

# AIRSHED PLANNING PROFESSIONALS (Pty) Ltd

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## HANLIE LIEBENBERG-ENSLIN - CURRICULUM VITAE

*Hanlie Liebenberg-Enslin has more than twelve years experience in the field of air pollution impact assessment and air quality management. Prior to becoming involved in air quality consultation, she specialized in Geographic Information Systems (GIS) applications and environmental management. She was also part of the Atmospheric Research Group based at the Schonland Research Centre for Nuclear Sciences at Wits University. Since joining Environmental Management Services, and more recently Airshed Planning Professionals she has undertaken numerous air pollution impact studies, with specific reference to emissions inventory development, dispersion modelling application, health impact analysis and air quality management planning and system development. Being an avid student, she is currently working on her PhD, specialising in Aeolian dust transport. Hanlie is also actively involved in the National Association for Clean Air and is currently the President of the International Union of Air Pollution Prevention and Environmental Protection Associations.*

### 1. CURRENT AFFILIATION AND JOB DESCRIPTION

Airshed Planning Professionals (Pty) Ltd – Director (*March 2003 to present*)

Hanlie Liebenberg-Enslin is one of the Directors of Airshed Planning Professionals. Her main function within the company is project managing various air quality related studies and to deal with administrative issues. Her main focus of work is air quality management planning and air quality impact assessments. This requires emissions inventory compilation and emissions factor application, atmospheric dispersion modeling, meteorological data analysis and interpretation, and health risk screening assessments.

### 2. ACADEMIC QUALIFICATIONS

Qualification	Institution	Year completed
PhD ( <i>Modelling the regional transport of wind eroded dust in the Erongo Region</i> )	University of Johannesburg	Currently registered
M.Sc ( <i>Air Pollution Population Exposure Evaluation in the Vaal Triangle using GIS</i> )	Rand Afrikaans University (now University of Johannesburg)	1999
B.Sc Hons ( <i>GIS &amp; Environmental Management</i> )	Rand Afrikaans University (now University of Johannesburg)	1995
B.Sc ( <i>Geography &amp; Geology</i> )	Rand Afrikaans University (now University of Johannesburg)	1994

### 3. CAREER HISTORY

Company	Position	Duration
Airshed Planning Professionals (Pty) Ltd	Director	March 2003 to present
Environmental Management Services CC	Senior Air Quality Scientist	January 2000 to February 2003
Independent Broadcasting Authority (IBA)	GIS Analyst and Demographer	May 1998 to December 1999
GIS Business Solutions (PQ Africa)	GIS Analyst	February 1997 to April 1998
Annegarn Environmental Research (AER)	Student Researcher	1996 to 1997

#### 3.1 Work Experience

Airshed Planning Professionals (Pty) Ltd (Director and Principal Consultant) and Environmental Management Services CC (Senior Air Quality Scientist)

- Extensive experience obtained over the past eight years in air quality management, ranging from baseline characterization to development of management plans and systems for industries, mines and government.
- Conducted Air Quality Impact Assessments for a wide range of industries including: mining operations, smelter operations, iron and steel industries, ferroalloy industries, cement manufacturers, waste disposal facilities, chemical producers, housing developments (etc.).
- Skills include source identification, the development of emissions inventories (including mass balance calculations and emission factor applications), identification of emission reduction strategies, dispersion modeling, buffer zone delineation and development of spatial frameworks, ambient air quality and dust fallout monitoring network designs, ambient air quality data and dust fallout analysis and reporting, compliance assessment, health risk assessments, air quality audits, etc.
- Application of various atmospheric dispersion models, including: Industrial Source Complex Short Term model (ISCST3), AERMOD model (replaced ISCST3), ADMS4, CALMET/CALPUFF suite of models, and waste disposal models (e.g. SIMS and Landfill Air Emission Estimation model), vehicle emission estimation and dispersion models (CALINE) and the TANKS model to calculate emissions from storage tanks and related facilities.
- Worked in various countries including South Africa, Zimbabwe, Mozambique, Namibia, Botswana, Zambia, Tanzania, Mali, Malawi, Egypt, Democratic Republic of the Congo and Russia.

Independent Broadcasting Authority (now ICASA) as GIS Analyst and Demographer: Worked on ArcInfo and ArcView, established a comprehensive population database for the IBA using MS Access and Excel (May 1998 to December 1999).

GIS Business Solutions, a division of PQ Africa as GIS Analyst: Worked on ReGIS, ArcView, MapInfo and Autodesk World. Mainly worked on Town Council projects involving demographics and environmental issues (February 1997 to April 1998).

Part of research for Masters degree was based at the Schonland Research Center for Nuclear Sciences, University of the Witwatersrand (1995 – 1996). Air quality research experience in the Vaal Triangle as part of Masters degree, determining the impact from particulate air pollution in the region on human health. The ISCST3 was used for the dispersion simulations and the results were imported into a GIS system (ReGIS) for the population exposure analysis.

Research Assistant for Annegarn Environmental Research (AER). Assisted in data processing, analysing and compilation of air quality reports (1996)

### 3.2 Project Summary

A brief overview of some of the projects completed in the past is listed below:

<b>Air Quality Management Plans &amp; Management Systems</b>	Air Quality and Radiation Assessment for the Erongo Region Namibia as part of a Strategic Environmental Assessment (June, 2010); Vaal Triangle Airshed Priority Area AQMP (March, 2009); Gauteng Provincial AQMP (January 2009); North West Province AQMP (2008); City of Tshwane AQMP (April 2006); North West Environment Outlook 2008 (December 2007); Ambient Monitoring Network for the North West Province (February 2007); Spatial Development Framework Review for the City of uMhlathuze (August 2006); Ambient Particulate Pollution Management System (Anglo Platinum Rustenburg)
<b>Mining and Ore Handling</b> <i>Blasting; quarrying; grinding; crushing; conveying; vehicles; tailings dams; etc</i>	Langer Heinrich Uranium Mine, Valencia Uranium Mine, Etango Project, Rossing South Uranium Mine (Namibia); Sishen Iron Ore Mine (Kathu); Kolomela Iron Ore Mine (Postmasburg); Thabazimbi Iron ore Mine (Thabazimbi); UKM Manganese Mine (Hotazel); Everest Platinum Mine (Steelpoort); Murowa Diamond Mine (Zimbabwe); Jwaneng Diamond Mine (Botswana); Sadiola Gold Mine (Mali); North Mara Gold Mine (Tanzania); Tselentis Coal mine (Breyeton); Lime Quarries (De Hoek, Dwaalboom, Slurry); Beesting Colliery (Ogies); Anglo Coal Opencast Coal Mine (Heidelberg); Klippan Colliery (Belfast); Beesting Colliery (Ogies); Xstrata Coal Tweefontein Mine (Witbank); Xstrata Coal Spitskop Mine (Hendrina); Middelburg Colliery (Middelburg); Klipspruit Project (Ogies); Rustenburg Platinum Mine (Rustenburg); Impala Platinum (Rustenburg); Buffelsfontein Gold Mine (Stilfontein); Kroondal Platinum Mine (Kroondal); Lonmin Platinum Mine (Mooinooi); Rhovan Vanadium (Brits); Macauvlei Colliery (Vereeniging); Voorspoed Gold Mine (Kroonstad); Pilanesberg Platinum Mine (Pilanesberg); Kao Diamond Mine (Lesotho); Modder East Gold Mine (Brakpan); Modderfontein Mines (Brakpan); Bulyanhulu North Mara Gold Mine (Tanzania); Gold Mine (Tanzania); Zimbiwa Crusher Plant (Brakpan); RBM Zulti South Titanium mining (Richards Bay); Premier Diamond Mine (Cullinan).
<b>Metal Recovery</b> <i>smelting; electro-wining</i>	Smelterco Operations (Kitwe, Zambia); Waterval Smelter (Amplats, Rustenburg); Herculon Ferrochrome Smelter (Brits); Rhovan Ferrovanadium (Brits); Impala Platinum (Rustenburg); Impala Platinum (Springs); Transvaal Ferrochrome (now IFM, Mooinooi), Lonmin Platinum (Mooinooi); Xstrata Ferrochrome Project Lion (Steelpoort); ArcelorMittal South Africa (Vandebijlpark, Vereeniging, Pretoria, Newcastle, Saldanha); Hexavalent Chrome Xstrata (Rustenburg); Portland Cement Plant (DeHoek, Slurry, Dwaalboom, Hercules, Port Eelizabeth); Vantech Plant (Steelpoort); Bulyanhulu Gold Smelter (Tanzania), Sadiola Gold Recovery Plant (Mali); RBM Smelter Complex (Richards Bay ); Chibuto Heavy Minerals Smelter (Mozambique); Moma Heavy Minerals Smelter (Mozambique); Boguchansky Aluminium Plant (Russia); Xstrata Chrome CMI Plant (Lydenburg); SCAW Metals (Germiston);
<b>Chemical and fertilizer</b>	AECI (Pty) Ltd Operations (Modderfontein); Kynoch Fertilizer (Potchefstroom)
<b>Petrochemical Industry</b>	SASOL operations (Sasolburg); Sapref Refinery (Durban); Health risk assessment of Island View Tank Farm (Durban Harbour)
<b>Power Generation</b> <i>stack emissions; coal and ash dump</i>	Mmamabula Energy Project (Botswana); Morupule Power Plant (Botswana), Eskom Waterberg Coal3 Project (Lephalale)
<b>Waste Disposal</b> <i>Incineration; landfill; evaporation; waste</i>	Coega Waste Disposal Facility (Port Elizabeth); Boitshepi Waste Disposal Site (Vandebijlpak); Umdloti Waste Water Treatment Plant (Durban).
<b>Vehicle Emissions</b> <i>Highways, Filling Stations, Toll Plazas</i>	Platinum Highway (N1 to Zeerust); Gauteng Development Zone (Johannesburg)
<b>Other</b>	Government projects include the APPA Registration Certificate Review Project for Department of Environmental Affairs (DEA).
AQMP – Air Quality Management Plan DEAT – Department of Environmental Affairs and Tourism, South Africa	

### 3.3 Courses Completed

April 2010 April & Aug 2009 March & Aug 2008 March & Nov 2007 March & Oct 2006	Air Quality Management Short Course: NACA and University of Johannesburg - Lecturer
February 2010	Air Dispersion Modelling Short Course: NACA and University of Johannesburg - Lecturer
May 2010	Environmental Management Short Course: University of Pretoria – Lecturer on Air Quality Management
May 2010 May 2009	Environmental Law for Environmental managers: Centre of Environmental management University of the North West – Lecturer on the Air Quality Act
1999	ARCINFO course at GIMS: Introduction to ARCINFO 7 course
1998	ARCVIEW course at GIMS: Advanced ARCVIEW 3.1 course
1998	ACCESS beginners course
1998	Advanced ReGEO course`
1996	Advanced Study Winterschool on Atmospheric Sciences - SA'ARI Research Alliance, Wits University, FRD, Max Planck Institute for Chemistry (Mainz).
1995, 1996 & 1997	REGIS courses at Computer Foundation: ReBASE, ReCLASS, ReMAP and ReGEO courses

### 4. SEMINARS & CONFERENCES

1 to 3 Oct 2008	National Association for Clean Air (NACA) Regional Annual Conference in association with IUAPPA, Nelspruit - <i>Presented</i>
11 to 12 Oct 2007	National Association for Clean Air (NACA) National Annual Conference, Champagne Castle, Drakensberg - <i>Presented</i>
24 to 28 July 2006	ICAR VI - International Conference on Aeolian Research in Guelph, Canada - attended
1995 - 2006	NACA National Annual Conference – <i>Presented &amp; Attended</i>
29 May 2006	IQPC Workshop on Air Quality Management - <i>Presented</i>
15 & 16 February 2005	IQPC Conference on Implementing Air Quality Management in a Changing Regulatory Environment – <i>Chairperson and Presented</i>
24 & 25 October 2005	IQPC Conference on Implementing the Air Quality Act – <i>Chairperson and Presented a paper</i>
2004	NACA Workshop on Air Quality Management – <i>Presented &amp; Attended</i>
August 2002	Coal and Environment Conference – <i>Presented</i>
August 2002	CEMSA Conference (3rd International Conference on Environmental Management In Southern Africa) – <i>Attended</i>
September 1995	SA Geography Society Student Conference – <i>Presented a paper</i>
October 1995	South African Society for Sciences – <i>Presented a Poster</i>
April 1995	International Geosphere-Biosphere Conference – <i>Attended</i>

### 5 MEMBERSHIP

- National Association for Clean Air (NACA) - President 2008-2010.
- International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA) – President 2010–2013.
- International Association for Impact Assessment South Africa (IAIASA).
- Air & Waste Management Association (AWMA).