



# Project Description Statement for the upgrade of Gozo Wastewater Treatment Plant

As per ERA requirements for S.L.549.46

## Report




## PROJECT DESCRIPTION STATEMENT

AIS REF. No: **S00214**

CLIENT REF. No: -  
FOURTH VERSION

PUBLICATION DATE  
**20 October 2025**

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PART OF 



## DOCUMENT REVISION HISTORY

DATE	VERSION	COMMENTS	AUTHORS / CONTRIBUTORS
15/07/2024	1.0	First Version	Dr. Eng. Francesco Demichele Sacha Dunlop
11/03/2025	2.0	Second Version	Susannah Farrugia Dr. Eng. Francesco Demichele Sacha Dunlop
20/06/2025	3.0	Third Version	Susannah Farrugia Dr. Eng. Francesco Demichele Sacha Dunlop
20/10/2025	4.0	Fourth	Susannah Farrugia Sacha Dunlop

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# 1 INTRODUCTION

Mr Karl Cilia (0431390M), Chief Executive Officer at Water Services Corporation (WSC), has filed a development permit application to “*Upgrade the Gozo Wastewater Treatment Plant using environmentally friendly measures*”.

Mr Karl Cilia (henceforth referred to as the “Applicant”) has commissioned AIS Environment Ltd to prepare a Project Description Statement (PDS) to pre-validate the impacts expected from the proposed activities which include the construction works of an additional wastewater treatment process (henceforth referred to as the “Scheme”) to provide the increased depuration capacity.

The PDS report has been requested by the PA to provide the necessary information in terms of a justification for the project, and an outline of the potential impacts and/or benefits of the project. This PDS has been prepared and structured in accordance with Schedule II of S.L. 549.46 of 2017 (ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2017).

## 1.1 SCHEME LOCATION

The Gozo Wastewater Treatment Plant (WWTP) (Scheme) is located at the Eastern part of the island of Gozo, in an area known as Ras il-Hobż in the limits of Ġhajnsielem (refer to Figure 1). A significant increase in the population of Gozo in the past decade has resulted in a substantial increase in the generation of wastewater.



FIGURE 1: THE SCHEME SITE IN GOZO (SOURCE: GOOGLE EARTH, 2023)



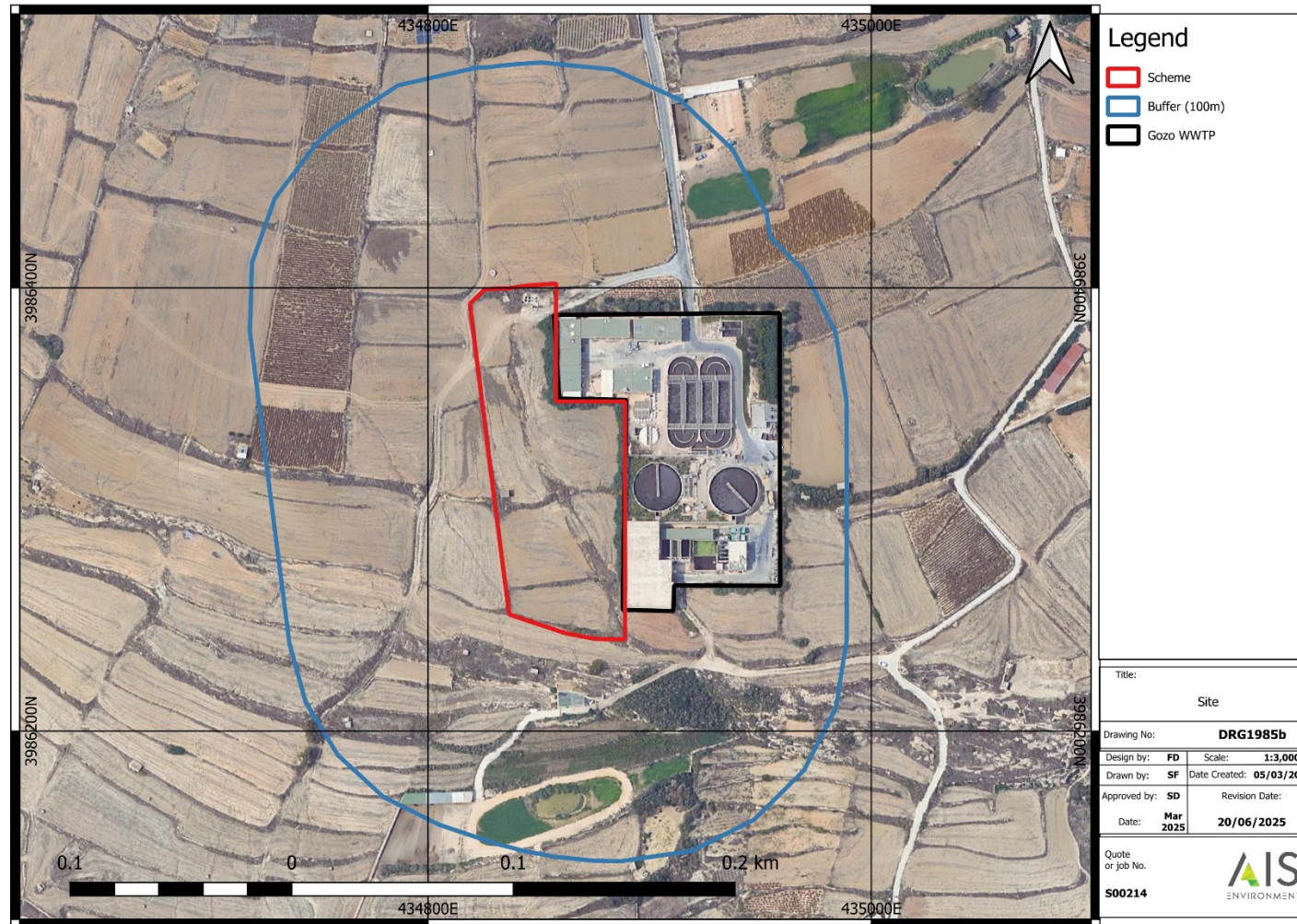


FIGURE 2: PROPOSED SCHEME SITE AND IMMEDIATE SURROUNDINGS



## 1.2 PROJECT OVERVIEW

The development in question encompasses a site footprint of about 17,830 m<sup>2</sup>. The site is specifically designed for the construction of an additional treatment unit to treat wastewater in Gozo. The existing WWTP has been operational since 2007 and currently serves a catchment population of 39,287 residents (census 2021). The designed treatment rate of 6,000m<sup>3</sup>/day has been surpassed on several occasions, especially during the summer which coincides with the peak tourism season.

According to the URBAN WASTEWATER TREATMENT DIRECTIVE 2024/3019, the population equivalent for agglomerations over 1000 people have a biological oxygen demand of 60g per day. For the proposed upgrade to the WWTP, the population equivalent will equate to 36,000 pe.

Water Services Corporation (WSC) shall be contracting the design, installation testing and commissioning of the upgrade of the plant to treat an average flow capacity of 12,000m<sup>3</sup>/day. The forecasted future flows, loads and concentrations of the wastewater that shall be treated at the upgraded treatment plant are shown in Table 1.

TABLE 1: FORECASTED WWTP INFLOWS, LOADS AND CONCENTRATIONS

VOLUME			GOZO WWTP RAW WASTEWATER – 2040		
Minimum (m <sup>3</sup> /d)			4000		
Maximum Screened Flow to Full			36,000		
Average flow (m <sup>3</sup> /d)			14,000		
Maximum Flow to Secondary Treatment (m <sup>3</sup> /d)			20,000		
Average Flow to Secondary Treatment (m <sup>3</sup> /d) -MBR			8,000		
Maximum Flow to Secondary Treatment (m <sup>3</sup> /d) - MBR			12,000		
Population Equivalent			36,000		
POLLUTANT (AVERAGE)	AVERAGE		80%ILE (DAILY)		95%ILE
	[mg/l]	[kg/d]	[mg/l]	[kg/d]	[mg/l]
COD	700.0	8,400	850.00	10,200	1000.00
BOD <sub>5</sub>	270.0	3,240	350.0	4,200	420.00
TSS	220.0	2,640	296.0	3,552	456.0

VOLUME			GOZO WWTP RAW WASTEWATER – 2040		
TN	65.0	780	75.2	902.4	102
NH <sub>4</sub> -N	62.0	744	72.7	872.4	78.0
TP	7.0	84	8.1	97.2	10.0
Chloride	676.0	8,112	706.4	8476.8	865.0
Conductivity (µs/cm)	4000	N/A	5,307.4	N/A	5,500
pH range	6.21 – 7.99				

### 1.3 SCHEME JUSTIFICATION

#### 1.3.1 Aim

The aim of the development in question is to upgrade the Gozo WWTP to meet current and future wastewater treatment demands.

Since the proposed upgrade must be carried out without interrupting the existing operations at the facility, most of the works cannot be done on the existing site but on the adjacent land. Therefore, WSC strived to find the best treatment process that would result in the least possible uptake of additional land. This was possible by employing a technology that could utilize at least part of the exiting assets on site.

Several wastewater tertiary treatment technologies were identified, assessed and evaluated. The assessment considered the technical, financial, environmental and land uptake implications of each option. From a technical perspective, the provision of high-quality effluent was deemed a mandatory requirement due to the new Urban Waste Water Directive (UWWD) recast and also because all secondary effluent must be treated further to produce New Water for irrigation purposes.

Following this detailed assessment, Membrane Bioreactor (MBR) technology was found to be the most feasible and appropriate option. The proposed Gozo WWTP upgrade aligns with Malta's objectives and complies with both local and EU regulations aimed at treating all wastewaters prior to discharge into the sea or reuse in agriculture.

#### 1.3.2 Relevant Policy

##### 1.3.2.1 GOZO & COMINO LOCAL PLAN (2006)

The project site falls within the region covered by the GOZO & COMINO LOCAL PLAN (GCLP, 2006) under the jurisdiction of Ghajnsielem. Policies of the GCLP which are most relevant to the proposed development are summarised in Table 2.

TABLE 2: POLICIES OF THE GCLP WHICH ARE RELEVANT TO THE PROPOSED WORKS

POLICY CODE	POLICY NAME	DESCRIPTION AND RELEVANCE
GZ-AGRI-1	Land of Agricultural Value	Buildings, structures and uses essential to the needs of agriculture will be permitted and then only if it can be demonstrated to the satisfaction of MEPA that they will not adversely affect water supplies, soil and landscape, and accord with all other policies within the Local Plan.
NWRE 6	Existing Footpath (Subject to survey)	Existing and proposed long distance footpaths and other access ways will be protected from any development that would adversely affect their route or character.
GZ-RCLN-1	Area of High Landscape Sensitivity	MEPA will not permit the development of any inappropriate structures or activities which in the opinion of the Authority would adversely affect designated (or future designations), Areas of High Landscape Value.
GZ-RCLN-1	Proposed Level 3 - Ecology	Protected site to conserve natural habitats and species of interest, ensuring their long-term survival and promoting sustainable land use.
GZ-COAS-1	Coastal Viewshed Protection Zone	Protected site to conserve natural views of common and touristic interest.

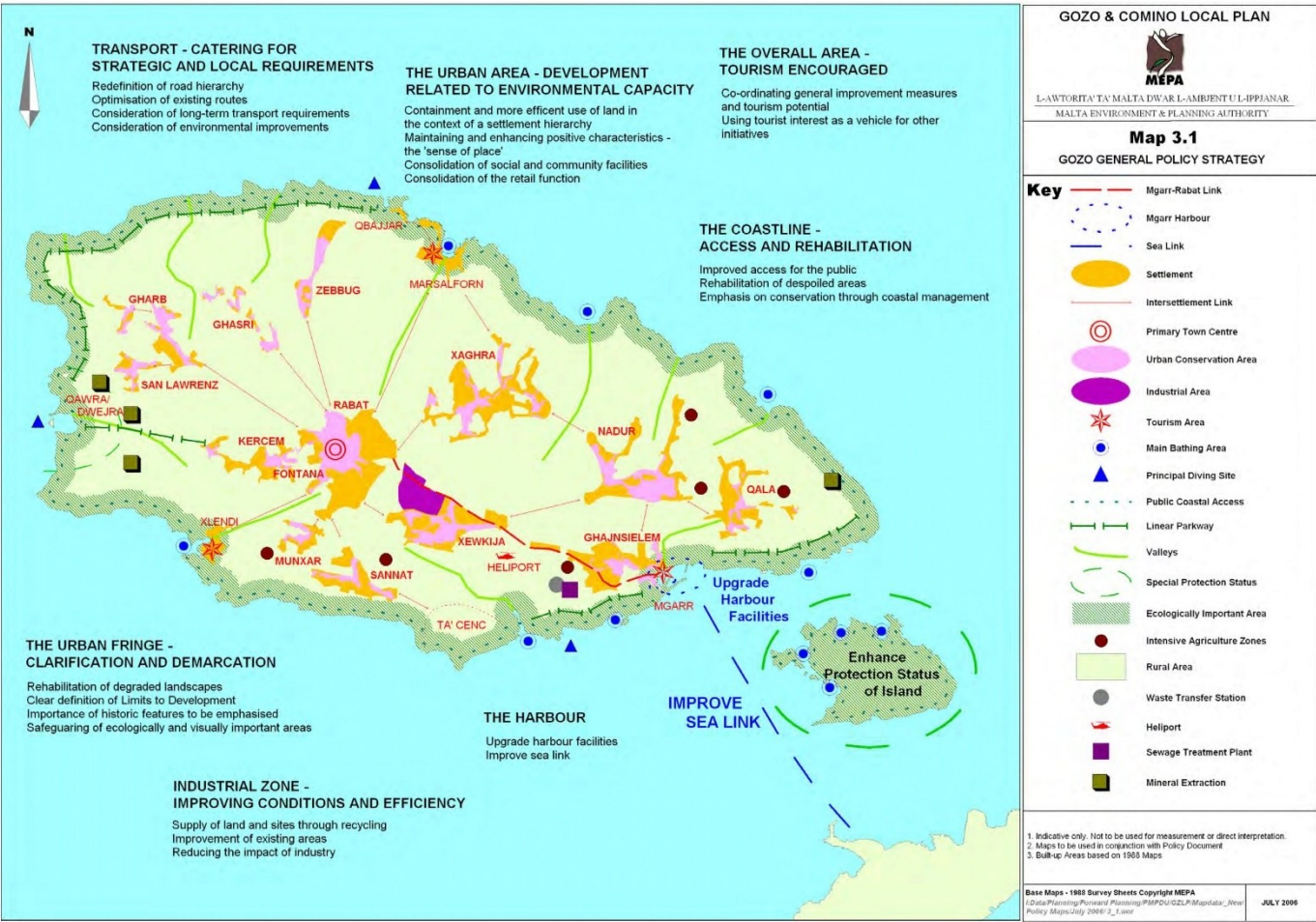


FIGURE 3: GOZO GENERAL POLICY STRATEGY, SCHEME SITE MARKED WITH A PURPLE SQUARE (SOURCE: GCLP, 2006)

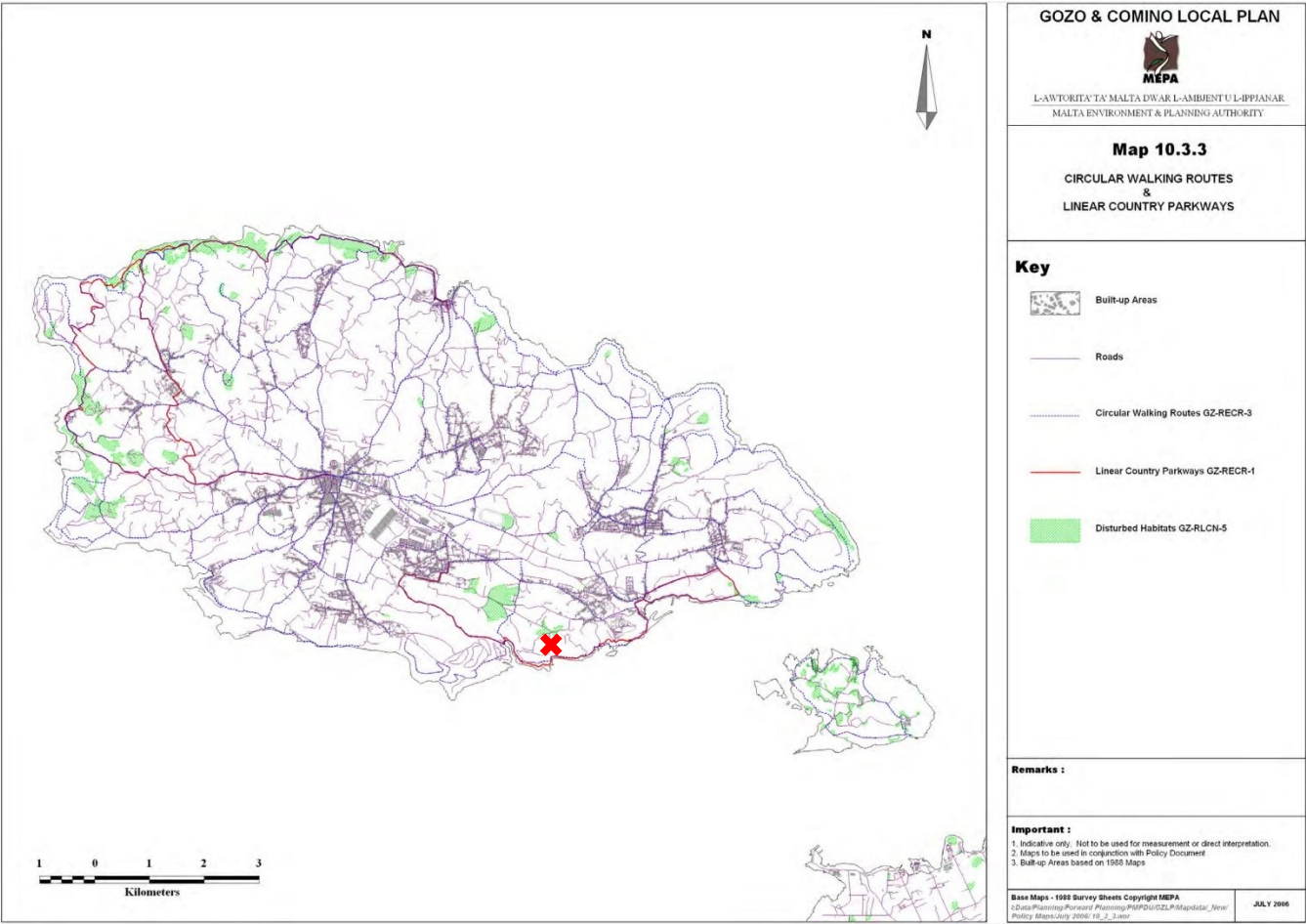


FIGURE 4: CIRCULAR WAKING ROUTES & LINEAR COUNTRY PARKWAYS, SCHEME SITE MARKED WITH A RED (X) CROSS (SOURCE: GCLP, 2006)



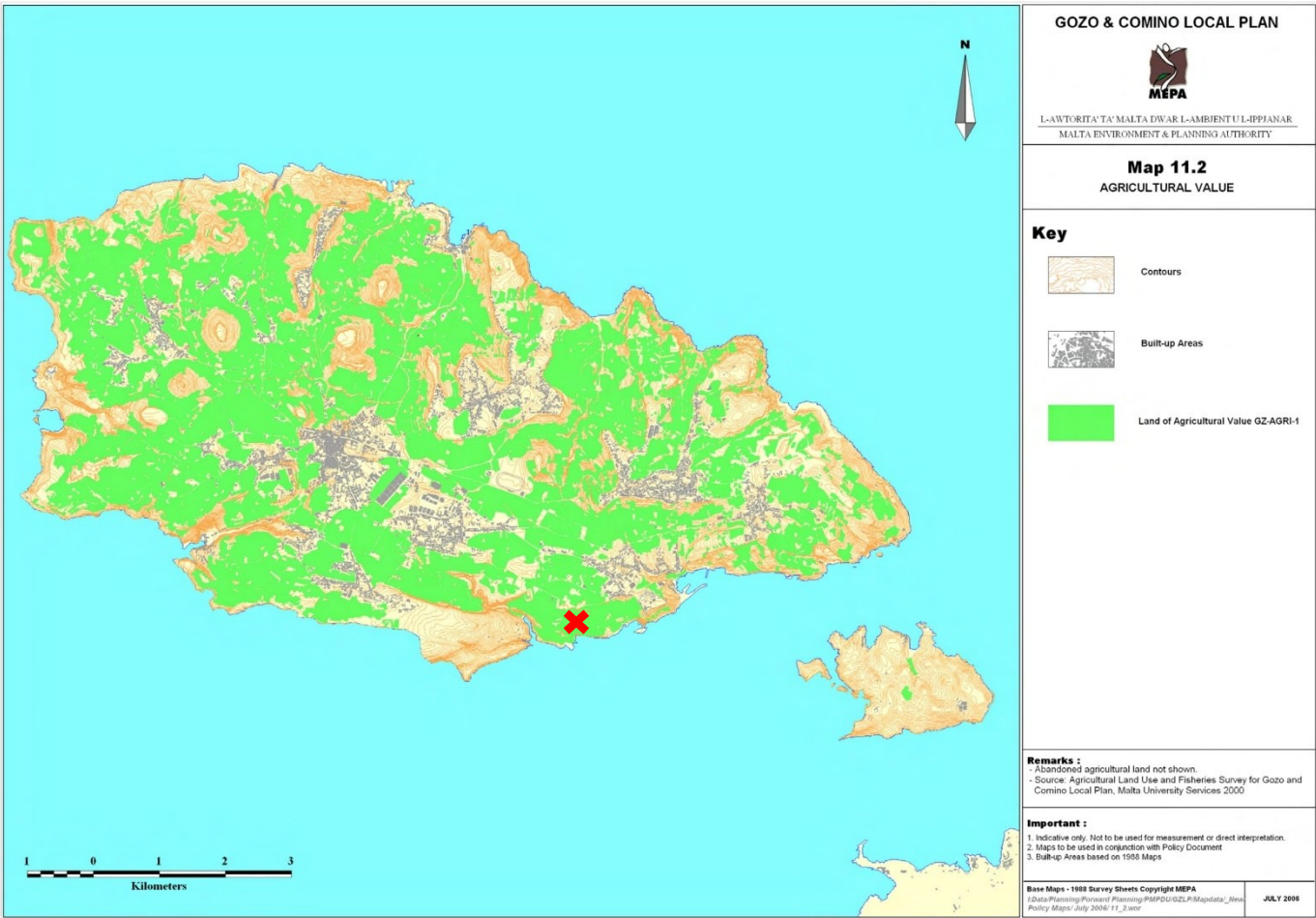


FIGURE 5: AREAS OF AGRICULTURAL VALUE, SCHEME SITE MARKED WITH A RED (X) CROSS (NWLP, 2006)

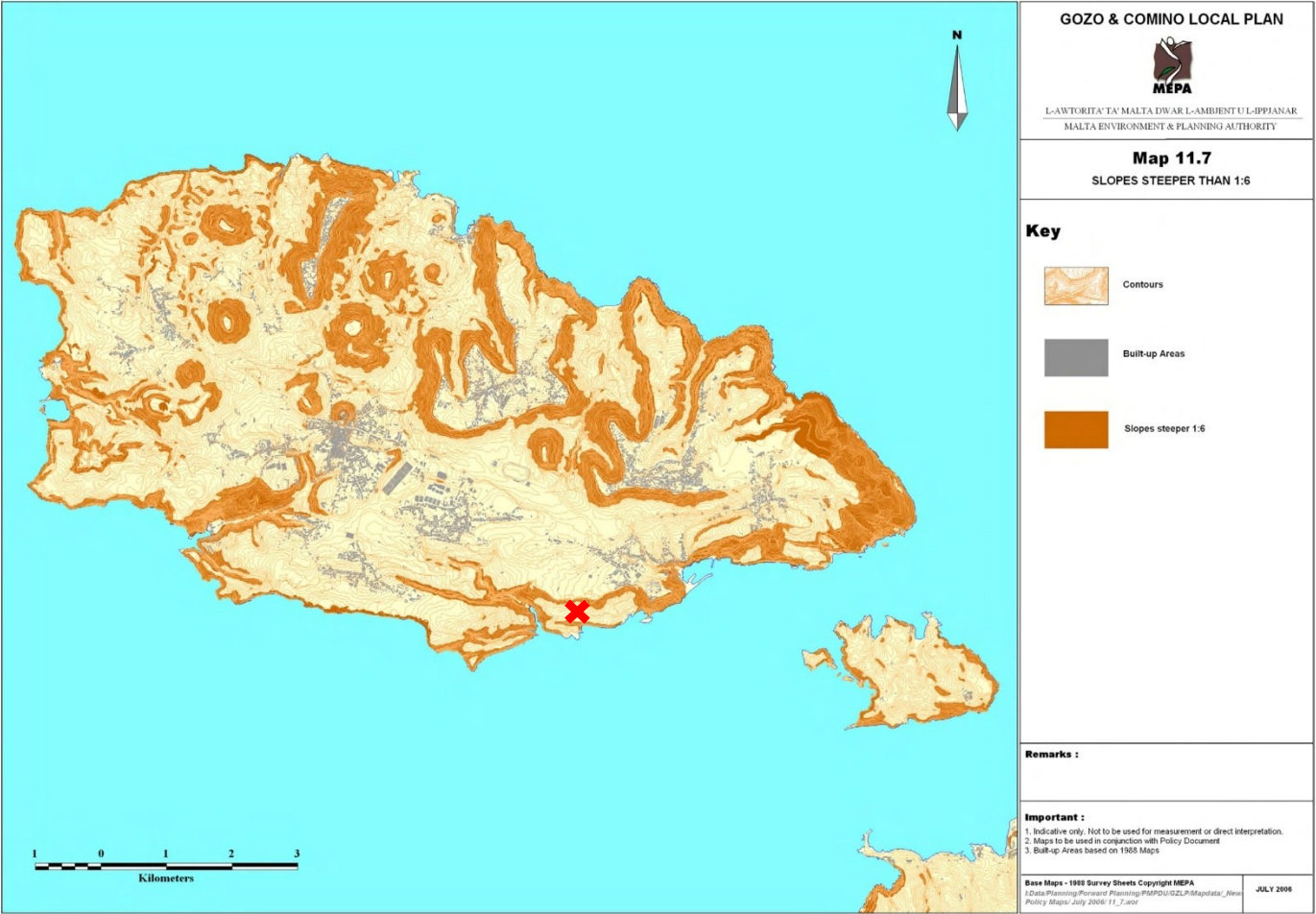


FIGURE 6: SLOPES STEEPER THAN 1:6 MAP, SCHEME SITE MARKED WITH A RED (X) CROSS (GCLP, 2006)



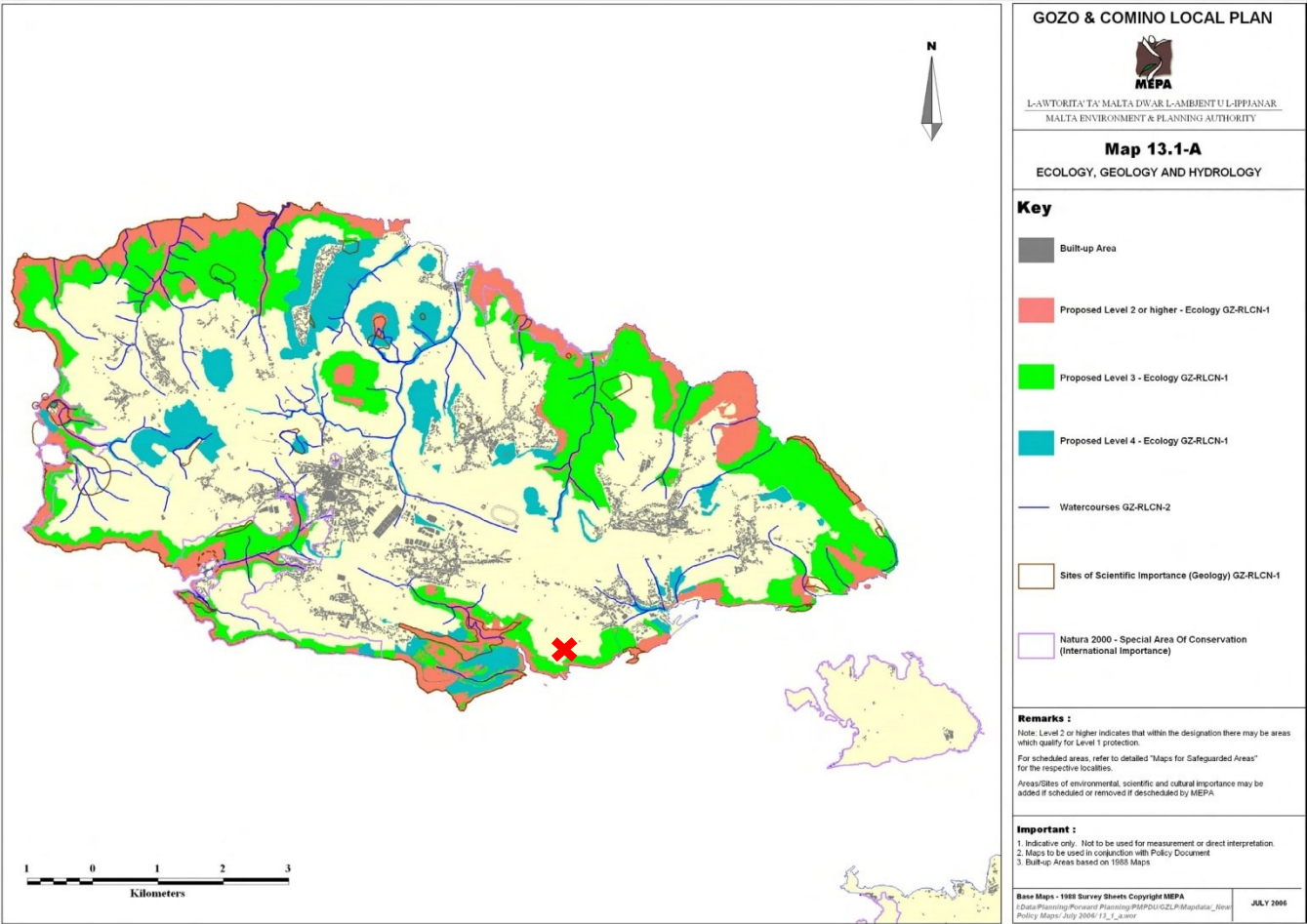


FIGURE 7: ECOLOGY, GEOLOGY AND HYDROLOGY MAP, SCHEME SITE MARKED WITH A RED (X) CROSS (GCLP, 2006)

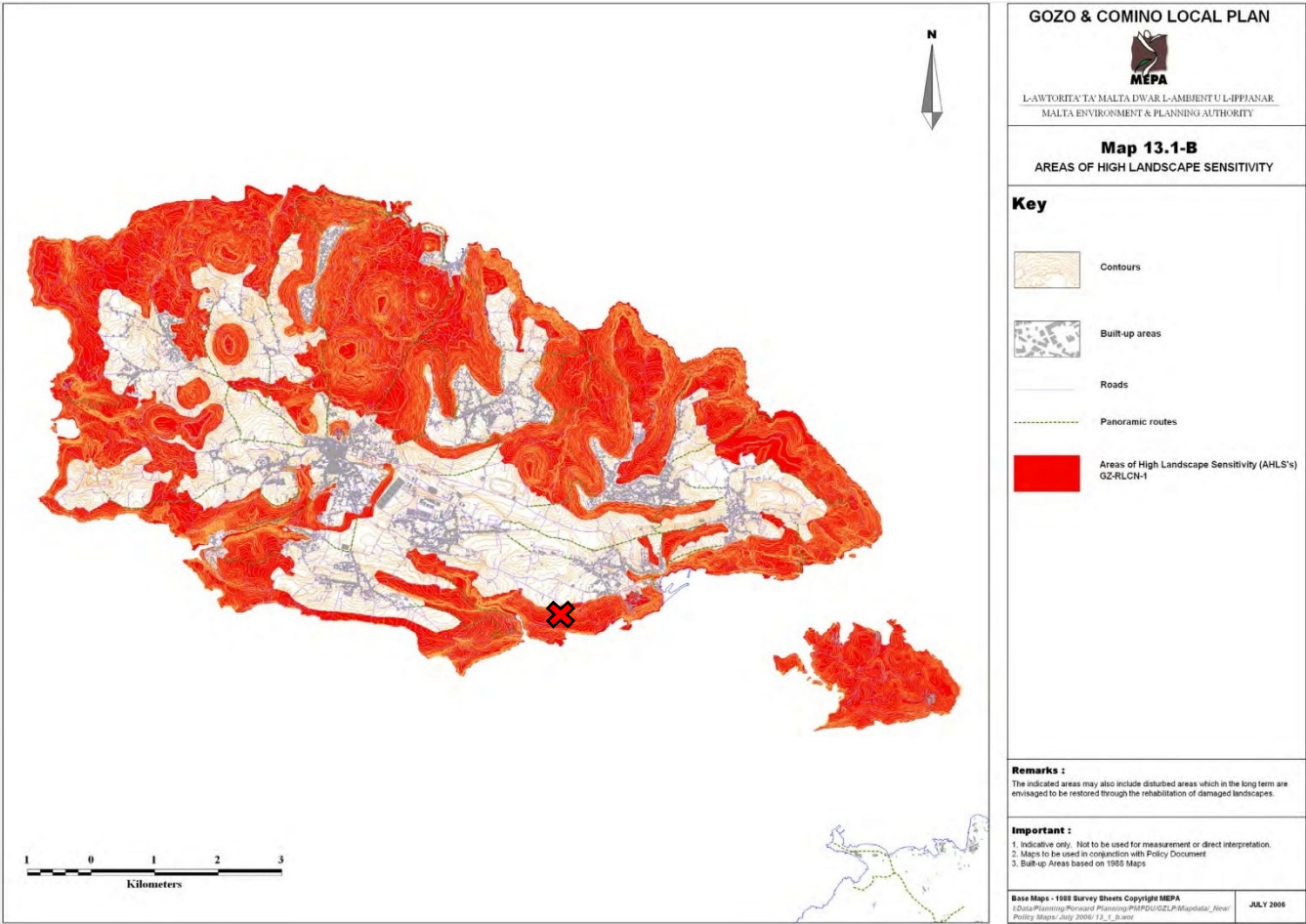


FIGURE 8: AREAS OF HIGH LANDSCAPE VALUE, SCHEME SITE MARKED WITH A RED (X) CROSS (GCLP, 2006)

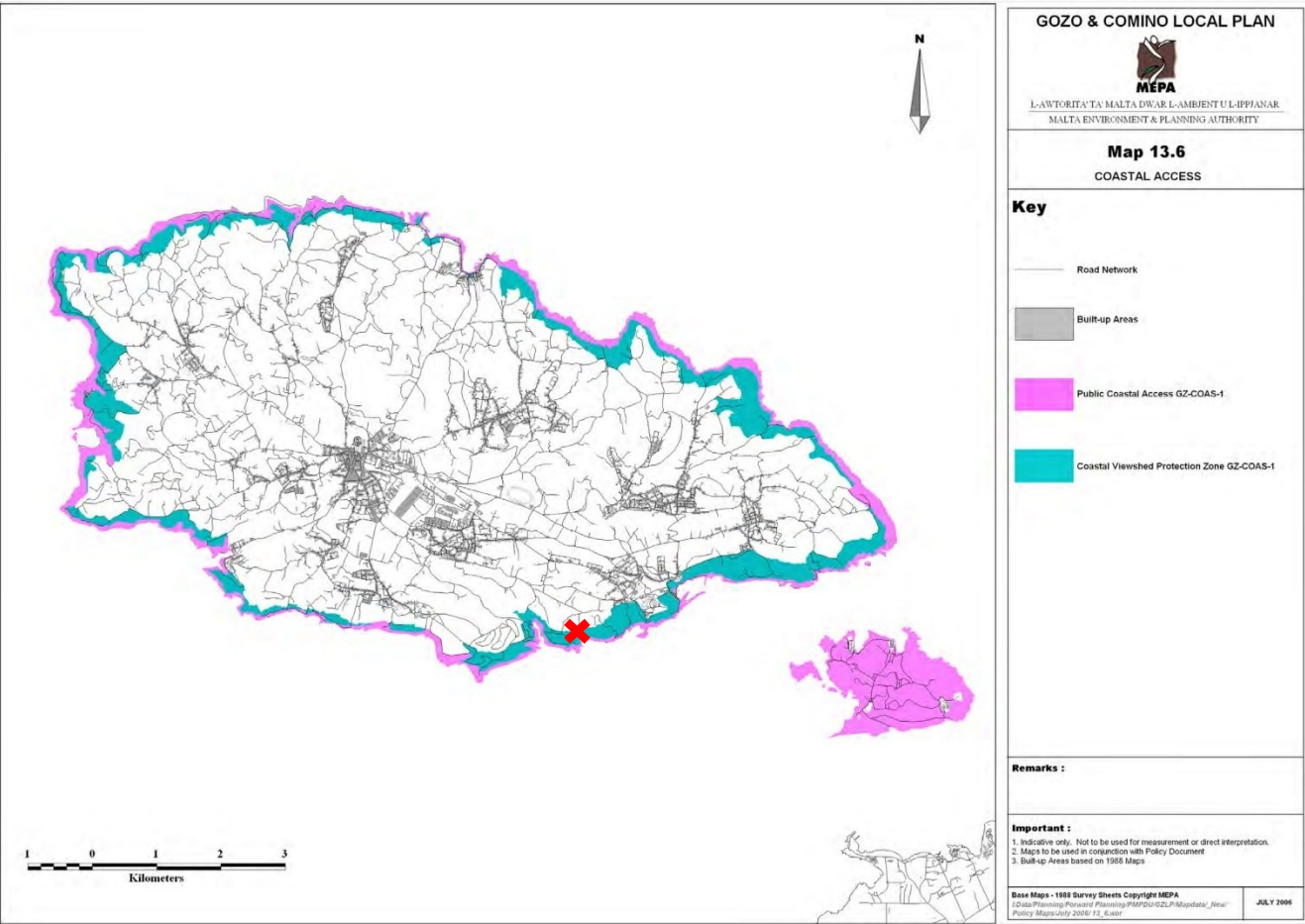


FIGURE 9: COASTAL ACCESS MAP, SCHEME SITE MARKED WITH A RED (X) CROSS (GCLP, 2006)



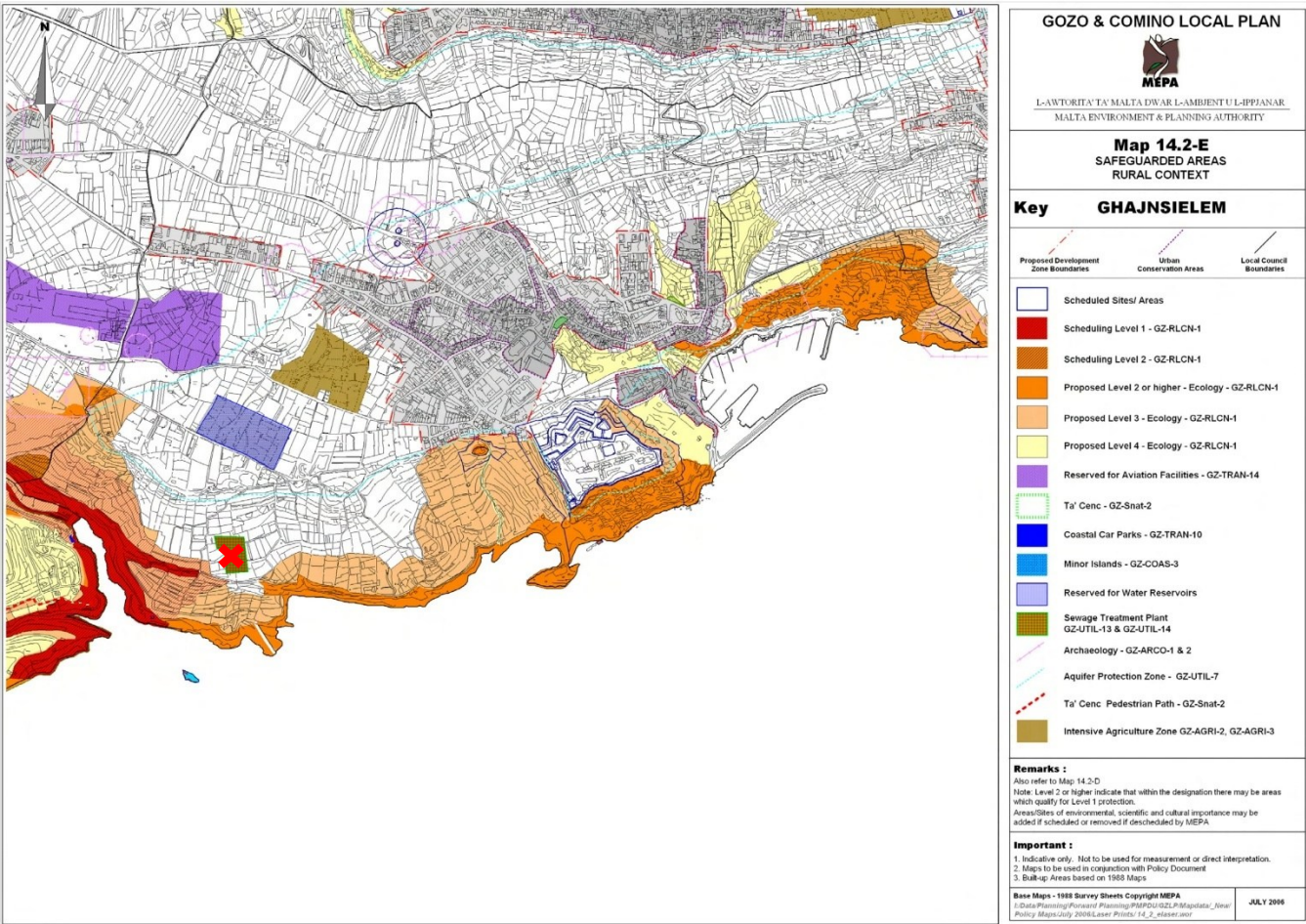


FIGURE 10: SAFEGUARDED AREAS RURAL CONTEXT, GHAJNSIELEM, SCHEME SITE MARKED WITH A RED (X) CROSS (GCLP, 2006)

### 1.3.2.2 Strategic Plan for the Environment and Development (2015)

All new developments must complement the goals and objectives outlined in the STRATEGIC PLAN FOR THE ENVIRONMENT AND DEVELOPMENT (SPED, 2015). SPED aims to guide development to ensure that land and sea resources of the Maltese Islands are utilised effectively, whilst ensuring that the environment is protected and enhanced. Table 3 lists the SPED objectives which are most relevant to the proposed Scheme.

TABLE 3: OBJECTIVES OF THE SPED (2015) RELEVANT TO THE PROPOSED SCHEME

OBJECTIVE	DESCRIPTION
Socio-Economic Development  Thematic Objective 2	<p>To ensure that provision is made for new social and community facilities and to cater for extensions to such existing facilities for education, child care, health, the elderly, the disabled, rehabilitation, places of worship and animal welfare which are accessible for all whilst minimising environmental impacts by:</p> <p><i>Guiding the location of new social and community facilities within the Urban Area and where no other feasible alternatives exist allowing consideration within appropriate locations in the Rural Area for education, health, elderly, disabled and rehabilitation facilities</i></p> <p><i>Facilitating the provision of health centres and homes for the elderly at a regional level</i></p>
Environment  Thematic Objective 7	<p>To promote the efficient use of resources including stone, water and soil, and manage waste in a manner that safeguards natural processes, and minimises impacts on cultural heritage landscape and human health by:</p> <p><i>Controlling demolition of buildings and structures and excavation of sites</i></p>

### 1.3.2.3 Regulatory framework assessment on wastewater

Malta's wastewater treatment legislation is governed by both national and international frameworks, primarily shaped by the EU's directives (Table 4).

TABLE 4: LEGISLATION ON WASTEWATER RELEVANT TO THE PROPOSED SCHEME

LEGISLATION	DESCRIPTION
URBAN WASTE WATER TREATMENT DIRECTIVE 2024/3019	This EU directive aims to protect public health and the environment with respect to waste water treatment which forms part of EU's zero pollution ambition and the European Green Deal commitments. Such regulations make reference to the population equivalent, which

LEGISLATION	DESCRIPTION
	represents the amount of pollution produced per day that has the same biochemical oxygen demand (BOD5) as one average person. The directive states that agglomerations of above 100,000 brings about risks in stormwater overflows. Moreover, the directive states that Member States must prioritize upgrading facilities with the highest environmental and health risks by 2045 and to ensure proper maintenance and monitoring to meet the Directive's goals.
URBAN WASTE WATER DIRECTIVE (UWWTD) (91/271/EC)	This EU directive mandates that all urban wastewater be collected and treated before discharge to protect the aquatic environment. Key requirements include (i) treatment of wastewater from urban areas with populations over 2,000; (ii) secondary treatment for most urban wastewater, with more stringent requirements for sensitive areas; (iii) regular monitoring and reporting of wastewater treatment processes and discharges.
URBAN WASTE WATER TREATMENT REGULATIONS (S.L. 549.22)	These regulations cover (i) collection, treatment and discharge of urban wastewater; (ii) issuance of environmental permits by the ERA; (iii) requirements for industries discharging wastewater to obtain Public Sewer Discharge Permits, overseen by WSC.
SEWER DISCHARGE CONTROL REGULATIONS (S.L. 545.08)	These regulations focus on regulating trade effluent discharges to safeguard the wastewater treatment process and infrastructure from harmful substances.

In compliance with the UWWTD (91/271/EC), more stringent contaminant thresholds are imposed on the outflows of WWTPs in EU Member States. The new effluent consents shall be as shown in Table 5.

TABLE 5: FINAL EFFLUENT CONSENT LIMITS FOR EU MEMBER STATES' WWTPs

PARAMETER	UNIT	ANNUAL AVERAGE CONSENT (SPOT – 24 PER YEAR)	MINIMUM INFLUENT LOAD REMOVAL (%) (UPPER TIER)
Temperature	°C	40°C, or 5°C above ambient temp (whichever is the lowest)	N/A
pH	-	6 – 10	N/A
COD	mg/l	125	75

PARAMETER	UNIT	ANNUAL AVERAGE CONSENT (SPOT – 24 PER YEAR)	MINIMUM INFLUENT LOAD REMOVAL (%) (UPPER TIER)
BOD <sub>5</sub>	mg/l O <sub>2</sub>	25	70 – 90
TOC	mg/l	37	75
TSS	mg/l	10	90
TP	mg/l	0.5	87.5
TN	mg/l	10	80



## 2 SCHEME SITE AND SURROUNDING AREA

### 2.1 LAND USE

Figure 15 showcases the land uses present within the Scheme site and in the surrounding 100m buffer zone.

The project site, covering a substantial footprint of about 10,000m<sup>2</sup> which together with the proposed development totals to 17,830 m<sup>2</sup>, is situated in the Southeast part of the island of Gozo, in an area known as Ras il-Hobż in the limits of Ġhajnsielem.

The existing wastewater treatment plant (WWTP) is surrounded by agricultural activities divided into distinct land parcels. Outside the site boundaries and more specifically at the South of the proposed development, the land encompasses an abandoned rural area that holds visual and landscape value.

This intricate blend of rural land within close proximity adds a layer of complexity to the Scheme, emphasizing the need for thoughtful planning and integration to harmonize the development with the existing fabric of the area.



FIGURE 11: ACCESS TO GOZO WASTEWATER TREATMENT PLANT (SOURCE: GOOGLE MAPS, 2024)



FIGURE 12: AGRICULTURAL AREA AT THE SCHEME (SOURCE: GOOGLE MAPS, 2024)

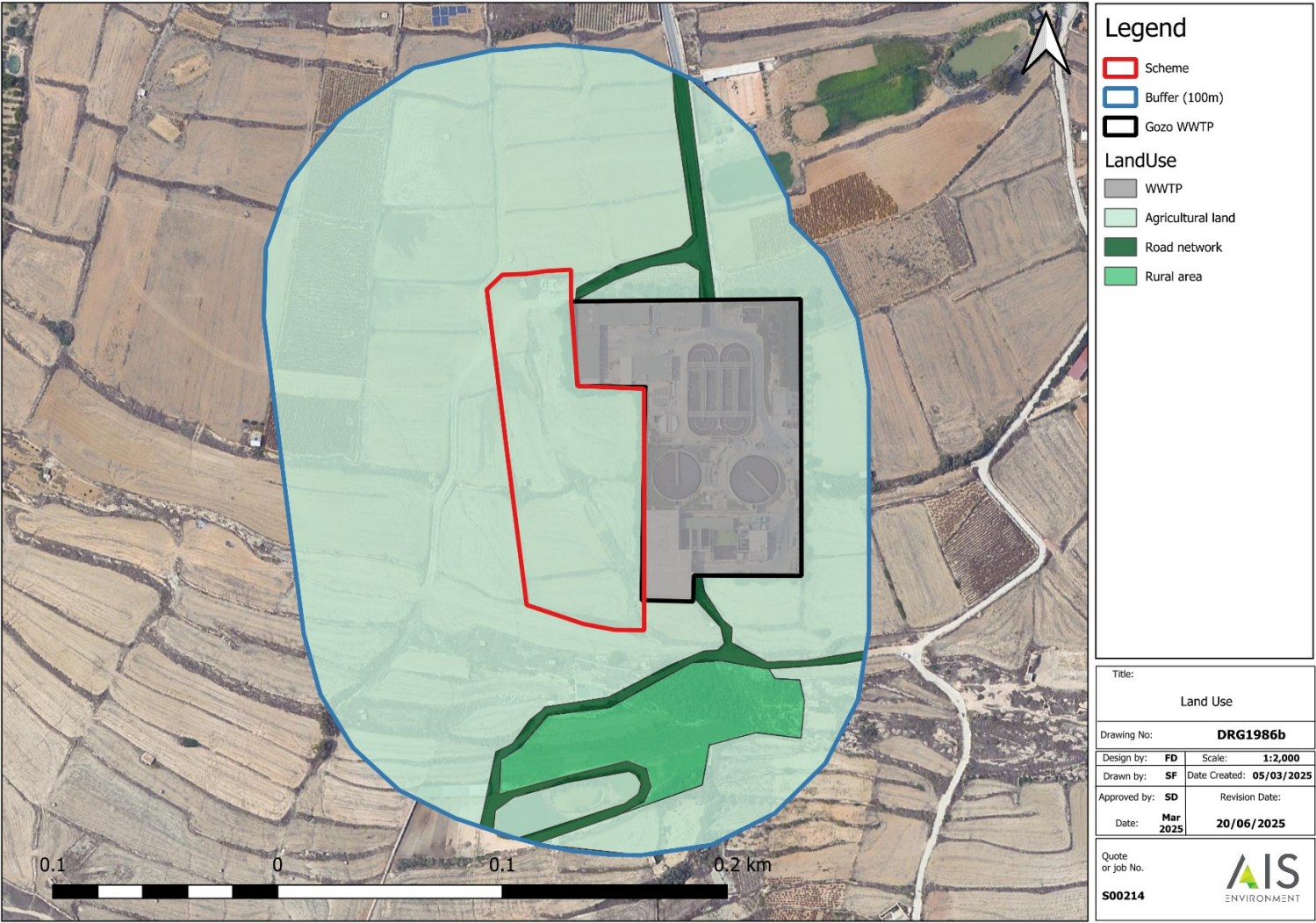


FIGURE 13: AGRICULTURAL FIELDS (SOURCE: GOOGLE MAPS, 2024)



FIGURE 14: AGRICULTURAL FIELDS (SOURCE: GOOGLE MAPS, 2024)





BUFFER ZONE AROUND THE SCHEME SITE

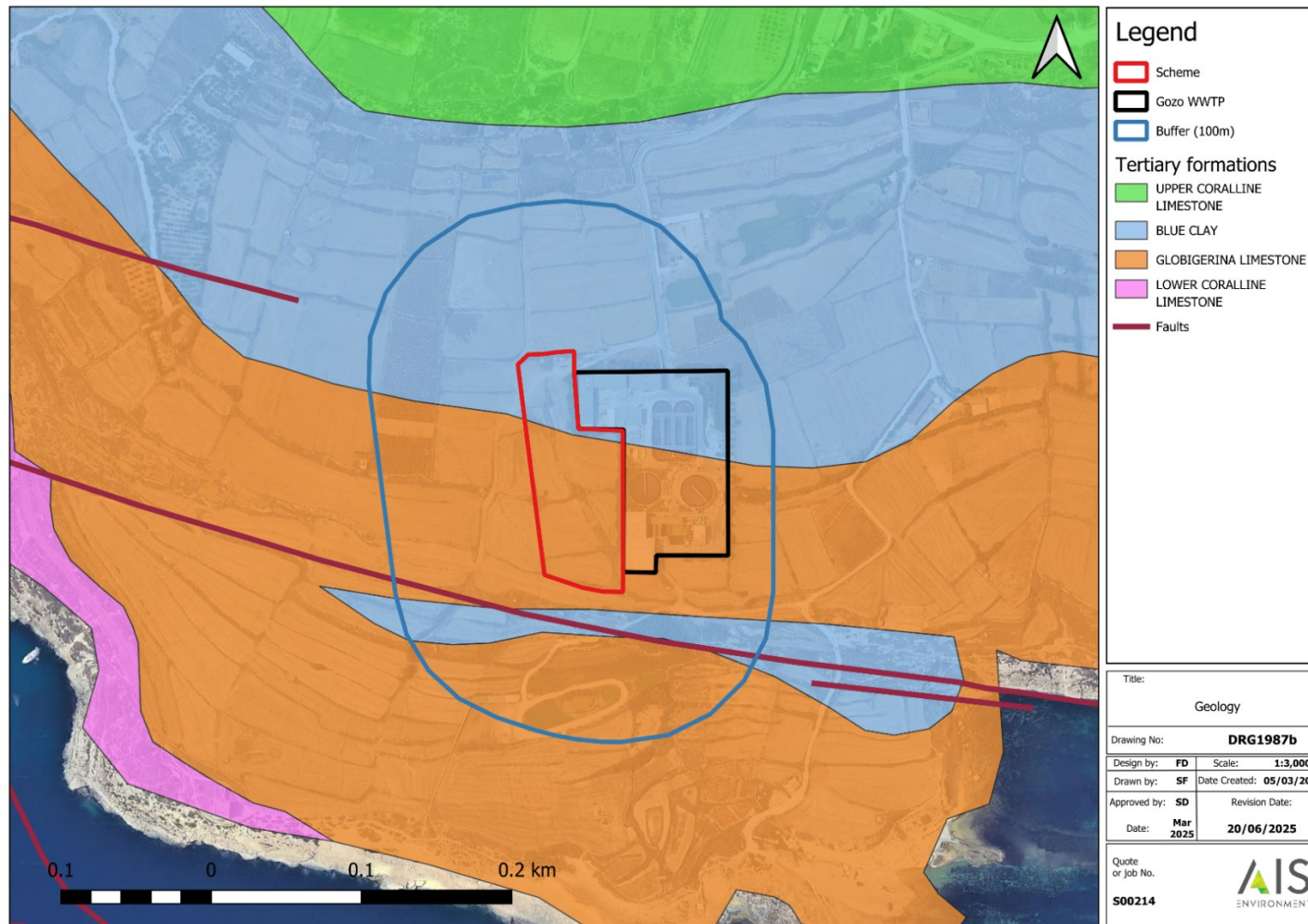
FIGURE 15: LAND USE IN A 100M

## 2.2 GEOLOGY AND SOIL

The Scheme site partially lies on the Blue Clay and Globigerina Limestone (GL) geological formations, as illustrated in Figure 16. Two geological faults of similar orientation pass through the Southern area of the 100m buffer zone.

The Blue Clay outcropping at the northern part of the Scheme is primarily composed of very fine-grained sediments, with a notable proportion derived from foraminifera, which are microscopic marine organisms. This composition indicates that the formation was deposited in a deep-sea environment, similar to the Globigerina Limestone beneath it. The presence of clay minerals distinguishes the Blue Clay from the Globigerina Limestone, suggesting that it includes terrigenous material likely sourced from land, with some contributions possibly from volcanic ash. The Blue Clay contributes significantly to soil fertility in Gozo. Its clay content allows for excellent water retention, making it suitable for agriculture. The fertile soils derived from this formation support much of Gozo's agricultural output, highlighting its economic importance to the region.

Globigerina Limestone is primarily composed of fine-grained yellow to pale-grey limestone that consists largely of the tests (shells) of planktonic foraminifera, particularly the genus Globigerina. This formation is notable for its soft texture and is characterized by irregular slopes, which contribute to the gently rolling landscape typical of much of Gozo and Malta. The formation is divided into three distinct members: Lower, Middle, and Upper Globigerina Limestone, separated by beds of phosphorite pebbles. These divisions reflect changes in depositional environments over time.



SCHEME SITE AND BUFFER ZONE

FIGURE 16: GEOLOGICAL MAP OF THE

The entire site footprint and immediate 100m buffer zone are also composed of soils, specifically the San Biagio and Fiddien series (Figure 17). Both soil series are characteristic of the calcareous, immature soils found in the Maltese Islands.

The San Biagio Series is a Calcisol (Xerorendzina) soil found in Malta. It is a silty clay loam originating from the upper and middle layers of the Globigerina limestone strata. The soil is not much differentiated from the surface to the bedrock and is greyish white in colour.

The Fiddien Series includes two main soil types found in Malta:

- Fiddien heavy clays: These are relatively raw, newly exposed soils developed on the Blue Clay. They are sometimes markedly alkaline and slightly saline. These soils are either unused or produce only very poor crops because they are very difficult when wet and when dry are very hard.
- Fiddien raw soils: These are raw carbonate soils found in front of undermined terrace back walls. They are very young, man-made soils that have been subjected to natural processes for less than 50 years.



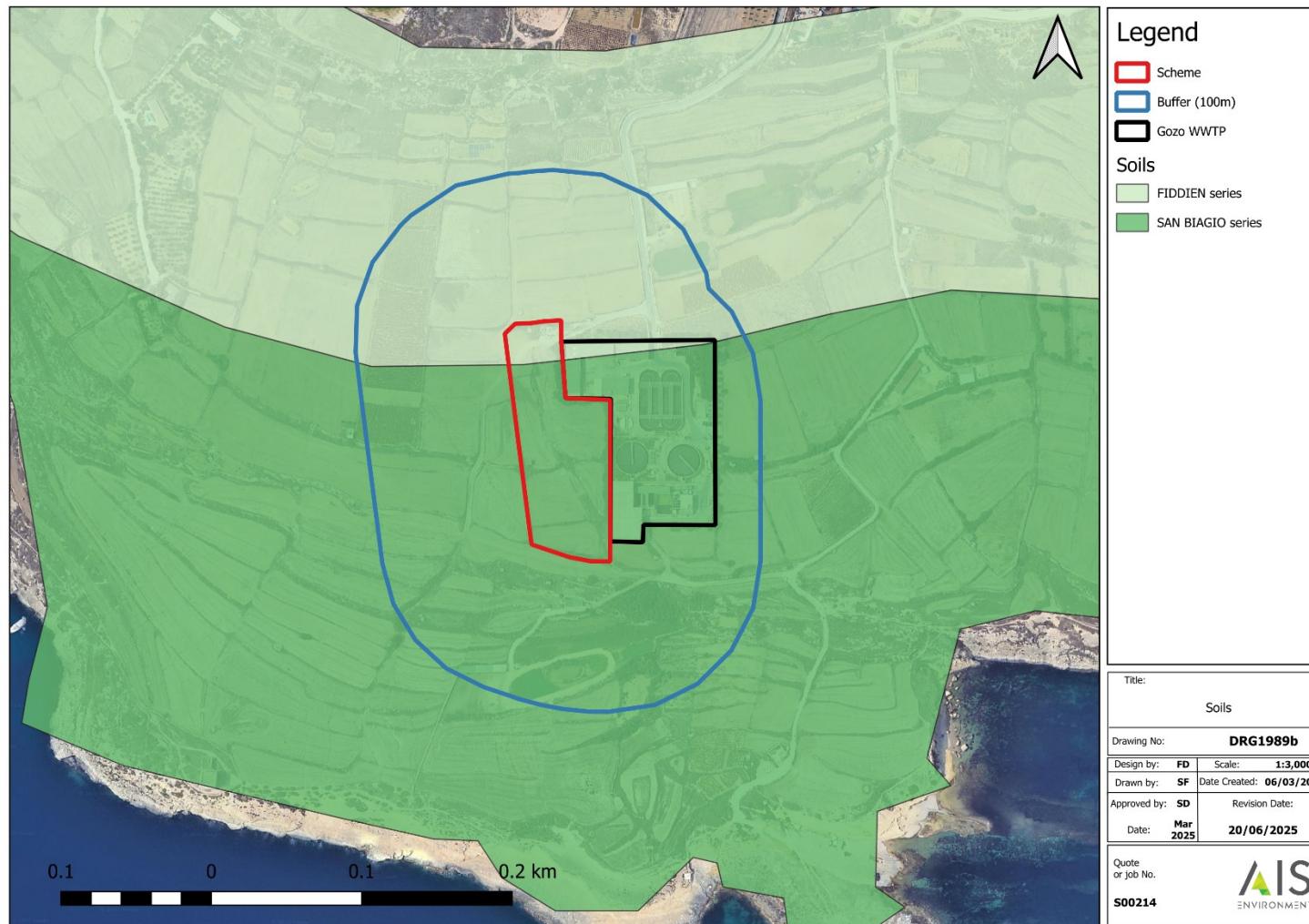


FIGURE 17: SOIL MAP OF THE PROPOSED SCHEME SITE AND SURROUNDING AREA

### 2.3 HYDROLOGY

The Scheme site lies outside the groundwater safeguard zone. It is overlying the Gozo Mean Sea Level Aquifer (MT013, Figure 19). MT013 groundwater body encompasses an aerial extension of about 65.8km<sup>2</sup>.

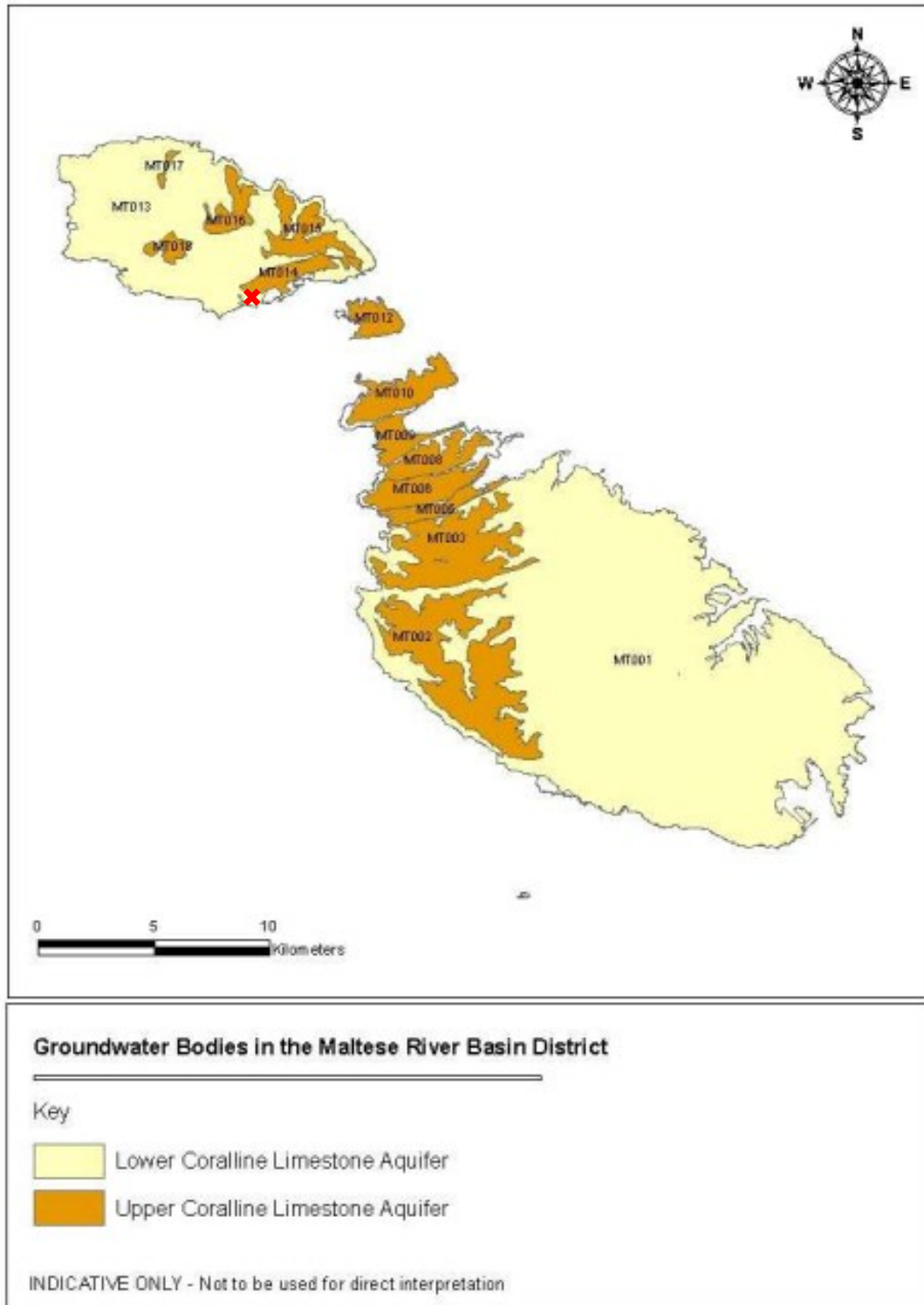


FIGURE 18: GROUNDWATER BODIES IN THE MALTESE RIVER BASIN DISTRICT

The Scheme is located at an elevation of about 40m amsl. The projected maximum excavation depth from current ground level is of 6m. Although groundwater level heights are not known at the time this report is prepared, the construction site is unlikely to intercept the underlying mean sea level groundwater body.

In line with the European Water Framework Directive (WFD), the Gozo Mean Sea Level groundwater body is classified with a poor quantitative status. Besides, the extensive agricultural practices present in this area challenge the achievement of good qualitative status when considering nitrates and chlorides<sup>1</sup>.

## 2.4 ECOLOGY

Although the Scheme does not encroach upon any Natura 2000 sites (Figure 19), the nearby L-Inħawi ta' Ta' Ċenċ (MT0000034) is worth mentioning as standing about 600m from the area of development. This protected area is favourable for the proliferation of endemic flora.

Outside the 100m buffer area of the Scheme, treated wastewater is discharged into the sea at Żona fil-Baħar madwar Għawdex (MT0000112), L-Inħawi ta' Ta' Ċenċ (MT0000027) and L-Inħawi ta' San Lawrenz (MT0000104) Natura 2000 sites, where reefs and sea caves support the proliferation of marine flora and fauna.

Further details about the above-mentioned Natura 2000 sites are provided in Table 6.



FIGURE 19: NATURA 2000 SITES SURROUNDING THE SCHEME MARKED WITH A RED (X) CROSS (SOURCE: NATURA 2000 VIEWER)

<sup>1</sup> ERA, EWA. (2024) 3<sup>rd</sup> River Basin Management Plan: Malta. Available at: [River Basin Management Plan - ERA](#). Accessed on 11/09/2024.

TABLE 6: NATURA 2000 SITES SURROUNDING THE SCHEME

CODE	SITE	HABITAT	DESCRIPTION
MT0000027	L-Inħawi ta' Ta' Ċenċ	Vegetated sea cliffs of the Mediterranean coasts (1240)	Diverse coastal and terrestrial ecosystems are present, including dramatic cliffs, scrubland, and garigue. this area supports a variety of endemic plant species and provides critical nesting sites for seabirds. the adjacent marine environment, including seagrass meadows, enhances its ecological significance, making it an important site for biodiversity conservation in the Maltese Islands.
MT0000104	L-Inħawi ta' San Lawrenz	Vegetated sea cliffs of the Mediterranean coasts (1240)	Coastal cliffs and rocky shores typical of the Mediterranean region. This habitat supports a variety of endemic plant species and provides essential nesting sites for seabirds. The area features diverse vegetation adapted to saline and windy conditions, contributing to its ecological significance. Additionally, the surrounding marine environment includes seagrass meadows that enhance biodiversity and serve as important habitats for marine life.
MT0000034	L-Inħawi ta' Ta' Ċenċ	Nearby Endemic phrygas of the Euphorbio-Verbascion (5430)	The nearby habitat is characterised by the co-dominance of <i>Hypericum aegypticum</i> with <i>Thymra capitata</i> . Other species that were common here include <i>Dittrichia viscosa</i> , <i>Psoralea bituminosa</i> , <i>Asparagus aphyllus</i> , <i>Asphodelus aestivus</i> , <i>Phagnalon</i>

CODE	SITE	HABITAT	DESCRIPTION
			<i>graecum ssp. ginzbergerii</i> , <i>Prasium majus</i> , <i>Teucrium flavum</i> , <i>Teucrium fruticans</i> , <i>Sedum caerulaeum</i> , <i>Hyparrhenia hirta</i> and <i>Chiliadenus bocconeii</i> . The structure of these habitats is well conserved with good prospects for the conservation of its functions.
MT0000112	Žona fil-Baħar madwar Ġhawdex	Special Protection Area for Birds	<i>Calonectris diomedea</i> (about 7300) and <i>Puffinus yelkouan</i> (about 4600) nest, feed and forage in the area.

## 2.5 CULTURAL HERITAGE

The status of the cultural heritage features within the 100m buffer zone was researched on the PA map server website. The study revealed that the Scheme does not lie within scheduled cultural heritage.

## 2.6 SERVICES AVAILABLE

### 2.6.1 Energy and Water

Electricity and water supply mains already exist and are connected to the operational WWTP. These services shall be extended and upgraded to the new wastewater treatment area in accordance to S.L.549.122: LIMITATION OF EMISSIONS OF CERTAIN POLLUTANTS INTO THE AIR FROM MEDIUM COMBUSTION PLANTS.

### 2.6.2 Surface Water Run-Off and Storm Water Drainage

An existing pipeline network is responsible for collecting surface and storm water run-off patterns throughout the existing plant. This water is conveyed and discharged to the sea via the existing shoreline discharge point. This system shall be extended to the Scheme, as necessary.



### 3 THE SCHEME

#### 3.1 SIZE, SCALE AND DESIGN

The proposed facility spans a total footprint of about 5,000m<sup>2</sup>. The proposed facility is proposed to be located adjacent and to the West of the existing plant (Figure 2). The Scheme involves the upgrade of the existing Gozo WWTP by including additional treatment units that would increase the plant's treatment capacity. The new facility shall be equipped with a Membrane Bioreactor Process (MBR) treatment process to optimize pollutant abatement in line with the increased treatment flow rates (from 6,000 to 12,000m<sup>3</sup>/day).

The whole treatment process spanning from the arrival of raw wastewater up to the production of reclaimed water (locally also known as New Water) shall consist of the following stages:

- Pumping of wastewater from the Inlet PS to the plant;
- Pre-treatment of the raw wastewater;
- Phosphorus removal;
- The biological treatment followed by solid/liquid separation (MBR plant);
- Sludge treatment;
- Water reclamation.

Figure 20 shows a conceptual diagram illustrating the type of wastewater treatment and the relative discharges or reuse of treated effluents. Additionally, sludge is treated with the aim of recovering nutrients and producing biogas. The remaining sludge is either incinerated or disposed of in landfills.

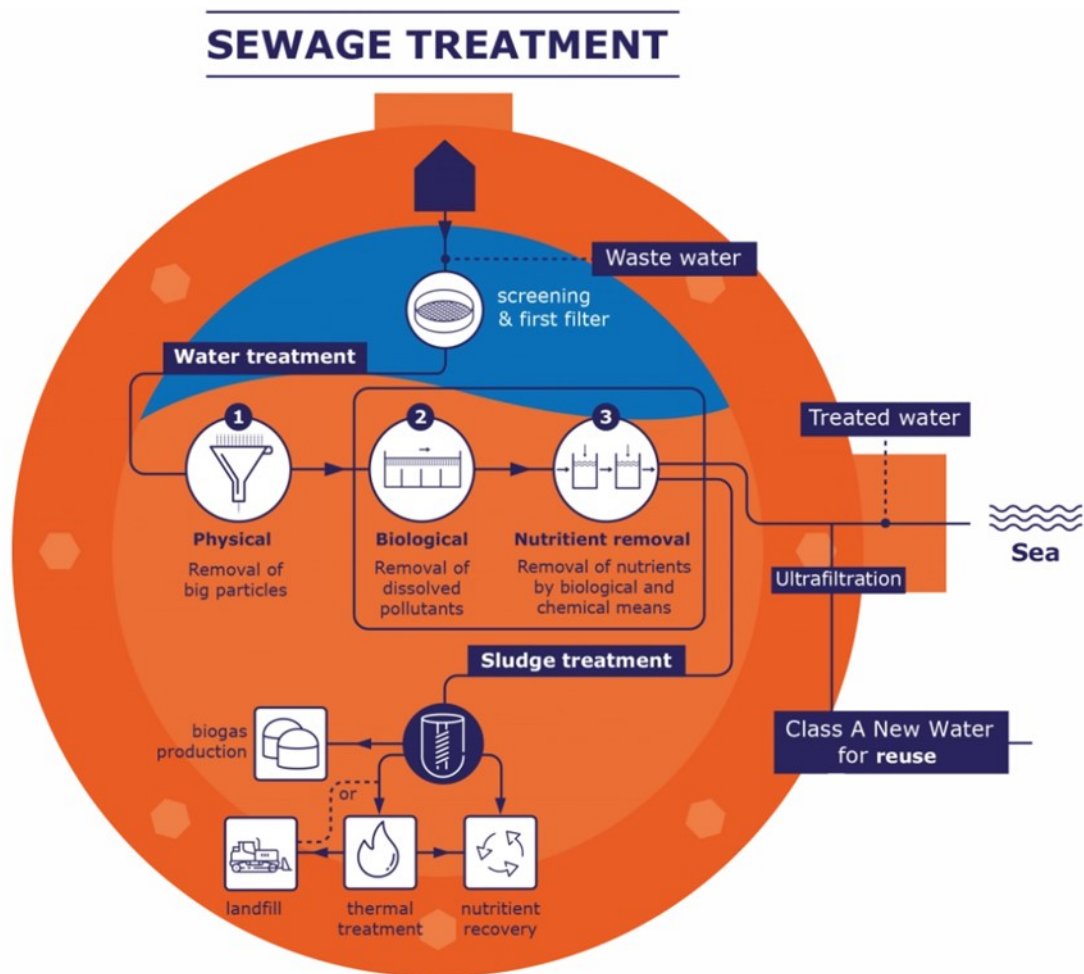


FIGURE 20: CONCEPTUAL DIAGRAM REPRESENTING THE WHOLE WASTEWATER TREATMENT PROCESS (SOURCE: WSC)

The proposed treatment process is summarized in the future plant Block Flow Diagram (BFD) exhibited in Figure 21. The treatment processes would take place within the newly constructed treatment facility which shall be hydraulically connected to the existing treatment units. These include the anoxic chamber and the oxidation ditches, as illustrated in Figure 22. No major civil works are envisaged on these tanks, but all equipment and pipework within them shall be replaced. The Contractor shall, therefore, install temporary treatment units to replace the function of these assets while they are undergoing refurbishment which may be subject to permitting requirements as summarised below:

- Phase 1 – Construct a new 12km<sup>3</sup>/day WWTP with MBR technology with a temporary Bioreactor capable of treating the current influent (circa 8 km<sup>3</sup>/day)
- Phase 2- Retrofit existing bioreactor with new diffusers and aeration system to treat the design capacity (12 km<sup>3</sup>/day)
- Phase 3 – Construct a reclamation plant with a production capacity of 4km<sup>3</sup>/day



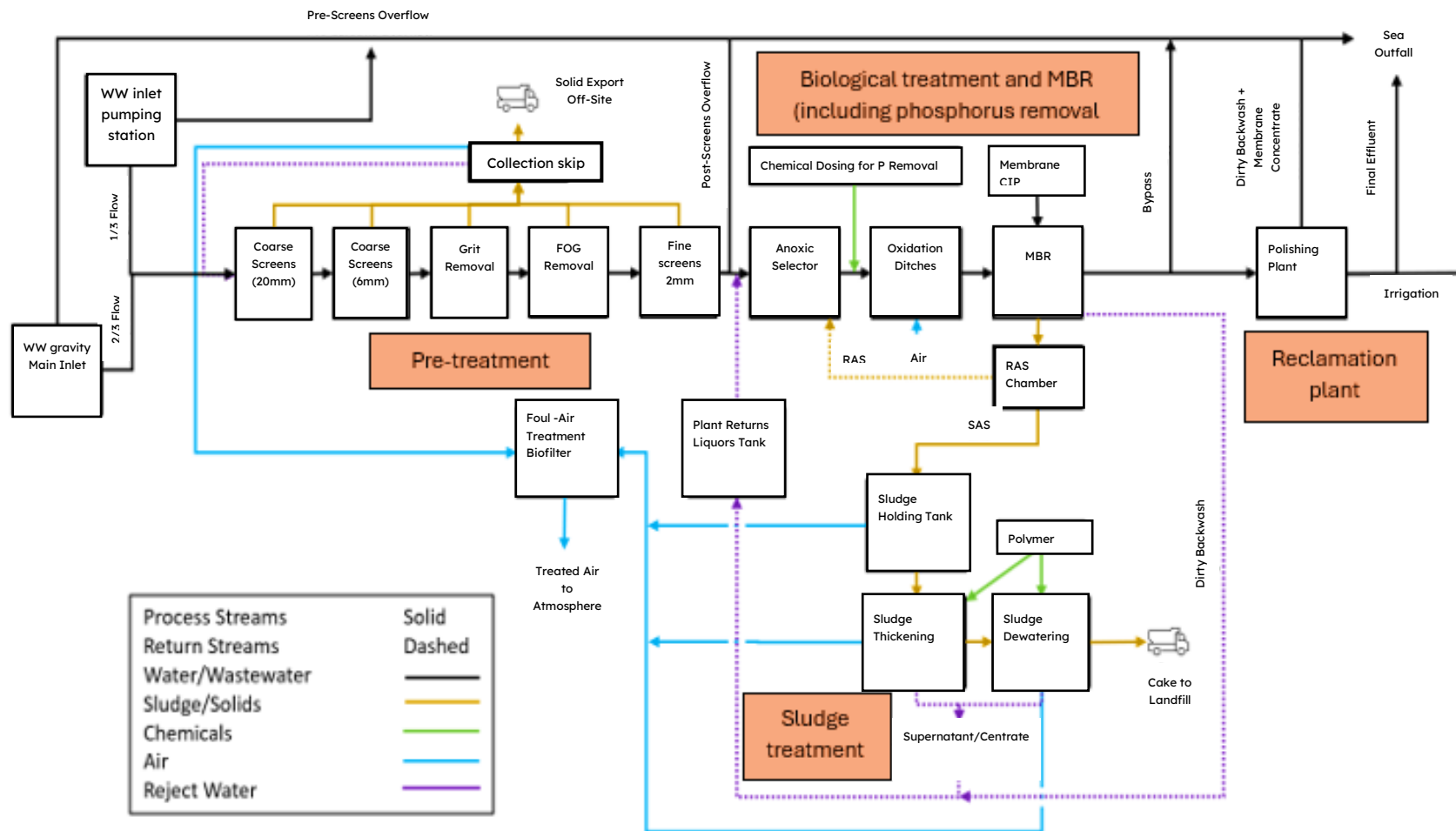


FIGURE 21: FUTURE PLANT BLOCK FLOW DIAGRAM (BFD) OF GOZO WWT

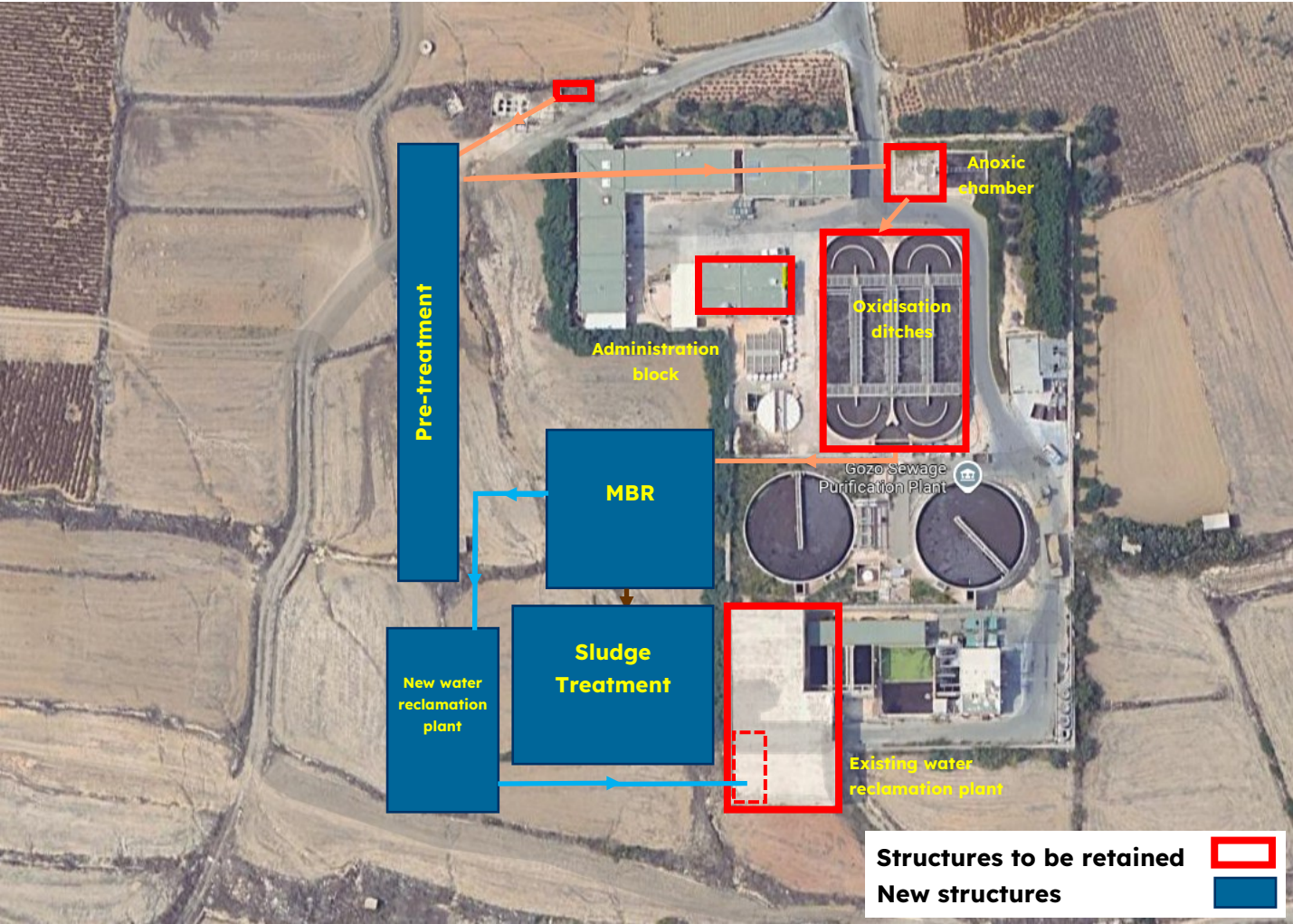


FIGURE 22: PROPOSED LAYOUT OF GOZO WWTP

### 3.2 CONSTRUCTION PHASE

#### 3.2.1 Number of Employees

Approximately 30 people will be working on site during the construction phase.

#### 3.2.2 Phasing

The works are anticipated to commence in January 2026. The construction process is expected to span approximately 120 weeks and will encompass various phases:

- Mobilisation;
- Hoarding;
- Site cleaning/demolition;
- Soil excavation and disposal;
- Excavation;
- Construction works;
- Site cleaning and demobilisation.

#### 3.2.3 Raw Materials

The quantities and type of raw materials required during the construction phase are estimated as follows:

- Concrete – 120m<sup>3</sup>
- Steel – 48,500kg
- Fill material – 131m<sup>3</sup>
- Stone masonry – 1,700m<sup>3</sup>

#### 3.2.4 Machinery

The construction activities will require the use of sludge and washed screenings skip trucks, as well as sewage sludge handling hook-loaders. Additionally, one to two electric forklifts will be utilized.

#### 3.2.5 Energy

Energy for the construction equipment shall be supplied through the fuel that will be used for the machinery required. Furthermore, the site can be supplied with a temporary electrical meter, if necessary.

#### 3.2.6 Waste

13,000m<sup>3</sup> of waste are estimated to be generated during the construction phase. This shall comprise primarily of the removal of limestone and soil during the excavation process. Other waste residues may also be encountered and collected during the site clearance activities. Waste recycling at source will be encouraged by providing 3 waste skips throughout the duration of the construction phase.

Additional volumes of waste from off-cuts generated during the construction phase are also likely to be generated. The Contractor shall ensure that all waste on-site is separated according to waste stream and stored in clearly labelled, closed receptacles within the designated waste management areas. Once the receptacles are full, an appropriately licensed waste carrier shall transport the waste to an ERA

licensed facility in line with the provisions of S.L.549.45. Any accidental spills originating from the works on site need to be mitigated and removed immediately.

### 3.2.7 Access

Access to and from the site shall be through the existing access road leading to Gozo WWTP and from the land adjacent to the project's site. Easement of these areas would be required for this purpose and the Contractor's office and storage requirements. On completion of the works on site, these temporary work areas shall be rehabilitated to their original status by the Contractor.

### 3.2.8 Parking Arrangements

Workers and project management personnel will park all machinery and vehicles in designated spots within the construction site (Figure 23) so as not to cause any inconveniences.

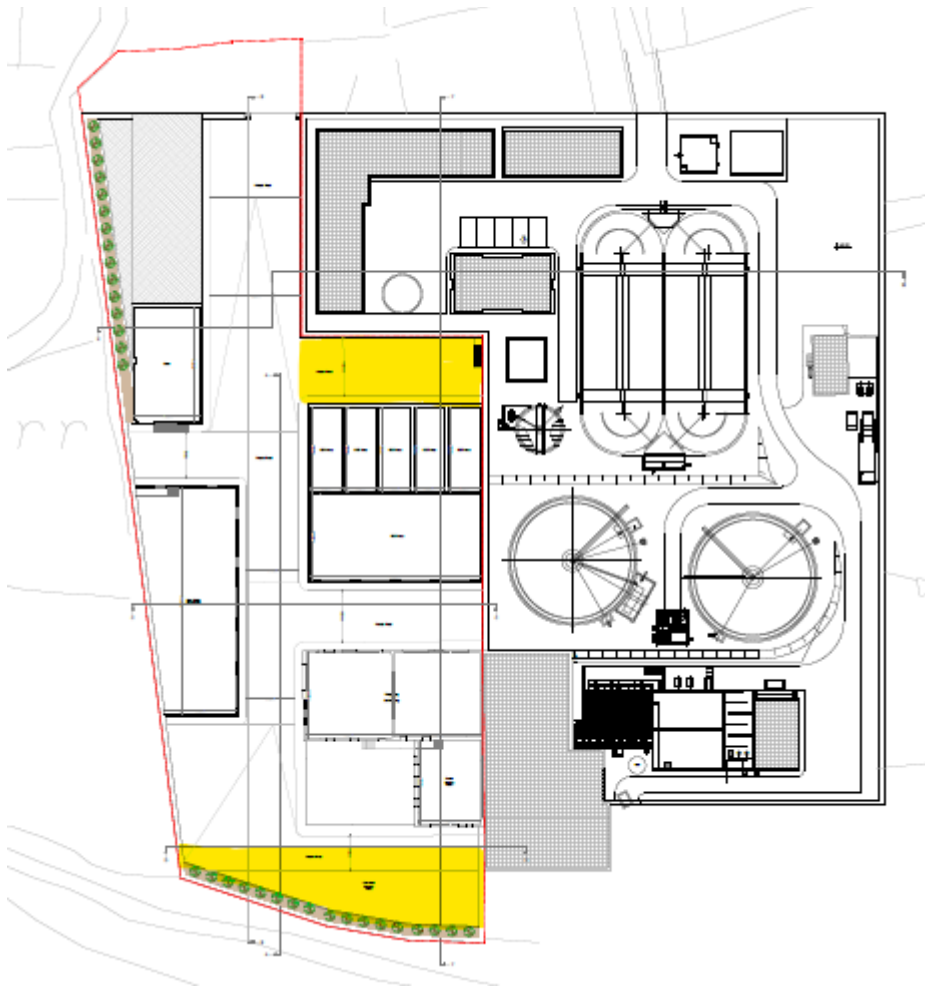


FIGURE 23: SITE LAYOUT SHOWING LOCATIONS OF DESIGNATED PARKING AREAS (YELLOW)

### 3.2.9 Trip Generation

It is anticipated that there will be an increase in vehicle trips as follows: around 16 trips per working day from lorries, trucks, and heavy construction vehicles, in addition to approximately 15 trips per day from light cars and mini-vans.

### 3.3 OPERATIONAL PHASE

#### 3.3.1 Number of Employees

During the operational phase, the number of employees at the Gozo WWTP is forecasted to be around eight people on a day-shift basis. The number of employees required to run the upgraded plant is not expected to increase compared to the current working conditions..

#### 3.3.2 Raw Materials

The main raw material required to operate the WWTP encompasses wastewater sourced from the domestic, commercial, industrial sectors including stormwater in Gozo. A pumping station provides adequate flow and pressures to operate the WWTP treatment units.

#### 3.3.3 Machinery

During the operational phase, the treatment units will provide distinctive abatement of the chemicals and pollutants present in the incoming wastewater. Additional light machinery including monitoring devices and maintenance tools will be regularly used for the smooth functioning of the treatment process.

#### 3.3.4 Energy

Energy will be sourced from the national grid. To operate the plan, 0.38 kWh of electricity is required per cubic meter of treated effluent for the MBR process, along with an additional 1.8 kWh per cubic meter for Reverse Osmosis (RO) and Advanced Oxidation Processes (AOP), which includes reservoir transfer.

WSC is investing in renewable solar energy, with its latest initiative projected to achieve a peak generation capacity of 3.7 MW, the target annual generation is 620,000 kWh. This project is financed through a Green Bond issued by WSC in 2023.

#### 3.3.5 Water

The Scheme is already connected to the public mains water supply.

#### 3.3.6 Waste

The plant is expected to produce approximately 8 to 16m<sup>3</sup>/day of dewatered sludge, which is equivalent to about 1 to 2 truckloads per day. Additionally, about 3 to 4 truckloads of washed screenings and grit will be removed from the plant each week. Both the sludge and the washed screenings and grit will be transported in sealed containers to Wasteserv's landfill.

Treated wastewater will be discharged into the environment through the existing sea outfall designated as a discharge point of the plant. The volume of treated wastewater discharged daily into the sea will increase from 8,000 to 12,000m<sup>3</sup>. Part of the treated outflow will undergo further treatment using Advanced Oxidation Processes to obtain highly treated wastewater (New Water), which will be reused for irrigation purposes in agriculture. An estimated 4,000m<sup>3</sup>/day of New Water is expected to be produced daily at its peak; however, New Water production is suspended during wet weather.



Additionally, domestic waste is expected to be generated by employees during their work shifts.

#### 3.3.7 Access

Access to and from the site shall be through the existing access road leading to Gozo WWTP.

#### 3.3.8 Parking Arrangements

On site parking for employees and visitors shall be possible within the boundaries of the Gozo WWTP.

#### 3.3.9 Trip Generation

An increased trip generation is anticipated to occur from and to the site. One or two hook loader truck will reach the site every day while three to four trucks will cart away washed screenings and grit every week, as part of ordinary plant maintenance.

## 4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A preliminary indication of the environmental impacts that are likely to be associated with the Scheme are described in this section, and may serve as an initial scoping assessment in the context of the ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS OF 2017 (S.L. 549.46). The potential impacts of the Scheme and their respective mitigation measures are listed in Table 7.

TABLE 7: POTENTIAL IMPACTS AND MITIGATION MEASURES

FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
Land Use	<p><b>Major Adverse</b></p> <p>The project is expected to take up agricultural land, and generate dust and noise during the construction phase.</p> <p>Nevertheless, during operation some inconveniences are expected on the surrounding land uses caused by the take up of land, noise generation, air contamination, etc.</p>	<p>Dust mitigation measures during construction works will be necessary to reduce environmental impacts on the surrounding land uses.</p> <p>The selected MBR technology requires significantly less land than traditional civil structures while achieving similar treatment objectives. The plant's screens, grit and grease removal units and sludge dewatering units will be housed in enclosed impervious buildings, along with biological filters for air treatment.</p>
Visual	<p><b>Moderate Adverse</b></p> <p>Excavation and construction work on the building, coupled with the presence of tower cranes and construction machinery will reduce the visual amenity and integrity of the site.</p>	<p>All machinery should be confined within the designated storage areas and site boundary.</p> <p>Optimising the timeframes for the various works to be conducted on site is also suggested to reduce the inconveniences caused during the construction phase.</p>
	<p><b>Major Adverse</b></p> <p>Rural land will be permanently converted and replaced by an industrial facility that will not align with the surrounding landscape.</p>	<p>Landscaping should be encouraged.</p>

FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
Ecology	<p><b>Moderate Adverse</b></p> <p>The construction phase is likely to produce adverse impacts on surrounding Natura 2000 sites. This may include the settlement of dust as well as the generation of noise from construction machinery.</p> <p>The interventions will not lead to the uprooting or obliteration of any ecologically sensitive habitats or species on site.</p>	The ENVIRONMENTAL MANAGEMENT CONSTRUCTION SITE REGULATIONS OF 2007 (S.L. 435.79) should be enforced and implemented throughout the construction phase.
	<p><b>Major Beneficial</b></p> <p>The discharge of untreated wastewater into sea is less likely to take place with the proposed upgrade. By implementing more stringent concentration thresholds for the quality parameters characterizing the treated effluent, the marine Natura 2000 site is likely to experience improved health and resilience.</p>	N/A.
Agriculture	<p><b>Major Adverse</b></p> <p>The area which will host the WWTP extension overlaps with agricultural land.</p>	Relocation of soil in compliance with applicable legislation.

FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
Archaeology and Cultural Assets	<b>Negligible</b>  The site is not located within areas of archaeological importance.	Excavation works shall be monitored by a competent archaeologist.
Geology & Geomorphology	<b>Minor Adverse</b>  Excavation works may alter the geology, geomorphology and palaeontology of the area and will generate excavated material.	Reuse of excavated material is strongly recommended. Geotechnical testing may be necessary to ascertain that excavation at the proposed depths is viable.
Hydrology & Hydrogeology	<b>Moderate Adverse</b>  The site lies outside the groundwater protection zone. Discharges from the construction site may lead to significant impacts to the nearby source of groundwater.  Excavation depths may affect the status of the groundwater body.	The contractor and site operator should install water containment measures and wheel washing practices to prevent discharges from the site/building at all times. Further hydrological studies and discussions with the competent authority may be necessary to ensure appropriate site mitigation measures.  Dewatering techniques may be required while monitoring of the status of the groundwater body shall be implemented.

FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
	<b>Minor Beneficial</b>  The discharge of untreated wastewater into seawater is less likely to happen with the proposed upgrade. By implementing more stringent concentration thresholds for the quality parameters characterizing the treated effluent, the seawater quality is likely to improve.	N/A.
Air Quality	<b>Moderate Adverse</b>  The construction effects of the planned Scheme on air quality are expected to have a moderately adverse impact, primarily attributed to the substantial volume of material to be excavated and the nature of the construction activities.  The increased treatment capacity will likely generate increased emissions to the atmosphere.	The ENVIRONMENTAL MANAGEMENT CONSTRUCTION SITE REGULATIONS of 2007 (S.L. 435.79) should be enforced and implemented throughout the construction phase to minimise the dispersal of dust into the surrounding environment. For example, all stockpiles (e.g. soil, rock) should be kept covered by a heavy-duty sheet when not in use.  A new odour abatement system will also be installed at the inlet pumping station. Emission points will be equipped with biological filters for air treatment.
Noise	<b>Moderate Adverse</b>  During the construction phase of the Scheme, additional noise will be generated which may disturb the nearby employees.	The ENVIRONMENTAL MANAGEMENT CONSTRUCTION SITE REGULATIONS of 2007 (S.L. 435.79) should be implemented to minimise the disturbance to locals in line with S.L. 435.79. Specific measures include restricting working hours to



FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
		daylight hours and switching off machinery when not in use.
	<b>Moderate Adverse</b>  The operational phase of the Scheme is likely to result in an increase in noise levels in the area.	The applicant should carry out a detailed noise mitigation study to ensure that the noise generated by the proposed development will not impact the surrounding noise sensitive receptors.
Waste Management	<b>Moderate Adverse</b>  It is expected that the excavation work will generate excavated and demolition material. The waste will be stored within the site, until it transported to an appropriate, registered waste management facility.	The ENVIRONMENTAL MANAGEMENT CONSTRUCTION SITE REGULATIONS of 2007 (S.L. 435.79) should be implemented to ensure that waste is stored and managed on site in an appropriate manner before being transported to a registered waste disposal facility.  Where possible any waste material should be reused on site or elsewhere to limit the volume of waste that need to be disposed of.
	<b>Moderate Adverse</b>  It is estimated that the operation of a WWTP will generate additional sludge.	The 3 Rs (Reduce, Reuse and Recycle) will apply to all recyclable material.  Unrecycled waste will be disposed of accordingly in authorised landfills or waste disposal facilities.

FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
	<b>Major Beneficial</b>  The proposed upgrade is intended to reduce the likelihood of discharges of untreated wastewater into the seawater environment.	N/A.
Social Impacts	<b>Minor Adverse</b>  During the construction phase of the Scheme, the use of heavy machinery will generate noise and dust which will cause a nuisance to the neighbouring farmers.	The ENVIRONMENTAL MANAGEMENT CONSTRUCTION SITE REGULATIONS OF 2007 (S.L. 435.79) should be implemented to minimise the disturbance to local residents and businesses. A traffic plan for the area should be developed to minimize the traffic impacts on the roads surrounding the site.  The applicant should also regularly consult local council and residents to identify and rectify any causes of concern.
	<b>Negligible</b> While in operation, the upgraded WWTP should not lead to a significant rise in the number of vehicles in the vicinity, posing a potential inconvenience to neighbouring farmers.	No further measures are considered necessary.