

CONSTRUCTION OF SEWAGE TREATMENT PLANT AT RAS IL-HOBZ, GOZO ENVIRONMENTAL IMPACT STATEMENT



Ministry for Resources and Infrastructure



NON-TECHNICAL SUMMARY OCTOBER 2002



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NON-TECHNICAL SUMMARY

1.0 INTRODUCTION

In July 1998 AIS Environmental Limited (AIS), in association with SLR Consulting Limited of the UK (SLR) were appointed by the Ministry for the Environment to undertake an Environmental Impact Assessment (EIA) in connection with the construction of sewage treatment plants at Malta North, Gozo and Malta South.

The Sewerage Master Plan for Malta and Gozo (prepared by COWIconsult in 1992) established that in order to comply with European Union law and with the requirements of international conventions there was a need to construct new sewage treatment plants.

This document provides a non-technical summary of the Environmental Impact Statement (EIS) for the proposed Sewage Treatment Plant to be constructed at Ras Il-Hobz on the southern coast of Gozo. This is the first of three Environmental Impact Statements to be submitted in relation to implementation of the Sewerage Master Plan. In due course Statements will be submitted for Malta North and Malta South.

2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

Currently almost the entire population of the Maltese Islands is served by the existing sewerage system, which leads to sea outfalls at two locations in Malta and three locations in Gozo. None of the sewage discharged to sea undergoes treatment, although around 10% of the total sewage production undergoes treatment at the Sant Antnin Treatment Plant, with the treated effluent used for irrigation and industrial purposes.

As a signatory of the 1976 Barcelona Convention Malta is obliged to establish sewage treatment for larger discharges. The requirements of European Community (EC) law is also relevant, particularly given the stated intention of the Government of Malta to seek membership of the European Union. As part of this process there is an identified need to implement the Sewerage Master Plan as a matter of priority.

The main outfall for most of the sewage arising on Gozo is located at Ras Il-Hobz. Improvements have been made to the outfall in recent years, although there remains a detectable impact on the marine environment. There are two further outfalls located on the northern coast of Gozo discharging minor quantities of sewage to the sea.

The general location of the proposed new sewage treatment plant at Ras Il-Hobz is shown in Figure 2 and the layout of the proposed plant is shown in Figure 3 of this Environmental Impact Statement. The location was selected since it was seen as offering the optimum technical solution, being at the end of the sewerage system for Gozo, thereby minimising the need for pumping and installation of new pipework. It was also considered that most of the

treated effluent could be reused during the summer months for irrigation of agricultural land in the vicinity of the proposed site.

The proposed plant will cover an area of 0.9 hectares of largely agricultural land, some 300 metres to the north of the coast at Ras Il-Hobz. An additional 0.3 hectares of land would be required during the construction phase of the project, which is expected to last for 24 months. The plant will comprise tanks (uncovered) and buildings, all located within a roughly rectangular compound contained by a masonry wall. All tanks and other process structures will be constructed into the ground so as to ensure that they do not protrude more than 1 metre above final levels. Buildings will be constructed in an architectural style to match other structures in the vicinity. The intention therefore, is to develop the plant in a manner which minimises any visual impact within the general locality and from more distant views. Where necessary additional planting will be provided to soften any impact and to blend the development into the surrounding landscape.

Access to the site, both during the construction phase of the development and for operational purposes, will be provided through upgrading of an existing track.

3.0 DESCRIPTION OF THE PROPOSED SITE

Ecology - Almost all the area within and around the proposed site comprises dry agricultural land. The majority of the crops grown consist of cereals, with a few fields being used to grow ornamental flowers. There is also one field with a small vineyard, with another planted with onions and peas. There are no protected areas in close proximity to the proposed site.

Agricultural Land Quality - The study area is predominantly agricultural land with a good soil cover, and a small proportion of non-productive wasteland used for bird-trapping. The natural topography is complex, with slopes in excess of 10°. In general, the fields are all well-contained within rubble walls. There are a few sparsely located trees on marginal land and as wind shelter at field boundaries. The soils within the area are of two main types.

Geology, Palaeontology and Geomorphology - The geology in the area comprises mostly Globigerina Limestone with a layer of Blue Clay Formation in the north. The Globigerina Limestone overlies the Lower Coralline Limestone Formation. There are also a number of fault systems affecting the general area around the site.

Landscape and Visual Setting - In landscape terms, the site is relatively exposed, and consists of a steep, terraced slope predominantly used for agriculture. The condition of the landscape is generally of a high scenic quality, with potentially high sensitivity to large scale, inappropriate development. Despite the open nature of the site and its coastal location, the visual influence of the site is relatively restricted.

Hydrology and Hydrogeology - The geological formation to the south of Ghajnsielem gives rise to two water bearing rock strata. Surface runoff in the area is expected to be higher than

the 6% average for Malta. The fields are well terraced and the majority have rubble boundary walls, and this tends to reduce surface runoff and soil erosion and enhances infiltration.

Archaeology and Cultural Heritage - It can be assumed that this area has supported continual human activity, although the site identified for construction of the proposed sewage treatment plant at Ras Il-Hobz, and its immediate environs, do not appear to preserve any cultural remains of any significance.

Land Use - The predominant land use within the site identified for development of the proposed sewage treatment plant, and the surrounding area, is agriculture.

Public Rights of Way - There are no public rights of way which traverse the site identified for the proposed sewage treatment plant. The site itself comprises agricultural land under private ownership, and the public therefore have no rights as such to gain access to the land.

Air Quality and Micro-Climate – Wind, rainfall and temperature data has been obtained for Luqa, on the Island of Malta, for the five-year period 1995 to 1999. Luqa is located approximately 25 km to the south-east of the proposed plant and this station is the nearest that has data appropriate for characterising the climate at the proposed development site.

Noise and Vibration - Noise monitoring locations utilised were agreed in discussion with the Planning Authority and are considered as being representative of the closest noise receptors to the proposed development.

Marine Environment - A review of the existing marine environment within the coastal area adjacent to Gozo has been undertaken by reference to information published in the State of the Environment Report for 1998, and an extract is included in the main text of this report. It is clear that this development will improve the quality of the coastal waters once the discharge of untreated sewage going to the open sea is topped.

Highways and Traffic - The site of the proposed sewage treatment plant is somewhat remote from the main highway network. The closest road to the site which can be described as being easily accessed by car is Triq Ta' Brieghen some 500 metres or so to the north. There is an existing track which connects with Triq Ta' Brieghen and runs in a southerly direction close to the eastern boundary of the proposed site. It is this track that will be upgraded so as to provide access to the proposed sewage treatment works site.

4.0 PLANNING AND LEGISLATIVE FRAMEWORK

Local Planning Policy - Local planning policy is set out in the following key documents:

- Structure Plan for the Maltese Islands
- Gozo Local Plan (completed in draft format but yet to be published)

Maltese Legislative and Regulatory Framework - Maltese legislation relevant to the proposed sewage treatment works development can be summarised as follows:

- The Development Planning Act, 1992.
- The Environment Protection Act, 1991.
- Legal Notice 8 of 1983. Issued under the 1991 EPA

International Policy Framework – This is established within the context of the following documents:

- Barcelona Convention
- Genoa Declaration
- European Community Directives

5.0 ASSESSMENT OF IMPACTS AND RISKS OF THE PROPOSED DEVELOPMENT

Primary Impacts - A summary of the impacts associated with the proposed development is provided in the table A overleaf.

Secondary Impacts - There will be a number of secondary impacts associated with development of the proposed sewage treatment plant. The principal issues that have the potential to give rise to secondary impacts are as follows:

- Installation of the access road to the sewage treatment plant
- Sourcing of construction materials (building stone, aggregates and concrete)
- Installation of services to the sewage treatment plant (power supply, water supply, telecommunications, foul water sewer)
- Re-use of treated effluent
- Management and disposal of wastes from the plant
- Construction of ancillary structures.

Cumulative Effects - There will be times during either the construction or operational phases of the development when one or more impact will be experienced over the same period of time. This will be most noticeable during the construction phase of the project. This will not be the case for the full 24 month construction period, but during discrete stages of the project (excavation works and concreting works for example when traffic, noise and air quality impacts will be at their most significant). During the operational phase of the development there does not appear to be any potential for cumulative effects to increase the overall impact of the scheme.

There is significant positive impact to be gained through elimination of discharges of untreated sewage to the sea, and this (assuming suitable mitigation measures are incorporated) far outweighs any other negative impacts associated with the proposed development.

SUMMARY OF IMPACTS FOR PROPOSED SEWAGE TREATMENT PLANT AT RAS IL-HOBZ

Key: (P) – Positive Impact (N) – Negative Impact
 (D) – Direct Impact (I) – Indirect Impact
 (ST) – Short Term Impact (LT) – Long Term Impact
 (H) – High Impact (M) – Medium Impact (L) – Low Impact

Environmental Issue	Summary of Impacts During Construction	Summary of Impacts During Operation
Ecology	<ul style="list-style-type: none"> • Airborne dust (N, D, ST, L-M) • Loss of vegetation (N, D, ST and LT, L) • Surface water runoff (N, I, ST, L) 	<ul style="list-style-type: none"> • Light pollution impact on birds (N, D, LT, L) • Intensification of agriculture and use of herbicides (N, I, LT, L-M)
Agricultural Land Quality	<ul style="list-style-type: none"> • Loss of agricultural land (N, D, LT, M-H) • Termination of field tenure (N, D, LT, M-H) • Loss of agricultural employment (N, D, ST, M-H) • Loss of economic productivity (N, I, LT, L) • Transportation of soils (N, D, LT, M) • Change in rural character (N, D, LT, M-H) • Removal and damage of rubble walls (N, D and I, ST and LT, M) • Temporary land-take for storage (N, D, ST, M-H) • Disturbance of agricultural land (N, D and I, ST, L-M) • Dust generation (N, D, ST, L) 	<ul style="list-style-type: none"> • Increased agricultural productivity due to effluent re-use (P, D, LT, M-H) • Increased agricultural employment (P, D and I, LT, M-H) • Increased nutrient input (N, D, LT, L-M) • Soil nutrient depletion (N, D, LT, L-M) • Decreased soil erosion potential (P, D, LT, L-M) • Health risks from effluent re-use (N, D and I, ST and LT, L-M)
Geology, Palaeontology and Geomorphology	<ul style="list-style-type: none"> • Removal of limestone and blue clay (N, D, LT, L) 	<ul style="list-style-type: none"> • None

Environmental Issue	Summary of Impacts During Construction	Summary of Impacts During Operation
Landscape and Visual Setting	<ul style="list-style-type: none"> • Visual disturbance due to traffic associated with construction activities (N, D, ST, L-M) • Temporary loss of land for storage (N, D, ST, L-M) 	<ul style="list-style-type: none"> • Completed plant and associated structures (N, D, LT, L-M) • Loss of arable land and change of use (N, D, LT, L-M) • Lighting within a dark landscape during night time (N, D and I, LT, L) • Visual disturbance due to traffic accessing the plant (N, D, LT, L)
Hydrology and Hydrogeology	<ul style="list-style-type: none"> • Removal of rubble walls causing increased soil erosion potential (N, D and I, ST, L-M) • Siltation of watercourses (N, D and I, ST, L-M) • Water contamination (N, D and I, ST, L) 	<ul style="list-style-type: none"> • Reduction in surface water runoff and infiltration (N, D and I, ST and LT, L) • Impedance of surface water runoff to sea (N, D, ST, L) • Re-use of treated effluent (N and P, D and I, ST and LT, M-H)
Archaeology and Cultural Heritage	<ul style="list-style-type: none"> • Damage to relics during excavation (N, D, ST, L) • Vibration damage to historic structures on access routes to the site (N, D and I, ST, L) • Vibration damage to coast tower (N, D, ST, L-M) 	<ul style="list-style-type: none"> • Improved marine environment giving benefit to roman wreck (P, I, LT, M)
Land Use	<ul style="list-style-type: none"> • Impact on agriculture locally (N, D and I, ST, M-H) 	<ul style="list-style-type: none"> • Impact on agricultural yields (P,D, LT, M-H)
Public Rights of Way	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Improved access to coast (P, D and I, LT, L-M)
Air Quality	<ul style="list-style-type: none"> • Dust arising from construction activities (N, D, ST, L-M) 	<ul style="list-style-type: none"> • Dust from waste storage areas (N, D, ST, L) • Odours from operational plant (N, D, ST and LT,

Environmental Issue	Summary of Impacts During Construction	Summary of Impacts During Operation
	<ul style="list-style-type: none"> • Odour - none 	<ul style="list-style-type: none"> L) • Bio-aerosol generation – on site (N, D, ST and LT, L-M) • Bio aerosol generation – off site (N, D ST and LT, L)
Noise and Vibration	<ul style="list-style-type: none"> • Noise during construction operations (N, D, ST, L-M) • Vibration during construction operations (N, D and I, ST, L) 	<ul style="list-style-type: none"> • Noise associated with plant operation (N, D, ST, L) • Vibration associated with plant operation (N, D and I, ST, L)
Marine Environment	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Improved marine environment (P, D, LT, H) • Improved recreational potential within the area (land based and marine based) (P, D and I, LT, H)
Traffic and Highways	<ul style="list-style-type: none"> • Construction related traffic (N, D and I, ST, M) 	<ul style="list-style-type: none"> • Operational traffic (N, D and I, LT, L)
Socio-Economics	<ul style="list-style-type: none"> • Loss of agricultural land (N, D and I, ST, L-H) • Termination of field tenure (N, D, LT, M-H) • Loss of agricultural employment (N, D, ST, M-H) • Loss of economic productivity (N, I, LT, L) • Change in rural character (N, D, LT, M-H) • Construction related employment (P, D and I, ST, L-M) 	<ul style="list-style-type: none"> • Increased agricultural productivity due to effluent re-use (P, D, LT, M-H) • Increased agricultural employment (P, D and I, LT, M-H) • Improved land and marine based environment (P, D and I, LT, H)
Recreation and Amenity	<ul style="list-style-type: none"> • Visual, noise and air quality impacts on tourism and amenity within the wider area of the proposed plant (N, D and I, ST, L-M) 	<ul style="list-style-type: none"> • Impact of operational plant on recreation and amenity (N, D and I, ST, L) • Improved land and marine based environment and

Environmental Issue	Summary of Impacts During Construction	Summary of Impacts During Operation
		local amenity (P, D and I, LT, H)
Secondary Impacts	<ul style="list-style-type: none"> • Installation of access road (N, D and I, ST, L-M) • Sourcing of construction materials (N, D and I, ST, L-M) • Installation of services (N, D, ST, L-M) • Construction of ancillary structures (N, D, ST, L-M) 	<ul style="list-style-type: none"> • Re-use of treated effluent (P and N, D and I, LT, M-H) • Management and disposal of wastes from the plant (N and P, D and I, LT, L-M)

6.0 MITIGATION MEASURES

Mitigation measures, which seek to prevent, minimise and/or offset predicted impacts, have been identified in the main report for the following aspects:

- Ecology
- Agricultural land quality
- Landscape and visual setting
- Hydrology and hydrogeology
- Archaeology and cultural heritage
- Air quality
- Noise and vibration

No mitigation measures are considered to be required for the following aspects:

- Geology, paleontology and geomorphology
- Land use
- Public rights of way
- Marine environment
- Highways and traffic
- Socio-economics
- Recreation and amenity

Proposed Monitoring Programme - So as to monitor the construction and operational phases of the proposed development, and to provide a basis for confirming that predicted impacts are not exceeded, a monitoring programme has been devised. Monitoring will only be required for certain environmental issues, as follows:

- Ecology
- Agricultural land quality
- Hydrology and hydrogeology
- Archaeology and cultural heritage
- Air quality
- Noise and vibration
- Marine environment

Appendix 1 - COMPARATIVE ASSESSMENT OF ALTERNATIVE SITES CONSIDERED FOR THE GOZO SEWAGE TREATMENT PLANT

BASIS OF ASSESSMENT	SITE 'A' – PREFERRED SITE COWI 1992 Outline Application submitted on this site	SITE 'B' COWI 1994 site/ MEPA Gozo Local Plan Site (Close proximity of sites warrants joint consideration)	SITE 'C' AIS 1998 site Recently reconsidered.
Construction	<p>The construction costs are less than for any sites below or higher up, because the natural slope is some 7% which allows flow by gravity through the plant with a minimum of excavation/terracing/retaining walls.</p> <p>Sites below, except for very close to the sea, are much steeper entailing a lot of excavation and retaining walls or slopes. The geotechnical conditions, with mainly excavation in globigerina limestone, are better than at SITES 'A' and 'B'.</p>	<p>The construction costs were estimated at 20% higher than at SITE 'A'</p> <p>The additional costs are chiefly related to the construction of an intake pumping station which has to pump the sewage to the STP across a 40m head unlike for SITE 'A' which is served by gravity.</p>	<p>The construction costs were estimated at 8% higher than at SITE 'A'.</p> <p>The gradient at the site is close to 10% resulting in additional excavations, earthworks and retaining walls.</p> <p>SITE 'C' overlies two geotechnical faults. There was particular concern regarding the rock stability of SITE 'C'. Desk study reports by Mr. Godwin Debono and Mr. Saviour Scerri from the University of Malta were in favour of the selection of SITE 'A' as opposed to other adjacent areas where deeper layers of Blue Clay and other troublesome soils prevailed.</p>

<p>Operations and Maintenance</p>	<p>A sewage deviation pumping station on the Mgarr/Ghajnsielem gallery will pump an average of 1,300 m³ per day of sewage across a 40m head utilising a 330m rising main.</p> <p>The TSE pumping station will pump an average of 4,368 m³ per day across a 32m head utilising a rising main of 330m.</p> <p>In case of pumping station failure 80% of the sewage will still reach the plant by gravity to be treated.</p>	<p>A sewage deviation pumping station on the Mgarr/Ghajnsielem gallery will pump 1,300 m³ of sewage per day across a 72m head utilising an 800m rising main.</p> <p>A major sewage pumping station will pump a total of 5,200 m³ of sewage to the STP across a 40m head which arrives by gravity in the case of SITES 'A' and 'C'.</p> <p>No TSE pumping station is required.</p> <p>Overall power consumption will be up by 157% over SITE 'A'.</p> <p>In case of pumping station failure no sewage will arrive at the treatment plant.</p>	<p>A sewage deviation pumping station on the Mgarr/Ghajnsielem gallery will pump 1,300 m³ of sewage per day across a 20m head utilising an 200m rising main.</p> <p>The TSE pumping station will pump an average of 4,368 m³ per day across a 60m head utilising a rising main of 800m.</p> <p>Overall power consumption will be up by 150% over SITE 'A'</p> <p>In case of pumping station failure 80% of the sewage will still reach the plant by gravity to be treated.</p>
<p>Access</p>	<p>An access road needs to be constructed to service the sewage deviation pumping station.</p>	<p>Same as for SITE 'A'</p>	<p>Same as for SITE 'A'</p>
<p>Sewage outfall</p>	<p>The plant will utilize an existing sewage outfall recently upgraded in 1998. The outfall discharges at a depth of 80m 140m away from the shore. In the case of a raw sewage discharge the surface water will still be free of any contamination as is the case right now.</p>	<p>Same as for SITE 'A'</p>	<p>Same as for SITE 'A'</p>

Distance from closest residence	230m away from closest residence.	Within less than 10m of the nearest residence.	250m away from closest residence.
Visual Impact	Least visual impact on Chambray and from the coast. Highest visual impact on the residential area of Ghajnsielem.	Least visual impact from the coast. Moderate visual impact on the closest residence.	Not visible from Chambray and least visual impact on the closest residence. Highest visual impact from the coast.
Effluent reuse potential	All sites provide similar potential for reuse of treated water.	All sites provide similar potential for reuse of treated water.	All sites provide similar potential for reuse of treated water.
Land Use and Agricultural Impact	All sites take up same area of agricultural land to accommodate sewage treatment plant	All sites take up same area of agricultural land to accommodate sewage treatment plant	All sites take up same area of agricultural land to accommodate sewage treatment plant
Ecology	Least ecological disturbance	Moderate ecological disturbance	Highest ecological during the construction phase of the sewage treatment plant given proximity to coastline.
Risk	Lowest risks with pumping failure. 80% of the sewage will still arrive at the plant to be treated	Highest risks with pumping failure. No sewage will arrive at the plant to be treated.	Marginally greater risk to the sewage treatment plant operation because of the higher exposure to the sea spray. Highest risks during construction and operation because of geological instability. Pumping risks similar to SITE 'A'

**SITE 'B' - 1994 -
MEPA**

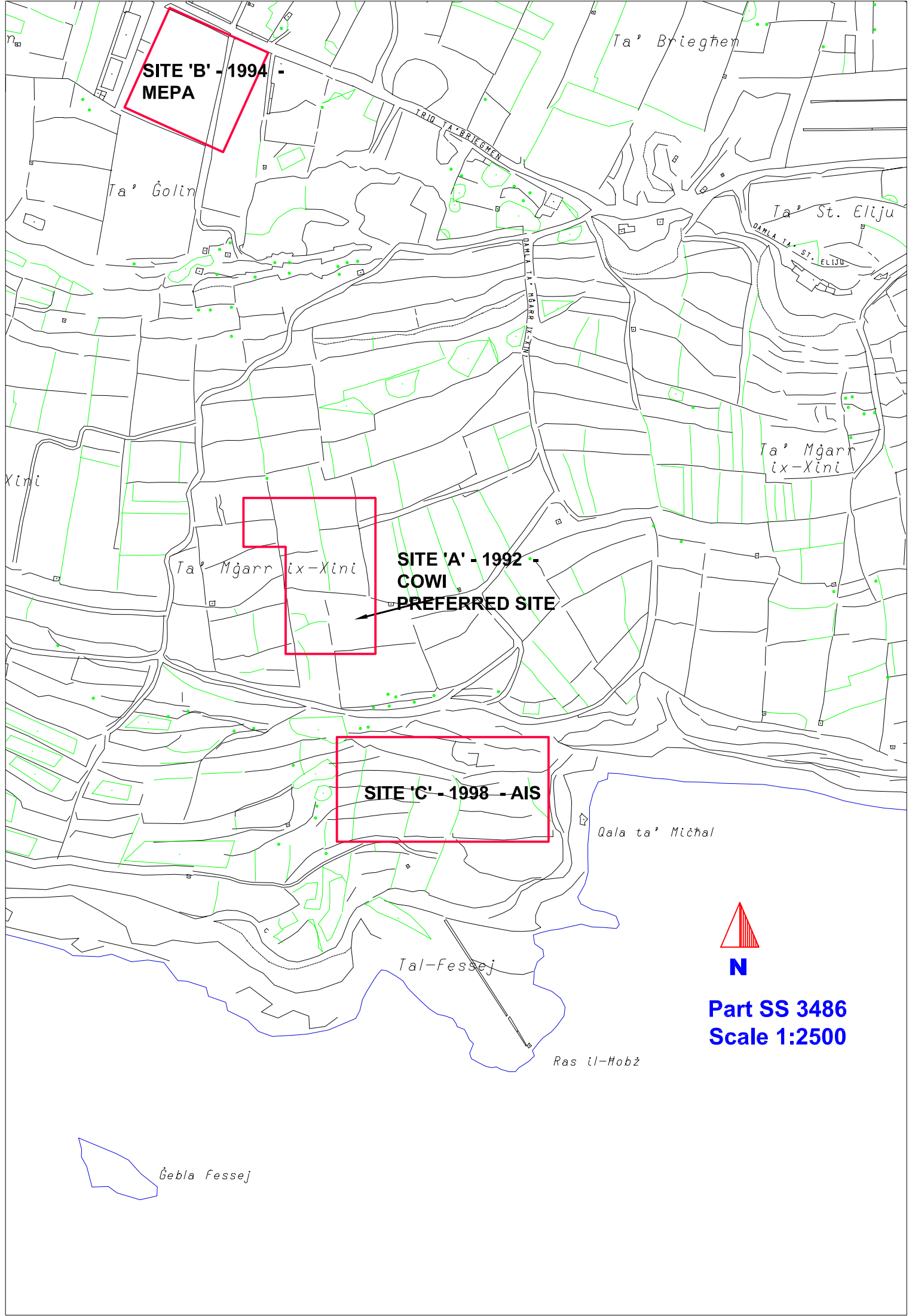
**SITE 'A' - 1992 -
COWI
PREFERRED SITE**

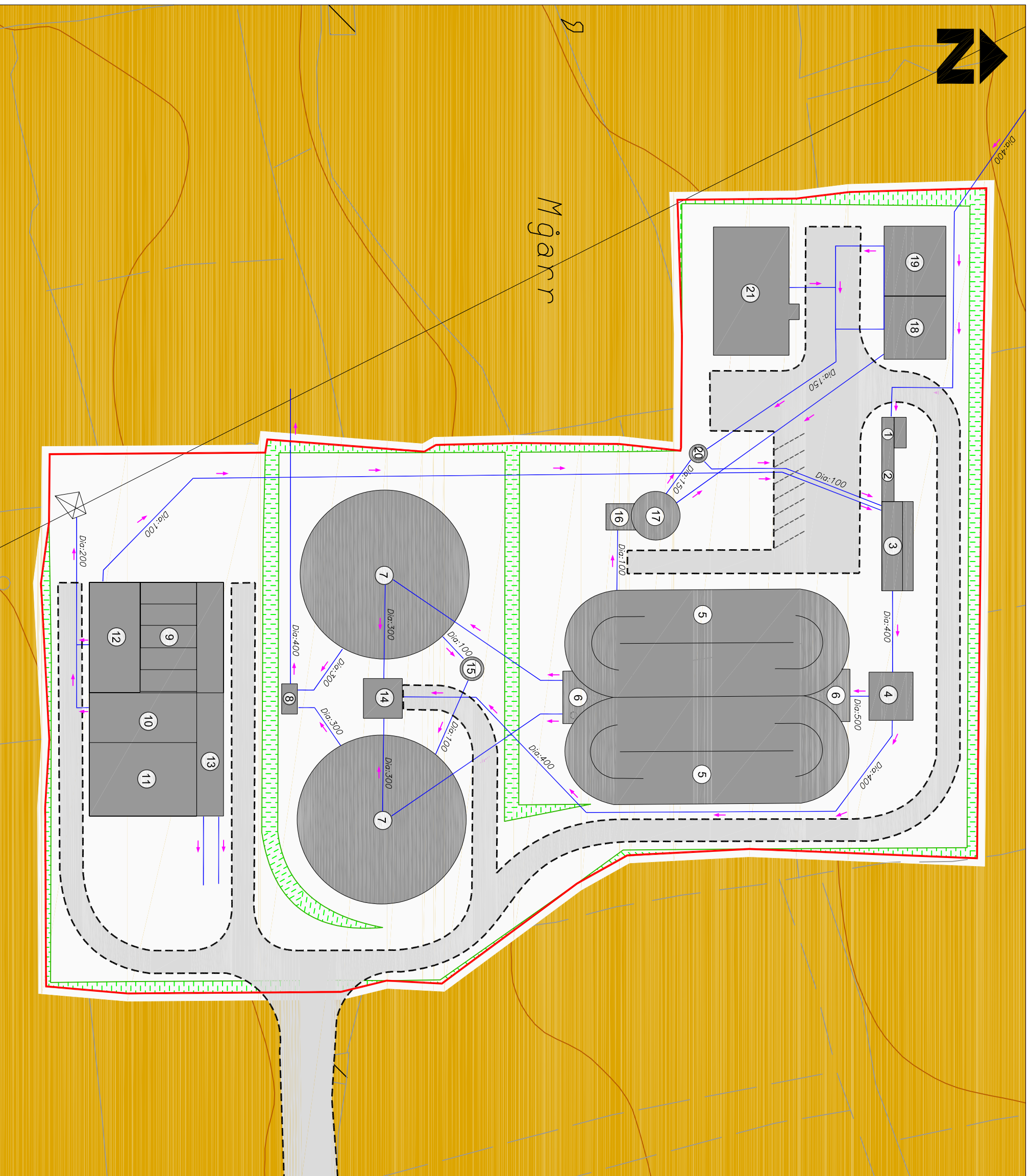
SITE 'C' - 1998 - AIS



N

**Part SS 3486
Scale 1:2500**





NOTES

- SITE BOUNDARY
- TREATMENT PLANT UNITS
- - - ACCESS ROAD
- ▨ FUTURE EMBANKMENT
- EXISTING CONTOURS
- PIPE AND FLOW DIRECTION
- Dia:400 PIPE DIAMETER IN mm
- ① SCREEN
- ② PARSHALL FLUME
- ③ GRIT CHAMBER AND GREASE TRAP
- ④ SELECTOR
- ⑤ BIOREACTOR
- ⑥ COLLECTOR AND DISTRIBUTION CHAMBER 1
- ⑦ SECONDARY CLARIFIER
- ⑧ OUTLET CHAMBER
- ⑨ SAND FILTER
- ⑩ BACKWASH TANK
- ⑪ CHLORINE CONTACT TANK
- ⑫ BUFFER TANK
- ⑬ SERVICE ROOM
- ⑭ RETURN SLUDGE PUMPING STATION
- ⑮ FLOATING SLUDGE COLLECTOR
- ⑯ EXCESS SLUDGE PUMPING STATION
- ⑰ SLUDGE THICKENER
- ⑱ SLUDGE DEWATERING FACILITIES
- ⑲ STORAGE OF DEWATERED SLUDGE
- ⑳ EXCESS WATER PUMPING STATION
- ㉑ ADMINISTRATION BUILDING



Project
CONSTRUCTION OF SEWAGE TREATMENT PLANT AT RAS IL-HOBZ: ENVIRONMENTAL IMPACT STATEMENT

Drawing
Plant Layout

Date	APRIL 2001	Figure	3
Scale	1:500		
Revision	0 Apr 2001 AST	4B.082.002 MSTWLYVO	4B/AB