



THE DEVELOPMENT OF READING MARINA, TEL AVIV - ISRAEL

SCOPE OF WORK FOR PLANNING, DESIGN, ENGINEERING & CONSULTANCY SERVICES

Related To

MARINE WORKS, MARINE STRUCTURES AND ASSOCIATED FACILITIES -

EXCLUDING LAND BASED WORKS



April 2025

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|--------------|--|-------------|-------------|--------------|
| Client | ATARIM/TEL AVIV YAFO Municipality | | | |
| Title | The Development of Reading Marina, Tel Aviv – Israel Scope of Work for Planning, Design, Engineering & Consultancy Services | | | |
| Sub-Title | Related to Marine Works, Marine Structures and Associated Facilities - excluding Land Based Works | | | |
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1. INTRODUCTION

Reading Power Station is located at the north part of Tel Aviv, State of Israel. ATARIM and TEL AVIV YAFO Municipality (“the Client”) intend to rehabilitate the existing Reading Anchorage and to transform the site into a Marina suitable for pleasure craft and small boats (approximately 300 berths) within the existing rubble mound breakwaters of the cooling water basin. This document describes the Scope of Work (SOW) for Planning, Design, Engineering and Consultancy Services related to certain marine works, marine structures and associated facilities.



Figure 1: Aerial view of Reading Power Station, cooling water basin and rubble mound breakwaters (source: Google Earth 2022).

The power station was built during 1937-1938 with a capacity of 24 MW. Its' capacity was increased in later years. Currently, only the two “D” power units are operational, with each unit capable of producing 214 MW. The station is powered by natural gas. Today the station produces only about 5% of Israel’s electricity output, but it operates at full capacity only when electricity consumption approaches the full national electricity production capacity. The station is important in the event of malfunctions in the national transmission network. In December 2021 the National Planning and Building Council approved the continued operation of the power plant until January 2026 and ordered the preparation of a plan that will allow for an extension until 2032. Since October 2022 the plant has been shut down due to the need to remove asbestos hazards and is expected to return to operation in 2026.

The original cooling water basin was built in 1938, with breakwater enlargements made in 1952 and 1972. In 2011, a 60-dunam (15-acre) public park was dedicated west of Reading with paved paths linking the site to Tel Aviv Port and the northern beach boardwalk.

The power station was named after Lord Rufus Isaacs, 1st Marquess of Reading, Lord Chief Justice of England and Viceroy of India, who became chairman of the Palestine Electric Corporation in 1926.



Figure 2: Reading Dock Tel Aviv Yafo Plan No. 4564. Construction and Development (indicative impression - for information only).



Figure 3: Reading Marina - Artist impression (indicative, for information only).



Figure 4: Reading Marina - Artist impression (indicative, for information only).

2. DEFINITIONS, ABBREVIATIONS, ACRONYMS

| | |
|-----------------|---|
| ASCE | American Society of Civil Engineers |
| ASTM | American Society for Testing and Materials |
| BAT | Best Available Techniques |
| BIM | Building Information Modeling |
| BoQ | Bill of Quantities |
| BS | British Standards |
| CAMERI | Coastal and Marine Engineering Research Institute, Haifa, Israel |
| CCTV | Closed-circuit television (video surveillance) |
| CIRIA | Construction Industry Research and Information Association |
| Client | Atarim Group/Tel Aviv Yafo Municipality |
| Consulting Firm | The selected entity with proven experience and expertise in the comprehensive planning, engineering, design and consultancy services of marinas for yachts and small craft, including, inter alia, breakwaters, berths, jetties, piers, quays, dredging, moorings, navigation, utilities and associated facilities. |
| CS | Capability Statement |
| D&C | Design and Construct |
| EN | European Norm |
| EPC | Engineering, Procurement and Construction |
| FTP | File Transfer Protocol |
| IEC | Israel Electric Corporation |
| ILSD | Israel Land Survey Datum |
| INGL | Israel Natural Gas Lines |
| IOLR | Israel Oceanographic & Limnological Research Institute, Haifa, Israel |
| IS | Israeli Standards |
| ITB | Invitation to Bid |
| Navigation Aids | Beacons, Lanterns, Towers, Poles, Radar Reflectors, Buoys |
| MEP | Ministry of Environmental Protection – Marine and Coastal Environment Division |
| MS | Method Statement |
| MOD | Ministry of Defense |
| MOH | Ministry of Health |
| MOT | Ministry of Transport, Administration of Shipping and Ports |
| NCR | Non-Conformance Report |
| NTP | Notice to Proceed |
| PIANC | World Association for Waterborne Transport Infrastructure |
| PQ | Pre-Qualification |
| QA | Quality Control |

| | |
|------------------|---|
| QC | Quality Assurance |
| Quay Accessories | Fenders, Bollards, Ladders, Walkways |
| ROV | Remotely Operated Vehicle |
| RFC | Request for Clarifications |
| RFI | Request for Information |
| RFP | Request for Proposals |
| SLR | Sea Level Rise |
| SOW | Scope of Work for Planning, Design, Engineering and Consultancy Services |
| Utilities | Water, drainage, electrical, communications infrastructure, conduits, sleeves, power pedestals, fuel stations, etc. |

Table 1: Definitions, Abbreviations, Acronyms.

The websites of some relevant institutions and organizations are shown in Table 2.

| Name | Website |
|---|--|
| ADYR | www.adyr.co.il |
| ATARIM | www.atarim.gov.il |
| CAMERI | www.cameri-eng.com |
| IEC | www.iec.co.il |
| INGL | www.ingl.co.il |
| IOLR | www.ocean.org.il |
| MEP | www.gov.il/en/departments/topics/seas and coasts/govil-landing-page |
| MOT, Administration of Shipping & Ports | www.gov.il/en/departments/authority of shipping and ports/govil-landing-page |
| PIANC | www.pianc.org |
| TEL AVIV YAFO Municipality | www.tel-aviv.gov.il |

Table 2: Selection of websites of some relevant institutions and organizations (indicative, not exhaustive).

3. STANDARDS, CODES OF PRACTICE, GUIDELINES

The Consulting Firm shall propose the recommended Israeli and international Standards, Codes of Practice and Guidelines for Design and Construction. Some typical, arbitrary examples (indicative, not exhaustive) are, for example:

- ASCE Manual 50 - Planning and Design Guidelines for Small Craft Harbors 3rd edition.
- PIANC Guidelines for Marina Design, Report No. 149, Parts 1, 2 and 4 (2016-2017).
- The Yacht Harbour Association Ltd. – A Code of Practice for the Design and Construction of Marinas and Yacht Harbours, 7th edition (2013).
- Guidelines for Design of Marinas (2001), Australian Standard AS 3962-2001.
- CIRIA, CUR, CETMEF (2007): The Rock Manual. The Use of Rock in Hydraulic Engineering (2nd Edition), C683.
- Metallurgical and Inspection Requirements for Cast Sacrificial Anodes for Offshore Applications, NACE RP0387.
- IHO Standards for Hydrographic Surveys, Special Publication No. 44, 6th Edition, 2020.

The Consulting Firm may recommend and/or propose other and/or additional Standards, Codes of Practice and Guidelines than those listed above. BIM standards shall be included (guidelines for the organization and digitization of information about buildings and civil engineering works).

Reference is made to the “General Specifications for Construction” (the Blue Book), published by the Interministerial Committee, as amended from time to time, also referred to as “General Specifications” or G.S. and to specific Israeli Standards (IS), which are all written in Hebrew. Codes of Practice and Standards shall be Israeli, except where no such standards are available or they are deemed to be not suitable, then the most-up-to-date International Codes and Standards shall be applied, for example ASCE, ASTM, BS, CIRIA, EN, PIANC, etc.

4. LOCAL OUTLINE PLAN (Excerpts)

Reading Marina must be designed and developed in accordance with the approved local planning regulations. Some relevant excerpts of the Local Outline Plan are mentioned below, based on the ***“Planning & Building Law 1965 – Program Instructions 507-0524777 – File 4564 – Recreation & Water Sports at Reading Dock – Local Outline Plan”*** (Hebrew) dated 08/11/2023. See Annex 9.1: Reference Documents. The partial excerpts below are indicative and not exhaustive. In case of translation ambiguities, the Hebrew text prevails.

Explanatory Notes to the Program (page 2)

The goal of the plan: to rehabilitate the existing Reading anchorage into an active anchorage, which includes about 300 berths by virtue of TA-5000 and TAMA 10/a/3.

Plans in the land sector: Anchorage services for operation and service, including the allocation of an area for maritime education, sailing clubs and commercial areas for users and visitors.

In addition, the plan enables regulation of the required infrastructures while being subject to safety arrangements for the coastal gas distribution station existing on site, for IEC facilities, etc. In the maritime field: installation of piers and docks, including supporting infrastructure systems for anchored vessels. Make engineering adjustments in the breakwater at the bottom and sides of the anchorage.

Program Settings (page 10)

In this program, each of the terms listed below shall have the meaning appearing on the side of the definition, unless it's implied differently from the provisions of the plan or the context of things.

| Term | Definition |
|------------------------|--|
| The Quit Pool | The body of water located east of the anchorage and the pedestrian bridge and is not included in the scope of the plan |
| Terrestrial structures | All construction in the land area that forms the east wall of the sea |
| Marine structures | Structures for establishing a land area within the sea and including breakwaters, docks and marginal piers |
| Secondary breakwater | The northernmost maritime anchorage area facing the open sea |
| Main Breakwater | The westernmost maritime anchorage area facing parallel to the open sea |

Table 3: Terms and Definitions in Local Outline Plan.

Any term that has not been defined in this plan shall have the meaning given to it in the Planning and Building Law, 5725-1965 (hereinafter: “the Law”) or in the regulations promulgated pursuant thereto, in the absence of any other intention implied.

Terrestrial Structures (page 12)

Note: Terrestrial Structures (Land Based Works) as described below are excluded from the SOW.

1. Office system for anchorage operation and management.
2. Maintenance and storage for vessels and related equipment.
3. Education in the marine field, including water sports and diving and sailing clubs.
4. Commerce, including catering services.
5. Temporary stalls for commercial, cultural, educational and leisure uses.
6. Stations for emergency services such as fire station, Magen David Adom and police, border control.
7. Open public spaces.
8. Active recreational facilities, play facilities.
9. Car crossings, operational parking, bus parking and disabled parking
10. Toilets and showers, including a land-based sanitary wastewater disposal facility.
11. Engineering facilities integrated into buildings including sewage, gas, electricity, communications.
12. Crane for lifting vessels if necessary.
13. Facilities to produce renewable energy such as: wind, sea waves or solar.
14. Garbage storage facilities

Dock – Land Domain (page 13)

TAMA 37/a/2/

1. The land area between the cooling pond to the west and the Reading power station to the east shall be open to the public and in accordance with the natural gas safety order according to TAMA 37/a/2 and the Master Plan TA/5000. Carrying out work to expand or consolidate this area, including the passage of heavy mechanical engineering equipment, on the adjacent bridge and above the overhead natural gas transmission line that crosses the Quiet Pool, shall be in accordance with the permitted loads as determined by an authorized entity in the field when submitting an application for a building permit, in coordination with INGL and/or gas authority.
2. Hazardous materials and other limitations shall not extend beyond the Blue Line of the power plant to the area of the plan for the dock.
3. The Quiet Pool will be controlled by the dock operator. Prevent access and take all precautions both from the terrestrial coastal environment and from the direction of the anchorage. The first building permit in the area of the plan will be attached to the safety plan regarding the risks of the Quiet Pool.

Parking

1. Disabled parking, buses, emergency vehicles and operational vehicles will be allowed in the anchorage area according to the valid standard at the time of issuance of a building permit.
2. In the architectural design and development plan, designated areas will be designated for parking vehicles and two-wheeled vehicles.

3. The plan does not add parking spaces except as specified in section 1.

Dock – Marine Domain (page 13)

Uses

1. Breakwater.
2. Docks, piers, mooring vessels, including moorings for sports and maritime education and transit for users of the dock.
3. In the area of the anchorage: containers with a volume of about 2,000 liters will be placed for the absorption of oil, including the reservoir legally. A dedicated facility for pumping stormwater with a volume of about 1,000 liters will be installed, including a pump and a separator, a container will be installed, including a pump for pumping contaminated seawater, all according to the law.
4. Lighthouse.
5. Renewable energy production facilities such as sea, solar and wind waves.
6. Water quality monitoring facilities.
7. Move a vessel to the mainland if necessary.
8. Overpass (bridge) between parts of land and pedestrian and bicycle traffic.
9. Barrier between the anchorage areas and the Quit Pool.
10. Crane as needed.

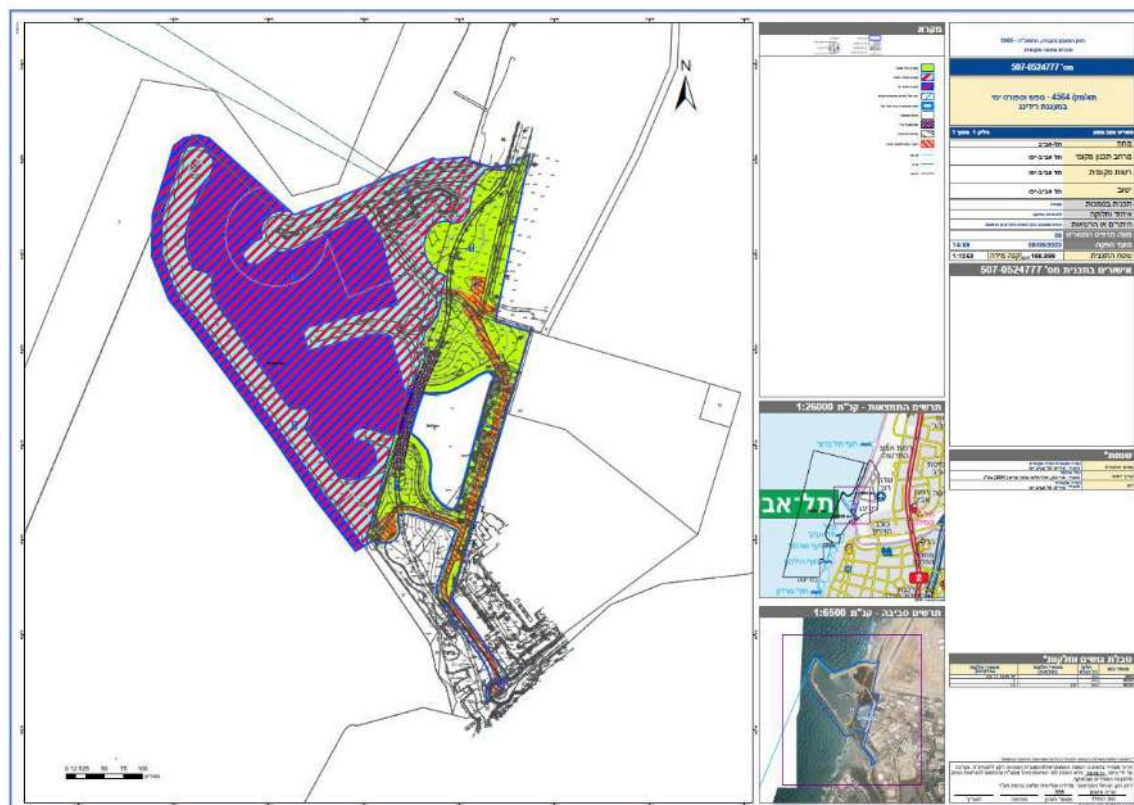
Dock – Marine Domain (page 14)

1. Access to marine structures
 - a) Access to the anchorage areas in the maritime area and the access docks to the vessels will be permitted in accordance with the guidelines of the dock management.
 - b) The main breakwater will be defined as an open public area for pedestrians, emergency vehicles and maintenance. In this territory activities such as temporary fairs will be permitted. The transition to the public will be more in accordance with the instructions of the dock management.
 - c) At the end of the main breakwater, a lighthouse and a point of sale such as a kiosk will be permitted.
 - d) At the end of the main breakwater, free passage for the public will remain at least 2 meters wide.
 - e) Detailed planning of the marine structures will take into account sea level rise at a height acceptable in the literature when appointing the planning, no less than a meter by the end of the century.
2. The area marked in the sketch as an area of construction restrictions from the gas infrastructure is subject to what is specified in National Outline Plan 37/a/2 and according to the actual existing infrastructure.
3. Movement and docking of various vessels will be permitted in accordance with the instructions of the Dock Administration.
4. At least 20% of the marine area will be allocated for sports and marine education.

5. Restoration, expansion, elevation, and sealing above the waterline of existing breakwaters and extension of existing breakwaters will be possible for the secondary breakwater.
6. Infrastructure lines, including gas, will be allowed to pass.
7. At each stage of the development of the berth, the minimum scope of docking places for maritime education shall not be less than 10% of the total docking places or 30 places, whichever is larger. These places will be arranged at the docks adjacent to the exit from the anchorage to the open sea.

Conditions in the Licensing Process (page 19)

6. In the marine space:
 - a) Promenade on the breakwaters, including guardrails, living areas and areas that will allow temporary stalls.
 - b) Design of the lighthouse and its surroundings, relating to the development of a trading point in the lighthouse.
 - c) Construction of piers and docks according to a detailed design and development plan.
 - d) If necessary, the boats and a lifting crane for vessels.
 - e) Providing a solution for all suitable infrastructure for vessels such as electricity/water/sewage disposal connections.



5. SCOPE OF WORK FOR PLANNING, DESIGN, ENGINEERING & CONSULTANCY SERVICES

5.1. GENERAL

The SOW includes rehabilitation of the existing Anchorage and the development of a Marina for approximately 300 berths within the boundaries of the existing cooling water basin of the Reading power station.

The Client appointed **ADYR Constructions** (www.adyr.co.il) to oversee, coordinate and manage the planning, design, engineering & consultancy services by the Consulting Firm. The services shall be conducted in Hebrew and English. If the Consulting Firm is based abroad, it's strongly recommended that the Consulting Firm appoints a competent local representative (Engineer and/or Architect) with a local office to assist, inter alia, with the Hebrew documents, application for Building Permit Plan(s), attend local meetings, interact with local authorities, obtain quotations of local contractors, suppliers, vendors, service providers, etc.

The Consulting Firm shall submit a Preliminary Design Study including three (3) alternative solutions for the Client's evaluation, which shall address, inter alia, layouts and all items as further mentioned in the SOW. Alternative solutions could be, for example: floating docks secured by chains and anchors, floating docks secured by vertical piles, rigid quay walls, combination(s) of these solutions or any other solution(s).

The SOW for planning, design, engineering, and consultancy services is not a "Stand Alone" project. The Client has already carried out initial planning and research activities. Attention should be given, inter alia, to the coastal research reports by H.R. Wallingford Ltd. The Consulting Firm shall integrate its' engineering design solutions with the plans of third party planners and designers which are assigned by the Client. For example, architecture, buildings, onshore facilities, utilities, roads, paving, fences, sewage, waste disposal, soil, environmental, safety, security, electrical lines, etc.

Important: It is emphasized that the Application(s) for the Building Permit Plan(s) of Reading Marina must be signed by an approved structural engineer holding a license from an approved education institute in Israel, such as the TECHNION and who is authorized to sign such papers. The Consulting Firm shall provide and manage such an engineer and shall assist and be fully responsible in the preparation of the Application(s) for the Building Permit Plan(s), which are written in Hebrew.

The power station is still operational from time to time, cooling water periodically enters the power station and excess cooling water is discharged intermittently into the Yarkon River estuary (see the relevant Wallingford report).

The Consulting Firm shall apply Best Industry & Engineering Standards and BAT.

5.2. PLANNING, DESIGN, ENGINEERING AND CONSULTANCY TASKS

The following list gives a limited impression of the planning, design, engineering and consultancy topics and tasks that the Consulting Firm shall address and develop. The list is not exhaustive. The Consulting Firm is responsible for implementing the planning, design, engineering and consultancy tasks, applying the best and most-up-to-date international Codes of Practice and Standards, such as, inter alia, the PIANC Guidelines for Marina Design and others.

5.2.1. Methodology

Provide a detailed description of the proposed methodology and time schedule for the planning, design, engineering and consultancy services for the Reading Marina project including, inter alia, introduction, review of specific site conditions, detailed standards, codes of practice and guidelines for the design, concepts for alternative solutions, etc. for approval by the Client.

5.2.2. Research and Investigations

1. Desktop study of relevant reference documents, reference drawings, bathymetric and topographic survey charts, diving reports (Hebrew and English). A limited list of reference documents is shown in Annexes 10.1 and 10.2.
2. Study the relevant statutory building plan(s) and regulations, including TAMA, etc. (in Hebrew) and apply the instructions.
3. Record all existing emerged, buried, submerged and submarine infrastructure, such as gas pipeline, telecommunication lines, electrical power supply lines, potable water supply lines, wrecks, objects, obstacles, etc.
4. Check soil, site, environmental and physical conditions.
5. Determine Israeli and International Codes of Practice and Standards for design, construction and maintenance of Marinas.
6. Check with IEC the historical dredge records in the basin.
7. Conduct site tours and visits (land & sea).

5.2.3. Feasibility Study

1. Conduct a feasibility study to assess the viability and potential environmental impacts of the marina.
2. Identify the target market and demand for yacht and sailing services.
3. Evaluate the economic, social and environmental aspects of the project.

5.2.4. Marketing and Stakeholder Engagement

1. Provide guidelines in developing a marketing strategy to attract yacht owners and sailing enthusiasts.

2. Provide guidelines in engaging with the local community, government agencies and potential users to address concerns and build positive relationships.

5.2.5. Consultation and Coordination

1. Consultation and coordination (Hebrew, English) with the Client, including all relevant consultants and advisors appointed by the Client, about topics such as, inter alia:
 - Environment.
 - Oceanography, Coastal Hydraulics, Meteorology.
 - Geology, Geophysics, Seismology.
 - Sedimentology.
 - Hydrology.
 - Planning, Architecture.
 - Civil, Marine and Structural Engineering.
 - Roads, Paving, Utilities.
2. Consultation and coordination (Hebrew, English) with, inter alia:
 - IEC Engineering Department.
 - Tel Aviv Yafo Municipality Engineering Department and/or ATARIM.
 - HR Wallingford Ltd.
 - CAMERI and/or IOLR.
 - INGL, MEP, MOT.
 - Any other relevant local and/or national authority and/or institute.

5.2.6. Coastal, Hydraulic, Sedimentological and Meteorological Issues

1. Water levels and tides, wind, waves, (rip)currents, sediments.
2. Climate change and SLR.
3. Numerical wave modelling.
4. Physical model testing (2D, 3D).
5. Determination of design wave event(s).
6. Wave overtopping study of breakwaters.
7. Wave penetration modelling.
8. Hydraulic boundary conditions.
9. Berthing tranquility.
10. Wave reflection.
11. Coastal hydrodynamics, Coastal Morphology.
12. Water circulation in the basin (refreshing the water mass in the basin), basin flushing and silting.
13. Tsunami event.
14. Scour Protection.
15. Sediment transport.
16. Stability and/or erosion of beaches.

5.2.7. Building Permit Plan(s)

1. Prepare the Application(s) for Building Permit Plan(s). The Client will provide support and assistance where possible.
2. Accept the nomination as the Project Structural and Marine Engineer and act according to Israeli law.
3. Sign as the responsible entity for structural engineering and the Auditor of the Project (Form 1 – BPR).
4. Provide structural analysis calculation as required according to Israeli law.
5. Provide the required drawings to support the BPR-DWG files of the engineering works.

5.2.8. Staging Area(s)

1. Provide recommendation(s) of Staging Area(s) for future Contractor(s) and temporary access roads to the construction site(s).
2. Provide recommendation(s) about Demolitions and Removals (if any).

5.2.9. Dredging, Nautical and Navigation Issues

1. Nautical study (channel and basin depths, approach, entrance, berthing of vessels, marine traffic, turning circles, maneuvering), provide detailed design drawings.
2. Ship Maneuvering Simulations.
3. Ship Downtime Assessment Study.
4. Navigation Aids (lights, buoys, radar reflectors, etc.).
5. Marine Traffic Control.
6. Dredging and disposal of dredged materials.
7. Plan and execute necessary dredging activities to maintain appropriate water depths.
8. Develop a sediment management plan to address potential environmental impacts. To be done together with Environmental Consultant.

Note: The Client's architect shall design the lighthouse or light tower. The Consulting Firm shall recommend the type of beacon(s), manufacturer, nautical range, elevation, electrical power supply system, etc.

5.2.10. Bathymetry, Topography and Diving Issues

Provide recommendations and guidelines about:

1. Bathymetric surveys, multi-beam echosounder surveys, Shaded Relief images, point cloud and 3D visualization.
2. Surveys in shallow waters (0-3 m depth).
3. Topographic and photogrammetric surveys, including the use of drones.
4. Underwater inspections, including by divers, ROV's.

5.2.11. Marina Planning, Design, Engineering and Specifications

1. Specify the number and types of berths based on the expected demand and market analysis.
2. Berthing systems. Define the size and configuration of each berth, considering variations to accommodate different yacht and sailing boat sizes.
3. Determine the maximum number of boats the marina can accommodate simultaneously.
4. Consider both transient (short term) and permanent (long term) berths in the capacity calculations.
5. Define the sizes of slips or mooring spaces, considering the range of boat sizes expected to use the marina.
6. Consider variations in slip dimensions to accommodate different types of vessels.
7. Plan for accessible berths suitable for people with disabilities.
8. Consider the need for larger turning areas or specialized facilities to accommodate specific boat types.
9. Establish minimum separation distances between berths and navigational channels to ensure safe maneuverability for boats. Consider environmental and safety regulations when determining these distances.
10. Specify the maximum draft (depth) of boats that the marina can accommodate.
11. Ensure that the navigational channels and berths have adequate depth for various vessel sizes.
12. Define the types of vessels the marine is designed to accommodate, such as sailing yachts, motor yachts, catamarans, etc.
13. Consider whether the marina will cater to specific sailing sports or events.
14. Differentiate between transient berths for short term visitors and permanent berths for long term mooring.
15. Define the proportion of each type based on market demand.
16. If applicable, include specifications for superyacht berths, considering their unique size and infrastructure requirements.
17. Define the size and capacity of boatyard facilities for maintenance and repair work.
18. Specify the availability of utilities (electricity, water, Wi-Fi) at each berth.
19. Define other services provided, such as concierge services, security and marina amenities.
20. Plan for waiting areas for arriving boats and guest facilities for marina users.
21. Ensure that all marina definitions comply with local regulations, industry standards and environmental guidelines.
22. Develop and operational plan for the Marina, including staffing, maintenance schedules and emergency response protocols.
23. Implement best practices for efficient marina operations.

24. Design the layout, including berths, docks, piers and navigation channels.
25. Consider the needs of various yacht sizes and sailing sports requirements.
26. Include facilities such as fuel stations, pedestals, pump-out stations and waste disposal.
27. Provide detailed, comprehensive design drawings.

5.2.12. Structural Issues (Jetties, Berths, Piers, Docks and Quays)

1. Provide detailed, comprehensive design drawings, including jetties, berths, piers, quays, docks, anchor systems, etc.
2. Live loads, vehicle loads, deck loads.
3. Ship to shore connections (electricity, fuel, potable water, telecommunication, internet).
4. Corrosion protection of steel elements, such as coating, anodes, etc.
5. Fenders, bollards, ladders, walkways.
6. Slipway, Boat lift (optional: the crane for lifting vessels, mechanical facilities, etc.), Boat ramp or synchro-lift.
7. All other marina and/or port facilities required to enable the vessels/yachts to moor and unmoor without problems.
8. Access Roads.
9. Determine design lifetime, technical lifetime and economical lifetime.
10. Demolitions and Removals.

5.2.13. Breakwaters

1. Provide detailed, comprehensive design drawings.
2. Check if existing Breakwaters can remain AS-IS or need rehabilitation and/or retrofit and/or upgrading and/or expansion.
3. Conduct hydraulic stability analysis.
4. Conduct seismic stability analysis.
5. Check wave agitation inside the basin.
6. Check if yachts are safe inside the Marina without upgrading the breakwaters.
7. Determine Design lifetime, technical lifetime and economical lifetime.
8. Demolitions, Removals and/or Restoration.
9. Check if heavy grade rocks can be supplied by stone quarries in Israel.
10. Check if pedestrians and cyclists can safely travel on the crest of the breakwaters (overtopping waves).

5.2.14. Geotechnical, Geophysical and Seismic Issues

1. Provide recommendations about the necessity of geotechnical and/or geophysical and/or seismic investigations.
2. Determination of design seismic event.
3. Soil stability analysis.
4. Settlements (subsidence) analysis.
5. Ground improvement (if needed).

5.2.15. Interfacing, Overlapping, Coordination and Integration

Interfacing, overlapping, coordination and cooperation of the plans and layouts with:

- Third party designers and planners such as architects, landscapers, engineers, etc.
- The Clients' legal and financial teams when preparing the Tender Documents.
- Police and National Security authorities.
- IEC, MEP, INGL, MOT, etc.

5.2.16. Time Schedule(s)

The Consulting Firm shall provide detailed time schedule(s) for site investigation, research, testing, planning, permitting, design, engineering, consultancy, construction and handing over, including Phase A and Phase B.

5.2.17. Cost Estimates, Cost Control, Budgets and BoQ's

1. Develop comprehensive budgets and BoQ's for the entire project, including design, engineering, permitting, quantity surveying, construction, and operational phases, including alternative solutions, Phase A (Base Case) and Phase B (Optional Works).
2. Implement cost control measures to ensure the project stays within budget.
3. Request price quotations from local and foreign contractors, manufacturers, suppliers, vendors, service providers, sub-consultants, etc.
4. Consider escalation, contingencies, currency risks, maintenance & repair costs, life cycle costs, etc.
5. Check value of Israeli Made Goods/Israeli Components Price, in accordance with Preference for Domestic Products - Tender Regulations (1995).

5.2.18. Maintenance, Repairs and Warranty

1. Assessment of maintenance and repairs of the marine structures and associated facilities, including dredging.
2. Warranty Period after handing over.

5.2.19. Tender Documents

Prepare the Tender Documents related to Design only or D&C or EPC (jointly with the legal and financial experts of the Client) for Phase A and Phase B. The Client shall assess whether Design only or D&C will be selected, depending, inter alia, on the cost estimates by the Consulting Firm, construction costs, etc. The Tender Documents shall include, inter alia, the Technical Specifications, BoQ's and Construction Time Schedules.

5.2.20. Assistance during Tender Process(es)

The Consulting Firm shall assist the Client related to the ITB's, RFP's, the bidding process and evaluation of the technical proposals and price proposals by the Bidders.

5.2.21. QC and QA

The Consulting Firm shall:

1. Possess the following valid certificate (or equivalent):

- **ISO 9001:2015** (or later) – Quality Management System.

In case the Consulting Firm does not possess this certificate during the tender stage, and it is the winning Bidder, then the Consulting Firm shall endeavour to obtain this certificate within six (6) months after signing the contract with the Client.

2. State its' QC policy and procedures.
3. Cooperate with QA audits by the Client (if required).

5.2.22. Proof Engineering

Only if required: The Consulting Firm shall prepare and submit design reports for review by Proof Engineer(s), who are appointed by the Client.

5.2.23. Environmental Issues

1. Evaluate and integrate the EIA's (Hebrew).
2. Pollution control (water, air, soil, noise).
3. Assistance with Environmental permitting.
4. Provide recommendation(s) and guidelines to prevent and/or control entry of jellyfish into Reading Marina.

Note: The environmental tasks shall be done in cooperation with the Client's environmental consultant(s).

5.2.24. Health and Safety Issues

1. Hazardous materials.
2. Sewage, waste disposal, bilge water disposal.
3. Guard rails, anti-slip surface.

4. Check the safety of tourists, pedestrians, yachts, vessels, surfers, bathers, etc. typically on a hot summer's day and during a storm event and recommend safety precaution measures.
5. Medical Emergency and First Aid Station (to be planned and designed by others).
6. Incorporation of local Health, Safety and Environmental (HSE) laws, bylaws and practices.
7. Fire & explosion prevention, Firefighting systems.

5.2.25. Security Issues

The Consulting Firm shall be aware of existing and future security measures (planned and designed by others) in Reading Marina, inter alia:

1. CCTV system(s).
2. Public shelters.
3. Fences, Gates, Barriers, Guard Booths.

5.2.26. Terrestrial Structures

Excluded from the SOW are Terrestrial Structures (Land Based Works) as described in section 4 above, which are done by other parties. Typical examples of terrestrial structures are, for example: onshore service buildings, residential buildings, office buildings, commercial buildings, public toilets and showers, warehouses, roads, carparks, main electrical power lines, sewage pipelines, main fresh-water pipelines, landscaping, dry garbage collection system, etc.

However, the Consulting Firm shall provide professional assistance with interfacing, overlapping, coordination and integration to achieve an overall holistic design of Reading Marina. In other words, the plans made by the Consulting Firm (Marine Works) and the plans made by others (Land Based Works) of Reading Marina shall be integrated into single, comprehensive plans.

5.2.27. Site Supervision and Supreme Supervision

During construction of Reading Marina the Consulting Firm shall:

1. Visit and inspect the site at agreed intervals, including QC and/or QA.
2. Respond to transmittals, NCR's, RFC's submitted by the Contractor(s).
3. Update Specifications, BoQ's and/or design drawings (if needed).
4. Check and duly sign the AS-MADE/AS-BUILT drawings.

5.3. CONSULTING FIRM'S ORGANIZATION

5.3.1. Organization Chart

The Consulting Firm shall submit an Organization Chart showing the main functions and job titles, in-house consultants, external consultants, sub-consultants, responsibilities, etc.

The Client has employed and/or intends to employ external Israeli and/or international consultants and/or experts for various disciplines. In case the Consulting Firm intends to employ services by consultant(s) and/or expert(s) which are hired by the Client, the Consulting Firm shall seek first prior approval by the Client to prevent a potential conflict of interest. A preliminary list of consultants and experts which are currently (November 2024) employed by the Client is attached as an annex.

5.3.2. Key Personnel

The Consulting Firm shall appoint a Project Manager for approval by the Client. The PM shall be an engineer (B.Eng. degree or higher) with at least ten (10) year relevant experience in similar works. The Consulting Firm shall not replace the approved PM, unless the Consulting Firm proposes a competent and professional replacement for approval by the Client. The PM shall be assisted and supported by a team of professional, experienced engineers and experts in their fields. The Consulting Firm shall submit the education details and resumes of the proposed Key Personnel to the Client for approval.

5.3.3. Reporting

As a minimum, the Consulting Firm shall report to the Client as follows:

1. Weekly progress meetings with Client (either in person or by video conference calls).
2. Monthly Progress Reports.
3. Submittals of technical notes, memos, letters, sketches, e-mails, etc.
4. Submit the deliverables as mentioned in section 8 below.
5. Supreme Supervision Reports.

All documents shall be transferred to a FTP (e.g. SharePoint) to be agreed with the Client.

5.4. DISCLAIMER

The SOW (this document) is preliminary and needs to be further developed and enhanced by the Consulting Firm (subject to prior approval by the Client) during the planning phase(s) of the Reading Marina project.

6. PROJECT PHASES

The SOW shall include planning, engineering design of Reading Marina intended for construction in two (2) separate phases, namely Phase A (Base Case) and Phase B (Optional Works), see Figure 3.

6.1. PHASE A (Base Case)

The goal of Phase A is the earliest possible utilization of (part of) Reading Marina in its' basic shape. In other words: a quick start-up with minimum preparatory work, meaning that upgrading of the breakwaters (if necessary) should be avoided at this stage. The Consulting Firm shall investigate if this is feasible without compromising on safety. This means, for example, that maybe the berths along the rear side of the Main Breakwater cannot yet be installed due to risk of wave overtopping. And maybe the intended walkway on the crest of the Main Breakwater cannot yet be constructed due to risk of overtopping waves. The Consulting Firm shall check what's the possible boat capacity of the Marina in Phase A.

The Consultant Firm shall check the advantages and disadvantages of constructing Phases A and B separately or simultaneously.

After implementation of Phase A, the Client will evaluate the situation and decide if, and when, Phase B (Optional Works) will be implemented. Phase B depends, inter alia, on the available budget and commercial success of Phase A (laws of supply and demand).

6.2. PHASE B (Optional Works)

The goal of Phase B is to realize the maximum capacity of Reading Marina (counted in yachts and counted in the number of visitors, tourists, pedestrians, cyclists, etc.) and implement the "add-ons", such as, inter alia:

- a) Upgrade/Retrofit of Breakwaters (if needed).
- b) Berth(s) along the rear side of Main Breakwater.
- c) Walkway on top of Main Breakwater.
- d) Slipway / Boatlift / Boat Ramp / Synchro-Lift.

The Consulting Firm shall check if and how Phase B can be constructed without hindrance to the existing yachts in the basin (Phase A) and without compromising on safety. In other words: the Marina users should not be disturbed during construction of Phase B.

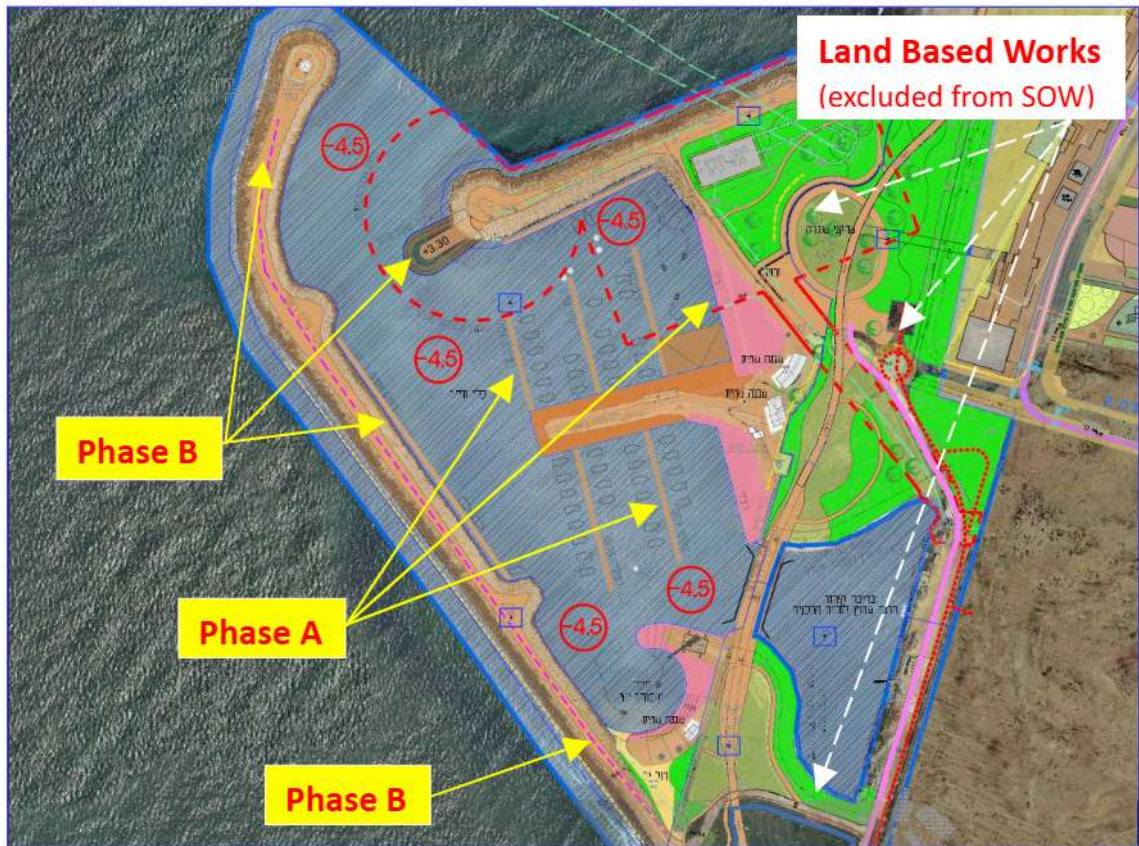


Figure 6: Schematic, indicative impression of Phase A (Base Case) and Phase B (Optional Works). For information only. The Consulting Firm shall make its' own assessment and recommendations.

7. PROJECT TIME SCHEDULE (Marine Works)

A tentative, indicative Project Time Schedule for the Planning, Engineering, Design and Consultancy Services and Construction Works (Marine Works only) is attached as an annex. The Consulting Firm shall update, enhance and expand this schedule during the planning phase(s) of the Reading Marina project.

8. DELIVERABLES

As a minimum, the Consulting Firm shall submit reports, documents and plans related to the following deliverables:

1. Evaluation based on Desktop study of reference documents, reference drawings, bathymetric and topographic survey charts, statutory building plans, etc.
2. Recommendations for further studies, investigations and/or tests (if required).
3. All topics and instructions as described in the SOW (this document).
4. Design Criteria (Basis of Design), including Design Life, Return Period of Design Wave Event, Return Period of Design Seismic Event, Live Loads, Vehicular Loads, Vessel Characteristics, Design Water Depth, Codes and Standards, etc.
5. Interim Progress Reports.
6. Three (3) alternative solutions for evaluation by the Client, including, inter alia, specifications, plans, lay-outs, general arrangements, drawings, sections, sketches, cost estimates, budgets, BoQ's, time schedules, advantages and disadvantages.
7. Recommendations about realization of Phase A (Base Case), Phase B (Optional Works) or Phases A and B combined, including cost estimates, advantages and disadvantages, time schedules, etc.
8. Application(s) for Building Permit(s), signed by an authorized structural engineer, as per Israeli law.
9. Standards, Codes of Practice and Guidelines for design, engineering, construction and maintenance of the Marina, including breakwaters, jetties, berths, piers, quays and associated facilities.
10. Technical Specifications, BoQ's and Time Schedules to serve as part of the Tender Documents to be submitted to future Contractor(s) who will be invited to construct Phase A and/or Phase B.
11. Drawings Album(s) including, inter alia, plans, sections and construction details.
12. Coordinate grid, primary benchmarks and datum.
13. Market research of potential contractors, vendors and materials suppliers.
14. Recommendations, considering what's in the best interest of the Client, including about Design only or Design & Construct.
15. Supreme Supervision Reports (during and at completion of construction).

Documents shall be submitted in the following formats:

- Drawings in DWG with X-Refs and PDF.
- Time schedules in MS Project, PDF and Excel.
- Documents in MS Word and PDF.
- Calculations sheets in Excel and PDF.

The quantities, scales, shapes and presentation of the drawings in the drawings-album(s) shall be agreed in advance with the Client (e.g. index, design criteria, plan views, general arrangements, layouts, sections, details, legends, logos, etc.).

9. ANNEXES

9.1. REFERENCE DOCUMENTS (1)

| # | Title | Source | Date | Pages |
|----|---|---|------------|-------|
| 1 | History of Reading Power Station 1934-2011 (Hebrew) | IEC - Design & Engineering Dept. | Dec. 2011 | 221 |
| 2 | DER5812 Methodology Summary Report | HR Wallingford Ltd. | March 2018 | 37 |
| 3 | DER5812 Site Inspection Report | HR Wallingford Ltd. | April 2018 | 18 |
| 4 | DER5812 Calibration & Baseline Modelling Report | HR Wallingford Ltd. | May 2018 | 143 |
| 5 | DER5812 Wave Agitation Modelling | HR Wallingford Ltd. | July 2018 | 114 |
| 6 | Reading Marina: Final Report on Marina Upgrade in all matters related to marine structures (Hebrew) | R. Raviv Engineering & Consulting Ltd. | 16/07/2018 | 4 |
| 7 | Environmental Impact Assessment (EIA) – Part A (Hebrew) | ADAMA / Ari Cohen Architects & Urban Planners | 01/05/2018 | 304 |
| 8 | EIA – Part B (Hebrew) | ADAMA / Ori Cohen | 01/05/2018 | 56 |
| 9 | EIA – Part C (Hebrew) | ADAMA / Ori Cohen | 01/05/2018 | 67 |
| 10 | EIA – Part D (Hebrew) | ADAMA / Ori Cohen | 01/05/2018 | 47 |
| 11 | EIA – Part E (Hebrew) | ADAMA / Ori Cohen | 01/05/2018 | 11 |
| 12 | Environment-PPP slide show (Hebrew) | Unknown | 02/01/2019 | 13 |
| 13 | Planning & Building Law 1965 – Program Instructions 507-0524777 – File 4564 – Recreation & Water Sports at Reading Dock – Local Outline Plan (Hebrew) | Tel Aviv-Yafo Municipality | 08/11/2023 | 25 |
| 14 | Reading Marina – Outline for starting the development initiative – PPP slide show (Hebrew) | ADYR Constructions / Dr. Shuki Amrani / Ari Cohen, Michael Wind | 13/12/2023 | 22 |
| 15 | Geotechnical Design Criteria – Reading Marina Breakwater Doc. No. 1538-02 – Plan no. 507-0524777 | Amos Shiran Ltd. | 31/03/2025 | 12 |

Table 4: Reference Documents (indicative, for information only).

9.2. REFERENCE DOCUMENTS (2)- DRAWINGS

| # | Dwg. No. | Title | Source | Date |
|----|----------|--|-----------------|------------|
| 1 | 1 | Bathymetric survey – Jaffa to Herzelia – General Map-Layout 1 | Lia Marine Ltd. | July 2017 |
| 2 | 2 | Bathymetric survey – Jaffa to Herzelia South – General Map-Layout 2 | Lia Marine Ltd. | July 2017 |
| 3 | 3 | Bathymetric survey – Jaffa to Herzelia – General Map-Layout 3 | Lia Marine Ltd. | July 2017 |
| 4 | 1604-001 | General plan | R. Raviv E & C | 21/07/2018 |
| 5 | 1604-002 | Principle breakwater sections | R. Raviv E & C | 21/06/2018 |
| 6 | 1604-003 | Typical sections of berths/Permanent piers | R. Raviv E & C | 21/06/2018 |
| 7 | 1604-004 | Floating piers | R. Raviv E & C | 21/06/2018 |
| 8 | 1604-005 | Lifting device, ramp, permanent dock | R. Raviv E & C | 21/06/2018 |
| 9 | 1649-201 | General plan to convert Reading Anchorage to Reading Marina | R. Raviv E & C | 21/06/2018 |
| 10 | 1649-202 | Floating docks in different alternatives | R. Raviv E & C | 21/06/2018 |
| 11 | 1649-203 | Main breakwater upgrade at Reading Marina – public promenade, breakwater sealing against water passage | R. Raviv E & C | 21/06/2018 |
| 12 | 1649-204 | Principle sections of main dock | R. Raviv E & C | 21/06/2018 |
| 13 | 1649-211 | General plan to convert Reading Anchorage to Reading Marina | R. Raviv E & C | 21/06/2018 |
| 14 | 1649-212 | Floating docks alternatives | R. Raviv E & C | 21/06/2018 |
| 15 | 1649-213 | Main breakwater upgrade at Reading Marina – public promenade, breakwater sealing against water passage | R. Raviv E & C | 21/06/2018 |
| 16 | 1649-214 | Main section of main pier | R. Raviv E & C | 21/06/2018 |

Table 5: Reference Drawings (indicative, for information only).

Notes:

- 1) The above reference documents and reference drawings are a limited selection and are for information only. The Consulting Firm will be given and should study more relevant documents during the planning & design process.
- 2) The drawings made by R. Raviv (2018) are just a feasibility study, are for information only and may not be relevant and/or appropriate. The Consulting Firm shall make its' own assessment, plans and drawings.

9.3. REFERENCE DOCUMENTS (3) – Surveys by ADYR (2025)

| # | Dwg. No. | Title | Source | Date |
|---|---------------------------------------|---|--------|------------|
| 1 | ADYR-DR-Reading/2025-02-CHT-ATR-01-GD | Reading Intake 202502 ITM Rev01-5m Grid (pdf) | ADYR | 20/02/2025 |
| 2 | ADYR-DR-Reading/2025-02-CHT-ATR-01-OP | Reading Intake 202502 ITM Rev01-BW Contours (pdf) | ADYR | 13/03/2025 |
| 3 | ADYR-DR-Reading/2025-02-CHT-ATR-01-CN | Reading Intake 202502 ITM Rev01-Contours (pdf) | ADYR | 20/02/2025 |
| 4 | ADYR-DR-Reading/2025-02-CHT-ATR-01-OP | Reading Intake 202502 ITM Rev01-Ortho (pdf) | ADYR | 20/02/2025 |
| 5 | ADYR-DR-Reading/2025-03-CHT-ATR-01-CS | Reading Intake 202502 ITM Rev01-Cross Sections (pdf) | ADYR | 04/03/2025 |
| 6 | - | Reading Intake 202502 ITM Rev01 – Model (DWG) | ADYR | 20/02/2025 |
| 7 | - | 25.02.28 Reading Breakwaters – Combined Points Cloud Images (pdf) | ADYR | 28/02/2025 |
| 8 | - | Reading Fly By – Video Animation (mp4) | ADYR | 13/03/2025 |

Table 6: Bathymetric and Drone Surveys by ADYR Constructions - February 2025 (indicative, for information only).

9.4. REFERENCE DOCUMENTS (4) – Additional Data by IEC

| # | Date | Title/Description | Drawing No./Doc. No. | Author/Origin | No. Sheets | Remarks |
|----|------------|--|----------------------|--|------------|---------|
| | | (1) Soil Investigation - Land side | | | | |
| 1 | 08/11/2021 | Boring No. 2-K | | David David - Foundation Consulting Engineering Ltd. | 4 | Hebrew |
| 2 | 30/04/1979 | Boring Location Plan | B-1R | Sargent & Lundy Inc. Engineers | 1 | |
| 3 | 30/04/1979 | Log of Borings - sheet 1 | B-5R | Sargent & Lundy Inc. Engineers | 1 | |
| 4 | 30/04/1979 | Log of Borings - sheet 2 | B-6R | Sargent & Lundy Inc. Engineers | 1 | |
| 5 | 30/04/1979 | Log of Borings - sheet 3 | B-7R | Sargent & Lundy Inc. Engineers | 1 | |
| 6 | 15/09/1968 | Borings B3-B11 & B15-B17 | RD-5-0044 | IEC | 1 | |
| | | (2) Dredging & Bathymetry | | | | |
| 7 | 18/01/2009 | Reading Reservoir - Cooling Water Pool - Estimated Quantity for Dredging | pdf | IEC | 3 | Hebrew |
| 8 | 09/12/2009 | X, Y, Z data | | IEC | 1 | Excel |
| 9 | 03/05/2012 | X, Y, Z data | | IEC | 1 | Excel |
| 10 | 11/07/2017 | X, Y, Z data | | IEC | 1 | Excel |
| 11 | 04/10/2018 | X, Y, Z data | | IEC | 1 | Excel |
| 12 | 03/05/2012 | Bathymetric chart - grid | | IEC | 1 | |
| 13 | 03/05/2012 | Bathymetric chart - contours | | IEC | 1 | |
| 14 | 11/07/2017 | Bathymetric chart - contours | | IEC | 1 | |
| 15 | 04/10/2018 | Bathymetric chart - contours | | IEC | 1 | |
| 16 | 01/07/2001 | Cooling Basin - Dredging Plan | rg0012659_02-01 | IEC | 1 | |
| | | (3) Floating Barriers | | | | |
| 17 | | .15 m Floating Barriers Security Barrier System "N" Type Drawing | | Mayi Deniz A.S. | 1 | |
| 18 | | .15 m Floating Barriers Security Barrier System "V" Type Drawing | | Mayi Deniz A.S. | 1 | |
| 19 | 13/06/2017 | Mooring System for Floating Barrier | IEC-MURING-000 | Leonardo Stadler Coastal & Harbour Engineering Ltd. | 1 | Hebrew |
| 20 | | Photographs | jpg | | 4 | |
| | | (4) Breakwater Survey Reports - V. Kagan | | | | |
| 21 | 01/09/2012 | Survey of the Breakwater at the Power Plant in Tel Aviv | | Valeri Kagan Consulting Engineer | 29 | |
| 22 | 01/08/2015 | Profiling of the Breakwater at the Power Plant in Tel Aviv | | Valeri Kagan Consulting Engineer | 59 | |
| 23 | 01/01/2020 | Profiling of the Breakwater at the Power Plant in Tel Aviv | | Valeri Kagan Consulting Engineer | 38 | |
| | | (5) Bathymetric & Topographic Survey Reports - Others | | | | |
| 24 | 27/05/2014 | Map and coordinates of points, bolts main breakwater | DWG, pdf | Gallie Surveyors Ltd. | 2 | |
| 25 | 01/01/2017 | Shaded relief images breakwaters | jpg | ? | 20 | |
| 26 | | Teledyne RESON PDS system, point cloud data | | Lia Marine Ltd. | various | |
| 27 | 01/11/2017 | Video animation drone survey covering main breakwater, lee breakwater | | Lia Marine Ltd. | 1 | |
| 28 | 01/11/2017 | Topographic map drone survey main breakwater, lee breakwater | MP4 | Lia Marine Ltd. | 1 | |
| 29 | 01/11/2017 | Google Earth 3D animation breakwaters | KMZ | Lia Marine Ltd. | 1 | |

Table 7/1: Additional Data provided by IEC (indicative, for information only).

| | | | | | | |
|----|------------|--|--------------------------|---|----|---------------|
| 30 | 27/01/2005 | Survey Map DWG - landside | snv6 | IEC | 1 | Hebrew |
| 31 | 27/01/2005 | Topographic Plan & Survey | snv6-IDFrame | IEC | 1 | |
| 32 | | Survey Map DWG - landside | tarshim2500 | IEC | 1 | Hebrew |
| 33 | 02/02/2017 | Layout main breakwater, surveyed sections above water | DWG | Baha Fahler Aldin - Land Surveyor | 1 | |
| 34 | 12/02/2023 | Bicycle Path and Service Road | ELT-1565-1-1 | Eltan Engineering | 1 | Hebrew |
| 35 | 12/02/2023 | Bicycle Path and Service Road | ELT-1565-1-2 | Eltan Engineering | 1 | Hebrew |
| 36 | 13/02/2023 | Bicycle Path | L-100 | Urbanof Studio Landscape Architecture | 1 | Hebrew |
| 37 | | Bicycle Path Reading - Foundation Wall for Fences | | Ervin Hirsch Management & Promotion of Projects | 1 | Hebrew |
| 38 | 29/11/2022 | Survey Report of the Reading - Tel Aviv Power Station Breakwater | | Lia Engineering Ltd. | 46 | |
| | | (6) Breakwaters Design Plans, Sections | | | | |
| | | Sub-folder "old" | | | | |
| 39 | 27/06/1967 | Cooling Water Basin Layout according to Stage C | RD-24-1-07 | IEC | 1 | |
| 40 | 30/04/1979 | Conceptual Design - Seawater Intake Basin Plan | RD-24-1-0010 / B-60R | Sargent & Lundy Inc. Engineers | 1 | |
| 41 | | ? | RD-24-37 | IEC | 1 | |
| 42 | 03/01/1973 | Cooling Water Basin - Bathymetry | RD-24-60 | IEC | 1 | |
| 43 | 12/07/1973 | Cooling Water Basin - Section | RD-24-61 | IEC | 1 | |
| 44 | | Steel Sheet Piles Wall | RD-24-62 | IEC | 1 | Hebrew |
| 45 | 10/11/1965 | Proposed Cooling Water System - Sheet 1 | rd-25-1 / B-3 | Sargent & Lundy Inc. Engineers | 1 | |
| 46 | 10/11/1965 | Proposed Cooling Water System - Sheet 2 | rd-25-2 / B-4 | Sargent & Lundy Inc. Engineers | 1 | |
| 47 | 10/08/1967 | Conceptual Design - Seawater Intake Basin Plan - Plan & Profiles | rd-25-13 / B-60R | Sargent & Lundy Inc. Engineers | 1 | |
| 48 | 10/08/1967 | Conceptual Design - Seawater Intake Basin Plan - Plan & Profiles | rd-25-13alt / Alt. B-60R | Sargent & Lundy Inc. Engineers | 1 | |
| | | Rest | | | | |
| 49 | 19/05/1968 | Seawater Intake Basin - Setting Out | rd-24-21 | IEC | 1 | |
| 50 | 19/05/1968 | Seawater Intake Basin - General Plan | rd-24-22-1 | IEC | 1 | |
| 51 | 19/05/1968 | Seawater Intake Basin - General Plan | rd-24-22-2 | IEC | 1 | |
| 52 | 19/05/1968 | Seawater Intake Basin - General Plan | rd-24-23 | IEC | 1 | |
| 53 | 17/06/1969 | Seawater Intake Basin - Cross Sections 1-8 Main Breakwater | rd-24-24 | IEC | 1 | |
| 54 | 19/05/1968 | Seawater Intake Basin - Cross Sections 9-14 Main Breakwater | rd-24-25 | IEC | 1 | |
| 55 | 19/05/1968 | Seawater Intake Basin - Cross Sections 15-17 Main Breakwater | rd-24-26 | IEC | 1 | |
| 56 | 19/05/1968 | Seawater Intake Basin - Cross Sections 18-21 Main Breakwater | rd-24-27 | IEC | 1 | |
| 57 | 19/05/1968 | Seawater Intake Basin - Cross Sections 2-6 Lee Breakwater | rd-24-28 | IEC | 1 | |
| 58 | 19/05/1968 | Seawater Intake Basin - Cross Sections 2-4 Jetty & Groin | rd-24-29 | IEC | 1 | |
| 59 | 10/08/1967 | Conceptual Design - Seawater Intake Basin - Sections Sheet 1 | rd-25-14 / B-61R | Sargent & Lundy Inc. Engineers | 1 | Stone Classes |
| 60 | 10/08/1967 | Conceptual Design - Seawater Intake Basin - Sections Sheet 2 | rd-25-15 / B-62R | Sargent & Lundy Inc. Engineers | 1 | Stone Weight |
| 61 | 01/03/1994 | Cooling Basin - Base Map of Survey Profiles | RG0002064_00-01 | Oceana Marine Research Ltd. | 1 | |

Table 7/2: Additional Data provided by IEC (indicative, for information only).

| | | | | | | |
|----|------------|--|------------------------------|---|--------|--------|
| 62 | 01/03/1994 | Cooling Basin - Breakwater Profiles 6 - 12 | RG002065_00-01 | Oceana Marine Research Ltd. | 1 | |
| 63 | 01/03/1994 | Cooling Basin - Breakwater Profiles 12 - 16 | RG002066_00-01 | Oceana Marine Research Ltd. | 1 | |
| 64 | 01/03/1994 | Cooling Basin - Breakwater Profiles 16 - 20 | RG002067_00-01 | Oceana Marine Research Ltd. | 1 | |
| 65 | 01/05/1965 | Seawater Intake System - Extended Breakwater Scheme A | RG0022272_00-01 | Sargent & Lundy Inc. Engineers | 1 | |
| 66 | 21/12/1971 | Cross sections 18-21 main breakwater - AS MADE survey | rg0028608_00-01 / RD-24-47 | IEC | 1 | |
| 67 | 21/12/1971 | Cross sections 15-17 main breakwater - AS MADE survey | rg0028609_00-01 / RD-24-46 | IEC | 1 | |
| 68 | 21/12/1971 | Cross sections 18-21 main breakwater - AS MADE survey | rg0028611_02-01 / RD-24-42 | IEC | 1 | |
| 69 | 21/12/1971 | Cross sections 15-17 main breakwater - AS MADE survey | rg0028612_02-01 / RD-24-41 | IEC | 1 | |
| 70 | 20/05/1968 | Cross sections 02-06 lee breakwater | rg0028624_01-01 / RD-24-28 | IEC | 1 | |
| 71 | 20/05/1968 | Cross sections 18-21 main breakwater | rg0028625_01-01 / RD-24-27 | IEC | 1 | |
| 72 | 05/01/1969 | Cross sections 15-17 main breakwater | rg0028626_01-01 / RD-24-26 | IEC | 1 | |
| 73 | 19/05/1968 | Cross sections 09-14 main breakwater | rg0028627_01-01 / RD-24-25 | IEC | 1 | |
| 74 | 17/06/1969 | Cross sections 01-07 main breakwater | rg0028628_02-01 / RD-24-24 | IEC | 1 | |
| 75 | | Sketch breakwater sections (poor resolution) | rg0028657_00-01 / RD-24-1-14 | IEC | 1 | Hebrew |
| 76 | 19/06/1972 | Typical section | rg28607 / RD-24-48 | IEC | 1 | Hebrew |
| 77 | 05/05/2004 | Plan Natural Gas facilities | ? | IEC | 1-2/12 | Hebrew |
| 78 | 19/05/1968 | Cross sections 02-06 lee breakwater | 324-8 / RD-24-28 | IEC | 3/12 | |
| 79 | 05/01/1969 | Cross sections 02-04 Jetty & Groin | 324-9 / RD-24-29 | IEC | 4/12 | |
| 80 | | Sketch breakwater sections (poor resolution) | ? | IEC | 5/12 | |
| 81 | 31/07/1994 | Plan, sections main breakwater | RD-24-0095 | Oceana Marine Research Ltd. | 6/12 | |
| 82 | 05/01/1969 | Plan, sections main breakwater, lee breakwater, groin | 324-2 / RD-24-22 | IEC | 7/12 | |
| 83 | 05/01/1969 | Longitudinal sections main breakwater, lee breakwater, groin | RD-24-23 | IEC | 8/12 | |
| 84 | 05/01/1969 | Cross sections 01-08 main breakwater | 324-4 / RD-24-24II | IEC | 9/12 | |
| 85 | 19/05/1968 | Cross sections 09-14 main breakwater | 324-5 / RD-24-25 | IEC | 10/12 | |
| 86 | 05/01/1969 | Cross sections 15-17 main breakwater | 324-6 / RD-24-26 | IEC | 11/12 | |
| 87 | 05/01/1969 | Cross sections 18-20 main breakwater | RD-24-27 | IEC | 12/12 | |
| 88 | 15/02/1992 | Yarkon River bathymetry | RD-26-203 | IEC, Oceana Marine Research Ltd. | 1/5 | |
| 89 | 21/03/1967 | Evolution of the bottoms around the basin | 13394 | Laboratoire Central D'Hydraulique De France | 2/5 | |
| 90 | 21/03/1967 | Evolution of the bottoms around the basin | 13241 | Laboratoire Central D'Hydraulique De France | 3/5 | |
| 91 | 10/04/1966 | Pickings and sea bottom sampling | 271-26 | IEC | 4/5 | |
| 92 | 20/04/1967 | Evolution of the contour lines south of the basin | 13337 | Laboratoire Central D'Hydraulique De France | 5/5 | |
| | | (7) Bulkhead | | | | |
| 93 | | Steel Sheet Piles Wall | RG0022275_00-01 | IEC | 1 | Hebrew |
| 94 | 01/07/2007 | Cooling Basin Bulkhead Plan and Inspection Stations | | Valery Buslov Consulting Engineer | 11 | |
| 95 | 01/07/2007 | Cooling Basin Bulkhead Typical Cross Section | JPG | Valery Buslov Consulting Engineer | 1 | Hebrew |

Table 7/3: Additional Data provided by IEC (indicative, for information only).

9.5. CONSULTANTS AND EXPERTS EMPLOYED BY THE CLIENT

See separate pdf document.

9.6. PRELIMINARY PROJECT TIME SCHEDULE (Marine Works)

See separate pdf document.