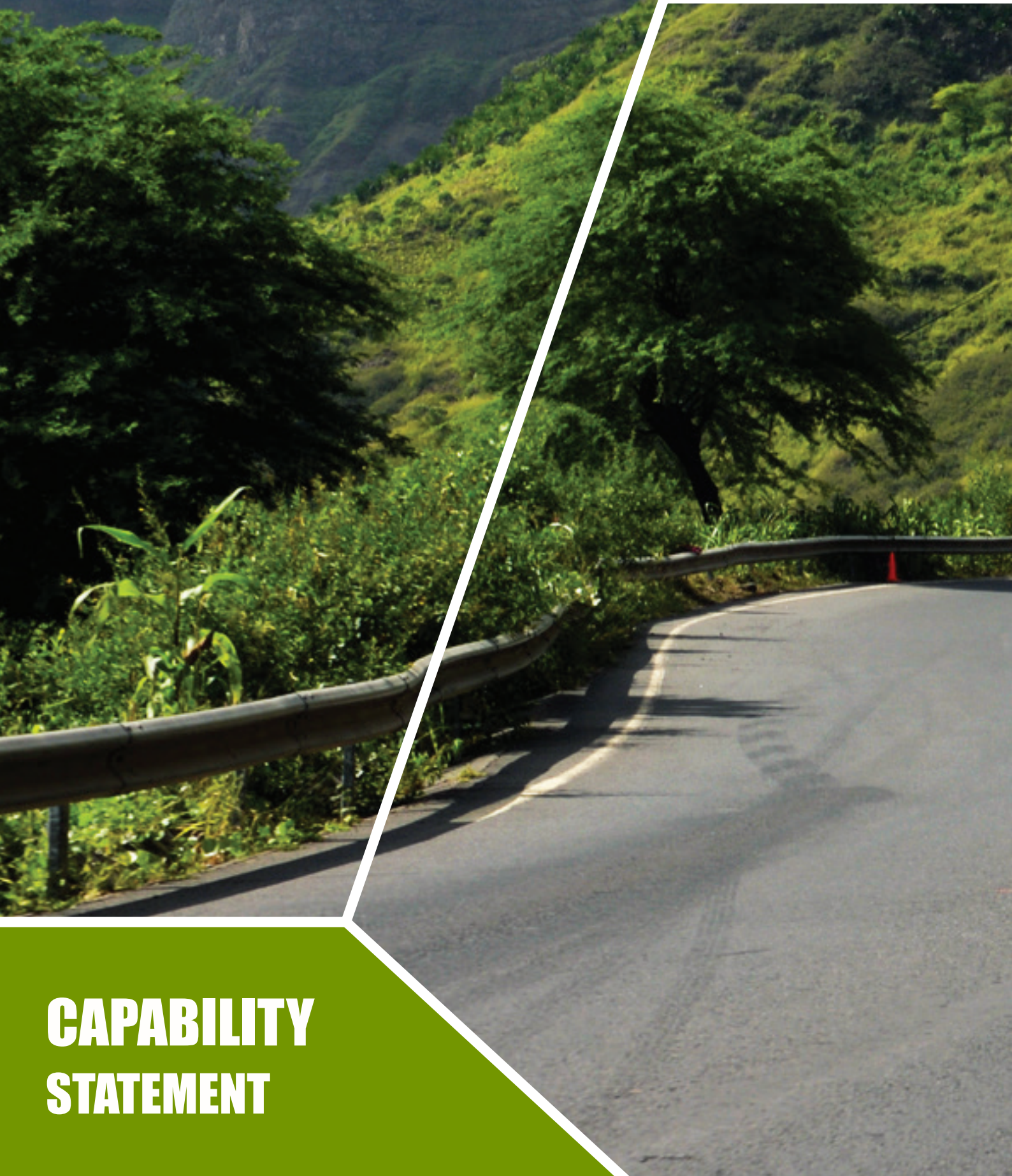




**NICHOLAS
O'DWYER**
an **RSK** company

TRANSPORT SECTOR



**CAPABILITY
STATEMENT**

Transport Sector *Capability Statement*

Economic growth is increasingly linked with transport development. When transport systems are efficient, they provide economic and social opportunities that impact throughout the economy.

Improvements in transport infrastructure bring important social and environmental developments with obvious implications for poverty alleviation and the development of personal welfare in the realms of Health, Education and Employment. The engineering of sustainable transport systems requires a mix of skills and experience developed over decades of successful project implementation.



Nicholas O'Dwyer implements and maintains a management system which fulfills the requirements of the standard IQNET ISO 9001:2015
Registration Number: IE-19.3077HQ



Transport Sector

Capability Statement

Nicholas O'Dwyer has successfully delivered transport infrastructure projects across the global economy for over 60 years. Counting all of the international funding agencies amongst our client base, we have been at the forefront of many major infrastructural projects throughout the developing world. As leaders in innovative design and strategic management of such projects, we continue to exploit the latest technologies and industry developments and trends to provide the right solution to meet client needs.

The firm's European and International clients include local and multi-national contractors, government departments, statutory bodies, private sector organisations, utility providers and International Funding Institutions (IFIs) responsible for funding and co-ordinating major infrastructure projects.

Over the decades, the firm has built strong connections to the best engineering firms worldwide, positioning itself to combine its international expertise with local knowledge and experience. Working together, Nicholas O'Dwyer and its partners provide the most effective solutions resulting from a true understanding of the client's brief.

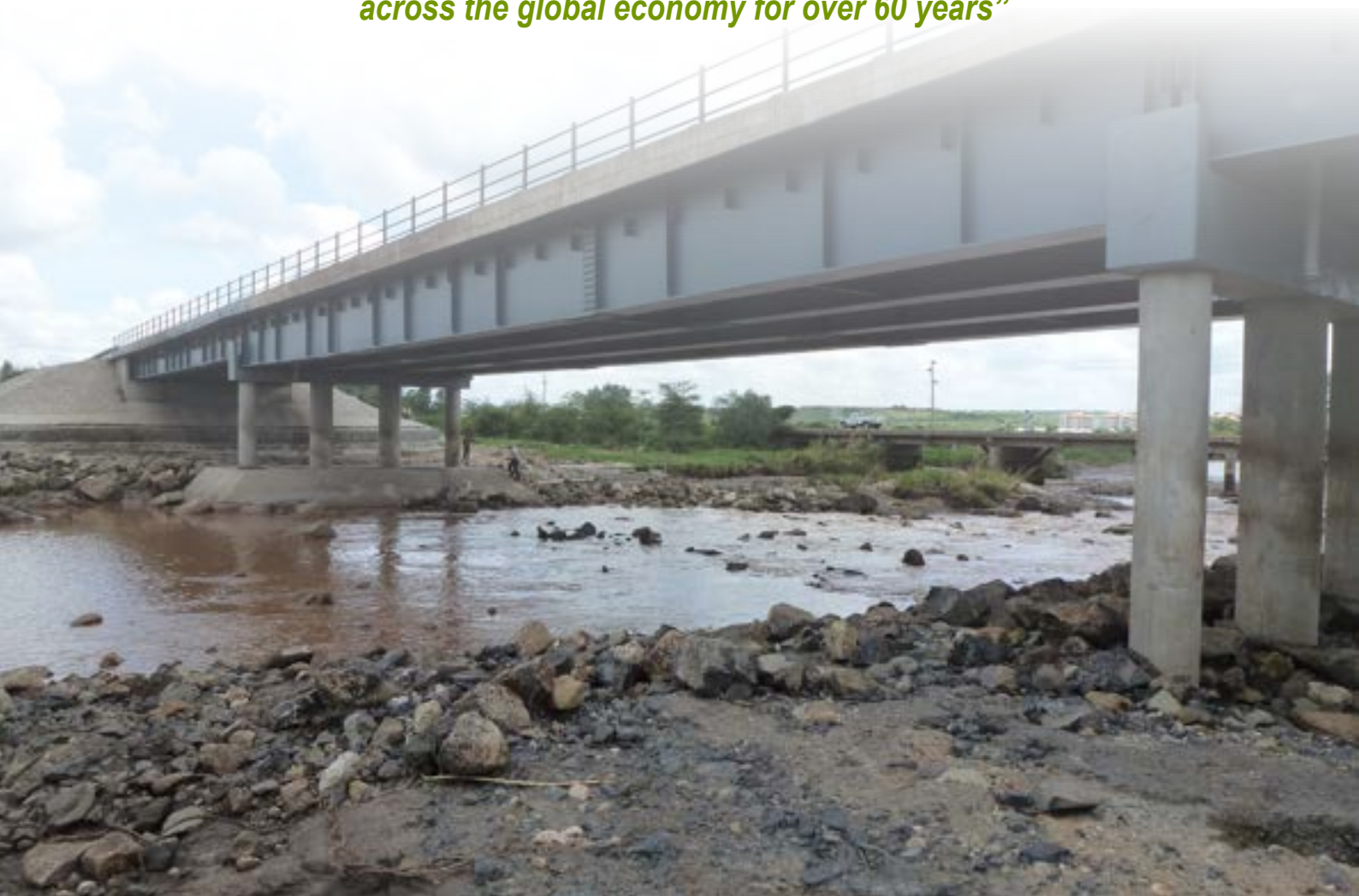
Since its foundation Nicholas O'Dwyer has delivered hundreds of transport, water, civil and environmental projects in more than 50 countries.

During the past 15 years alone it has:

- *Provided engineering services to the development of over 5,000km of highways;*
- *Provided engineering services to the projects in the transport sector with a construction value of over a billion euro;*
- *Provided over two million man-hours of transport engineering services;*
- *Worked in over 20 countries throughout the developing world;*
- *Developed a strong track record in the delivery of projects funded by IFI's;*
- *Extensively used and is familiar with the conditions of contract of these agencies and with the FIDIC conditions.*

Our team prides itself on a 'can do' approach delivered through sound management, technical excellence and teamwork.

“Successfully delivered transport projects across the global economy for over 60 years”



Transport Sector

Our Service

Drawing on more than 60 years of experience, Nicholas O'Dwyer provide a full range of services to help transportation agencies meet the financial, technical and contextual challenges of delivering roads and highways that address the economic, social and environmental needs of the communities they serve.

Our professional staff have devised solutions for projects of all scopes, sizes, and levels of complexity. We encourage innovation across disciplines and collaboration with clients and stakeholders to develop outcomes that are as sustainable for tomorrow as they are successful for today.

We have played a leading role in the delivery of major transportation links in the developing world such as the Nairobi Mombasa Road in Kenya, the Central Corridor Route in Tanzania and the Northern Coastal Highway in Jamaica.

We provide services in every aspect of a highway program including transportation planning, traffic analysis, urban design, environmental impact studies and statements, funding and feasibility analysis, preliminary engineering, final design and construction supervision. The firm has developed and established best practices in the areas of:

Transportation Planning and Economics

We plan, design, deliver and support sustainable transport solutions that move people and goods in a safe, efficient way. We help to meet the travel and social needs of communities, commerce, network owners and operators. Working in integrated, multi-disciplinary teams, our transportation experts assess the feasibility of solutions and optimise the potential of our clients' assets and strategies.

"Plans, and manages construction and operation for the highways of tomorrow"

Highway Design

We plan, analyse, design, inspect, procure and manage projects internationally. We deliver long-term sustainable solutions for all types of highways, from local and rural roads to major strategic routes. Our cost-effective designs improve safety, ease congestion and extend street and highway life while reducing future maintenance costs.

Environmental and Social Impact Assessment

Our full range of services reflects the life cycle of a development or project, from initial consultation and master-planning to detailed design and impact assessment. Where relevant, we also provide support during the operational phases.

Our teams of experts operate on both a local and a global level. We understand the implications of different regional approaches and the associated legislative requirements. We focus on the delivery of sustainable environmental solutions that incorporate global best practice where appropriate.

Bridge Design

We create sustainable structures that are economic to construct and maintain, whilst minimising their environmental impact using technologies that include pre-stressed concrete, post tensioned concrete and composite girders. Our services cover the entire life-cycle of a bridge project, from preliminary draft design to bridge deconstruction plans.

We also act as inspectors of bridge infrastructure, specialising in comprehensive bridge rehabilitation and replacement design services.

Construction Supervision

Our company has a long and successful history in providing construction supervision services in this sector. We specialise in delivering construction supervision solutions to road construction projects in the developing world. We have completed many projects funded by international donor agencies and have well developed procedures to comply with the requirements of all of these agencies which are implemented by our very experienced project teams.



Transport Sector

Our Approach

At Nicholas O'Dwyer we understand the transport needs and priorities of developing economies. Much of our work in the transport sector has been concerned with the development of transport infrastructure as a key priority for economic development and growth.

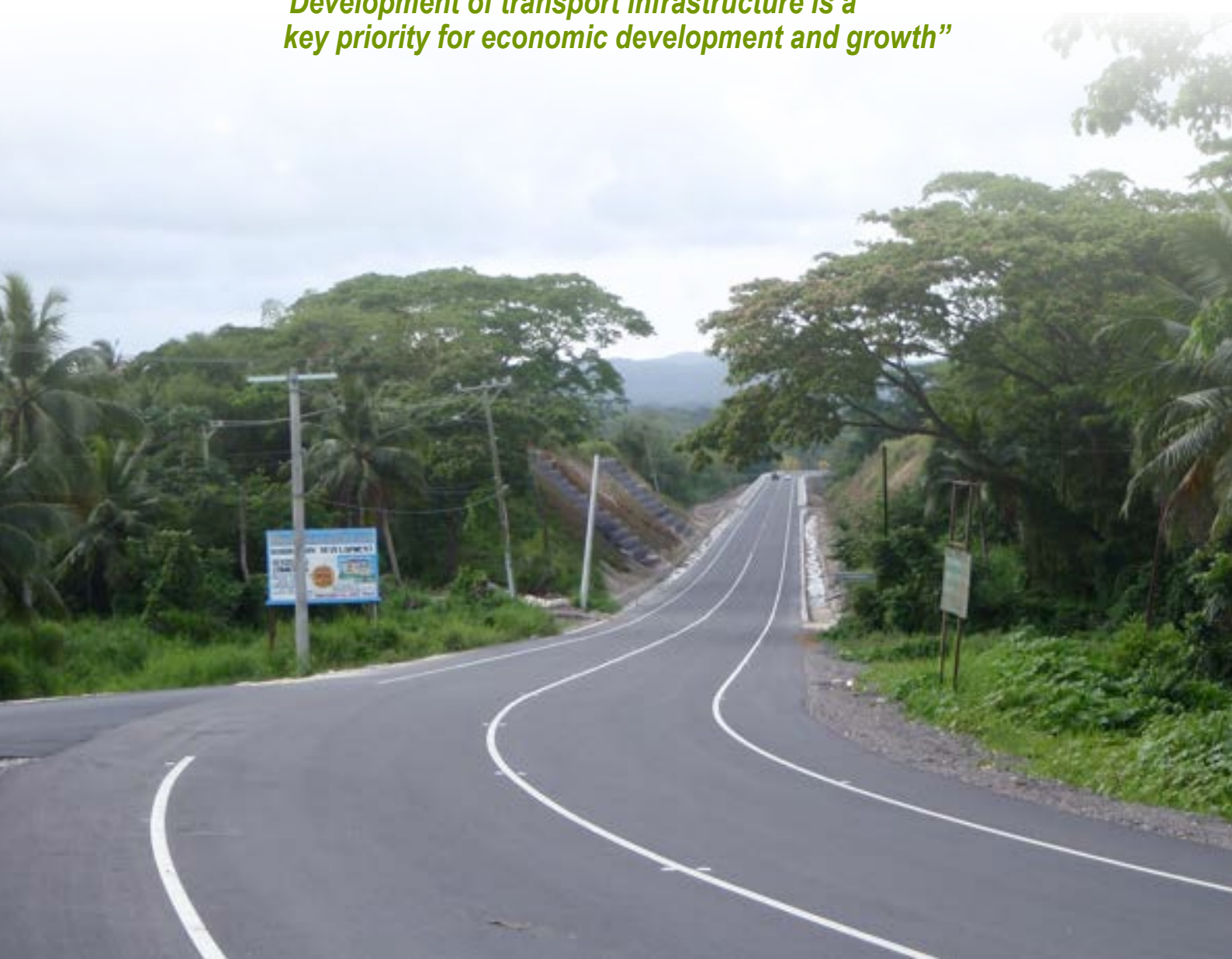
We understand what it takes to deliver both strategic inter urban routes and rural road infrastructure to the budgets and time frames available and to achieve quality in construction and sustainability in operation in challenging environments and conditions.

But most importantly we build relationships that work for you. It is this partnership with you, the client, and all members of the supply chain that ensures you benefit from the expertise across all disciplines.

Our approach stems from our belief that:

- *Innovation is key, yet we must deliver robust, practical solutions, guaranteed by our broad and varied experience in the transport sector;*
- *Complexity should be simplified. Infrastructure projects are not simple but we know how to manage the complexities to deliver results;*
- *Value for Money is critical. That's why we aim to do more with less, we use the latest information and communication technology to deliver better performance with less of your resources;*
- *Encouraging our staff to excel in all that they do benefits the project, benefits you and benefits us.*

“Development of transport infrastructure is a key priority for economic development and growth”



CASE STUDIES



Ngoma- Nyanza Road

Lot 2: Kibugabuga - Shinga - Gasoro - 66.55km

Rwanda

The purpose of this project was to provide a road designed to national standards that is fit for its purpose and constructed in accordance with national standards and specifications.

The contract was an Output and Performance-based Contract (OPRC) and had a performance-based maintenance period of 5 years where the road asset is maintained to predefined levels of service.

Another key outcome was an improved Post Accident Response regime that increased survival and recovery in road traffic accidents. The project was implemented in a sustainable way that preserved the environment and ensured social impacts are mitigated.

The Package is Lot 2, Kibugabuga- Shinga – Gasoro with a design and construction period of 30 months. The Contractor was responsible for design and construction of this road, and maintenance to a standard outlined in this contract for a period of 60 months following construction completion.

Payment through the maintenance period was by a series of lump sum payments, but non-conformance within a section resulted in a deduction from the regular payment.

Nicholas O'Dwyer are responsible for the provision of services as Monitoring Consultants / Project Manager for the detailed design and construction supervision of the Contractor on behalf of the RTDA.

The Works construction were administered under FIDIC for Contract for Design and Build, modified to incorporate the 60 months maintenance Conditions.

Services Provided:

- *Review and approval of detailed designs for roadways and bridges;*
- *Construction setting out survey checks;*
- *Quality control checks and monitoring through construction and maintenance;*
- *Progress monitoring and assessment;*
- *Certification of Works;*
- *Monitoring of environmental and social safeguards;*
- *Monitoring of road performance throughout the maintenance phase by regular inspection;*
- *Adjudication of claims / disputes arising.*



“The road is an important component of the integrated corridor development initiative (ICDI) in the East African Community (EAC) Countries”

GEITA USAGARA ROAD

Tanzania

Geita is a town in northwestern Tanzania of approximately 40,000 people, located 90kms west of Mwanza. In 2012 it became the administrative headquarters of the newly created Geita Region. Geita regained prominence in the mid to late 1990's when the Tanzanian Government opened the mineral sector to foreign investment.

The Government of the United Republic of Tanzania through the Tanzania National Roads Agency (TANROADS) upgraded the existing unpaved B163 Geita – Usagara road (90km) to bitumen standard. The improvement is part of the Government strategy to develop its road network to support socio-economic development of Tanzania.

The project was divided into two Lots:

Lot 1: Geita – Sengerema (50km) section with a construction cost of €24 million;

Lot 2: Sengerema – Usagara (40km) section with a construction cost of €22 million;

The contracts for Design and Build of both Lot 1 and Lot 2 were signed, with M/s Sinohydro Corporation Limited from China. Both Lots were constructed under Design & Build forms of contract.

Lot 1 commences at 9km east of Geita and runs eastwards to Sengerema. Lot 2 commences at Sengerema town, 1.33km east of the junction to Kamanga ferry, and runs eastwards to Usagara where it joins the road B6.

In general a large part of the project road crosses gently undulating plains. The works included ferry landings, administrative buildings and weigh-bridge facilities.

The project road starts at Sengerema town and is naturally split in two parts by Lake Victoria.

Nicholas O'Dwyer were responsible for reviewing the contractor's design and for the supervision of both works contracts for the upgrading from gravel road to Class 1 Bitumen standard.

The road pavement consisted of a selected sub-grade of natural gravel, a sub base and a base of cement stabilised gravel, surfaced with a 20mm chip double seal surface dressing.

“Design review and construction supervision of 90km highway upgrade near Lake Victoria under design and build contract”



CONSTRUCTION SUPERVISION SERVICES FOR SULTAN HAMUD–MACHAKOS-EMBAKASI ROAD

Kenya

Poor road conditions have been a major obstacle for development in Kenya. This Service Contract consisted of the supervision of two separate Works Contracts aimed at improving the situation.

Contract No 1:

(RD 417). The section of Road No A109 from Sultan Hamud to the Machakos Turn-Off.

Contract No 2:

(RD 418). The section of Road Nos A104/109 from Jomo Kenyatta International Airport (JKIA) Junction to the Machakos Turn Off.

These sections form part of the Northern Corridor Road, which is the busiest and most important transport route in East and Central Africa, providing a gateway through Kenya to the landlocked economies of Uganda, Rwanda, Burundi and Eastern DR Congo. It also serves Southern Sudan since its independence from Khartoum. The main Northern Corridor transport network is connected to the Port of Mombasa.

Machakos Turnoff-Ulu-Sultan Hamud Road (A109)

This project consisted of 55km of single carriageway and included provision of truck parking at Salama and service roads at Machakos Turnoff. The scope of the contract was increased significantly with the designs enhanced to respond to unprecedented growth in traffic.

JKIA Junction-Machakos Turnoff Road (A104-A109)

This project consisted of 33km of single carriageway from Machakos Turnoff Road to Athi River and dual carriageway from Athi River to JKIA. It included construction of interchanges at Athi River and JKIA Junction.

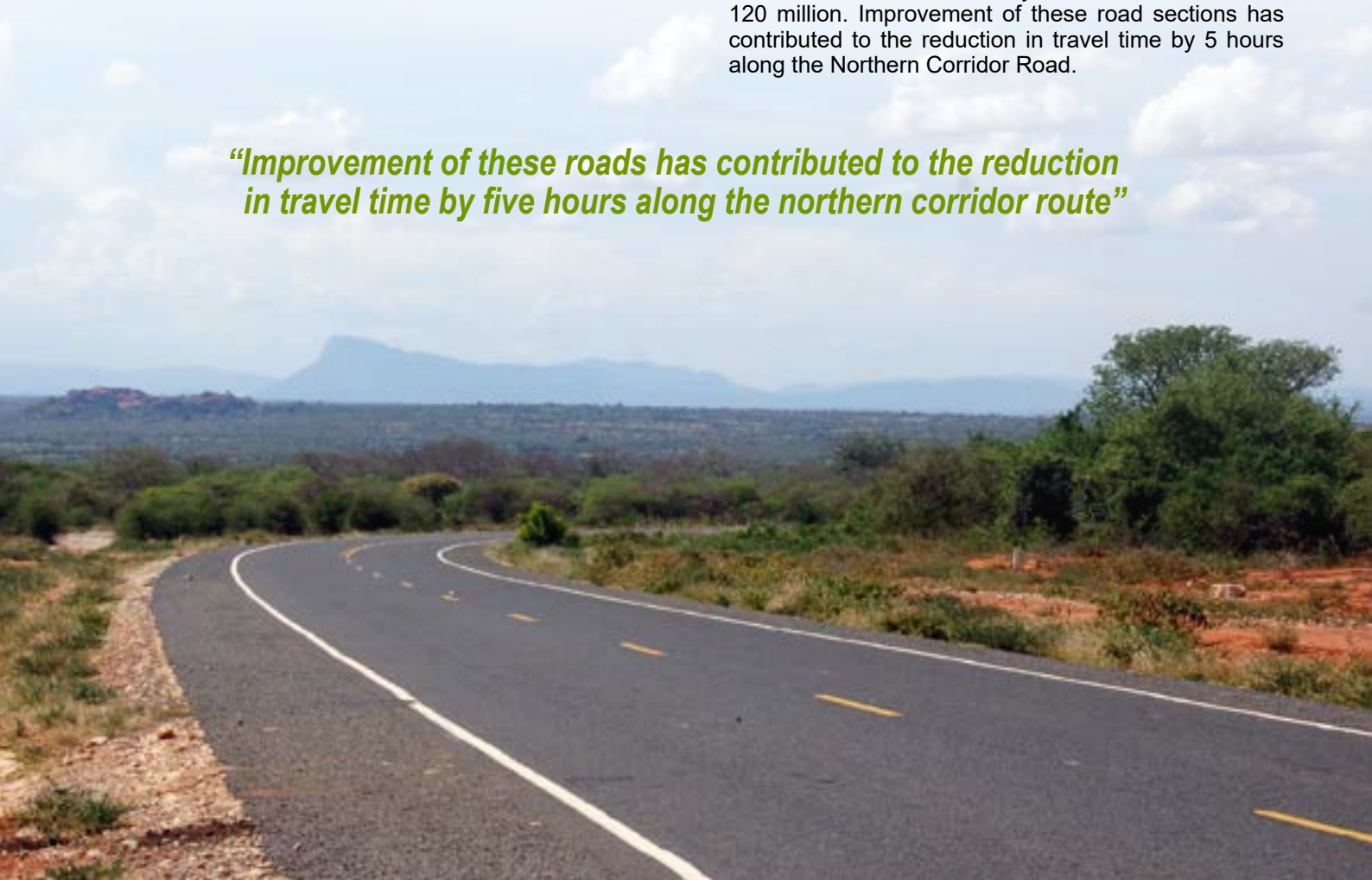
The scope of the contract was increased significantly to respond to increased traffic volumes, unprecedented mushrooming of industrial, commercial and residential developments requiring services. Two river bridges, an interchange, access and service roads were included under the contract.

The RD 418 road traverses two administrative areas, Embakasi Division in Nairobi Province and Mavoko and Athi River Divisions in Machakos District in Eastern Province. The entire road is just under 34km long, with the majority of the project road lying in Machakos District.

This road forms part of the Nairobi - Mombasa A109 international highway. The road from Embakasi to the Athi River Junction is part of the A104 road which is an integral section of the Trans-African Highway and as such functions as a major transit route for traffic to and from Tanzania. The road traverses an area of relatively high population density.

The project was jointly funded by the World Bank and the Government of Kenya at a total cost of USD 120 million. Improvement of these road sections has contributed to the reduction in travel time by 5 hours along the Northern Corridor Road.

“Improvement of these roads has contributed to the reduction in travel time by five hours along the northern corridor route”



DESIGN AND CONSTRUCTION SUPERVISION OF OCHO RIOS - PORT ANTONIO HIGHWAY

Jamaica

The objective of this project was to increase access to the north-western part of Jamaica and thus foster economic diversification through improving conditions for tourism development.

The Project Road is the section of the Northern Coastal Highway between Ocho Rios and Port Antonio on the island of Jamaica. The road links the northern parishes of St. Ann, St. Mary, and Portland, and is a vital component of the island's tourism infrastructure. The road is approximately 96km in length and passes through numerous towns and villages requiring significant stakeholder liaison.

The project comprised the rehabilitation and reconstruction of this stretch of road which runs primarily adjacent to the coastline. In addition, eight new bridges spanning rivers were constructed, three existing bridges were extended/widened and thirteen existing bridges were rehabilitated.

Nicholas O'Dwyer was responsible for the design, tender documentation and construction supervision of the project which was funded by the European Union at a total cost of €80 million. All existing pipe and box culverts were replaced or improved, and new ones were added in order to provide an adequate drainage system.

Traffic control devices and informational signs were installed and environmental mitigation measures implemented. To assist with the movement of travellers, numerous curve widening, bus turnouts and right turn lanes were provided to alleviate congestion and improve safety.

Urban traffic lanes and traffic calming facilities were also provided along with facilities for non-motorised traffic, pedestrians and cyclists, again, improving safety of road users.

“The road is approx 96km in length and passes through numerous towns and villages requiring significant stakeholder liaison”



ROUTE T1 ZIMBA - LIVINGSTONE ROAD

Zambia

Trunk Road T1 is a strategic route linking Zambia to Zimbabwe at the Victoria Falls crossing and Livingstone to Lusaka and the rest of Zambia. The T1 is 428Km long and also links Lusaka with the Botswana and Namibian Border crossings via the M10 route. This Southern Corridor Route is of vital national and international importance to the country.

This project concerned the section of the road from Zimba to Livingstone, 73km long, which was a rural 2-lane road with unpaved shoulders traversing flat to undulating terrain in the southern lowland and passing through isolated peri-urban centres. The road was initially constructed to bituminous standard in 1963 and although subsequently rehabilitated, notably in 1985, it required significant intervention to cater for traffic of 500 axles per day.

Nicholas O'Dwyer was appointed to update a previous detailed engineering design and economic study for the 73km from Zimba to Livingstone, to prepare a tender dossier and launch the tender process and to assist the Contracting Authority in the procurement process.

Falling Weight Deflectometer (FWD) and Dynamic Cone Penetration (DCP) surveys were carried out to inform the design and the pavement layers were redesigned accordingly.

Following successful completion of the design stage, the firm was appointed as the Supervision Consultant to oversee the construction stage.

The construction was carried out in two Contract Lots:

Lot 1 had a value of €18.5 million and was funded by the Government of Zambia and Lot 2 had a value of €30m and was jointly funded by the EU and the Government of Zambia.

The road platform widened from the existing width of 6.7 - 10m to an overall width of 11.1m.

The pavement consists of a crushed stone base surfaced with asphalt concrete on the carriageway and a double surface dressing seal on the shoulders. The sub-base layer is cement stabilised.

“€50 Million project for design and construction supervision of 73km of highway on the strategic road network ”



RAMU HIGHWAY

Papua New Guinea

The Ramu Highway upgrading project, in the Madang Province of Papua New Guinea was to upgrade the existing highway from Lae to Ramu (a poor quality unsealed road) to provide a two-lane surface sealed highway, virtually continuous from Lae to Madang.

The project was in three sections.

The first section of 73 km ran from Pompaquato Bridge through mostly flat terrain and was fully upgraded and included repairs to most of the existing single lane bridges;

The second section was 40km long through hilly and forested country to Tapo Creek and here upgrading was limited to 16km of specific sections with repairs to some bridges and the construction of a new bridge across the Tapo Creek;

The third section continued from Tapo Creek through flat open country for 13km where it joined the existing sealed highway from Madang and full upgrading was carried out there.

In all 102km of road was upgraded by widening of the formation using the existing pavement as select fill, and providing a new sub-base and crushed stone base course before sealing.

Much of the length was through very steep side sloping country prone to landslips. Several landslip areas were rebuilt over geotextile wrapped drainage blankets. Major new drainage works were installed including 1,200 culverts and a total of 26 bridges were rehabilitated.

Nicholas O'Dwyer carried out design review and design amendments, contract administration, supervision of construction and claims management for the project. The firm also provided assistance in the land acquisition process, and monitoring of compensation payments for cash crops removed from the road reserve.

The Service Contract was later extended to provide for a claims analysis report which formed the basis for amicable settlement procedures between Contractor and Contracting Authority.

The project was funded by the European Development Fund for 85% of the €26million contract value.

“102 Km of highway upgrade in areas prone to landslip with major drainage works and complete rehabilitation of 26 existing bridges”



M4 MOTORWAY Ireland

The project involved the construction of 39km of motorway from Kinnegad to Kilcock as part of the Irish Government's Transport 21 programme to upgrade the inter-urban Dublin to Galway route to motorway standard.

The motorway by-passes the towns of Enfield and Kinnegad. The project was Ireland's first 'public-private-partnership' motorway and was constructed by a private enterprise consortium with a 30 year operating concession.

The contract was awarded to the EuroLink Consortium (SIAC Construction Ltd and Cintra - Concesiones de Infraestructuras de Transporte S.A.). Nicholas O'Dwyer carried out construction quality control on behalf of the Concessionaire and this included supervision of construction, materials testing at an on-site laboratory, survey, measurement and valuation for interim payments.

To optimize the design Nicholas O'Dwyer provided value engineering services and the firm also provided detailed engineering design services for the toll systems and toll plaza and for the administration, control and maintenance facilities for the operation and maintenance of the motorway.

The project is a 39 km long stretch of 2 x 2 lane motorway and links the N4 and N6 national primary routes west of Kinnegad to the existing M4 motorway at Kilcock. It includes 19 overbridges, 7 underbridges, and 3 underpasses.

Three grade separated interchanges provide access to and from the motorway to the local road network. The road was completed on budget, and almost a year ahead of schedule, at a cost of €281 million.

“39km of 2 x 2 lane tolled motorway with toll facilities completed by public private partnership 10 months ahead of programme”



CONSTRUCTION SUPERVISION OF TRUNK ROADS 3 & 35

Hungary

The traffic network in Hungary serves a domestic population of over 10 million people. The network also serves, by virtue of its geographical location, a crucial inter-route transit function for international cross border traffic between Hungary and Slovakia.

The primarily trunk road network length is approximately 7,000km of which 2,000km are defined inter European primary routes. The road density per capita was estimated as 67% of the European average and many of the network bridges were below the minimum width and axle load requirements as defined by the EU at the time.

The project included Trunk Road 3 (International Road E71) Nyékládháza to Tornyosnémeti; and Trunk Road 35 Nyékládháza to Debrecen. The total length of the road was 139km with 13 new bridges and a further 11 bridges strengthened and/or repaired, with some structural alterations where necessary for both roads.

The works (under FIDIC Conditions of Contract) included removal, reconstruction and widening of pavements, to cater for a new EU Standard 11.5 ton design axle load.

Also included were minor realignments, upgrading and reconstruction of junctions, upgrading and strengthening of bridges and relocation of public utilities.

Nicholas O'Dwyer was appointed as Engineer for the Works Contract and successfully assisted the Contracting Authority with project management services and the implementation of a "Promotion Plan" to involve and inform all local Stakeholders via regular visits to Mayors and other officials.

The Urban sections of the Rehabilitation Works included significant local liaison and co-ordination for the following:

- *Traffic calming facilities for pedestrians and cyclists;*
- *Walkways and Bikeways and associated Bus Rapid Transit structures;*
- *Asphalt concrete mixed traffic lanes.*

"The total length of the project was 139km with 13 new Bridges and a further 11 bridges strengthened"



NATIONAL ROAD 1W: SECTION AYOROU - YASSINE

Niger

The Government of Niger appointed Nicholas O'Dwyer to supervise the construction of the two lane national highway (National Road 1W) between Ayorou and Yassane.

The project was carried out with financial assistance from the 9th European Development Fund (EDF), and was carried out under EDF Conditions of Contract and EU Financing Procedures.

The project aimed at improving the service level of the 37.5km section in question, but also formed a critical part of the overall Gao-Niamey-Tillabéri link. This is an important link between the capitals of Niger and Mali and will also be a link between several major cities in West Africa.

The project area was located in the Northwest Region of Tillabéri, along the banks of the Niger River. The climate of the area is challenging, characterised by a long dry season (November to June) and a short rainy season (July to October).

Vegetation is stunted, sparse and consists mainly of thorny shrubs. These conditions presented logistic difficulties to the Contractor and required precise planning for the different elements of the project.

Nicholas O'Dwyer successfully provided key and support staff to cover a construction period of 15 months, together with preconstruction services and post construction maintenance services.

“The road is an important link between the capitals of Niger and Mali”



Supervision of Integrated Development of Milange – Mocuba Corridor Phase II, Mozambique

Approximately 1.4 million Mozambicans, living in the bordering districts of the corridor, will benefit from better rural and highway transport that will allow farmers to market their produce more profitably, encourage investors to create employment opportunities in the corridor, and allow its inhabitants to travel and access healthcare and education opportunities more easily.

The first phase was completed in August 2013 and upgraded from gravel to paved standard over the 80-km stretch of the N11 from Mocuba to Alto Benfica.

The second phase connecting Milange to Alto Benfica, upgraded the 110 km highway, upgraded two bridges and saw the new construction of two further bridges at Mutuassee and Namilale which had been damaged by the 2015 floods.

The aim of this road project, funded by the EU and implemented by the Government of Mozambique, is to improve the country's rural infrastructure by upgrading the 190-km of road between Milange and Mocuba.

More than just a road - this project has opened up areas of significant agricultural production along the Milange-Mocuba corridor. Giving access to markets, promoting economic and social development, enhancing regional integration and reducing poverty.

The upgrading of approximately 110 km of international trunk road to bituminous standard including weighbridge and the upgrading/spot improvement of approximately 150 km of rural roads. The Works were executed in 2 lots.

The purpose of the services was to supervise the Contractors under 2 Lots throughout all stages of construction.

Nicholas O'Dwyer ensured that the works were in accordance with the technical specifications and drawings and that quality and financial controls were put in place to ensure that the construction of the project was kept within the project budget, quality requirements and time frames agreed upon by all parties. The funding Agency was EU - Europe Aid

Services Provided:

- *Checking and reviewing contractor's detailed design proposals;*
- *Confirmation of survey and setting out to suit final designs;*
- *Construction materials sourcing and processing approvals;*
- *Confirmation of land acquisition and utility services diversion proposals;*
- *Programme analysis and monitoring for progress reporting;*
- *Works measurement and assessment for interim/final certificate;*
- *Construction works testing for quality control conformations.*


“More than just a road - This project has opened up areas of significant agricultural production along the Milange - Mocuba corridor.”



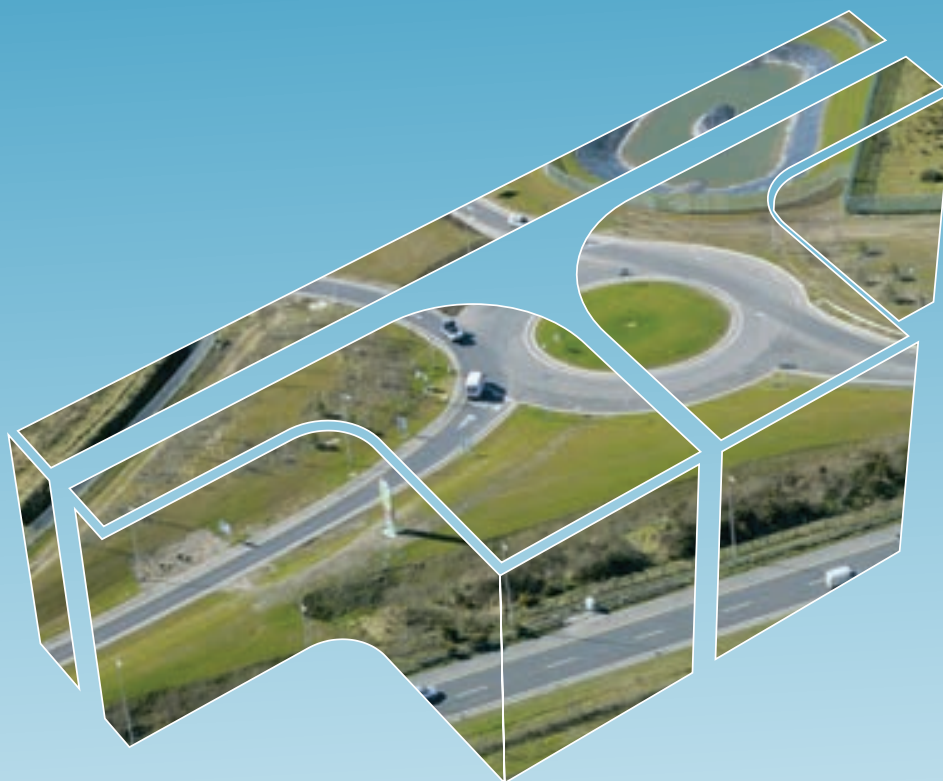
Transport Sector

Sample Client List

Department of the Environment, Community & Local Government, Ireland
Local Authorities in the Republic of Ireland
Department for Regional Development, Northern Ireland
European Union
Irish Aid
Millennium Challenge Corporation
World Bank



VALUE SOLUTIONS
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