

GreenPARK

Project Description Statement

Covering the proposal:

Transforming an existing waste treatment site into an urban greening project including excavation, underground parking facilities educational building, greenhouse, food court and water feature



GVERN TA' MALTA
MINISTERU GĦALL-AMBJENT,
L-ENERĠIJA U L-INTRAPRIŻA



GREENSERV

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1 Scope of the PDS

This project development statement (PDS) describes the proposal of rehabilitating a former waste treatment facility into an Educational National Park, hereby being referred to as GreenPark. This document aims to provide a concise overview of the project's objectives, scope, and key details.

It is the aim of this PDS to highlight issues which are of importance to the project both in relation to its location and surrounding amenities and in the context of the facilities which are to be provided on site.

This document will provide:

- An outline of the history of the Sant Antnin site, the past activities that used to be held in the area, the surrounding landscape as well as context to what the nearby localities entail.
- A review of the present environmental situation.
- A proposal for the required interventions (detailed design and methodology) required to ensure proper excavation and implementation of facilities.

2 Details of Developer

Wasteserv Malta Ltd.

ECOHIVE Complex

Tul il-Kosta, Naxxar, Malta NXR 4613

Wasteserv is responsible for the waste management of all Malta and Gozo.

Throughout the years many landfills, both official and unofficial, were formed around Malta and Gozo.

Through the creation of WasteServ the central government has taken the initial step in managing the waste we produce, which, considering the population density together with the individual waste generation is no easy task.

Its main objectives include:

- The organisation, management, and operation of integrated systems for export of waste to destinations outside the Maltese Islands and for waste management, including integrated systems for transport, sorting, reuse, utilisation, recycling, treatment and disposal of solid waste and hazardous waste.
- The organisation, management, and operation of integrated systems for waste management in accordance with the Laws of Malta and the waste management policy and the new Waste Management Plan 2021-2030, whilst simultaneously observing internationally recognised waste management principles.
- The organisation, management, and operation of integrated systems for waste management for other types of waste as may be decided by the Government of Malta or the Ministry responsible for the infrastructure relating to the management of waste.

GreenServ is a new urban greening project implementation arm within WasteServ that has been set up to deliver a new lease of life to Malta's dense urban areas. GreenServ has been involved in several Urban Greening projects, in different localities, with the aim of creating more green spaces for the residents and tourists on the island. The focus is to transform urban, dense areas into a desirable feature that will serve as an open space for public outdoor recreational activities whilst delivering a series of health and well-being benefits to residents.

GreenServ first mandate was to deliver projects that introduced a new concepts of urban living aimed at enhancing the quality of green space across an urban landscape characterized by grey spaces and increased traffic congestion that negatively impinge on the quality of life.

These projects aim to convert traffic thoroughfares into green heavens allowing residents to benefit from improved air quality across their towns.

Through this new arm, WasteServ will continue to broaden its portfolio and reinforce its environmental mission as part of a continuous commitment to preserve the environment for future generations.

3 Introduction

3.1 Surrounding localities

The site lies within the limits of Marsaskala and is situated approximately 2.2km from Żejtun and Żabbar, originally a fishing town with a small harbor, has evolved into a seaside town over time. Nowadays the town has shifted towards being a tourist destination. The population of Marsaskala increases to approximately 20,000 during the summer period.

Marsaskala is also home to il -Maghluqa, a Natura 2000 site and an extant wetland rich in biodiversity. The wetland is crucial for various avian and aquatic fauna and is home to national fish such as the Mediterranean Killifish. The site is being assessed so that it may become a conservation site enabling it to better study how a habitat perseveres in closed water conditions. The newly envisaged project aims to recreate a similar water body with the same ideal qualities to form a rich ecosystem.¹

Within Marsaskala one can also find the Sant' Antnin Family Park, home to various recreational spaces and activities. The GreenPark would also serve as a continuation for this park, with the aim of being more nature oriented in its use of space.

¹ Nature Trust Malta. (2021, December 29). Il- Maghluq Natura 2000 site - Marsascale - Nature Trust - FEE Malta. Nature Trust - FEE Malta. <https://naturetrustmalta.org/what-we-do/natural-parks/in-maghluq-natura-2000-site-marsascale/>

3.2 Location of Site

The site (*Figure 1*) lies just below Wied iz Ziju and is sandwiched between the rural surroundings, the Sant Antnin Family Park, the recycling plant and Sant Antnin Sewage plant. The site lies on co-ordinates 35°51'42.59"N Latitude and 14°33'1.72"E Longitude (*Figure 2*).



Figure 1 Map showing Site within Marsaskala (Source Google Earth, 2023)



Figure 2 Map showing Site within Southeastern Region of Malta (Source Google Earth, 2023)

3.3 Current State of Proposed Site

The proposed site is located in an area known as Sant' Antnin Waste Treatment Plant. The latter formed an integral part of Malta's waste management infrastructure, however, as most waste management facilities moved to the ECOHIVE Complex in Magtab, the proposed plans target the return of approximately 23,800 sqm of this land to the community.

The figure below indicates the state of the site in 2023.



Figure 3 Map showing state of project extents within Marsaskala (Photo taken in 2023)

3.3.1 A history of the site as a waste management facility.

The Sant' Antnin Waste Treatment Plant (SAWTP) was constructed to treat and manage solid waste to address Malta's growing waste management needs at the time whilst also adhering to environmental standards.

The SAWTP aimed to enhance operational efficiency and promote best practices in the industry. This strategy was initiated with the Materials Recovery Facility (MRF), as became operational in February 2008 as the first phase, concluding with the second phase in November 2010 with the Mechanical Biological Treatment Plant (MBTP).

In essence, the purpose of SAWTP extended beyond mere waste treatment; it stood as a beacon of sustainable development, demonstrating the integration of environmental responsibility and technological innovation. However, on the 22nd of May 2017, following a fire incident, the MRF shed was destroyed. In October 2018, a pilot project was launched to collect biodegradable waste as a separate organic fraction, to deviate waste away from landfill, and to improve the quality of the digestate and biogas yield. For a time, the said organic bag

was processed at Sant' Antnin but eventually, the treatment of the organic waste was also shifted to Maghtab and currently, the site only operates as a glass sorting line.

3.3.2 An overview of the works already carried out and those planned for the transition of the site from a waste management facility to the proposed park, including studies carried out and decommissioning plans.

WasteServ started working on the partial decommissioning of the site as per ERA approved 'SAWTP Decommissioning Plan (Rev 01 06.01.2023)'.

The decommissioning works were given the green light by ERA in the new EP permit (EP 0016/23) granted on 06.12.2023. Since then, WasteServ has almost completed the removal of the anaerobic digestion plant and ancillary activities. Following the clearance of the AD area, WasteServ shall proceed to decommission the subsequent areas as specified in the above-mentioned decommissioning plan.

In parallel with these decommissioning works, WasteServ conducted a land and ground water baseline analysis based on the 'Baseline Monitoring Strategy (Version 3)' as approved by ERA. The results of this analysis and an HP Assessment of ground samples were shared with ERA in December 2023.

4 Proposed Development

4.1 Project Development

The proposed project is to be carried out in the former Sant' Antnin Waste Treatment Plant after it is dismantled and cleared. The site will be making room for GreenServ to deliver a new project within the site and transform the decommissioned plant into a green area, which will also include a three-level underground parking area, food court, educational area, and a greenhouse. To maximize spaces and envision sustainability, a unique merger between soft landscaping and the facilities is proposed. Hence these are to be covered by green roofs and mature trees which will make the roofs of each facility usable as well as beneficial for the building.

The area of the greening project is circa 23,800 sqm, on which several mature trees and shrubs will be planted transforming it into a green area, followed by natural paths that will be created to facilitate the circulation within the area but at the same time merging it completely with the surrounding environment. An approx. 4,200sqm lake is envisioned to be created in the site that shall contain a large body of water and a 320 sqm island within the lake to sustain a new micro ecosystem.

The planned development aims to incorporate a range of sustainable measures, including the installation of solar panels for renewable energy generation, the implementation of green roofs and advanced building insulation to enhance energy efficiency, and the integration of water reservoirs for efficient water management. Additionally, the project will embrace various passive energy generation systems, collectively contributing to a holistic and environmentally conscious approach to development.

Whilst the proposed project involves converting a significant portion of the existing Sant Antnin Waste Treatment Plant (SAWTP) into an urban greening project, specific activities, mainly related to the treatment of glass waste, will remain within the SAWTP. The proposed development includes the construction of a retaining wall that will separate the greening project from the waste treatment plant.

This segregation resulted in the need to construct a reservoir for effective water management within the industrial area (as marked in *Figure 1*), as a replacement to the existing reservoir which is located within the extents of the greening project. The construction of this reservoir and the levelling of this same area is being included as part of this project.

4.2 Project Objectives

GreenServ's aim is not only in providing green spaces but also creating a relationship between society and nature. Given the general populations' wish to have more green open spaces, as surveys² indicate, as well as the promise made by the government to return this land back to the public, the objectives are to:

- Provide an open green space for both the public and biodiverse species.
- Employ sustainable methods of construction whilst and after building the project.
- Connect the complex with Sant Antnin Family Park in Marsaskala.
- Educate all demographics with regards to conserving and improving the environment.
- Promote green infrastructure and a circular economy.
- Improving air quality in the area.
- Promote outdoor recreation, encourage social cohesion, and create new job opportunities.

The project will therefore result in direct health and well-being benefits to people's living and working environments. The project will be a true example of how a grey area associated with the management of waste can be transformed into a green space to be enjoyed by many.

These objectives will be reached through the said practices:

1. Site Preparation and Construction:

- Following the decommissioning, clearing, and disassembly phase, excavation work will be undertaken to facilitate the development of an underground multi-level parking area, building foundations and reservoirs, lake structure and the shaping of the landscape.

2. Biodiversity Conservation:

- The introduction of greening will help biodiversity conservation, can provide habitat for a wide variety of plants and animals, which can help to increase biodiversity.

² Malta, E. (2022). EY Generate Youth Survey: The pulse of Malta's future generations. www.ey.com. https://www.ey.com/en_mt/articles/generate-survey-2022

Prioritizing the preservation of flora and fauna, the landscaping will be carefully designed to support different ecosystems. The habitat design will consider the diverse needs of fauna, ensuring that the park becomes a harmonious sanctuary where local wildlife can thrive. Through this conscientious design, the goal is not only to create an inviting and aesthetically pleasing environment but also to contribute actively to the conservation and enhancement of the region's ecological richness.

3. Accessibility and Connectivity:

- Access points from Sant Antnin Family Park to the underground carpark and the existing pedestrian bridge will be established, creating links for both vehicular and pedestrian traffic. Additionally, a primary pedestrian entrance will connect to Triq Sant Antnin.

4. Educational Center:

- A dedicated educational hub is set to be established, designed to accommodate a diverse array of educational programs centered around the distinctive characteristics of the Maltese islands. The facility will offer essential amenities such as auditoriums and libraries, aiming to support and sustain continuous educational initiatives. Create an educational experience by making use of recycled material to construct the park and possibly, run parts of the park on renewable energy to promote environmentally friendly design. In general, will also improve the community engagement since it can also serve as a gathering place for the community and provide opportunities for people to get involved in sustainability efforts.

5. Circular Economy Initiatives:

- To advance the principles of the circular economy, the utilization of recycled and recyclable materials will be actively promoted.

6. Green Infrastructure:

- To promote sustainable water use, large reservoirs beneath the complexes will harvest water for irrigation. Green roofs will also be incorporated to optimize space usage and mitigate the urban heat island effect.

7. Recreational Spaces:

- Various spaces, including multipurpose areas and informal spots scattered throughout the site, will cater to diverse outdoor recreation preferences, providing users with flexibility.

8. Job Opportunities:

The development will generate job opportunities in various sectors, including teaching, touring, groundskeeping, operational services, and maintenance, contributing to local employment and community engagement.

4.3 – Environmental benefits of the project

The implementation of the new educational park is primarily intended to give back the land to the community, enriching the quality of life for residents, and providing recreational and educational opportunities. The project therefore offers various environmental benefits.

Overall, the implementation of an educational park will present opportunities to engage and educate the public about environmental stewardship while enhancing the ecological, cultural, and social value of the surrounding landscape.

The park will also increase access to green spaces that will promote physical activity and mental well-being. Educational programs within the park will raise awareness about health and environmental issues. Opportunities for outdoor recreation will improve overall community health and social cohesion. In addition to this, in respect of biodiversity and ecology the implementation of the new park will improve habitat restoration within the park and enhance local biodiversity. Educational initiatives will foster appreciation for the importance of preserving ecosystems and protecting endangered species. Implementing sustainable practices will mitigate habitat degradation and

promote ecological balance. In addition to this, the new park will improve the physical environment such as the landscaped areas will improve soil quality and prevent erosion. The introduction of water bodies within the park will promote aquatic and avian biodiversity. Green infrastructure and tree planting will help mitigate air pollution and improve air quality. Furthermore, in terms of climate and environmental dynamics, the adoption of green building practices and the integration of renewable energy systems will mitigate greenhouse gas emissions linked to park operations. Educational programs focusing on climate change adaptation and mitigation will help to increase awareness and encourage sustainable behaviors among visitors. Additionally, the incorporation of natural habitats and green spaces within the park will bolster climate resilience and enhance ecosystem services.

4.6 - The effect of this project on traffic flows

As previously mentioned, the currently approved development relates to the Sant Antnin Waste Treatment Plant (SAWTP). For several years this facility served as the primary waste management plant for the Maltese Islands, where the site was predominantly characterized by the regular influx of waste trucks delivering various waste streams.

With the shifting of most waste management facilities to ECOHIVE Complex in Maghtab, the existing plant is currently undergoing decommissioning.

Following this process, and with only the glass line set to remain operational, there will be a significant reduction in truck traffic throughout the area. Furthermore, a significant portion of the workforce associated with Wasteserv Malta has been relocated to alternative administrative offices. Consequently, this move has led to a further reduction in both personnel and company vehicles within the area.

The proposed transformation of a waste management site into an educational green park signifies a fundamental change in the area's approved use. The envisioned activities are anticipated to primarily

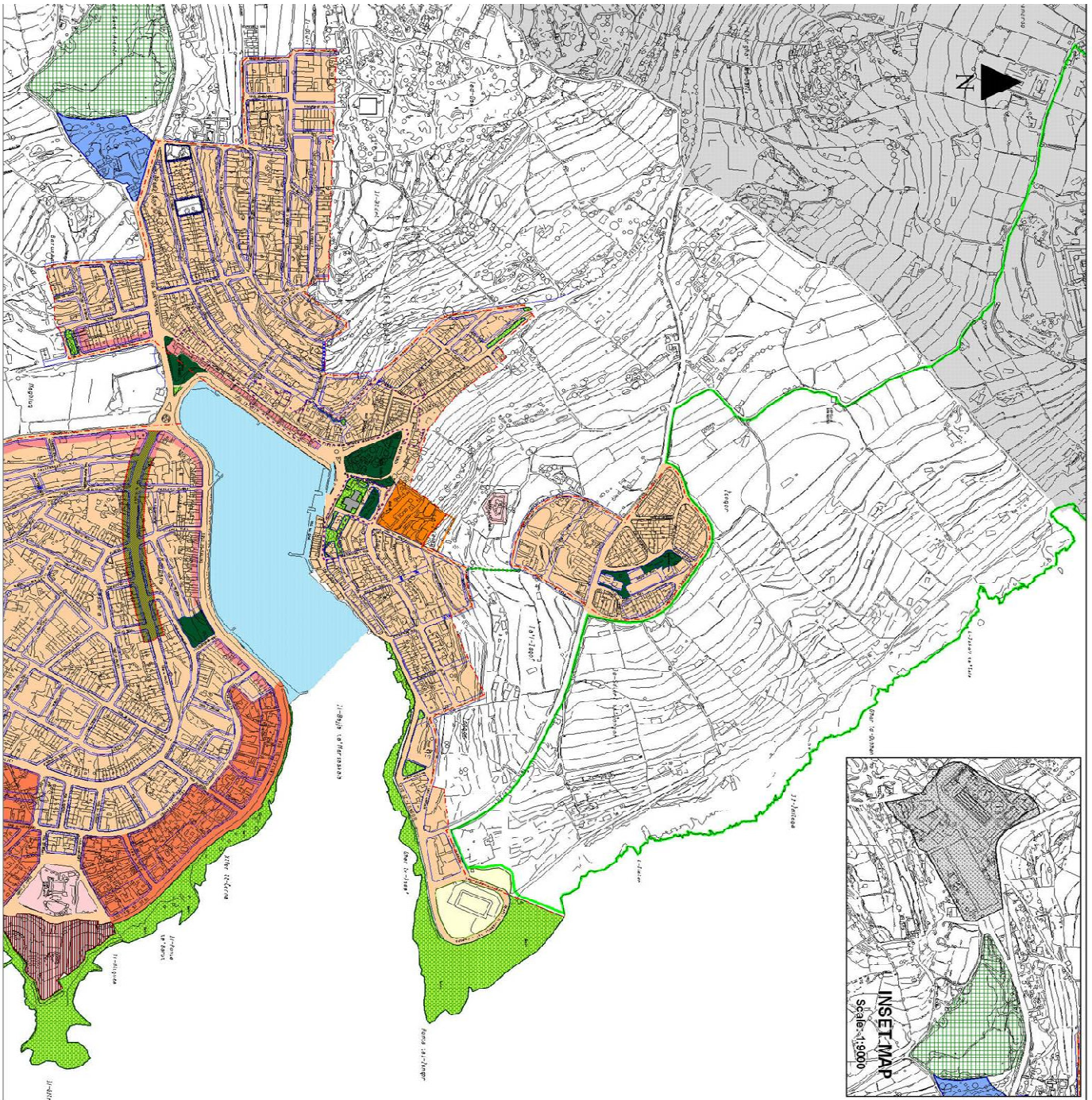
attract school buses and individual cars, which will vary and be spread throughout the day. This reduction in industrial traffic will fundamentally alter the traffic dynamics in the area. Forming part of the proposal is also an underground multilevel car park proposed to accommodate 365 car spaces. To access this car park, existing vehicular access will be utilised. The decision to use the existing vehicular access is aimed at maintaining the viability along the main road, Triq Sant Antnin, without causing disruptions. Therefore, upon comparing the generated trips and types of vehicles employed for the initially approved development pertaining to waste management for the Maltese Islands and the associated workforces, it becomes evident that the trips generated for the proposed development are incomparable regarding the nature of vehicles. With respect to the Annual Average Daily Traffic (AADT) attributed to the project, the proposed development is expected to generate 91 trips during the weekday AM peak hour (08:00) and 99 trips during the weekday PM peak hour (17:00). During weekends, the AM peak hour (10:00) is expected to result in 152 trips. The overall contribution of the project in terms of average annual daily traffic is estimated at 512 trips. When the contribution of traffic from the existing development is taken into account, the net AADT of the proposed development is projected at 22 trips. However, it is to be noted that the majority of trips for the currently approved development related to waste trucks, whereas for the proposed development, they mainly consist of smaller vehicles. For more detailed information, reference should be made to the AADT report upload in eApps.

One must also keep in mind that traffic for a public park may not directly correlate with vehicular traffic on roads, as visitors might opt to visit the park via other means. It is to be noted that a bus stop is already available adjacent to the main pedestrian access to the proposed project. Therefore, a number of visitors are also expected to arrive at the park by public transport, on foot from the nearby locality, by other modes of green transport (such as bicycles and scooters) or by organized group transport (such as school buses), reducing the number of independent vehicles.

Furthermore, there is already an existing park in the area, and therefore the influx of people may be shared between the new and existing park.

5 Related Local Policy

The local policy for Marsaskala falls underneath the south Malta local plan (SMLP). The proposed land for this project can be found on Map MS1 (*Figure 4*) and falls under the category of Waste Management Facility. Adjacent to it, the local plan includes the present recreational area, known as the Family Park. The intended purpose of the proposed site is to function as an extension to this established recreational area, namely the Family Park. Around the area lie various land uses such as agricultural, social and community and recreational. Moreover, the site lies in between the valley protection zone as Map MS 4 (*Figure 5*) indicates.



SOUTH MALTA LOCAL PLAN

MEPA

L-Awroreja ta' Malta Dwar l-Anhjen u l-Ippogru
Malta Environment & Planning Authority

Key

- Turns to Development
- Scheme Alignment
- Urban Conservation Area - SMCO 01
- Road Alignment Change - SMAC 07
- Residential Area - SMRO 02, SMRE 04
- Residential Priority Area - SMPRO 02
- Educational Facilities - SMRE 10, SMRE 03
- Area Set-aside for Expansion of School - SMAS 10
- National Park - SMNP 13
- Green Area - SMRE 04
- Public Urban Open Space - SMRE 04, SMAS 02
- Church / Chapel
- Heritage Sites - SMAS 13
- Entertainment Priority Area - SMAS 01, SMAS 13, SMTO 01
- Tourism Development Subject to a Development Brief - SMAS 16
- Local Centre - SMCO 02
- Village Station / Maritime Related Uses (Class 100) - SMAS 04
- Social and Community Facility - SMAS 04
- Sports Facilities - SMAS 03, SMAS 04
- GE: National Sovereignty Foot Site
- Footpath - SMAS 03
- Site to be developed as per Policy SMAS 14

INSET MAP

- Waste Management Facility - SMAS 12
- Recreational Area - SMRE 09

Marsascala - North

Policy Map

Scale: 1:7000
Date: July 2006
Map: MS 1

REDUCATIVE ONLY
Not to be used for measurement or direct interpretation
Maps to be used in conjunction with Policy Document.
Base Map: 1:888 Survey Sheet
Copyright Mapping Unit, Delta Distribution & Planning Authority
Marsascala North Policy Map v02

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Figure 4 Map MS1 showing current land uses around site and within site

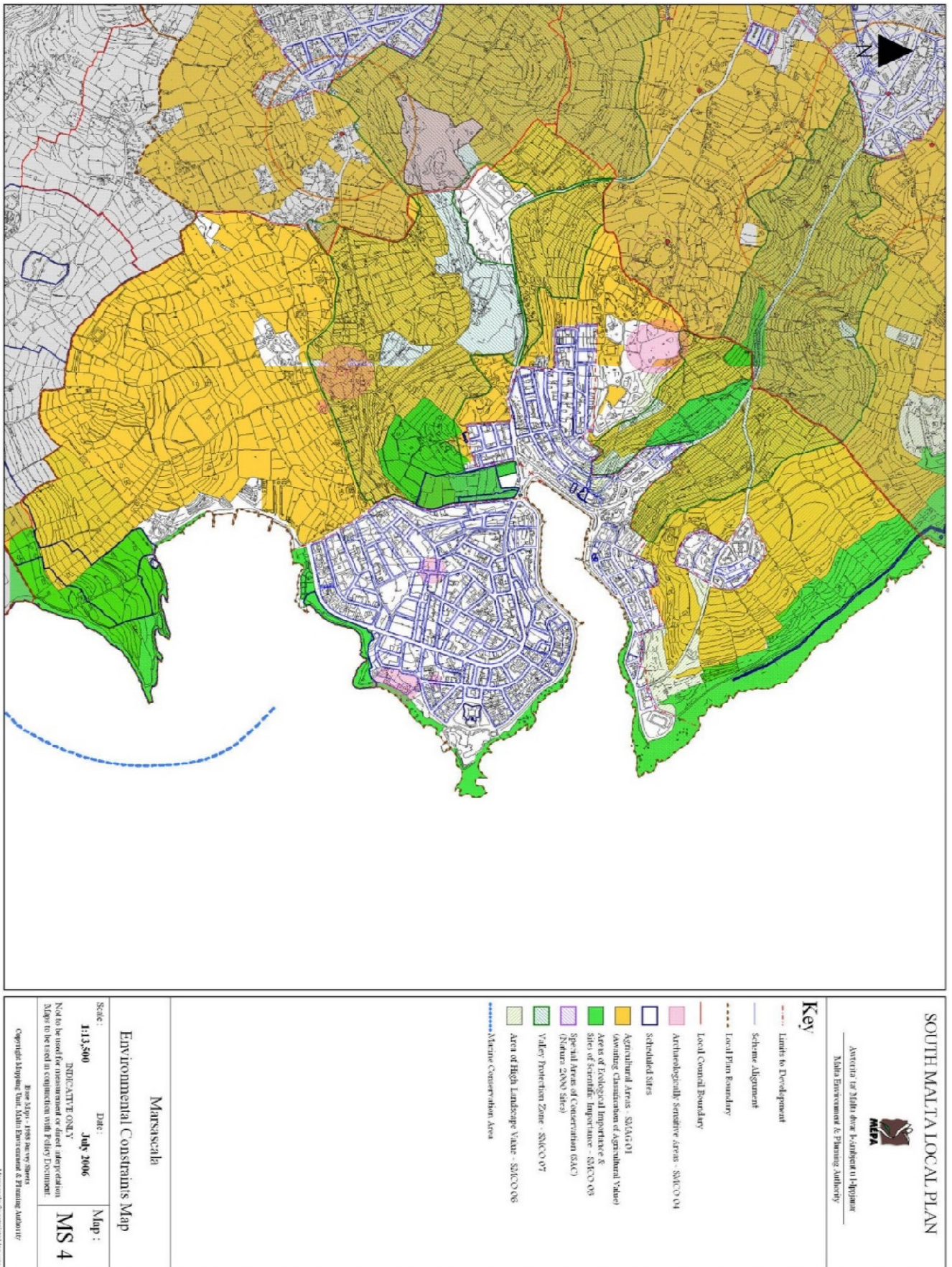


Figure 5 Map MS4 showing environmental constraints around the area

6 Project Timing

The project will be carried out in three potential phases:

Phase 1 - Preparatory studies and drawings such as geotechnical investigations, detailed surveys, consultations and research.

Phase 2 - Excavation works within the site and construction of retaining walls and reservoir in the industrial area.

Phase 3 - Construction of landscaping works and building structures.

7 Maintenance

In the project, importance shall also be given to ensure the minimum possible maintenance required.

General maintenance such as groundskeeping and handyman services will be required regularly.

Having specialized people on board will also make the park run more efficiently which will in turn benefit the end user, which will in turn be reaching one of the main goals of the park, that is to provide recreational facilities of a high-level standard to the people residing in the southern part of the island.

8 Project Characteristics

The site under consideration covers an area of approximately 23,800 sqm, which is government owned. The proposed project is envisaged to be divided into three phases: *phase 1* (preparatory studies and drawings), *phase 2* (excavation phase including the construction of retaining walls and reservoir), *phase 3* (construction of the underground parking, buildings and the overlying garden).

It is to be noted that these phases will not necessarily happen consecutively but may overlap. The different characteristics of the greening project can be seen in *Figure 6* below:

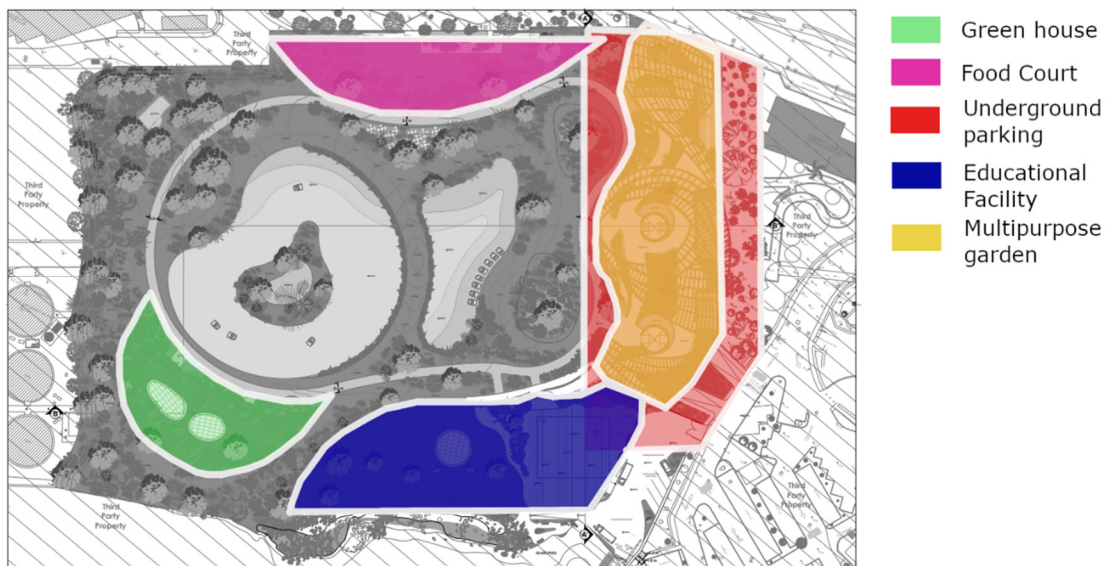


Figure 6 Characteristics of the greening project

Phase 2 of the project will include the excavation works and construction of retaining walls and reservoir located in the industrial area. This stage will also serve to clear the site for preparation of the main construction phase. The possibility of material being graded and re-used on site to create the proposed contours will be considered, the remaining amount will be loaded and discarded in an approved dump site.

Excavation

As mentioned above, the site in question was permitted to develop and operate as a waste treatment facility, therefore this section delves into the details of how the excavated material will be treated, based on the testing carried out and mentioned above. The new proposal is to transform the area into a park and therefore following completion of the project there shall be no further operational activities which shall yield further contamination. The result shall hence be a reduction in further leaching and removal of further contamination of the ground. Every effort has been made to build above the existing material, however in areas where this was not possible, the precautionary measures listed below are proposed to be applied:

- i. Material which exceeds residential limits of Decreto 152 of 2006 will not be backfilled in local quarries.
- ii. Material intended for landfilling is to meet waste acceptance criteria as per analysis of leachability against Waste Acceptance Criteria as per Council Decision 2003/33/EC.
- iii. Any material to be considered for reuse will be specified, clearly specifying the treatment that will be applied and the location where this shall be carried out.

Moreover, it is to be noted that most of the site, shown by a grey hatch on *figure 7*, shall be retained (inclusive of the current site finish) and built over. As such, this area is considered as sealed. With respect to areas where we will be intervening upon, these are proposed to be sealed as following:

- Areas marked A, C, D & E: to be sealed with a concrete structure. The concrete seal shall be impermeable and resistant to leaching and it will be certified by a warranted engineer;
- Area B: to be sealed with a liner intended to retain the water in the lake and therefore impermeable.

With regards to the proposed excavation, reference should be made to the plan below – *figure 7*, which outlines the areas affected by excavation works. This shall be read together with the table beneath *table 1*, where all necessary information for each area has been listed.

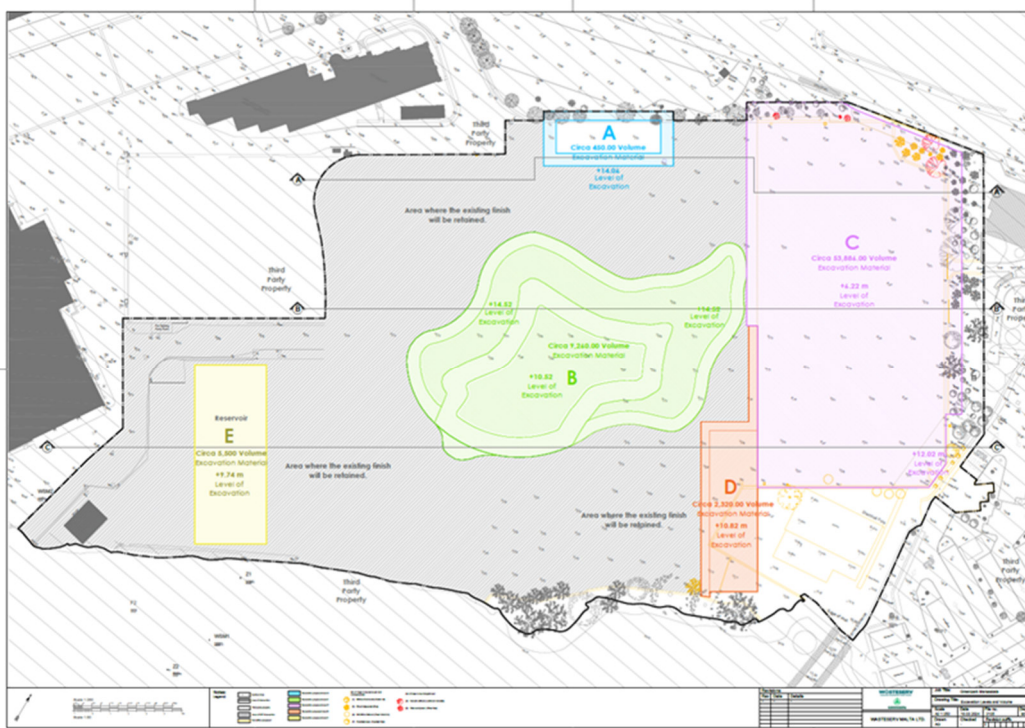


Figure 7 Plan showing excavated areas

Depth and Volume of Excavation

Colour Code	Location	Depth	Volume of excavation	
A		1.50 m	450 m ³	0.63 %
B		5.00 m	9,249 m ³	12.95 %
C		9.80 m	53,235 m ³	74.54 %
D		5.00 m	2,982 m ³	4.18 %
E		5.50 m	5,500 m ³	7.70 %
	Total		71,416 m³	100.00 %

Notes:

* Depths and volumes are estimates.

Table 1

Excavation Methodology

A number of samples were collected as per ERA approved 'Baseline Monitoring Strategy (Version 3)'. Reference is being made to the site plan found on page 3 of such document, whereby a sample location was identified at every grid point.

The following plan shows a superimposition of the locations from where samples were collected as per previously mentioned 'Baseline Monitoring Strategy' and the proposed excavation.

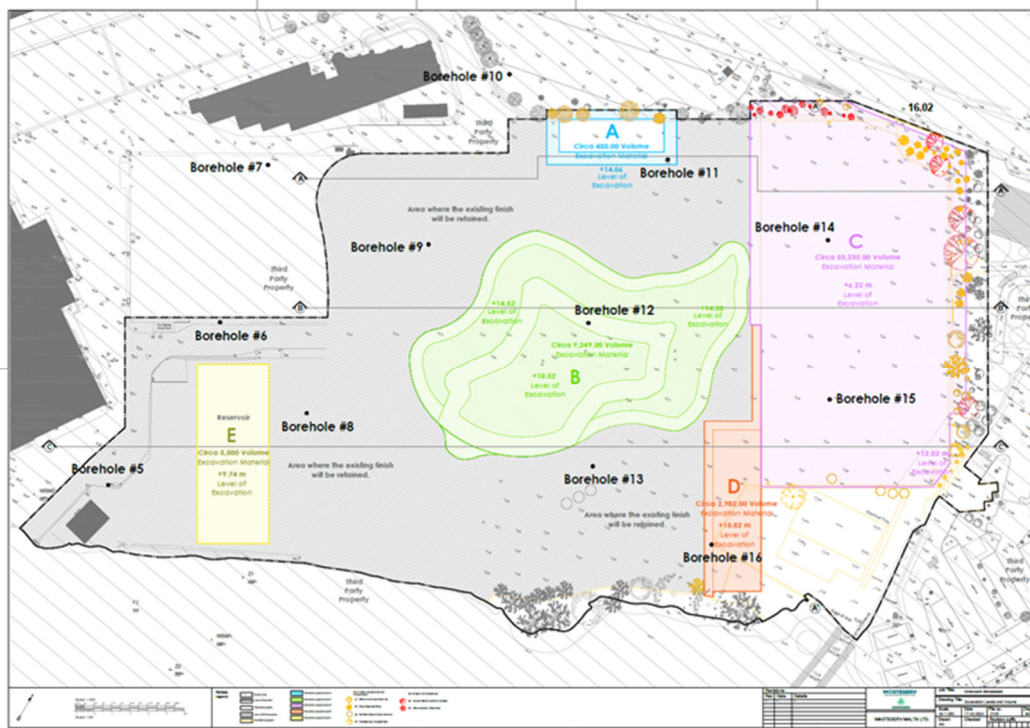


Figure 8 Plan showing excavated areas and location of boreholes

A comprehensive grid spanning the entire site, *figure 9*, was drafted to determine the location of each borehole relative to the different excavation zones, this system ensures that each excavation area can reference a specific borehole for calculating the contaminated excavated materials. Reference is being made to *table 2*, which indicates the representative borehole/s for each location and the specified depths as determined from the Land characterisation report.

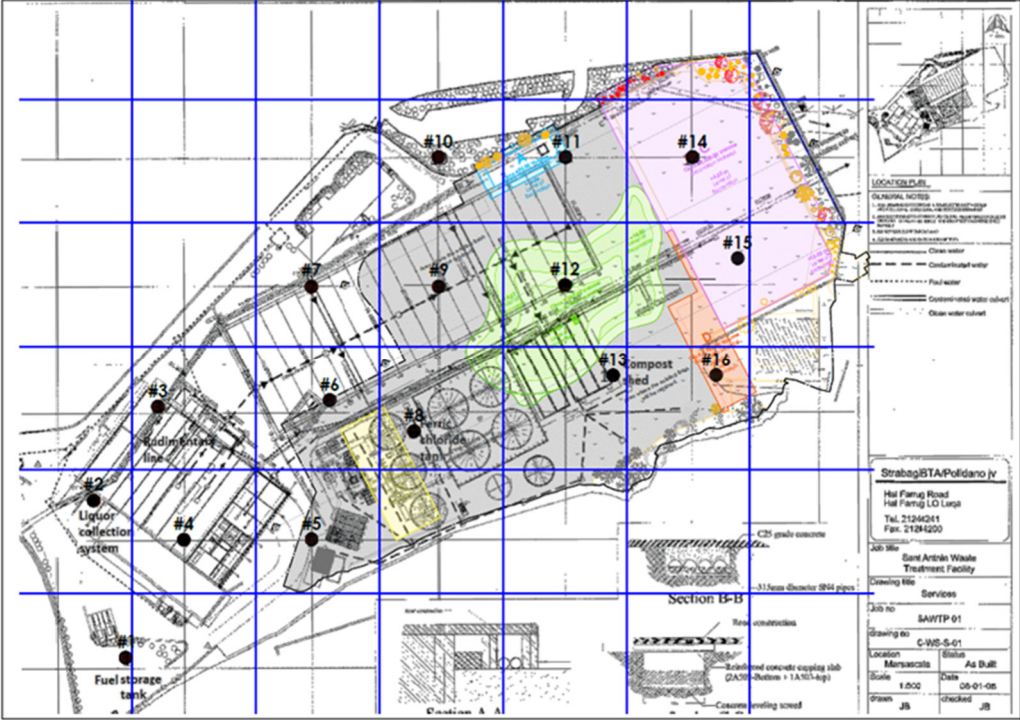


Figure 9 Plan showing grid over the area of intervention

In addition to *Figure 9*, the below image (*Figure 10*) indicates the boundary lines to show the separation of areas which are represented by the different BHs, for excavation areas B and E. The depth for each representative borehole is reflected in *table 2*.

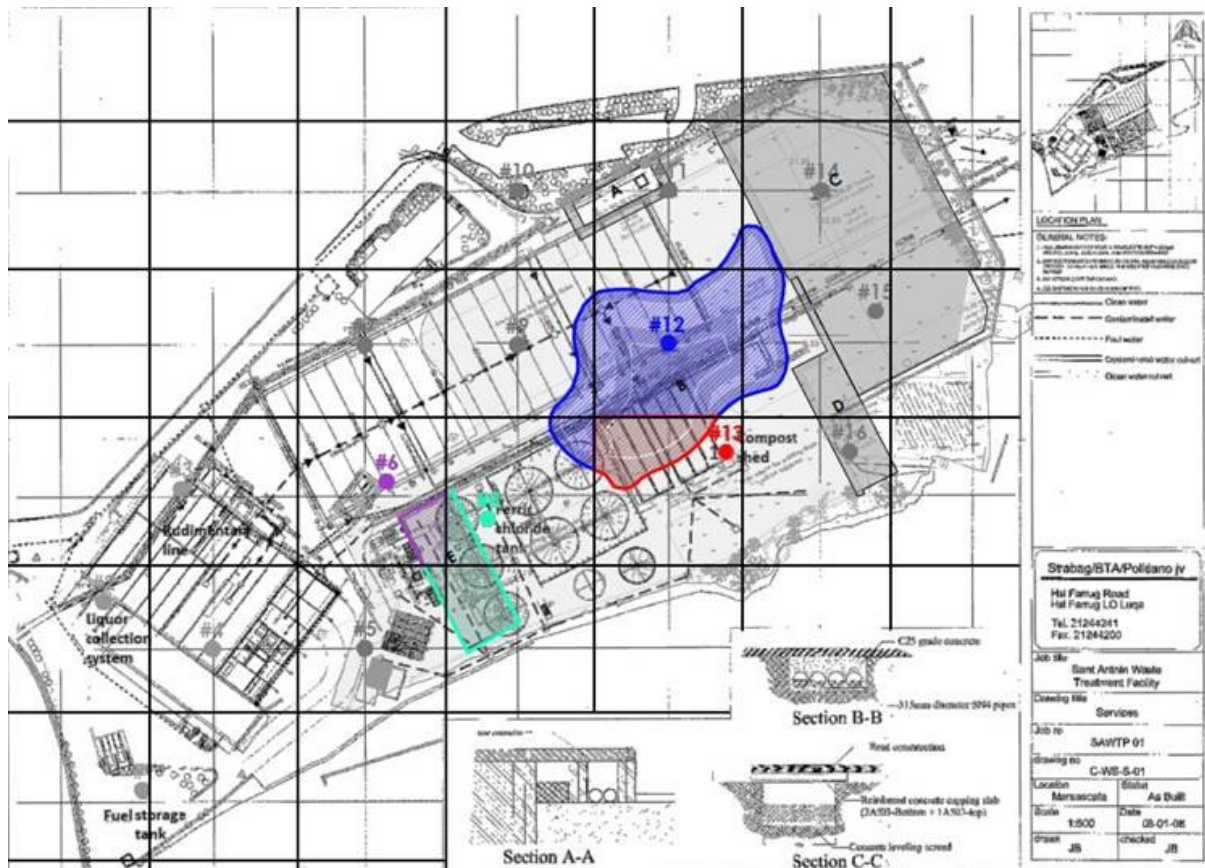


Figure 10 Plan showing areas for excavation areas B and E

Table 2 below provides a breakdown of the total excavated volume, taking in consideration the results of the samples carried out, and the respective proposed method of disposal or recovery. The volumes include a precautionary buffer of 0.5m depth, both above and below the analysed depth, as applicable.

Location	Representative Boreholes	The range of depth (in meters), from existing FFL, taken to calculate the volume of excavated material that exceeds residential levels (this includes a precautionary buffer of 0.5m)	Volume (in cu.m.) of material which exceeds industrial limits.	Volume (in cu.m.) of material which exceeds residential levels but within industrial limits.	The range of depth (in meters), from the existing FFL, taken to calculate the volume of excavated inert material	Volume (in cu.m.) of inert material
A	11	from 0 – 1,5	450	0	N/A	0
B	12	from 0 – 2,5	0	7,433	from 2,5 – 5	1,816
	13	from 0 – 5			N/A	
C	14,15	from 0,5 – 2,5	0	10,662	from 0 – 0,5 from 2,5 – 9,8	42,573
D	16	from 0 - 5	0	2,982	N/A	0
E	6	from 0,5 – 3,5	0	1,881	from 0 – 0,5 from 3,5 – 5,5	3,619
	8	from 0 -1,5			from 1,5 – 5,5	
	Total Volumes in cu.m.		450	22,958		48,008
	Proposed disposal or recovery options:		This material shall be disposed of in an authorized non-hazardous landfill, in line with waste acceptance criteria.	This material shall be re-used on site to reach the required levels and sealed. This material shall be located in areas marked W, X, Y and Z in the following plan, <i>Figure 11</i> .		This material will be partly re-used on site to achieve the desired levels while the rest will be loaded onto covered trucks and transported to an authorized filling quarry for recovery, following the EWC code 17 05 04. The latter classification was determined following a Hazard Assessment of Ground Samples at SAWTP, carried out by an expert engaged by WSM, and which was also submitted to ERA.

Table 2

Re-use of materials on site

The possibility of reusing excavated material is a crucial consideration in the project. Efforts were made to integrate design choices that encourage and facilitate the reuse of excavation material whenever feasible. In fact, as indicated in the plan, the project was intentionally elevated beyond the current baseline to mitigate disruptions to the existing site and restrict the need for extensive excavation. Furthermore, approximately 32% of the material obtained from excavation activities is proposed to be crushed and graded to be reused to reprofile the site, minimizing waste and promoting sustainability. This principle shall allow to reduce the embodied carbon of the project by approximately 20%.

The following plan and *table 3* indicate the locations, and respective volumes, for the re-use on site of the excavated material which exceeds residential levels but is within the industrial limits, i.e. the 22,958 cubic meters mentioned in *Table 2*. Each location also includes the proposed method to seal such material, and indicative sections per each methodology.

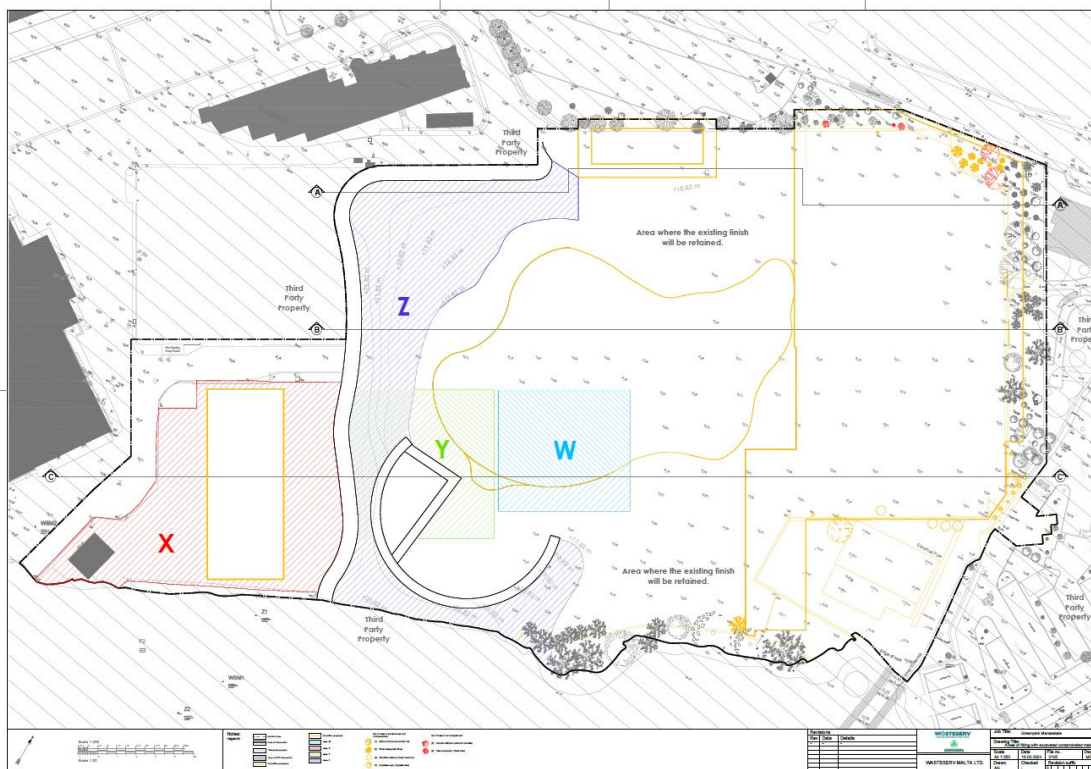
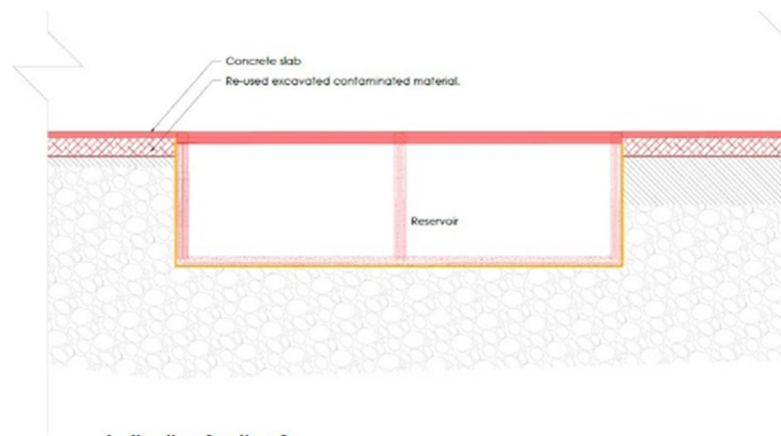


Figure 11 Plan showing the location of excavated material to be re-used on site.

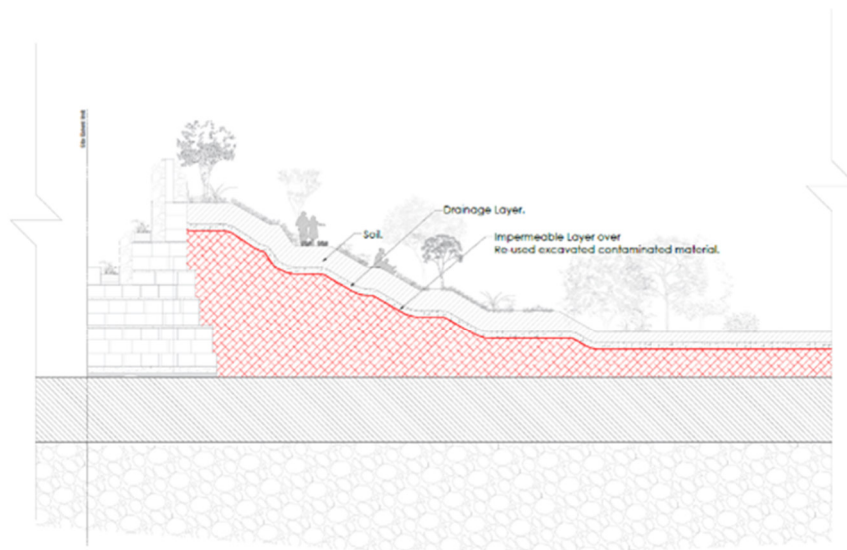
Location	Volume (in cu.m.)	Proposed intervention over the re-use of material which exceeds residential levels but within industrial limits.
W	2,490	Material to be sealed with a concrete structure/ impermeable layer.
X	655	Material to be sealed with a concrete structure.
Y (up till level +15.60m)	5,078	Material to be sealed with a concrete structure/ impermeable layer.
Z	14,735	Material to be sealed with an impermeable layer.
Total Volume in cu.m.	22,958	

Table 3

To note that the area X / industrial area will operate only as a storage area for the glass sorting line.



Indicative Section 2
Showing contaminated material sealed by a concrete structure.



Indicative Section 1
Showing use of impermeable layer.

Water Management

As previously stated in paragraph 4.1 Project Development, the current water management system entails collecting rainwater within the existing reservoir, ensuring that all rainwater remains within the site.

With the construction of the new retaining wall, a distinct barrier will be established to separate the proposed Green Park from the existing industrial area. This necessitates the construction of a new reservoir within the remaining industrial area to manage rainwater within that specific part of the site. However, for the new proposed park, the proposal includes the construction of two reservoirs designed to collect water from the roofs of the proposed buildings. Additionally, a comprehensive water management strategy will be implemented to optimize rainwater absorption by the landscaped areas. Moreover, the inclusion of a natural lake within the site will further enhance water absorption capabilities.

Following adequate filtration, if necessary, any excess water will be directed into the proposed reservoirs for reuse on-site. All the efforts will be made to ensure that all water remains within the site boundaries, effectively mitigating the risk of water infiltration beyond the project perimeter, reflecting the current situation. This commitment to retaining and recycling excess water within the site underscores the project's sustainability goals and its dedication to responsible water management practices.

Phase 3 of the project is where most of the work and resources are undertaken. Civil and structural works for the underground parking, the overlying garden above the parking space, construction of main buildings and the landscaping works would be the biggest stages to get through in this phase.

The physical characteristics that come out throughout this construction phase are the facilities such as:

Underground Parking

Three levels of underground parking for visitors shall be made available. This space may also be used for the necessary car parking facilities. The number of parking spaces below the greening project shall adhere to the requirements set out by the Planning Authority. The proposed car park caters for 365 spaces. The use of passive energy systems for air movement, natural lighting and other means that minimize the use of energy sources shall be considered.

Multipurpose garden above the parking space

The multipurpose area serves as an entrance point to the site, for pedestrians and cyclists. On top of the parking area, a glued laminated timber light structure or a more sustainable yet natural looking material is to be used to provide shelter upon this area. The canopy, characterized by its flexibility and adaptability, emerges as a dynamic, multipurpose space where various activities can take place. From hosting temporary exhibitions to facilitating events intertwined with educational endeavors, it becomes a vibrant hub accommodating diverse and engaging experiences.

Educational facility

The Educational building will provide a learning experience to people of all ages. Informative programs contributing to the sustainability of the environment will be held here. In addition to this, the site also aims to display a firsthand experience of the habitat of a lake as well as the planted vegetation within it. The facilities within the educational building will also include an audio vision room for pre recordings, classrooms to accommodate visitors, an administration office for facilitating administration, play area for kids, computer room, auditorium/library, a soundproof boot, security room and an adequate area for the storage. Moreover, space for both permanent and temporary exhibitions is to be allocated. An area for the services of the building will be allocated at the top. The exterior of this building will be covered by greenery, in the similar form of a mound of green. The idea

is that buildings within the site are integrated into the landscape, so that both visual impact and energy consumption of the building is reduced.

The educational centre, in terms of functionality, requires a designated space for the handling of equipment. Within the multipurpose space, we aim to create both permanent and temporary exhibitions. This necessitates a dedicated area for loading and unloading materials to access or exit the facility without disrupting traffic flow on main roads or inconveniencing visitors. Such buildings typically require a 'back door'/ service area to facilitate these operations, ensuring smooth logistics for exhibit setup and removal, as well as minimizing disruptions to the overall visitor experience.

Greenhouse

The greenhouse, in line with the architectural style of the educational park, shall host a variety of indoor plants aiming to establish an optimal setting for their vibrant display.

Food court

A food court allowing small restaurants the possibility to serve food at counter service shall be included. Seating shall be provided both indoors and outdoors and no seating shall be reserved for a specific restaurant.

Landscaping

The project shall be dominated with landscaping in the form of trees, shrubs and vibrant coloured flowers. Such colors shall also be reflected in the design of the cycle lanes and footpaths, creating a colorful atmosphere whilst encouraging the visitors to explore the site in different ways.

A lake shall also form an integral part of the project. It will create a quiet atmosphere whilst also refreshing the flora and nourishing the fauna. This will provide a place for biodiversity to flourish and

visitors to explore. A bridge will cross over the lake. This, together with the changing in the surrounding landscaping over the seasons, creates a project that is continuously changing and providing new educational and environmental experiences to anyone visiting the site.

The architectural buildings shall also be inspired by nature, thus bringing the users close to the natural environment whilst educating them on the importance of green building systems, self-sustainability and the circular economy.

During the design of the proposal, importance was given to avoid consolidating the above-mentioned buildings into one structure, but rather such buildings have been strategically placed around the site to integrate them within the proposed landscaping project.

The build-up areas were also carefully positioned to create distinct centers with different uses within the park: a food court, an educational hub, a greenhouse and a versatile open area covered by an organically shaped structure, intended to host local product markets and cultural events like temporary exhibitions. By establishing these distinct structures, each serving a unique purpose, the integration with the park itself was significantly enhanced.

Scattering the buildings throughout the park allowed us to blend them harmoniously with the natural landscape, thereby enhancing the aesthetic charm of the park and creating an engaging experience for visitors. Moreover, having distinct and strategically placed buildings serves not only to distinguish different activities but also to prevent areas from becoming heavily congested with visitors.

Once the locations of the buildings were chosen, deliberate choices were made to minimize their impact. All the buildings have been covered by green roofs, which will eventually accommodate mature trees and be surrounded by a diverse variety of vegetation.

Another significant aspect is the integration of vegetation within the buildings themselves, as evident in the image showcasing the area under the canopy and in the greenhouse structure. In the latter the

intention is to be able to integrate in the project even indoor vegetation and thus increasing the experience and educational aspect of the visitors. Furthermore, all available surfaces, including most of the pathways, are covered with vegetation. It is to be noted that 60% of the project area will in fact be covered with soft landscaping.

The idea of utilizing the building to elevate the topography and form natural contours entails incorporating architectural elements that blend with the surrounding landscape, creating a seamless integration of built environments with natural features.

Reference is being made to Appendix A which show how the final outcome showcases the integration of scattered buildings, such as the food court, with the surrounding vegetation.

9 Services

A substation is proposed to be located in the proposed first floor underground car park.

Furthermore, *figure 7* shows the Maltese distribution system with a distribution center being present and close by to our site.

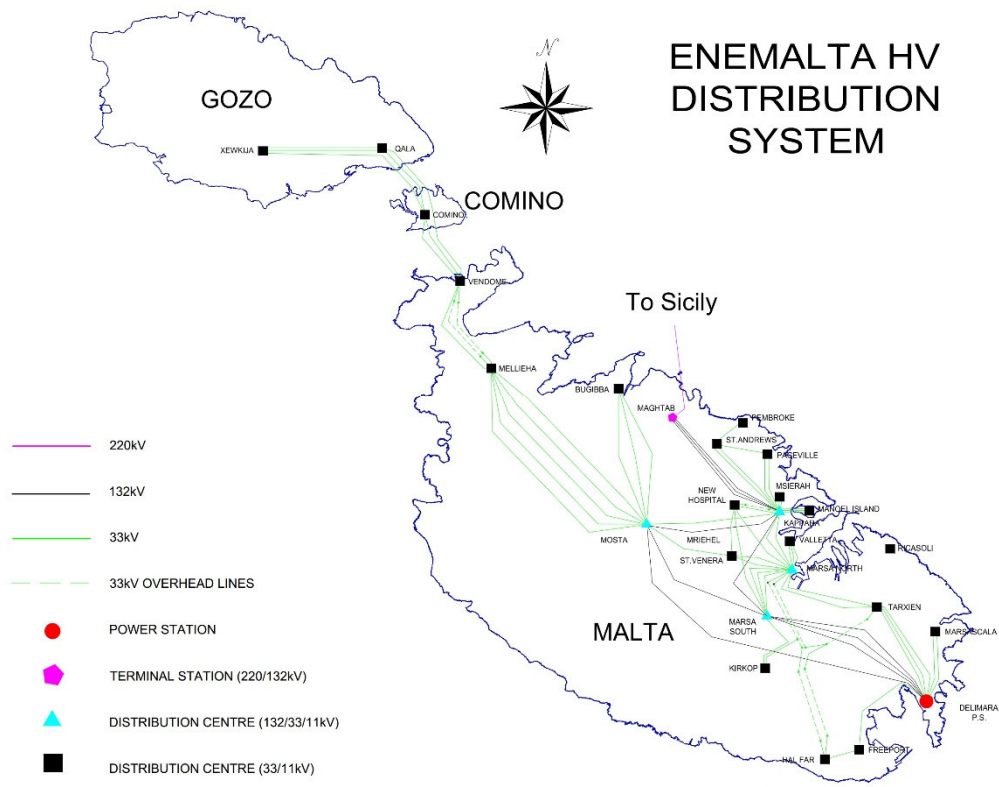


Figure 16 Enemalta HV Distribution System – Image from national grid diagram <https://www.enemalta.com.mt/wp-content/uploads/2017/12/National-Grid-diag> Figure 17 General view of the site showing the potential of the proposal <https://www.enemalta.com.mt/wp-content/uploads/2017/12/National-Grid-diagram.jpg> Figure 18 Enemalta HV Distribution System – Image from national grid diagram <https://www.enemalta.com.mt/wp-content/uploads/2017/12/National-Grid-diagram.jpg>

For stormwater management the site proposes various reservoirs to harness water collection in line with local regulations, to be used mainly for irrigation. Moreover, the use of permeable soil as well as the coverage of soft landscaping allows for the absorption of most water that falls onto the site.

10 Ecology

The site aims to encompass an integral part in the valley's ecological system. The proposal aims to support as well as attract various species within it to further the quantities of flora and fauna. Within the site both the proposed lake and greenhouse shall be carefully considered in what they will be accommodating. The vegetation proposed to be planted is also varied and includes trees and shrubs, and both insect and wind-pollinated species. Vegetation is to be found all throughout the project with roughly 14,500 sqm out being soft landscaped. This figure amounts to approximately 62%, being roughly covered by soft landscaping.

The introduction of green areas will also contribute the carbon sequestration helping the mitigation of climate change.

The concept of this project incorporates measures to seamlessly integrate the environment and architecture. Each building is, in a sense, harmoniously extracted from the ground, yet remains connected to the terrain through the thoughtful use of green roofs and surrounding slopes. This approach aims to preserve the ecological balance and present Greenpark as a verdant landscape, even when viewed from above. This approach was strongly pursued to minimize the impact of the built environment, prioritizing the adoption of the most natural and organic aesthetic.

Various natural environments have been strategically incorporated to create a favorable setting for diverse ecosystems. The primary allure for the wildlife stems from the lush vegetation, meticulously designed landscaping, and the presence of the lake.

This project incorporates supplementary features aimed at enhancing biodiversity, including the integration of bird nest boxes (either built-in or attached to structures), bird feeding stations, the incorporation of bee blocks or hotels, and the provision of hedgehog houses.

10.1 - Potential discharges from the site (including arrangements for disposal /collection of the lake water during maintenance work).

A filtration system will be integrated into the lake to ensure the proper maintenance of the lake. This filtration system will be a comprehensive water treatment solution designed to maintain the cleanliness and quality of the water body. Additionally, the deepest part of the lake has been designed to a depth of 6 meters to prevent water from overheating during the hottest periods and to ensure improved water cleanliness. A deeper lake can store larger volumes of water, which can be advantageous for water supply management, irrigation purposes, or maintaining water levels during dry periods. In addition to this, deeper lakes provide a wider range of habitat types, including deeper water zones that support different aquatic species. This can increase biodiversity and promote healthier ecosystems by accommodating various aquatic plants and animals. Additionally, deeper lakes may have better water circulation, facilitating oxygenation and nutrient cycling processes.

It is not envisaged that the water in the lake will need to be disposed of, as this will eradicate the ecosystem established in the lake. In the one-off occurrences that this may need to be, fully or partially, carried out following expert advice, the necessary permits with the respective authority will be obtained. Other alternative solutions will be considered and applied and only in extreme situations will the lake be emptied.

Reservoirs will serve as general rainwater catchment in line with local regulations, with overflow potentially directed onto the road in the event of excess water.

As for sewage discharge, the site shall be connected to the main sewage system and any necessary permits from the respective authorities will be obtained.

11. Landscaping

Whilst importance was given to integrate the existing trees within the project's design, a compromise had to be reached whereby some trees shall need to be transplanted or removed. These have been marked on the proposed drawings.. We believe however that the project already caters for appropriate compensation. Furthermore, an Environmental Permit in line with the *Trees and Woodlands Protection Regulations* permit will be sought for any interventions on protected trees.

Below is a list of trees and plants to be used:

Table 4 Tree species within site

BOTANIC NAME	ENGLISH NAME	MALTESE NAME
Cupressus sempervirens	Cypress Tree	Cipressa
Quercus ilex	Oak Tree	Balluta
Fraxinus angustifolia	Narrow- leaved Ash	Fraxnu
Pinus halepensis	Pine Tree	Znuber
Salix alba	White Willow	Zafzafa Kbirra
Populus alba	Poplar	Luq
Ceratonia siliqua	Carob Tree	Harruba
Olea europaea	Olive Tree	Zebbuga
Cercis siliquastrum	Judas Tree	Sigra Ta' Guda
Prunus dulcis	Sweet Almond	Lewza
Arbutus unedo	Strawberry Tree	Imbrijaglia
Punica granatum	Pomegranate Tree	Rummiena
Delonix regia	Peacock Tree	-
Chamaerops humilis	Med Dwarf Fan Palm	Gummar
Archonto- phoenix alexandrea	Alexandra Palm	-

Table 5 Plant species within site

BOTANIC NAME	ENGLISH NAME	MALTESE NAME
Rosmarinus officinalis 'prostrata'	Rosemary	Klin
Typha domingensis	Southern Bulrush	Buda
Phormium tenax	New Zealand Flax	-
Pistacia lentiscus	Lentisk	Deru
Nerium Oleander	oleander	Olejandru
Vitex agnus- castus	Chaste Tree	Sigra tal-Virgi
Spartium junceum	Spanish Broom	Genista Safra
Salvia officinalis	Sage	Salvja
Viburnum tinus	Laurustinus	Viburnum
Teucrium fruticans	Tree Germander	Zebbugija
Myrtus communis	Common Myrtle	Rihan
Lavandula angustifolia	English Lavender	Lavander
Jacobaea maritima	Silvery Ragwort	Kromb il- Bahar

Cheirolophus crassifolius	Maltese Rock-Centaury	Widnet il-Bahar
Carex divisa	Sedge Grass	Soghda Komuni
Agapanthus africanus 'purple	African Lily	-
Rhyncos- permum jasminoides	Star Jasmine	-
Fatsia japonica	paperplant	-

12 Conclusion

In general, the transformation of the existing plant into a Greenpark is set to enhance the current situation while returning the land to the community, as shown in Appendix A. This importance is magnified within the context of this project, as it not only reinstates a green space for the community but also simultaneously introduces new educational initiatives, fostering a positive revitalization of the area. It can function as a communal gathering space and offer chances for individuals to engage in sustainability initiatives.

In addition to the benefits they provide to people, green spaces are also crucial for the environment. They help filter pollutants and purify the air, reduce the heat island effect in urban areas, and provide a habitat for various plants and animals.

Overall, establishing the proposed green space not only generates positive social effects but also significantly contributes to alleviating the heat island effect commonly observed in densely urbanized areas.

Therefore, transforming a waste treatment plant into a park represents a sustainable and adaptive reuse of land, repurposing it for a more environmentally friendly and community-oriented purpose.



Figure 19 Block Plan showing visuals location



Figure 20 Visual 01



Figure 21 Existing Site – Visual location 01



Figure 22 Visual 02



Figure 23 Existing Site – Visual location 02



Figure 24 Visual 03



Figure 25 Existing Site – Visual location 03



Figure 26 Visual 04



Figure 27 Existing Site – Visual location 04