AIS ENVIRONMENT

Project Description Statement for the upgrade of Ċumnija Wastewater Treatment Plant, Malta North

As per ERA requirements for S.L.549.46

Report

AIS ENVIRONMENT

PROJECT DESCRIPTION STATEMENT

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AIS Environment Ltd,
AIS House, 18, St. John Street,
Fgura, FGR 1447

+356 21803374
www.aisenvironment.com
info@ais.com.mt

VAT No: MT 1457-1625
Reg No: C18445

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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 Ċumnija Wastewater Treatment Plant using environmentally friendly measures"* at Mellieħa, Malta.

WSC (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 ERA 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 Ċumnija Wastewater Treatment Plant (WWTP) (Scheme) is located at the western end of the Għadira isthmus in an area known as iċ-Ċumnija, in the limits of Mellieħa (FIGURE 1). The existing facility lies in close proximity to the cliffs (FIGURE 2). During the past decade, a significant rise in the number of residents residing permanently or temporarily in the Malta North wastewater catchment area (St.Paul's Bay, Mġarr and Mellieħa) has been observed. This has resulted in a substantial increase in the generation of wastewater, which puts the existing WWTP under continuous pressure to cope with the rising influx of wastewater flow and to treat it effectively.

Figure 3 shows the site boundaries of the proposed area to host the upgrade of the plant next to Ċumnija WWTP.

FIGURE 1: THE SCHEME SITE IN MELLIEĦA WITHIN THE SPATIAL CONTEXT OF MALTA NORTH (SOURCE: GOOGLE EARTH)

FIGURE 2: THE EXISTING WASTE TREATMENT SITE AT IĊ-ĊUMNIJA, MELLIEĦA

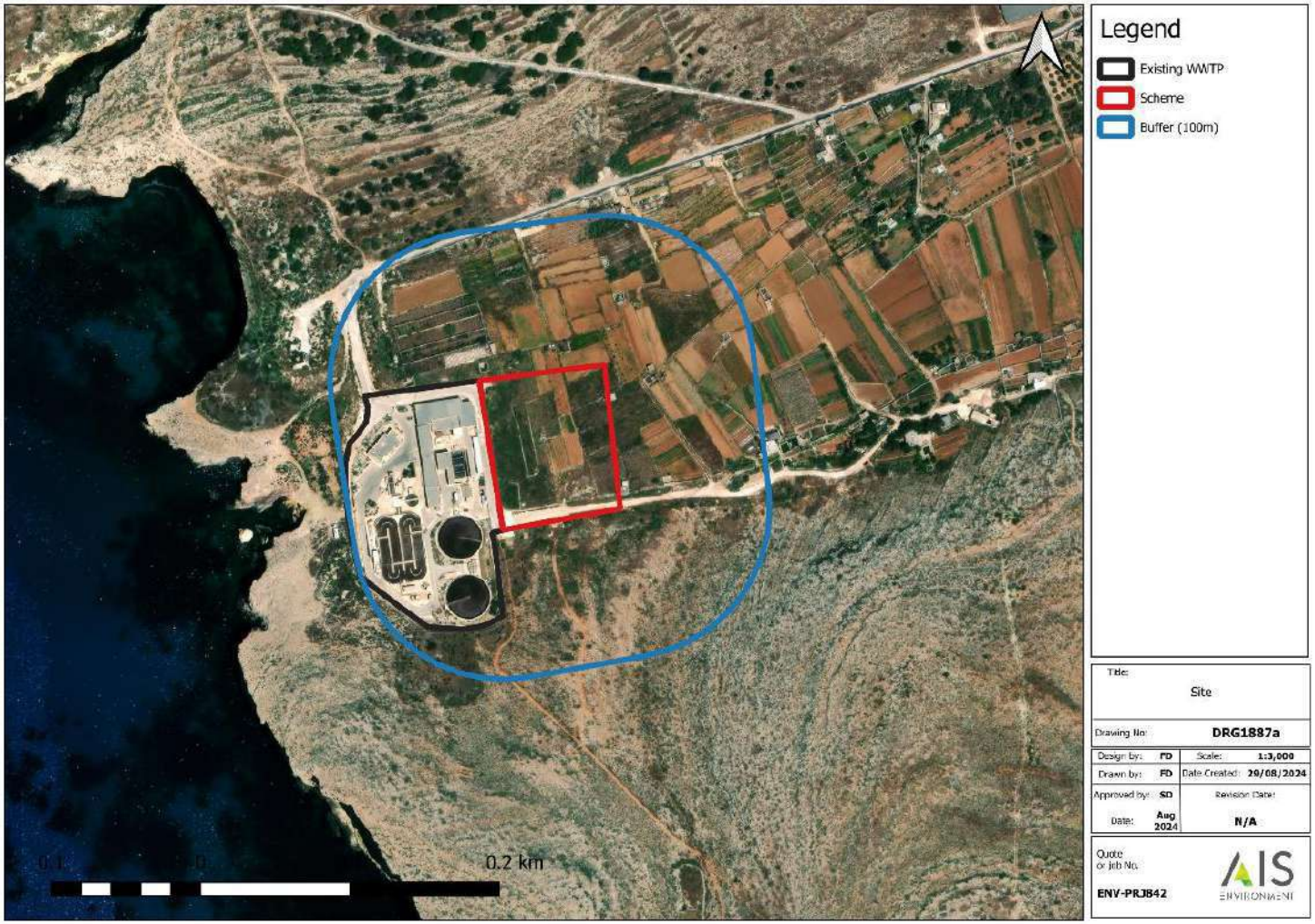

FIGURE 3: PROPOSED SCHEME SITE AND IMMEDIATE SURROUNDINGS

1.2 PROJECT OVERVIEW

The development in question encompasses a footprint of about 11,600m², with 6,500m² specifically designed for the construction of an additional treatment unit to cope with sewage treatment. The WWTP has been in operation since 2009 and currently serves a catchment population of 49,620 residents (census 2021). The current operational treatment rate of 6,700m³/day has been surpassed on several occasions, especially during summer seasons which coincides with the peak of tourism in Malta.

Water Services Corporation (WSC) shall be contracting the design, installation testing and commissioning of the upgrade of the Ċumnija WWTP to cope with an average flow capacity of 20,000m³/day. The forecasted future flows, loads and concentrations of the wastewater that has to be treated at the upgraded treatment plant are shown in Table 1.

TABLE 1: FORECASTED WWTP INFLOWS, LOADS AND CONCENTRATIONS

VOLUME			ĊUMNIJA WWTP RAW WASTEWATER - 2040		
Minimum (m³/d)			5,519		
10%ile (m³/d)			17,054		
DWF 20%ile (m³/d)			17,640		
Average Flow (m³/d)			20,000		
Maximum Flow Pre-Inlet Works			52,919		
Maximum Screened Flow to			30,198		
POLLUTANT (AVERAGE)	AVERAGE		80%ILE (DAILY)		95%ILE
	[mg/l]	[kg/d]	[mg/l]	[kg/d]	[mg/l]
COD – Chemical Oxygen	840.0	16,800	1,009	20,277	2,086
BOD5- Biological Oxygen	293.0	5,860	376	7,261	407
TSS – Total Suspended Solids	381.0	7,619	388	8,721	870
TN – Total Nitrogen	71.0	1,424	82	1,673	99
NH_4-N – Ammonia	70.0	1,40	81	1,642	94.24
TP – Total Phosphorus	8.0	159	9.4	195	12.03
Chloride	762.0	15,247	950	18,859	997
Conductivity (µs/cm)	3,677.0	NA	5,054	NA	4,798
pH range	6.4 – 8.0				

1.3 SCHEME JUSTIFICATION

1.3.1 Aim

The aim of the development in question is to upgrade the Ċumnija WWTP in Mellieha to meet current and future wastewater treatment demands. The proposed upgrade of Ċumnija WWTP has been designed to meet future operational demands, until 2040.

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 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 Wastewater 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 Ċumnija 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 NORTH WEST LOCAL PLAN (2006)

The project site falls within the region covered by the NORTH WEST LOCAL PLAN (NWLP, 2006). Polices of the NWLP which are most relevant to the proposed development are summarised in Table 2.

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

POLICY CODE	POLICY NAME	DESCRIPTION AND RELEVANCE
NWAG-1	Areas 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.

POLICY CODE	POLICY NAME	DESCRIPTION AND RELEVANCE
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.
NWLA 2	Area of High Landscape Value	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 at Buskett, Chadwick Lakes, Coastal Cliffs, Mdina, or Victoria Lines.
SAC	Special Area of Conservation (Natura 2000 Sites)	Protected site designated under the EU's Natura 2000 network to conserve natural habitats and species of European interest, ensuring their long-term survival and promoting sustainable land use.

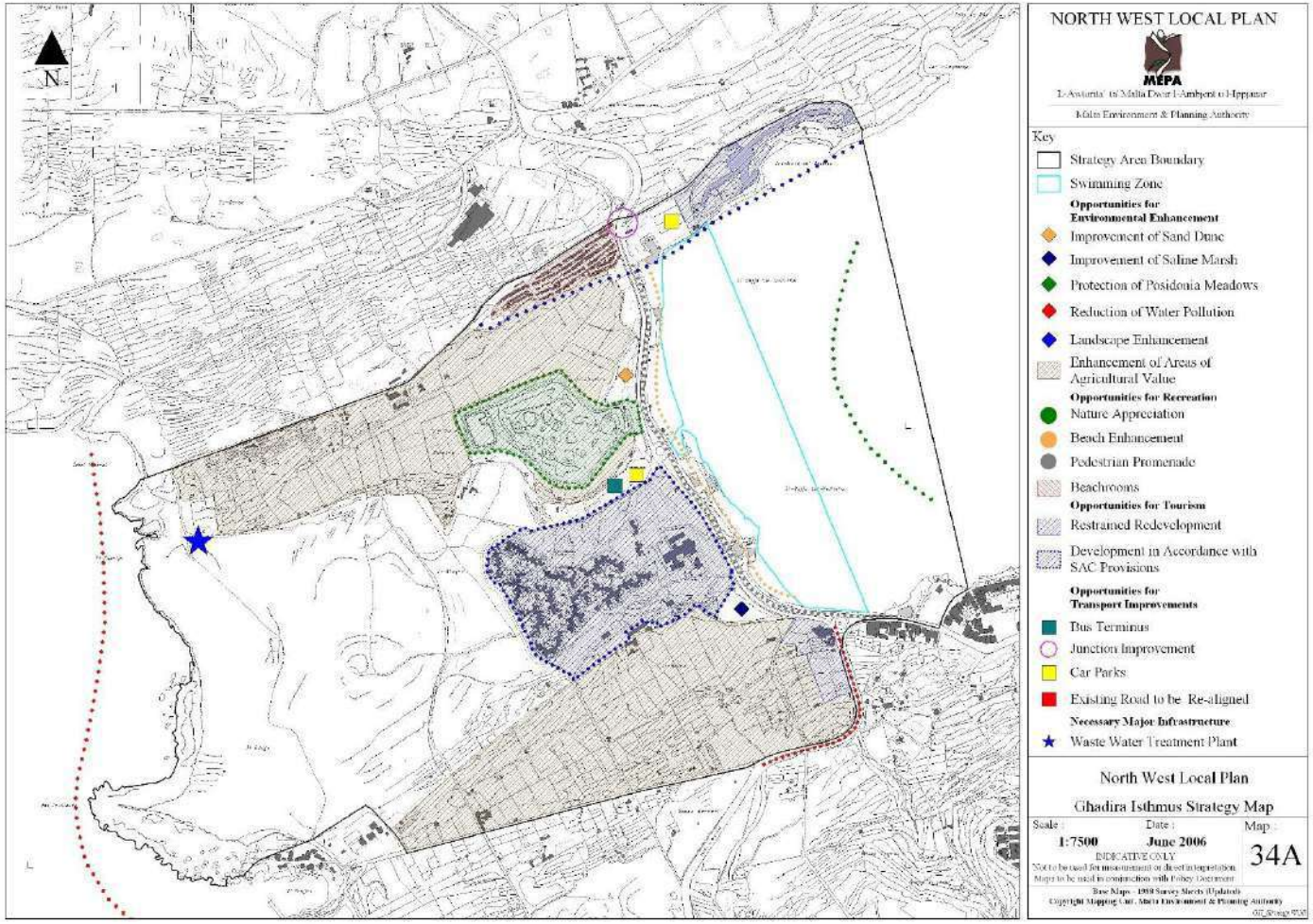

FIGURE 4: MELLIEĦA, NORTH WEST LOCAL PLAN, SCHEME SITE MARKED WITH A LARGE BLUE STAR (SOURCE: NWLP, 2006)

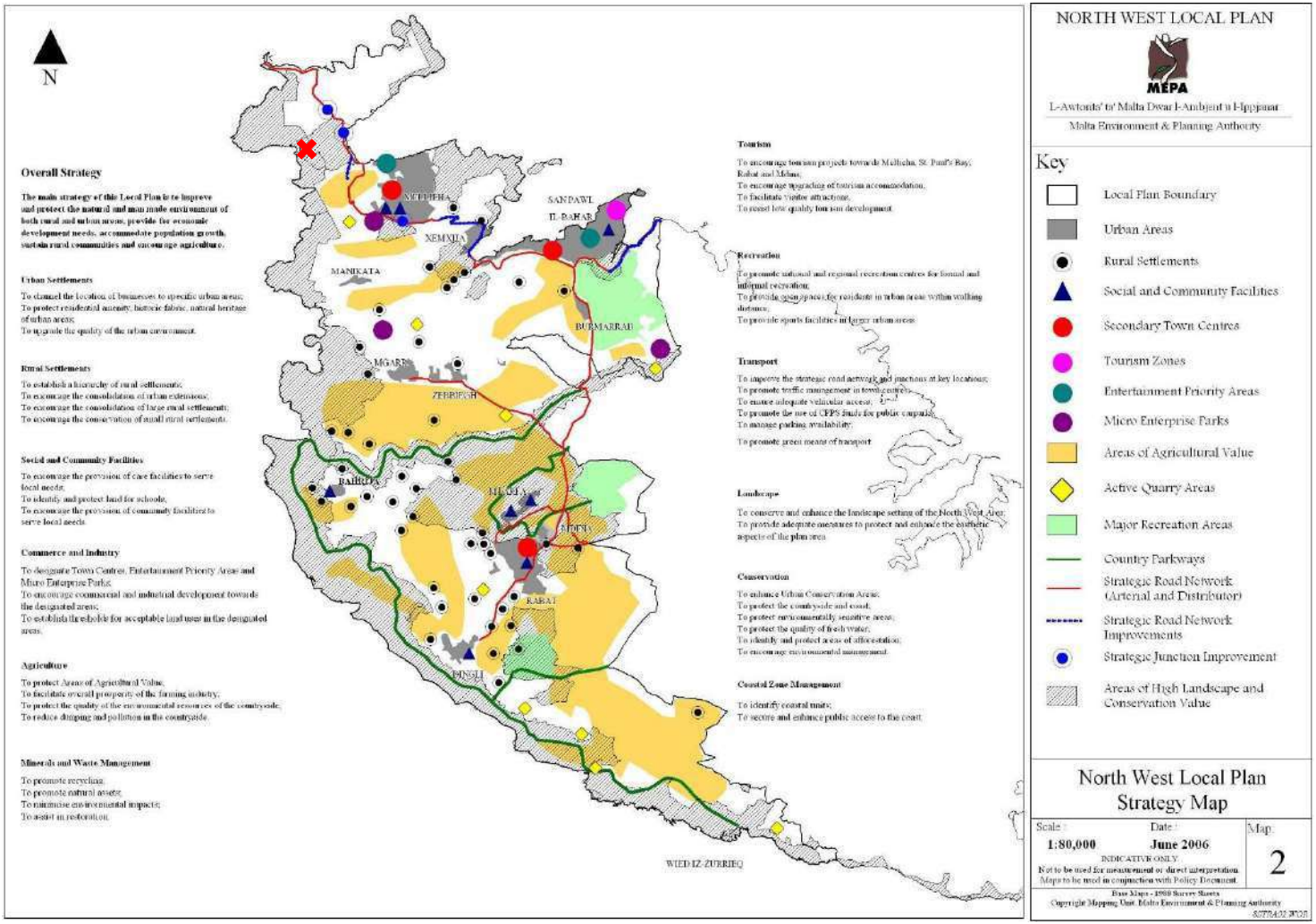

FIGURE 5: STRATEGY MAP, SCHEME SITE MARKED WITH A RED (X) CROSS (SOURCE: NWLP, 2006)

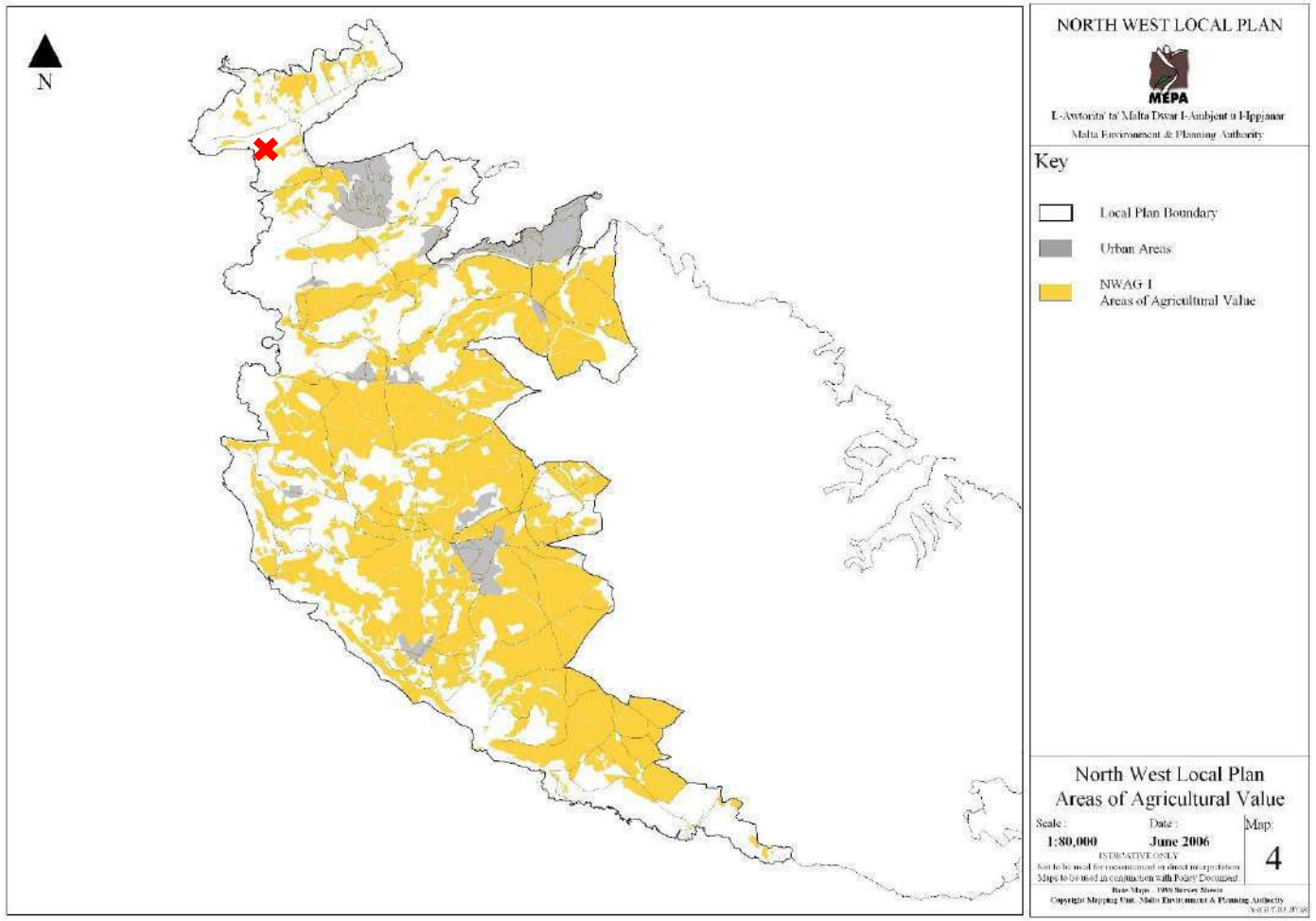

FIGURE 6: AREAS OF AGRICULTURAL VALUE, SCHEME SITE MARKED WITH A RED (X) CROSS (NWLP, 2006)

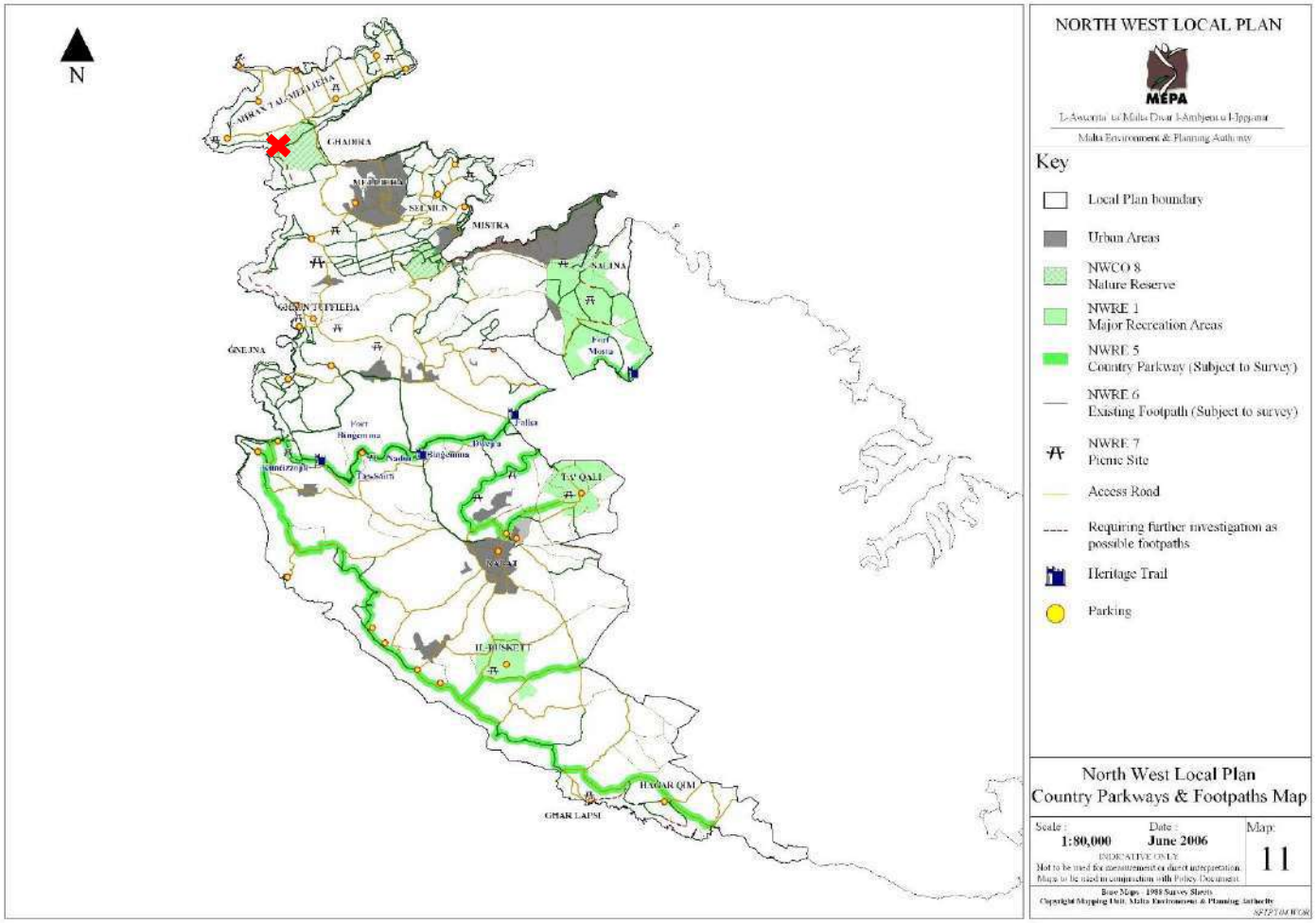

FIGURE 7: COUNTRY PARKWAYS & FOOTPATHS MAP, SCHEME SITE MARKED WITH A RED (X) CROSS (NWLP, 2006)

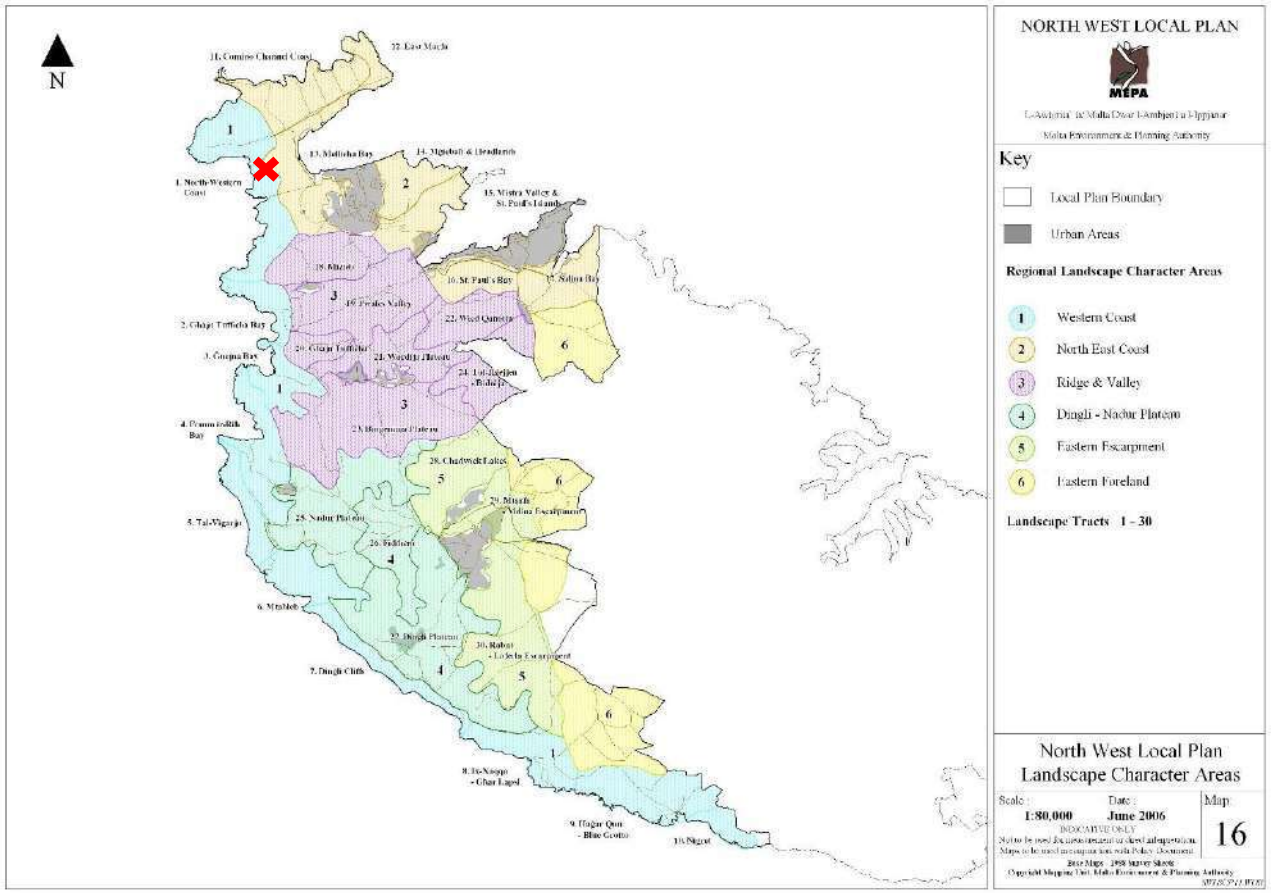

FIGURE 8: LANDSCAPE CHARACTER AREAS MAP, SCHEME SITE MARKED WITH A RED (X) CROSS (NWLP, 2006)

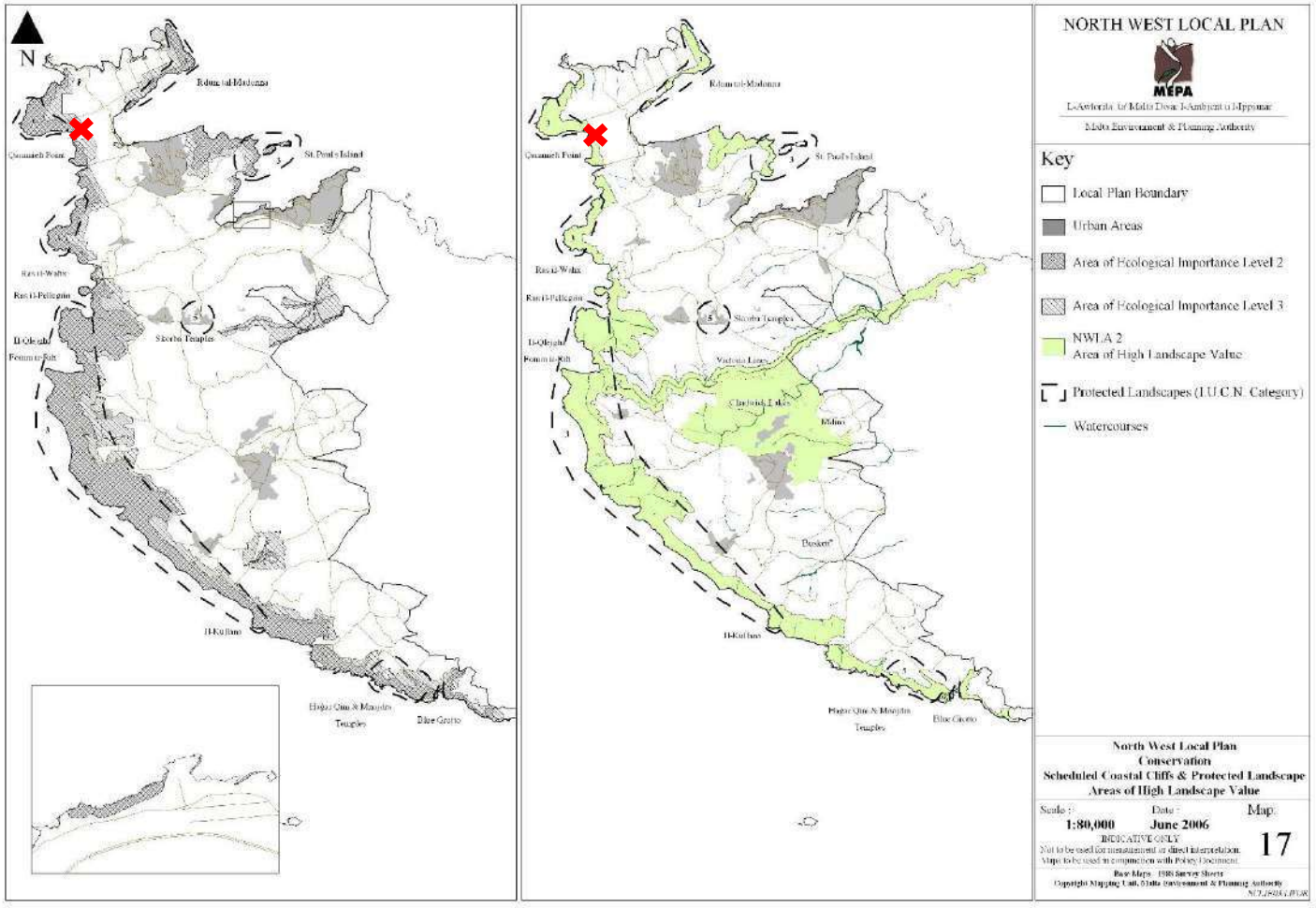

FIGURE 9: SCHEDULED COASTAL CLIFFS & PROTECTED LANDSCAPE AREAS OF HIGH LANDSCAPE VALUE, SCHEME SITE MARKED WITH A RED (X) CROSS (NWLP, 2006)

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	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: *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* *Facilitating the provision of health centres and homes for the elderly at a regional level*
Environment Thematic Objective 7	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: *Controlling demolition of buildings and structures and excavation of sites*

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 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

LEGISLATION	DESCRIPTION
	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 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
BOD_5	mg/l	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 13 showcases the land uses present within the Scheme site and in the surrounding 100m buffer zone.

The project site, covering a substantial area of about 6,500m^2, is located at the Western end of the Għadira isthmus in an area known as iċ-Ċumnija, in the limits of Mellieħa, very close to the shoreline.

The current condition of the area next to the existing WWTP, where the proposed plant upgrade will take place, is characterized by agricultural activities divided into parcels. Outside the site boundaries and more specifically at the South of the proposed development, the land use includes the presence of abandoned rural area that holds visual and landscape value.

This intricate blend of land uses 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 surrounding area.

FIGURE 10: ACCESS TO ĊUMNIJA WASTEWATER TREATMENT PLANT (SOURCE: GOOGLE MAPS, 2024)

FIGURE 11: AGRICULTURAL AREA SURROUNDING THE SCHEME (SOURCE: GOOGLE MAPS, 2024)

FIGURE 12: RURAL AREA LOCATED AT THE SOUTH OF THE SCHEME (SOURCE: GOOGLE MAPS, 2024)

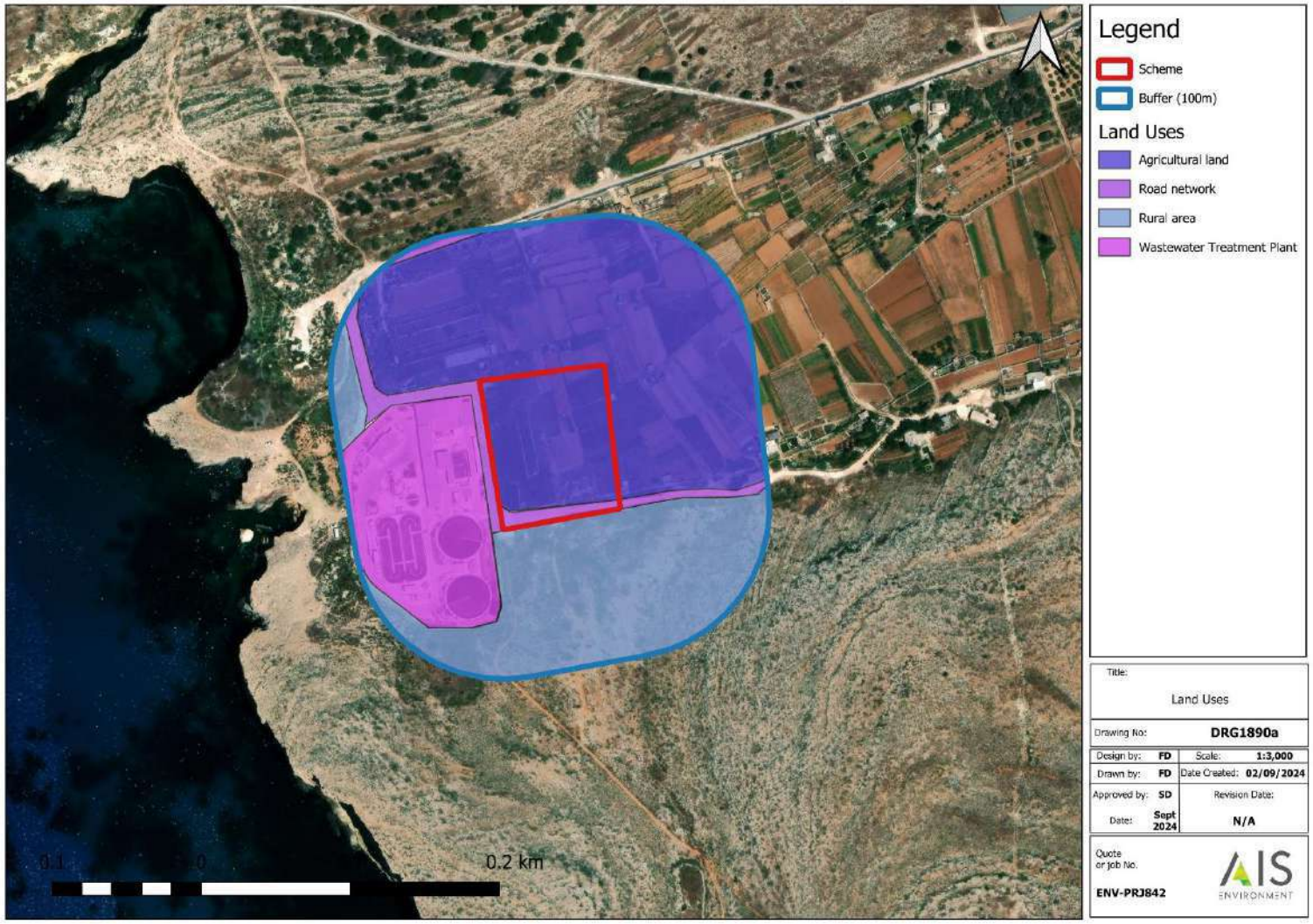

FIGURE 13: LAND USE IN A 100M BUFFER ZONE AROUND THE SCHEME SITE

2.2 GEOLOGY AND SOIL

The Ċumnija WWTP is located in Malta North where a series of geological faults were responsible of generating a horst and graben structure. Valleys take place in these geological settings filled with quaternary material deposited through the erosion of limestone and clay.

The Scheme site lie on the Upper Coralline Limestone (UCL) geological formation capped by soil, as illustrated in Figure 14. A geological fault crosses the site footprint.

The UCL, the most recent geological formation outcropping in Malta, is characterized by highly fissured and fractured conditions associated with a porous matrix. This limestone is a porous massive formation which outcrops over the Western and Northern zones of the Maltese Archipelago and forms the highest parts of the topography. Well-developed karst phenomena can be found with dolines, sinkholes, weathered and corroded on outcrops and fissures, dry valleys and dissolution figures. Beneath the UCL, the Blue Clay layer takes place, which is an aquitard sustaining groundwater body.

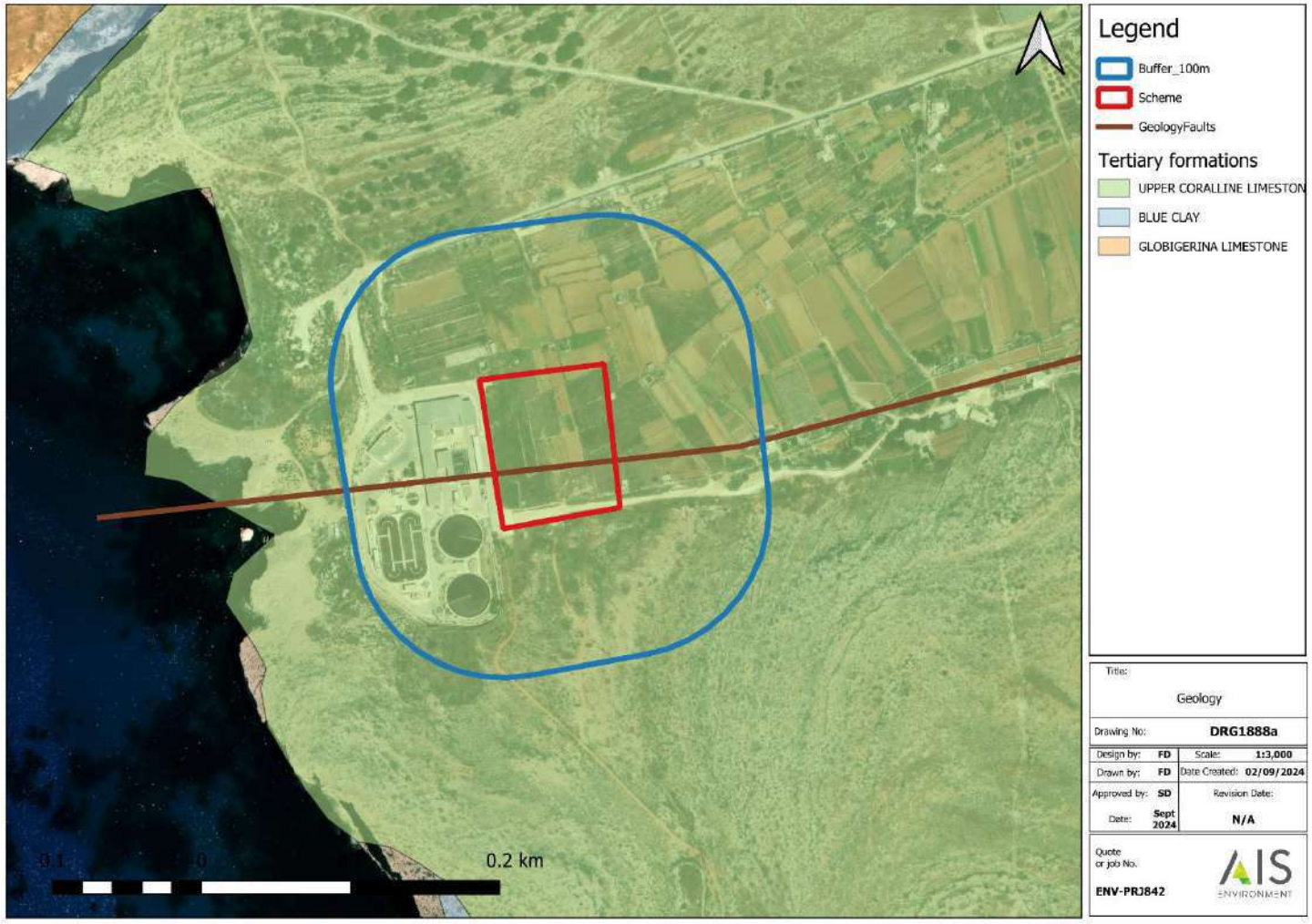

FIGURE 14: GEOLOGICAL MAP OF THE SCHEME SITE AND BUFFER ZONE

The entire site footprint and immediate 100m buffer zone are also composed of terra rossa soils, specifically Xagħra and Tas-Siġra soil series (Figure 15). Terra rossa soils, particularly the Xagħra and Tas-Siġra soil series found in Malta, are characterized by their reddish colour and clayey texture, resulting from the weathering of limestone and the accumulation of iron oxides.

The Xagħra series is typically associated with the area around Xagħra on the island of Gozo. This soil series is noted for its fine-textured, clay-rich composition, which is often calcitic and contains limestone rubble. The soil profile usually exhibits multiple horizons, indicating periods of erosion and deposition, and it supports a variety of xerophytic vegetation due to its relatively low organic matter content and high calcium carbonate levels.

Tas-Siġra series is another important terra rossa soil type in Malta, found predominantly in areas with similar geological conditions. Like the Xaghra series, Tas-Siġra soils are also clayey and rich in calcium carbonate, but they may exhibit slight variations in their mineral composition and structure. These soils are generally less developed, reflecting the influence of the Mediterranean climate, which limits organic matter accumulation and soil horizon development.

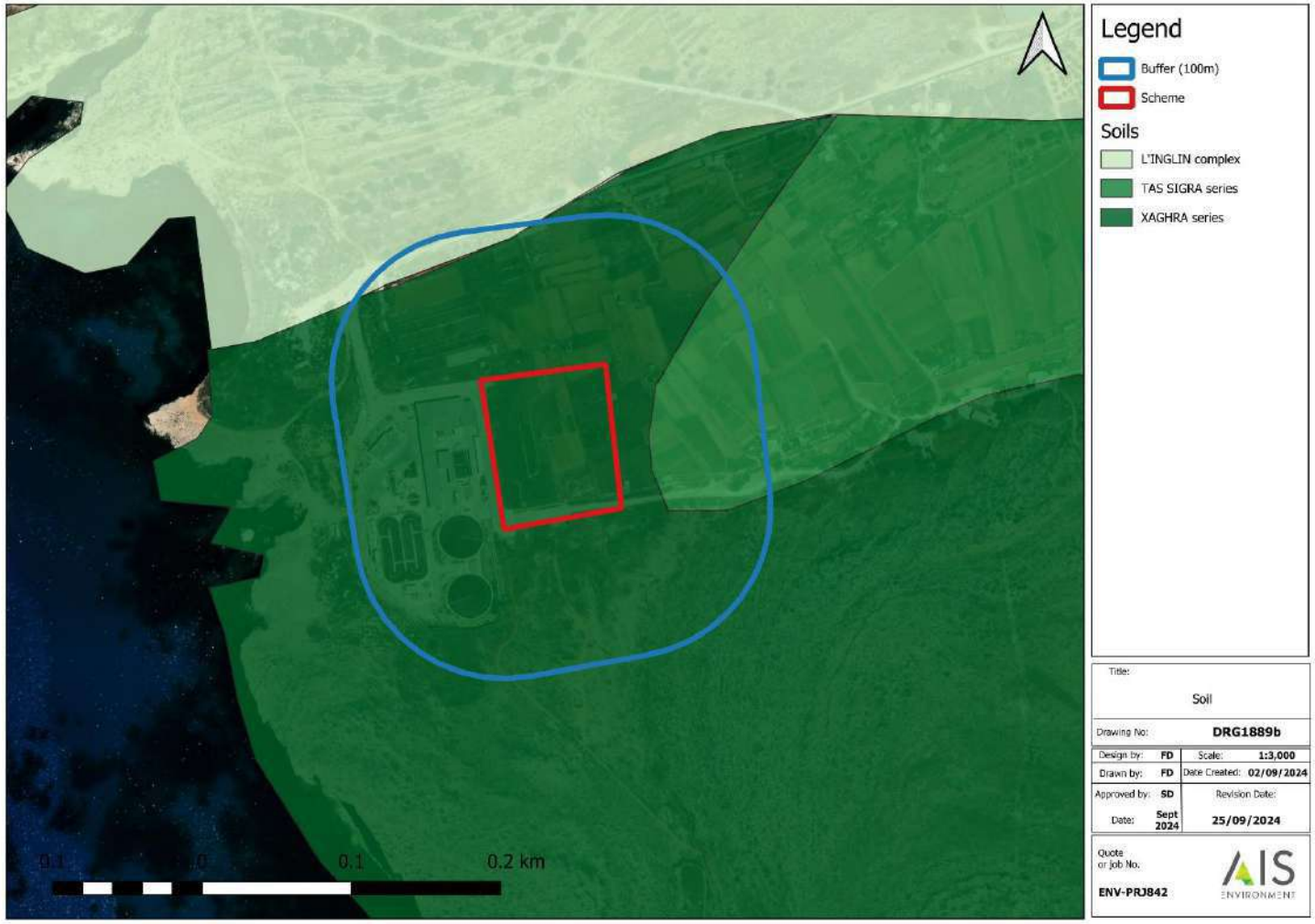

FIGURE 15: SOIL MAP OF THE PROPOSED SCHEME SITE AND SURROUNDING AREA

2.3 HYDROLOGY

The Scheme site lies outside the groundwater safeguard zone. It is overlying the Mellieħa Coastal groundwater body (MT009, Figure 16). MT009 groundwater body encompasses an aerial extension of about 2.9km².

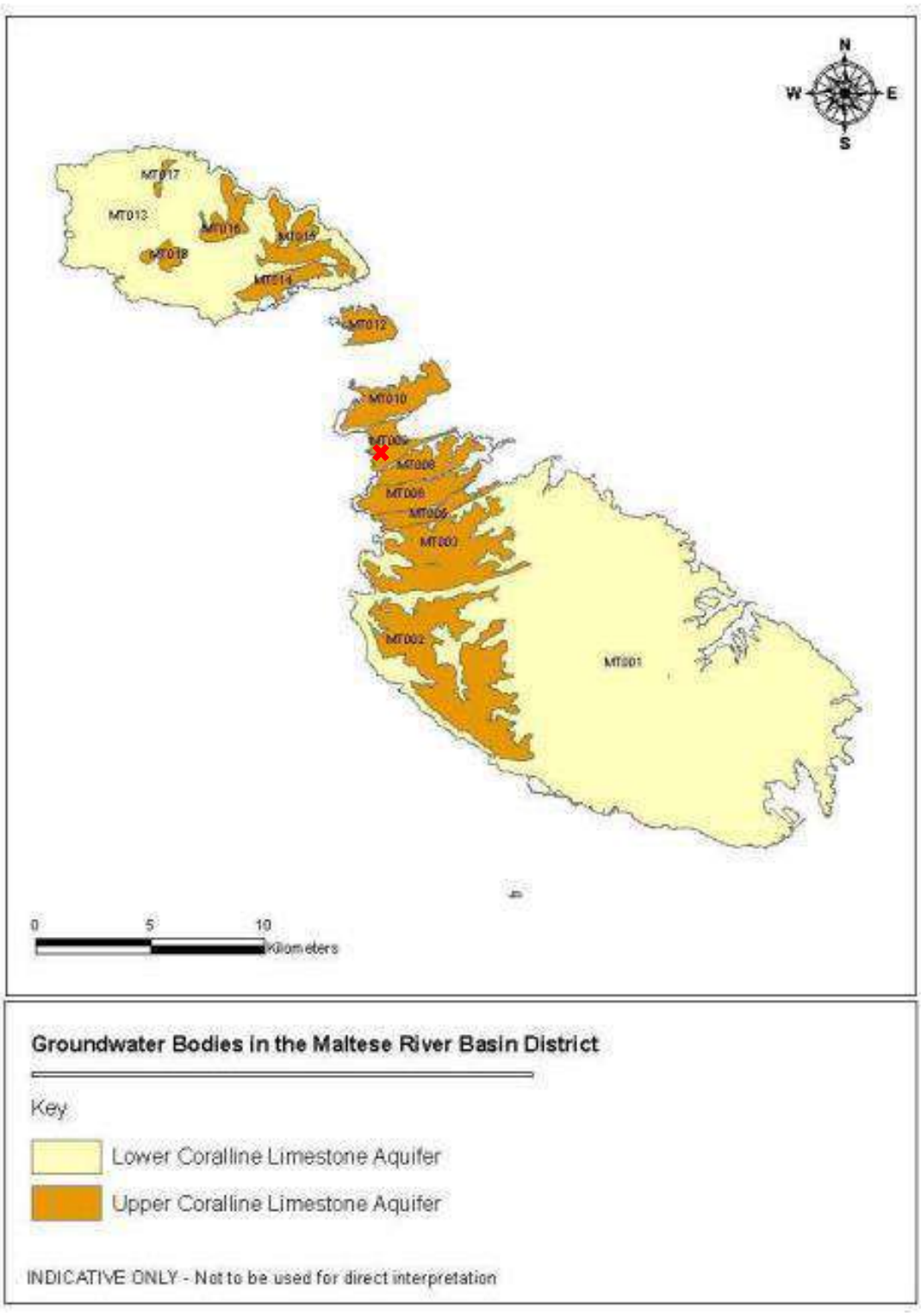

FIGURE 16: GROUNDWATER BODIES IN THE MALTESE RIVER BASIN DISTRICT

The Scheme is located at an elevation of about 7-9m 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 likely to intercept the underlying groundwater body. Due to the vicinity of the Scheme to the sea, the groundwater qualitative status is highly likely to be brackish if a hydraulic connection exists between the aquifer and seawater.

The Mellieħa coastal groundwater body, as well as all the coastal aquifers in Malta, is more responsive to pressures than other aquifers and is susceptible to lateral saline intrusion. It is relatively small in size compared to other groundwater bodies.

In line with the European Water Framework Directive (WFD), the Mellieħa coastal groundwater body is classified with a good quantitative status. However, the extensive agricultural practices present in this area challenge the achievement of good qualitative status when considering nitrates and chlorides[1].

2.4 ECOLOGY

The Scheme partially overlaps with two Natura 2000 sites (Figure 17). Rdumijiet ta' Malta: Mir-Ramla taċ-Ċirkewwa sar-Ramla tal-Mixquqa (MT0000024) at the South encompassing a significant stretch of coastal and marine habitats; L-Inħawi tal-Għadira (MT0000015) at the North playing a crucial role in providing refuge for migratory birds and maintaining ecological balance within Malta's unique Mediterranean environment.

Outside the 100m buffer area of the Scheme, treated wastewater is discharged into the sea at Żona fil-Baħar madwar Għawdex (MT0000112) Natura 2000 site, 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.

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

FIGURE 17: NATURA 2000 SITES SURROUNDING THE SCHEME MARKED WITH A RED (X) CROSS (SOURCE: NATURA 2000 VIEWER)

TABLE 6: NATURA 2000 SITES SURROUNDING THE SCHEME

CODE	SITE	HABITAT	DESCRIPTION
MT0000024	Rdumijiet ta' Malta: Mir-Ramla taċ-Ċirkewwa sar-Ramla tal-Mixquqa	West Mediterranean clifftop phryganas (5410)	This occupies 103Ha being the second most widespread habitat. It is found in karstic coralline limestone plateaux. The conservation status and structure of three of the five communities was found to be good, whilst two of the communities had an average or poor structure and conservation status.
MT0000015	L-Inħawi tal-Għadira	No habitat present	The nearby garigue habitat is classified as Habitat 5410
MT0000112	Żona fil-Baħar madwar Għawdex	Reefs (1170) and submerged or partially submerged sea caves (8330)	Reefs are underwater ecosystems formed by coral polyps, providing essential habitats for diverse marine life and playing a crucial role in coastal protection. Sea caves are coastal formations created by wave erosion,

CODE	SITE	HABITAT	DESCRIPTION
			serving as habitats for marine species and hosting diverse life on their walls.

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 next to any scheduled or known cultural heritage features.

2.6 SERVICES AVAILABLE

2.6.1 Energy and Water

Electricity and water supply mains are already connected to the operational WWTP. These services would need to be extended and upgraded to accommodate the new wastewater treatment area.

2.6.2 Surface Water Run-Off and Storm Water Drainage

An existing pipeline network collects surface and storm water run-off originating from the existing plant. This water stream is conveyed and discharged to the sea via the existing shoreline discharge point. This system shall be extended to cover the foorptint of the new Scheme.

3 THE SCHEME

3.1 SIZE, SCALE AND DESIGN

The proposed facility spans a footprint of about 6,500m². The new facility is proposed to be located adjacent and to the East of the existing plant (Figure 2). The new facility shall be equipped with a Membrane Bioreactor (MBR) treatment process to optimize pollutant abatement in line with the increased treatment flow rates (from 6,700 to 20,000m³/day).

The whole treatment process spanning from the arrival of raw wastewater up to the production of reclaimed 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 18 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.

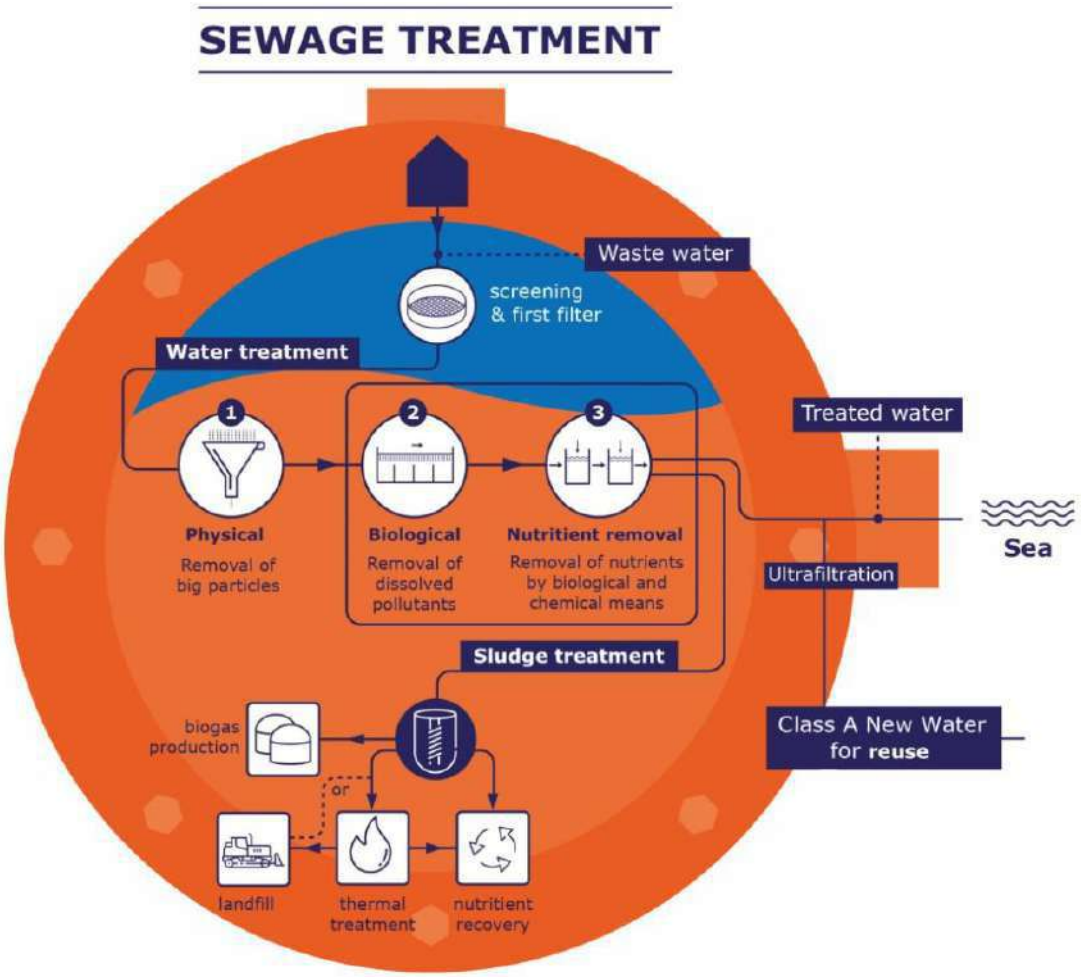

FIGURE 18: CONCEPTUAL DIAGRAM REPRESENTING THE WHOLE WASTEWATER TREATMENT PROCESS (SOURCE: WSC)

The proposed treatment process is summarized in the future plant Block Flow Diagram (BFD) in Figure 19. The treatment processes would take place within the newly constructed treatment facilities which shall be hydraulically connected to the existing treatment units. These include the anoxic chamber and the oxidation ditches, as illustrated in Figure 20.

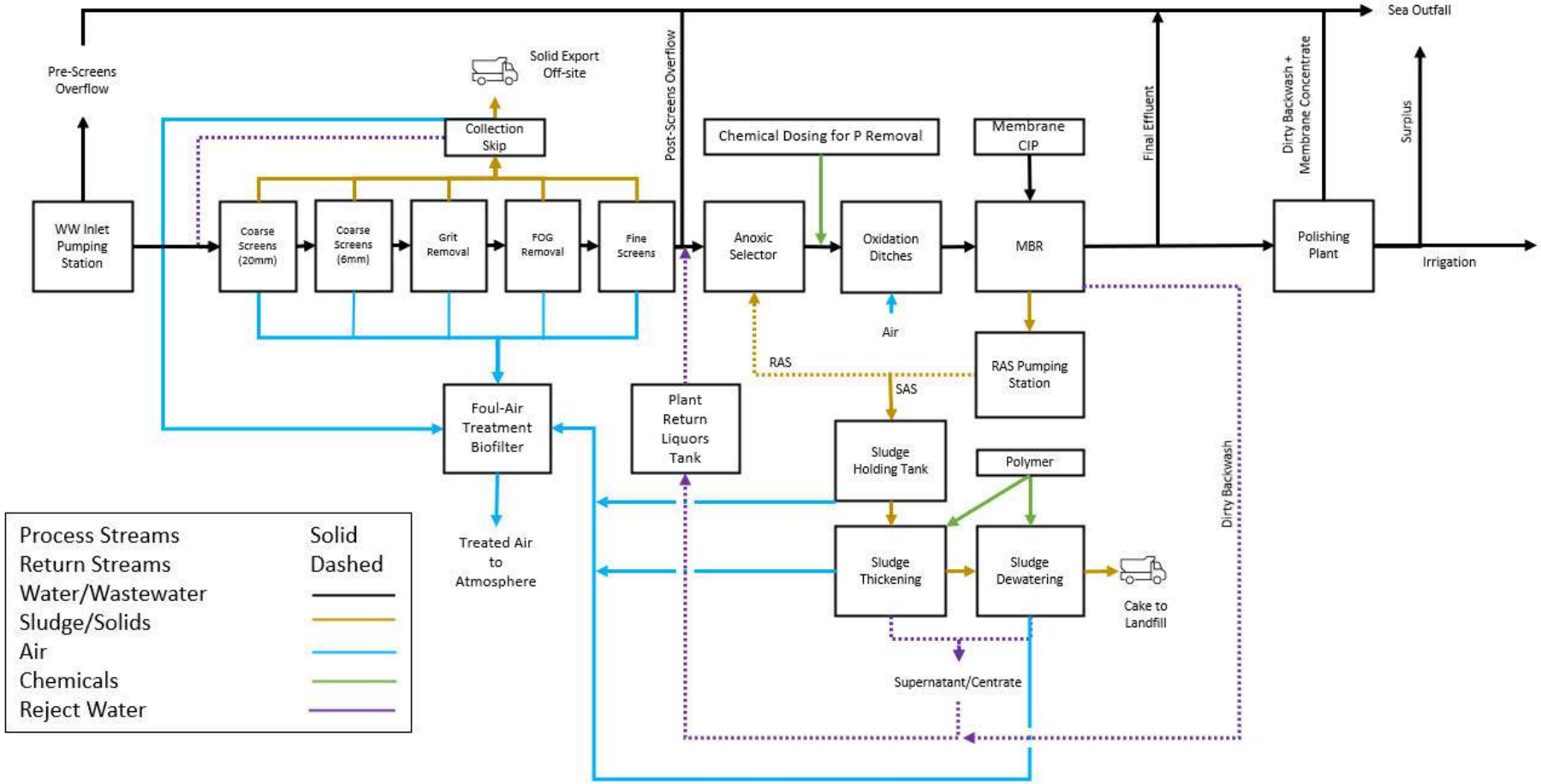

FIGURE 19: FUTURE PLANT BLOCK FLOW DIAGRAM (BFD) OF ĊUMNIJA WWTP

FIGURE 20: PROPOSED LAYOUT OF ĊUMNIJA 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 a few months after the Full Development Permit is issued. The construction process is expected to span approximately 140 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 – 120m³
- Steel – 48,500kg
- Fill material – 131m³
- Stone masonry – 1,700m³

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

17,000m³ of waste were 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 of the facility 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 the site will provided through a new road which shall be formed along the northern and eastern perimeters of the new plant to replace the existing one, presently located to the east of the existing plant, which shall be taken up by this project. This new road is intended to be used during both construction and operational phases of the plant.

3.2.8 Parking Arrangements

Workers and project management personnel will park all machinery and vehicles associated with the construction phase in designated spots within the Scheme site and immediate surroundings to minimise inconveniences.

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 Ċumnija WWTP is forecasted to be around eight people on a day-shift basis. The number of employees required to run the upgraded plant is expected to increase by two personnel 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 Malta North. 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 plant, 0.42 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.

As part of an ongoing but separate project, WSC is investing in renewable solar energy to render its operations more sustainable. Its latest initiative projected to achieve a peak capacity of 3.7 MW peak. This project is financed through a Green Bond issued by WSC in 2023.

3.3.5 Water

The existing facility is already connected to the public mains water supply. Some extensions to the new facility may be necessary.

3.3.6 Waste

The plant is expected to produce approximately 8 to 16m³/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 12,000 to 20,000m³. 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 8,000m³/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

A new road shall be formed along the northern and eastern perimeters of the new plant to replace the existing one, presently located to the east of the existing plant, which shall be taken up by this project.

3.3.8 Parking Arrangements

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

3.3.9 Trip Generation

An increased trip generation is anticipated to occur from and to the site. One or two hook loader trucks 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.

Since the number of employees required to run the plant is expected to increase by only two personnel, no disruptions to traffic conditions are anticipated at this stage.

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	**Major Adverse** The project is expected to take up agricultural land, and generate dust and noise during the construction phase. Nevertheless, during operation some inconveniences are expected on the surrounding land uses caused by the take up of land, noise generation, air contamination, etc.	Dust mitigation measures during construction works will be necessary to reduce environmental impacts on the surrounding land uses. 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.
Visual	**Moderate Adverse** 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.	All machinery should be confined within the designated storage areas and site boundary. Optimising the timeframes for the various works to be conducted on site is also suggested to reduce the inconveniences caused during the construction phase.
	Major Adverse Rural land will be permanently converted and replaced by an industrial facility that will not align with the surrounding landscape.	Landscaping should be encouraged.

FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
Ecology	**Moderate Adverse** 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. The interventions will not lead to the uprooting or obliteration of any ecologically sensitive habitats or species on site.	The ENVIRONMENTAL MANAGEMENT CONSTRUCTION SITE REGULATIONS OF 2007 (S.L. 435.79) should be enforced and implemented throughout the construction phase.
	Major Beneficial 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.	N/A.
Agriculture	**Major Adverse** The area which will host the WWTP extension overlaps with agricultural land.	Relocation of soil in compliance with applicable legislation.

FEATURE POTENTIALLY IMPACTED	DESCRIPTION OF POTENTIAL IMPACT	MITIGATION MEASURES
Archaeology and Cultural Assets	**Negligible** The site is not located within areas of archaeological importance.	Excavation works shall be monitored by a competent archaeologist.
Geology & Geomorphology	**Minor Adverse** 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	**Moderate Adverse** 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
	Minor Beneficial 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	**Moderate Adverse** 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	**Moderate Adverse** 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.
	Moderate Adverse 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	**Moderate Adverse** 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.
	Moderate Adverse 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
	Major Beneficial The proposed upgrade is intended to reduce the likelihood of discharges of untreated wastewater into the seawater environment.	N/A.
Social Impacts	**Minor Adverse** 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 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.
	Negligible 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.	N/A.