



INGEROP SOUTH AFRICA COMPANY PROFILE



CONSULTING ENGINEERING
AND PROJECT MANAGEMENT



Water



Transportation



Buildings



Energy



Infrastructure



Industry



Urban development

➤ EXCELLING BEYOND THE NORM

Ingerop South Africa is a multidisciplinary consulting engineering and project management company which was established in 1957. With more than 60 years' experience and more than 180 qualified personnel, the company is ideally placed to provide, in partnership with its clients, innovative and appropriate world-class solutions. Ingerop South Africa developed strong capabilities to serve both the public and private sector clients in the fields of: Energy & Industry, Water & Environment, Urban Development & Transportation and Buildings.

Within all its disciplines, Ingerop South Africa has earned merit through continuous improvement and the embracing of its ethos "Excelling beyond the norm". Ingerop South Africa is a member of the Ingerop Group of Companies, a long established privately-owned French consulting engineering firm currently employing over 2000 permanent staff, of which 1000 are engineers, over 270M€ annual turnover and is today a leading partner in the execution of all types of engineering projects.

Ingerop South Africa is a Level 1 BEE rated enterprise and has achieved ISO 9001:2015 certification



Corporate Social Investment

Corporate Social Investment (CSI) is a key element in our company's business strategy. Our CSI initiatives are aimed at establishing and sustaining positive social development in our surrounding communities. With education being one of our primary CSI focus areas, we continuously concentrate on improving and uplifting previously disadvantaged schools.



> CERTIFICATIONS

Ingerop integrates social environmental and economic concerns in all of its activities taking into account:

- the health and safety of its employees based on the OHSAS 18001 standard
- its clients objectives thanks to constant investment in improving management processes as set out in the standards of ISO 9001
- Ingerop South Africa was nominated in the top 500 performing companies, incorporating the public sector, in South Africa, and ranked 3rd within our sector, Consulting Engineering

INGEROP SOUTH AFRICA IS A MEMBER OF

NIASA	- Nuclear Industry Association of South Africa
IMIESA	- Institute of Municipal Engineering of South Africa
ECSA	- Engineering Council of South Africa
CESA	- Consulting Engineers South Africa
WISA	- Water Institute of South Africa
IWMSA	- Institute of Waste Management of Southern Africa
BEPEC	- Built Environment Professions Export Council
SARF	- South African Road Federation
SANCOLD	- South African National Commission on Large Dams
ICOLD	- International Commission on Large Dams
FIDIC	- The International Federation of Consulting Engineers
RRA	- Railroad Association
ODENG	- Association of Engineers of Mozambique

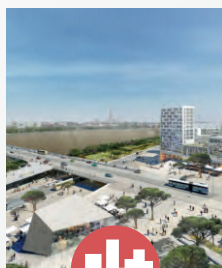


> A COMPLETE RANGE OF ENGINEERING SERVICES THROUGHOUT 4 BUSINESS LINES

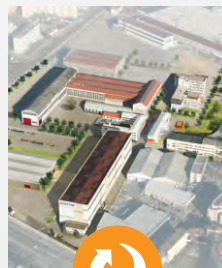
Technical & Organisational Assistance to Owners | Feasibility Studies | Preliminary Design | Detailed Design | Construction Design | Building Permit Documentation | Project Management | Procurement | Design and Construction Management | Consulting to Governments and Institutional Organisations | Assistance to Maintenance



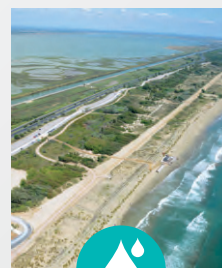
BUILDING



URBAN DEVELOPMENT
& TRANSPORTATION

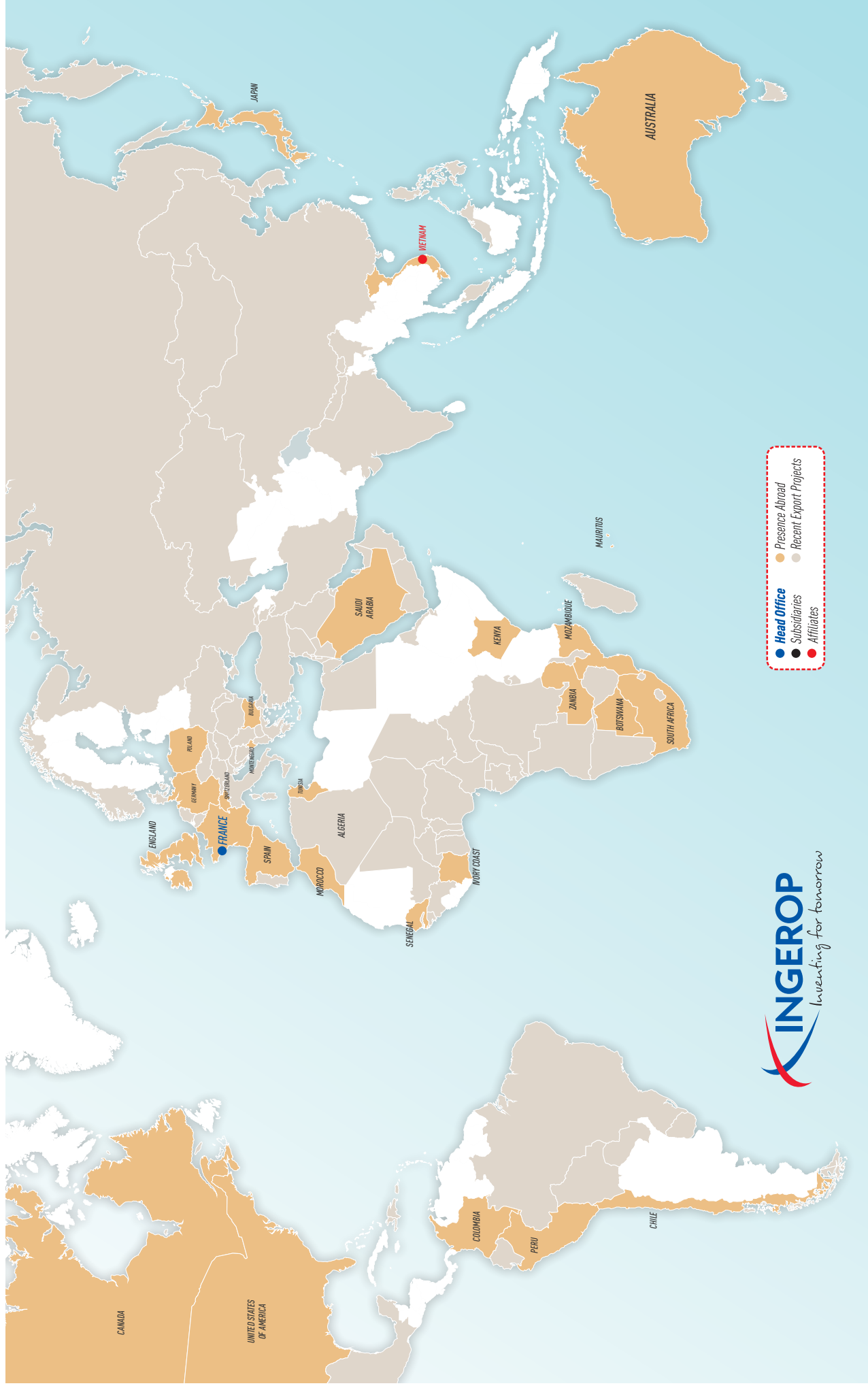


ENERGY
& INDUSTRY



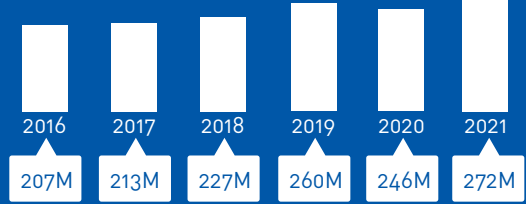
WATER
& ENVIRONMENT

➤ INGEROP'S PRESENCE IN THE WORLD



INGEROP KEY FACTS

TURNOVER (in M€)



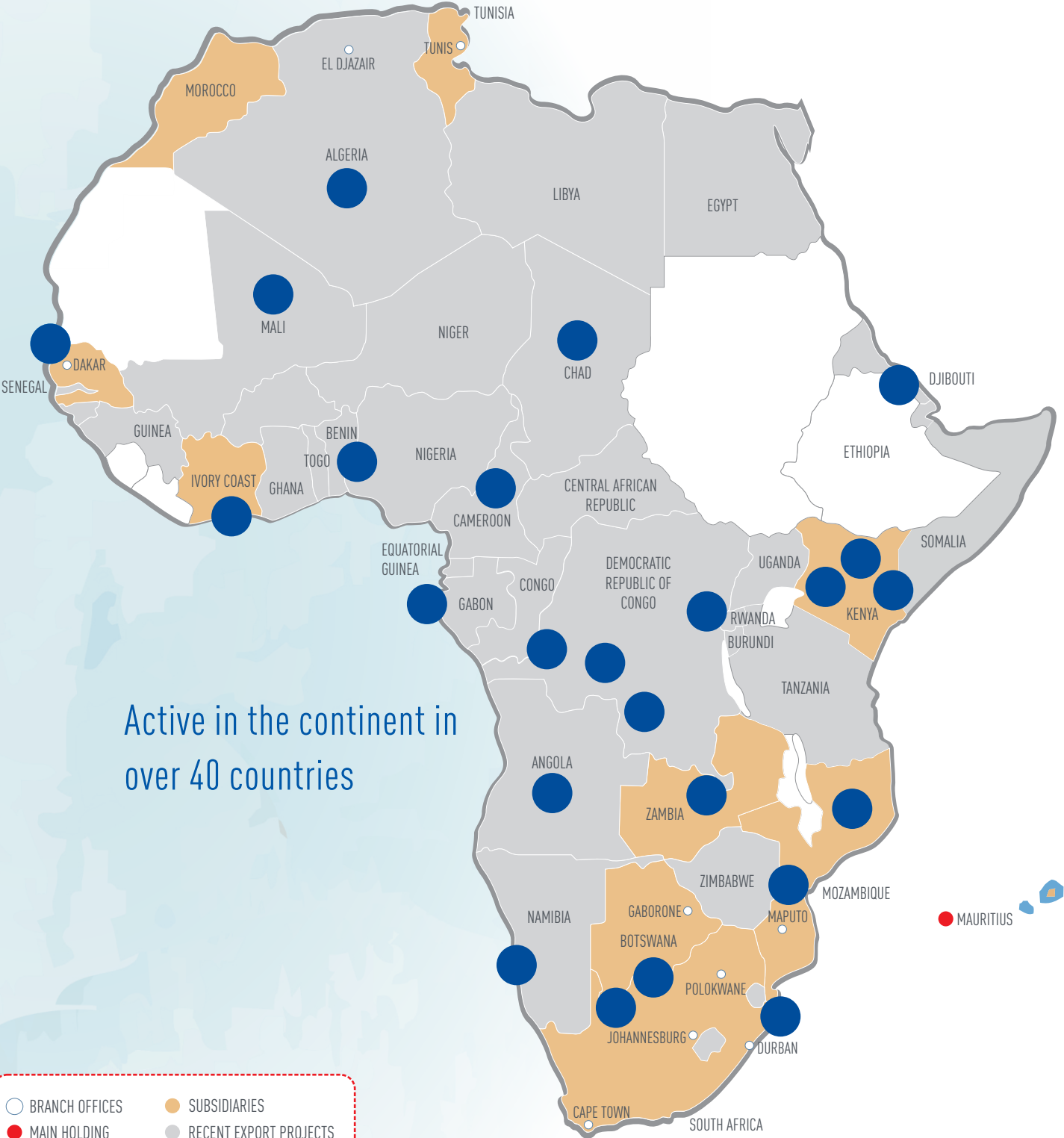
Total Ingerop Staff

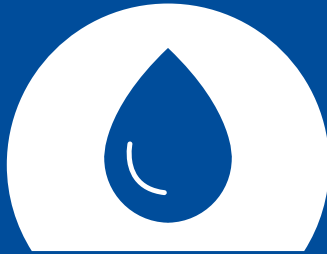


Total Staff in Africa



Countries Around the World





Water

DAMS, PIPELINES, WATER TREATMENT, & WATER SUPPLY

SERVICES PROVIDED

- Raw Water Abstraction works
- Pump stations & pipe lines
- Reservoirs
- Dams and Dam Safety
- Potable water purification
- Rural & urban reticulation network
- Borehole development
- Water pollution management
- Waste water treatment plants
- Appropriate sanitation technology
- BOTT schemes (water and sanitation)
- Bulk Services
- Storm Water Management
- Hydrology
- Catchment management
- Sewer reticulation
- Water reticulation and distribution
- Stormwater Management and Control



WATER AND ENVIRONMENT WRITE UP

Through the years, Ingerop has had several highly qualified and experienced dam engineers who have been involved in different aspects of dam design engineering, ensuring that the know-how continues to be available as an asset. This includes planning, preliminary design, detail design, safety inspections, betterment works, tender documentation and construction supervision of various types of dams.

Ingerop's engineers have also acted as experts to give advice to regional water Departments throughout Africa as well as infrastructure funders. Our dam experts' references include projects in Botswana, DRC, Kenya, Malawi, Mozambique, Namibia, Sudan, Swaziland, and Zambia. Our dam engineers are supported by an experienced team of Civil-, Mechanical-, Structural- and Electrical engineers and technicians.

PROJECTS IN AFRICA

Morocco - Detail Design & Technical Assistance for the Construction Works on the City of Oujda
Client: ONEP

Morocco - Technical Assistance for Drinking Water Supply to City of Oujda & El Aioun
Client: ONEP

Morocco - Water Supply to City of Marrakech.
Client: ONEP

Kenya - NWSEPIP - Detailed Design and Works Supervision for Strengthening Water Transmission Pipelines Restoring the transmission mains between Ngethu and Gigiri
Client: Athi Water Services Board

South Africa - Bulk Water Supply & Reticulation Upgrade - Cork Village.
Client: Cork Water Committee

South Africa - Rooiboklaagte Phase 2
Client: Rooiboklaagte Water Committee

South Africa - BoTT Water Delivery Project
Client: Department of Water Affairs & Forestry

South Africa - 50MI Reservoir design and build
Client: Polokwane Municipality

South Africa - Olifantspoort potable water treatment works - upgrade and extensions to 65 Ml/day
Client: Lepelle Northern Water

South Africa - Manok Bulk Water Supply and Standby Reticulation
Client: Greater Tubatse Municipality

Mozambique - Design check and supervision of network expansion for Beira, Dondo, Chimoio, Gondola and Quelimane
Client: FIPAG

Mozambique - Maputo Potable Water Network. Evaluation on possible extension of water dist. network.
Client: NLI

Swaziland - LUSIP Irrigation water supply scheme.
Client: Coyne et Bellier

South Africa - Lower Umkhomazi Bulk Water Supply Scheme - Phase Two
Client: Umgeni Water

South Africa - Baden Powell Bulk Watermain - Design & Construction supervision of a large diameter bulk water supply main
Client: CITY OF CAPE TOWN

South Africa - Stellenbosch Water Augmentation
Client: Stellenbosch Municipality/Hatch,

South Africa - Investigate & Report on Structural Condition of JHB Water Reservoirs
Client: JHB Water

South Africa - Damani Water Supply Project Phase 3. Design & Constructions.
Client: Department of Water Affairs & Forestry

South Africa - Glen Alpine Subproject 2. Construction of water supply infrastructure to 14 villages.
Client: Department of Water Affairs & Forestry

South Africa - Badirile Bulk Water Supply.
Client: Randfontein Local Municipality

South Africa - Emjindini Ext 11 Township Services
Client: Umjindi Municipality

South Africa - Quaggasfontein Housing Development - Bulk and internal water reticulation
Client: Emfuleni Local Municipality

South Africa - Munsieville Urban Development
Client: Power House Consortium

PROJECT REFERENCE



Project Name:

Hazelmere Dam Raising

Country:

South Africa

Location within Country:

KwaZulu Natal

Name of Client:

DWA

Start Date:

2015

Completion Date:

Current

Narrative Description of the Project:

Ingerop South Africa was appointed by the Department of Water and Sanitation (DWS) The original design for the dam provided for radial gates to raise the Full Supply Level (FSL). The hydrological characteristics of the catchment area are such that the time of concentration of 6 to 12 hours could result in operators being unable to open the gates timeously in the event of a flood.

This led to designers considering the use of an uncontrolled Piano Key Weir spillway (PKW) which is to date the highest in the world. A feature of the PKW is that it can accommodate a phased impoundment of water thereby allowing water storage to commence ahead of contract completion.

The reinforced concrete requires special treatment to achieve necessary permeability characteristics, casting temperatures, control of heat of hydration and curing. The rate and sequence of construction are also important considerations to ensure stability during all stages.



PROJECT REFERENCE



Project Name:

Rehabilitation and completion of Massingir Dam

Country:

South Africa

Location within Country:

Gaza District

Name of Client:

Administração Regional de Águas do Sul

Start Date:

2002

Completion Date:

2006

Narrative Description of the Project:

The 54 m high Massingir dam consists of a 4200 m long earth embankment with a 108 m wide spillway originally constructed, to supply irrigation water to the Xai-Xai area, in early 1970's was never completed due to the civil war in Mozambique.

The Government of Mozambique received a loan from the African Development Bank to do the required upgrading of the dam wall to ensure its safe operation. The works involve the strengthening of the wall at the downstream toe by adding additional material and provision of drainage holes.

Extensive grouting of the foundation below three sections of the existing clay core. Six radial gates (18m X 11 m) will be installed on the ogee spillway to accommodate floods up to 14 000 m³/s.



PROJECT REFERENCE



Project Name:

Olifantspoort - Phase 2

Country:

South Africa

Location within Country:

Polokwane

Name of Client:

Lepelle Northern Water

Start Date:

2005

Completion Date:

2010

Narrative Description of the Project:

Ingérop South Africa was appointed by Lepelle Northern Water to provide professional services for the extensions of the existing (30 ML/day) potable water treatment works at Olifantspoort to 65 ML/day for the augmentation of water supply amongst others via the existing Olifants-Sand transfer scheme to the Greater Polokwane area.

Ingérop South Africa, as leader of the professional civil, mechanical and electrical professional team, was responsible for the detail design, tender documentation, contract administration and construction supervision of the works that had two project time objectives. The first phase was for a plug flow delivery of water at the storage reservoirs in Polokwane by November 2009 and the second phase for the total augmented works were completed in June 2010.



PROJECT REFERENCE



Project Name:

Upgrading Of Politsi Plant

Country:

South Africa

Location within Country:

Polokwane

Name of Client:

Lepelle Northern Water

Start Date:

2013

Completion Date:

2015

Narrative Description of the Project:

Extension of and upgrading of an existing potable water treatment works from its present capacity of 6,5 ML/day to 15 ML/day to supply the areas of Politsi, Modjadjieskloof and Kgagapane with potable water. The works involve the supply of raw water from an existing dam, upgrading and extension of the WTW (coagulation, sedimentation, filtration, disinfection and raw water storage as well as the high lift pump station and 35 km bulk water (400 mm diameter pipe line) conveyance system.

Description of actual services provided by Ingerop SA staff within the assignment:

Quantification of the yield available from the water source, Water demand requirement, planning and design of the upgrading and refurbishment works, tender documentation, assist the client with the tendering and tender adjudication, construction monitoring commissioning and close out report.



PROJECT REFERENCE



Project Name:

Baden Powell – Bulk Water Main to Khayelitsha

Country:

South Africa

Location within Country:

Cape Town

Name of Client:

City of Cape Town

Start Date:

2017

Completion Date:

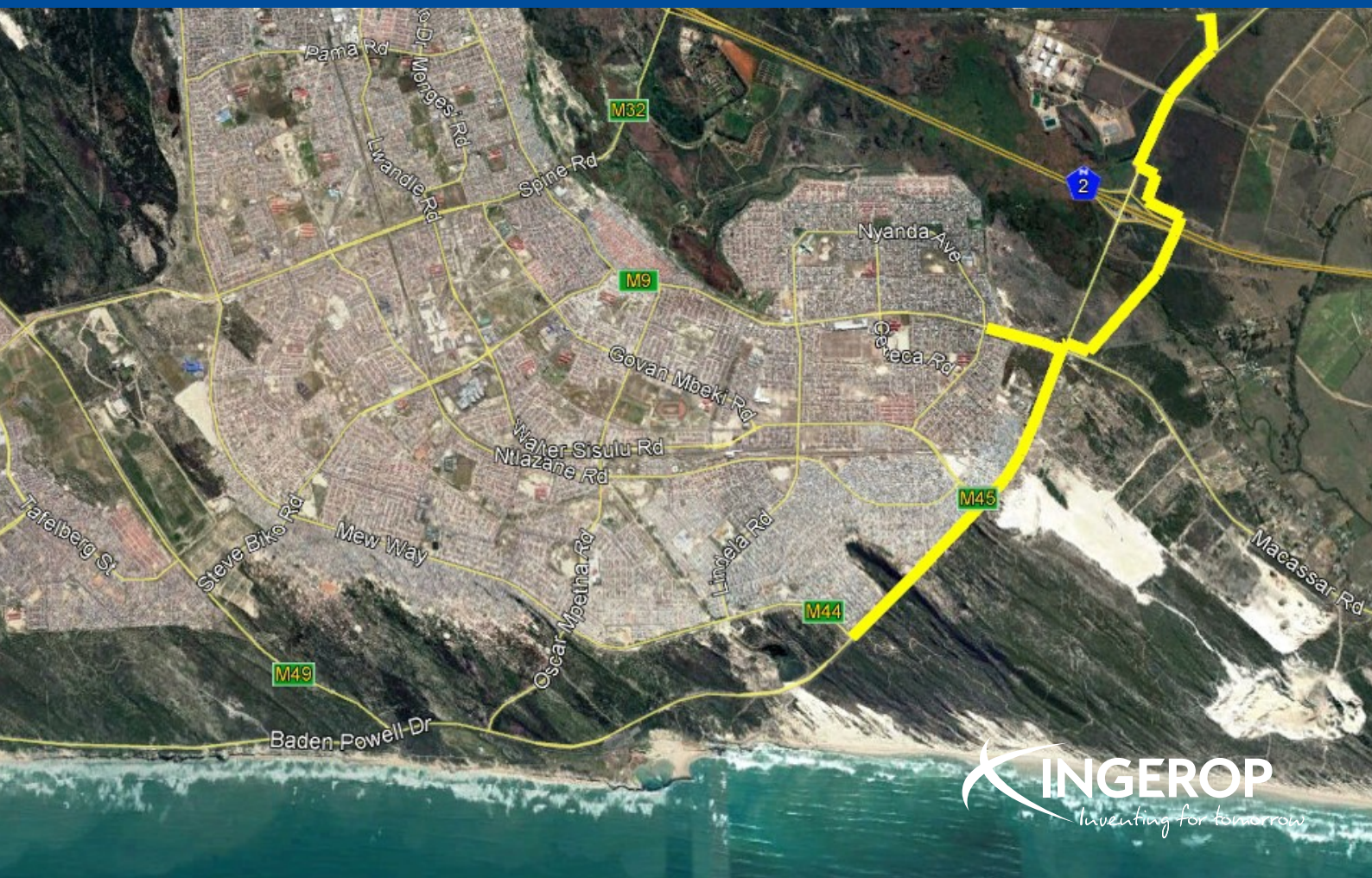
Current

Narrative Description of the Project:

The objective is the investigation, design and construction of an additional bulk water supply pipeline and pressure reducing station, which supplies Khayelitsha.

The project comprise of approximately 6 km of water pressure-pipelines of diameters varying from 1200mm to 600mm. The pipeline extends from its northern tie-in at the existing 2.4m diameter pipeline, alongside Baden Powell Drive, to Mew Way at the southern end.

- The typical deliverables included the following:
- Feasibility Study
- Preliminary Design
- Detailed Design and Tender Documentation
- Tender Evaluation Report and Tender Adjudication
- Contract Administration
- Construction Supervision for entire works



PROJECT REFERENCE



Project Name:

Lower Umkhomazi Bulk Water Supply Scheme

Country:

South Africa

Location within Country:

KwaZulu Natal

Name of Client:

Umgeni Water

Start Date:

2018

Completion Date:

Current

Narrative Description of the Project:

Water treatment works comprises of the design and construction supervision of a conventional water treatment plant, gravity bulk pipeline to the existing Command Reservoir, increased capacity of the Command Reservoir and associated infrastructure. This consist of the head of works, chemical dosing train, flocculation, clarification, filtration and chlorination plant. In addition, this includes a backwash recovery system, residual treatment plant, potable water gravity pipeline and extensions to the existing Quarry Reservoir

Description of actual services provided by Ingerop SA staff within the assignment:

- Project Management
- Engineering Design (Mechanical, Civil, Electrical, architecture, Control and instrumentation)
- Contract Administration
- Construction Monitoring



PROJECT REFERENCE



Project Name:

Sedibeng Water Vaal Gamagara Phase 1 – PMU

Country:

South Africa

Location within Country:

Northern Cape

Name of Client:

Sedibeng Water

Start Date:

2016

Completion Date:

2018

Narrative Description of the Project:

The Vaal Gamagara Scheme runs from Delpportshoop to Black Rock and its core function is to supply potable bulk water for mining, industrial and domestic use.

The scheme currently supplies 20 million m³/annum while the current demand is approximately 26 million m³/annum. Demand forecast to 2030 is 40 million m³/annum which includes a potential delivery of 5 millions m³/annum to Botswana in the future.

Phase 1 involves the upgrading of the existing pipeline from Roscoe to Black Rock, split into 4 sections of pipeline (1A, 1B, 2 & 3).



PROJECT REFERENCE



Project Name:

Network Expansion for Beira, Dondo, Chimoio, Gondola and Quelimane

Country:

Mozambique

Location within Country:

Beira, Dondo, Chimoio, Gondola and Quelimane

Name of Client:

FIPAG

Start Date:

2013

Completion Date:

2014

Narrative Description of the Project:

Design Check and Supervision of Network Expansion for Beira, Dondo, Chimoio, Gondola and Quelimane

The works is divided into Three lots:

- Design and Construction of Network at Beira and Dondo – comprises the design and construction of approximately 75 km of primary and secondary network and system reinforcement in Beira and Dondo.
- Design and Construction of Network at Chimoio and Gondola – comprises the design and construction of approximately 31 km and 10 km of primary and secondary network and system reinforcement in Chimoio and Gondola respectively.
- Design and construction of network at Quelimane – comprises the design and construction of approximately 25 km of primary and secondary network and system reinforcement in Quelimane.



PROJECT REFERENCE



Project Name:

NWSEPIP Water Transmission Pipelines

Country:
Kenya

Location within Country:
Kabete

Name of Client:
Athi Water Services Board

Start Date:
2007

Completion Date:
2012

Narrative Description of the Project:

NWSEPIP : Detailed Design and Works Supervision for Strengthening Water Transmission Pipelines

Restoring the transmission mains between Ngethu and Gigiri (A complementary 700mm transfer line 9,5km long, and additional pumping equipment to ensure a supplementary flow of 42 000 m³/day transferred from Gigiri to Kabete.

Undertake a yield analysis of the Ruiru Dam to assess opportunity for obtaining more water resources, and prepare a conceptual design for increasing water supply to Kabete Reservoir as appropriate.



PROJECT REFERENCE



Project Name:

Stellenbosch Municipality Borehole Water Augmentation

Country:

Cape Town

Location within Country:

Stellenbosch

Name of Client:

Hatch Africa

Start Date:

2018

Completion Date:

2019

Narrative Description of the Project:

Project entailed implementation of various borehole water augmentation schemes in the Stellenbosch Municipal area as part of the Drought Response Plan.

Ingerop provided project management and strategic operational assistance to Hatch Africa for this project. 7 No Borehole augmentation schemes were developed utilising existing and new boreholes and containerised water treatment plants were procured using a Design and Build Mechanical Works contract.

The estimated value of capital works under design and construction is R53M for 2018-19.



PROJECT REFERENCE



Project Name:

Empangeni Bulk Water Supply - Upgrading of Pump Station and Bulk Water Pipeline

Country:

KwaZulu Natal

Location within Country:

Empangeni

Name of Client:

Mhlathuze Water Board

Start Date:

2008

Completion Date:

2009

Narrative Description of the Project:

Ingérop International Consultants was appointed for the Empangeni Bulk Water Project Phase 2 to:

- Increase the capacity of the pump station located in Nsezi Treatment Plant from 30 to 60ML/day,
- Construct a new Bulk Water pipeline to connect to a new reservoir and an existing reservoir (3.5km of DN800 and 3.4 km of DN600 and 0.3 km of Dn500),
- Provide control and telemetry systems.



PROJECT REFERENCE



Project Name:

Rehabilitation of Treatment Facilities of Nampula

Country:

Mozambique

Location within Country:

Nampula

Name of Client:

FIPAG

Start Date:

2001

Completion Date:

2004

Narrative Description of the Project:

The contract included the providing of consultancy services concerning the rehabilitation of Water Impounding, Water Treatment Plant and Water Supply to the city of Nampula. The surface water impounding is made in a reservoir of Monapo River and the treated water flow is 840m³/hour.

Description of Actual Services Provided by Hidroprojecto Staff:

Detailed Design

Tender Documents for the Water Impounding
Rehabilitation Works

Water Treatment Plant

Water Supply

Evaluation of Tender Procedure (evaluation of
Bidders' offers)



PROJECT REFERENCE



Project Name:

Upgrade & Refurbishment of Wolseley WWTW

Country:

South Africa

Location within Country:

Western Cape

Name of Client:

Witzenberg Municipality

Start Date:

2019

Completion Date:

Current

Ingerop South Africa has been appointed based on tendered rates for the Upgrade And Refurbishment Of Wolseley WWTW, Cluster 3: Rehabilitation / Upgrading of sewer networks and associated bulk facilities. Professional Engineering services for Witzenberg Municipality.

The project will entail the following:

Refurbishment of existing aeration tank. This will entail structural repairs as the existing tank is busy disintegrating.

- Construction of new sludge drying beds.
- Evaluation of pond system and lining of existing ponds.
- Upgrade of chlorination system in order to comply with H & S regulations.
- Balancing of existing clarifiers.
- Upgrade of existing RAS pump station.
- Complete process audit/needs assessment, design and costing to apply for external funding.





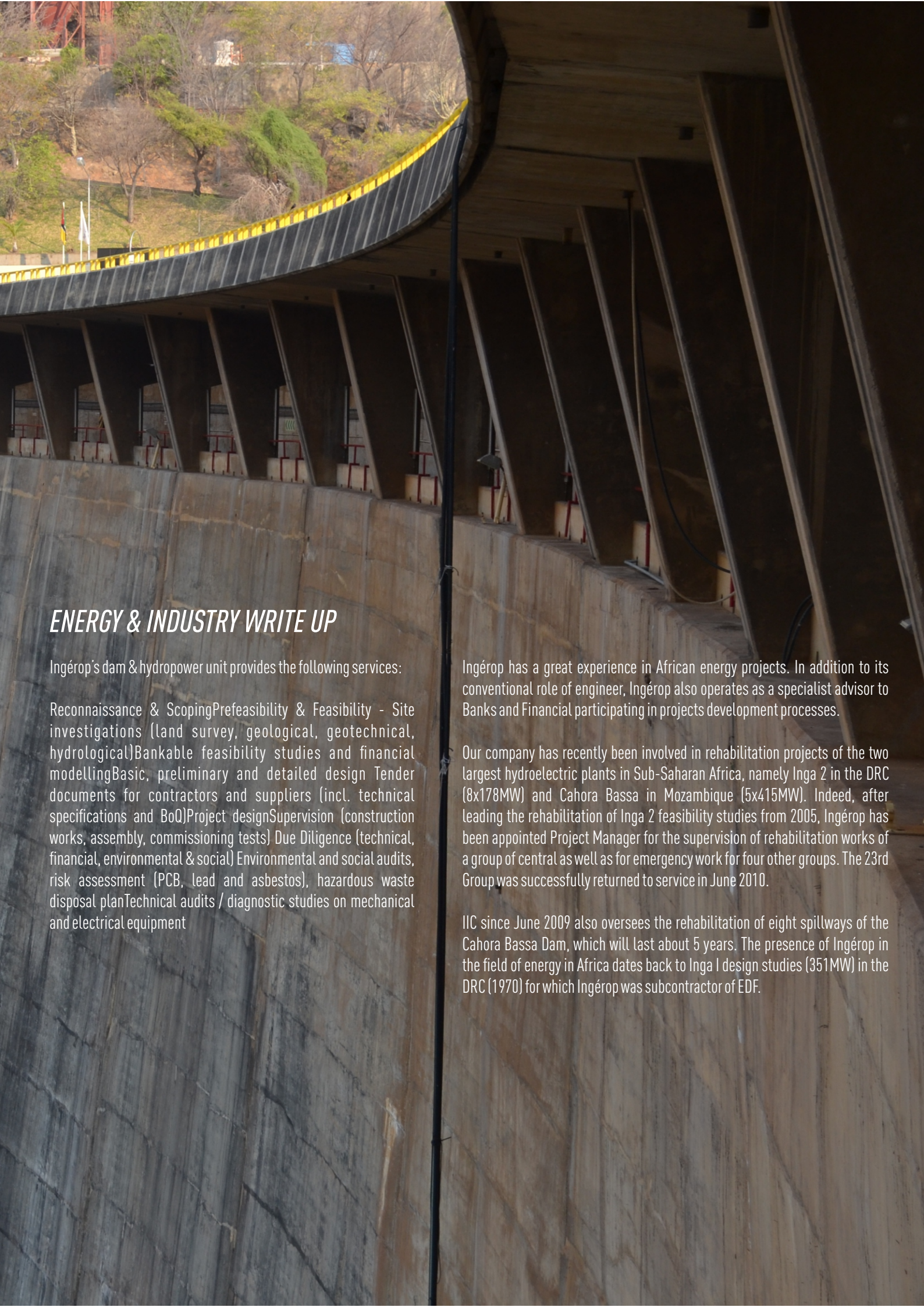
 **INGEROP**
Inventing for tomorrow



Energy

SERVICES PROVIDED

- | *Hydropower*
- | *Industrial buildings*
- | *Nuclear*
- | *Data centers*
- | *Power plants*
- | *Renewable energy*
- | *Waste to energy - Oil and gas*



ENERGY & INDUSTRY WRITE UP

Ingérop's dam & hydropower unit provides the following services:

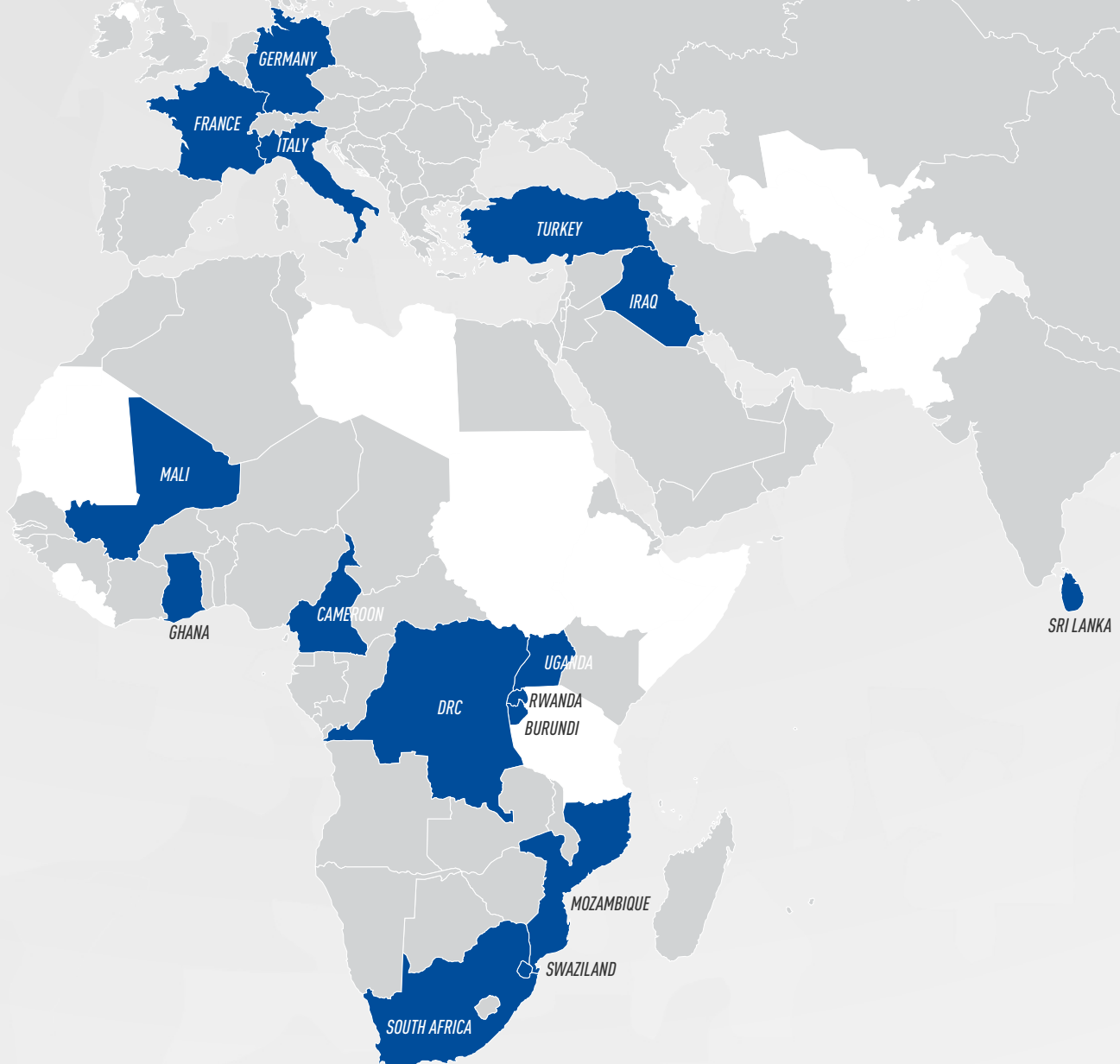
Reconnaissance & Scoping
Prefeasibility & Feasibility - Site investigations (land survey, geological, geotechnical, hydrological)
Bankable feasibility studies and financial modelling
Basic, preliminary and detailed design
Tender documents for contractors and suppliers (incl. technical specifications and BoQ)
Project design
Supervision (construction works, assembly, commissioning tests)
Due Diligence (technical, financial, environmental & social)
Environmental and social audits, risk assessment (PCB, lead and asbestos), hazardous waste disposal plan
Technical audits / diagnostic studies on mechanical and electrical equipment

Ingérop has a great experience in African energy projects. In addition to its conventional role of engineer, Ingérop also operates as a specialist advisor to Banks and Financial participating in projects development processes.

Our company has recently been involved in rehabilitation projects of the two largest hydroelectric plants in Sub-Saharan Africa, namely Inga 2 in the DRC (8x178MW) and Cahora Bassa in Mozambique (5x415MW). Indeed, after leading the rehabilitation of Inga 2 feasibility studies from 2005, Ingérop has been appointed Project Manager for the supervision of rehabilitation works of a group of central as well as for emergency work for four other groups. The 23rd Group was successfully returned to service in June 2010.

IIC since June 2009 also oversees the rehabilitation of eight spillways of the Cahora Bassa Dam, which will last about 5 years. The presence of Ingérop in the field of energy in Africa dates back to Inga I design studies (351MW) in the DRC (1970) for which Ingérop was subcontractor of EDF.

ENERGY & INDUSTRY PRESENCE IN THE WORLD



HYDROPOWER / REHABILITATION & NEW SCHEMES

Ingérop's dam & hydropower unit is specialised in rehabilitation of hydropower schemes in Africa with several projects implemented in the Democratic Republic of the Congo (DRC)

Rehabilitation Projects (from recent or ongoing to older):

Sélingué & Sotuba (Mali) – main Consultant

Ruzizi 1 and Ruzizi 2 (Eastern DRC / Rwanda) – main Consultant

Cahora Bassa (Mozambique) – main Consultant

Mpiana Mwanga (DRC) – main Consultant

Lubulanji (DRC) – main Consultant

Mavuzi / Chicamba (Mozambique) – Sub-Consultant to CEGELEC

Mwadingusha / Koni (DRC) – Sub-Consultant to STUCKY

Inga 2 (DRC) – Owner's Engineer for rehabilitation of G23 (PPP SNEL-MagEnergy)

Inga 1 (DRC) – main Consultant

Ingérop is also involved in the planning & design of new hydropower schemes

New Hydropower Projects (from recent or ongoing to older):

Sombwe (DRC) – main Consultant

Jiji (Burundi) – main Consultant

Mule (Burundi) – main Consultant

Busanga (DRC) – main Consultant

Zongo 2 (DRC) – main Consultant [PFS for MagEnergy]

Mpanga (Uganda) - Auditor (Technical & Environmental DD)

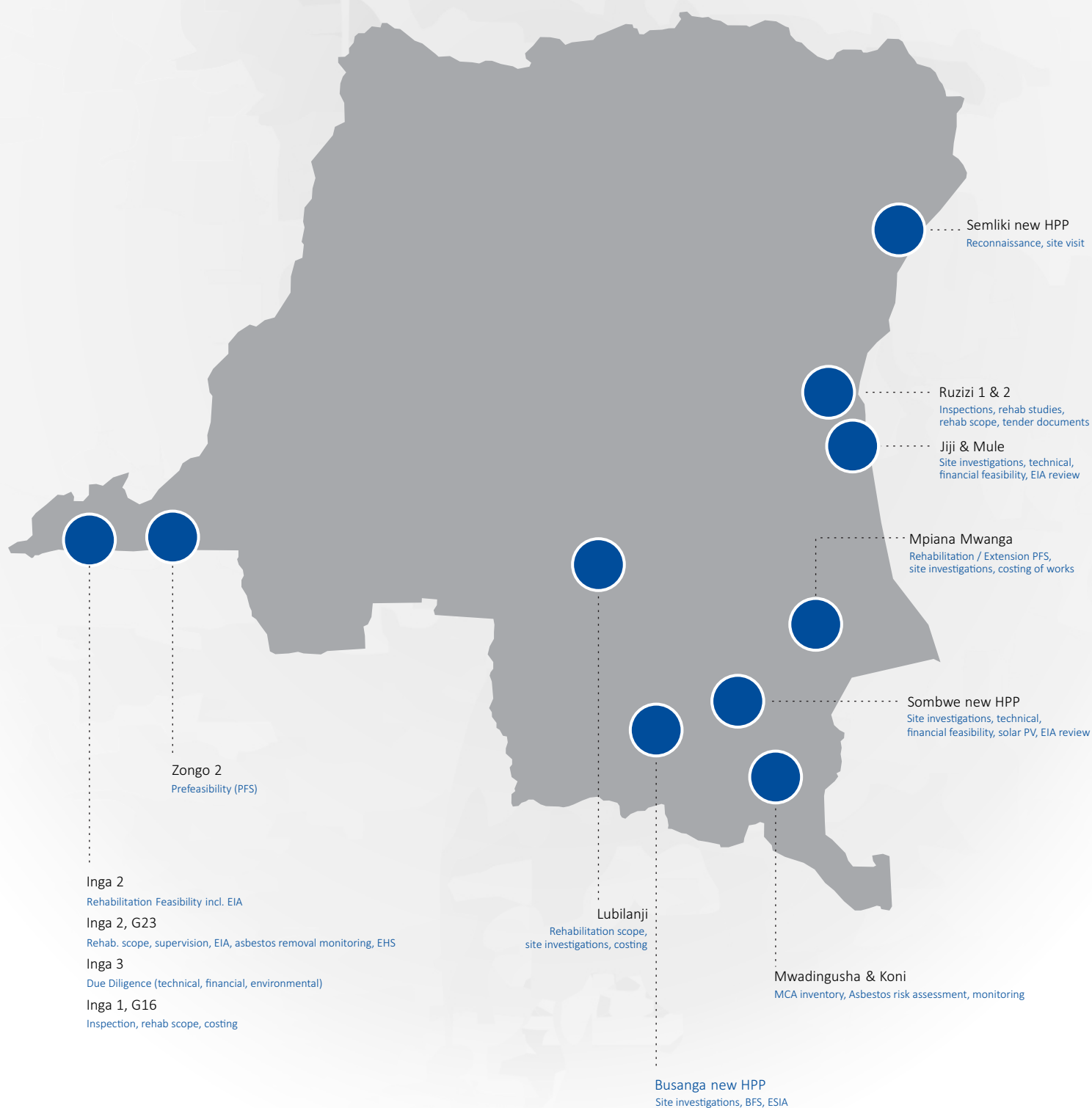
Semliki (DRC) – main Consultant [PFS for MagEnergy]



Energy

DEMOCRATIC REPUBLIC OF THE CONGO

REFERENCES



GERMANY REFERENCES



PROJECT REFERENCE



Project Name:

SELINGUE & SOTUBA

Country:

Mali

Location within Country:

Bamako

Name of Client:

EDM

Start Date:

2015

Completion Date:

Current

SÉLINGUÉ

Reservoir 4 x 11,9 MW Kaplan (vertical axis)

Substation 8,66/33/63/150kV Commissioned in 1979

130km NW of Bamako

Preparation of tender documentation
Contractors selection & work supervision (incl. design check & factory manufacturing monitoring)

SOTUBA

Run of river 2 x 2,8 MW Kaplan (vertical axis)

Substation 2/15/30 kV Commissioned in 1965

Bamako

Inspection & rehabilitation program definition
Preparation of tender documentation
Works supervision



PROJECT REFERENCE



Project Name:

RUZIZI I&II

Country:

DRC

Location within Country:

South Kivu

Name of Client:

EGL

Start Date:

Submission of tender documents (July 2018) for rehabilitation works Negotiation for the works supervision

Completion Date:

Current

RUZIZI 1

Reservoir (Lake Kivu) 2 x 7 MW Kaplan (vertical axis) 2 x 9.1 MW Kaplan (vertical axis) Commissioned between 1958 & 1973 Bukavu

Inspection

Risk assessment (PCB, asbestos & lead) Rehabilitation Program definition Tender Documentation/Specs.

RUZIZI 2

Small reservoir 3 x 14.6 MW Kaplan (vertical axis) Commissioned in 1989 (units 2 & 3) and 2001 (unit 1) 26km from Bukavu

Inspection

Risk assessment (PCB, asbestos & lead) Rehabilitation Program definition Tender Documentation/Specs.



PROJECT REFERENCE



Project Name:

CAHORA BASSA

Country:

Mozambique

Location within Country:

Tete Province

Name of Client:

Hidroeléctrica de Cahora Bassa

Start Date:

2009

Completion Date:

2016

Technical assistance and works supervision for the refurbishment of the eight spillway gates (2200m³/s each) at Cahora Bassa dam (installed capacity of is 5x415 MW)

Geotechnical study on parameters for Civil Engineering Design of the proposed Cahora Bassa North Bank Power Plant (potential capacity of 3x415 MW)

Design and construction supervision of an underground permanent disposal facility (Class 1) for asbestos-containing waste



PROJECT REFERENCE



Project Name:

SOMBWE

Country:

DRC

Location within Country:

River: Lufira, the main tributary of Congo River (Lualaba) in Katanga

Name of Client:

Kipay Investments

Start Date:

2016

Completion Date:

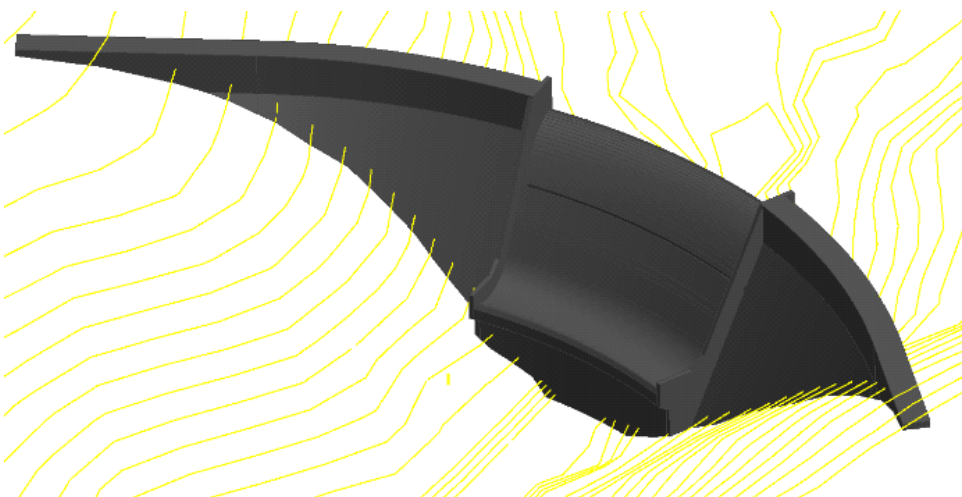
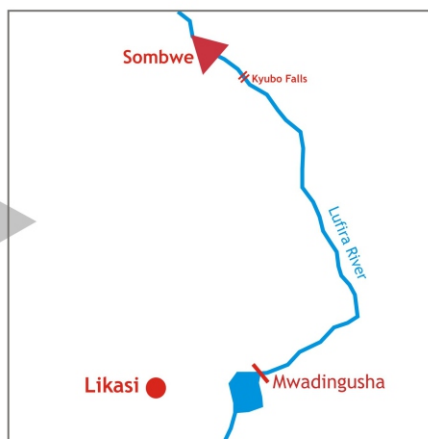
2017

Installed capacity: 133.5 MW - Average Annual Energy Produced: 518 Gwh

Components:

Geophysical and geotechnical investigations
Hydrological study, hydropower system analysis
Flood hydrology study - Sedimentation study
Coordination of LIDAR survey
Scheme Options report
Technical feasibility study (incl. basic design, BoQ,

Interconnecting line to grid)
LEC calculation (kWh price) - Negotiation with off-takers
Bankable feasibility study (incl. input data for fin. model)



PROJECT REFERENCE



Project Name:

BUSANGA

Country:

DRC

Location within Country:

Katanga Province

Name of Client:

MagEnergy

Start Date:

2007

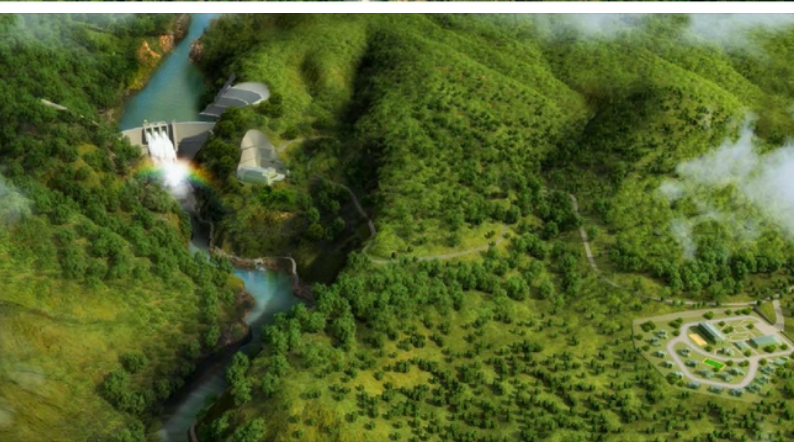
Completion Date:

2008

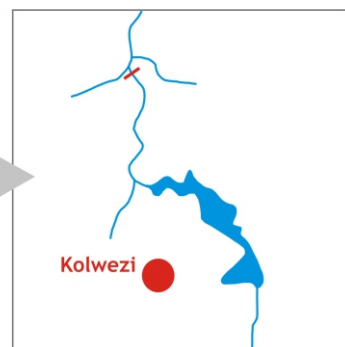
Description of Actual Services:

The Bankable Feasibility Study by Ingérop Africa consisted of the following:

- Selection of a site (topography, geology, etc)
- Hydraulic studies



Busanga



PROJECT REFERENCE



Project Name:

INGA

Country:
DRC

Location within Country:

Name of Client:
Kalumines / Kasonta-Lupoto
Mines sprl

Start Date:
2007

Completion Date:
2008

A decade involvement at the Inga Hydropower Complex.

With some major achievements:- recommissioning of G23 (June 2010); emergency works completed on G24; alerting SNEL on dam and plant movements; removal of asbestos-containing materials in all facilities; implementation of Hazardous Waste Disposal Plan; support to main Contractors (GE, VOITH, FTM) and to Owner & his partners (two units at Inga 1 and all units except G25, G6 and G28 at Inga 2)

Ingérop as SEEE (Design Office of Grands Travaux de Marseille) and subcontractor to EDF DAFECO: Inga 1 (1969-1972): detailed design for structures excl. plant & tailrace canal Inga 2 (1973-1975): detailed design of the intake canal & water intake

Hydrology and bathymetry studies at the water intake (start of existing canal), financed by MagEnergy and presented to the World Bank in Washington (2005): outcrops reducing flow & accumulation of sediments in intake canal (>30 000 000 m³) → opening of a second intake canal

Due Diligence for the World Bank on the proposed Inga 3 hydropower scheme (4300MW) as part of the Bankable Feasibility Study for the Development of the Inga III Hydropower Facility (2007)



PROJECT REFERENCE



Project Name:

INGA II

Country:
DRC

Location within Country:

Name of Client:
Kalumines / Kasonta-Lupoto
Mines sprl

Start Date:
2005

Completion Date:
2015

A decade involvement at the Inga Hydropower Complex.

Geological & engineering considerations of the sites and of the structures foundations behaviour (2005-2006)

Stability assessment of the existing civil structures of Inga 2 & on solutions for appropriate rehabilitation measures (2006)

Phase 1: Refurbishment of G23 (inspection, rehabilitation scope & programme, tender documents, international bidding process, tender evaluation, contract negotiation)

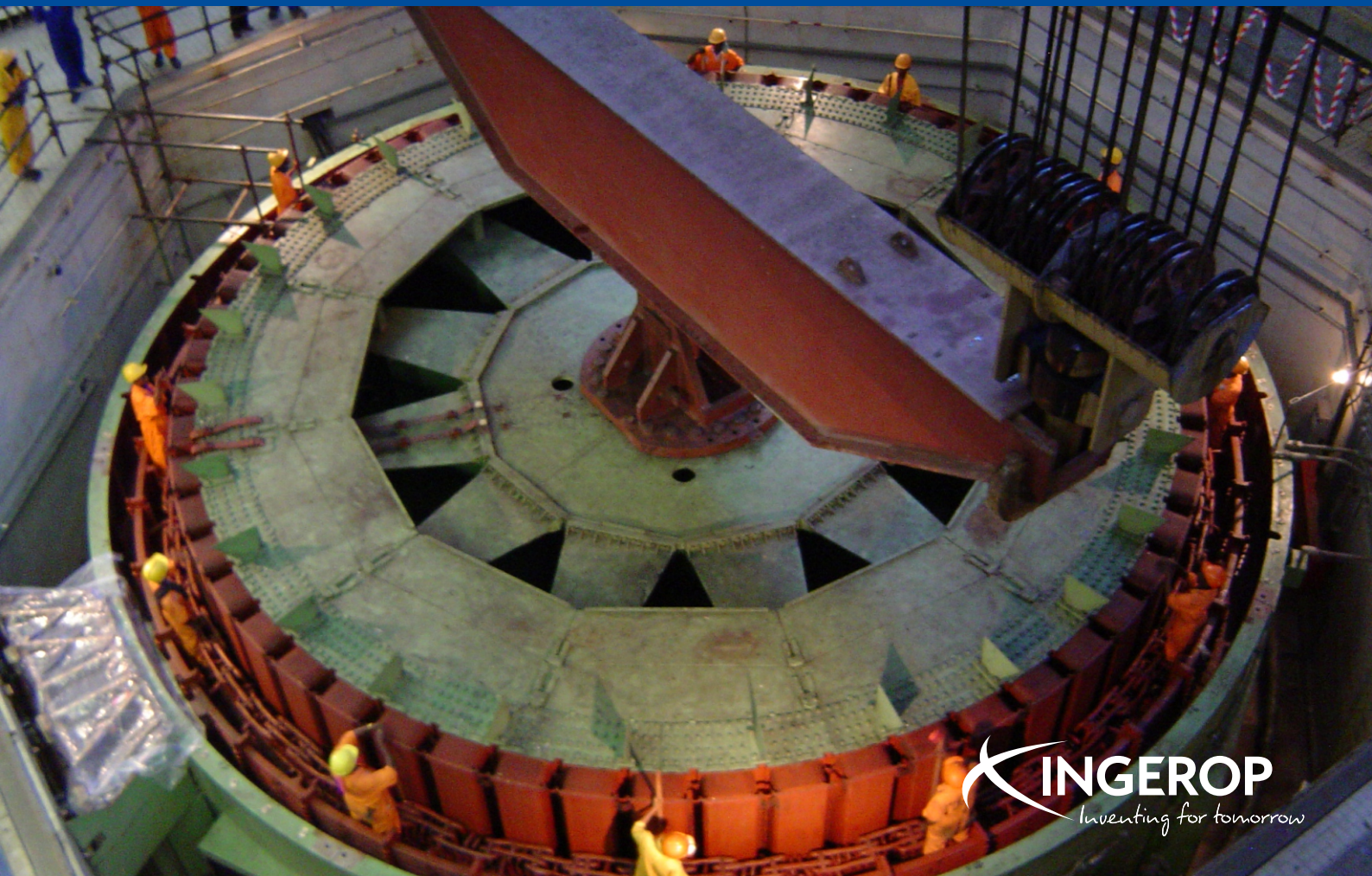
Phase 2: Feasibility study of the Rehabilitation of Inga 2 hydropower plant (8 x 178MW) for the PPP between MagEnergy & SNEL (2005-2006)

ESIA/ ESMP for the rehabilitation of Inga 2 including Refurbishment of G23

Owner's Engineer for the refurbishment → rehabilitation of G23 and emergency works on G24 at Inga 2 (2007-2010)

Extracting rotor [March 2007]

Re-commissioning in June 2010 Running at an average of 150-160 MW since that date



PROJECT REFERENCE



Project Name:

INGAI

Services provided:

Inspections, Scope of Works & costing of the proposed rehabilitation of G14 & G16 units

Country:
DRC

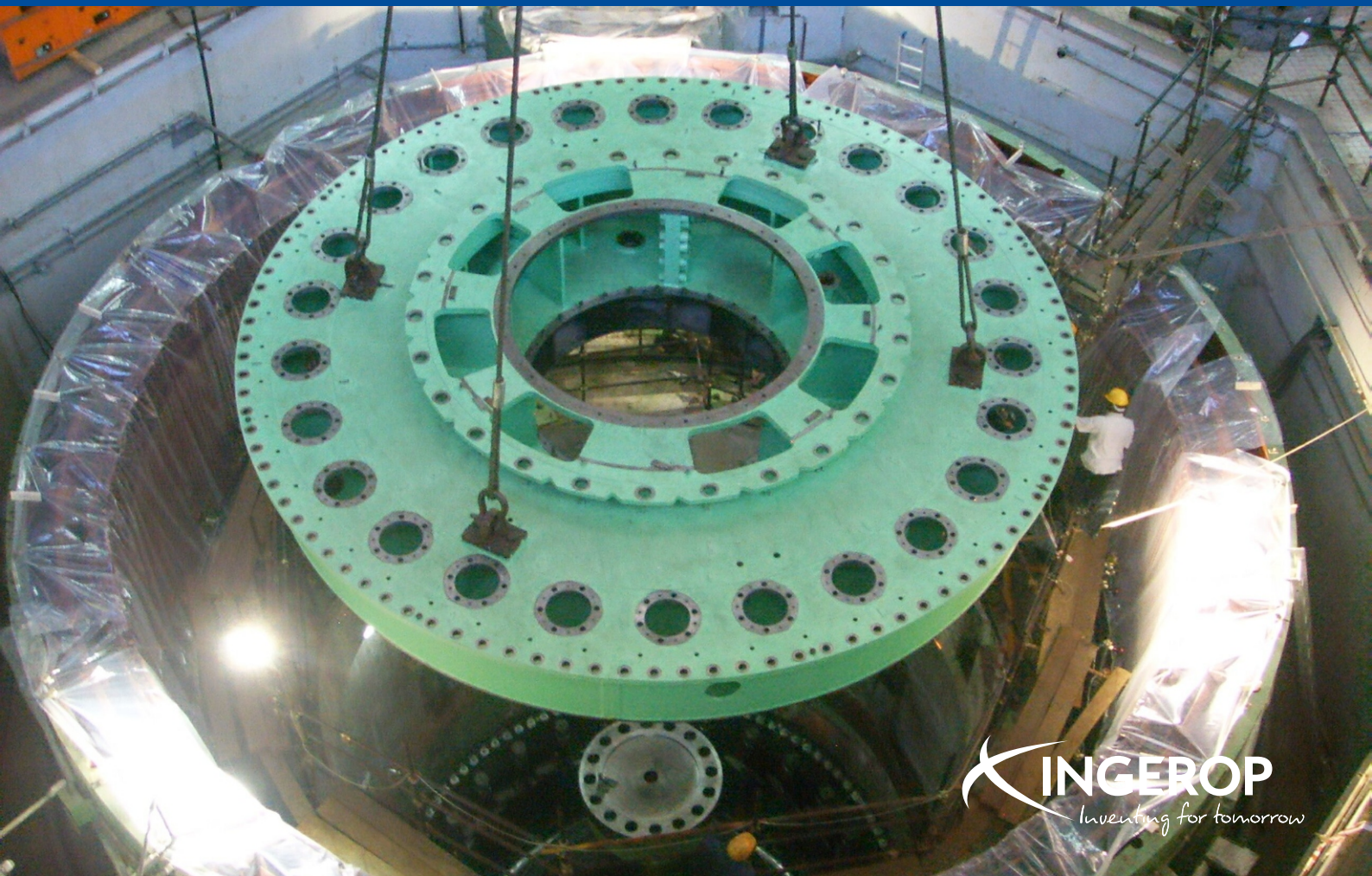
Estimated restored capacity: 2 x 58MW

Location within Country:

Name of Client:
Kalumines / Kasonta-Lupoto
Mines sprl

Start Date:
2010

Completion Date:
2011





Energy

Oil and Gas





 **INGEROP**
Inventing for tomorrow



Petrochemical Capabilities

Selected Project Experience

Over the last decade, Rendel has completed a wide variety of maritime projects embracing ports, harbours, jetties, wharves, marinas, docks, ship fabrication and repair facilities, cruise terminals, ferry terminals, container terminals and waterfront developments in more than 20 countries throughout the Americas, Europe, Africa, Middle East and Asia.

In the UK, we have successfully performed marine assignments at many of the UK's leading refinery and petrochemical complexes as well as major ports, docks, harbours and marinas. Locations include Aberdeen, Barrow-in-Furness, Belfast, Birkenhead, Bristol, Canvey Island, Carrickfergus, Chatham, Clydeport, Coulport, Dover (Master Plan), Flotta, Fowey, Grangemouth, Great Yarmouth, Hunterston, Immingham, Isle of Grain, Leith, Liverpool, London (several locations on the River Thames), Milford Haven, Pembroke, Plymouth, Poole, Portsmouth, Port Talbot, Redcar, Rosyth, Scarborough, St Peter Port, Shoreham, Southampton, Sunderland, Tyne, West Thurrock and Whitby.

In the following section, we present a selection of LNG, process industry and marine facilities assignments that demonstrate the depth of Rendel's skills and expertise and the extent of our services, capabilities and experience.

LNG PROJECTS

Client/Project/Location

Description/Scope of Services

AMEC
Al Zour Refinery
Al Zour, Kuwait



When completed in 2018, the multi-billion dollar Al Zour refinery is expected to be the largest in the Middle East and will increase Kuwait's refinery capacity by 615,000. It will be a key part of Kuwait's long term strategy, producing cleaner fuels to meet its electrical power generation growth and demand while adhering to the latest environmental standards. AMEC, the international engineering and project management company, was awarded a US\$528 million (£330 million) PMC contract by KNPC for the refinery in December 2012.

Rendel's services will follow the three phases of the Al Zour Refinery Project:

- Phase 1 – Pre EPC Contract Award Phase
- Phase 2 – EPC Contract Detailed Engineering and Procurement Phase
- Phase 3 – EPC Contract Construction, Commissioning and Handover Phase

On award of the EPC Contract, Rendel's team will relocate to the successful EPC Contractor's offices.

Rendel has also studied the integration of new LNG facilities into the refinery works and is advising KNPC on the implementation of a new permanent LNG import facility.

Client/Project/Location

Description/Scope of Services

Confidential
LNG Project
Australia



Development of an LNG Project to commercialise three gas and condensate fields approximately 400 km off the Kimberley coast. Gas and liquids from these fields will be brought to an onshore LNG plant at James Price Point, approximately 60 km north of Broome, comprising three, 4 million tonnes per annum (MTPA) LNG trains, associated infrastructure, accommodation and marine facilities.



Rendel undertook a corporate review of project execution and delivery risk (for bidding joint venture). We were retained to provide an EPC contract tender review of technical, process and performance requirements of the 'Basis of Design' and work undertaken to date (by the JV partner)



Murray & Roberts Australia
Gorgon LNG Project
Plant Materials Offloading Facility (PMOF)
Barrow Island, Western Australia



The US\$40bn Gorgon LNG project is one of world's largest natural gas projects and is being developed by the Australian subsidiaries of three leading international energy companies: Chevron (50%), ExxonMobil (25%) and Shell (25%). Chevron received environmental approval to build a three-train LNG processing plant at Barrow Island, located about 30 miles offshore. The Gorgon Project includes an LNG facility with three processing units designed to produce 15.6 million metric tons of LNG per year. It also includes a domestic natural gas plant and a carbon sequestration. Construction began in late 2009 and is on track to deliver the first shipment of LNG by the middle of 2015. In August 2014 following the arrival of the final train 1 module, the project was 83% complete.

Rendel was engaged to provide strategic advice to improve recovery through variations and claims, investigation of status of work being carried out by Murray & Roberts on valuation of variations, advice on recovery strategies, advice on preparation of extension of time claim, lead investigation of specific issues, preparation and presentation audit of potential income from variations and claims.

Client/Project/Location	Description/Scope of Services
<p>Leighton Contractors Ichthys Project Onshore LNG Facilities – Main Civil Works Bladin Point, Darwin, Australia</p> 	<p>The Ichthys Project is a Joint Venture between INPEX group companies (the Operator), major partner TOTAL and the Australian subsidiaries of Tokyo Gas, Osaka Gas, Chubu Electric Power and Toho Gas. When completed, the facility will produce approximately 8.4 million tonnes of LNG and 1.6 million tonnes of liquefied petroleum gas (LPG) per annum, and 100,000 barrels of condensate per day at peak.</p> <p>Rendel has been appointed by Leighton Contractors to provide commercial consultancy and project controls services for the construction of the Main Civil Works (CVL-3) for the Ichthys Project Onshore LNG Facilities.</p> <p>Our scope includes:</p> <ul style="list-style-type: none"> Assistance to establish project controls processes, procedures and reporting system for cost, time and progress measurement, based on Earned Value Analysis (EVA). Provision of project-start up support and on-going specialist site staff, particularly in commercial and contractual management, planning, scheduling and claims formulation. Strategic management for successful negotiation of new contractual arrangements (Cost Plus Basis) and settlement of major change orders and variations.
<p>Petronet LNG Whessoe Kochi LNG Terminal India</p> 	<p>Bulk liquid material handling installations, 700m LNG receiving jetty; maximum vessel size 216,000m³, 100m breakwater, dredging; tug/small boat berth.</p> <p>Rendel's scope included:</p> <ul style="list-style-type: none"> PMC services Design review Review of EPC contractor's work methods and material procurement
<p>Northern Star National Gas Company Bradwood LNG Feasibility Study Oregon, USA</p>	<p>New LNG import terminal to be constructed under three EPCs. Re-gasification plant, tankage and import jetty & tug berth.</p> <p>Rendel carried out an engineering review of and comment on the Marine EPC design.</p>

Client/Project/Location	Description/Scope of Services
<p>Kajima Corporation Sakhalin II Project LNG Plant Civil Works Korsakov, Sakhalin Island, Russia</p> 	<p>Sakhalin II is the world's largest integrated oil and gas project and includes the installation of two further oil production platforms at the Piltun-Astokhskoye field, 300km of offshore pipelines, 800km of onshore pipelines, an onshore processing facility, an oil export terminal and Russia's first liquefied natural gas (LNG) plant.</p> <p>Rendel's scope included:</p> <ul style="list-style-type: none"> Claims preparation and analysis for civil works, including foundations, sewers, ducts, paving and pipe racks Planning and delay analysis Leadership to develop commercial solution
<p>Enron Dabhol LNG Receiving Terminal India</p> 	<p>Bulk liquid material handling installations; 1.7km LNG receiving jetty, 2.3km breakwater, dredging.</p> <p>Rendel's scope included:</p> <ul style="list-style-type: none"> Ports and terminals master planning Navigation and ship handling studies Surveys, testing and inspections Oceanographic and meteorological studies Civil and structural design Dredging and reclamation design Geotechnical services Cost estimates, financial planning and financial management Construction supervision
<p>Confidential LNG Distribution Control System Das Island, UAE</p>	<p>Instrumentation works to retrofit a distribution control system into the new control building of an LNG plant.</p> <p>Rendel provided contractual and claims advice.</p>
<p>Abu Dhabi Gas Liquefaction Company Adgas Jetty Longevity Project Das Island United Arab Emirates</p>	<p>Project to extend operational life of a major existing LNG terminal jetty, including jetty arm, jetty head, mooring and berthing dolphins. Repairs and modifications to ensure safe operation to the year 2025.</p> <p>Survey of existing structure; report; design of necessary repairs and modifications.</p>

Client/Project/Location	Description/Scope of Services
State of Qatar LNG Marine Terminal Study Doha (Jazirat Alyah)	Feasibility study to determine the optimum site for a new LNG marine terminal in the vicinity of the proposed new cargo port of Jazirat Alyah, near Doha. Eight possible sites were considered, five shortly discarded and three costed in depth.
ADMA/BP Structural Audit Das Island, UAE	Structural and safety audit of Das Island tankers berths.
Davy McKee Oil and Chemicals Yeosu LNG Terminal Korea	LNG terminal designed to receive vessels of up to 70,000m ³ capacity, containing LNG from Saudi Arabia. Rendel provided advice on the siting and preliminary layout
Adma Opco/BP Das Harbour Improvements Study UAE	Proposed LNG tank project. Study investigating ways of easing congestion and formulated proposals for new and improved facilities which could be provided sufficiently rapidly to handle a large influx of materials.
Cremer & Warner Underground Storage Tanks Zeebrugge, Belgium	Four 1,000,000m ³ underground storage tanks for storage of LNG. Rendel carried out an appraisal of civil aspects of proposed designs including cryogenic behaviour of steel and concrete.
Cremer & Warner LNG Storage Tanks Emshaven, Netherlands	Four 60,000m ³ above ground LNG storage tanks constructed of 9% nickel steel inner tanks and reinforced concrete outer tanks on piled foundations. Rendel undertook an appraisal of civil aspects of proposed designs.
Techint Cimi Montubi (Italy) Bonny Island LNG Plant Nigeria	Construction of a new LNG plant in Nigeria. Rendel provided contractual advice and claims preparation on behalf of the client.

MARINE TERMINALS REFINERY & PETROCHEMICAL

Client/Project/Location

Description/Scope of Services

Oikos Storage Company
Oikos Jetty Improvement Studies & Replacement Jetty Design
Canvey Island, Essex, UK



Structural and geotechnical surveys:

Stage 1: improvement; for two new mono dolphins, various remedial works and cathodic protection to steel piles, that secure the jetty and allow for safe berthing of vessels up to 40,000dwt.

Stage 2: with deeper dredging; new marine loading arm, a ship-to-shore access and new mooring dolphins will allow the berthing ship size to increase up to 70,000dwt).

Stage 3: construction of new jetty, mooring dolphins and topsides to allow berthing ship size increase up to 100,000dwt.

Rendel's scope included:

- Technical and economic feasibility studies
- Ground and marine site investigations
- Structural Surveys
- Navigation studies
- Cost estimates
- Civil and structural design
- Berthing and mooring analysis


Technip
Dung Quat Refinery Project
Vietnam





Bulk liquid material handling installations, CALM offloading buoy, 1km multi-berth jetty supported on steel piles; dredging; 1.2km breakwater; coast protection revetment; seawater intake and outfall.

Rendel's scope included:

- PMC services
- Design review
- Construction supervision
- Equipment commissioning
- Contract management and administration




Client/Project/Location	Description/Scope of Services
<p>Ethylene Malaysia Kertih Maritime Facilities Malaysia</p> 	<p>Development of the port to support the import and export of petroleum gases and products. Part of the development included a 1.4km breakwater, T-head jetty.</p> <p>Rendel carried out studies and developed conceptual designs and audited the EPC contractor's detailed design. We also provided tender assistance, design and supervision support during the construction of the two jetty heads.</p>
<p>BP Trading Marine Terminal Isle of Grain, UK</p>	<p>Seven deepwater berths for tankers up to 45,000dwt in 12m depth of water at high tide and two berths for coastal and barge traffic.</p> <p>The jetties are supported on steel box piles over 30m long. Also included were foundations for the entire refinery; cooling water intake system; seawater pumphouse with a capacity of 36,400m³ per hour.</p>
<p>Associated Petroleum Terminals for Lindsey Oil Co, Petrofina & Total Oil Immingham Terminal UK</p>	<p>Rehabilitation and reconstruction of berthing and mooring dolphins for two jetty heads to accommodate tankers up to 250,000dwt for import/export of crude and refined petroleum products, approachway and finger pier for coastal tanker vessels.</p> <p>Rendel prepared the performance specification, contract documents, and detailed design and supervised the construction.</p>
<p>Humber Oil Terminals Immingham Oil Terminal UK</p>	<p>The Oil Terminal serves two local refineries and is in continuous operation for the import and export of crude oil and petroleum products. A 40,000dwt bulk carrier destined for the nearby bulk terminal contacted the downstream berthing dolphin to Berth 1. This incident gave rise to damage to the fender frame and structure of the dolphin.</p> <p>Rendel was engaged to inspect the dolphin and advised on the remaining energy capacity of the damaged dolphin, designed alternative repair schemes to the flexible tube structure of the dolphin, produced drawings and tender documents; supervised the tender period and construction and acted as Planning Supervisor (CDM Coordinator) under the CDM Regulations.</p>

Client/Project/Location	Description/Scope of Services
<p>KNPC Refineries Restoration Project Mina Al-Ahmadi, Kuwait</p> 	<p>Rehabilitation and repair of three oil refineries following the Gulf War and the liberation of Kuwait.</p> <p>Rendel was appointed as Maritime Consultant for the project, with responsibility for the assessment of three major oil export jetties at the Mina Al-Ahmadi and Shuaiba refineries.</p> <p>Services included:</p> <ul style="list-style-type: none"> Structural inspections Structural analysis Design life assessment Detailed design for restoration works Preparation of Specifications
<p>Aden Refinery Company Aden Oil Harbour Improvements Yemen</p>	<p>Rehabilitation and development of the harbour. Included a new berth for tankers of 110,000dwt and rehabilitation of existing berths.</p> <p>Rendel prepared reports, cost estimates, tender documents and provided construction supervision.</p>
<p>Aqaba Ports Corporation Aqaba Oil Terminal Aqaba, Jordan</p>	<p>The Terminal was constructed for the export of crude and fuel oil which had been road-hauled in tanker vehicles across the desert to Aqaba. The terminal was designed for berthing a permanently moored 400,000dwt oil storage tanker, with ocean-going tankers up to 250,000dwt berthing alongside.</p> <p>The scheme consisted of a 150m long piled approach arm and jetty head, plus berthing and mooring dolphins. The dolphins jetty heads were concrete slabs supported on tubular steel piles, and the approach arm consists of 25m long structural steelwork spans carrying the pipeways and concrete roadway supported on tubular steel raking piles.</p> <p>Onshore works consisted of a paved area of about 20,000m² with access roads to the highway. Road tankers are connected to a piped system and the oil pumped into a storage tanker. Oil pipework, pumping plant and fire-fighting and pollution control equipment was included in the project.</p> <p>Rendel was responsible for the detailed design and engineering drawings for the berth and the civil engineering works onshore, together with supervision of construction.</p>

Client/Project/Location	Description/Scope of Services
<p>KNPC Shuaiba Oil Pier Restoration Kuwait</p> 	<p>Following the Refineries Restoration Project, in which short-term repairs were carried out to enable operation of two of the four berths, this project involved the full restoration of all four berths for a service life of 15 years. The work included detailed design of all structural and topsides facilities.</p> <p>Rendel carried out extensive planning and scheduling studies along with a construction risk assessment and HAZOP study. Additionally, we prepared the detailed design and tender documents, conducted the technical and commercial evaluation of the tenders, and supervised construction of the works.</p>
<p>Aden Refinery Company Tankage & Pipeline Works Little Aden, Yemen</p>	<p>Oil refinery tank farm development project involving the construction of 16 new storage tanks and refurbishment of 7 existing tanks. The contract also includes associated pipelines, pumps and instrumentation as well as upgrading the refinery fire-fighting systems. The 16 new tanks range from 700 to 50,000 tonnes and are for the storage of crude oil and refined products such as kerosene and light diesel fuel.</p> <p>Rendel provided design verification and construction supervision.</p>
<p>KNPC Mina Abdulla Refinery Sea Island Underwater Inspection Kuwait</p>	<p>Rendel was appointed to provide a Diving Inspection Supervisor to lead a team of divers in the underwater inspection of this offshore sea-island structure used for berthing 250,000dwt tankers while loading crude oil and product from the Mina Abdullah Refinery complex. The structure comprises a series of linked piled jacket structures forming the loading platform and berthing and mooring dolphins.</p> <p>Rendel's scope included:</p> <ul style="list-style-type: none"> Structural inspections Structural analysis Integrity check to API RP 2A-WSD
<p>Kuwait Oil Company North Pier, Mina Al-Ahmadi Mina Al-Ahmadi, Kuwait</p>	<p>800m jetty head for four 100,000dwt tankers with a 1.5km long approach structure.</p> <p>Rendel undertook site investigation, design and preparation of tender drawings and supervision of construction.</p>

Client/Project/Location	Description/Scope of Services
<p>Kuwait Oil Company South Pier, Mina Al-Ahmadi Kuwait</p>	<p>The pier provides accommodation for oil tankers up to 80,000dwt and gas carriers up to 126,000m³. The terminal was originally constructed as a design-construct project based on Rendel's concept design.</p> <p>Rendel was responsible for checking the contractor's detailed drawings; supervising the works. Since the liberation of Kuwait Rendel has performed an above and below water inspection of the structure and structural analysis. Repairs and refurbishments to extend the life of the facility were recommended to the client.</p>
<p>Kuwait Oil Company Limited Mina Al-Ahmadi South Pier Refurbishment Mina Al-Ahmadi, Kuwait</p>	<p>This project required a survey of the existing oil terminal jetty following the Gulf War. The Jetty provides accommodation for oil tankers up to 80,000dwt and gas carriers up to 126,000m³, and comprises steel piles with an all-welded steel superstructure.</p> <p>Rendel carried out a structural integrity survey including above and below water inspection, structural analysis, recommendations on repair and refurbishment.</p>
<p>Kuwait Oil Company Limited Mina Al-Ahmadi South Pier Mina Al-Ahmadi, Kuwait</p>	<p>Eight berths for tankers up to 45,000dwt, three cargo berths, and a small craft harbour. Steel piled jetty has 1,200m long approach leg and 1,180m T-head. Harbour enclosed by 760m of rubble breakwaters to accommodate tugs and other small craft.</p> <p>Rendel carried out site investigations, design, preparation of contract drawings and documents, evaluation of tenders and supervision of construction.</p>
<p>Kuwait Oil Company Limited Mina Al-Ahmadi South Pier Remedial Works Mina Al-Ahmadi, Kuwait</p>	<p>Repair and repainting of corroded structural steelwork of existing jetty designed by the Rendel Palmer and Tritton in the 1950s.</p> <p>Rendel carried out a detailed survey of structure; corrosion survey report; design of remedial works; preparation of contract documents and bills of quantities.</p>
<p>ThyssenKrupp Sulphur Jetty Kuwait</p>	<p>Marine facilities for the export of granular sulphur via a conveyor system and ship loader.</p> <p>Rendel was engaged to undertake the planning layout, design and specification. We undertook various navigation studies, specified the site investigation, produced ITB drawings and specification.</p>

MARINE FACILITIES

Client/Project/Location	Description/Scope of Services
<p>Ministry of National Security Sandy Bottom Small Ports Project Bahamas</p> 	<p>Rendel has been awarded an Employer's Representative contract by the Ministry of National Security, Bahamas for the provision of specialist marine consultancy services on three new ports facilities to accommodate the new Royal Bahamas Defence Force fleet. This contract forms part of US\$200m investment by the Bahamian Government to upgrade ageing naval infrastructure and their fleet of small patrol vessels.</p> <p>Rendel's services will follow the three phases of the project:</p> <ul style="list-style-type: none"> Procurement and contract advice Detailed engineering review Construction supervision <p>Works include the construction of three small ports, sea walls, sea defences and associated infrastructure.</p>
<p>Afcons Aktau International Seaport Expansion Project - Northern Terminal Kazakhstan</p> 	<p>Expansion of the Caspian seaport of Aktau in the West of Kazakhstan as part of the international transCaspian corridor.</p> <p>Rendel is providing detailed design for the Northern Terminal which includes:</p> <ul style="list-style-type: none"> Dry cargo quay Port fleet quay (sheet piled wall) Silos Paving Navigation Aids Scour protection and dredging Filling and ground treatment Roads Rail
<p>NASS Contracting ASRY Quay Wall Tender Design Hidd, Bahrain</p> 	<p>Construction of a quay wall for Arab Shipbuilding and Repair Yard (ASRY). The Tender design included blockwork quay wall construction including facilities for berthing 300,000dwt vessels. Alternative sheet piled wall solution for berthing 300,000dwt vessels. The contract type is an EPC/Turnkey Lump Sum Basis.</p> <p>Rendel was employed to undertake a tender design for the Maritime (Civil) element of the ASRY shipbuilding facility in Bahrain. Tender Design includes for sheet piled wall and concrete block quay structure capable of accommodating 300,000dwt vessels.</p>

Client/Project/Location

Description/Scope of Services

Consolidated Contractors Company (CCC)
New Port of Walvis Bay Container Terminal
Namibia, Africa



Walvis Bay is Namibia's largest commercial port. The sheltered deepwater harbour receives approximately 3,000 vessel calls each year and handles about 5 million tonnes of cargo. The container terminal can accommodate ground slots for 3,875 containers with provision for 482 reefer container plug points.

Rendel provided design services during the tender phase covering the full scope of works including civil and marine and mechanical and electrical design elements.

Technip
Ammonia-Urea Loading Jetty and Material Offloading Facility
Port Gentil, Gabon

Design of material offloading facility jetty.

Rendel carried out front end engineering design (FEED) assessment of quantities, construction cost estimate and construction programme for a FEED study for a jetty, and jetty approach, for vessels up to 60,000dwt for the export of urea and ammonia. The new fertilizer complex was built on a greenfield site.

The scope of works included:

- Review and analysis of ground investigation, bathymetric and topographic surveys
- Wind and wave data, definition of foundation design parameters
- Definition of optimum location of the jetty
- Preliminary design of the urea export jetty, preliminary design of construction jetty and shore protection works
- Production of construction programme and production of construction cost estimates.

Parsons International Ltd
Saadiyat Island
UAE



A master plan for a mixed-use development comprising three marinas with berthing for 1,000 vessels, development of beach facilities on the north west of the island, Marine studies for proposed access bridges, major dredging and reclamation works (40 million m3)

Rendel was responsible for the preliminary and schematic design of all maritime works associated with the proposed 27km² development. We were retained to prepare a strategic development plan which included a master zoning plan for the whole port, with particular attention being paid to hazard analysis, separation criteria and potential pollution problems.

Rendel also prepared tender documents for major dredging and reclamation works associated with the development and carried out tender assessments prior to the award of contract. Work included managing hydraulic modelling and environmental impact assessments associated with the maritime works.

Client/Project/Location

OLAM International
Gabon Fertilizer Plant
Hydraulic Reclamation
Port Gentil, Gabon



Description/Scope of Services

Construction of 4.5 million m³ dredged sand hydraulic reclamation and dynamic compaction (including environmental monitoring and implementation of significant remediation measures) to create a platform to elevate the current site to 3.5m above sea level.

Rendel was Project Management Consultant (PMC) for the dredging and landfilling of 4.5 million m³ of material to create the base platform for the construction of a world-class grass-roots ammonia-urea fertilizer complex at Cap Lopez, 25km from Port-Gentil in the Republic of Gabon.

The proposed plant includes self-sufficient utility, offsite units and product export facilities, when completed, will have a production capacity of 2,200 metric tonnes per day (mtpd) of Ammonia and 3,850 mtpd of granulated urea. A land area of 150ha has been allocated for the project site within the industrial park developed at Cap Lopez. The reclamation covers 80ha of land created from the sand fill borrowed by dredging in the adjacent bay. The works also included the removal of approximately 500,000m³ of topsoil from the site and dynamic compaction of the landfill material.

Rendel had a resident team on site comprising eight people: a team leader, two field engineers and five supervisors, two of whom have specialist experience in environmental matters and marine biology. An important part of the works was to ensure that the dredging did not detrimentally affect the marine environment, in particular cetaceous and turtles which visit the sea adjacent to the site at particular times of the year.

Rendel's scope of work included supervision of the quality of dredging and reclamation, environmental monitoring, supervision of investigation works and a review of all geotechnical data relating to the site and the findings of ongoing geotechnical investigations.

Client/Project/Location

Description/Scope of Services

Archirodon
T3-Q10 Container Terminal (Jebel Ali)
Jebel Ali, UAE



Construction of a new bulk terminal facility in Jebel Ali port under a design and build contract. Terminal 3 will be one of the finest modern marine terminals in the world with a quay length of 1,860m, a draft of 17m, and a 70ha storage yard.

Rendel provided design services during the tender phase covering the full scope of works including civil and marine and mechanical and electrical design elements.

BHP Biliton/Mitsubishi Alliance
(BMA)/Aspec
Hay Point Coal Terminal Expansion 3
Queensland, Australia



Construction of a new AU\$500m Coal Export Jetty at the Hay Point Coal Terminal in Queensland, Australia. The facilities include 2.5km of approachway, three number berth links, a new wharf with shiploader and associated conveyors to accommodate 220,000dwt bulk carriers in 19m water depth.

Rendel was engaged as Independent Checking Engineer and we provided a Fender Options Report for Berth 1, and a Vessel Collision Report for Berth 2.

Aqaba Port Authority
Aqaba Port Development
Aqaba, Jordan



The development of the Port of Aqaba comprising phosphate berths, general cargo berths, container and Ro-Ro berths, oil jetty, new industrial jetty for bulk solids and liquids, Haj industrial jetty, coastguard naval base, port building inspection, boat repair yard, repairs to existing jetties and berths, bulk cargo, mechanical handling equipment and facilities, new phosphate jetty.

Rendel has worked on the development of the Port of Aqaba since 1956 and has continued to deliver various assignments. Scope of services have included preliminary design, feasibility studies, environmental impact assessment, tender design, production of tender documents, tender evaluation, detailed design, supervision of construction.

PROJECT REFERENCE



Project Name:

AL ZOUR REFINERY

Country:

Kuwait

Location within Country:

Kuwait

Name of Client:

AMEC / Kuwait

National Petroleum Company / Fluor

Start Date:

2006

Completion Date:

Current

Provision of specialist marine consultancy services on a new, grass-roots, 615,000 barrels per day oil refinery project in Kuwait.

The project includes construction of a new small boat harbour with 600m of quay wall, solids export berth 3 km offshore connected to the shore by piled approach trestle, 6million cubic metres of reclamation for a new LNG terminal, steel pile sea island located 17km offshore supplied by 5 number 17km long subsea pipelines.

Rendel has been involved in the master planning, preliminary design, tender document preparation, tender review and is currently undertaking the PMC role in phase 4 (Construction Supervision) of the project.

The project phases are as follows:

Phase 1 – Preliminary Design

Phase 2 – Pre-EPC Contract Award Phase

Phase 3 – EPC Contract Detailed Engineering and Procurement Phase

Phase 4 – EPC Contract Construction, Commissioning and Handover Phase



PROJECT REFERENCE



Project Name:

KOCHI LNG TERMINAL

Country:

India

Location within Country:

Kerala

Name of Client:

Whesoe Technology Centre

Start Date:

2009

Completion Date:

2010

Kochi LNG is a liquefied natural gas (LNG) regasification terminal operated by Petronet LNG. It has the capacity to store and distribute 5-million tonnes per annum. The marine terminal has the capacity to receive LNG tankers between 65,000 to 216,000m³ capacity. The terminal has two full containment above ground LNG storage tanks of net capacity of 155,000m³ each.

The LNG import terminal was opened in August 2013 and was constructed under three EPCs.

Rendel services:

Rendel was the independent checking engineer and carried out the engineering review of and commented on the Marine EPC design, procurement and construction method.



PROJECT REFERENCE



Project Name:

MINA ABDULLA REFINERY SEA ISLAND STRUCTURE UNDERWATER INSPECTION

Country:

Kuwait

Location within Country:

Kuwait

Name of Client:

Kuwait National Petroleum Company

Start Date:

2012

Completion Date:

Current

Appointed to provide a Diving Inspection Supervisor to lead a team of divers in the underwater inspection of this offshore sea-island structure used for berthing 250,000 dwt tankers while loading crude oil and product from the Mina Abdullah Refinery complex. The structure comprises a series of linked piled jacket structures forming the loading platform and berthing and mooring dolphins.

Included visual inspection as well as detailed wall and marine growth thickness measurements, cathodic protection potential measurements and MPI of a selected number of welds. Rendel's supervisor dived with the inspectors and collated the inspection report.



PROJECT REFERENCE



Project Name:

PETROCHEMICAL REFINERY INTEGRATION AL ZOUR

Country:

Kuwait

Location within Country:

Kuwait

Name of Client:

Amec Foster Wheeler/KIPIC

Start Date:

2017

Completion Date:

Current

Appointed by Amec Foster Wheeler to provide maritime consultancy services on the Petrochemical Refinery Integration Al Zour (PRIZe) project. AMEC is the PMC with overall FEED responsibility for the PRIZe project.

PRIZe covers the integration/expansion of the Al Zour Oil Refinery with the addition of gasoline production, an aromatics plant and an olefins plant. The following products will be exported from the PRIZe marine facilities:

- Gasoline
- Benzene
- Paraxylene
- Solid pelletized polypropylene (in palletised bags or bulk container)
- There will also be import of methanol

Deliverables will be split into two main activities – Phase A; Concept Identification and Phase B; Selected Concept Development.



PROJECT REFERENCE



Project Name:

MINA AL AHMADI REFINERY, SULPHUR EXPORT JETTY

Country:

Kuwait

Location within Country:

Kuwait

Name of Client:

Thyssenkrupp

Start Date:

2008

Completion Date:

2009

Export of granular sulphur via a conveyor system and ship loader. Revision to existing Phase 1 Report. Supervision of Navigation & mathematical modelling studies. EPC design of jetty head carrying shiploader & conveyor system and Approachway with conveyors. Specification of geotechnical surveys and site supervision of the same.

Services

Engaged to undertake the planning layout, design and specification for the marine facilities. We provided navigation studies, specified the site investigation, produced ITB drawings and specification.

Scope of services included:

- FEED design
- Construction programme
- Cost estimates
- Technical specification
- Hydrodynamic studies



PROJECT REFERENCE



Project Name:

H2/CO PLANT DORMAGEN

Country:
Germany

Location within Country:
Dormgen

Name of Client:
Air Liquide Global E&C Solutions

Start Date:
2012

Completion Date:
2014

Codema Services

- Structural design (concrete and steel construction) including the preparation of formwork and reinforcement drawings as well as the steel construction overview
- Steel construction workshop planning for the process units
- Architectural design for control room and switchgear
- Building services design for 3 buildings including smoke extraction system for the control room
- Infrastructure design including roads and drainage
- Dynamic design of compressor foundations
- Building physics services



PROJECT REFERENCE



Project Name:

AMONIA / UREA PLANT PORT NEAL

Country:
USA

Location within Country:
Donaldsonville

Name of Client:
Thyssenkrupp

Start Date:
2012

Completion Date:
2014

Codema Services

- Static calculations for steel and concrete structures on the basis of American standards
- Execution drawings for concrete and steel constructions according to American conventions and measurement systems
- Infrastructure design
- Architectural design for buildings
- Design coordination and PE-sealing for the activities of the Indian design units of the customer



PROJECT REFERENCE



Project Name:

KAINIT CRYSTALLIZATION AND FLOTATION PLANT

Country:
Germany

Location within Country:

Name of Client:
K+S Kali GmbH

Start Date:
2015

Completion Date:
2019

Codema Services

- Approval and execution design for new pipe bridge constructions including their foundations
- Approval and execution design for the modification of existing cable bridges to accommodate new cable ducts
- Design services within the framework of the approval and implementation planning of the structural design for the solid components of the KKF production building
- Tenders for production buildings, ancillary facilities and outdoor facilities
- Design services for outdoor facilities
- Architectural design services, e.g. for production building
- Project management services for the new construction including conversion of the Hattorf power plant, ancillary facilities and connecting infrastructure for the design, execution and commissioning phases



PROJECT REFERENCE



Project Name:

COAL FIRED POWER PLANT LÜNEN

Country:

Germany

Location within Country:

Lünen

Name of Client:

1. Siemens Power Generation
D-91058 Erlangen
2. AE&E Austria
A-8074 Raaba/Graz
3. AE&E Lentjes
D-40880 Ratingen

Start Date:

2008

Completion Date:

2013

Codema Services

- Structural design (concrete, masonry and steel constructions): design, static and dynamic calculation, formwork, reinforcement and steel layout drawings
- Architectural design for buildings: Detail design including quantity take-offs and preparation of tender documents for facade works
- Design of Roads and pavements
- Drainage design and drainage pipes and ground pipes



PROJECT REFERENCE



Project Name:

COAL FIRED POWER PLANT MOORBURG

Codema Services

- Facade design
- Design coordination
- Construction management

Country:

Germany

Location within Country:

Hamburg

Name of Client:

G&H Fassadentechnik Vattenfall

Start Date:

2010

Completion Date:

2014





Buildings

BUILDINGS WRITE UP

Ingérop's dam & hydropower unit provides the following services:

Reconnaissance & Scoping
Prefeasibility & Feasibility - Site investigations (land survey, geological, geotechnical, hydrological)
Bankable feasibility studies and financial modelling
Basic, preliminary and detailed design
Tender documents for contractors and suppliers (incl. technical specifications and BoQ)
Project design
Supervision (construction works, assembly, commissioning tests)
Due Diligence (technical, financial, environmental & social)
Environmental and social audits, risk assessment (PCB, lead and asbestos), hazardous waste disposal plan
Technical audits / diagnostic studies on mechanical and electrical equipment

Ingérop has a great experience in African energy projects. In addition to its conventional role of engineer, Ingérop also operates as a specialist advisor to Banks and Financial participating in projects development processes.

Our company has recently been involved in rehabilitation projects of the two largest hydroelectric plants in Sub-Saharan Africa, namely Inga 2 in the DRC (8x178MW) and Cahora Bassa in Mozambique (5x415MW). Indeed, after leading the rehabilitation of Inga 2 feasibility studies from 2005, Ingérop has been appointed Project Manager for the supervision of rehabilitation works of a group of central as well as for emergency work for four other groups.



PROJECT REFERENCE



Project Name:

REDDAM SCHOOL – JUNIOR & SENIOR DEVELOPMENT

Country:

South Africa

Location within Country:

Somerset West

Name of Client:

Century Property Developments

Start Date:

2015

Completion Date:

2016

Project Description:

The design comprised a 2-storey loadbearing masonry building with pre-cast concrete slabs for the majority of the structure. Reinforced concrete columns, beams and slabs were used at selected locations. Structural steel element was used for the walkways.



PROJECT REFERENCE



Project Name:

***REDDAM SCHOOL – EARLY
LEARNING***

Country:

South Africa

Location within Country:

Somerset West

Name of Client:

Century Property Developments

Start Date:

2015

Completion Date:

2016

Project Description:

The design comprised a single storey loadbearing masonry building for the majority of the structure with double volume entrance. Reinforced concrete columns, beams and slabs were used at selected locations. Structural steel element was used for the walkways.



PROJECT REFERENCE



Project Name:

***CUT- CENTRAL UNIVERSITY OF
TECHNOLOGY***

Country:

South Africa

Location within Country:

Welkom

Name of Client:

Central University of Technology

Start Date:

2013

Completion Date:

Ongoing

Project Description:

Structural and Civil Design of the building – reinforced concrete frame structure in clay soil. Earthquake design has been completed.

Professional services related to structural design of various hostel buildings, ranging from double to four storeys. Civil Engineering services for the project relating to earthworks, roads, external services – storm water, sewerage, and water supply.



PROJECT REFERENCE



Project Name:

SOMERSET LAKES DEVELOPMENT

Country:

South Africa

Location within Country:

Somerset West

Name of Client:

OMWIECO

Start Date:

2015

Completion Date:

Ongoing

Project Description:

Civil and structural design of roads and services for 850 residential units, schools, and commercial properties within Somerset Lakes



PROJECT REFERENCE



Project Name:

***CAPE TOWN INTERNATIONAL
SCHOOL***

Country:

South Africa

Location within Country:

Western Cape

Name of Client:

Steven Chester

Start Date:

Jan 2003

Completion Date:

Nov 2003

Project Description:

The building comprised a reinforced concrete frame structure with structural steel roof.



PROJECT REFERENCE



Project Name:

EASTWOOD APARTMENTS

Country:

South Africa

Location within Country:

Western Cape

Name of Client:

Eastwoods

Start Date:

2019

Completion Date:

Ongoing

Project Description:

Ingérop provides Structural Engineering Services for Design of multi storey building consisting of loadbearing brickwork and pre-cast slabs with in-situ concrete areas.



PROJECT REFERENCE



Project Name:

***BLOUBERGZICHT
DEVELOPMENT***

Country:

South Africa

Location within Country:

Western Cape

Name of Client:

Devmark Developers

Start Date:

2016

Completion Date:

2017

Project Description:

Ingérop provides Structural Engineering Services Design for a 3 Storey walk-up flats with loadbearing brick and pre-cast slabs system. Reinforced concrete elements used for transfer area.



PROJECT REFERENCE



Project Name:

AFFORDABLE HOUSING PROJECTS – SILVER MEADOWS APARTMENTS

Project Description:

Ingérop provides Structural Engineering Services Design for a 3 Storey walk-up flats with loadbearing brick and pre-cast slabs system. Reinforced concrete elements used for transfer area.

Country:

South Africa

Location within Country:

Cape Town

Name of Client:

City of Cape Town

Start Date:

2015

Completion Date:

2016



Ingérop – International Buildings Experience

Ingérop develops its references in buildings with a wide variety of public or private funded projects for hotels, houses, offices, civic buildings, laboratories and hospitals, educational premises, stadiums, museums and industrial buildings. By providing a full range of services, often partnering with leading architects, Ingérop have built close relationships with their clients that enable their projects to benefit from the most advanced technology and efficient solutions.



Hermes House – Seoul, Korea
(Rena Dumas Architect)



Casa Vélásquez, Madrid - Spain
(Architects : Argola, Madrid et Flint, Bordeaux)



34 LCB housings - Strasbourg - Architects:
Patrick Schweitzer & Associés



Ekwaterr, Issy-les-Moulineaux (Architect: Arquitectonica)



Grands Moulins de Pantin (Reichen & Robert & Associés Architects)



CNIT - La Défense
(Jean-Luc Crochon Architects)



Petit Palais Museum, Paris
Architects : Chaix et Morel et Associés

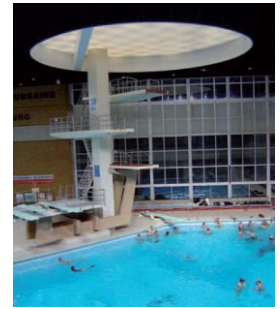
General Company Information



Princesse Grace Hospital, Monaco
(Architects: Claude Vasconi, Patrick Raymond)



Jabal Omar - Mecca - Saudi Arabia –
Preliminary and tender design



Schiltigheim Pool
(Architect: Patrick Schweitzer)



Total E&P company Headquarters - Angola - Architect: EDI (Houston USA) Tower
construction project (VTB) for use as offices in Luanda (Angola) including: - 16 office storeys (26,000 m²) - 1 auditorium with 400 seats - 1 restaurant with 400 seats - 8 levels of parking (12,000 m²) and a building sheltering electricity generators and the waste water treatment plant. Working drawings of: plumbing, fire safety, air-conditioning / ventilation, smoke extraction, strong/weak electricity currents (including electricity generators and waste water treatment plant).

Ingerop South Africa has acquired a strong reputation in the built environment field due to its involvement over the years in some of the major built environment related projects in Sub-Saharan Africa, including:

FIELDS OF SPECIALIZATION

The table below indicates the relevant specialism related to the Built Environment fields of interventions of Ingerop South Africa. The relevant specialisms are shown by placing a tick (✓) in the box corresponding to those specialism in which Ingerop South Africa has significant experience.

	Ingerop South Africa
Field of intervention	
Built environment	✓
Architecture	✓
Environment, Economic studies, Infrastructure hydraulics	✓
Civil, Structural Geotechnical, Hydraulic, Environmental	✓
EIA studies, Environmental planning & Management and Regional Economic planning,	✓
Diagnostic, Due diligence, Marketing to investors, financial closure, Post closing support	✓
Scope of services	
Design studies (preliminary design, tender design, tender procedure assistance, detailed design, as-built drawing)	✓
Environmental planning & management (incl. monitoring)	✓
Occupational Health & Safety	✓
Institutional/ Financial arrangements	✓
Operational Support	✓
Implementation studies	✓
Pre and Feasibility Studies	✓
Technical, economical and environmental feasibility study	✓
Client Liaison	✓
Quality Control	✓
Review Organisational, Institutional arrangements and division of functions	✓
Review existing systems, available data, studies & feasibility reports	✓
Legal framework and bankable Feasibility Studies	✓
Economic Analysis/ Project Finance/ financial modelling (cost benefit analysis, calculation of IRR...)	✓
Master Planning	✓
Audits/ Evaluations (ex-post & ex-ante)/ Due Diligence examinations	✓
Technical studies	✓
Project management & Client consultancy	✓



Urban development



Transportation

SERVICES PROVIDED

- / Public transport planning and implementation*
- / Roads and highways*
- / Infrastructure networks*
- / Bridges and tunnels*
- / Urban development*
- / Land use management and planning*
- / Railways*
- / Urban transportation*
- / Transportation systems and equipment*



URBAN DEVELOPMENT AND TRANSPORTATION WRITE UP

Ingérop South Africa has acquired a strong reputation in the roads field due to its involvement over the years in some of the major roads related projects, including:

South Africa-Manguzi: design and construction documentation and supervision - was appointed by SANRAL to carry out detailed design and perform construction supervision for the special maintenance of Regional Route R22 from Phelendaba circle (km 0) to Manguzi (km 22) in the region of Kwazulu-Natal.

South Africa-N2 Empangeni: Carrying out the detailed design for the upgrade of the existing National Route N2, located in the province of Kwazulu-Natal, from a 2-lane single carriageway freeway to a 4-lane undivided freeway, for a total length of 55,1km road. South Africa-Reseal of N14 Section 5 Upington: Consulting Engineering Services for the periodic maintenance (reseal) on National Route 14 Section 5 between Upington (km7.60) and Boplaas.

South Africa-Rehabilitation of national route 2, section 32 between Pongola (31.20 km) and the Kwazulu-Natal border (70 km) - Full rehabilitation of 33.8km of single carriageway National Road

South Africa-ER-N2-30 KHANGELA - Msunduzi to Khangela - Consulting Engineering Services for the periodic maintenance on National Route.

PROJECT SHOWCASE



Project Name:

Upgrading Of N2 Between Umtentweni Interchange And Hibberdene Interchange

Country:
South Africa

Location within Country:
KwaZulu-Natal

Name of Client:
SANRAL

Start Date:
2016

Completion Date:
2022

Ingerop SA in joint venture with Knight Piesold have been appointed by The South African National Roads Agency (SANRAL) for full Engineering Services, including detailed design, construction monitoring and close up report, for the doubling of 20kms section of the existing National Route N2, between Umtentweni (section 22, km 34.8) and Hibberdene (section 23 km 5.3) interchanges, in the province of Kwazulu Natal.

The project consists of the construction of a new carriageway freeway alongside the existing 2-lane single carriageway freeway. 14 existing bridges (of which 6 across rivers) and 13 major culverts structures (of which 5 across rivers) will be extended or new structures constructed next to existing to accommodate traffic to the new carriageway. Among new structures to be constructed along the new carriageway, there will be a 180m long bridge across Mzombe river.

The provisional programme consists of 12 months design period followed by 60 months construction period.



PROJECT SHOWCASE



Project Name:

Detailed Engineering Design of the N2 EMPANGENI Highway

Country:

South Africa

Location within Country:

KwaZulu-Natal

Name of Client:

SANRAL

Start Date:

2012

Completion Date:

2015

Carrying out the detailed design for the upgrade of the existing National Route N2, located in the province of Kwazulu-Natal, from a 2-lane single carriageway freeway to a 4-lane undivided freeway, for a total length of 55,1km road.

The existing road pavement will be rehabilitated. There are 13 existing bridges (of which 3 are across major rivers) to be built along the proposed new carriageway alongside the existing bridges.

Three bridges will be completely demolished and access service roads will be provided to properties that currently getting accesses through those bridges. There are 8 major culverts (bridges) and about 210 minor culverts to be extended across the new carriageway road. Compiling contract documentation of works



PROJECT SHOWCASE



Project Name:

Tanzania BRT Phase 1

Country:

Tanzania

Location within Country:

Dar-es-Salam

Name of Client:

TANROADS

Start Date:

2010

Completion Date:

2012

Description of actual services provided by your staff within the assignment:

Basic Design/Detailed Design

- Field survey
- Basic design
- Detailed design
- Project cost estimation
- Detailed design drawings
- Economic Appraisal

Tender Supervision

- Preparation of tender documents
- Implementation of tender process
- Evaluation of tender
- Contract negotiation
-

Procurement Supervision



PROJECT SHOWCASE



Project Name:

Feasibility and detailed design of Kenya BRT

Country:
Kenya

Location within Country:
Nairobi

Name of Client:
MOTI (Ministry of Transport and Infrastructure)

Start Date:
2015

Completion Date:
2017

Studies outlined the important challenges hampering urban mobility within the Nairobi Metropolitan area. With regard to Mass Rapid Transit (MRT) projects, 5 major corridors were identified with Bus Rapid Transit as a preferred option.

The contract involves:

- Eastern and Western Line 3 (27 km): Ngong and Juja / Komarock / Kangundo corridors, passing through the CBD (Central Business District);
- Western Line 4 (7 km) between the CBD and T-Mall via Mbagathi Way.

Description of actual services provided by your staff within the assignment:

- The definition of the BRT “concept” is an integral part of the study: operation scheme, stations, and interfaces with other modes
- Scope of the assignment:
- Feasibility and detailed study of both lines:
- Technical studies (alignment design, infrastructure, operation, ITS, structures);
- Transport demand forecast using a specifically developed traffic model;



PROJECT SHOWCASE



Project Name:

Detailed Design and Management of the Implementation of the Durban CBD ICDS

Country:

South Africa

Location within Country:

KwaZulu-Natal

Name of Client:

eThekweni Transport Authority (ETA) - Durban

Start Date:

2007

Completion Date:

2012

The aim of the ETA CBD PTDS project is to have a road-based bus transport system operating on priority lanes within the wider Durban CBD precinct connecting all the major destinations, including the 2010 Soccer World Cup stadium to be located on the northern outskirts of Durban. The final deliverable is an operational CBD distribution system, including monitoring and administration of the contract up to December 2010.

Key components to the success of the project are the design of the most appropriate routes within the CBD, a traffic impact assessment and negotiations/consultations with the existing public transport providers, businesses and residents likely to be affected by the distribution system.



PROJECT SHOWCASE



Project Name:

SENA Railway Line

Country:

Mozambique

Location within Country:

Beira

Name of Client:

CFM - Eng. Adelino Mesquita

Start Date:

2006

Completion Date:

2010

Independent Engineer for the Beira Railway Project

Rehabilitation and rebuilding of 600Kms of a railway line between Dondo and Moatize Coal mine, plus 65 Kms from Inhamitanga to Sena Sugar Plant at Marrromeu and a short connection to Malawi 23 kms from Sena to Vila Nova da Fronteira.

The scope of this assignment includes bridges (p.ex. D. Ana metallic structure – 7kms long), culverts, drainage systems and all other related facilities such as train stations, and buildings for logistic support of the running management of the railway. Furthermore, IIC provided support and execution of all topographic and geologic survey activities required to project implementation – Railway and site Plant.



PROJECT SHOWCASE



Project Name:

Limpopo Rail Plan Phase 2

Country:

South Africa

Location within Country:

Limpopo

Name of Client:

PRASA

Start Date:

2011

Completion Date:

2011

- A. Polokwane – Mokopane: Commuter Service
- Investigating feasibility of introducing commuter service
- Proposed service design
- Rail infrastructure and upgrade requirements
- Financial/Economic feasibility
- Impact on the current bus and taxi services
- B. Polokwane – Gauteng : Improved Shosholoza Meyl Service
- Identifying operational measures for improving the rail service
- Business Plan
- C. Mankweng – Seshego: Passenger Transport Service
- Conceptual Design of New line
- Station Locations and Environs
- Comparative evaluation of above service and Bus Rapid Transit Service
- Determining the most suitable transport solution for the greater Polokwane area
- Financial/Economic feasibility
- D. Polokwane – Moloto Corridor :
- Identification of preferred rail linkages and conceptual design of preferred alignment.
- Route determination and co-ordination
- Station location and environs
- Operational Assessment
- Economic / financial feasibility



PROJECT SHOWCASE



Project Name:

Algiers Tramway

Country:

Algeria

Location within Country:

Alger

Name of Client:

WILAYA D'ALGER

Start Date:

2001

Completion Date:

2004

Feasibility studies of two tramway lines in agglomeration of Alger, one on the East (25 Km) and the other on the West (15 Km). And also, detailed design and tender document of the main transportation axis (East) between Alger and Bordj El Kiffan.

Disciplines concerned : demand evaluation, infrastructures, artworks, urban developments, platform, railway, energy, low currents, garage-workshop, rolling stock .



PROJECT SHOWCASE



Project Name:

Construction of Gautrain High Speed Railway line

Country:

South Africa

Location within Country:

Gauteng

Name of Client:

Bombela

Start Date:

2005

Completion Date:

2005

Completion of Tenderer's Conceptual Design to give Preliminary design of civil works (earthworks, drainage, utilities, foundations, structures, on 2 of 5 sections of the railway, i.e. 22 km in length) with drawings sufficient for construction costing to facilitate financial closure for a concession contract. Includes 9 viaducts (3km) and 32 bridges. Highest embankment 20m, deepest cut 18m.



PROJECT SHOWCASE



Project Name:

Mtentu Bridge

Country:

South Africa

Location within Country:

Eastern Cape

Name of Client:

Start Date:

2005

Completion Date:

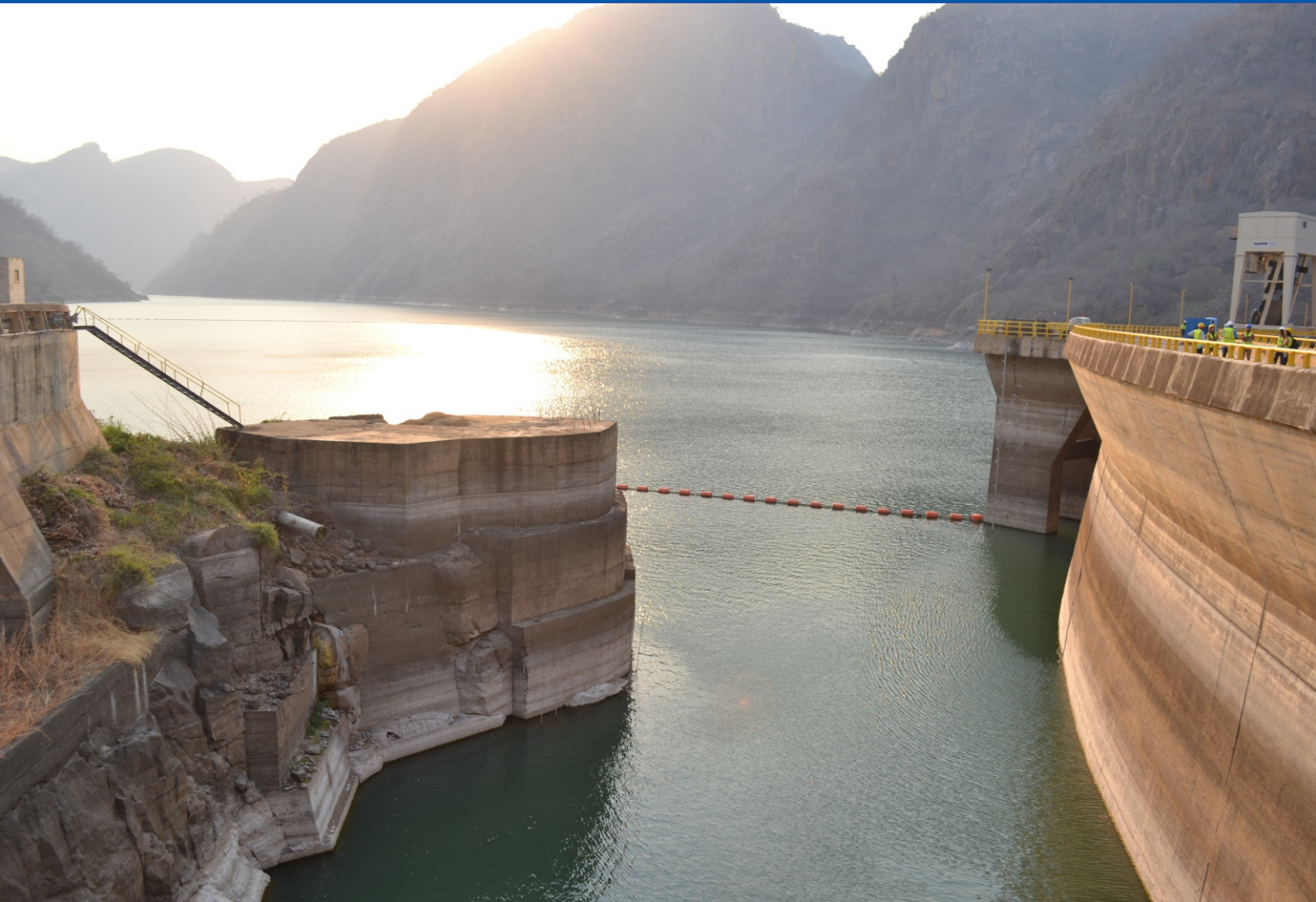
2005

Ingerop South Africa have been appointed to provide independent checking of special temporary works on the construction of the Mtentu River Bridge on the N2 Wild Coast Toll Road in the Eastern Cape province, South Africa.

On completion, this will be one of the highest bridges in the world, with a deck height of approximately 223 metres.







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