

APPENDIX D

CURRICULA VITAE OF EAPs



1 Personal Particulars

Proposed Position:	Senior Environmental Assessment Scientist
Profession:	Environmental Management
Date of Birth:	06 December 1976
Name of Firm:	Nemai Consulting
Name of Staff:	Donavan Henning
Years of Experience:	18
Nationality:	RSA
Membership of Professional Societies	EAPASA Reg. no. 2020/1217 SACNASP Reg no: 400108/17

2 Education

M. Sc. Freshwater Ecology, RAU, 2001

3 Selected Experience

(A) WATER RESOURCE MANAGEMENT

- (1) Prepared Applicant Guidelines, Decision-support System and standard Record of Decision for Section 21(c) and (i) water uses (National Water Act), for the then Department of Water Affairs and Forestry (DWAF).
- (2) Developed the risk-based approach, reporting mechanism and model for the then DWAF's Sustainable EMS, based on ISO 14001 and international best practices. The study focus on Water Resource Management.
- (3) Updating of the then DWAF's Integrated Environmental Management Framework and integration of the Integrated Environmental Management tools, with a focus on Water Resource Management.
- (4) Prepared Catchment Management Framework for the Upper Klip River for the City of Johannesburg.
- (5) Developed a Rehabilitation Plan for Bruma Lake for the City of Johannesburg.
- (6) Assisted in the preparation of an Environmental Management Framework for the Jukskei River, where responsibilities included the analysis of water quality, biomonitoring, development of technical intervention measures and associated implementation plan.

(B) ENVIRONMENTAL IMPACT ASSESSMENT (EIA) & WATER USE LICENCE (WULA)

- (1) EIA for the Water Transfer Scheme from Mokolo Dam to Lephalale as part of the Mokolo Crocodile West Water Augmentation Project, for the Department of Water Affairs.
- (2) EIA and WULA for the uMkhomazi Water Project Phase 1: Raw Water and Potable Water in KZN, for DWS and Umgeni Water. The scope included a large storage dam, tunnel, balancing dam, raw water pipeline, Water Treatment Works, potable water pipeline and hydropower facilities.



- (3) EIA for the Ncwabeni Off-Channel Storage (OCS) Dam in KZN, for DWS. The scope included an OCS dam and outlet infrastructure to make measured releases back to the Mzimkhulu River, abstraction / gauging weir on the Mzimkhulu River; abstraction works with a mechanism to remove silt, and a pump station and pipeline to deliver water to the dam.
- (4) EIA and WULA for the Lower uMkomazi Bulk Water Supply Scheme, for Umgeni Water.
- (5) EIA and WULA for the Augmentation of the Western Cape Water Supply System (Voëlvlei Dam), for DWS. The scope included a low level weir, abstraction works and 4 m³/s raw water pump station on the Berg River, a rising main pipeline from the Berg River to Voëlvlei Dam, and a potential new summer release connection at the existing Swartland Water Treatment Works.
- (6) EIA, and WULA and borrow pit application for the proposed Foxwood Dam and associated infrastructure in Eastern Cape, for DWS. This dam is to allow for a proposed irrigation scheme downstream on the Koonap River. . The scope included a major storage dam (Foxwood Dam), bulk water supply pipeline, gauging weir and relocation of infrastructure.
- (7) EIA for the Mokolo Crocodile River (West) Water Augmentation Project, for DWS. The scope included an abstraction weir on the Crocodile River (West), low-lift pumping station, low-lift rising main, sedimentation works, balancing reservoir, high-lift pumping station, high-lift rising main to break pressure reservoir, break pressure reservoir, gravity pipeline from break pressure reservoir to operational reservoir, operational reservoir, gravity pipeline from operational reservoir and ancillary infrastructure.
- (8) EIA for Esther Park Housing Development, Ekurhuleni.
- (9) EIA for Syferfontein Mixed Typology Housing Development, Gauteng.
- (10) EIA for the mixed-use development of Portion 5 of Brandkop Farm No. 702, Bloemfontein.
- (11) EIA for the Fischer Tropsch Wax Expansion project, for Sasol Technology.
- (12) EIA for the de-bottlenecking of the Acrylic Acid and Acrylates (AAA) complex, for Sasol Technology.
- (13) EIAs and prepared EMPs for Johannesburg Water sanitation and water supply projects for 2003/2004 and 2004/2005 financial years.
- (14) EIA for expansion of sewerage Bushkoppies Waste Water Treatment Plant. Performed biomonitoring on Klip River.
- (15) EIA for 80km long pipe from Randfontein to Rustenburg. Responsible for all bio-monitoring surveys of rivers crossed in the project.
- (16) EIA for a fish barrier on the Mooi River upstream of Spring Grove Dam.
- (17) EIA for the Neptune-Poseidon 400kV Power Line from East London to Cookhouse for Eskom.
- (18) EMPs for the Acacia, Koeberg, Rugtevalei, Hydra 01 and Hydra 02 Substations for Eskom.
- (19) EIAs for river bank stabilization and flood attenuation features in the Jukskei River.
- (20) EIA and EMPR for waste rock dump at Beatrix Gold Mines, with public participation.
- (21) EIA for proposed Westlake Township development (economic housing project)
- (22) EIA for low-cost housing development in Soshanguve (ext. 11, 12 and 13), Tshwane.
- (23) EIA for upgrade of De Deur/Walkerville Waste Disposal Site, for Midvaal Local Municipality.
- (24) EIA For Parkhaven Filling Station, Boksburg.
- (25) EIA for Zandspruit Pumpstation, Rising Main and Existing Sewer Line for Johannesburg Water.



- (26) EIA for the Makalu B Substation and Loop in Lines in Sasolburg, for Eskom.
- (27) EIA for the Offshore Sandwinning for Developments within the Port of Durban, for Transnet.
- (28) Developed the Environmental and Social Management Plan in terms of IFC Standards for Kivu 56 - Extraction of Gas and Electric Power Production Plant in the Rubavu District of the Western Province, Rwanda.
- (29) EIA for Esselen Park Housing Project, Ekurhuleni.
- (30) EIA for Pomona Housing Project, Ekurhuleni.
- (31) Project managed various EIAs, including the following:
 - Modderfontein Outfall Sewer;
 - Olievenhoutbosch Ext 37 low cost housing development;
 - Aspen eco-estate development;
 - Fairview estate development;
 - Edenville Bulk Water Supply;
 - Braam Pretorius Street Extension;
 - Rehabilitation of Fairland Spruit;
 - Kempton Park Outfall Sewer;
 - Garsfontein Pipe Reinforcement;
 - Tembisa Reservoir Pipeline;
 - Zuikerbosch embankment stabilisation;
 - Zuikerbosch Central Sludge Pipeline;
 - Mahube Valley Ext. 15 low cost housing development.

(C) ENVIRONMENTAL MANAGEMENT FRAMEWORK (EMF), STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) & ESMF

- (1) EMF for the Frances Baard District Municipality.
- (2) EMF for the uMkhanyakude District Municipality.
- (3) SEMP for the Ugu District Municipality.
- (4) EMF for the uThukela District Municipality.
- (5) EMF for the uMzinyathi District Municipality.
- (6) EMF for the Harry Gwala District Municipality.
- (7) SEA for the Port of Durban, for Transnet National Ports Authority.
- (8) Integrated Environmental Management Plan for the Sol Plaatje Local Municipality.
- (9) Biophysical review and planning for the development of the Namakwa District Municipality Environmental Management Framework.
- (10) Biophysical and river health investigation for the EMF and SEMP for the Mthonjaneni Local Municipality.
- (11) EMF for the Jukskei River.
- (12) EMF for the Great Ellis Park development.
- (13) EMF for the Mapungubwe World Heritage Site for DEA.
- (14) SEMP for the Dr Kenneth Kaunda District Municipality.
- (15) ESMF for the National Business Initiative to Support the Development of the Public and Private Sector Energy Efficiency Programme Feasibility Assessments for Application to the Green Climate Fund.



(D) RESOURCE MONITORING

- (1) Fieldwork with Department of Environmental Affairs and Tourism, in the Northern Province. In a biomonitoring team, was responsible for performing SASS4, IHAS (Integrated Habitat Assessment System), HQI (Habitat Quality Index), and assisting in performing the FCI (Fish Community Index) and RVI (Riparian Vegetation Index).
- (2) Extensive practical fieldwork in biomonitoring of rivers in the Mpumalanga, Gauteng and North West Provinces. Performed SASS4, IHAS, HQI and chemical water sampling and analysis.
- (3) Performed biomonitoring of numerous urban rivers (e.g. Jukskei River, Braamfonteinspruit, Sandspuit and Klipspruit) to obtain baseline data to detect disturbance and non-compliance of various construction activities on aquatic ecosystems.
- (4) Assisted in the completion of the State of the Rivers Report for the Luvuvhu River.
- (5) Experience in Fish Health Assessment Index.
- (6) Performed biomonitoring on the Klein-Olifants River and Bosmanspruit in Mpumalanga to obtain baseline data for expansion of mining operations by Ingwe Coal.
- (7) Performed biomonitoring (SASS4, IHAS, RVI, habitat integrity index) on the lower Jukskei River to obtain baseline data for a proposed housing development.
- (8) Performed the Fish Health Index (FHI) on various fish species in the Vaal Dam.
- (9) Performed biomonitoring (SASS5, IHAS) on the Sesmyspruit for the Irene River development

(E) MANAGEMENT

- (1) Project managed the preparation of an EMF for the Klipspruit, where responsibilities included the analysis of water quality, biomonitoring, development of technical intervention measures and wetland action plans, and aiding in the set up of the GIS.
- (2) Project managed the preparation of the Kliptown Environmental Management Framework, where responsibilities included the (1) establishment of the status quo of the environment, (2) generation of Action Plans to address environmental deficits, (3) preparation of an Environmental Management Plan with area-specific mitigation measures for construction, (4) preparation and management of a Geographical Information System.
- (3) Project managed the EIAs for Johannesburg Water's 2004/2005 Capital Projects.
- (4) Project managed the EIAs for Johannesburg Water's 2005/2006 Capital Projects.

(F) INSTITUTIONAL AND SOCIAL DEVELOPMENT

- (1) Performed environmental training for Rand Water employees.
- (2) Held public meetings to garner community views on the Jukskei River during the compilation of the Jukskei River EMF.
- (3) Completed a social survey for DWAF, on the impact of defunct mines in the Loskop Dam area on the social environment.
- (4) Undertook investigation of social facilitation aspect of four housing developments in Metsweding, namely Ekangala F1, F2 and F3, Rethabiseng Proper, Zithobeni Ext 8 and Onbekend, as well as numerous housing developments in Tshwane.



- (5) Performed a needs assessment for the Bekkersdal Township in the West Rand, and prepared Business Plans for combined school sports facilities and a water ring feed.
- (6) Undertook water and sanitation needs assessment for seven of the fourteen Southern African Development Community (SADC) member states.

(G) RESEARCH PROJECTS (IN CONJUNCTION WITH VARIOUS INSTITUTIONS)

- (1) Undertook study, funded by WRC and CSIR, of the evaluation of the role of a local biomonitoring method in the Ecological Risk Assessment process and in the determination of Resource Directed Measures for the Luvuvhu River
- (2) Prepared Guideline to develop a Sustainable Urban River Management Plan, funded by WRC.

(H) COMPILING SPECIFICATION DOCUMENTS

- (1) Wrote decommissioning phase of general EMP plan.
- (2) Prepared decommissioning strategy for pipe-manufacturing plant.

(I) RISK ASSESSMENTS

- (1) Performed Human Health Risk Assessment on contaminated fish from a Zambian copper mine.
- (2) Experience in working with human health risk assessment software package Risk*Assistant™.

(J) TECHNICAL PROJECTS

- (1) Assisted in the identification of mine holdings, sampling of surface and groundwater, and preparation of concomitant GIS.
- (2) Prepared Rand Water GIS for a pipeline in the Germiston region. The GIS incorporated significance ratings of environmentally sensitive features to assist in the integration of sensitive issues in future undertakings in the respective area.
- (3) Acted as an on-site Environmental Officer during the open-trench crossing and subsequent rehabilitation of a dyke in North Riding.
- (4) Prepared GIS for service breakdowns and bylaw contraventions in Greater Ellis Park

(K) ENVIRONMENTAL MONITORING PROJECTS

- (1) Olifants River Water Resources Development Project (ORWRDP) Phase 2C: Environmental Monitoring.
- (2) Mooi Mgeni Transfer Scheme Phase 2 (MMTS-2) Construction of Spring Grove Dam and associated works for TCTA.
- (3) BRT Phase 2, for JDA.
- (4) Upgrade of the P1 pipeline in the Magaliesburg Protected Natural Environment, for Rand Water.
- (5) Leeukop Relief Outfall Sewer, for Johannesburg Water.



- (6) Modderfontein Outfall Sewer, for Johannesburg Water.
- (7) Mamelodi Extension 18 low-cost housing development, for the Gauteng Department of Housing.
- (8) Environmental compliance monitoring for the Soshanguve Extension 11 low-cost housing development, for the Gauteng Department of Housing.

(L) ENVIRONMENTAL EDUCATION

- (1) Developed user-friendly documents of the Resource Directed Management of Water Quality policy, strategy and management instruments for DWAF.
- (2) Undertook training of the DWAF Regional Offices of the policy, strategy and management instruments for the Resource Directed Management of Water Quality project.
- (3) Developed Basic Environmental Awareness Training Material for the Expanded Public Works Programme, for DEA.

4 Employment Record

2001 – Present Environmental Scientist, Nemai Consulting

- Duties:
- Water Resource Management.
 - Application, development and implementation of environmental impact and management tools (e.g. EIA, EMP, SEA, EMS, EMF, WULA, environmental monitoring, training).
 - Developed Section 21 (c) and (i) WULA guideline.
 - Implemented numerous training sessions at all levels of government in the environment sector.
 - Developed 8 EMF's.
 - Completed over 50 EIAs.

5 Languages

English & Afrikaans - excellent speaking, reading, and writing.

Declaration:

I confirm that the above CV is an accurate description of my experience and qualifications.

Signature of Staff Member

PERSONAL DATA

Name	Dhanashree (Nicky) Naidoo
Date of Birth	1973-03-27
Nationality	South African
Qualification	BSc Chemical Eng International Accredited Auditor
Years of Experience	22
Profession	Environmental Engineer
Professional Registration	IAIA, ECSA, South African Monitoring and Evaluation Association

EMPLOYMENT RECORD

1995-1998 Eskom
1998-1999 Bergman Ingerop
1999- To Date Nema Consulting

EXPERIENCE RECORD PERTINENT TO REQUIRED SERVICE

(A) EIA's, SIA's and EMPs'

- 1) Development of the ESMF and SEP for the Public and Private Sector Energy Efficiency Programme for Application to the Green Climate Fund.
- 2) Environmental and Social Due Diligence for the Extraction of Gas and Electric Power Production Plant in the Rubavu District, Rwanda.
- 3) Project Managed and facilitated Public Participation on the Berths 203 to 205 EIA Expansion Programme. This is the only infill project in the Port of Durban in the last 10 years.
- 4) The uMkhomazi Water Project Phase 1 - Raw Water Component. Project Manager of the EIA for the proposed uMkhomazi Water Project. This includes a dam and associated infrastructure on the raw water side.
- 5) nCwabeni Dam - Project Manager of the EIA for the construction of a new raw water supply dam in Ugu in southern KwaZulu Natal.
- 6) Mhlabatshane Dam EIA - Project Manager of the EIA which covered the construction of a new 20m high bulk rural water supply dam in southern KwaZulu Natal. The project included the EIA for the associated Water Treatment Works.
- 7) The uMkhomazi Water Project Phase 1 - Raw Water Component - Project Manager of the EIA for the proposed uMkhomazi Water Project. This includes a Water Treatment Works and associated infrastructure on for the potable water side.
- 8) Mokolo Crocodile Water Augmentation Project, Project Manager of the EIA for the heavy engineering pipelines and water transfer scheme, Limpopo Province
- 9) Anderson Dinaledi Transmission Line - Project Manager of the EIA and public participation for a 80 km transmission line, with alternatives, through a the Magaliesburg Nature Conservation Area.
- 10) High Altitude Training Facility – Project Manager of the EIA and public participation for an international high altitude training facility in Mpumalanga. The project included

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- access roads, WTW, WWTW and relocation of protected species. The development was designed around Green Building principles.
- 11) FET Colleges – Project Manager for the EIA and public participation for 16 FET Colleges around the country. This is a SIP and is a fast tracked project hence the company understands the pressure and need of presidential projects. Included are many waste licences and WULA's.
 - 12) Resource Management Plans for 15 government water works. Project Manager for the development of these RMPs which covered reservoirs such as the Vaal, Midmar, Loskop, Craigieburn and Hazelemere Dams.
 - 13) Neptune Poseidon Transmission Line, Eastern Cape - Project Manager of the EIA and public participation for a 320 km transmission line, with alternatives, from East London to Fort Beaufort in the Eastern Cape
 - 14) Performed all EIAs and prepared EMPs for Johannesburg Water sanitation and water supply capital projects for 2003-2007 financial years. Projects for which authorization was sought include expansions to Waste Water Treatment Works, outfall sewer pipelines, bulk and reticulation pipelines and pump stations. Over 50 EIA completed over this period.
 - 15) Boksburg Cason Pipeline –Completed detailed EIA for the construction of a 53 km pipeline.
 - 16) EIA for the Northern Waste Water Treatments Works, Unit 5, 50 Ml/day capacity.
 - 17) Total Gas holding facilities, Senegal – Completed Environmental Impact Assessment Study for the existing infrastructure as well as a new gas sphere.
 - 18) EIA and SIA for 180km transmission line for Eskom.
 - 19) EIA, SIA and EMP for 280km long transmission line for Eskom.
 - 20) EIA for Casino Development in Queenstown. Involved details Social Impact Assessment study of the project on the community and EIA because the casino is to be located in the De Lange Nature Reserve.
 - 21) EIA for Cast Iron Pipe Factory in Pretoria. Was successful in getting the Client, Stanton from the UK, an exemption on the project.
 - 22) EIA and EMP for pipeline for Hartbeespoortdam Local Town Council
 - 23) EIA, EMP and SIA for Maputo Corridor
 - 24) EIA and EMP for water reticulation project in Piet Gouws.
 - 25) I was employed by the Inspectorate Division in Gauteng for the period from January 2000 to March 2000 as a Senior Environmental Officer.
 - 26) EMP and social survey for the Witbank to Maputo Toll road on the Mozambican side.
 - 27) EIA and EMP for R600 000 000 project funded by the DBSA for a 1000km long Fibre Optic Communication Line in Mozambique. The Client is TDM and the project starts in Beira in the North and runs to Maputo in the South. The entire project is in accordance to ISO 14001 standards. This was the first project of its kind in Mozambique.

(B) ENVIRONMENTAL MANAGEMENT FRAMEWORKS

- (1) Project Manager for the Frances Baard District Municipality Environmental Management Framework.
- (2) Project Manager for the Integrated Environmental Management Plan for the Sol Plaatje Local Municipality.
- (3) Project Manager for the Project Management and planning for the development of the Namakwa District Municipality Environmental Management Framework.

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- (4) Project Manager for the Umzinyathi District Municipality Environmental Management Framework.
 - (5) EMF for the Jukskei River.
 - (6) EMF for the Great Ellis Park development.
 - (7) EMF for the Mapungubwe World Heritage Site for DEA.

(C) WASTE SECTOR

- 1) Construction of a 50 Ml/day treatment unit (Unit 5) including sedimentation tanks, BNR activated sludge treatment and chemical dosing facility at Northern WWTW, for Johannesburg Water.
- 2) Remediation of Fine Ash 1 and 2 /Coarse Ash Dump/ Venco Capillary Break for Infrachem, a division of Sasol
- 3) Scoping/EA and IWWMP for the disposal, treatment and re-use of Fine Ash 3, 4 and 5 at Sasol.
- 4) IWWMP for the disposal of gypsum for Infrachem.
- 5) EIA and IWWMP for the storage of Hazardous Waste Material for Merisol.
- 6) BA and IWWMP for the storage of Chlor Vinyls Brine Sludge for Sasol Polymers.
- 7) BA and IWWMP for the storage of Wax Catalyst Storage for Sasal Wax.
- 8) BA and IWWMP for the storage of Solvents Catalyst Store for Sasol Solvents.
- 9) BA and IWWMP for the disposal of asbestos waste for Transnet.
- 10) Increase in sludge treatment capacity including new lime dosing plant at Northern Works WWTW, for Johannesburg Water.
- 11) Construction of sewerage pump station in Alveda Park, for Inframax.
- 12) Construction of thickeners at the Goudkoppies WWTW, for Johannesburg Water.
- 13) Expansion of the maturation ponds at the Bushkoppies WWTW, for Johannesburg Water.
- 14) Expansion of the Olifantsvlei WWTW, for Johannesburg Water, for Johannesburg Water.
- 15) Emergency dam and pump station at the Olifantsvlei WWTW, for Johannesburg Water.
- 16) Bruma Lake Desilting combined waste licence.
- 17) Henley on Klip landfill application
- 18) Walkeville landfill closure application.
- 19) Groethoek Hospital medical waste storage
- 20) Transwerk asbestos removal and disposal application
- 21) Rehabilitation of Transnet rail infrastructure of asbestos waste
- 22) Kwa Themba landfill closure application
- 23) IWMP for the Bojanala Platinum District Municipality
- 24) Frances Baard IWMP
- 25) Thabo Mofutsanyane District Municipality IWMP
- 26) Motheo District Municipality IWMP
- 27) Lejweleputswa District Municipality IWMP
- 28) Naledi Local Municipality IWMP
- 29) Mantsopa Local Municipality IWMP
- 30) North West Provincial IWMP
- 31) Illegal Waste Minimisation Implementation Strategy
- 32) EPWP Waste Management Strategy
- 33) Generic Waste Management Contract for Municipalities

34) Soweto Waste Clean-up Programmes

(B) WATER SECTOR RELATED PROJECTS

- 1) Developed Provincial Water Sector Plan Guideline.
- 2) Developed concept paper on Water for Growth and Development.
- 3) Developed checklists for EDSS.
- 4) Developed monitoring and auditing guidelines.
- 5) Compile on SDMS.
- 6) Compile on 2nd Edition CEIMP.
- 7) Compiled Resource Management Plans for 17 Dams

(D) ENVIRONMENTAL AUDITING AND REPORTING

- 1) Completed an environmental and safety audit for the decommissioning of the Grootvlei Power Station.
- 2) Completed an environmental and safety audit for the decommissioning of the Camden Power Station.
- 3) Completed an environmental audit for the decommissioning of the Komati Power Station.
- 4) Completed an environmental and safety audit for the Total Bottling Plant in Dakar, Senegal.
- 5) Completed the verification of the Rand Water Environmental Report for 2001.
- 6) Completed an environmental report for the Pindamondagaba development in Brazil.
- 7) Completed environmental auditing of all landfills in Gauteng for the provincial government.

(E) ENVIRONMENTAL ENGINEERING

- 1) Environmental design review of the Naphta Tar Extraction Plant at Sasol.
- 2) Environmental design review of the upgrade of certain process at Sapref plant.
- 3) Environmental design of the Total Gas Bottling Plant in Senegal.

(F) AIR, WATER AND SOIL MONITORING AND CONTROL

- 1) Catchment Study. Determine the impact of raw sewage in the Elands River Catchment area on the Valkopdam.
- 2) Catchment Study: Impact of defunct mines on water quality in the Loskopdam catchment.
- 3) Water quality analysis for the Jukskei and the Klipspruit Catchment.
- 4) Soil and Ground water monitoring, quality control and remediation measures for Collect-a-can site in Vanderbylpark. The soil was highly contaminated with various inorganic chemicals.
- 5) Soil, water and air quality analysis for chemical spill at the Eskom Phalaborwa sub-station site. The polluting agents were essentially phosphates.
- 6) Air emission control management at Eskom Power Stations. Monitoring plans were implemented to assess air emission from the stacks. Various cleaning technologies were investigated.
- 7) Air emission analysis at the Cast Iron Pipe Factory in Pretoria. Review and compared smelter technologies. This formed part of the EIA study for the construction of a new plant; however, the study did include review of air emission monitoring on the existing plant. This was a requirement from CAPCO.

- 8) Scale Inhibitors: Study done in conjunction with the CSIR to determine the impact of the use of scale inhibitors at Eskom Power Stations on water quality.
- 9) Air, water and soil analysis at the Total Senegal Plant. Did trial studies of dispersion tests at the plant in order to satisfy the French Environmental Legislation.
- 8) Kendal Power Station Water Balance – Prepared software package to monitor water usage and effluent use at the station.
- 10) Simunye Return to Service (RTS) Report – Performed feasibility and environmental study and made recommendations on process water, effluent and stormwater management, cooling water system, chemical dosing systems, and air emission control and sewerage treatment system for Grootvlei Power Station.
- 11) Environmental Review – Responsible for interpreting ground and surface water analysis in accordance with the drinking water standards as set out by the DWAF within Eskom

(E) RESEARCH PROJECTS (in conjunction with various institutions)

- 1) Hydrogen Research – Engaged in research associated with the novel approach of handling and venting contaminated hydrogen mixtures.
- 2) Scale Inhibitors – Used regression test analysis to determine whether the generic approach to scale prevention within Eskom was possible and the environmental effect on the ash dams of dosing scale inhibitors.
- 3) Hydrogen Venting – Responsible for performing all calculations associated with the venting of hydrogen air mixtures. Reviewed and commented on hydrogen handling specification/standard. Completed extensive literature surveys locally and internationally.
- 4) Fire Protection – Part of design team responsible for novel approach to conveyor belt protection. Wrote software package to predict effects of water droplet sizes on extinguishing fires. Completed extensive literature surveys locally and internationally.
- 5) Crystallisation Modelling – Extensively involved in the modelling of the growth of calcium sulphate crystals, optimisation of crystallisation processes and investigating the effects of various parameters on the growth of crystals.
- 6) Completed literature search on public participation in water related projects in third and first world countries.

(G) RISK ASSESSMENTS

- 1) Total Gas holding facilities, Senegal – Completed Risk Assessment Study for the existing infrastructure as well as a new gas sphere and bottling plant. The study was done in accordance to the French Legislation.
- 2) Contingency Plans for Simunye Power Station – Compiled document presenting the various contingency plans, in the event of an environmental disaster, for the different decommissioned stations. The report was aimed at satisfying the needs and requirements set by the DWAF and DEAT. Focused on HAZOP analysis and pollution control from a design point of view.
- 3) Risk and Environmental Impact Assessment and Integrated Environmental Management – Reviewed and commented on numerous RIA's, EIA's and IEM's for the various Eskom stations.
- 4) Prepared oil spill contingency plans for Eskom wide power stations.

(H) CLIMATE CHANGE

- 1) Climate change adaptation strategy for the City of Johannesburg with special focus on water infrastructure.

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- 2) Berths 203 – 205 expansion – Climate Change Study to determine the impacts of sea level rise and extreme weather conditions on the design of the new berths in the Port of Durban.
 - 3) Climate Change Study to determine the impacts on the water sector for DWS Study included in the Growth and Development Programme.
 - 4) Factored in climate change implications on 10 EIA Studies.