

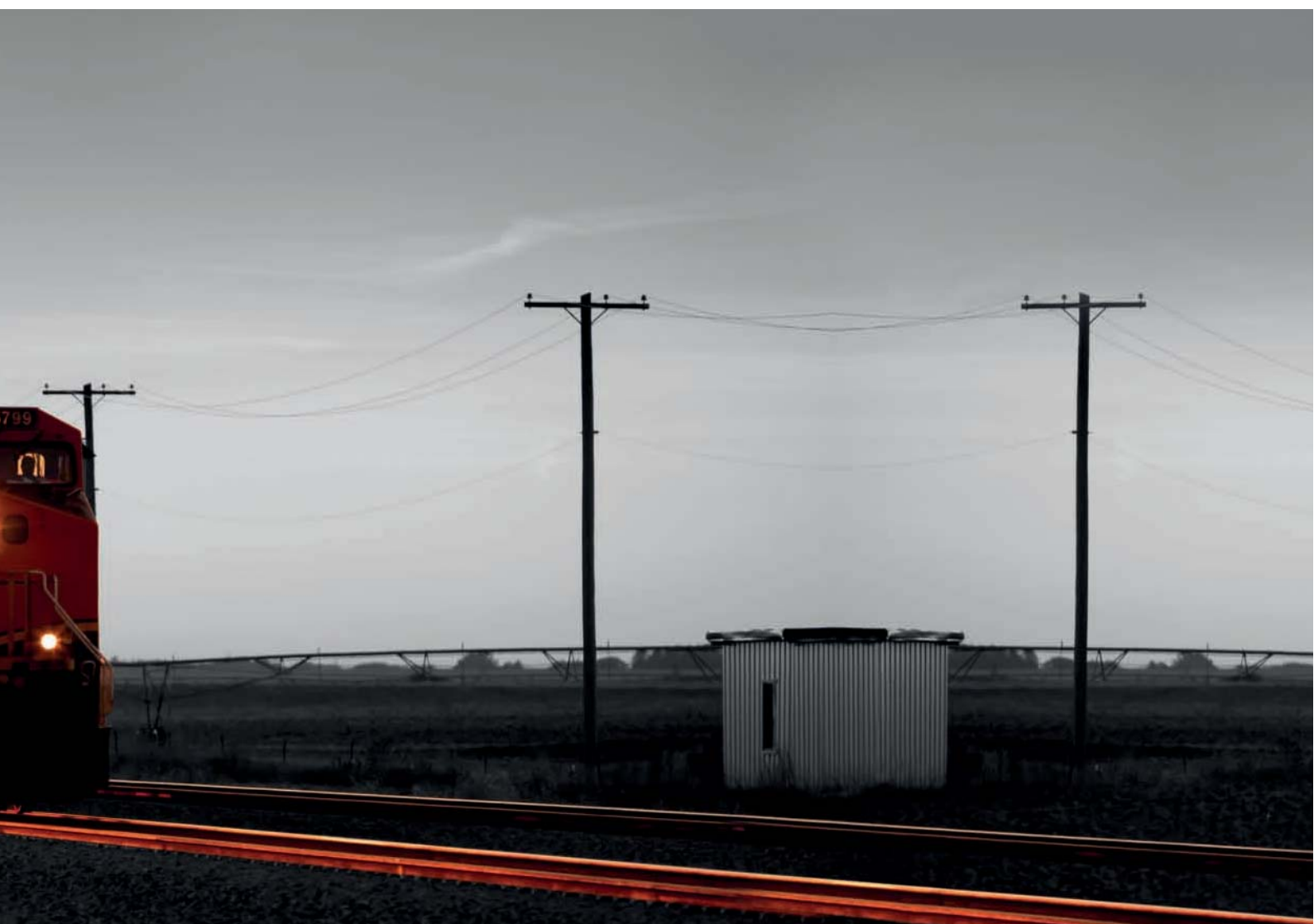


R&H Rail
COMPANY BROCHURE



ADVANCED RAIL SOLUTIONS FOR MORE THAN 60 YEARS

R&H Rail (Pty) Ltd Established in 1950



**R&H Rail (Pty) Ltd
(R&H) is not simply a
company of railway
engineers, we are
integrated rail solutions
experts.**

Our extensive services offering is designed to ensure that the appropriate solution is developed for any particular problem. With our broad reach into Africa, we have proven that we can make any rail project a reality.

As market leaders, we pride ourselves in providing technologically advanced engineering solutions to the rail industry. With our strong heritage, unwavering commitment to customer satisfaction and core values that are practised with passion, integrity and pride, we will deliver comprehensive rail solutions to fulfil the logistic and operational requirements of your business.



**In excess of 60 years of experience
and countless achievements**

WHO WE ARE

R&H was established as Robertson and Hitchins Consulting Engineers in 1950, and have since migrated through various acquisitions into R&H Rail, to become a significant force in maintaining and feeding the railway, parastatal, mining and industrial sectors with rail expertise. With our head office in Johannesburg, and support offices in Witbank, Richards Bay and Durban, we are at the forefront of rail activities in South Africa.

In 2004, R&H became part of the international DAR Group of Companies. With companies including TY-Lin, Penspen and Perkins & Will forming part of their portfolio, the Group is rated first globally for Consultants in the building and airport categories, second in bridges and fourth in the Transportation Division. (*Engineering News Record – 12 December 2011*)

R&H consists of three divisions each incorporating a unique service provision within the rail sector;

Consulting

Rail Framework Planning and Infrastructure Design consisting of Sub-Structure, Permanent Way, Train Service / Operations, Signalling, Telecommunications, Overhead Track Equipment (OHE), Traction Power Supply. Area Lighting and Rolling Stock

Training

Transport Education Training Authority (TETA) and South African Qualifications Authority (SAQA) accredited training of Train Operating and Rail Maintenance personnel

Maintenance

Planning and Management of rail reinstatement, condition based and preventative maintenance

R&H is committed to the development of the rail sector and the important function it plays in the social development of the continent as a global and industrial contributor.

We therefore continuously invest in the maintenance and transformation of skills among all rail disciplines on an equality basis.

R&H has achieved a Level 2 Broad-Based Black Economic Empowerment (B-BBEE) status, which, combined with our Value Added Supplier status, results in a final B-BBEE procurement recognition of 156.25%. (May 2012)

At the helm of R&H is a dynamic management team who are passionate about the development of rail logistic solutions and the provision of sustainable rail specialist services to all industry players.



WHAT WE DO

CONSULTING SERVICES

As one of Africa's largest private rail consultants, R&H delivers complete rail logistic solutions which include operational and commercial aspects. We offer the following services;

- Rail Framework Planning
- Strategic Freight Planning
- Train Service Design
- Train Scheduling
- Train Control and Operational Design
- Operation Analysis, Simulations and Optimisation
- Capacity Studies
- Feasibility / Economic Studies
- Route Optimisation
- Logistic Chain Interface
- Infrastructure and Rolling Stock Design
- Operation and Maintenance Facility Design
- Infrastructure and Rolling Stock Assessment and Maintenance
- Planning and Management
- Supplier and Contractor Procurement
- Contract Administration, Site Supervision and Project Management
- Testing and Commissioning of Rail Elements and Systems
- Rail Safety Requirements
- Training of Operation and Maintenance Personnel
- Train Incident / Accident Investigations

The above services are provided inclusive of the following technical disciplines and expertise;

- Civil and Permanent Way
- OHTE, Power Supply and Lighting
- Signalling and Telecommunications
- Mechanical and Rolling Stock
- Maintenance Planning and Management
- Project Management and Cost Engineering
- Logistic and Operation Management
- Training and Rail Safety Services

PROJECT MANAGEMENT AND COST ENGINEERING

R&H has the technical expertise to implement various types of projects inclusive of all rail disciplines. Typical projects include;

- Feasibility Studies
- Investigating and Upgrading of Existing Facilities (Brownfield Projects)
- Implementation of New Infrastructure (Greenfield Projects)
- Improving of Train Operations and Logistic Control
- Safety Audits - Maintenance Projects, Condition Assessments, Planning and Management
- Procurement of Materials, Equipment, Rolling Stock and Contractors

These projects can be executed by R&H in terms of the standard engineering form of agreement for clients and consultants, or as an EPCM type contract.

Engineering personnel are well equipped and experienced in providing comprehensive contract administration, site supervision, project interface and project management services. Project management services include the following:

Project Management Role

- Single point of responsibility and accountability for the performance of a project
 - Manage the competing demands of;
 - o Scope
 - o Time
 - o Cost
 - o Resources
 - o Quality
- For stakeholders with differing needs and expectations

- Apply knowledge, skills, tools and procedures in order to meet project requirements. This includes;
 - o Initiating processes - authorise the project (the project may originate from a colleague or client)
 - o Planning processes - defining and refining objectives and selecting the best course of action in order to attain the specified project objectives
 - o Executing processes - coordinating people and other resources to carry out the plan
 - o Controlling or evaluating processes - ensuring that project objectives are met
 - o Closing processes - formalising acceptance of the project or phase

Project Organisation Development Responsibility

- Develop and implement an organisational structure fully capable of managing and performing all necessary project activities
- Provide leadership to a professional project team

Project Lifecycle Management Responsibility

- Develop and apply project specific lifecycle processes while managing the following integrated necessities;
 - o Project Setup - clarity of goals
 - o Planning - detailed project plan
 - o Change Management - manage changes in scope while safeguarding cost and schedule
 - o Risk Management - identify, analyse, evaluate and treat risks
 - o Human Resources Management
 - o Communication - develop a communication plan for project, clarity and transparency on time



CIVIL ENGINEERING, PERMANENT WAY AND STRUCTURES

R&H provides civil engineering services as part of the infrastructure design dictated by the rail logistic solution. More specifically, this includes;

- Development and design of mainline track layouts, staging and shunting yards for all passenger and freight requirements
- Interfacing with materials handling and other related consultants for the most feasible solution
- Geometric design for the most cost effective route with regard to operational and capital costs
- Design of the permanent way structure
- Remodelling of existing facilities incorporating latest rail technologies
- Failure of substructure and rail behaviour investigations
- Hydrological investigations and storm water design forming part of the rail substructure design
- Structural design of rail and road bridges as well as all storm water structures
- Bridge assessments
- Operational facility layouts and design (workshops, etc.)
- Implementation of projects on client / consultant model and or EPCM form of contract, inclusive of contract administration, site supervision, quality control, and health and safety requirements

RAILWAY ELECTRICAL ENGINEERING

Covering: OHTE, traction substations, railway yard area lighting, and electric light and power supply (E,L&P)

R&H is involved in a wide range of OHTE, traction substations, yard area lighting and power supply projects, covering new design and construction, refurbishment of systems as well as investigations and management of the maintenance of installed railway electrical systems. This includes;

OHTE

- 3kV DC electrification systems
- 25kV AC electrification systems
- 50kV AC electrification systems
- Unique systems found in Africa
- Fixed and Spring tensioning OHTE systems
- Auto-tensioned OHTE systems
- Capacity determination of electrification systems

- OHTE component applications and development
- Unique wiring applications
- Specialised structure configurations
- 6,6kV and 11kV Signal Power Supply transmission lines
- Power supply step down points
- Remotely operated telecontrol systems
- Traction negative return systems
- Traction power feeding configurations and arrangements
- OHTE wire profiling under bridges
- OHTE switching philosophies and configurations
- Maintenance condition auditing

Traction Substations and Power Supply

- 3kV DC traction substations and tie-stations
- 25kV AC traction substations and Track Sectioning Stations (TSS)
- 50kV AC traction feeder stations
- Traction substation capacity determination and positioning
- Traction substation system requirements
- Provision of new traction substations
- Traction substation refurbishments /upgrades
- Maintenance condition auditing

Yard Area Lighting and E,L&P

- Interpretation of clients' and Transnet's illumination requirements
- Systems applications
- Appropriate lighting technology selection
- Yard area lighting and power reticulation design
- Interior lighting and building power distribution design
- Interior lighting and building power refurbishment
- Maintenance condition auditing



SIGNALLING AND TELECOMMUNICATIONS SERVICES

R&H offers a specialised signalling and telecommunications service to the railway sector which includes;

- Feasibility and design using best-fit signalling technologies and world best practices, including related subsystems like interlocking, track vacancy detection, remote control, and train condition monitoring systems
- Incorporating cutting edge solutions in the field of telecommunication 'backhaul' infrastructure, Scada and Telemetry systems, locomotive communication modules, rail bound telecommunication equipment, satellite systems and wireless voice and data communications
- Planning and preparation of detailed signalling layouts as dictated by the train control method e.g. Centralised Traffic Control (CTC), Communication Based Authorisation Systems (RTO, TWS, in-cab signalling), etc.
- Telecommunication network planning and design, including coverage predictions and microwave network planning
- Reliability studies on existing signalling and train control systems - modernisation proposals and upgrade implementation
- Signalling and telecommunication maintenance planning and procedures - inputs to the development of operating and train control procedures and rules
- Deriving operating and technical (signalling and telecommunication) staff requirements
- Staffing, staff training (technical and operational)

- Compiling functional specifications and performance requirements
- Procurement of design and construct tenders
- Verification and approval of design solutions
- Contract administration and project management
- Testing and commissioning of signalling and telecommunication installations

OPERATIONS AND LOGISTICS

Analysis of current or projected freight and traffic volume characteristics;

- Measurement and analysis of route constraints
- Designing train configurations to satisfy volumes, route constraints and budget
- Simulating train handling, energy consumption and multiple train interactions across existing and planned networks
- Designing rolling stock, staff, locomotive and wagon flows across networks
- Deriving operating staff requirements coupled with train working rules
- Conducting green- and brownfields feasibility studies from conceptual to detailed level
- Compiling operating rules, maintenance procedures and staff training
- Producing train working timetables and diagrams, operating rule books and safety instructions

- Audits, applications and review of Safety Management Systems and Safety Permits to the Rail Safety Regulator (RSR) (Act 16 of 2002)
- Managing the operation and maintenance of fleets (MIS), including refinement and updating of service, technical and safety audits, training, and fleet management (up to total outsourcing)
- Finalising complete railway system service designs

MECHANICAL ENGINEERING

- Specifying and procuring suitable locomotives and wagons (rolling stock)
- Designing of maintenance facilities, location, equipment and staffing for locomotives and wagons
- Deriving and designing optimised train handling methods
- Conducting train commissioning tests and verifying performance against designs and specifications
- Auditing train performance and rolling stock maintenance
- Derailment /train incident investigation and expert witness services



dar group

R&H is a member of the DAR group of companies



**A skilled workforce
of tomorrow is the product
of today's training.**



RAIL MAINTENANCE MANAGEMENT SERVICES FOR SIDINGS AND LINK LINES

The maintenance management division of R&H currently manages 715 kilometres of private rail sidings carrying collectively more than 60 million gross tonnes per annum. The involvement varies from quarterly routine rail safety inspections to fulltime management of rail infrastructure maintenance. The services offered include condition assessments and review, determining maintenance strategies, the procurement and management of resources required to maintain the rail infrastructure and liaising, on behalf of the client, with Transnet, PRASA and the RSR.

In order to deliver a value adding, professional service to the siding owner, R&H offers a structured approach for the management of the maintenance of the rail siding.

The following is a brief summary of the services offered;

- **Inspection / Condition Assessment**
 - o Compile an asset register
 - o Identify safety and operating requirements
 - o Determine workload
 - o Prepare a risk profile
 - o Develop a maintenance plan
 - o Compile a budget
- **Acquire Resources (Procurement) – Periodic Inspections**
 - o Asset management
 - o Safety inspection
 - o Workload determination
 - o Emergency callouts
 - o Rail accident investigations
 - o Assistance during derailments / breakdowns
- **Liaison with Authorities**
- **Contract Management**
- **Client Feedback**
- **Engineering Investigations and Design**
- **Other Services**
 - o OHTE
 - o Signals
 - o Optimisation of train service design and operations

R&H TRAINING

A skilled workforce of tomorrow is the product of today's training. This is why R&H invests in the future by identifying talent, and ensuring its success with world-class training. In this regard we offer the following:

Training

- Training of train operating staff (drivers, assistants and shunters)
- Training of rolling stock maintenance staff
- Training of track maintenance staff (track masters, trackmen, flagmen, patrolmen, etc.)
- Rail Operator's Safety Responsibility Training

Rail Safety Management

- Informing the RSR of new line construction and alterations, and applying for construction permits, testing and commissioning permits, and safety permits
- Performing safety management system audits
- Performing risk assessments
- Compilation and submission of the RSR's quarterly and annual reports

Accreditations

Loyal to our vision, we invest in the upkeep and transformation of skills in all rail disciplines on an equality basis. We believe that this is fundamental to the social development of Africa's people and its growth as a global economic contributor.

We;

- Offer equal opportunities to all
- Grow interest in rail among the youth within the engineering environment
- Embrace the principles of B-BBEE in our recruitment and development strategy

R&H Rail is fully accredited by the Transport Education Training Authority (TETA), endorsed by the South African Qualifications Authority (SAQA). We also actively participate as a TETA Rail Chamber member.





Loyal to our vision, we invest in the upkeep and transformation of skills in all rail disciplines



RECENTLY COMPLETED AND CURRENT PROJECTS

Maintenance Projects

- **Richards Bay Coal Terminal (RBCT), Xstrata Coal SA (XCSA), Pretoria Portland Cement (PPC), Assmang, Mondi, BHP Billiton, Natal Portland Cement (NPC), Richards Bay Minerals (RBM), uMhlathuze Municipality, Zululand Anthracite Colliery, Exxaro and Kumba Iron Ore:** Maintenance assessment review and planning, maintenance management, and RSR compliance. Total of 56 private sidings and 715km of track and 60 million gross tonnes per annum
- **Turkish National State Railways - TCCD:** Maintenance audit and review, recommendation of improvement practices

New Infrastructure Implementation Projects

Design and construction supervision of integrated rail solutions, including civil, permanent way, signalling, OHTE, lighting, VIS, and structural works for;

- **Exxaro:** Mayoko, Republic of Congo, iron ore export project
- **XCSA:** Goedegevoonden export load-out facility and domestic link
- **XCSA:** Tweefontein Optimisation Project – Load-out Rail Facility
- **RBCT:** Phase 5 expansion, from 81 Mtpa to 90 Mtpa
- **BHP Billiton:** Mamatwan yard remodelling
- **XCSA:** Rail over road bridge repair and realignment of provincial road
- **Total Coal SA:** New balloon load out facility at Dorsfontein
- **Lafarge:** Randfontein staging yard and loading facility
- **Exxaro:** Black Hill linear coal loading facility
- **Assmang:** Khumani Swingset loop (FIDIC EPC contract)
- **BHP Billiton:** Hotazel passing loop and lighting
- **PMG Mining:** Remodelling Glosam Station, creating manganese materials handling and loading facility
- **Impala Platinum:** 16 rail infrastructure development
- **VALE:** Construction of 150km new rail line forming part of the Nacala corridor upgrade

Studies and Design Development Projects

Rail concept, pre feasibility and feasibility studies, and design development projects for;

- **Exxaro:** Belfast Coal Mine rail study
- **PMC:** Relocation of exchange yard and provision for balloon facility study
- **Total Coal SA:** Eloff Coal Mine loading study
- **PMC:** Track safety system for slag trains study
- **XCSA:** Zonnebloem Mine Rail Study

- **Coega Development Project:** CDC Zone 5 rail infrastructure study
- **Aquarius:** Rustenburg PSA II study
- **Bafokeng Rasimone:** Styldrift feasibility study
- **RPM:** Chrome Recovery Plant (CRP) rail export study
- **Benin and Niger:** Mainline upgrade study for containers through Cotonou
- **Uganda:** Crude oil export study
- **Republic of Congo:** Iron ore export study
- **DRC:** Refurbishment and upgrade studies for copper and manganese mines
- **Mpumalanga DoR&T:** Moloto Corridor Development Initiative design
- **Ghana:** Export studies for western mainline, and new Tema-Akosombo link
- **Iron Ore and Manganese Exports:** PPP initiatives with Transnet
- **Vale Limitada:** Nacala coal FEL 3 export study
- **Husab Uranium Mine, Namibia:** New private siding and road infrastructure study
- **PPC:** Relocation and upgrade of Riebeeck Wes loading facilities
- **Togo:** Rail condition assessment and refurbishment feasibility study
- **TATA Steel:** Richards Bay siding study
- **Anglo Platinum:** Amandelbult rail siding study

OHTE and Lighting Specific Projects

- **Anglo Coal, Phola Mine:** Investigation and report on negative return system
- **PRASA JHB, PTA, CPT and DBN:** Replacement of High Speed Circuit Breakers
- **PRASA DBN:** Rehabilitation of Duffs Road to Umgeni OHTE system
- **UCW:** 50kV AC traction substation
- **PRASA PTA:** Pilot project for rehabilitation of OHTE system supply lines
- **BHP Billiton / Assmang:** Hotazel exchange yard area lighting
- **XCSA Goedegevoonden:** Various projects including export facility, domestic link, theft detection system, emergency call-outs, OHTE maintenance and contract management

Signalling Specific Projects

- **PRASA DBN:** Evaluation and improved protection of level crossings
- **PRASA PTA:** Conceptual design of improved train services
- **PRASA JHB:** Signal application and visibility audit
- **XCSA Goedegevoonden:** Replace cables and install theft detection system
- **ACASA DBN:** Resignalling as part of the Bombardier African Alliance

Mechanical Specific Projects

- **RPM Amandelbult:** Refurbishment of locomotives, wagon feet condition audits, on-train tests, design and rolling stock procurement documentation
- **Exxaro:** Mayoko project locomotive, wagon and coach procurement

- **RPM Rustenburg:** GPS control system overriding prohibition study, hump controller performance and application tests, locomotive performance tests, design and tender documentation, stopping distance, driver visibility, train performance, wheel-rail interaction, and on-train fuel consumption tests
- **Assmang Cato Ridge:** Procurement and refurbishment of DZ wagons
- **Assmang Khumani:** Design and procurement documents for new locomotives
- **Douglas Colliery:** Wagon brake audit for maintenance dispute resolution
- **Hotazel Manganese Mines:** Locomotive condition inspections for refurbishment
- **Impala Platinum Mine, Rustenburg:** Refurbished locomotive commissioning
- **Lafarge Randfontein:** Adjudication of locomotive tenders
- **Lafarge Lichtenburg:** Train performance tests and operations study
- **NPLI Zambia:** Wagon condition and workshop maintenance assessments
- **Vale Limitada:** DDM45 locomotive assessment for deployment on Sena Line
- **Assmang / BHP Billiton:** Locomotive capacity tests
- **Xstrata Tavistock, South Witbank, Boschmans:** Rolling stock and operations design and improvement strategies

Logistic and Operations Management

- **RPM AMANDELBULT:** GPS based train monitoring and control system
- **RPM Rustenburg:** Railway incident and accident database system
- **BHP Billiton Boschmanskrans:** Operations assessment and efficiency study
- **Ethekwini Municipality:** Integrated Rapid Public Transport Network study
- **TCP:** Eastern, Western, Central and Gauteng Basin Corridor master plan studies
- **Transnet:** Hotazel exchange time-motion study
- **TCC:** Capacity study on Hotazel PE mainline
- **Transnet:** Natcor and Northern Corridor container supply chain study
- **Richcor:** Export rail logistics improvement study
- **Impala Platinum Mine:** Operations simulations of rail network
- **Lafarge Lichtenburg:** Operations assessment and improvement study
- **Sasol, Secunda:** Goedeheop logistics upgrade study
- **Xstrata South Witbank:** Operations and logistics improvement study
- **Infrasors:** Capacity and upgrade study on the OREX line

Safety Management

RSR: Numerous applications and submissions for project registration, risk assessments, construction and commissioning permits, and safety management system reports for various clients

Transnet Freight Rail and PRASA (previously SARCC)

- **Iron Ore (Orex) Line FEL2:** Increasing export capacity to 82.5 Mtpa
- **Limpopo FEL 1:** Freight Demand Model and Infrastructure Capacity Intervention
- **Development of Rail Infrastructure Costing Module**
- **Long Term Planning Framework GIS Development, Nationally**
- **Interoperability Study:** Determining design criteria and test section requirements for operation of passenger and freight trains to the same service parameters
- **Durban Rail in Port (DRiP) FEL 1,** Master plan development
- **PRASA, Durban Re-signalling;** Part of the Bombardier South African Alliance responsible for technology adaptation and integration, project management and testing and commissioning of signalling interlocking and radio and telecommunication installations

Training Projects

- **Xstrata Coal SA:** Refresher training on all sites for locomotive and shunting operations
- **Lafarge Cement SA, Lichtenburg:** New loco drivers and shunter training and refresher training of locomotive drivers
- **BHP Billiton Middelburg Mine:** Locomotive training programmes
- **Kumba Iron Ore Kathu:** Loco driver and shunter training
- **Transnet Capital Projects:** Trackmasters
- **Lenning:** Trackmasters
- **Walter Sisulu University:** Trackmasters
- **Botswana Railways:** Assessment of perway personnel training needs
- **Rio Tinto Mozambique:** New driver and driver refresher training by simulator



R&H has been servicing the rail industry of South Africa for the past 62 years with the main focus on transportation of heavy haul freight

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