

CURRICULUM VITAE

Name of staff member: **Marthinus Leon HUGO**
Nationality: South African
Date of birth: 19 September 1970
ID: 700919 5065 085
Profession: Civil engineer
Position: Principal professional engineer
Start date with firm: October 2007
Qualifications: B.Eng (Civil) University of Pretoria – 1994
Professional membership: ECSA 980413 (Pr.Eng.)
SAICE 206763
WISA 21389
Contact: hugo@integrategroup.net
+27824114515



| LANGUAGES CAPACITY | Speaking | Reading | Writing |
|---------------------------|-----------------|----------------|----------------|
| English | Excellent | Excellent | Excellent |
| Afrikaans | Excellent | Excellent | Excellent |

KEY EXPERIENCE

Leon's experience was focussed on engineering planning and design for disciplines mentioned below. His design involvement is typically in the form of lead design engineer with support by specialists and a small technical production team.

He acts as specialist stormwater drainage engineer in arbitrations.

He will administer GCC-based construction contracts.

Environmental engineering

Planning and design of stream improvement systems, artificial wetlands and mining pollution control facilities.

Roads (geometric and drainage design – new infrastructure and upgrading of existing infrastructure): National highways and interchanges, Toll plazas and open road tolling facilities, Provincial rural and urban dual carriageway roads, single carriageway roads and 4-lane undivided roads and intersections, Provincial gravel roads, Mining haul roads, Urban single and dual carriageway roads and intersections, Urban gravel streets, Commercial and residential complex access roads, Parking areas, Bus and taxi ranks.

Earthworks

Modelling of terrain shaping for educational, commercial, industrial and residential developments.

Modelling bulk earthworks to create platforms for buildings.

Modelling retention dams, pollution control dams, discard dumps, waste sites.

Geometric design of earth retaining structures.

Stormwater drainage infrastructure

Stormwater management plans, river and bridge hydraulics, stormwater drainage infrastructure design, floodline determination.

Sports facilities

Demolition Planning

EMPLOYMENT RECORD

- Oct 2007 to Date: *Integrate Group* - Design lead.
- Jan 2004 to Sep 2007: *Nyeleti Consulting* – Director responsible for hydrology, hydraulics and general civil infrastructure design.
- Jul 2001 to Des 2003 *Contract design engineer* for Van Renssen & Fortuin (1 year full time), Paruk Consulting (4 months full time and 1 year part time), Pula Strategic Resource Management (1 month full time and 3 months part time), Semanya and Furumele (Part time), Eyethu Engineers (3 months full time, 1 month part time)
- Jul 1999 to May 2001 *UWP Engineers* (Bryanston) - Senior Engineer – Road geometry and drainage design.
- Jan 1995 to Jun 1999 *Ninham Shand* (Pretoria and Polokwane) – Trainee to Senior Engineer - Design, documentation, procurement, construction supervision and contract administration of a wide variety of civil engineering infrastructure projects.

PROJECT EXPERIENCE

National and Provincial Roads

- *Madikwe Road, North West Province*: Detail geometric and drainage design of 10km road upgrade from gravel to surfaced. Project value R80m. 2017
- *Maputo, Mozambique*: Expert geometric and drainage design input into the detail design of proposed new mainline toll plaza. Project value R20m. 2017
- *Centurion masterplan accessibility study, Pretoria, Gauteng*: Conceptual design of three interchanges on the N1 and N14 in Centurion, Pretoria. 2014
- *Reading junction, Alberton, Ekurhuleni, Gauteng Province*: Access interchange feasibility investigation on N12, Alberton. 2014.
- *Road D936 (R576), Waterberg district, Limpopo Province*: Rehabilitation of 10km provincial surfaced road. Responsible for detail geometric design. Project value R25m. 2014
- *Road 1263, Sonop to Britz, North West Province*: Reconstruction of 10km provincial asphalt road. Responsible for road drainage preliminary design. Project value R90m. 2014
- *N14-Hendrik Verwoerd Interchange, Pretoria*: Conceptual design of interchange. 2013
- *N2 Wild Coast Toll Highway, Kwazulu-Natal/Eastern Cape*: Determining the benefit of a proposed new toll road with sections proposed as upgrades of existing roads and other sections proposed as new green fields road. Evaluate existing and proposed alternative routes according to topography, travel time and total lift. 2012
- *N2/N3 Durban open road tolling*: Identify optimal locations of ORT gantries according to geometric design criteria, ORT equipment criteria and within the limits of an existing toll strategy. 2012
- *National Routes N1,N5,N8,N12,R34,R521,R523*: Develop a pavement maintenance and capacity improvement strategy for the listed national routes with maintenance and improvement budget cost estimates for a period of 30years. Roads were inspected, maintenance histories investigated and capacities analysed for various traffic and geometric improvement scenarios using SANRAL's Highway Traffic Model. Budget value R31bn. (2011)
- *National Route N14 North West Province*: Existing culvert capacity desktop study along the N14 between Sannieshof and Delareyville. (2010).
- *National Route N3/M13 Natal*: Preliminary design of two ramp toll plazas. (2010).
- *Road 383 Mpumalanga*: Preliminary design of 3.6km re-alignment of provincial road. Project Value R12.5m (2010).
- *R575 Mpumalanga*: Preliminary and detail design of a new mine access intersection with a provincial road. Project value R2mil(2009)
- *Road 383 Mpumalanga*: Preliminary design of two new mine access intersections with a provincial road. Project value R4mil (2008)
- *N35-Middelburg-Bethal*: Detail design of a new mine access intersection with a national single carriageway rural road. Project value R3,7mil (2008)
- *N2-Izotsa interchange, Natal*: Bulk earthworks to improve sight clearance for diamond interchange ramp. (2008)
- *Gauteng open road tolling facilities, Gauteng*: Chief design engineer for the planning and design of 42 urban highway lay-bys accommodating open road tolling gantries and technical shelters. Project value R35mil. (2008-2011)

- *N2-16 Upgrading, East London*: Drainage and intersection geometric design for the reconstruction of 20km of the N2, East London–Mtata, highway. (2007)
- *N12-18 Road rehabilitation, Johannesburg*: Preliminary design of road drainage for the addition of climbing lanes and amendments to interchanges for 11km of highway.(2007)
- *Road D4050, Mafefe, Limpopo Province*: Flood lines, river hydraulics, bridge hydraulics for 3 major bridges, 2 minor bridges and 15 major culverts and general road cross-drainage for the upgrading of a low order gravel road to SANRAL class B asphalt road. Project Value R228million. (2006)
- *N1 & N8 Bridges (Kaalspruit)*: Hydrology, flood lines and bridge hydraulics. Project Value R34million. (2005)
- *N4 Platinum Highway, North West Province*: Detail design of a 9 km section of a highway, a half-diamond interchange and stormwater drainage facilities. (2001)
- *Road 795, Gauteng*: Rehabilitation design of a 16km long surfaced single carriageway road. Detail design of 16km of road widening. Detail Design of 2km of dual carriageway road. Detail design of a new signalised intersection between a 4-lane undivided road and a dual carriageway road. Detail design of the upgrading of a signalised intersection between a 4-lane undivided road and a single carriageway township road. (2000)
- *Route K154, Gauteng*: Preliminary design of 9,5 km of a dual carriageway road. (1998)
- *Road 1651, Kriel*: Preliminary and detail design of 5 km of single carriageway surfaced road. (1998)
- *Route K58, Gauteng: Klipfontein View, Johannesburg*. Detail design of a filling station access. (1997)
- *Route K122, Gauteng*: Detail design of 3 km of a dual carriageway road. (1996)

Rural/Haul Roads

- *Zandriverspoort ROM haulroad, Limpopo Province*: Route determination for a 3km haul road in mountainous terrain. (2011)
- *Wachtenbietjieskop mine access, Gauteng*: Traffic impact assessment of the R25, and private gravel roads for the proposed development of the Wachtenbietjieskop mine. (2010).
- *Goedehoop haulroad, Mpumalanga*. Detail design of 3km gravel haulroad and related access control, weigh bridge and parking facilities. Project value: R10mil (2009)
- *Ben Farm, Northern Province*: Plan and design the re-routing of a local rural bus route. Project value R3mil. (2009)
- *Steelpoort haul road, Groothoek mine, Limpopo Province*: Design of drainage installation for 6km haul road in mountainous terrain. (2008)
- *Road D3685, Limpopo Province*: Detail design for flood repairs to 38km of rural gravel road. (2002)
- *Kroondal Platinum Mine*: Detail design of 2km of surfaced access road and bus terminal. (2001)
- *Mimosa Platinum Mine, Zimbabwe*: Preliminary design of a 22km gravel haul road. (2001)
- *Bolobedu bus routes, Limpopo Province*: Detail design and construction supervision of 16 km of gravel roads with accompanying stormwater culverts in mountainous terrain. (1999)

Urban Roads

- *Doubling of Sam Mulele Drive, Tembisa, Gauteng Province*: Feasibility investigation into the proposed doubling of 1km class U3 road. Project value R17m. 2017-2018
- *Sable Hills Waterfront Estate, Gauteng*: Detail geometric design of intersection to traffic circle transformation. Project value R100k. 2017
- *Lebowa Kgomo Street, Limpopo Province*: Detail geometric and drainage design of 3km new class 3 urban surfaced road. Project value R20m. 2016
- *K105, Kempton Park*: Conceptual, Preliminary and Detail design of 1km of dual carriageway urban provincial road. Project value R30m. 2015.
- *Upgrading of the Lynnwood Road/Solomon Mahlangu Drive intersection*: Detail design of the widening of Lynnwood Road at its intersection with Solomon Mahlangu Drive. Project value R2m. 2015

- *Reading junction, Alberton, Ekurhuleni, Gauteng Province:* Access planning and feasibility design on internal streets for proposed 120ha commercial / retail / residential development. 2014.
- *Doubling of Garstfontein Road and Solomon Mahlangu Drive, Pretoria:* Preliminary design of 6,2km class 3 dual carriageway urban roads and at-grade intersections. Project value R250m. (2014)
- *Upgrade on Lynwood/Sussex Streets intersection, Pretoria:* Preliminary design of converting a full intersection to partial access on a class 2 dual carriageway urban streetroads and at-grade intersections. Project value R400k. (2014)
- *Achilles Road, Pretoria:* Preliminary design of 5km class 4 single carriageway urban road. Project value R22m. (2013)
- *Gordon/Schoeman Street intersection upgrade, Pretoria:* Preliminary design of the upgrading of R300 000. (2013)
- *Brooklyn circle, Pretoria:* Preliminary design of the upgrading of a two-lane urban traffic circle. Project value R2m. (2013)
- *3rd Road/Pomona Road intersection upgrade, Ekurhuleni:* Preliminary design and authority approval for the upgrading of an intersection between class 5 urban access road and single carriageway urban provincial road. Project budget R2m. (2012)
- *Chamberlain Silver Lakes, Pretoria:* Detail design of traffic circle and three accesses points to a commercial development from a class 5 urban street. Project value R800k (2011).
- *Groenvallei access intersection, Paarl, Western Cape:* Preliminary and detail design of the improvement of an access intersection for a proposed residential development. Project value R2m. (2010)
- *Mogwase waste site access road, North West Province:* Preliminary and detail design of 1km surfaced urban access road and parking area value R4mil. (2010)
- *COC access roads, Midrand:* Preliminary and detail design of new 2km of urban collector road and local access street including two roundabouts and one intersection. Project value R6mil. (2009)
- *Doubling of Delmas Road and De Villa Bois Road, Pretoria, Gauteng:* Preliminary and detail design of the doubling of 7,5km of urban arterial roads as well as the upgrading of and improvements to 13 intersections with other roads of varying class. Project value R 30mil. (2009)
- *Zambesi Park Roads upgrade, Pretoria.* Preliminary and detail design of the widening and doubling of 3,8km of peri-urban k-routes and a 700m 4lane undivided urban access road including the upgrading of 7 intersections, two new roundabouts and one new intersection. Project value R20mil. (2009)
- *Drivers license testing facilities, North West Province:* Detail design of five drivers license testing facilities. (2002)
- *Waterkloof mine, Rustenburg:* Conceptual design of new parking area for 500 light vehicles, 10 mini-bus taxi's and 5 busses, the widening of 500m of an existing two-lane road to three lanes for waiting areas and four lanes for access control, and 500m of new two-lane access road. (2002)
- *Magaliessig, Johannesburg:* Detail design of the widening and re-grading of 500m of urban dual carriageway road and 700m of single carriageway roads and the provision of a new access to a proposed retail development. (2001)
- *Linbro Business Park, Johannesburg:* Detail design of the transformation of three existing roads into a one-way couple. (2001)
- *Linbro Business Park, Johannesburg:* Detail design of 600m of new distribution roads and the widening of 500m of existing roads inside a business development. Conceptual design of a mini-bus taxi rank. (2000)
- *Benmore Road, Sandton:* Detail design of the widening of an urban single carriageway road, a signalised intersection and 700m of new access roads and turning circle. (1999)
- *Hans Strijdom Drive, Randburg:* Detail design of the widening of an urban dual carriageway road, a signalised intersection and left-in slip road to a new retail development. (1999)
- *Republic Road, Randburg:* Detail design of the upgrading of an existing urban single carriageway road to a dual carriageway road (1.8km in length). (1997)

Flood Lines and Stormwater Management Systems

- *Delmore Park Ext8, City of Ekurhuleni, Gauteng*: Develop an holistic and 22 individual stormwater management plans for a proposed township development, determine floodlines, design stream improvements. Professional fees R735 000. 2018
- *Thokoza Stormwater Masterplan, City of Ekurhuleni, Gauteng*: Develop a solution for the stormwater drainage of a 14km² flood-pestered urban catchment, create a masterplan and a strategic improvement implementation plan. R3m project fee. 2018
- *Primrose stormwater upgrade feasibility study, City of Ekurhuleni, Gauteng*: Investigate the condition and capacity of existing municipal stormwater pipe systems and propose remedial solutions. R380m construction value. 2017-2018
- *Mapleton, City of Ekurhuleni, Gauteng*: Investigate and develop a stormwater masterplan proposal to solve flooding problems. 2017-2018
- *Vlei Street, Johannesburg, Gauteng*: Stormwater flooding investigation including attenuation analyses, culvert design and road re-alignment design. Project value R10m. 2017
- *Dendron, Limpopo Province*: Investigation and detail design of flooding relief solution for a rural town with limited budget, Project value R3m. 2016
- *Mabobane, Pretoria, Gauteng*: Determine certified floodlines in urban river system with four reaches. 2016
- *Vaalwater coal mine, Mpumalanga Province*: Determine floodlines and develop a surface water management plan for a proposed new coal mine. (2015)
- *OP Goedenhoop coal mine, Mpumalanga Province*: Detail design, documentation and construction supervision of clean and dirty water management drains and pipes for a coal mine. Project value R1,5m. (2015)
- *Langkloof coal mine, Mpumalanga Province*: Develop a dirty water management system involving a surface dam, wetland and spill catchment dam. (2015)
- *Leandra mine floodlines, Mpumalanga Province*. Determine 50 and 100yr floodlines for 1053km length of rivers over a 700km² area of land. (2014)
- *Mankweng sports stadium, Limpopo Province*. Water management plan for the reconstruction of a sport stadium with R30m project value. (2014)
- *PRASA railway station developments at Leralla and Vereeniging stations: 3No* Stormwater management plans. (2013-2014)
- *Erf 2230 Glen Erasmia x22, Ekurhuleni*: Stormwater management plan for commercial building project. (2013)
- *BHP Billiton Block D-South dewatering, Mpumalanga Province*: Rapid surface water drainage plan as part of dewatering programme prior to open cast mining operations. (2013)
- *Pegasus mine floodlines, Mpumalanga Province*: Determine 50 and 100yr floodlines for 20km length of rivers. (2013)
- *Middelkraal mine floodlines Mpumalanga Province*: Determine 50 and 100yr floodlines for 20km length of rivers. (2013)
- *Argent powerline, Mpumalanga Province*: Determine 50 and 100yr floodlines for 32km length of rivers. (2013)
- *Springlake coal mine, Kwazulu-Natal Province*: Determine 50 and 100yr floodlines for 34km length of rivers. (2013)
- *Springlake coal mine, Kwazulu-Natal Province*: Develop a surface water management strategy and plan for an existing 3175ha Coal Mine. The surface water management strategy included 3 pollution control dams, 5 artificial wetlands, 1 discard dump, one water treatment facility and clean and dirty water catchment berms and drains. (2013)
- *Goedehoop Mine, Mpumalanga Province*: Detail design of stormwater cutoff drains. (2012)
- *Paarlmedia, Gauteng Province*: Develop a stormwater management plan for an industrial development. (2012)
- *Ptn 60 Rietfontein, Gauteng Province*: Develop a stormwater management plan for an industrial development. (2012)
- *Kaalfontein X22 housing, Johannesburg*: Prepare a stormwater management plan for a low cost housing development for approval by JRA. (2012)
- *Tembisa Mall, Gauteng Province*: Evaluate a retail development stormwater drainage design as part of a litigation process. (2011)
- *Ben Farm Culvert, Northern Province*: Perform hydrological and hydraulic design and manage the structural design of a river crossing. R3mil. (2009)
- *Swavelpoort, Kungwini*: Floodlines for proposed residential development. (2008)

- *Dower Glen Ext12, Johannesburg*: Design of a stormwater detention facility and complicated culvert as well as the determination of floodlines for Golf estate development. (2008)
- *Eagle Glen Ext 3&7, Johannesburg*: Determination of floodlines. (2008)
- *Eagle Glen Ext.8, Johannesburg*: Determination of floodlines. (2008)
- *Glen Cowie, Limpopo Province*: Stormwater master plan for rural village and design of phase 1 stormwater drainage system. (2007)
- *Wolwekrans mine, Witbank*: Detail design of a stormwater management system for the workshop area of a mine. (2002)
- *Optimum Colliery, Middelburg*: Detail design of a stormwater bypass channel and culverts. (2002)
- *Optimum Colliery, Middelburg*: Detail design of a stormwater management system around the ROMYIG. (2002)
- *Rietspruit opencast mine, Ogies*: Evaluation of detail design of stormwater contour drains and downchute. (2002)
- *Manganese Metal Company, Nelspruit*: Detail design of stormwater drainage channel and energy dissipater. (2002)
- *Rivonia Road West, Rivonia*: Assessment of the impact of a proposed office development on the existing stormwater drainage system. (1999)
- *Road 1651, Kriel*: Detail design of stormwater drainage canals along road 1651 and accompanying culverts to prevent stormwater run-off during a flood with a 1:100 year return period from entering an open mining area. (1998)
- *Fourways Mall, Fourways*: Assessment of the expected flooding of an existing retail development and other residential developments as a result of a proposed upstream hotel development. (1998)
- *Klipfontein View, Johannesburg*: Flood line calculations and culvert design. (1997)
- *Fountain Blue, Johannesburg*: Flood line calculations and recommendations to narrow flood planes. (1996)
- *Jukskei Park, Johannesburg*: Flood line calculations. (1996)

Sewer Pump stations

- *Ehlanzeni District Municipality sewer pump station refurbishment*: Investigate and prepare inception report for the refurbishment / replacement of six municipal sewer pump stations. Project value R5.5m. (2015)
- *Telkom building, Pretoria*: Design a small sewer pump station with 3m³ sump for building. (1996)
- *Volksrust*: Site supervision of the construction of a sewer pump station consisting of a 25 m³ sump, 20 m of gravel settling channels, 1.2 km of rising main and 800m of gravity pipe work. (1995)

Sewer treatment works

- *Barberton WWTW, Mpumalanga Province*: Investigate and prepare inception report for the refurbishment of a municipal waste water treatment plant. (2015)
- *Lydenburg WWTW, Mpumalanga Province*: Investigate and prepare inception report for the refurbishment of a municipal waste water treatment plant. (2015)
- *Steelpoort WWTW, Steelpoort, Limpopo Province*: Design, tender and construction stage for repairs to existing small treatment works (2006)
- *Polokwane WWTW, Polokwane, Limpopo Province*: Investigation into the use of sludge lagoons for purposes of improved effectiveness of an existing plant. (2005)
- *Sunderland Ridge WWTW, Pretoria, Gauteng*: Manage the design of all interconnecting pipework for a R200 million WWTW upgrade project. (2004)

Potable water pump stations

- *Zwawelpoort resort*: Detail design of borehole pump station and pressure boosting pump station. (2007)
- *Malematja rural bulk water supply, Duiwelskloof*: Design review of potable water pump station

(2003)

- *Tswaing Museum, Pretoria*: Detail design of booster pump station (2003).
- *Baobab Toll Plazas, Bronkhorstspuit*: Detail design of booster pump station (2002).

Civil Engineering Services for Buildings and Sports Complexes

(Internal access roads, parking areas, external pedestrian surface shaping, bulk earthworks, stormwater drainage, water supply, sewer drainage, sport facilities)

- *Malamulele sport complex, Malamulele, Limpopo Province*: Upgrading of a sports complex involving two soccer fields, tartan athletics track, hard courts, swimming pools, outdoor gym and children playgrounds. Project Value R70m. 2018
- *Erf 15665, Cosmo City, Gauteng*: Detail design of bulk earthworks, roads and stormwater for a commercial development. Project value R10m. 2017
- *Mpumalanga International Fresh Produce Market, Mbombela, Mpumalanga Province*: Design, documentation, procurement and construction monitoring of buildings and related engineering infrastructure for a proposed fresh produce market. Project value R1.5bn. (2015-Date)
- *Sunningdale, Jackal Creek, Johannesburg*: Detail design of access, parking, stormwater management, water supply, sewer drainage and bulk earthworks for building platforms for a townhouse complex with 144 dwelling units. (2015)
- *Die Wilgers Medical Centre, Pretoria, Gauteng*: Detail design of access, parking and stormwater management for a medical centre. 2014.
- *Musina storage facilities, Limpopo Province*: Detail design of building platforms, stormwater drainage, sewer drainage, potable water supply and fire water supply systems for 12000m² storage facilities. (2014).
- *Supersport Park, Pretoria, Gauteng*: Conceptual design of bulk earthworks, access roads and walkways for the reconstruction of the Supersport Park stadium. Project value R63m. (2014).
- *Erf 6 Bredell Ext11, Ekurhuleni, Gauteng*: Detail design of access, parking and stormwater management for a residential house. 2014
- *Further Education Training Centres (Giyani), Limpopo Province*: Design and document Access roads, stormwater drainage, domestic water supply, fire water supply and sewer drainage systems for a proposed new educational centre consisting of 20 buildings with 14 000m² total floor area. Project value R70m (2013).
- *Further Education Training Centres (Balfour), Mpumalanga Province*: Design and document Access roads, stormwater drainage, domestic water supply, fire water supply and sewer drainage system for a proposed new educational centre consisting of 19 buildings with 20 000m² total floor area. Project value R100m (2013).
- *PRASA Leralla railway station*: Design and document intersection upgrade, new access road and parking area, external pedestrian surface shaping, bulk earthworks and stormwater drainage system for a new railway station building (xm² floor area) and retail facilities (xm² floor area). Project value RX (2013).
- *PRASA Vereeniging railway station reconstruction*: Design and document access roads, parking areas, taxi ranks and bus terminals, related stormwater drainage and external pedestrian surface shaping for a new railway station (Xm² floor area) and retail facilities (Xm²). Project Value RX (2013).
- *Erf 2230 Glen Erasmia x22, Ekurhuleni*: Detail design of parking area and stormwater management system for a two-storey office building with 800m² total floor area. (2013)
- *Morningside apartments, Gauteng*: Detail design and construction drawings of access road, parking, landscaping topography, stormwater drainage, water supply and sewer drainage systems for 10 luxury residential units. Project Budget R375k. (2013)
- *Ollombo Airport, Congo*: Design engineer for the detail design of civil engineering services for an airport development. Project value R10mil. (2011/2012)
- *Rob Ferreira Hospital, Nelspruit*: Detail design of access roads, parking areas and bulk earthworks for multi-storey residential building. Project value R700k. (2011)
- *Ditheku Primary School, Lephalale*: Design and documentation of bulk earthworks, platforms, access roads and parking areas for proposed new school development. (2010/2011)
- *Gauteng open road tolling facilities, Gauteng*: Chief design engineer for the planning and design of civil engineering services for 10No 450m² public service centres and 1No 13000m² office building. Total project value R600mil. (2009/2010)
- *VG Paving, Vereeniging, North West Province*: Design, tender and construction stage for concrete block pavements. (2006)

- *Dunotter Military Base, Nigel, Gauteng*: Design and tender stage for the repair and maintenance of all structures, buildings, wet services, roads and stormwater drainage system. Project value R50mil. (2006-2007)
- *Eedenglen Retirement Village, Jeffreysbay*: Design review and post-construction assessment of access roads, stormwater drainage, water supply and sewer drainage infrastructure for a 330-unit residential development. (2007)
- *Tshwane District Hospital*: Detail design of external civil engineering services for the re-vamping of an existing 800-bed Hospital. (2007)
- *PG Bison Warehouse, Midrand*: Design of stormwater drainage system for new road pavement for existing building. (2006)
- *Orlando Stadium*: Detail design of bulk earthworks, roads and civil engineering services for a new stadium seating 45 000 people. Project value R300mil. (2006-2007)
- *Bushbuck Ridge Municipal Offices, Mpumalanga Province*: Detail design of bulk earthworks, roads and civil engineering services for a new 2000m² office building. (2005-2007)
- *Thokoza Cemetery, Johannesburg*: Detail design, tender and construction stage for upgrading of roads, fencing, and new access control building. (2005-2007)
- *Tembisa Hospital, Johannesburg*: Detail design of earthworks, roads, stormwater drainage, water supply and sewer drainage systems for extensions to an existing hospital. (2004-2007)
- *Tshwane Market, Pretoria*: Detail design of earthworks, roads, stormwater drainage water supply and sewer drainage systems for a new shopping centre. (2003)
- *Baobab Toll Plazas, Bronkhorstspuit*: Detail design of water supply and sewer drainage systems for one full interchange plaza and eight ramp plazas (bulk, reticulation and treatment).
- *N4 Toll Plazas, Bronkhorstspuit*: Detail design of water supply and sewer drainage systems for one full interchange plaza and eight ramp plazas (bulk, reticulation and treatment). (2003)
- *Karee Toll Plaza, Bloemfontein*: Detail design of water supply and sewer drainage systems (bulk, reticulation and treatment). (2002)
- *Baobab Toll Plaza, Limpopo*: Detail design of water supply and sewer drainage systems (bulk, reticulation and treatment). (2002)
- *Tswaing Crater Museum, Pretoria*: External water reticulation system. (2002)
- *Medicos School, Pretoria*: External water supply for building extensions. (2002)
- *Cresta shopping centre extension, Randburg*: Detail design of building platforms, parking area, access roads and stormwater drainage system. (2002)
- *Sazakhele Primary School, Benoni*: Detail design of a sewer drainage system and water connection for a new school building. (2002)
- *Mall of Namibia, Windhoek*: Preliminary design of access and distribution roads, parking areas, a stormwater drainage system and bulk earthworks for building and parking platforms. (1998)
- *Kokstad maximum security prison, Kokstad*: Detail design of an external sewer drainage system for buildings accommodating 1 800 inmates. (1998)
- *Mamelodi Hospital, Pretoria*: External water reticulation network design, assessment of existing sewer and stormwater systems and recommendations. (1997)
- *Irene Country Lodge, Pretoria*: External water reticulation, sewer drainage system, access roads, parking areas and stormwater drainage system for a hotel development. (1997)

Municipal services for residential developments, including rural water supply

- *Delmore Park Ext8, City of Ekurhuleni, Gauteng*: Township establishment services: Coordinate a team of professional specialists to perform urban design, environmental studies, engineering studies and town planning for the establishment of a township hosting 2930 residential units, retail, schools, community facilities, public transport facilities. Professional fees R7m. 2017-2018
- *Delmore Park Ext8, City of Ekurhuleni, Gauteng*: Design of township services including roads, stormwater infrastructure, water and sewer for a proposed township hosting 2930 residential units, retail, schools, community facilities, public transport facilities. Project value R80m. 2018
- *Middelburg Roads, Mpumalanga*: Detail design of urban residential street upgrades from gravel to surface. Project value R13m. 2016-2018
- *Mankweng Regional water supply scheme, Mankweng, Limpopo Province*: Detail design of four rural and urban residential water supply reticulations. 2018
- *Various suburbs of the City of Ekurhuleni, Gauteng*: Upgrading of local residential streets and stormwater infrastructure: Project value R70m, 2017-2018.

- *Makwarela Ext3, Thohoyandou, Limpopo Province*: Detail geometric and drainage design of 13km urban class 3, 4 and 5 road upgrade, rehabilitation and reconstruction. Project value R83m. 2017
- *Dullstroom, Mpumalanga Province*: Detail design of waterborne sewer drainage system for existing town. Project value R2.5m. 2016-2017
- *Gailes, Jackal Creek, Johannesburg, Gauteng*: Design and construction monitoring of roads, stormwater, water and sewer services for a proposed 38-stand full title residential development. Project value R3m. (2016)
- *Suurman roads upgrade, Hammanskraal, Gauteng*: Reconstruction of 66km gravel residential streets to surfaced streets with formal drainage systems: Preliminary design of road geometry and drainage. Project value R260m. 2014
- *Badimong regional water scheme, Polokwane*: Technical investigation, preliminary design budget estimate and report for a 20-year regional water supply improvement programme for a rural region hosting a population of 66 000 people. Project value R110m. (2013)
- *Misty River X16, Zwavelpoort, Gauteng*: Services investigation report. 160 residential units, hotel and sports park. (2011)
- *Madibeng municipal services status quo, Brits, North West Province*. Status quo investigation into all municipal water, sewer, stormwater, roads, waste sites and cemeteries within the Madibeng Local Municipal boundaries. (2010)
- *Roosenekal Water Supply*: Design of a replacement water supply reticulation for the town Roosenekal. (2008)
- *De Hoop Dam*: Design management of a water supply reticulation for 250 residential stands and industrial area. (2008)
- *Misty River X16, Zwavelpoort, Gauteng*: Preliminary and detail design of civil engineering services for development of 160 residential units, hotel and sports park. Value of civil services R20m. (2007)
- *Mzinti, Mpumalanga*: Evaluation of an existing bulk water supply and reticulation network to Mzinti village and identification of potential solutions. (2007)
- *Maila Mapitsane, Sekhukune District Municipality*: Detailed design, tender and contract administration of a rural water supply reticulation to 300 households. (2007)
- *Leratong, Gauteng Province*: Detailed design of a sewer drainage network for an existing urban residential development of 2000 households. (2006)
- *Groothoek Regional Water Supply, Limpopo Province*: Detailed design and tender of rural water supply reticulations to five villages totalling 1000 households. (2006)
- *Laastehoop, Limpopo Province*: Detailed design and tender of an extension to an existing rural water supply reticulation for an additional 200 households. (2005)
- *Ga-Rankuwa extension 17, Gauteng Province*: Detailed design of a water reticulation, sewer drainage network, roads and stormwater drainage system for a new urban residential development of 1700 households. (2005)
- *Ngwaname, Limpopo Province*: Detailed design and tender of a new water reticulation network for 120 households. (2005)
- *Ga-Motholo, Limpopo Province*: Detail design of a new water reticulation network for 1150 households. (2002)
- *Motlhabe, North West Province*: Existing water reticulation capacities check and house connection recommendations. (2002)
- *Vaalwater, Limpopo Province*: Detail design of a sewer reticulation and stormwater drainage system for 200 urban residential stands and 100 business stands. (2002)
- *Merry Pebble Stream, Limpopo Province*: Detail design of the extension and upgrading of an existing water reticulation network servicing 2000 stands. (2002)
- *Nkadimeng regional water supply scheme, Limpopo Province*: Detail design of water reticulation networks for informal rural settlements with a total projected population of 55 000 people. (1998)
- *Alldays, Limpopo Province*: Detail design of a water reticulation network for 1 560 new residential stands. (1998)
- *Davidsonville West, Roodepoort*: Responsible for the preliminary design of full municipal services for 100 new residential stands and new central business area. (1997)
- *Heavens Gate Townhouse complex, Northcliff*: Detail design of roads and a stormwater drainage system for eight new luxury dwellings. (1997)
- *Broad Acres Townhouse complex, Kengies*: Detail design of municipal services for 30 new dwellings. (1997)

- *Lombardy East, Johannesburg:* Detail design of full municipal services for 800 new residential stands. (1996)
- *Misgund North, Johannesburg:* Detail design of full municipal services for 800 new residential stands. (1996)
- *Klipfontein View, Johannesburg:* Responsible for the detailed design of full municipal services for 1 200 new residential stands. (1996)

Bulk water supply

- *Marapong bulk water supply, Lephalale:* Preliminary design of a bulk water supply system, including 18km pipelines up to 800mm diameter and a 12MI reservoir. Project Value R115m. (2016-2017)
- *Mogalakwena bulk water augmentation scheme, Mokopane:* Mutually responsible design engineer for the preliminary and detail design and documentation of the following gravity pipelines: 14km of 1400mm diameter steel pipeline, 7km of 1100mm diameter steel pipeline, 18km of 600mm diameter steel pipeline, 7km of 500mm diameter oPVC pipeline. Project value R400m. (2015-2017)
- *Badimong regional water scheme, Polokwane:* Technical investigation, preliminary design budget estimate and report for repairs and augmentation of 27km bulk water supply pipelines. Project value R2mil (2013)
- *Olombo water supply, Congo:* Detail design of a borehole water supply system for airport and housing development (2012)
- *Springboklaagte, Delmas:* Conceptual design of a 16km process water supply pipeline between two mines. Project value R8mil. (2012)
- *Roosenekal bulk water supply:* Feasibility study, water resource development planning and design and bulk water supply infrastructure design. (2008)
- *Gezina bulk water main, Pretoria:* Detail design of a new 7km long, 600mm diameter steel gravity main through CBD, residential areas and private properties. The project also included a secondary emergency supply valve arrangement, valve chambers, connections to existing pipes of various types and sizes. Project value R25mil. (2007)
- *Etwatwa water main, Benoni:* Detail design of a new 1,1 km long 700 mm diameter and 300 m long 500 mm diameter steel gravity main feeding a reservoir in Etwatwa. The project also included valve chambers, connections to existing pipes of various types and sizes and the cathodic protection of the steel pipeline.
- *Molepo Dam:* Design of a new 5 km long 200 mm dia ductile iron rising main supplying a reservoir from the Molepo dam pump station.
- *Malematja Water Supply, Duiwelskloof:* Design of a 3 km 80 mm high pressure steel rising main with pump station and valve chambers.
- *Mamelodi Reservoir, Tshwane:* Quality checks on the detail design of a 20ml reservoir and appurtenant pipe details and valve chambers. (2002)
- *Baralink, Johannesburg:* Conceptual design and cost estimate of a bulk water supply network, sewer outfall network and stormwater drainage system for future residential and business development on 62 500 ha of open space. (1998)
- *Broad Acres, Kengies:* Preliminary design of 2 km of bulk water supply pipeline. (1997)
- *Acornhoek, Mpumalanga:* Detail design of 10 km of bulk water supply pipelines and two 200 kl reservoirs. (1997)
- *Orange Farm, Johannesburg:* Construction drawings for 6,5 km of bulk water supply pipelines. (1996)

Wetlands

- *Langkloof coal mine, Mpumalanga Province:* Conceptual design of a wetland for acid water management. (2014)
- *Springlake coal mine, Kwazulu-Natal Province:* Preliminary design of 5 wetlands with 28ha combined surface area for acid water management. (2013)

Waste disposal sites

- *Wonderfontein plant area co-disposal site:* Detail design and documentation of a co-disposal facility for a coal process plant. Project value R18m. (2013)

- *Wonderfontein discard dump B*: Detail design of a 10ha coarse discard disposal facility. Project value R10m. (2013)
- *Wonderfontein discard dump A*: Preliminary design of an 83ha coarse discard disposal facility. (2012)
- *Kleinfontein co-disposal site*: Conceptual design of a 22ha coarse discard and slurry co-disposal site. (2012)
- *Moabsvelde discard dump*: Conceptual design of a 9ha coarse discard and slurry co-disposal site. (2012).
- *Mogwase waste disposal site*: Preliminary design of a 12ha municipal (Class G:M:B-) land fill site and detail design of one 2ha cell and access facilities. (2010)
- *Roosenekal landfill site*: Design of a 2ha municipal landfill site (Class G:S:B-). (2008)
- *Iscor Newcastle landfill site*: Detail design of a 11ha lined hazardous landfill site(Class H:h), 2ha leachate control dam and appurtenant drainage pipes, channels and access roads. (2002/2003)
- *Rustenburg Platinum Mine landfill site, Rustenburg*: Modelling and drainage design of a mine residue disposal site. (2003)

Mine rehabilitation

- *Rietspruit opencast mine, Ogies*: Design management and review of various projects related to stormwater management and open cast mine rehabilitation. (2002/2003)

Dams

- *Mpumalanga International Fresh Produce Market, Mpumalanga*: Concept and detail design of 84 000m³ attenuation and stormwater storage dam. Project value R4m. 2017
- *Vaalwater pollution control dam*: Preliminary design of a 30 000m³ pollution control dam. Project value R3mil. (2015)
- *Rietfontein pollution control dam*: Detail design of a 10 000m³ pollution control dam. Project value R1.2mil. (2014)
- *OP Goedehoop pollution control dam*: Detail design and contract administration of a 40 000m³ pollution control dam. Project value R6mil. (2013-2014)
- *Wonderfontein plant area slurry dam*: Detail design and contract administration of bulk earthworks for a 7500 m³ coal slurry dam, Project value R5mil. (2013-2014)
- *Wonderfontein plant area pollution control dam*: Detail design and contract administration of a 45 000 m³ pollution control dam. Project value R6mil. (2013-2014)
- *Wonderfontein open cast pollution control dam*: Detail design and contract administration of a 100 000 m³ pollution control dam. Project value R12mil. (2013-2014)
- *Vlaklaagte pollution control dam*: Detail design and contract administration for a 45 000m³ pollution control dam, Project value R4mil. (2013)
- *Springlake pollution control dams, Kwazulu-Natal Province*: Preliminary design of a 81 500m³ and a 16 000m³ pollution control dam, Project value R10mil. (2012/2013)
- *Kleinfontein returnwater dam, Mpumalanga Province*: Design engineer for the conceptual design of a 45 000m³ co-disposal returnwater dam. Project value R4.5mil. (2012)
- *Otto Block pollution control dam, Mpumalanga Province*: Detail design and contract administration of a 45 000m³ pollution control dam. Project value R6mil. (2012/2013)
- *Kleinfontein pollution control dam, Mpumalanga Province*: Detail design, construction documentation, contract management and quality monitoring of a 47 000m³ pollution control dam. Project value R4.5mil. (2012)
- *Moabsvelde pollution control facilities, Delmas*: Preliminary design of and 45 000m³ pollution control dam. (2012)
- *Vlaklaagte pollution control dam, Mpumalanga Province*: Design engineer for the detail design, procurement and contract management of a 35 000m³ pollution control dam. Project value R3mil. (2012/2013)
- *Wonderfontein pollution control facilities, Middelburg*: Design engineer for the detail design of a 100 000m³ pollution control dam, 3No 24 000m³ slurry dams (preliminary design only), 45 000m³ returnwater dam. Project value R30m. (2012)

- *Klippan pollution control dam, Mpumalanga Province:* Detail design, preparation of construction drawings and tender documentation for a 50 000m³ pollution control dam and construction quality monitoring. Project value R5mil. (2011/2012)
- *Awelani Tourism, Masisi, Limpopo Province.:* Site evaluation for 9 proposed wild stock drinking dams (2005).

Demolition planning

- *Orlando stadium, Soweto, Gauteng:* Planning, measurement and contract documentation for the complete demolition of an old soccer stadium. Project value R2mil. (2006)

Project management

- *Mpumalanga International Fresh Produce Market, Mbombela, Mpumalanga Province:* Manage a team of architects, landscape architects, quantity surveyors, electrical, mechanical, structural, civil and acoustic engineers, fire consultant and Occupational Health and safety agent for the design of a new fresh produce market. Project value R1.2bn. (2015-2016)