



RIVERLAKE

Terminal development Experience & Project References



Experience

Tank Terminal Development

Riverlake provides a full range of project management services for all aspect of on- and offshore oil & gas terminal development. We have the capabilities and experience to assist throughout the whole process of terminal development, from conception to operation.

Our services are based on our in-depth knowledge and experience with oil & gas terminals, tanker mooring systems and project development. For the development of on- and offshore oil terminals specifically, Riverlake Solutions developed a comprehensive project development methodology.

Reference projects

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Services

Throughout the subsequent development phases, Riverlake provides numerous services:

Market feasibility

- Market analysis
- Business planning
- Feasibility studies
- Master planning
- CAPEX / OPEX estimation

Funding & permitting

- Bankable reports
- Permit process management

Engineering

- FEED
- Functional scoping
- Conceptual design
- Basic design
- Detailed design

Tendering

- Contracting strategies
- Pre-qualifications / Contractor selection
- Requests for Proposal
- Construction contracts
- Contract negotiations

Terminal construction

- Construction management
- Pre-commissioning
- Commissioning
- Start-up

Terminal operations

- Preparation of operations management
- Preparation of maintenance management
- Terminal automation
- Technical/operational due-diligence
- Performance optimization programs

Health, Safety and Environment (HSE)

- HAZID, HAZOP, SIL
- Safety procedures

Project management

- Project scheduling
- Project risk management
- Overall project management

Proprietary Methods

Over time Riverlake Solutions developed a number of proprietary tools:

- Project Management Handbook
- Suite of templates for Standard Operating Procedures

Industry Experience

The staff of Riverlake Solutions brings to you many years of experience from world leaders in the field, including SBM, Bluewater and Monobuoy.

International Track Record

Since 2008, Riverlake has proven its skills in projects in many countries and for many clients.

The next pages provide background information about a number of these projects.



Single Point Mooring Construction Supervision

Region Fabtech, Dubai / Oman
Duration 9 months
Client Shell Oman Marketing Company

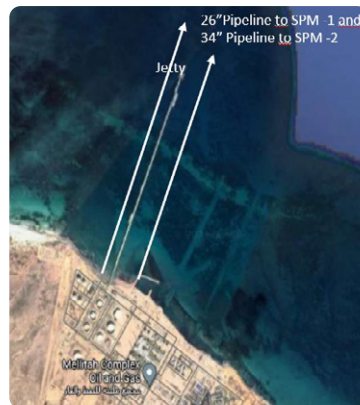
The Scope of Work & Supply for the refurbishment and replacement of the CALM buoys covered the Design, Construction, Procurement & Supply of SPM System. Riverlake ensured the Contractor provided all necessary materials, planning, engineering, documentation, supplies and personnel. All work was performed in accordance with this Scope of work, Drawings, codes and specifications.



Single Point Mooring – Consultancy Support

Region Melitah, Libya
Duration Ongoing
Client ME Marine

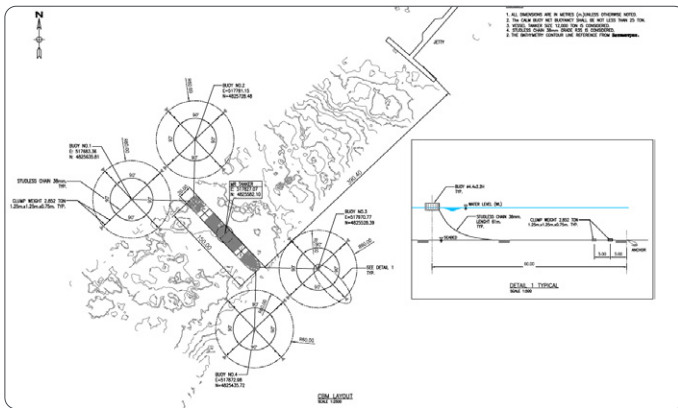
The Riverlake Solutions Scope of Work includes yearly inspection of the two SPM systems and advisory work on the needed maintenance for the two SPM's. In addition, Riverlake arranges spare parts and procurement (in case needed by the end Client).



Conventional Buoy Mooring – Concept & FEED Study

Region Oil Transshipment, Kazakhstan
 Duration Ongoing
 Client Oil Transshipment

Riverlake scope of work for the was Project Management, Engineering and make an assessment of the various future product flows (i.e. quantities). In addition, Riverlake performed the Floating & Mooring system design and the offshore / subsea pipeline or floating hose design. Finally, a Cost Estimate was prepared for budget approval (FID).



Conventional Buoy Mooring for Technical and Operational Consultancy Support

Region Tema, Ghana
 Duration 6 months
 Client Cassel

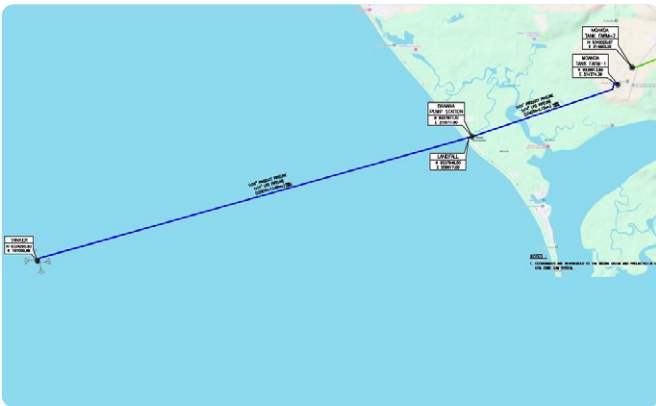
Riverlake assisted client with the development of an oil terminal consisting of five tanks with a total capacity of approx. 70,000mT. is envisaged via A CBM system is considered the most economical for tanker off-loading of these products. As back-up, 18-inch onshore pipeline tie-in to a nearby Tank Farm is designed.



Conventional Buoy Mooring – Pre FEED Study

Region Moanda, DRC
Duration 2 years
Client SOCIR SA

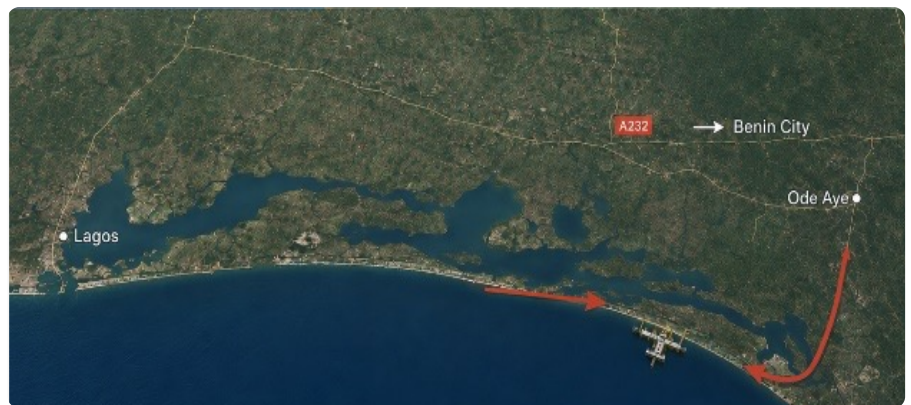
Riverlake performed the Pre-FEED scope for both white products (Gasoil, Gasoline, Kerosene, Fuel Oil) and LPG. The study included the offshore CBM system design, the PLEM and subsea pipelines, the shore approach, a pumping / booster station, onshore pipelines to the onshore Tank Farm.



SPM for fuel trade and import – Tendering Services

Region Nigeria
Duration 6 months
Client OKFTZ

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Ammonia Import Terminal

Region Flushing, the Netherlands

Duration 4 years

Client Evolution Terminals

Riverlake Solutions developed this integrated Green Energy Hub for the import, storage and handling of hydrogen carriers, renewable energy products and low-carbon fuels, comprising 150,000 m³ of ammonia, 180,000 m³ of methanol and 70,000 m³ of biodiesel storage with all related berths, rail and road loading and utilities. The scope covered the in-house concept design of the complete facility and management of the pre-FEED and environmental permit application executed by specialized third parties, technical consultancy on stakeholder engagement with landowners, government and permit authorities, and the initiation of ammonia cracking into hydrogen for the Dutch hydrogen backbone.



Refinery Terminal - Operating Manual

Region Duqm, Oman

Duration 2 years

Client OQ8 (JV of Oman Oil and Kuwait Oil)

For OQ8's new world-scale refinery and its large export terminal for gasoil, fuel oil, Jet A1 and gasoline, Riverlake Solutions wrote the complete operating manual. Building on earlier work on the Oman Oil bunker terminal in the same port, Riverlake produced all operating procedures, work instructions and related forms based on engineering and supplier information - over 100 documents in total, structured according to the ISO 9001 standard.



Bunker Terminal Development

Region Duqm, Oman
 Duration 6 years
 Client Oman Oil Marketing Company (OOMCO)

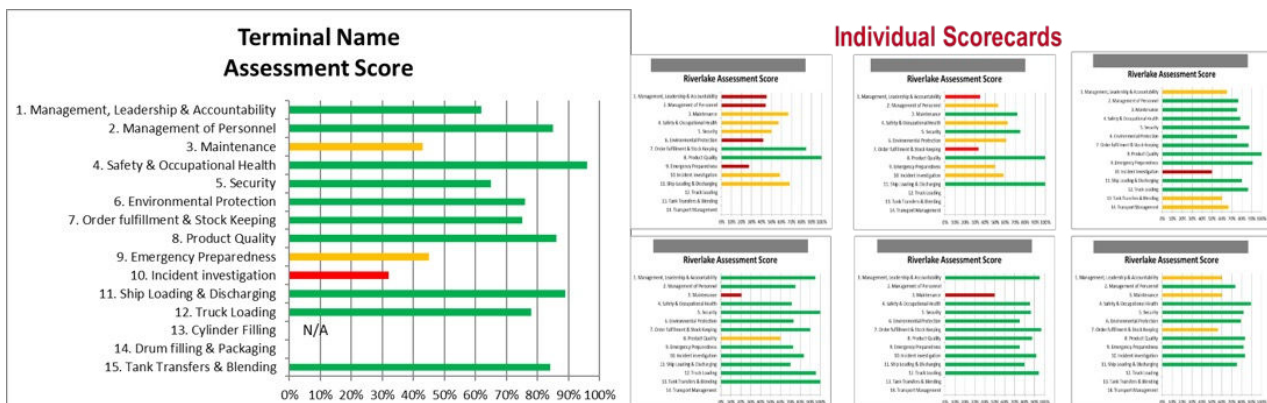
Greenfield development of a tank terminal with an initial storage capacity of 200,000 m³, including jetty facilities, for the storage and handling of bunkering fuels in the newly constructed port of Duqm. The terminal comprises 12 tanks, marine loading/discharging facilities, truck loading, a blending installation and all utilities including firefighting and product heating. Riverlake's services covered financial modelling (CAPEX/OPEX), conceptual design, the FEED tender and project management, EPC tender documents, and - once awarded - the Project Management Consultant (PMC) role for construction supervision and commissioning.



Asset Integrity Assessment

Region Seven fuel distribution depots (Benin, Nigeria, Spain, Sierra Leone, Senegal, Tanzania)
 Duration 18 months
 Client Oryx Energies

As part of a drive towards increased reliability, safety and sustainability, Riverlake Solutions conducted Asset Integrity Assessments on the client's fuel distribution depots, assessed against both client-defined and international standards (MTMSA, CDI-T, ISGOTT and ISO/OHSAS 9001, 14001 and 18001). A dedicated questionnaire based on Riverlake's proprietary assessment tool was issued for self-evaluation one month prior to on-site assessments by Riverlake staff, with results presented to client management through clear KPI graphs.



National Import Terminal

Region Ain Sokhna Port, Suez, Egypt
Duration 18 months
Client Sonker Energy

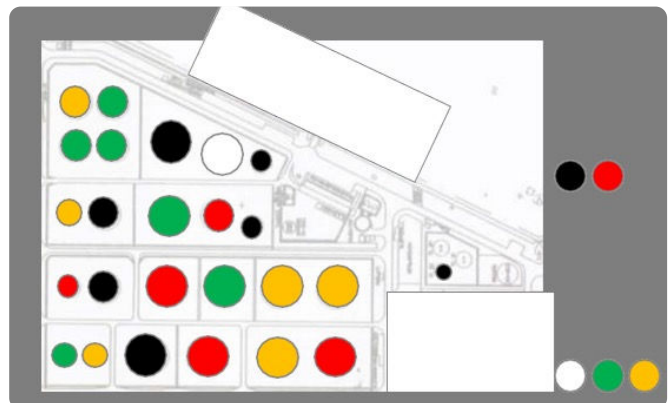
Development of a major import facility for LNG, LPG and gasoil connected to the Egyptian grid to supply the growing capital Cairo. In the initial stages Riverlake Solutions provided conceptual designs for further project stages, contracting strategies, HSE policies and emergency planning. During a later stage Riverlake prepared the commissioning and start-up, delivering a detailed Operations and Maintenance (O&M) plan, Standard Operating Procedures and complete quality documentation.



Terminal Renovation

Region Rotterdam, the Netherlands
Duration 8 months
Client Nova Terminals

Brownfield conversion of a former refinery offsite into an independent tank terminal with a storage capacity of 200,000 m³ for the storage and handling of fuels in the port of Rotterdam. With feasibility highly dependent on the technical status of the assets, Riverlake Solutions conducted the required technical assessments and provided guidance on renovation through technical status reports, conceptual designs for various scenarios and CAPEX estimates.



Bunker Terminal Development

Region Las Palmas, Gran Canaria, Spain
Duration 60 months
Client Oryx Energies

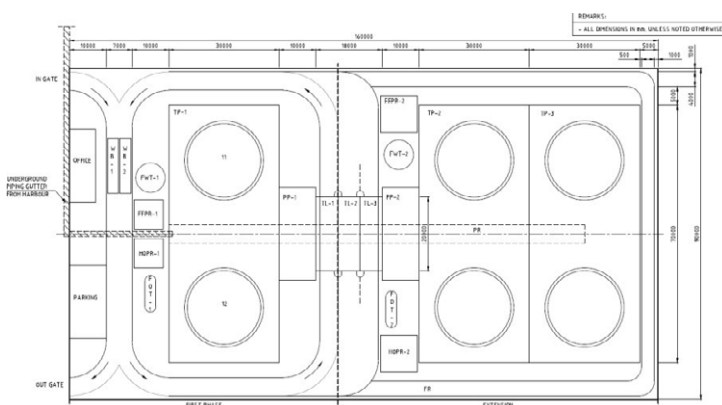
Greenfield development of a 220,000 m³ tank terminal for the storage and handling of heavy fuel oil and gasoil, comprising 13 tanks (10,000-35,000 m³), marine loading/discharging, truck loading, a blending installation and all utilities. Riverlake Solutions provided a project risk assessment, overall project management, engineering supervision and the full contracting process, stepped in to take over construction management and pre-commissioning when works were delayed, and ran commissioning and operational start-up, acting as terminal and operations managers.



Bitumen Terminal Development

Region Pointe Noire, Congo
Duration 1 year
Client Confidential

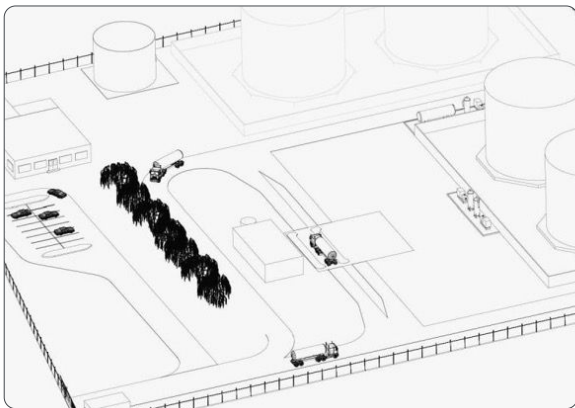
Greenfield development of a bitumen tank terminal with a storage capacity of 30,000 tons to supply bitumen in the region, consisting of 2 tanks, marine loading/discharging facilities, truck loading and all utilities including firefighting and product heating. Riverlake Solutions was involved from the beginning, preparing the financial model (including CAPEX and OPEX costs) and the conceptual design.



Jet Fuel Terminal Development

Region International Airport of Accra, Ghana
Duration 12 months
Client Blue Ocean

Greenfield development of a 10,000 m³ jet fuel (Jet A1) terminal at Accra international airport, consisting of 4 tanks of about 2,500 m³ each, receiving from trucks and delivering clean, on-specification fuel to the aircraft hydrant system. Riverlake Solutions developed the functional requirements and conceptual design, set a CAPEX budget, and managed the EPC tender process (an EPC strategy split into Civil and Mechanical/Electrical/Instrumentation packages), handling clarifications, bid evaluation and contract negotiations with the two final contractors.



Oil Terminal Expansion

Region Ceyhan, Turkey
Duration 6 months
Client Confidential

Expansion of a terminal with a total storage capacity of approximately 600,000 m³ for crude oil, oil products and LPG to accommodate increasing trading volumes, with the intention to grow in phases to 1 million m³ and to add a multi-berth jetty for vessels up to 150,000 DWT. Riverlake Solutions developed a phased overall growth plan and detailed plans for the first phase of approximately 150,000 m³, and assisted the client with the related commercial negotiations.



Oil Terminal Assessment

Region Atsumi and Owase, Japan
Duration 5 months
Client Chubu Energy

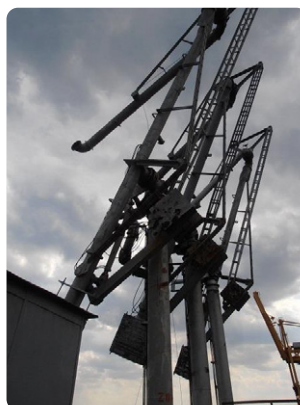
Riverlake Solutions acted as Technical Consultant to define the existing storage infrastructure capacities and utilisation at Chubu's main sites and to assess the feasibility of options to more fully utilise storage - including re-commissioning of mothballed tanks, storing new products and other on-site enhancements - on a basic master-planning level. Chubu's facilities include two bulk-handling sea ports and over sixty large-scale tanks across five oil-fired power generation sites near Nagoya, with a total oil storage capacity of roughly 1,500,000 m³.



Oil Terminal Assessment

Region Constanta, Romania
Duration 2 months
Client Société Générale

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Crude Oil Import Terminal

Region Alexandria, Egypt
Duration 2 months
Client Socar Trading

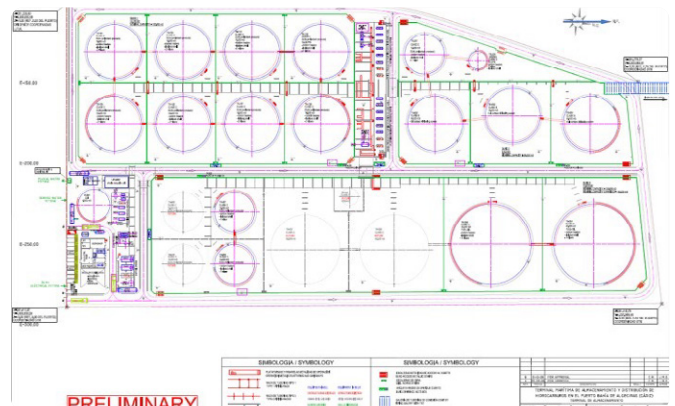
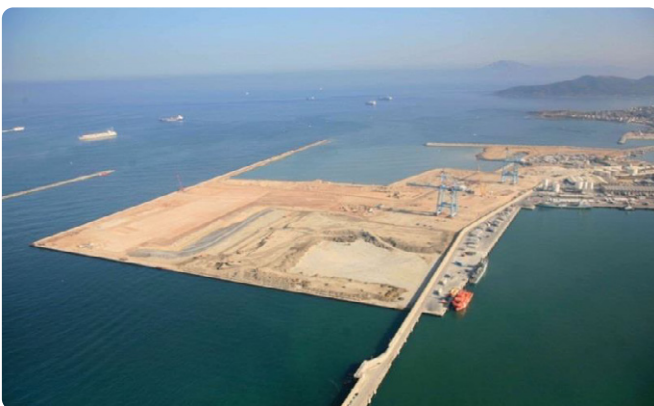
Investigation into how increasing volumes of Azeri crude oil could be imported into Egypt and transported to the refineries around Alexandria, with a focus on identifying potential locations for a large crude oil import terminal. Riverlake Solutions inspected local refineries, pipelines, ports and terminals and conducted numerous interviews, then made detailed logistics calculations to size the required expansion of tank capacity, pipeline capacity and marine infrastructure, presenting a comprehensive assessment report with detailed recommendations for crude import and oil-product export and inland distribution.



Bunker Terminal Development

Region Algeciras, Spain
Duration 18 months
Client Alpetrol

Greenfield development of a 400,000 m³ tank terminal for the storage and handling of fuel oil and gasoil to serve the bunker market in the south of Spain, comprising 20 tanks (10,000-40,000 m³), marine loading/discharging, a blending installation and all utilities. Riverlake Solutions began with a comprehensive project risk assessment, then acted as overall project management, engineering supervision and led the tendering/contracting process for a Turnkey Lump Sum contract, carrying out negotiations and contractor selection and reporting to the client's Board of Directors; construction was awarded substantially below budget.



New Oil Jetty

Region Takoradi, Ghana

Duration 2 years

Client Ibistek (concession from Ghana Ports and Harbours Authority)

Greenfield development of a New Oil Jetty for gasoil, gasoline, HFO, bitumen and LPG, able to transfer products from tankers up to 55,000 DWT, comprising 5 marine loading arms, 18-inch export pipelines to the existing Takoradi oil depots, slop tanks, a SCADA system, metering skids, a firefighting system and HFO heat tracing. Riverlake Solutions conducted the design review and a HAZID/HAZOP with the client and contractor, supervised on-site construction through commissioning, prepared all Operations & Maintenance procedures, and recruited and trained the operational personnel; the jetty is now in operation.



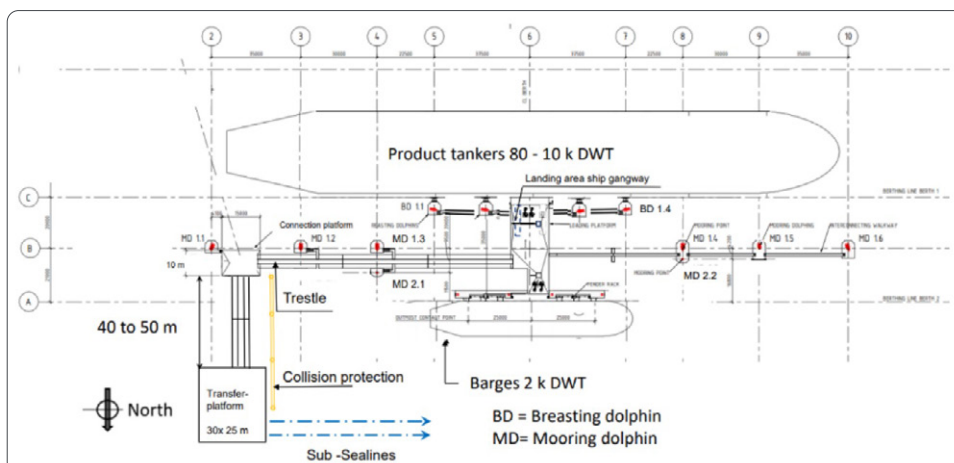
New White products import Jetty Design

Region Africa / DRC

Duration 3 months

Client SOCIR SA

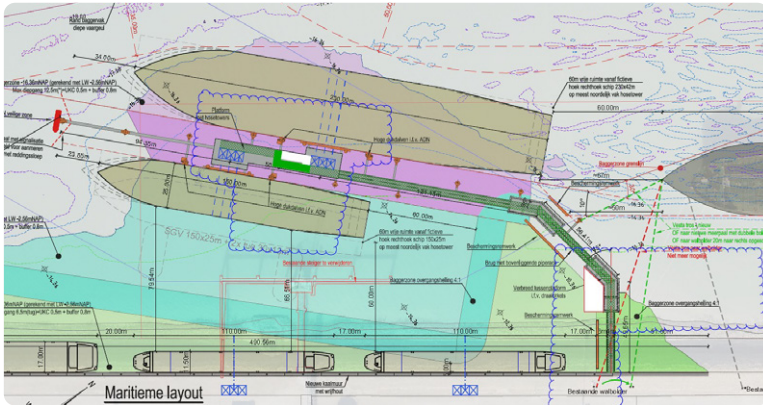
Riverlake designed the jetty to serve as an import facility of various white products and LPG for the existing SOCIR Refinery Storage. The berth configuration allows for ocean going vessels and a berth for smaller ships or barges. Riverlake managed the design phase and coordinated with Client representatives and Port Authorities.



Ammonia import Jetty

Region Flushing / The Netherlands
 Duration 12 months
 Client Evolution Terminals

Riverlake managed the design of the new dedicated deep-water Jetty import facility which will serve as an import facility for storage of 150,000m³ Ammonia. The quay is designed for simultaneous loading and discharging of ammonia on two seagoing tankers and inland barges. Maneuvering and berthing studies were executed by Marin.



New large Jetty and linking pipeline system for terminal

Region Ceyhan, Turkey
 Duration 6 months
 Client Undisclosed

The client intended to expand its terminal to accommodate increasing trading volumes of various oil products. The expansion consists of additional tankage, a large new jetty with multiple berths and the linking pipeline systems. Riverlake Solutions provided the consultancy services for all aspects of this expansion.



Jetty Development

Region Freetown, Sierra Leone
Duration 24 months
Client Oryx Energies

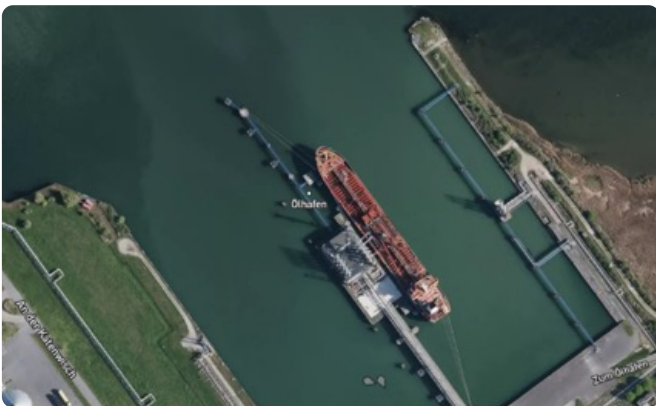
Greenfield development of a jetty for the handling of palm oil, fuel oil, gasoil, gasoline, bio-ethanol, bitumen and LPG to serve the inland market in Sierra Leone, consisting of a jetty structure and marine loading/discharging facilities including firefighting. Riverlake Solutions' services covered basic design review, EPC/Turnkey contract preparation, overall project management, engineering supervision, construction management, pre-commissioning and commissioning.



Oil Jetty Project Consultancy Services

Region Germany
Duration 2 months
Client Undisclosed

Riverlake provided Consultancy Services for the GOR terminal jetty, including a structured visit and inspection of the jetty facilities. The overall handling of the terminal and the jetty's operational readiness for Suezmax-class tankers was also assessed. Riverlake also coordinated with Client representatives and Port Authorities to ensure full stakeholder align.



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