

1 GBS Profile

GBS (Geographic Business Solutions) is an established and privately owned geospatial solutions company, with a proven track record delivering high quality strategic consulting and geospatial solutions to its clients.

GBS is an independent consultancy concentrating on providing the most appropriate solutions to meet client's business needs, rather than being involved in software sales. The company has no GIS software reseller arrangements.

GBS is an authorised Gold Esri Business Partner which enables it to deliver the highest quality solutions to our Esri based clients, using Esri best practice.

After more than 10 years as independent GIS consultants, the company's directors established GBS in July 2002. GBS has quickly become an established and recognised GIS consultancy in New Zealand. The company derives its strength from the expertise of its principals, Harley Prowse and Tony Elson, with the support of its leadership team in Shane Pienaar and Lisa Read, and its highly skilled employees. The company aims to deliver world class geospatial solutions for organisations that want strategic geospatial alignment throughout their enterprise. We aim to provide solutions that support operational efficiencies and drive business growth for our clients.

GBS and its staff have experience in developing geospatial solutions across a variety of industry sectors, including transport, local and central government, utilities (electricity, gas and water), retailing, agriculture, forestry and viticulture. The company has undertaken work for a wide range of clients, from large industry leaders such as:

- Ravensdown Fertiliser Co-Operative
- NZ Transport Agency
- Ministry of Primary Industries
- Auckland Council
- Mighty River Power
- Statistics NZ
- Powerco
- City Care
- Department of Conservation

As well as smaller clients such as:

- New Zealand Walking Access Commission
- Tasman District Council
- Nelson City Council
- Selwyn District Council
- Queenstown Lakes District Council
- Hutt City Council
- Nga Whenua Rahui

GBS offers the following services:

- GIS and IS project management
- GIS and IS strategic consulting including:
 - strategic planning, strategic reviews, system selection, implementations, management and enhancements
 - GIS and IS business analysis including:
 - cost-benefit analysis, user needs assessments, data quality procedures and methodologies, data model design and review, and tendering process management
- Geospatial solutions design and development (Desktop, mobile and web based)
- C#, JavaScript and HTML 5, Flex, Silverlight, web services, map services, data services, geo-processing web services, Esri Flex API, Esri Silverlight API, Esri JavaScript API, ArcGIS Server, ArcSDE, ArcGIS Desktop, ArcGIS Runtime API's, Portal for ArcGIS, ArcGIS Online, MS SQL server, SQL Compact, MS Compact Framework for mobile applications.
- Data integration, data analysis and map production
- Contract GIS management.

GBS uses a Prince II based project management methodology and employs Agile software development strategies by preference and where appropriate. In particular GBS has successfully used SCRUM on multiple software development projects (of varying sizes).

GBS has a strong internal project management framework, which we use for managing our projects. The framework allows our clients to fully interact with the business and project processes.

GBS operates from a professional suite of offices in Mt Wellington, Auckland. The office is well equipped with:

- high powered desktop and server computers for application development
- multiple test computers (servers and desktop)
- a centralised source code version control system and issue tracking software
- Multiple mirrored hard drives for added data security
- and a comprehensive back-up regime (including off site back up).

1.1 GBS Company Profile

Name: **Geographic Business Solutions Ltd**

Status:	Registered New Zealand Company AK/1218911
Years in Operation:	13 years (Incorporated June 2002)
Staff:	2 Directors, 1 Operations Manager, 1 Technology Manager, 1 Senior Project Manager/Business Analyst, 4 Senior GIS Developers, 2 GIS Developers and one part time office administrator.
Indemnity Insurance:	Professional and Public Liability to \$2,000,000
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	New Zealand
Physical Address	Level 3, 45 Mt Wellington Highway
	Mt Wellington
	Auckland
	New Zealand
WEB	www.gbs.co.nz

2 GBS Personnel

2.1 Tony Elson - Company Director

Qualifications

- Bachelor of Social Sciences, University of Waikato
- Bachelor of Social Sciences (Honours 1st Class), University of Waikato

Relevant Experience

Tony has specialised in the GIS field for over 20 years, primarily as a consultant, contracting either independently or with GIS consultancies.

Tony has worked in GIS for a range of organisations in a number of industry sectors, and has worked with the following organisations: Progressive Enterprises, United Networks (now Vector), Veolia Water NZ, Papakura District Council, Auckland Regional Council, Auckland Council, Rotorua District Council, Christchurch City Council, Whangarei District Council, Ace Air Conditioning, New Plymouth District Council, Queenstown Lakes District Council, AsureQuality, Auckland Regional Transport Authority, Nga Whenua Rahui Trust, Goldpine, Western Bay of Plenty District Council and the New Zealand National Party. In the last few years he has assisted Visitor Solutions in the areas of urban infrastructure, community development, sport, leisure and outdoor recreation. This has included demographic analysis and infrastructure placements and configurations.

With strong management and applied GIS skills, Tony has worked in project management, strategic planning, project design, user needs assessment, data design and development, and data integration. He has worked with a wide range of GIS and associated systems with experience in integration with asset management systems, records management systems and property databases.

These days Tony's primary roles within GBS are business development and business management, strategic and business analysis. Tony is currently vice chair of the NZ Esri User Group and has been a serving committee member since 2009.

2.2 Harley Prowse - Company Director

Qualifications

- Master of Science (Geography), University of Auckland
- Bachelor of Science (Geography), University of Auckland

Relevant Experience

Harley Prowse is an established GIS consultant with a strong background in physical geography. He has considerable experience (over 22 years) with respect to all aspects of GIS including project management, strategic planning, business analysis, user needs assessment, application design and development, and data analysis, integration and capture.

Harley has undertaken GIS consultancy for a range of organisations across diverse industry sectors. Examples of some of the companies that Harley has worked with are: New Zealand Walking Access Commission, Ministry for the Environment, Land Information New Zealand, AsureQuality, Rayonier NZ, Powerco, Auckland Motorway Alliance, Ravensdown Fertiliser, Christchurch City Council, Tasman District Council, Nelson District Council, Taupo District Council, Rotorua District Council, Queenstown Lakes District Council, Whangarei District Council, Nga Whenua Rahui Trust and Auckland Council.

Harley has experience with a range of GIS systems including Esri software (ArcGIS, ArcView, ArcPad, MapObjects, ArcObjects), GenaMap, MapInfo and SmallWorld. He has years of experience in software design and development.

These days Harley's primary roles within GBS are governance, business development, account management. Harley was a founding member of the executive for SIBA NZ – the Spatial Industries Business Association and is currently still an executive committee member.

2.3 Shane Pienaar - Technology Manager

Qualifications

- Bachelor of Science (Geography), University of Auckland

Relevant Experience

Shane is an experienced GIS Developer with over 19 years' developing GIS solutions in both the commercial and public sectors. Shane arrived at GBS from the Auckland Regional Council (ARC) in May 2007. Shane had spent 8 years at ARC involved in the development of a range of successful and large scale GIS projects.

Shane brings an excellent technical skillset to projects. As Technology Manager, Shane is responsible for the overall technical direction of GBS as well as operating as a solution architect, technical lead and team leader for many of GBS' projects. He is very experienced and adept at interpreting organisational requirements into successful technical solutions. In particular he has focussed on

delivering location based solutions over the internet (i.e. web mapping solutions) and mobile platforms.

Some examples of the projects (and technologies) Shane has worked on for GBS are:

- Multiple Ravensdown Projects – Solution Architecture, Lead developer and developer roles. JavaScript/MVC Viewer, Geoprocessing services, web services – Esri JavaScript API blended with Microsoft ASP .NET MVC 3, ArcGIS Server 10+, Web AppBuilder for ArcGIS, AppStudio for ArcGIS.
- ArcGIS Upgrades – Various Clients – Upgrading ArcSDE and ArcGIS Server
- Mighty River Power – Solution Architecture – ArcGIS Server and Portal for ArcGIS, Web AppBuilder for ArcGIS.
- Dunedin City Council – 2 Fat Thumbs – Solution Architect and developer for a field data maintenance Windows (7/8) mobile application – ArcGIS Online and Esri Runtime SDK for .NET, C#.
- Auckland Council – Solution Architect for the implementation of Portal for ArcGIS and custom web mapping templates and applications – Portal for ArcGIS, ArcGIS Server, Esri JavaScript API.
- NZ Transport Agency – Solution Architect for the implementation of Portal for ArcGIS and custom web mapping templates and applications – Portal for ArcGIS, ArcGIS Server, Esri JavaScript API
- Statistics NZ (Stats Map)- Solution Architect and developer for the implementation of a custom JavaScript web mapping application - ArcGIS Server, Esri JavaScript API
- NZ Walking Access Commission – WAMS v2, Solution Architecture and building custom client side services to remotely integrate with SharePoint 2010.
- City Care Map Viewer – Esri JavaScript API, ArcGIS Server.
- Custom built geo-processing tools delivered via ArcGIS Server. Using fine grained ArcObjects to deliver highly functional geo-processing tools that go beyond the capability of Python based tools.
- Department of Conservation – Mobile applications using ArcGIS for Windows Mobile API, ArcGIS Server.

- Powerco Map Viewer - Silverlight, C#, ArcGIS Server, Esri Silverlight API.
- SCION Map Viewer - Silverlight, C#, ArcGIS Server, Esri Silverlight API.
- Walking Access Commission (WAMS 1 and 2) - ArcGIS Server, Flex API, .NET Web services (C#), Esri JavaScript API for mobile.
- Terralink Map Viewer (eMap) - ArcGIS Server, Flex API, .NET Web services (C#)
- Top Of The South Maps - ArcGIS Server, Flex API, .NET Web services (C#)
- AEGIS – Horizons Regional Council – Pilot emergency management system – ArcGIS Server, Flex API, .NET Web services (C#)
- Ravensdown Map Viewer – ArcGIS Server, ASP .NET
- RavTrak (Spreader truck performance analysis) – Ravensdown – ArcGIS Server and ASP .Net (C#)
- ArcFM Tools – Powerco – ArcFM, ArcObjects and C#.
- ARC – Interprets – Web map based socio-economic data analysis tool – ArcGIS Server, Flex API, .NET Web services (C#)
- Sports Facilities Inventory Pilot – SPARC – GeoSmart API, PostGIS and JavaScript
- Courier Dispatch Mapping Application – Urgent Couriers – Open Source

Shane has proven software design and development skills and experience. He has undertaken development projects using Esri ArcObjects, ArcGIS Server, ArcIMS and Open Source web mapping technologies using a variety of software development languages and Esri Software Development Kits.

Shane is also a very experienced administrator of ArcGIS Server and ArcSDE.

2.4 Lisa Read - Operations Manager

Qualifications

- Bachelor of Science (Geography and Statistics), University of Auckland
- ITIL Certified (Version 3), 2009
- PRINCE2

Relevant Experience

Lisa has 19 years' experience in the GIS industry. She has worked in a range of roles during this time, having started out initially as a GIS Analyst, before moving into development, then Business Analysis and now Project Management and Operations.

Her role at GBS is as Operations Manager where she is responsible for managing GBS projects with respect to scheduling, resourcing, budget control and day to day project management. Driving effective operational efficiency and productivity, through quality management and process creation/adherence, are also a key part of her role.

Lisa has worked in both the public and private sectors, and has experience working in England as well as New Zealand. Lisa has extensive experience in the transport industry through her experiences in the UK and with Auckland Transport in NZ. Some examples of the GIS positions she has held, and the work she has been involved in are:

- Systems Analyst - MS SharePoint administration, Auckland Transport, New Zealand (2010 – 2011)
- Spatial Business Analyst – Asset Management System Implementation (GIS and SAP Plant Maintenance integration), Auckland Regional Council, New Zealand (2008 – 2010)
- GIS Consultant – Business Analysis for Asset Management, Geographic Business Solutions, New Zealand (2008)
- Spatial Application Developer – Build & maintain spatial applications, Auckland Regional Council, New Zealand (2006 – 2008)
- Lead GIS Developer – Build spatial applications for external clients (MapInfo), Beca Infrastructure Ltd, New Zealand (2004 – 2006)
- Analysis and Planning Manager – Creation and implementation of a GIS and RDBMS Acceptance Testing Strategy - Serco Group PLC, Birmingham, England (2002 – 2003)
- GIS Developer – Spatial application for landmine mapping in Bosnia & Angola (Contract), European Landmine Solutions, London, England (2002)
- GIS Application Developer – Build spatial applications to integrate with Iptis-RDBMS-based Asset Management System (Contract), South Yorkshire Passenger Transport Executive, Sheffield, England (2001)

- GIS Support Analyst – Support existing applications & build new-non-spatial applications using MS Access (Contract), Ministry of Defence, Birmingham, England (2000)
- GIS Support Analyst – To support existing GIS applications, & develop customised applications using MS Access (Contract), Carter Holt Harvey Forests, New Zealand (2000)
- GIS Helpdesk Operator – To support users of custom-built GIS software via the phone, CACI Ltd, London, England (1999)
- GIS Analyst – GIS Analysis and map creation, Auckland Regional Council, New Zealand (1997 – 1998)

Project Highlight

Geographic Business Solutions – GBS Project Management Framework Creation

Lisa has created the GBS Project Management Framework, which we use as a guide in managing and delivering our software development projects. This framework is tailored and scaled to suit each project we enter into, and is dependent on project-specific requirements such as size, duration, number of developers required, timescales, budget, project approach, risks etc.

The principles & processes identified in this framework are primarily based on PRINCE2, but have also been adapted to work with GBS's specific business (using lessons learned on projects to date, and the project environment of customer / supplier in which GBS operates). This framework is a living entity, and will continually evolve and update based on on-going project experience. Ensuring that the processes identified in this framework and making sure that this framework stays current, is Lisa's responsibility.

Project Highlight

Auckland Regional Council - Asset Management System Implementation

Lisa worked predominantly in Asset Management in the last few years she spent at the Auckland Regional Council, and has extensive knowledge regarding GIS and SAP Plant Maintenance integration. Her role in the project included the design, implementation, configuration, maintenance, update and support of the ARC's and ARTA's asset management system that links Esri GIS to SAP Plant Maintenance (PM). She was also responsible for managing the technical parts of the project, and liaising with the middleware software team. Her role also included the creation of training material, taking training sessions, running business process and technical workshops, change request impact assessment, analysis and implementation (in both GIS and SAP PM).

2.5 Anna Eilers - Senior Project Manager and Business Analyst

Qualifications

- Graduate Diploma GIS, Massey University
- PRINCE2

Relevant Experience

Anna joined GBS in July 2013 as a GIS Business Analyst. Her role with GBS is to provide BA and PM skills to our clients and assist with the development of project scope as well as the management of projects in conjunction with the GBS Operations Manager. Anna also manages a number of our key clients and projects.

Anna has over 12 years' experience within the GIS. Anna's background in GIS started in NZ (Taupo District Council), and then migrated to the UK where she worked as the GIS Team lead in a consultancy, then as a Service Delivery Manager for the Forestry Commission in the UK.

As the Service Delivery Manager, Anna was responsible for post-implementation reviews, data implementations and structures / architecture, reporting and analysis to business management units and user acceptance testing as well as a raft of other implementation responsibilities.

As a Team Lead, Anna was responsible for database architectures and client commercial models.

Most recently, Anna was employed by the Department of Conservation back in NZ, where she was responsible for managing implementation of processes for the development and management of applications, supporting applications, working with the business units and identification of business requirements.

2.6 Matthew Simmons - Senior GIS Developer

Qualifications

- Bachelor of Science (Computer Science), University of Canterbury

Relevant Experience

With a background in software engineering, Matthew's GIS experience was initially gained while working at the Christchurch City Council and has significantly expanded during his many years with GBS. Matt brings expert data modelling skills to the team as well as solid software development skills and experience.

Matt's focus is on Esri Desktop, Esri Web and Esri Server application development projects including solution architecture, data modelling, and database design. Matt has development experience using ASP .NET, C#, ArcObjects, ArcGIS Server (including mobile), SQL Server and the Microsoft Mobile Framework, JavaScript, Flex and Silverlight.

Matt also has a significant role within GBS of offering technical assistance and troubleshooting across the GBS development team and across multiple projects.

Some examples of the projects Matt has worked on for GBS are:

- Multiple Ravensdown projects – JavaScript/MVC Viewer and server side services (e.g. web services, geoprocessing services). Esri JavaScript API blended with Microsoft ASP .NET MVC 3, ArcGIS Server 10+
- Geomatic Technologies Pty Ltd - Rail Asset Capture Tool - ArcGIS for Windows Mobile – C#
- Confidential Client – Esri Silverlight API, C#, ArcGIS Server. Data modelling, data synchronisation, Solution Architecture, integration with custom built CRM, web services
- SCION Map Viewer - Silverlight, C#, ArcGIS Server, Esri Silverlight API.
- AMA HIS – Silverlight, C#, ArcGIS Server, ArcObjects, Esri Silverlight API.
- Council GIS Consortium – Printing and Workspace widgets for GISMO - ArcGIS Server, Flex API, .NET Web services (C#)
- ARC/Auckland Council – Biomap 2.0 – Biosecurity mobile and web mapping based applications – ArcGIS Server Mobile, SQL Server DB, C#, .Net Web services, Flex API
- BTW Company – Web mapping portal– ArcGIS Server, Flex API, .NET Web services (C#)
- GeoMapper – Enhancements and maintenance of GBS desktop mapping solution for forestry – ArcObjects, VB .Net

2.7 Ardeshir Gheidian - Senior GIS Developer

Qualifications

- MCTS .Net 2, Web-based Client Development Certificate
- M.Sc. degree in Applied Physics, Tehran University

- B.Sc. degree in Applied Physics, Isfahan University of Technology

Relevant Experience

Ardeshir has been developing software solutions since 1994. Ardeshir has considerable experience designing and implementing SQL server databases as part of windows and web based software development projects. Since 2006 he has primarily been developing web based solutions.

Ardeshir's primary role within GBS is as a web developer. Some examples of the projects Ardeshir has worked on for GBS are:

- Multiple Ravensdown projects relating to the JavaScript/MVC Viewer – Esri JavaScript API blended with Microsoft ASP .NET MVC 3, ArcGIS Server 10
- GBS LIM Tool – Ongoing LIM Tool enhancements, implementation and support.
- City Care Map Viewer – Esri JavaScript API, ArcGIS Server.
- Ravensdown ArcGIS 10 to ArcGIS 10.3 upgrade.
- Ravensdown ArcGIS 9.3.1 to ArcGIS 10 upgrade.
- Ravensdown Fertiliser Limited – Various Ravensdown Online Application Management ROAM Projects - Silverlight, C#, AGS Server, MSSQL Server
- Powerco Map Viewer - Silverlight, C#, ArcGIS Server, Esri Silverlight API, ArcFM Server (network tracing)
- Internal web based resource planning application - Silverlight, C#, MSSQL Server, ArcObjects.
- NZ Walking Access Commission - Enquiry management System and Administration Tool - Silverlight, C#, MSSQL Server
- Powerco Map Viewer - Silverlight, C#, ArcGIS Server, Esri Silverlight API.

2.8 David Aalbers - Senior GIS Developer

Qualifications

- Bachelor of Arts (Geography), University of Auckland

Relevant Experience

David started working in the GIS industry in 2007 for Waitakere City Council in a GIS analyst role. He became more involved in the development side of things and in 2010 officially became a developer in the newly formed Auckland Council. He joined GBS in March 2012.

His development experience is across client side applications using Flex (Adobe Flash), JavaScript and server side C# based web services. David also has experience with Android application development.

GBS projects that David has worked on are:

- Auckland Council – Internal / External Map Viewers – Esri JavaScript API, HTML 5, Portal for ArcGIS
- NZTA Map Hub – Esri JavaScript API, HTML 5, Portal for ArcGIS
- Stats NZ – Pilot Project – Linking ArcGIS Server to DataHub using SDMX API – ArcGIS Server, C# web services, Esri JavaScript API, SDMX API.
- WAMS (Walking Access Mapping System v2) - ArcGIS Server, Esri Flex API, C#, SQL
- Selwyn District Council's Internal Map Viewer - ArcGIS Server, Esri Flex API, C#, SQL
- Tasman District / Nelson City Internal and external map viewers – ArcGIS Server, Esri Flex API, C#, SQL
- Queenstown Lakes District Council - ArcGIS Server, Esri Flex API,
- Department of Conservation – Android mobile application

For the Auckland Council (including Waitakere City Council), David has worked on:

- ArcGIS Server, Flex API, C#, SQL, .Net Web Services (WCF), Python.

David is now one of our senior developers and is taking on more solution architecture and technical lead roles on a number of projects. David works across a number of smaller projects that have legacy technology, as well as working on the Auckland Council's GFMO project.

2.9 Heath Rongo - Senior GIS Developer

Qualifications

- BSc Computer Science, University of Waikato

Relevant Experience

Heath joined GBS in February 2013. Prior to joining GBS Heath had 10 years' experience as a developer, with 4 of those being in GIS with Intergraph. Heath's role at Intergraph was a mixture of development and consulting.

Heath's role with GBS is as a Senior Developer. Apart from being actively involved with development projects, Heath also has a mentoring role as well as assisting the GBS Technology Manager with technical leadership.

Heath has had some challenging projects recently with both the Auckland Council and at Ravensdown. Heath is also providing support in solution architect and technical lead roles over a number of projects and is now a strong Esri practitioner.

GBS projects that Heath has worked on are:

- GeoMapper v 2.0 (GBS proprietary product) - ArcGIS for Desktop, C#, ArcObjects, SQL Server.
- AC Internal Map Viewer – Esri JavaScript API, Portal for ArcGIS, C#, ArcGIS Server, HTML5, CSS
- Auckland Council SAP Integration – Python, C#, JavaScript, HTML5
- Ravensdown Fertiliser Co-op – Esri ArcGIS Server ASP.Net MVC, C#, JavaScript, CSS
- CHPs (GBS Internal Product) – C#, ArcGIS Desktop extensions
- Statistics NZ Internal Viewer & Geocoding Services – C#, HTML 5, JavaScript, CSS

2.10 Alex Lee - Graduate GIS Developer

Qualifications

- BSc Computer Science, University of Auckland
- Postgraduate Diploma in GIS, Auckland University of Technology

Relevant Experience

Alex joined GBS in February 2015 as a Graduate GIS Developer.

GBS projects that Alex has worked on are:

- Cable Harvest Planning Solution (CHPS) – ArcGIS for Desktop, C#, ArcObjects
- Support work on Nelson City and Tasman District Council's internal viewers – ArcGIS Server, C#, Flex API

2.11 Arun Sebastian - GIS Developer

Qualifications

- Bachelor of Technology (Electronics & Communication), Cochin University School of Engineering, India.
- Post Graduate Diploma in Advanced Engineering, Dublin Institute of Technology, Ireland.

Relevant Experience

Arun joined GBS in July 2013 as a GIS Developer. Arun has over 5 years of experience developing Open Source GIS solutions and is now applying that depth of experience to the Esri platform.

Arun has experience with JavaScript, HTML(5), C and a range of other development environments.

Apart from development experience, Arun has also applied himself as a GIS consultant, technical consultant and project leader.

Latterly, Arun has worked on a number of GBS' larger projects including work for Statistics NZ, NZTA and the Auckland Council. GBS projects Arun has worked on are:

- Auckland Council Internal Web Viewer - HTML5, ESRI JavaScript, Esri ArcGIS Server, Dojo, Dojo Mobile, Portal for ArcGIS
- NZTA Map Hub - HTML5, ESRI JavaScript, ArcGIS Server Dojo, Dojo Mobile, Portal for ArcGIS
- Statistics NZ Internal Viewer - HTML5, ESRI JavaScript, ArcGIS Server, JQuery