning**
Mula Bastion - Kyrenia Gate

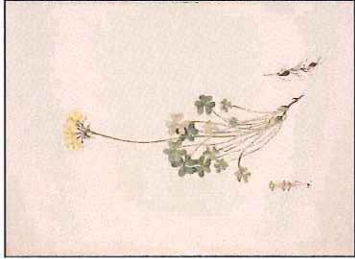
Conservator: *Niki Lazarou*
Date: *January 2018*
Scale:

Drawing name: **LOCATIONS OF PLANTS**

Drawing no: **Dr.22**

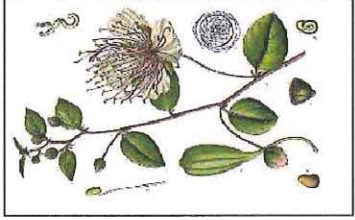
PRESENCE OF INVASIVE VEGETATION

Invasive species



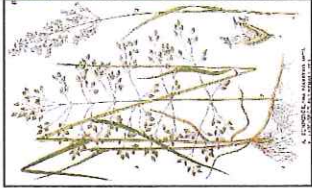
Oxalis pes-caprae

Introduced, cool-season, perennial herb, with a fleshy white rhizome and 2-3 cm long, brown bulbs; bulbils are formed on a white fleshy rhizome and in axils of basal leaves. Vegetative parts die off during summer and re-shoot again in autumn. Aerial stems are absent or greatly reduced. Leaves are trifoliate; leaflets are heart-shaped and 1-3 cm across, often with dark blotches. Yellow flowers occur in groups of 3-25 at the tips of stems that arise from the base of the plant. Sepals 5 and fused. Produces vegetative shoots in autumn and most flowering is in late winter and spring. It occurs where annual rainfall is greater than 320 mm per annum and colonises disturbed soils with moderate to high fertility & good moisture holding capacity. Spread by tuberous bulbs, bulbils and rhizomes. Disturbance of a colony can result in massive recruitment of new plants. Heavy infestations can be as dense as 3000 plants per square metre. A garden escape, it is now a weed of pastures, crops and orchards where it is extremely difficult to control once established. Competitive in pastures from autumn-spring, especially in winter rainfall annual pastures. Plants can be controlled by digging and removing bulbs or repeated use of herbicides.



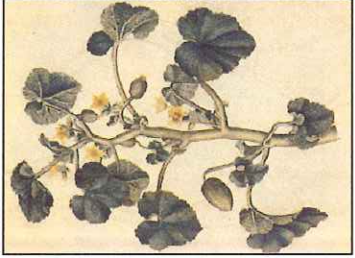
Capparis spinosa

bush with barrel and branched lignified part in low commonly called caper bush, is a scrambling, sprawling, spiny, evergreen shrub that typically grows to 3' tall, but spreads by semi-prostrate branching to as much as 6-10' wide. It is native to somewhat hostile growing conditions including sandy or gravelly soils, rocky hillsides, cliffs, stone walls and rock crevices in Mediterranean coastal regions. Leaves are variable in texture, orbicular to elliptic, base rounded and apex mucronate. Flowers are white, solitary, axillary. Bloom from May to September.



Poa

It has a slightly creeping, fibrous, rootstock. The stem grows from 15-25 cm high. The panicle is open and triangular shaped, 5 to 7.5 cm long. The spikelets are stalked, awnless, 1 to 2 cm long when flowering, and loosely arranged on delicate paired or spreading branches. The vivid green leaves are short and blunt at the tips, shaped like the prow of a small canoe. It is in flower all year around except for severe winters. The seeds ripen and are deposited 8 months of the year. The plant grows rapidly from seed, flowering within 6 weeks, seeding and then dying.



Ecballium elaterium

a perennial growing to 0.3 m (1ft) by 1 m (3ft 3in). It is in flower from Jun to August, and the seeds ripen from Aug to September. The flowers are monoecious (individual flowers are either male or female, but both sexes can be found on the same plant) and are pollinated by Insects. The plant is self-fertile. Suitable for: light (sandy), medium (loamy) and heavy (clay) soils, prefers well-drained soil and can grow in nutritionally poor soil. Suitable pH: acid, neutral and basic (alkaline) soils. It cannot grow in the shade. It prefers dry or moist soil.



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Conservator:	Niki	Lazarou
Date:	January 2018	Scale:

Drawing name: PRESENCE OF INVASIVE VEGETATION

Drawing no.: Dr.23