

**EScience Associates**  
**9 Victoria Road, Oaklands**  
**Johannesburg, 2192**  
**Tel: +27 (0)11 718 6380**

**Curriculum Vitae:**

**Abdul**  
**Ebrahim**

**Surname:** Abdul Ebrahim

**Date of birth:** 07 December 1977

**Country of Residency:** Republic of South Africa

**Position:** Director

**Key Qualifications:** BEng (Hons) Environmental, BEng (Hons) Mechanical

**Registrations:** ECSA, EAPASA

#### Contact details

☎: 011 7186380

☎: 072 268 1119

✉: abdul@escience.co.za

#### Abstract

Abdul Ebrahim is a director of EScience Associates, an environmental consultancy specialising in waste and waste recovery, effluent, atmospheric emissions and air quality, as well as cleaner and renewable energy. EScience Associates caters for a diversity of industries and economic sectors and has forged strong relationships with other specialists, and specialist agencies, allowing the company to deal with complex and contentious environmental problems.

Abdul Ebrahim holds a BEng (Hons) in both Mechanical and Environmental Engineering disciplines. He specialises in air quality management, hazardous waste management and cleaner production, as well as their related environmental authorisation and licensing processes. His work experience includes numerous environmental impact assessments, cleaner production, waste recover-recuse-recycling, hazardous waste management assessments, and air quality impact management projects in power generation, manufacturing, minerals processing, and mining industries. His interests range from atmospheric modelling and wind energy, to the beneficial use of industrial wastes and effluents.

He is a certified Environmental Assessment Practitioner (EAP) and member of amongst other professional organisations: Engineering Council of South Africa (ECSA), and the National Association of Clean Air (NACA).

Abdul has provided Honours level lecturing at the University of Pretoria, UNISA, Cape Town University of Technology and various private training institutions in the fields of Environmental Compliance Enforcement, Environmental Impact Assessment, Cleaner Production and Air Quality Management since 2005.

His work experience includes:

- Environmental strategic, legal, and technical compliance advisory services
- Environmental Permitting - Environmental Authorisation, Waste Management Licensing, Atmospheric Emissions Licensing, Mine Environmental Management Programme development, and their relating environmental impact assessment and stakeholder engagement processes.
- Air quality management and Air Quality Management Plan development – Emissions quantification; meteorological and air quality modelling and impact assessment; development of emissions abatement and management strategies;
- Waste management consulting - classification, landfill assessment, mine residue liner risk assessments, development of waste minimisation treatment & recycling strategies;
- Development of specialist training courses (including EIA Administration and Review, Environmental Enforcement, Environmental Compliance Achievement for Industry).
- Environmental Due Diligence – due diligence assessment to inform purchase or ownership transfer of existing going concerns or proposed new establishments.

Abdul has 20 years post graduate experience of which four years are in industry, and the remainder in consulting.

#### Education

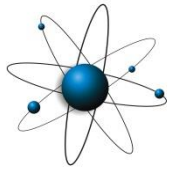
**BEng (Hons) Mechanical Engineering**

**BEng (Hons) Environmental Engineering**

#### Languages

**English** (excellent speaking and writing)

Limited French and Portuguese



### **Experience**

Personal work experience includes:

- Cleaner and renewable energy strategy development, plan and project development;
- Technical and environmental due diligence – industrial and energy projects
- Waste management (classification, handling, storage, and disposal requirements;
- Development of waste minimisation treatment & recycling strategies);
- Air quality management and emissions inventorying, development of abatement and management strategies;
- Environmental Impact Assessment and Permitting
- Development and dissemination of specialist training for government and the private sector at NQF level 7 (honours degree).

Abdul's work experience in a wide diversity of economic sectors and industries and provides him with a good understanding of both small scale and large scale impacts of waste and pollution, as well as keeping up to date with various management alternatives available and their individual advantages and disadvantages, both locally and internationally implemented and pilot scale. Various waste streams have been dealt with to determine the most applicable disposal methods and impacts on the environment, from various industries:

- Metallurgical processes
- Power generation
- Food processing
- Waste recovery, reuse, and recycling and waste to energy
- Mining
- Cement manufacturing
- General Commercial – General waste management from various industries

### **Professional Registration**

Environmental Assessment Practitioner (EAP)  
Engineering Council of South Africa (ECSA)

### **Hourly Rate**

### **Nature of expertise offered**

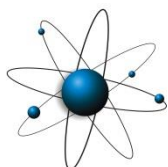
- Ability to interpret and analyse technical material on wide range of subjects
- Engineering expertise in energy, waste, air quality and multi-disciplinary subjects
- Ability to undertake technology feasibility studies, technical and financial due diligence
- Understanding of the green economy and technologies, ICT and agricultural and agro-processing sectors
- Ability to undertake a market research and investigation into the industry
- Proposal evaluation expertise

### **Experience and relevant projects**

#### **1. AIR QUALITY MANAGEMENT:**

##### **1.1 Government & Regulatory**

- Vaal Triangle Air-shed Priority Area - Air Quality Management Plan review, development of emissions inventory and Ambient Air Quality Impact Assessment.
- Highveld Priority Area Air Quality Management Plan – development of emissions inventory, and mitigation strategies.
  - Reference: Dr Thulile Mdluli



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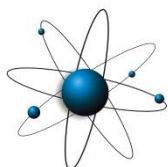
**Curriculum Vitae:**

**Abdul**  
**Ebrahim**

- Tel: 012 310 3436
- Email : tmdluli@environment.gov.za
- Ekurhuleni Metropolitan Municipality - Development of an Air Quality Management Plan (AQMP)
  - Reference: Mr Edmund van Wyk
  - Tel: 011 999 2470
  - Email: Edmund.vWyk@ekurhuleni.gov.za
- Nkangala District Municipality - Development of an Air Quality Management Plan (AQMP)
  - Reference: Mr Vusi Mahlangu
  - Tel: 013 249 2164
  - Email: Mahlangumv@nkangaladm.gov.za
- North West Province - development of provincial emissions inventory (PM, NO<sub>x</sub>, SO<sub>2</sub> etc)
- Development of National Air Quality Officers Companion Guide for the Republic of South Africa
- Development of the atmospheric emissions licensing department for Nkangala District Municipality
- EThekweni Municipality (Durban) - Greenhouse gas emissions quantification
- Newcastle Local Municipality - Development of an Air Quality Management Plan (AQMP)
  - Reference: Mr Phelelani Ntshingila
  - Tel: 034 328 3300
  - Phelelani.Ntshingila@newcastle.gov.za

### **1.2 Industrial and Mining**

- A large variety of major industrial and mining operation across the Highveld and Vaal Triangle as part of Highveld Priority Area and Vaal Triangle Air-shed Priority Area AQMP projects.
- Lanxess CISA Chrome Chemicals Plant Expansion, CO<sub>2</sub> generation, Power Generation and hazardous waste treatment and recovery
- Samancor Chrome Proposed Chrome Chemicals plant
- Karbochem (Synthetic Rubber Manufacture) proposed Power Generation Plant
- PPC Cement Slurry Cement Plant Expansion
- PPC Cement Jupiter Cement Plant Expansion
- PPC Cement PE Cement Plant Expansion
- PPC Cement Dwaalboom waste heat recovery
- PPC Cement De Hoek, PE, Slurry, and Dwaalboom postponement applications
- Afrisam Cement - Dudfield Environmental Management Programme update.
- ClinX Medical Waste Incineration plant expansion
- Goedemoed organic waste incineration
- AWPP pyrolysis of organic waste
- Interwaste Waste Recovery, Waste to Energy and Waste Incineration plant
- Eskom power generation emissions off-setting
- Hayes Lemmerz SA Aluminium Wheel Manufacturing
- Evraz Highveld Steel and Vanadium proposed Powered Generation - Furnace Off-Gases
- Assmang Ferrochrome and Ferromanganese plants Powered Generation - Furnace Off-Gases
- Resource Generation Proposed Boikarabelo Power Station – coal fired
- Weir Minerals Africa (Isando, Alrode and Heavy Bay Foundries)
- Goedemoed Prison proposed Waste incineration and Landfill
- Consolidated Wire Industries Expansion
- Sylvania Proposed Open Cast PGE Mine and Processing Plant
- Assmang Black Rock proposed manganese mine expansion and sinter plant
- Assmang machadodorp proposed smelter plant expansion and cross-over to manganese



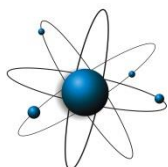
- Dwarsrivier Chrome Mine
- Nkwe proposed Platinum Mine
- Agricultural Research Commission hazardous and infectious waste incineration
- Sephaku Aganang proposed use of AFR's in cement manufacture
- Idwala Phalaborwa atmospheric emission licence for magnetite drying
- Mandini Wealth (Pty) Ltd tyre pyrolysis air quality health risk assessment
- Johnson Tiles a Division of Norcross Sa (Pty) Ltd Air quality health risk assessment
- Lanxess CISA (Pty) Ltd Air quality health risk assessment
- Namakwa Sands, South Africa – Tronox
- Devon Valley Landfill expansion
- Groblersdal limestone mine

## **2. WASTE CLASSIFICATION, HAZARD RISK ASSESSMENT AND MANAGEMENT**

- Weir Minerals Africa
- Heavy Bay foundry Port Elizabeth
- Lafarge Gypsum
- Consolidated Wire Industries
- BPB Gypsum
- PG Bison melamine plant
- ABBW Electrical manufacturing plant
- CBI copper and fibre optical cable manufacture
- Holcim Cement
- Lanxess Chrome Chemicals
- Assmang Chrome
- Assmang Manganese
- Hayes Lemmerz SA Aluminium Wheel Manufacturing
- Auto industrial group (Pty) Ltd
- CBI Electrical
- Various mining residues

## **3. ENVIRONMENTAL IMPACT ASSESSMENT:**

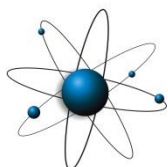
- Assmang Black Rock Mine expansions, tailings facilities, water treatment facilities
- Highveld Steel furnace off-gas power generation
- Lanxess CISA chrome chemicals plant expansion and hazardous waste landfilling
- Samancor chrome chemicals plant development
- Heric Ferrochrome power generation from furnace off-gases
- Kanhym Biogas project
- Alumicor secondary aluminium recovery rotary salt furnaces
- Hays Lemmerz Aluminium smelters, furnace and alloy die casting
- Agricultural Research Commission hazardous waste incineration plant
- Darkling Metal Industries
- Idwala Lime Danielskuil asbestos waste disposal
- Plettenburg Polo Estates
- PG Bison Decorative Panels
- British Aerospace Land Based OMC Systems
- BPB Gypsum phosphogypsum plant
- Extrupet HPDE and PET recycling plants
- Assmang BRMO



- Assmang Machadodorp
- Interwaste waste recovery and waste to energy plants
- PPC Cement expansions, electricity generation, use of alternative fuels and resources
- Sephaku cement use of alternative fuels and resources
- ClinX Healthcare Risk Waste Management
- Turfontein Race Course night racing

**4. ENVIRONMENTAL LEGAL COMPLIANCE ASSESSMENT & RECTIFICATION PLANNING:**

- SASOL Synfuels
- NATCOS Petrochem
- Dwarsrivier Chrome Mine
- Angloplatinum Base Metals Recovery
- Samancor Hotazel Manganese Mines
- PG Bison (Pty) Ltd MDF manufacturing
- Samancor Manganese Division Samancor Metalloys Meyerton
- Holcim SA (Pty) Ltd Cement Plants:
  - DUDFIELD
  - ULCO
  - ROODEPOORT
- Natal Portland Cement Plants:
  - NEWCASTLE
- Consolidated Wire Industries
- South African Airways (Pty) Ltd Technical Division
- TWK forestry strategic environmental legal compliance assessment
- Inergy Automotive Systems(Pty) Ltd
- Consolidated Wire Industries
- Mittal Steel Vereeniging and Dunswart plants – specialist assistance to DEAT environmental management inspectors
- Assmang Black Rock Mining Operations
- ClinX Medical Waste Management
- Extrupet PET and HDEP recycling plants
- Scaw Metals High Chromium Ball Plant
- Unilever waste recovery, recycling, and zero waste-to-landfill
- Numerous waste recycling facilities
- Oilflow
- The Smart Company
- Darkling Industrial Metals CC
- Unilever waste recovery, recycling, and zero waste-to-landfill
- Central Waste
- AT Packaging
- EWaste Africa
- Mpact Recycling
- Wasteplan
- Fine Metals
- Living Earth
- Industrial Plastic Recyclers
- SA Paper Mills
- Interwaste
- Matchem
- TGS
- Verigreen



- SB Boxes
- Drumpal
- Oscars Meat
- FOSECO South Africa (Pty) Ltd
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**5. GREENHOUSE GAS QUANTIFICATIONS AND ASSESSMENTS**

- PPC Riebeeck
- Lafarge Lichtenburg
- Ilangabi Investments coal mining
- Lanxess CISA (Pty) Ltd
- Consolidated Wire Industries
- ClinX Waste Management
- ArcelorMittal Newcastle
- Development of emission factors for ferrochrome smelting

**6. CLEANER PRODUCTION AUDITS, WASTE TO ENERGY, ENERGY RECOVERY, WASTE RECOVERY AND RELATED PROJECTS:**

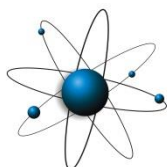
- Tuffy Plastics
- Proplas plastics
- WHS Distribution
- Premier Foods Pretoria Wheat Mill
- Alfred Nzou municipality
- Lanxess chrome chemicals residue recovery
- Karbochem power generation ash to bricks project
- Cement kilns alternative fuels and raw materials assessment for South Africa
- Kanhym Estates Biogas Generation from piggery effluent
- British American Tobacco:
- Tobacco Processors Zimbabwe
- Souza Cruz Brazil

**7. ENVIRONMENTAL MANAGEMENT SYSTEM DEVELOPMENT & IMPLEMENTATION:**

- British American Tobacco (full system development from scratch – ISO 14001 and ISO 9001)
  - Weir Minerals Aspects Identification, Rating, Assessment and Development of EMPs
  - Lafarge Gypsum Aspects Identification, Rating, Assessment and Development of EMPs
  - Environmental Aspects Identification, rating and formulation of EMPs for Samancor Metalloys Meyerton
  - Environmental Aspects Identification, rating and formulation of EMPs for DMS Powders.
  - Holcim Slagment development & implementation of EMS components including waste and air quality management
  - Holcim Roodepoort development & implementation of EMS components including waste and air quality management
  - Consolidated Wire Industries Environmental Aspects Identification, rating and formulation of EMPs and operational control procedures.
  - Samancor Metalloys Ferro Silicon Manganese and FerroSilicon production
  - DMS FeSi dense media production

**8. ISO14001 AUDITING:**

- Debswana Orapa and Letlhakane Mines
- Ingwe Colliery



- Arnot Colliery
- FOSECO South Africa (Pty) Ltd
- Lafarge Gypsum
- CWI

**9. SPECIALIST TRAINING COURSE DEVELOPMENT & PRESENTATION**

- 2011 Training of Atmospheric Emissions Licensing Authorities – air quality management, emissions quantification, regulation and enforcement.

- 2007-2015 Training of Authorities for EIA review and permitting

Responsible for development of NEMA EIA Review Course and Administrators EIA Review Manual, theoretical and practical training material, and training of Government Officials responsible for EIA Review - responsible for the whole manual other than Law applicable to EIA Review. As at May 2013 approximately 1000 officials from National, Provincial and Local Government.

- 2005&6 Bridging Training for Environmental Management Inspectors and Enforcement

ESA was part of a consortium selected to develop and conduct the EMI Training. More than 2000 officials and university students have completed the training.

- University Of Pretoria Specialist Lecturer

- Environmental Legal Compliance inspections and investigations (RSA)
- Environmental Legal Compliance achievement (RSA)
- Environmental Legal Compliance inspections and investigations (Africa)

- University Of South Africa Specialist Lecturer

- Environmental Legal Compliance inspections and investigations (RSA)

- Training for industry and mining

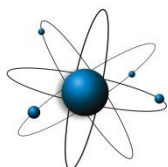
Development and presentation of training material for environmental impact identification and management in terms of South African environmental law for the SABS and other training institutions.

**10. SOIL AND GROUNDWATER CONTAMINATION ASSESSMENT:**

- Weir Heavy Bay Foundry
- Lafarge Gypsum
- Kanhym Estates
- SABAT (Pty) Ltd Johannesburg – investigation of heavy metal contamination of soils and groundwater
- Chemiphos SA (Pty) Ltd – investigation of phosphate and heavy metal contamination of soils and groundwater
- Castrol Lubricants Zimbabwe

**11. ENVIRONMENTAL DUE DILIGENCE AUDITS, INCLUDING ASSESSMENT OF ENVIRONMENTAL AND CLOSURE LIABILITY:**

- Determination and quantification of financial provision for the environmental rehabilitation and closure requirements of smelting operations for Highveld Steel & Vanadium operations:



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**Curriculum Vitae:**

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**Ebrahim**

- HIGHVELD IRON AND STEEL WORKS
  - VANCHEM
  - TRANSALLOYS
  - RAND CARBIDE
  - MAPOCHS MINE
- 
- Determination and quantification of financial provision for the environmental rehabilitation and closure requirements of smelting operations for TransAlloys
  - Determination and quantification of financial provision for the environmental rehabilitation and closure requirements of mining operations for Samancor Chrome:
    - MIDDELBURG FERROCHROME
    - FERROMETALS
    - TUBATSE FERROCHROME
    - WESTERN CHROME MINES
    - EASTERN CHROME MINES
  - Determination of critical environmental liability associated with the purchase of Xmeco Foundry by Weir Minerals Africa, and subsequent legal compliance achievement programme

**12.**

#### **Possible timelines to commit to the assignment**

- Available for assignments over the next two years
- Not available during the December holiday period - from 15 December until 3 January – due to company's closure for the festive season



# CURRICULUM VITAE

# James Pugin

Name  
Date of Birth

James Malcolm Pugin  
23 March 1989

## Qualifications

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- MSc (Archaeology) (University of the Witwatersrand) 2013 – 2016
- BSc Honours: Archaeology (University of the Witwatersrand) 2012 - 2012
- Bachelor of Arts (University of the Witwatersrand) 2009 - 2011

## Key Experience

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- **GIS Mapping and Modelling**
- **Site Feasibility Analysis**
- **Atmospheric Impact Report Mapping**
- **Environmental Reporting**
- **Predictive Modelling for archaeological sites**
- **Database Coordinating**
- **Archaeological Survey and recording**
- **Baseline Archaeological Survey of Sehlabathebe National Park on behalf of UNESCO**

## Employment History & Project Experience

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### **Environmental Science Associates** **2016 - Present**

Environmental and Geographic Information System Consultant

#### **Map Production**

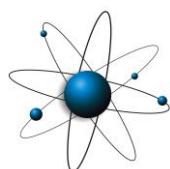
- Air Quality and Geographical Information Systems Isopleth Mapping
- Site Feasibility Analysis for prospective developments ranging from Wind Farms to Industrial sites

#### **Other responsibilities**

- Environmental reporting including Scoping and Environmental Impact Reports, Environmental Management Programmes, Basic Assessments etc.
- Environmental Applications for Water Use License, Waste Management Licences, and Environmental Authorisations
- Co-audited Water use licence and Waste management licences

#### **Key Project Involvement**

- Policy and Measures Assessment for the Department of Environmental Affairs
  - Assisting with development of models based on GIS datasets
- Mapping of Acid deposition, along with development of catchments based on points for WRC project: K5/2550 (Atmospheric deposition impact assessment)
- Mapping of Acid deposition for WRC project: K5/2466 (Development, Parameterisation and Verification of WRFCHEM Acid Deposition Modelling over the Highveld)
- Site Selection Assessment for the development of a new facility for Mandini Wealth based on specific developmental constraints.



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PO Box 2950  
Saxonwold  
2132

**PHYSICAL ADDRESS:**  
9 Victoria Street  
Oaklands  
Johannesburg

**WEB SITE**  
[www.escience.co.za](http://www.escience.co.za)

**E MAIL:**  
[james@escience.co.za](mailto:james@escience.co.za)

**TEL:**  
+27 11 718 6384

**FAX:**  
+27 866 106703

**Associate Researcher, Co-Author and Specialist Photographer 2015-2016**

UNESCO world heritage survey of Sehlabathebe National Park, Lesotho

**Baseline Archaeological Survey**

- Geographic Information System and Remote Sensing that included the modelling of known rock art data to predict areas with a higher likelihood for containing rock art sites.
- Data capture and report writing
- Spatial Analysis, cartography and map production
- Site recording
- Field survey
- Data tabulation
- Photography

**Database Coordinator (part time) 2013-2016**

- Managing the Matatiele Archaeology and Rock Art (MARA) rock art site database
- Research Assistant
- Geographic Information System and Remote Sensing that includes the modelling of known rock art data to predict areas with a higher likelihood for containing rock art sites.
- Data capture and report writing
- Spatial Analysis, cartography and map production
- Site recording
- Field survey
- Data tabulation
- Photography

**Presentations**

Presentation	Date	Conference/Seminar
Locating the Rock art of the Maloti-Drakensberg	2014	Pan African Archaeologist Conference, The University of the Witwatersrand, South Africa
Lecture: Rock art survey techniques and tactics	2013	Association of South African Professional Archaeologists (ASAPA) Student Development Workshop – Parys, South Africa
Developments in Mountainous Rock Art Survey	2013	Association of South African Professional Archaeologists (ASAPA)- Gaborone, Botswana

**Research Contribution**

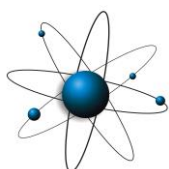
- Contributed towards digitisation and cartography of the distribution of canine species and disease spread for Mitchell, P 2017. Disease: A Hitherto Unexplored Constraint on the Spread of Dogs (*Canis lupus familiaris*) in Pre-Columbian South America. *Journal of World Prehistory*.
- Challis, W., Mullen, A., Pugin, J, 2016. Rock Art and Baseline Archaeological Survey of the Sehlabathebe National Park, Kingdom of Lesotho; Final Report to the World Heritage Committee of the United Nations Educational, Scientific and Cultural Organization. Publication to UNESCO

**Education**

**University of the Witwatersrand**

**MSc (Archaeology)**

- Dissertation: Locating the rock art of the Maloti-Drakensberg: Identifying areas of higher likelihoods using remote sensing



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- Geographic Information Systems and Remote Sensing
- Predictive Modelling
- Rock Art Field Surveying
- Photographic recording of rock art sites

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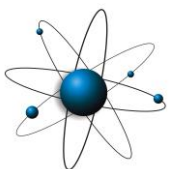
[https://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjz-qfVv8HbAhWDesAKHUcMAWIQFggoMAA&url=http%3A%2F%2Fwiredspace.wits.ac.za%2Fhandle%2F10539%2F1686&usg=AOvVaw0PF7e8F-Rs4WVNkdx\\_OfCzC](https://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjz-qfVv8HbAhWDesAKHUcMAWIQFggoMAA&url=http%3A%2F%2Fwiredspace.wits.ac.za%2Fhandle%2F10539%2F1686&usg=AOvVaw0PF7e8F-Rs4WVNkdx_OfCzC)

- **BSc Honours (Archaeology)**

- Dissertation: Improving rock art survey: finding the sandstone shelters of the Maloti- Drakensberg.
  - Geographic Information Systems
  - Rock Art Field Surveying
  - Photographic recording of rock art sites

- **Bachelor of Science**

- Major Courses:
  - Geography
  - Archaeology



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