

2nd Mediterranean Plant Conservation Week

“Conservation of Mediterranean Plant Diversity: Complementary Approaches and New Perspectives”

Reconnecting People with Plants Implementation Examples for Ancillary Botanic Gardens

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In Collaboration with the Municipality of Byblos and the Directorate General of Antiquities



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Countries of the Arab League have lowest number of BG, highest number of individuals per Botanic Garden, and lowest number of Botanic Gardens per area

EU	807	0.6	5
USA	760	0.4	13
Russia	109	1.3	157
China	151	8.9	64
India	131	9.5	25
Australia	131	0.2	59
Canada	105	0.3	95
Argentina	48	0.8	58
Brazil	40	4.9	213
Arab league	33	10.5	225

Botanic Gardens Limitations and Importance

Possible limitations to establishing botanical gardens in these countries

Colonial History, land limitation, management costs, water scarcity, taxonomy, conflict, climatic conditions

- The idea of appropriating lands to establish botanic gardens and dedicate financial resources to operate such institutions is sometimes considered as foreign and almost always unjustifiably expensive.
- Botanical gardens are important to help safeguard a country's floristic diversity, reconnect people with the rest of nature, and bringing science to the public.



Credit: marviikad

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<https://www.flickr.com/photos/66543362@N00//>

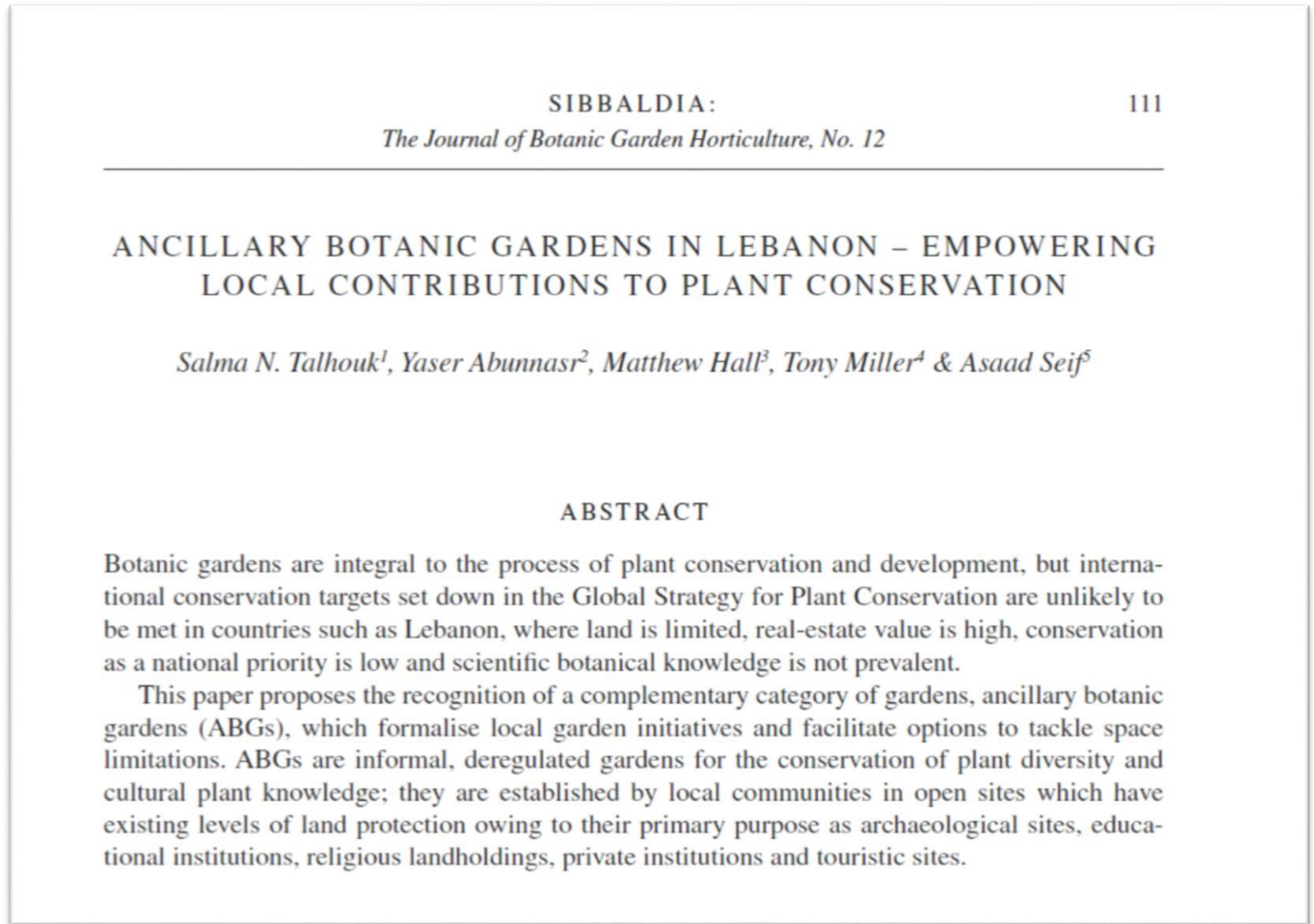


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- In 2014, Talhouk et al. proposed a novel concept *Ancillary Botanic Gardens (ABGs)* whereby ‘ancillary’ stands for secondary, additional, and supporting and they are not to be mistaken with satellite gardens



ABGs can be established in any open site that has existing levels of land protection owing to its primary purpose

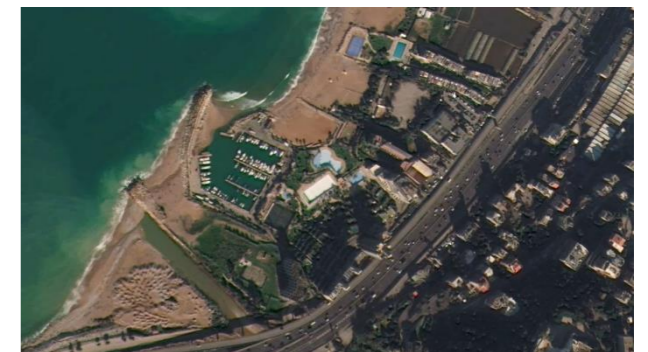
Education institutions (32 universities)

Archeological sites (4000 sites)

Tourist resorts and other private initiative

Religious land holdings

As ABG, only secondarily in space usage or land function is the site also used for the growing and display of plants



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ABGs occupy
unbuilt lands or
managed green
spaces of almost
ubiquitous
institutions



Credit: David Blackwell.
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<https://www.flickr.com/photos/mobilestreetlife/>



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Societal Level

The main objective of an ABG is to serve as a somewhat permanent plant educational and conservation outreach outlet for people.

Engage members of society that aren't necessarily versed in plant taxonomy

Act as 'custodians' for traditional land management practices and ethno-ecological knowledge

Promote local 'nature' as culturally valuable planned and managed by local citizens.

Are Negotiated and regulated between local groups and primary site function owners

Have mandates defined by immediate stakeholders and are flexible rather than prescriptive.



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Educational Institutions *Campus to Garden*

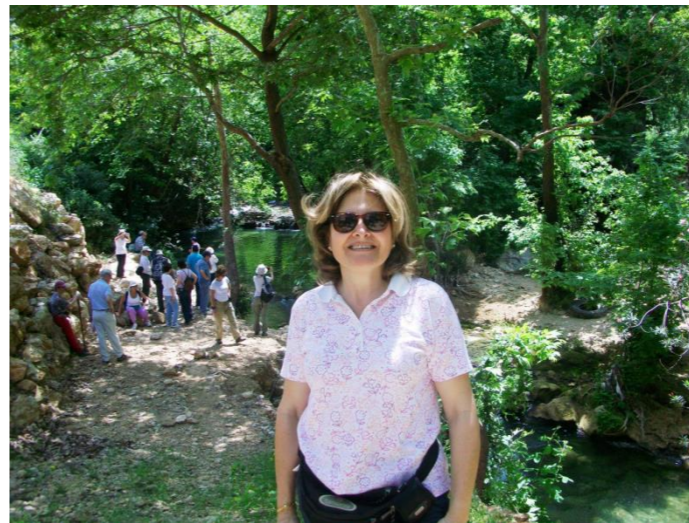
AUB (American University of Beirut) 61 acres
Green spaces 24.3% of AUB total area, roofs that can be turned into green roofs 7-10% of AUB area, green roofs may increase green areas by 17 – 24%



Digital map of AUB campus woody plants
10,759 trees and shrubs belonging to 166 species



Biology students tour AUB campus to learn about plants of economic importance
BIOL 273 (Economic Botany)



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From History

AUB ESTABLISHED ON ROCKY COAST LANDS 1926-1931 INTENSE TREE PLANTING EFFORTS

- Chemitry W. A. West (1909-1980) "Anywhere you see a Judas tree or a Vibrunum shrub you can be sure that it came from a seedling which I dug with my own hands in the mountains and brought back to Beirut in my knapsack."
- H Glockler brought the eucalyptus seedlings from Jerusalem in a biscuit tin

FAILED ATTEMPT TO ESTABLISH BOTANIC GARDEN CAMPUS GREENING AND MANAGEMENT



Grevillea robusta بلوط حريري
Common name: Australian silver oak
Origin: Australia

Sometime before the first world war, Mr. George Stewart, then treasurer of the Syrian Protestant College obtained seeds of this Australian tree. The Tall robust tree from new south wales is known for forming large clusters of yellow-orange flowers during the spring



Ficus retusa
Common name: Cuban laurel
Origin: Malay archipelago and Malaysia

This tree was planted in 1931. It is a Landmark tree that has developed exceptional historical, cultural and aesthetic value because of its legendary stature and huge umbrella-like canopy keeping the medical gate area in constant shade



Ceratonia siliqua خروب
Common name: Carob
Origin: Mediterranean region

This is the oldest Carob tree in AUB. It was planted around 1880. In 1964, the tree was cut down after a strong storm but a branch has resprouted from the stump. Carob trees are the only Mediterranean trees having the main flowering season in autumn (September-November). The dark-brown pods are not only edible, but also rich in sucrose.



Dermatophyllum secundiflorum
Common name: Mescal bean
Origin: Southwestern United States and Mexico

These small trees were planted in late 1940s. The small size and growth habit of this drought tolerant tree make it an ideal landscape tree with attractive drooping clusters of violet-blue flowers, which later give rise to crimson-red seeds. It should not be confused with the hallucinogenic cactus mescal buttons



Quercus calliprinos سدابان
Common name: Palestine oak
Origin: Mediterranean region and Southwestern Asia

Oldest tree in AUB. According to Professor W. West, this large prickly-leaved oak was already growing on site before the founding of AUB. Acorns were collected from this tree by W. West and the seedlings were planted throughout the campus, mainly between Jafet library and the Chemistry laboratory



Washingtonia filifera
Common name: Fan palm
Origin: Southwestern U.S

These palms were planted in 1950 by W. West hoping that they would grow tall enough to display their column-like trunks



Cupressus sempervirens مرد
Common name: Mediterranean cypress
Origin: Southeastern Europe

The ten Cypress trees in this triangle were planted in 1886 by AUB's first President Daniel Bliss, but one died in 1940 and was replaced



Ficus sycomorus جشيز
Common name: Sycamore fig
Origin: Africa and Arabian peninsula

This Gemayz tree was planted in 1942 and was relocated in 2000 from the old athletic field when Charles Hostler Student Center was being built



Eucalyptus camaldulensis كينا
Common name: River red gum
Origin: Australia

This large tree was brought in 1911 from Jerusalem in a biscuit tin by AUB alumnus Henry Glockler and planted by A. Day (Professor of Botany). The tree is easy to identify with its distinctive thick trunk and multicolored bark. It is of major importance in Australia as a source of honey



Ficus benghalensis التين البنغالي
Common name: Banyan
Origin: India and Pakistan

This sprawling evergreen Ficus is one of the best known of the 10,000 trees on the University's campus. Professor Abou Chaar (Professor of Pharmacognosy and Botany at AUB until 1985) estimated that the Banyan trees were planted between 1876 and 1880 next to Assembly Hall, West Hall, Jessup Hall, and the Observatory. Banyan tree is sacred to Hindus and Buddhists in India and is frequently planted around temple to reflect eternal life. The word banyan means a peculiar growth habit whereby roots come out of branches and grow down to the ground

#AUBbotanicgarden



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To Historical Tree Tour

Walking tour to visit trees that have developed exceptional historical cultural, or aesthetic value because of their age. These trees hold historic affiliation to faculty, administration and students.



 : Tree Location

- 1 *Grevillea robusta*
بلوط حريري
- 2 *Ficus retusa*
- 3 *Ceratonia siliqua*
خرزوب
- 4 *Dermatophyllum secundiflorum*
- 5 *Ficus benghalensis*
التين البنغالي
- 6 *Eucalyptus camaldulensis*
كيننا
- 7 *Ficus sycomorus*
جشيز
- 8 *Cupressus sempervirens*
سرو
- 9 *Washingtonia filifera*
واشتونيا
- 10 *Quercus calliprinos*
سنديان
- 11 *Bombax ceiba*
شجرة الحرير



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Once established as an ABG

Every tree is connected to a database

Tree selection policy

Donor recognition policy

Fundraising strategy

Management strategy

Outreach, service, and education strategy

[Ancillary Botanic Garden Committee](#)

The screenshot shows the homepage of the AUB Landscape Plant Database. The header includes the AUB logo and the text: "Landscape Design & Ecosystem Management, Faculty of Agriculture & Food Sciences, AUB Landscape Plant Database". The main content area features three search options: "Search By Name" (with a magnifying glass icon), "Search By Criteria" (with a barcode icon), and "Plant Identification" (with a fingerprint icon). A sidebar on the left lists navigation links: Home, About Us, Useful Links, Image Gallery, Popular Plant Categories, Glossary, and Contact Us. Below the sidebar is a "Spot Light" section featuring a photo of a tree and the text: "Buddleia madagascraensis, Evergreen shrub from Madagascar with a high potential to be ...". At the bottom of the screenshot, there is an "About Us" section and a "Search Plants Alphabetically" section with a letter index from A to Z.



A red-bordered box containing information about the Judas Tree. At the top, there is a red circle with the letter 'O'. Below it, the text reads "Judas Tree". Underneath is a QR code. At the bottom, the text reads "Cercis siliquastrum" and "Southern Europe and Western Asia".



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Perhaps Potentially Available Infrastructure

- **The Post Herbarium** houses a historic collection of plant specimens, mostly collected from Lebanon and the Middle East in the late nineteenth and early twentieth century by such renowned collectors as Post, Blanche, Dinsmore, Wood, Chaudhary, and Edgecombe. The collection amounts to sheets, of which ca. 12000 were collected in Lebanon. Because of the Lebanese civil war, the herbarium was not being curated for over 15 years. In 2000, thanks to a Darwin project, work at the herbarium was revived and a dataset of all specimens at the herbarium was compiled.
- **The Advancing Research Enabling Communities Center (AREC)** is located at Haush-Sneid in the Beqa'a Valley, 80 kilometers from Beirut
- **The Greenhouse Area** is The greenhouse area is operated by the faculty of agriculture and used by LDEM and agriculture departments for research and agriculture activities. There are four greenhouses on site; 1 large compartment with 8 rooms used by different faculty members and three polycarbonate houses. There are also two agriculture planting lots of 250 sq. meters in area and a water reservoir.
- **Biology Dept., Education Dept., Architecture Dept., Landscape Design and Ecosystems Management Dept., Physical Plant, Facilities Planning & Design Unit, Environmental Health Safety & Risk Management, Chemistry Dept., Agriculture Dept., and Environmental Health Dept.**



Credit: American University of Beirut Campus Master Plan



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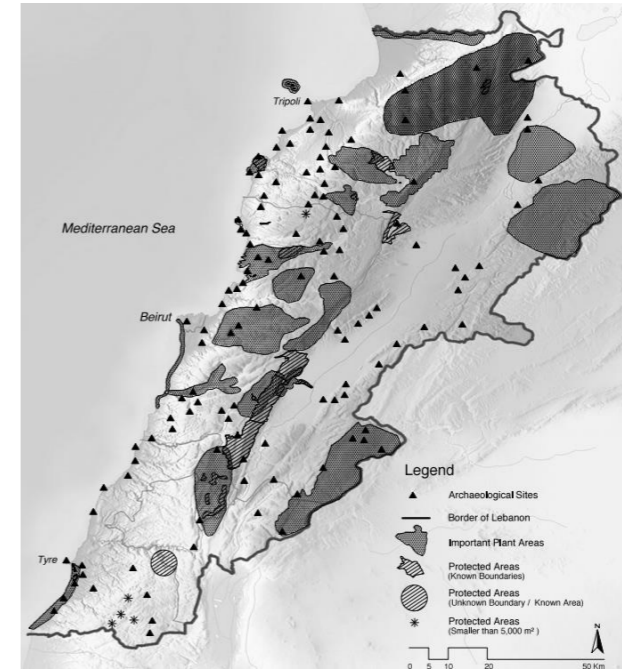
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Archeological Sites

Under the mandate and mostly the ownership of a single entity: the Directorate General of Antiquities

Possible occurrence of rare species plants in or close to archaeological sites and thus they can play an *in situ* or a *circum situm* conservation function and certain occurrence in various bioclimatic zones

By establishing ABGs on peripheral “protective areas” of archeological sites or within them the botanic garden institution becomes a secondary attribute to the land that has already been assigned a primary function and use, archeology, and has been protected for this purpose.



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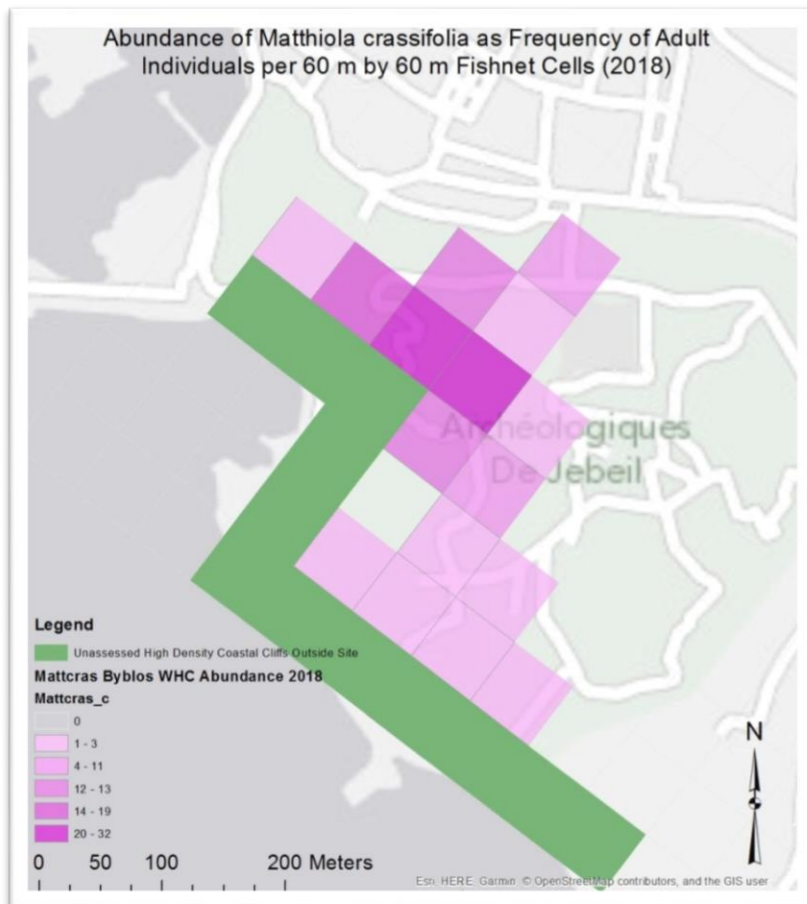
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Archeological Sites *A Journey of an Ancient Garden*

The UNESCO World Heritage Site of Byblos and Nearby Sites

STEP TOWARDS ESTABLISHING AN ANCILLARY BOTANIC GARDEN: SITE IDENTIFICATION AND NEEDS ASSESSMENT OF STAKEHOLDERS

Active municipality,
land largely owned by Directorate General of
Antiquities (highly cooperative)



Credit: Wikipedia Commons



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Archeological Sites *A Journey of an Ancient Garden*

STEP TOWARDS ESTABLISHING AN ANCILLARY BOTANIC GARDEN: PLANNING

Provide a background that links the ABG with the institution/individual by producing a historical narrative linking the two

Integrate the ABG in the growth and planning strategy of the institution/estate

MAJOR RESTRICTIONS: Not allowed to move any archaeological feature nor dig more than a few tens of centimeters or less in certain parts

The garden is adjacent to secondary Road, the main landscape road



Primary Road
Municipality
Secondary Road

Public Garden
Located in the center of the traditional city, North Decumanus



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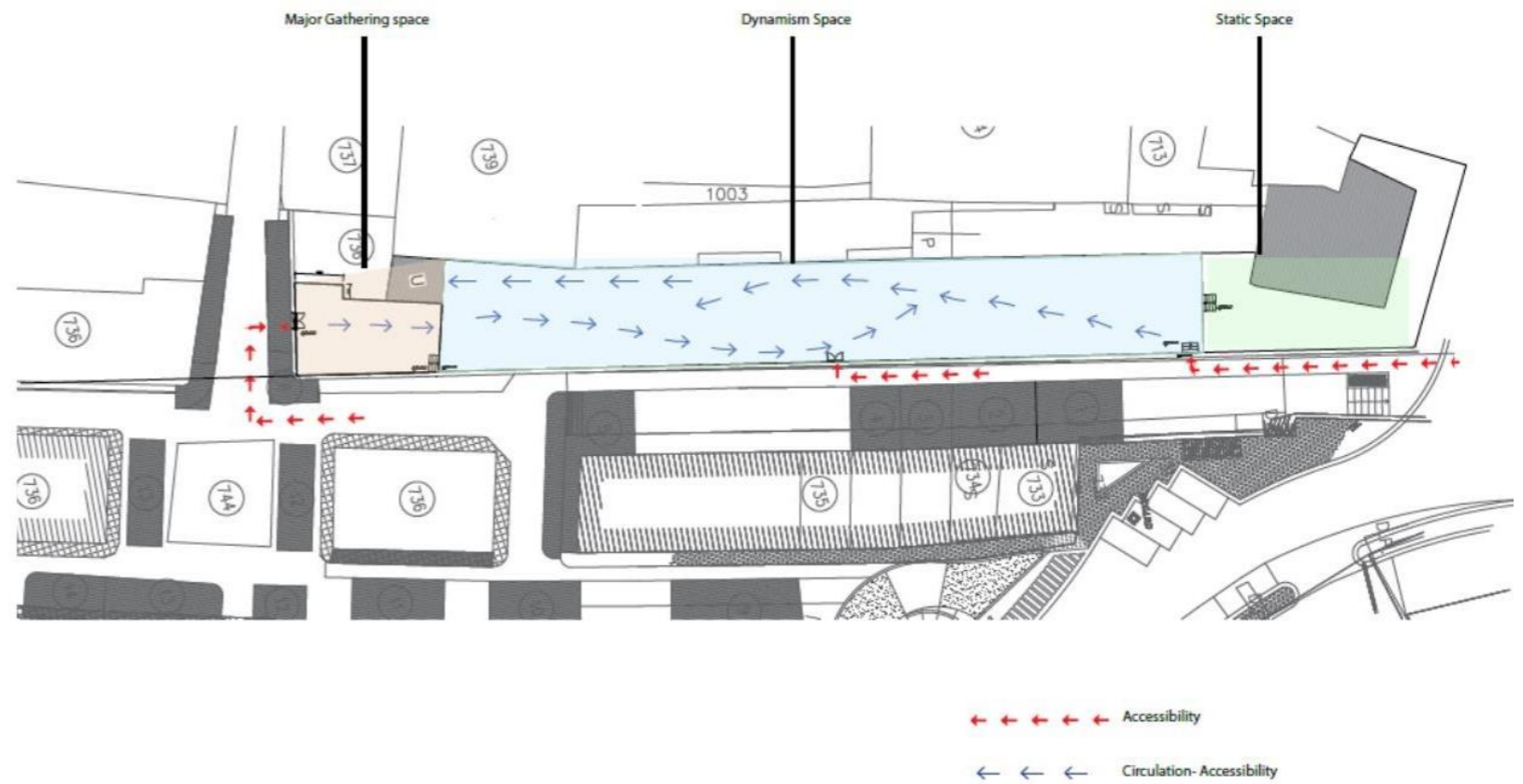
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STEP TOWARDS ESTABLISHING AN ANCILLARY BOTANIC GARDEN: DESIGN

Stimulate the pleasure of learning by providing recreational opportunities by means of walks, and beautiful displays



Flow of people determining locations posters and signage



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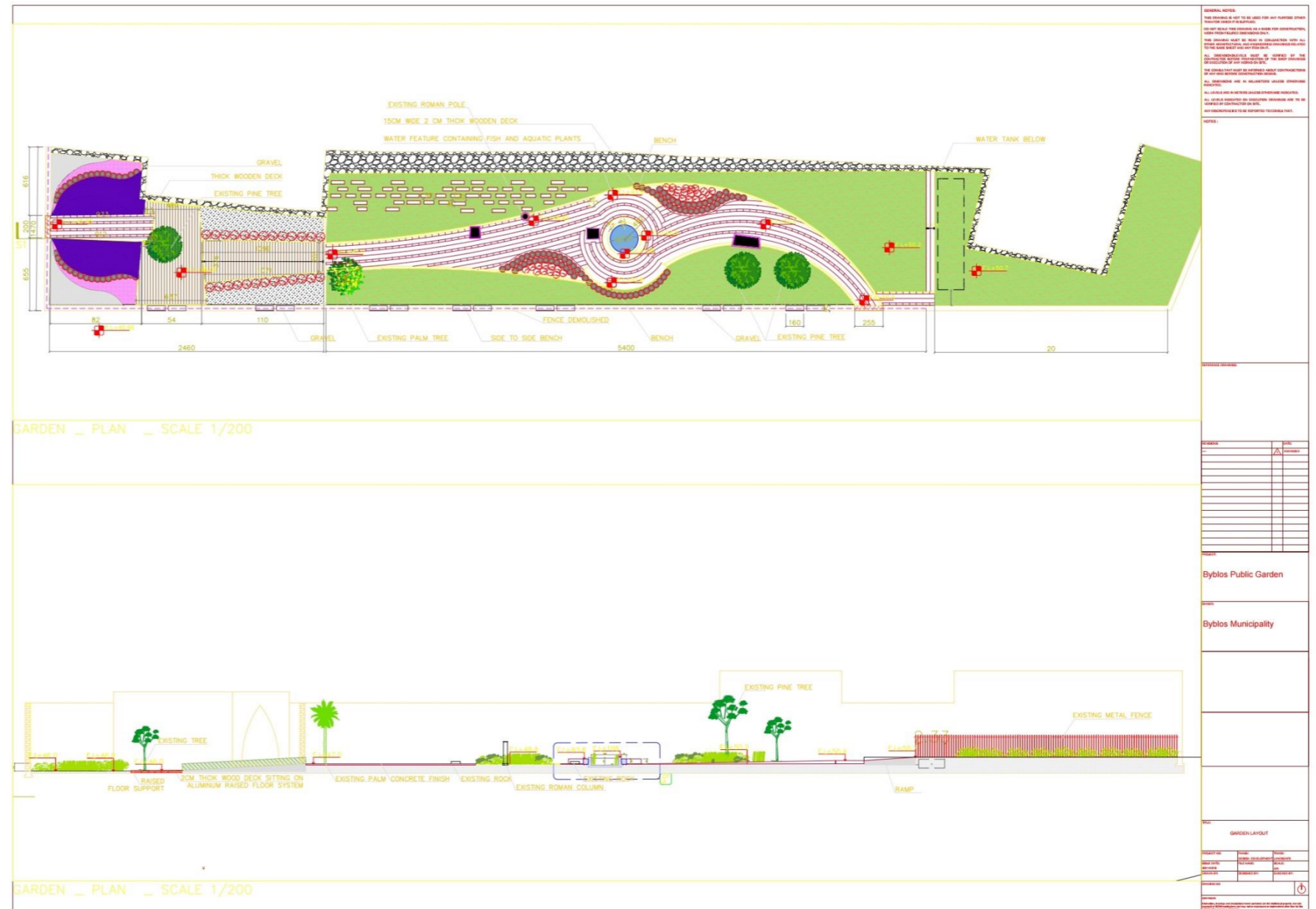
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Archeological Sites A Journey of an Ancient Garden

Design still being modified to enhance potential habitat of rare coastal plants, perhaps inspired by the style of Piet Oudolf, while taking into account aesthetic preferences of local culture

Nassauer (1995) *Messy ecosystems, orderly frames*, as well as a few similar studies in the region, are of special relevance here and there is an urgent need for similar investigations in Lebanon

STEP TOWARDS ESTABLISHING AN ANCILLARY BOTANIC GARDEN: DESIGN
Stimulate the pleasure of learning by providing recreational opportunities by means of walks, and beautiful displays

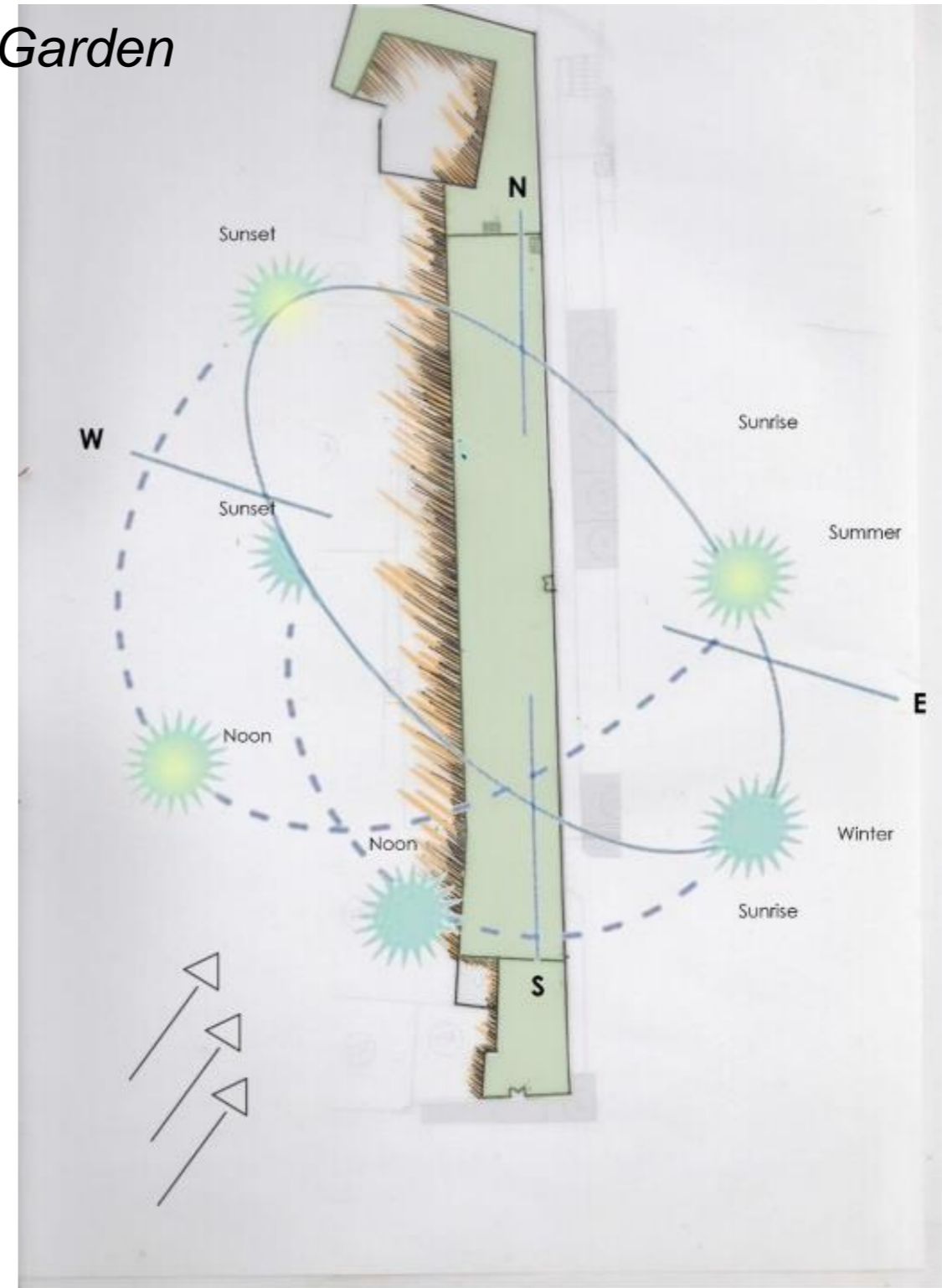


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STEP TOWARDS ESTABLISHING AN ANCILLARY BOTANIC GARDEN: MANAGEMENT

- Adopt sustainable practices when managing the ABG
- Form an ‘internal’ (and external) committee of champions for the management and promotion of the ABG
- Estimate annual expenses needed for proper management, display, and education



Environmental parameters
guiding design and
management processes



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STEP TOWARDS ESTABLISHING AN ANCILLARY BOTANIC GARDEN: EDUCATION

Define your educational goal (scientific, cultural, commercial, ...)

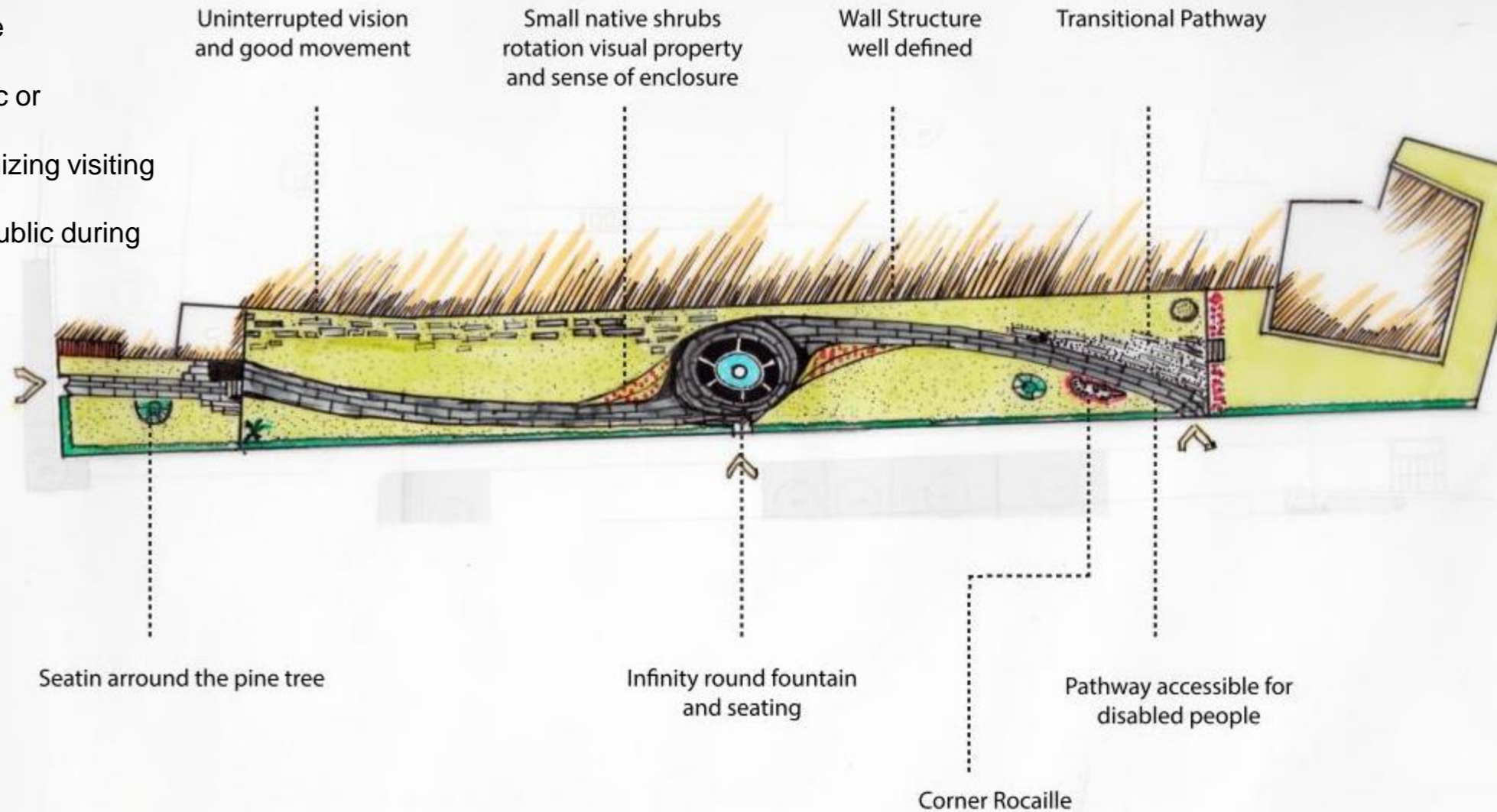
Define your target visitors (neighbors, village community, school students, customers....)

Label all the plants whether by their scientific or common names

Provide partial access to the public by organizing visiting days, tours, and events

Prepare information material to share with public during visiting days, tours, events....

- The fragile coastal habitats and wetland habitat of Ammiq
- Endangered plant species, *Matthiola crassifolia*, and Critically Endangered fish species, *Garra festai*



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In the end,

My only
suggestion,

Love your
stakeholders
and partners



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