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JG/440/K

DEMOLITION METHOD STATEMENT

FOR

REFUSE INCINERATOR

AT

EUROPA ADVANCE ROAD

GIBRALTAR



Date: November 2013

DIRECTORS: **M. E. BELILO** MBE EUR ING CEng MICE
M. T. MILLGATE CEng FStructE AMAE MIABSE

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METHOD STATEMENT FOR THE DEMOLITION OF THE REFUSE INCINERATOR AT EUROPA ADVANCE ROAD.

SECTION A - GENERAL BACKGROUND INFORMATION

1.0 LOCATION:

The buildings to be demolished are located on Europa Advance Road and situated between the Gibraltar crematorium and Dudley Ward tunnel.

2.0 ACCESS:

Vehicular access is directly off Europa Advance Road which is a two way public highway.

3.0 DOCUMENTS:

This Method Statement is to be read in conjunction with the following documents:

- The site location shown at Appendix 1
- The contractors Demolition Method Statement at Appendix 2 including photographs of the type and condition of the buildings.

4.0 GENERAL INFORMATION:

The site is currently occupied by the redundant waste to energy and de-salination plant which has fallen into a state of dilapidation. The plant consists of a variety of processing buildings including refuse reception, incinerator and boiler house, turbine and generator hall, water treatment and administration building, together with a standalone chimney in excess of 50m high and ancillary structures such as pipe bridges and water tanks.

5.0 CONSTRUCTION:

All the buildings are predominantly of braced steel frame construction with profiled metal cladding to the roofs and walls supported on light gauge steel purlins and sheeting rails. The wall and roof cladding is generally of the single skin type and is in a very poor condition with a number of perforations to the eastern wall and roofs generally.

The refuse reception building has a pitched roof and has an overall height of approximately 22m above ground level and a width of approximately 15m. An overhead gantry crane with grab is located in this building with gantry support beams located at a height of approximately 17m.

There are two upper floor levels covering part of the plan area of the building and each of these floors is constructed out of reinforced concrete supported on steel beams connected to the frame columns.



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The refuse pits which cover the full width of the building at its southern end are approximately 5.5m deep below ground level and constructed out of reinforced concrete base and walls.

The incinerator and boiler house building has a pitched roof and has an overall height of approximately 27m above ground level and a width of approximately 11.5m. The sub-structure which includes ground slab and a pit approximately 20m long, 3m wide and 4.5m deep is constructed out of reinforced concrete. The incinerator chimney is constructed out of circular steel sections connected via bolted flanges, the method of lining if any is not known.

The turbine and generator hall is made up of a main building with a lean too structure attached to its southern elevation. The main building has an overall height of approximately 18.5m from ground level with the lower 6.5m being constructed out of a reinforced concrete frame consisting of columns, beams and slabs which carries the turbine which is situated at high level. The upper 12m is constructed out of a steel frame with a duo pitch roof. The lean too structure has a monopitch roof and has an overall height of approximately 6m above ground level. The main building is approximately 12.5m wide and the lean too approximately 5.5m wide. A movement joint separates the two structures each of which is independent of the other.

The desalination and admin building has a duo pitch roof with an overall height above ground level of approximately 6.5m and a width of approximately 5.5m. An intermediate floor level within the admin building covers an area of approximately 100m² and is believed to be constructed out of 150mm thick precast concrete hollow core units spanning between steel beams which form part of the frame. The substructure to these buildings is of reinforced concrete and includes a pit approximately 4.5m wide and 2.0m deep over the full width of the desalination building.

The water storage tank immediately adjacent to Europa Advance Road is constructed out of steel plate on a reinforced concrete base slab.

6.0 INTENTION:

The intention is to demolish / dismantle the existing buildings down to ground level only leaving the reinforced concrete sub-structures and foundations in place.

7.0 SUPERVISION:

The works supervisor has yet to be appointed.

8.0 CONTRACTOR:

The demolition work is to be carried out by a suitably qualified and experienced contractor.



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9.0 FOREMAN:

The Contractor will have a suitably experienced foreman on site during demolition works. The name of the foreman will be advised by the contractor.

10.0 CLEARANCES:

Clearance enquiries are to be made to the Gibraltar Electricity Authority, AquaGib, Gibtelecom, MOD and Gibraltar TSD with regard to services around the site (both live and obsolete) and the contractor should refer to these through the project manager.

11.0 HOARDINGS:

Suitable safety hoardings are to be erected to all site perimeters so that adjacent businesses and the general public can go about their normal business unhindered.

12.0 NOTICES.

The Contractor will be required to install suitable "DANGER" warning signs at all accesses to the site

13.0 AVOIDANCE OF NUISANCE:

The Contractor will be required to remove rubble from site as the demolitions proceed. Care is to be taken to avoid materials arising from the demolition works from falling onto the Public Highway or into adjacent sites.

The Contractor will be required to maintain all Public Highways in the vicinity of the site, clean and swept on a daily basis. All demolition is to be carried out in a manner to cause as little inconvenience to the general public and to vehicular traffic. Debris is to be kept well watered during the works, to prevent excess dust.

14.0 MATERIALS:

All materials arising from the demolitions will become the property of the Contractor, and together with all debris and rubble is to be carted away to an approved tip using suitably covered and secured tipper lorries.

15.0 HAZARDOUS MATERIALS:

An asbestos survey has been carried out and will be made available to the demolition contractor. The demolition contractor should also be aware that special provision will need to be made with regard to the removal of any precast prestressed concrete units.

16.0 STANDARDS:

The Contractor will carry out the demolitions in compliance with the requirements of BS 6187 or equivalent European codes.



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SECTION B - SEQUENCE OF DEMOLITIONS

1.0 HOARDINGS & SIGNS:

Prior to any demolition works, the Contractor will erect all necessary warning signs and safety hoardings.

2.0 BURNABLE MATERIALS:

Remove from site all refuse, rubbish, cardboard, vegetation and any other burnable materials.

3.0 OBSOLETE SERVICES:

Carefully remove all obsolete electrical and telephone cable runs, fuse boxes, switch gear, etc., all potable and salt water supply pipes, internal waste and foul drainage installations, rainwater drainage goods, etc., and cart away to tip. All connections to the storm drains and foul sewer are to be sealed, maintaining any relevant manhole chambers with their covers intact.

4.0 SOFT STRIP:

Remove the remainder of all woodwork elements such as doors, frames, sanitary ware and fittings, etc., and cart away to an approved tip.

5.0 PRELIMINARY WORKS:

- a) Carry out a condition survey with full photographic record on adjacent property elevations and adjacent footpaths and roads at all site boundaries.



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6.0 MAIN WORKS:

- a) All of the following works will be weather dependent particularly with regard to wind / gust speeds when working at height and removing large panels of light gauge cladding panels. A maximum wind / gust speed will need to be agreed above which no work can be undertaken and the contractor will need to liaise with the meteorological office locally for daily weather updates.
- b) Carefully dismantle the free standing incinerator chimney in sections using suitable heavy lift cranes, guide lines and cutting equipment down to ground level. Lower sections to ground and cart away.
- c) Carefully strip off all profiled metal cladding to all buildings in such a way to try and avoid dominant openings, particularly on prevailing windward faces. Cart away all cladding materials off site either to tip or contractors yard.
- d) Carefully strip out all light gauge steel purlins and sheeting rails by mechanical means and cart away off site either to tip or contractors' yard.
- e) Remove the turbine, desalination plant and gantry cranes and set aside on site.
- f) Starting from the southern end of the site dismantle the steel frame buildings down to ground level by mechanical means and cart away to contractors yard.
- g) Once all steel structures are dismantled reduce all remaining reinforced concrete elements down to ground level and cart away arisings to tip.
- h) Ensure that the water tank situated immediately adjacent to Europa Advance Road is suitably drained down prior to demolition. Dismantle by mechanical means ensuring that work is undertaken in such a way and at such a time so that the safe use of the adjacent roadway is not compromised.

7.0 GENERAL:

At the end of each working day, the Contractor is to ensure that all elements of the building that remain in place are adequately secured to prevent the collapse of free standing elements during silent hours.

All demolition work must be carried out in accordance with the requirements of BS 6187 or equivalent European standards and all most recent HSE regulations applicable. Prior to commencement of any works the contractor will need to supply a site specific method statement for the works and will be required to meet with the Engineer on site to walk over the buildings.

J.Gray C Eng MIStructE MICE.



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APPENDIX 1
SITE LOCATION

DIRECTORS:

M. E. BELILO MBE EUR ING CEng MICE
M. T. MILLGATE CEng FStructE AMAE MIABSE

D. A. ORFILA EUR ING CEng MStructE
J. GRAY CEng MStructE MICE



Desalination & admin building

Turbine hall.

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Incinerator & boiler house.

Water tank

Refuse reception

Revisions	***		
Architect	N / A		

Client: **Government of Gibraltar**

Project title:

Incinerator Demolition

Drawing title:

Site Plan

Date	Scale	Size	Drawn by
15 Nov 13	1:120	A4	C.S. Ferguson
This drawing must be read with:			
drawing n°:	***		Engineers
& BBS n°:	**		J. Gray

Information Only

Job n°:	440 / K	Drawing n°:	/ 01	Rev:	*
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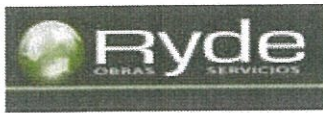
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 TEL +350 2007948 FAX +350 2007293
 E-MAIL mail@belilos.gi



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APPENDIX 2

CONTRACTORS METHOD STATEMENT



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1.6 DISMANTLING SEQUENCE

Before commencing any dismantling operation, priority is given to the setting up of support facilities such as, changing rooms and storage units, giving the necessary required services to the work force. **(See Attached Plan 2).**

Once these "Works Units", have been erected, the Operators of Ryde Obras y Servicios S.L.U – Redena S.L. will proceed to protect the zones as herein identified and documented by the Contractor, prior to the commencement of any works as follows:-

- Metal sheeting (2.5cm thickness) will be utilised to construct a security barrier both inside and outside the desalination plant offices, equally the same covering will be utilised to protect the thoroughfare through which the high voltage cables will run from the existing electrical transformer to the new proposed site. **(See Attached Plan 1).**
- Furthermore, a protective cover will be constructed housing the water pump, utilising wooden 3 ply boards, Ulma type, ensuring the said pump is protected against accidental damage at all times during the demolition process of the desalination offices.

To follow, the Chief of Works, will be responsible to ensure all utilities connected to the site such as water, electricity, gas and so on, have been correctly identified and securely disconnected during the demolition and dismantling process.

Once the work site has been checked and confirmed worthy for the cleaning operation to commence, the operators will start packing and securing the "**Residual Waste**", identified and catalogued as "**Dangerous**" first. These will be removed to an identified secure storage area to be dealt with appropriately by the Contractor.

Having all the identified "**Dangerous Residual Waste**", been securely removed, the operators will commence with the removal of the "Non Dangerous Residual Waste", namely the chimney stack and immediate surrounding area, including the recirculation and cleansing emissions zone. This will be the next step to be undertaken by the operators, allowing the dismantling process to proceed.

Once this area has been cleared, this will give simultaneous open access to the either side, such as the incinerator oven to one and the turbine to the other.

Desalination Turbine Zone: Before the Turbine Engine can be removed; the protective housing needs to be dismantled. This will be undertaken both mechanically and manually with the aid of a heavy duty mobile crane. Thereon demolition equipment will be utilized to raise to the ground the remainder of the building.

Incinerator Oven: The demolition of said oven will be undertaken by heavy duty Retro-Plant and Cutting Machinery.

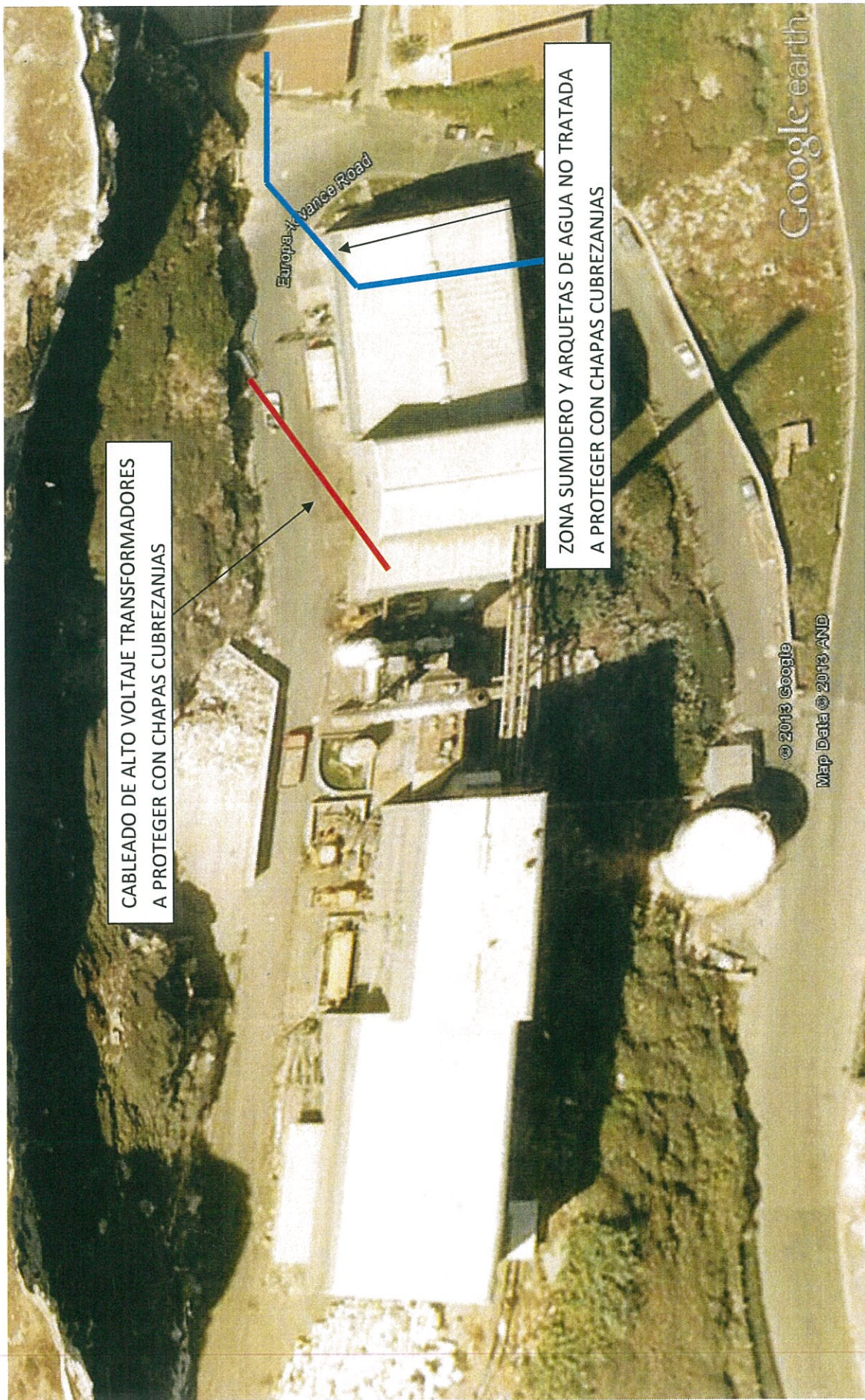
All manner of scrap will be cleared and disposed off accordingly.



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COLOCACIÓN CONTENEDORES RESIDUOS

PROTECCIÓN DE SALIDA BOMBA CON
ENTRAMADO DE TABLEROS TRICAPA

COLOCACIÓN DE CASSETAS DE OBRA



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ANNEX I: CHIMNEY DISMANTLING METHODOLOGY.



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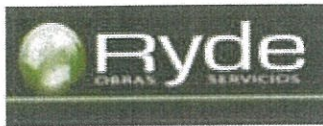
The Heavy Lifting Mobile Crane, namely the Mobile Leibherr **LTM 1350** will be utilised for the dismantling of the incineration plant chimney. The LTM 1350 boasts a 70mts Telescopic Boom, and a 28mts Lattice Jib. Also to be utilised will be the **LTM 1080**. Both pieces of equipment are homologated and will be operated by personnel in accordance to the Rules and Regulations as set by the U.N.E.

(Attached you will find equipment and performance Technical Data).

Methodology:

We will seek to position the Mobile Heavy Lifting Equipment LTM-1350 at a pre determined site, ensuring stability, safety and secure foundation. (Positioning site, to be inspected for any possible instability by way of inferior, damaged, worn or poor quality road/surface covering).

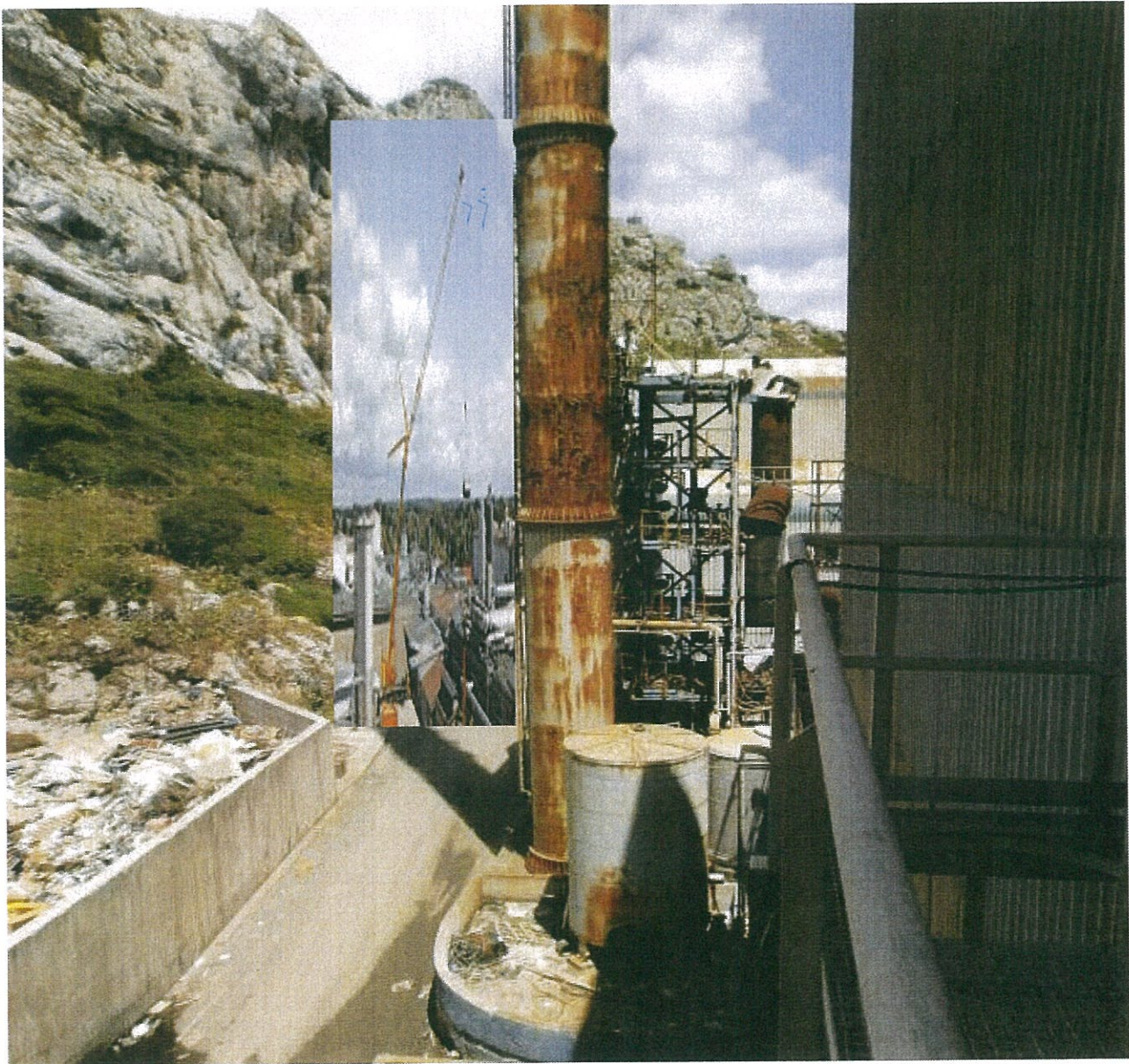
The equipment will be positioned within a minimum radius of the asphalted area as indicated by this photograph.



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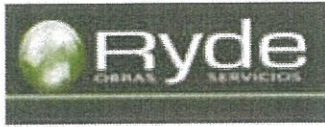


Once the LTM1350 has been securely positioned in place, together with the help of another Mobile Heavy Duty Crane the LTM-1080, fitted with a homologated, metal basket and operated by skilled and fully qualified personnel in the art of dismantling; utilizing a type of choker system, chains, grips and cables will be used to secured the first 2 lengths of the chimney stack to be lowered to the ground.



Once inspected and confirmed the first 2 lengths of the stack is firmly secured, ready for cutting and lowering to the ground, 2 operators will be hoisted in the metal basket attached to the LTM-1080; equipped with oxy settling cutting equipment will proceed to cut right round the stack just above the joint of the second length of chimney and the attached access ladder.

Before cutting the final section, the crane operator will be communicated with, via walkie-talkie, to ascertain the correct aplomb of the crane, with the intention of coordinating the vehicle that is going to transport the dismembered chimney stack away, so that the last section can be lowered directly on the lorry ready for transportation.



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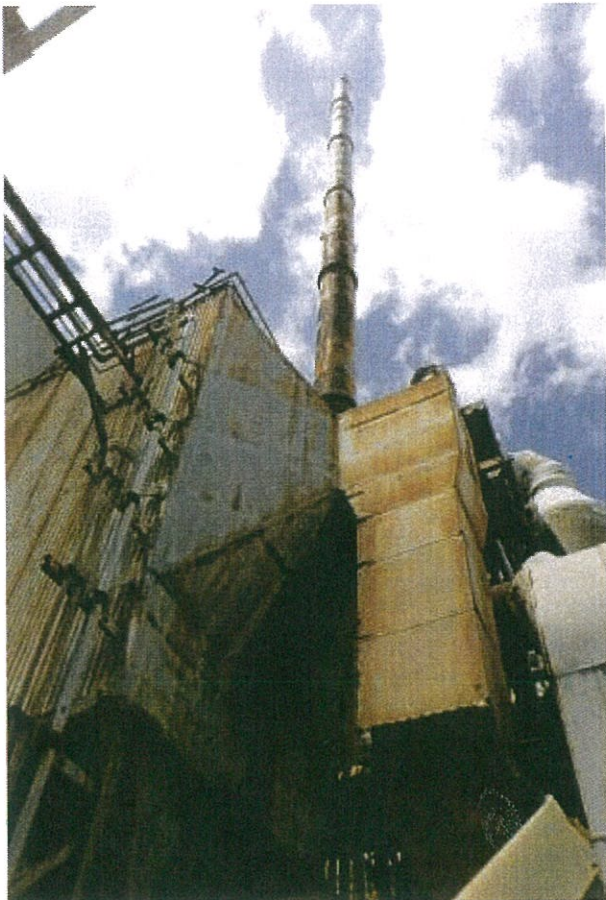
The first 2 sections cut and lowered, by the Crane LTM 1350; just before it reaches road level, will be stopped, allowing a digger with a 1.10mtr split shovel to grab the chimney section and working in conjunction with the crane, help to set it down horizontally.

Should the operators handling the oxy settling cutting equipment discover at any time refractory/fireproof bricks or any other material (Deemed Dangerous Residual Waste) stuck to the section being cut, they are instructed, with the aid of an electric power hammer, breakaway said waste, place it in the metal basket with them and thus lower it to the ground .

However, if any other material discovered not deemed "Dangerous residual waste", it will be allowed to drop down the inside of the chimney to be collected at the disposed of at the end.

This process will be repeated exactly until the last of the chimney is finally dismantled.

The chimney base itself will be mechanically demolished and the anchoring foundations cut down 5cm, below surface level.





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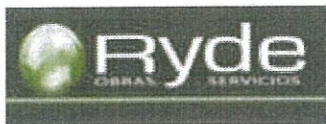
LTM 1350-6.1

Capacidad de carga máx.: 350 t
Altura de elevación máx.: 134 m
Radio de trabajo máx.: 96 m



All-terrain mobile crane LTM-1350

With its outstanding capacities and boom length the LTM 1350 sets the bench mark in the 6-axle crane class. With its Y-suspension the capacities will be remarkably improved in telescopic and in lattice fly-jib operation.



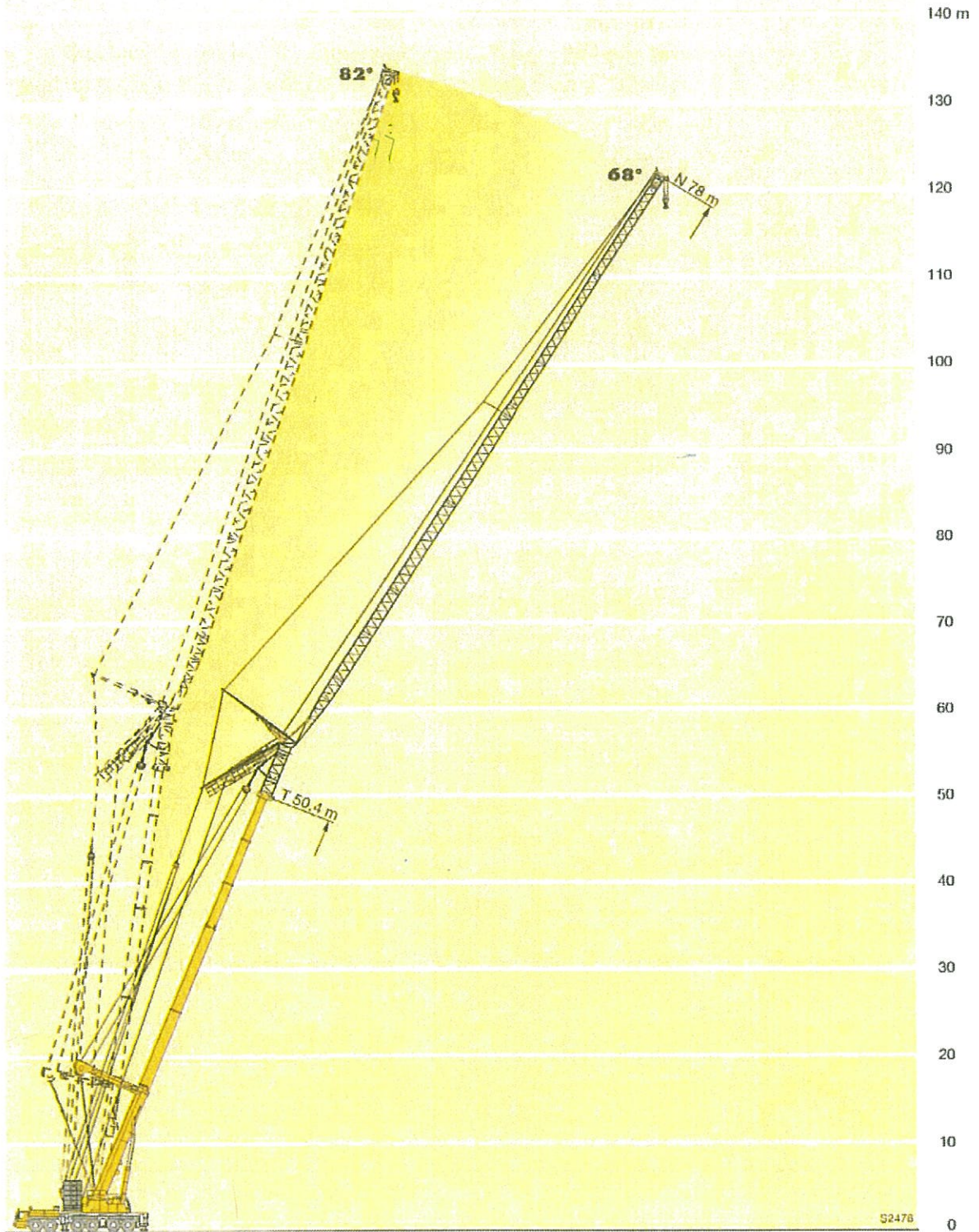
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Max. lifting capacity	350 t at 3 m radius
Telescopic boom	14.9 m - 70 m
Lattice jib	6 m - 78 m
Carrier engine/output	77 Liebherr, 8-cylinder, turbo-Diesel, 450 kW
Crane engine/output	Liebherr, 4-cylinder, turbo-Diesel, 180 kW
Drive/steering	12 x 8 x 12
Travel speed	80 km/h
Operational weight	72 t
Total counterweight	140 t





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ANNEX II: METHODOLOGY FOR THE DISMANTLING OF THE PURIFICATION AND RECIRCULATION OF EMISSIONS ZONE.



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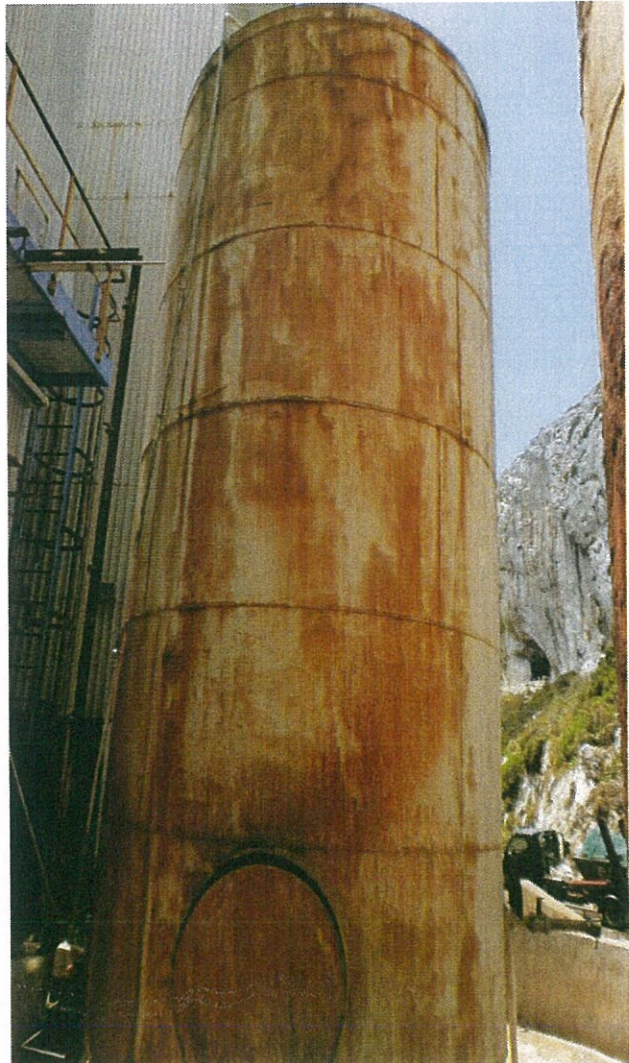
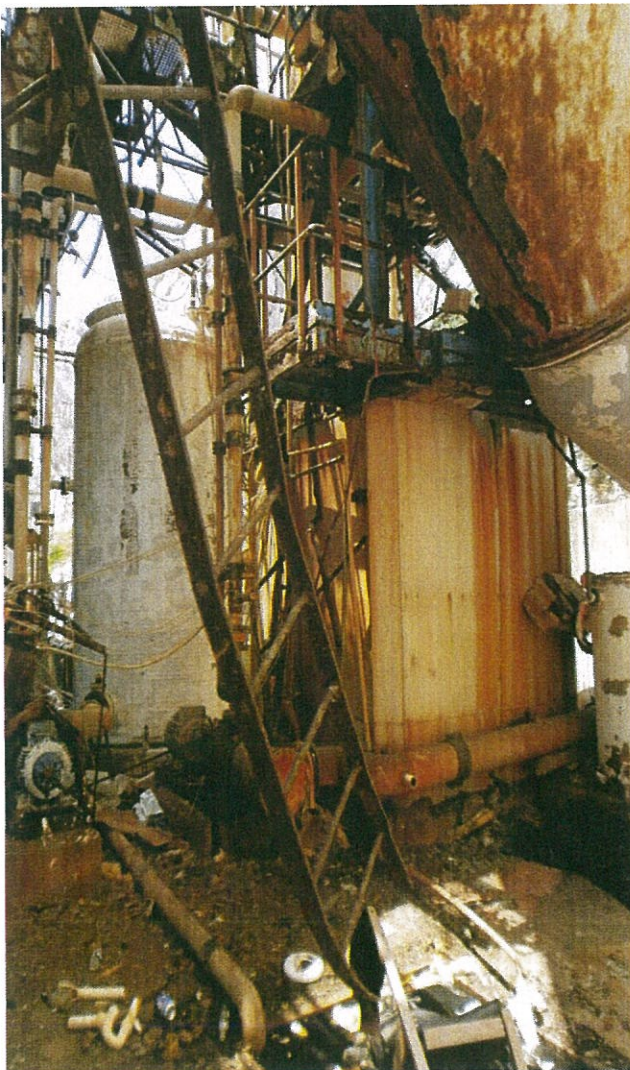
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We will proceed with the demolition and scrapping of the afore mentioned, by means of utilising specialised mechanical platforms such as the HYUNDAI 290 fitted with metal shears type VIBRAM AS 4000 with a cutting capacity of 900T/cm².

The structures will be dismantled on a basis of top to bottom, thus avoiding any form of collapse or toppling over.

By scrapping and clearing this area directly after the chimney has been dismantled, will provide the contractors an area for assembling scrap and dismantled materials, while making way for the operators to tackle the dismantling of the Turbine (Turbine to be saved) and the incineration oven at the same time.





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**ANNEX III: METHODOLOGY FOR THE DISMANTLING OF THE
TURBINE AND SURROUNDING AREA.**



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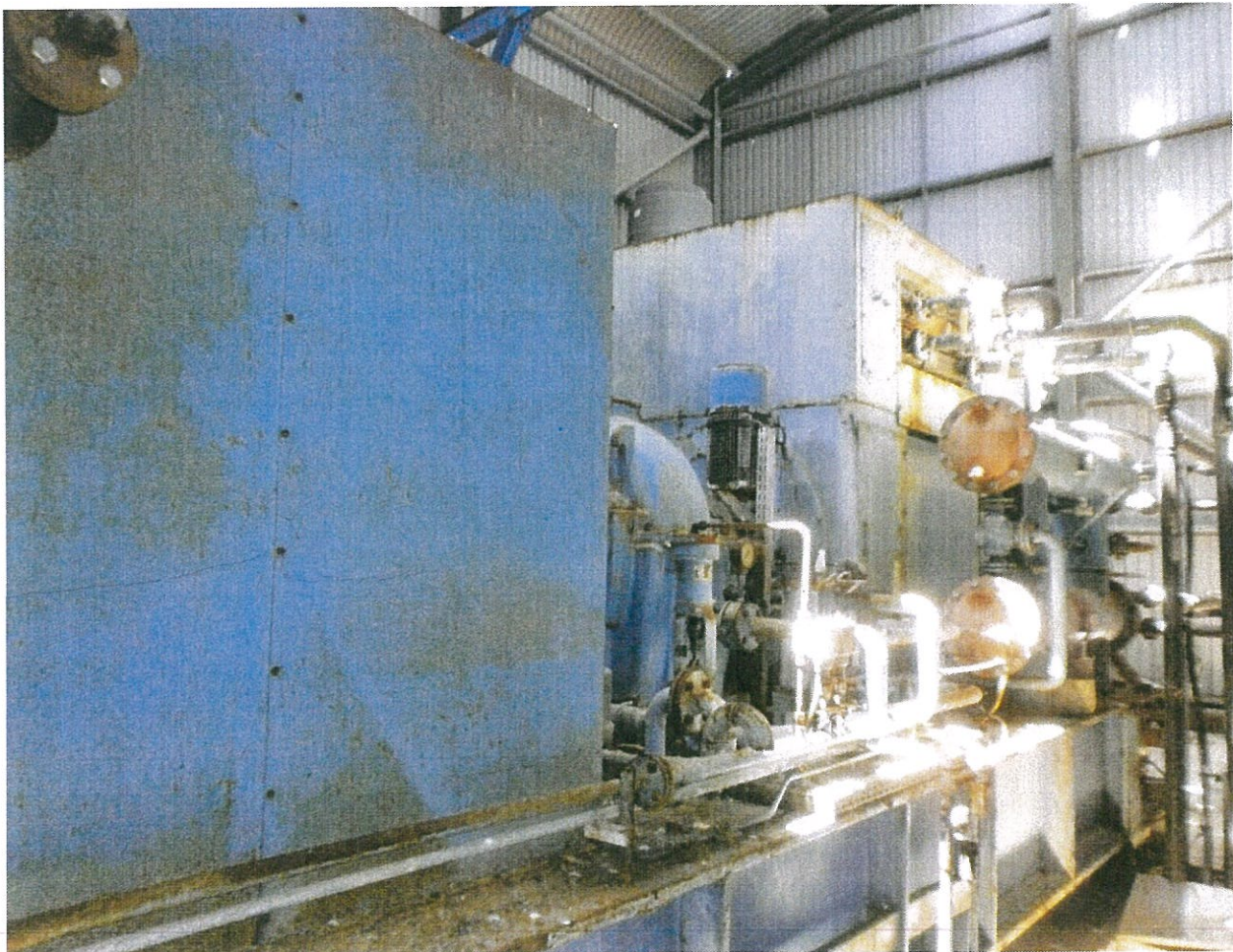


We will proceed to remove the Turbine Engine Protective Housing, bit by bit until the area has been cleared completely, giving easy access to the 2MW Turbine, deemed equipment with high residual value. As requested and in accordance with the requirements of the Local Authorities, the Turbine Engine will be removed to a place of safe keeping within the complex, thus facilitating the dismantling and demolition of the site to continue un-encumbered.

Given the excessive weight of the Turbine Engine in question, it will be necessary to utilize such lifting equipment as is the Mobile Heavy Duty Crane LTM-1350, with the required lifting capacity and the necessary additional counter weight of 140ton for its removal.

Once the Turbine Engine has been securely fastened and held in place with the correct aplomb, the oxy settling equipment will be utilized to cut the anchoring bolts. Meanwhile, 2 lead ropes will be attached as guide lines, to help steer the Turbine, once it has been cut free from its mountings. This manoeuvre will be carried out ensuring at all times workers remain well clear while the Turbine Engine, is suspended in the air and being manoeuvred into its rightful place, as designated once again by the responsible local authority.

The remainder of the buildings will be mechanically demolished or dismantled as per the set requirements, utilizing the Hyundai 290 Mechanical Platform, with an 11mtr reach and Caterpillar 330 BL Mechanical Platform, with a 25mtr reach.





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**ANNEX IV: DISMANTLING METHODOLOGY OF THE
DESALINATION PLANT.**



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We will proceed to dismantle element by element with the aim of facilitating the removal of the desalination plant. We will also dismantle the covering wall facing the roadside, with the idea of once again facilitating the removal of said plant, giving consideration to a potential high residual value, as established by the responsible Local Authority. The plant will be removed to a place of safe keeping within the complex, In accordance with the requirements of the Local Authorities, thus facilitating the dismantling and demolition of the site to continue un-encumbered.

Once again, the remainder of the buildings will be mechanically demolished or dismantled as per the set requirements, utilizing the Hyundai 290 Mechanical Platform, with an 11mtr reach and Caterpillar 330 BL Mechanical Platform, with a 25mtr reach.





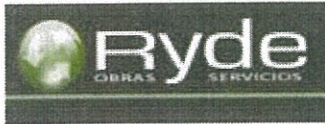
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ANNEX V: DISMANTLING METHODOLOGY OF THE OVEN AND SURROUNDING STRUCTURES AND THE DISPOSAL RECEPTION AREA.



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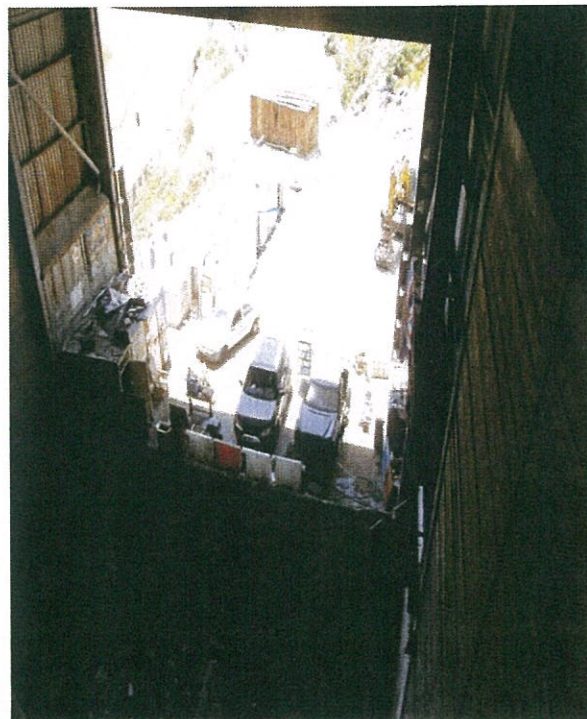


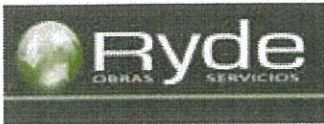
We will proceed to dismantle and or demolish the Disposal Reception area, utilizing once again, the Hyundai 290 Mechanical Platform, with an 11mtr reach and Caterpillar 330 BL Mechanical Platform, with a 25mtr reach.

These structures are not envisaged in anyway problematic, as they are of metal construction. Therefore the plan is to dismantle them working from the outside in.

The oxy settling cutting team will always be on hand, should the need arise to facilitate access to any difficult access areas.

The areas containing concrete will be demolished and ground, leaving the said areas ready for mobile flattening equipment to carry out their surfacing work.

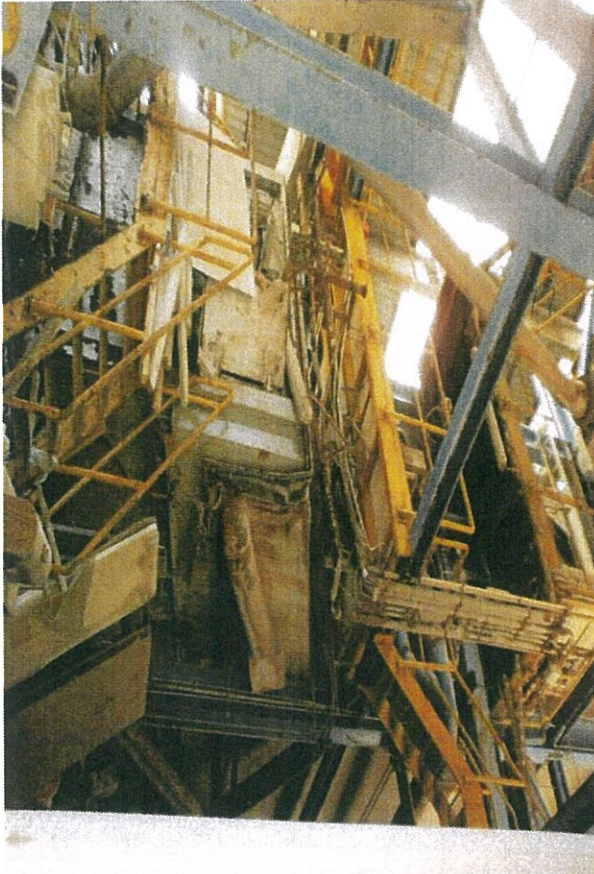




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ANNEX VI: METHODOLOGY FOR THE DISMANTLING OF THE EXTERIOR WATER HOLDING TANKS.



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The water holding tanks situated next to the roadside will be dealt with extreme caution when undertaking the removal of said tanks. Two operators will be placed to control the flow of traffic using one carriageway, while the tanks are being mechanically removed.

The Mechanical Excavator will commence demolition of the said tanks, accessing them from the road, and commencing from the bottom up, in the direction to the incineration plant. All the extracted waste will be directly placed inside containers by the excavators.

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