



**Curriculum Vitae  
Grant Andrew Benn**

**Profession:** GIS Consultant/Project Manager

**Nationality:** South African

**Key Qualifications:**

- Considerable GIS expertise (more than 18 years), including spatial data development, spatial analysis and modelling (vector, raster and 3D).
- Development and maintenance of enterprise spatial information systems and corporate spatial databases (including setting data standards, metadatabases and data accessibility), and a keen understanding of the use of such databases in various sectors (including biodiversity management, environment, planning, local government and education).
- Training of client staff in GIS and use of developed GIS-based information management systems.
- Successfully managed research programmes and projects in university, provincial conservation agency and private consulting environments.

**Education:**

1988 - 1990      BSc. In Zoology and Botany, University of Witwatersrand

1991              BSc. Honours in Zoology, University of Witwatersrand

1991              Statistical Research Design and Analysis, University of Witwatersrand

1993 - 1994      MSc. Conservation Biology, University of Cape Town

**Employment Record:**

Current              **Principal Member**, GeoCline Consulting CC

2005 - 2006        **Business Development Consultant /Technical Analyst**, GISCOE (Pty) Ltd

2002 - 2005        **GIS Analyst/Conservation GIS**, GISCOE (Pty) Ltd

2000 - 2002        **GIS Consultant**, TerraMare Environmental Data Systems (Pty) Ltd

1996 - 2000        **Landscape Ecologist**, Biodiversity Division, KwaZulu-Natal Nature Conservation Services

1994 – 1996        **Scientific Officer**, FitzPatrick Institute, University of Cape Town

1992 - 1993        **Field Researcher**, (Kruger National Park Rare Bird Project) FitzPatrick Institute, University of Cape Town

## **Software**

### **GIS**

1. ArcMap 10.2 (ArcView, ArcEditor and ArcInfo)
2. ESRI Spatial Analyst
3. ESRI 3D Analyst (including ArcGlobe)
4. ArcView 3.3a
5. ArcSDE 10.2
6. ArcIMS
7. ArcGIS Server 10.2
8. ArcPad
9. ArcGIS Mobile
10. ArcGIS Online
11. IDRISI
12. CartoWeb 3.4 (open source web-GIS)
13. uDig 1.1.1 (open source GIS)
14. Mappetizer (web-GIS)
15. GeoServer

### **Programming**

1. Microsoft Visual Basic 6.5

### **Other**

1. MicroSoft Office (including MS Access)
2. MicroSoft VISIO
3. FreeMind
4. BizAgi Process Modeller
5. Cybertracker
6. MS SQL
7. SAP Crystal Presentation Design 2011

### **Examples of relevant professional experience:**

#### **(additional project examples and contacts are available on request)**

##### Spatial Information System Development and Maintenance (Selected Project List)

- *Peace Parks Information Management System*  
Lead consultant on a partnership between the Peace Parks Foundation and GISCOE. GISCOE assisted the Peace Parks Foundation with the strategic planning and implementation of GIS technology to aid the execution of the Foundation's conservation mandate. This includes the development of an Enterprise GIS-based Information Management System and a web-based system for monitoring the movements of a number of elephants being tracked with satellite technology across Southern Africa.  
ESRI technology was applied in this instance (ArcMap, ArcIMS, ArcSDE)  
Project Manager: Craig Beech  
Cell: 082 375 8815  
Email: cbeech@ppf.org.za
- *Table Mountain National Park Environmental Information System Development*  
GIS, database and conservation ecological specialist for the development of the CPNP EIS. This World Bank funded project involved the development of a system, which provides relevant and timeous information to park managers to

improve management efficacy. GIS-technology forms the basis of the system, which is also underpinned by a detailed data management plan and a comprehensive set of standards.

ESRI technology was applied in this instance (ArcMap, ArcIMS, ArcSDE)

Project Manager: Chad Cheney

Landline: 021 701 8692

Email: ChadC@sanparks.org

- *Table Mountain National Park Environmental Information System Maintenance*  
Maintenance and enhancement of the Table Mountain National Park Environmental Information System (EIS). This includes maintaining and updating the GIS-based database and the applications that provide an interface to the database, as well as periodic training of staff.

Project Manager: Chad Cheney

Landline: 021 701 8692

Email: ChadC@sanparks.org

- *Table Mountain National Park Environment Information System Upgrade*  
Upgrading existing EIS to ArcGIS Server 9.3.1. Involves moving of data from legacy SDE database structure to new geodatabase. Redevelopment of the ArcIMS-based web viewers using the ARCGIS Server web mapping application.

Project Manager: Chad Cheney

Landline: 021 701 8692

Email: ChadC@sanparks.org

- *Development of GIS-based Information Management System for National Department of Environmental Affairs*

Lead consultant on the development of a GIS-based intranet information system for the national Department of Environmental Affairs and Tourism. Tasks included execution of an exhaustive System Requirements Process and managing a team of system developers.

ESRI technology was applied in this instance (ArcMap, ArcIMS, ArcSDE)

Project Manager: Deon Marais

Cell: 082 773 5726

Email: dmarais@deat.gov.za

- *Development of Web-Based Protected Areas Register for National Department of Environmental Affairs*

Project leader on the development of the new web-based National Protected Area Register for the Department of Environmental Affairs and Tourism. System allowed staff from various national and provincial conservation agencies to capture and update information on protected areas, and the spatial features describing the boundaries of these areas. Tasks included execution of an exhaustive System Requirements Process and managing a team of system developers.

ESRI technology was applied in this instance (ArcMap, ArcIMS, ArcSDE)

Project Manager: Deon Marais

Cell: 082 773 5726

Email: dmarais@deat.gov.za

- Corporate GIS Development and Maintenance (Nature Conservation Corporation)*  
 Development and maintenance of a corporate GIS for the Nature Conservation Corporation. Includes design, population and maintenance of a central geodatabase and web-GIS Viewers).  
 Combination of ESRI technology (ArcMap and File Geodatabase) and Mappetizer.  
 Project Manager: Dean Ferreira  
 Cell: 084 629 4303  
 Email: deanf@ncc-group.co.za
- Development and maintenance of enterprise GIS for Western Cape Education Department.*  
 Includes data capture and maintenance, geodatabase maintenance (ArcSDE and MS SQL), and management of Web-GIS Viewers (ArcIMS). System is being moved across to the ArcGIS Server.  
 Tasks include data capture and analysis, spatial database design, population and management and development and maintenance of Web GIS viewers.  
 Part of project team integrating GIS and Business Intelligence (WebFocus) software.  
 Project Manager: Laurianne Stamer  
 Cell: 082 903 1622  
 Email: laurianne.stamer@za.fujitsu.com
- Development of Web-based mapping application for the Aquaculture Institute of South Africa*  
 Worked in partnership with Mr B. Heald of the Provincial Government of the Western Cape.  
 Development and population of a ArcGIS server geodatabase containing relevant datasets (ArcSDE and Oracle).  
 Production of web mapping applications based on the ArcGIS Server platform.  
 Tasks included data capture and cleaning, geodatabases design and development, development of Web GIS viewers using the ArcGIS Server web mapping application.  
 Project Manager: Lizeth Botes  
 Cell: 082 903 1622  
 Email: lbotes@ai-sa.org.za
- Maintenance and enhancement of Western Cape Central Provincial GIS spatial databases and web applications*  
 Contracted to the Western Cape Provincial Government's Department of the Premier to assist with the development, management and maintenance of the provincial, central corporate GIS.  
 This involves the development of spatial datasets, management of an enterprise spatial database and the creation of web-GIS and desktop applications for a wide-range of users across all the provincial departments.  
 Project Manager: Basil Heald  
 Landline: 021 483 2542  
 Email: basil.heald@westerncape.gov.za

- Information management for a suite of avian monitoring projects on wind farm sites across South Africa*  
Partnering with NCC Environmental Services to provide information management services to a number of monitoring projects (currently 12). Role includes the development of digital field tools for the effective capture of data, management of the collected data, and the development of web-based GIS data viewers and dashboards to provide users with access to the monitoring data.  
Project Manager: Dean Ferreira  
Cell: 084 629 4303  
Email: deanf@ncc-group.co.za
- Development of field capture tools for Peregrine Falcon field research*  
Development of a Cybertracker-based digital field data capture application for the capture of various datasets for a long-term study of Peregrine Falcons. Datasets included individual resightings, general observations and nest checking (egg measurements, chick measurements and ringing details).  
Project Manager: Dr Andrew Jenkins (AviSense Consulting)  
Cell: 084 959 9238  
Email: andrew@avisense.co.za
- Development of an online system for spotting of alien vegetation (EDRR Online)*  
Development of a web-based system for the management of public spotters, capture of alien plant sighting records, and visualisation of spot locations on a web-mapping interface.  
Specific roles included management of project team and development of web-mapping interface.  
Project Manager: Louise Stafford (Environmental Resource Management, City of Cape Town)  
Phone: 021 712 1434  
Email: louise.stafford@capetown.gov.za

#### Data Development, GIS Analysis and Data Modelling (Selected Project List)

- LHDA Contract 1273 Biological Resources Monitoring within Phase 1 of the LHWP Catchments.*  
Provided general GIS support (data development, management, cartography) as well as spatial analytical skills to this project. Project was aimed at monitoring the impacts of the development of the Katse and Mohale dams in the Lesotho Highlands on the environment in this mountainous landscape. Undertook a series of analyses on land cover and NDVI time series raster datasets derived from Landsat imagery. This analysis was aimed at investigating patterns of land cover and biomass changes over time, potentially resulting from dam construction.  
Project Manager: Dr. Jane Turpie  
Phone: 021 701 3640  
Email: jane@anchorenvironmental.co.za
- Radar surveys of a proposed wind farm development on West Coast of South Africa.*  
Development of a Cybertracker-based digital field data capture applications for the capture of observer information to accompany radar surveying data.

Provided data management services for the curation of data captured in the field.

Undertook detailed 2D and 3D spatial analysis to assess the potential impact of a proposed wind farm development on Great White Pelicans.

Project Manager: Ms. Penny Jane-Cooke

Phone: 021 702 2884

Email: pennyjc@ncc-group.co.za

- *Maloti Drakensberg Transfrontier Project (Lesotho) Biodiversity Plan*  
Various spatial data analysis and modelling tasks were required to develop the large number of spatial datasets required to successfully complete this project. Data analysis and modelling was undertaken using both vector and raster datasets.  
The project aimed at identifying areas critical for the conservation of biodiversity in the study area.  
Project Manager: Jessica Hughes  
Cell: 083 657 5125  
Email: mdec@iafrica.com
- *Maloti Drakensberg Transfrontier Project (South Africa) Biodiversity Plan*  
Various spatial data analysis and modelling tasks were required to develop the large number of spatial datasets required to successfully complete this project. Data analysis and modelling was undertaken using both vector and raster datasets.  
The project aimed at identifying areas critical for the conservation of biodiversity in the study area.  
Project Manager: Dr Richard Lechmere-Oertel  
Cell: 084 512 5007  
Email: richard.bpm@gmail.com
- *City of Cape Town Biodiversity Network*  
Spatial analysis of vector data to identify the areas of the City required to conserve the areas internationally important biodiversity.  
Project Manager: Dr Pat Holmes  
Cell: 082 298 4564  
Email: Patricia.Holmes@capetown.gov.za
- *Ecosystem Services Modelling for Africa (Peace Parks Foundation)*  
Using available continental-scale spatial datasets, a wide range of ecosystem services were modelled to produce spatial layers describing the distribution of these services. Project involved both vector and raster modelling approaches for the development of ecosystem service surfaces.  
Spatial layers were also analysed in combination to identify hotspots for ecosystem services across the African continent.  
Project Manager: Craig Beech  
Cell: 082 375 8815  
Email: cbeech@ppf.org.za
- *Spatial System for Prioritising unplanned land within Industrial Forestry Estates (Grassland Programme, South African National Biodiversity Institute)*

Development of a spatial system for prioritising unplanted land on industrial forestry plantations for environmental management. System involves integrating a range of variables describing critical biodiversity/conservation value (specifically end-products developed by conservation planning projects), and then applying this in a scoring system to unplanted land holdings of the major South African forestry companies. Project involves a series of high-level GIS analyses and spatial data cleaning, as well as the development of a Excel Tool allowing for the assessment of land priority status.

Project Manager: Dr Richard Lechmere-Oertel

Cell: 084 512 5007

Email: richard.bpm@gmail.com

- *Development of a Strategic Environmental Assessment (Pilanesberg National Park)*

This involved spatial sensitivity and vulnerability modelling, applying the Conservation Development Framework developed by South African National Parks.

Project Manager: Marlene Laros

Cell: 083 325 9964

Email: mtlaros@mweb.co.za

- *Gamma-Omega Construction Environmental Management Plan (ESKOM)*

Provided GIS expertise (raster and vector modelling, cartographic outputs, 3d modelling and visualisation) for the development of an Environmental Management Plan for the proposed Gamma-Omega power line.

Project Manager: Dean Ferreira

Cell: 084 629 4303

Email: dean@natureconservation.co.za

- *Estuarine Management Plans for Klein and Bot River Estuaries (Estuaries Programme, Cape Action for People and the Environment)*

Provided GIS expertise (raster and vector modelling, cartographic outputs, 3d modelling) for the development of Estuarine Management Plans for the Klein and Bot river estuaries (CAPE Estuaries programme).

A review by the CSIR of these projects highlighted the high standard of the GIS work carried out on the project.

Project Manager: Jenny Whitehead

Cell: 083 661 6621

Email: irap@worldonline.co.za

- *Identification of Geographic Implementation Areas in Cape Winelands District*

Subcontracted to Deloitte Consulting to complete the GIS component of this project. Tasks involved spatially representing poverty indexes developed by the project team. Workshops were held with District officials to identify and map Geographic Implementation Areas, for which index values were calculated.

The project also required the loading of the datasets into SDE and the development of a web viewer using ESRI's ArcGIS Server technology.

Project Manager: Feizal Toefy

Cell: 082 410 4858

Email: ftoefy@capewinelands.gov.za



- *Post-fire assessment Vergelegen Wine Estate*  
Subcontracted to Nature Conservation Corporation to complete the GIS component of this project. Tasks involved:
  1. mapping fire extent
  2. mapping alien vegetation
  3. providing inputs into alien clearing costing; travel distances, area slopes and ruggedness.

Also developed a Web-GIS application for the Vergelegen Wine Estate.

Project Manager: Dean Ferreira

Cell: 084 629 4303

Email: dean@natureconservation.co.za

- *Post-fire assessment Agulhas National Park*  
Subcontracted to Nature Conservation Corporation to complete the GIS component of this project. Tasks involved:
  1. acquisition of post-fire satellite imagery
  2. mapping fire extent
  3. develop ground-truthing and fire intensity field assessment protocol

Project Manager: Justin Miller

Landline: 021 702 2884

Email: justinm@ncc-group.co.za

- *Development of Environmental Management Plan for Farm Voorhoede*  
Subcontracted to Nature Conservation Corporation to complete the GIS component of this project. Tasks involved:
  1. mapping natural vegetation
  2. mapping alien vegetation
  3. mapping firebreaks
  4. mapping erosion

Also developed a Web-GIS application for the Farm Voorhoede.

Project Manager: Robin Jangle

Landline: 021 702 2884

Email: robinj@ncc-group.co.za

- *Development of Environmental Management Plans for LEDET*  
Provided GIS expertise (data capture, analysis and cartography) for the development of environmental management plans for 28 reserves in Limpopo.

Project Manager: Rob Dyer

Landline: 021 702 2884

Email: Rodb@ncc-group.co.za

- *Updating of Land Register Database for Table Mountain National Park*  
Provided GIS expertise (data capture, database development and population, cartography) for the update of the TMNP's land register database.

Project Manager: Chad Cheney

Landline: 021 712 2337

Email: Chad.cheney@sanparks.org

- *GIS Component of Lesotho Wind Power Project*  
 Provided GIS expertise (data capture, data analysis, raster and vector modelling, cartographic outputs, 3d modelling) to Environmental Resources Management (Southern Africa) Pty Ltd (ERM) for the sensitivity study of the Scoping Phase of this project.  
 Project Manager: Jessica Hughes  
 Landline: 021 702 9127  
 Email: Jessica.hughes@erm.com

#### Other

- *Open Data and Innovation*  
 Led the development of an interactive iOS app for a major international global consulting company. App was used with 60 senior level (government and corporate) clients in a signature, international workshop held in Singapore during October 2014.  
 Worked with a team of the global consulting company's' worldwide experts to ensure representative relevance for developed and developing countries, and to use state of the art visualization tools while balancing user experience needs. Co-presented the signature workshop and facilitated one of the break away sessions.  
 Also, helped the consulting company adapt the content for additional priority internal and external audiences.

#### Skills Transfer

- Training of Table Mountain National Park staff in GIS and the use of a specially developed Environmental Information System based on GIS technology.
- Teaching of MSc Conservation Biology students at University of Cape Town – module = GIS and Landscape Ecology.
- Training of Western Cape Education Department staff in the use of ArcIMS (Internet Map Server) for producing GIS-enabled Web Pages.
- Training of selected staff from the City of Cape Town's Environmental Management Department in the GIS and planning analyses required to complete the identification of the City's Biodiversity Network.
- Various GIS Workshops for NCC Environmental Services.

## Publications in peer reviewed scientific journals

1. Armstrong, A.J., Benn, G., Bowland, A.E., Goodman, P.S., Johnson, D.N., Maddock, A.H. & Scott-Shaw, C.R. 1998. Plantation forestry in South and its impact on biodiversity. *South African Forestry Journal* 182: 59-65.
2. Benn, G.A. (1997). Saddlebilled Stork. In: The Atlas of southern African birds. Vol 1: Non-passerines. Harrison, J.A., Alan, D.G., Underhill, L.G., Herremans, M., Tree, A.J., Parker, V. & Brown, C.J. (eds). Pp 96-97. Birdlife South Africa, Johannesburg.
3. Benn, G.A. & Kemp, A.C. (1995). Diet, home range, hunting and reproductive behaviour of a pair of Dickinson's Kestrel *Falco dickinsoni* in the Kruger National Park, South Africa. *Ostrich* 66: 81-91.
4. Benn, G.A. & Kemp, A.C. (1995). The distribution, size and trends of the Saddlebilled Stork *Ephippiorhynchus senegalensis* population in South Africa. *South African Journal of Wildlife Research* 25(3): 98-105.
5. Benn, G.A. (1991). The foraging behaviour of the Roan Antelope *Hippotragus equinus*. Unpublished Honours Thesis, University of the Witwatersrand.
6. Benn, G.A. (1993). The conservation status of the Saddlebilled Stork *Ephippiorhynchus senegalensis* in South Africa. Unpublished MSc. Thesis, University of Cape Town.
7. Branch, W.R., Benn, G.A. & Lombard, A.T. (1995). The tortoises (Testudinidae) and terrapins (Pelomedusidae) of Southern Africa: their diversity, distribution and conservation. *South African Journal of Zoology* 30 (3): 91-102.
8. Hurford, J.L., Lombard, A.T., Kemp, A.C. & Benn, G.A. (1996). Geographical analysis of six rare bird species in the Kruger National Park, South Africa: transects of small species with specific habitat associations. *Bird Conservation International* 6: 117-138.
9. Mugo, D.N., Lombard, A.T., Bronner, G.N., Gelderblom, C.M. & Benn, G.A. (1995). The distribution patterns and current conservation status of endemic and threatened rodents, lagomorphs and macrscelids in South Africa. *South African Journal of Zoology* 30 (3): 115-126.
10. Siegfried, W.R., Benn, G.A. & Gelderblom, C.M. (1998). Area and connectivity of national parks in Africa. *Biological Conservation* 84: 131-140.
11. Skelton, P.H., Cambray, J.A., Lombard, A.T. & Benn, G.A. (1995). Patterns of distribution and conservation status of freshwater fishes in South Africa. *South African Journal of Zoology* 30 (3): 71-81.
12. Maddock, A.H., Benn, G.A., Johnson, D.N. & Scott-Shaw, C. Rob. (1997). An African conservation agency's perspective on advocacy. *Conservation Biology* 11: 831.
13. Kemp, A.C., Benn, G.A. & Begg, K.S. (1998). Geographical analysis of vegetation structure and sightings for four large-bird species in the Kruger National Park, South Africa. *Bird Conservation International*. 8: 89-108.
14. Maddock, A.H. & Benn, G.A. (2000). Identification of conservation-worthy areas in Northern Zululand, South Africa. *Conservation Biology* 14: 155-166.
15. Fairbanks, D.H.K. & Benn, G.A. (2000). Identifying regional landscapes for conservation planning: a case study from KwaZulu-Natal, South Africa. *Landscape and Urban Planning* 50: 237-257.
16. Jenkins, A.R. & Benn, G.A. (1998). Home range size and habitat requirements of peregrine falcons on the Cape Peninsula, South Africa. *Journal of Raptor Research* 32: 90-97.
17. Malan, G. & Benn, G.A. (1999). Agricultural land-use patterns and the decline of helmeted guineafowl *Numida meleagris* (Linnaeus 1766) in KwaZulu-Natal, South Africa. *Agriculture, Ecosystems and Environment* 73: 29-40.

19. McCann, K.I. & Benn, G.A. (2006). Land use patterns within wattled crane (*Bugeranus carunculatus*) home ranges in an agricultural landscape in the KwaZulu-Natal. *Ostrich* 77: 186-194.

### Symposia papers

- 1995 Branch, W.R. & G.A. Benn. The diversity, distribution and conservation of South African chelonians. International Congress on Chelonian Conservation, Gonfaron, France, 6-10 July 1995.
- 1995 Lombard, A.T. & Benn, G.A. Reserve design and climate change. Global Change and Terrestrial Ecosystems Focus 4: Global change and ecological complexity workshop to develop and implement a research plan. September 24 - 27, 1995, Minneapolis, Minnesota, USA.
- 1997 Benn, G.A. What does landscape ecology offer nature conservation? KwaZulu-Natal Nature Conservation Service Annual Research Symposium, September, Queen Elizabeth Park, Pietermaritzburg.
- 1998 Fairbanks, D. & Benn, G.A. Alternative data sources for conservation area prioritisation and planning. Zoological Society of southern Africa Symposium, July, Durban.
- 1999 Benn, G.A. Development of a landscape classification for KwaZulu-Natal and the identification of priority areas for landscape conservation. KwaZulu-Natal Nature Conservation Service Annual Research Symposium September, Queen Elizabeth Park, Pietermaritzburg.
- 2001 R. Knight, A.B. Low, G.A. Benn & U. Pond. Geology as a surrogate for determining natural vegetation distribution on the West Coast. R. Knight, A.B. Low, G.A. Benn & U. Pond. Fynbos Forum Symposium, August.
- 2002 R. Knight and G.A. Benn. Identification of Key Nature Conservation Areas: Development of a nature conservation network for the City of Cape Town. South African Association of Botanists, November.
- 2008 Lechmere-Oertel, R, Benn, G.A. & Lepone, T. The Maloti-Drakensberg Transfrontier Conservation Area Systematic Biodiversity Plan, Systematic Biodiversity Planning Forum, March.
- 2008 Van, Zyl, A.J. & Benn, G.A. Estimating Lesser Kestrel *Falco naumanni* and Amur Falcon *Falco amurensis* population size overwintering in South Africa, Pan African Ornithological Congress, September 2008.
- 2009 Lechmer-Oertel, R. & Benn, G.A. Forestry Estate Biodiversity Prioritisation. Grasslands, Timber and Fire. A Symposium. Grassland Society of Southern Africa and SANBI National Grasslands Programme, October 2009 .
- 2013 Millikin, R, Jenkins, A., Benn, G. & Du Plessis, J. Improving Avian Environmental Impact Assessments with Radar (1st use of Radar for EIA in South Africa). Windaba. September 2013.

**Contact details for current clients**

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Dean Ferreira  
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NCC Environmental Services  
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ERM Southern Africa  
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