

***Application by Matt Higgins for Candidate for  
FIG Vice President for the Period 2007 to 2010***

The following information supports my nomination by the Institution of Surveyors Australia as a candidate for FIG Vice President for the Period 2007 to 2010. Also attached is a brief Resumé covering the more general aspects of my career.

***FIG Experience and Knowledge***

Prior to my involvement in FIG, I was involved in the early days of the development of Global Positioning System (GPS) applications in Australia and in the associated reference frame issues. In 1988, I completed my Masters Degree, specialising in those topics. In 1989, I spent 6 months in the USA and Canada visiting and working with key government, private and academic organisations working in the then emerging field of GPS surveying and geodesy. That study tour of North America and the global nature of satellite surveying sparked my interest in international work.

My first direct exposure to FIG was at the Congress in Melbourne in 1994. At that time, the then Chair of FIG Commission 5 on Positioning and Measurement (Larry Hothem) invited me to Chair the Working Group on Reference Frames and Heighting for the period 1995 to 1998. In 1998, the FIG General Assembly elected me Chair-Elect for Commission 5 (under Chair Jean-Marie Becker) for the period 1999 to 2002. In 2002, I progressed to Chair Commission 5 for the period 2003 to 2006.

During my term as Commission Chair I have sought to consolidate the strong technical basis of Commission 5 but I have also taken steps to increase involvement in strategic issues associated with the topics covered by the Commission. Some specific examples of this increased emphasis on “big picture” issues include:

- I put significant focus on revitalising the relationship between FIG and the International Association of Geodesy (IAG). I developed a Liaison Document that has been agreed between FIG and IAG to give substance to our overarching MoU by setting out specific activities of cooperation. An example is the AFREF project, where FIG is supporting IAG in the development of a uniform geodetic reference frame for Africa. That work is recognized by several UN organizations as a key project underpinning the development of a spatial data infrastructure for Africa.
- I also worked to ensure that FIG is represented on the newly created International Committee on Global Navigation Satellite Systems. That committee is mandated by the UN General Assembly via the UN Committee on the Peaceful Use of Outer Space. This gives FIG a voice on a very important UN Committee, which is considering interoperability and application issues for the USA’s GPS, Russia’s GLONASS and Europe’s Galileo; all of which are crucial technologies for Surveyors world-wide.
- That work has also led to the signing in December 2004 of an MoU between FIG and the UN Office of Outer Space Affairs. The MoU covers not only Global Navigation Satellite Systems but also the use of Space Technology for Disaster Management and Education in Space Technology, especially in developing countries.

During my time as Chair Elect and/or Commission Chair I have also been involved in several “whole-of-FIG” activities such as:

- Task Force on Review of Commission, Task Force and Permanent Institution Structure 2000-2002;
- Task Force on the Cultures and Languages;
- Current FIG Task Force on Governance Structures.

In 2004, my fellow Commission Chairs elected me as their representative on FIG Council for 2005 and 2006. As well as representing the interests of Commissions, that position has enabled me to contribute to broader discussions in FIG Council on policy, strategy and administration. That experience as an ex-officio member of FIG Council has given me a strong background that would help me progress to a role of Vice President and full member of FIG Council.

The timing of my term as Commission representative on FIG Council means that my election as Vice President would also contribute to the continuity between the old and new Councils.

### ***Regional Representation***

As an Australian, I am well placed to represent the rapidly growing region of the Asia-Pacific. I have a strong network of contacts in the region, which has been developed through participation in major events for our profession in the Asia-Pacific. That has included attendance at specialist conferences, for example on GNSS. However, the most effective mechanism for regional engagement has been my regular involvement in the South East Asian Survey Congresses. At the two most recent congresses in Hong Kong and Brunei, I facilitated and Chaired FIG awareness sessions and panel discussions, which also involved the FIG President and/or Vice Presidents. I also ensured that Commission 5 co-sponsored technical sessions on key topics that complemented the Commission Work Plan, while also being relevant to local practitioners.

### ***Support from FIG Member Association***

My FIG Member Association is the Institution of Surveyors Australia (ISA), of which I am a Fellow. ISA is strongly committed to supporting me should I be elected Vice President. I have a close working relationship with the President and the Executive Officer of ISA.

ISA has an excellent participation record in FIG and key people from Australia's past involvement are strongly supporting my candidacy for Vice President. Such supporters include:

- Earl James, FIG President during the Australian Bureau from 1991 to 1994.
- Professor Ian Williamson, Past Chair of Commission 7 and past FIG Director for UN Relations.

In recent years, ISA has increased the financial support for my activities as Commission Chair and for the activities of my Vice Chair for Administration (Rob Sarib). Financial support has also been strong for activities that have enhanced ISA's work towards hosting the FIG Congress in Sydney in 2010.

While it is understood that many of the activities of a Vice President are funded by FIG, ISA is committed to supplementing those funds where necessary. That is especially true for additional activities in the Asia-Pacific, where the support can also be linked to promotion of FIG leading into Sydney 2010.

### ***Support from Employer***

My employer, the Queensland Government's Department of Natural Resources, Mines and Water, has officially approved my possible involvement as Vice President from 2007 to 2010. That support includes time on salary for travel and time for work in Australia associated with

FIG activities. The Department will also support me through use of a computer, software, email, internet connections, phones etc for FIG activities.

***Possible Activities to Advance the Aims and Objectives of FIG***

If elected, I would like to propose the activities listed below to the new President and Council, as practical ways to advance the aims and objectives of FIG:

- The recent changes to the internal rules have led to the first fully elected Council but have also removed the previous concept of a “Shadow Bureau” and the associated draft work plan for the following period. It is therefore important that the new Council works to quickly develop a new Work Plan for 2007 to 2010 so that there is no loss in momentum in Council activity and to also give overarching guidance to the new Commission Chairs;
- A significant challenge for FIG in the next period will be to sustain the recent growth of the “FIG Brand” as seen through the increasingly strong attendance at recent Working Weeks and Regional Conferences. There is a need to ensure that the growth can be managed and sustained, while remembering that we are an organisation based on the work of volunteers;
- An important issue for the new council will be to develop ways to increase the participation in FIG from all regions of the globe, especially those where current participation rates are low;
- I am also interested in developing ways to have more concrete and direct involvement by the Corporate Members of FIG;
- From my time as a member of the Task Force on Culture and Languages, I appreciate that it is important to ensure that we continue to respect the cultural and linguistic diversity within the membership of FIG. That requires effectively managing any associated problems that may arise from time to time but we should also develop any opportunities to benefit from our diversity;
- I would like to build on my track record as Chair of Commission 5 to advise Commissions on practical activities that could improve and give substance to our interaction with UN Organisations and Sister Associations;
- Under the new internal rules the location of the FIG Congress is no longer tied to the make up of the FIG Council. Also, the Congress Director is no longer a member of Council. Therefore, as an Australian member of Council I could work to ensure strong cooperation between Council and the Sydney Congress Organising Committee from 2007 through until the Congress in 2010.

## Resumé

**Name:** Matthew Bryan Higgins  
**Date of Birth:** 3 December 1960  
**Nationality:** Australian  
**Marital Status:** Married, three children  
**Present Position:** Principal Survey Advisor, Land Information and Titles, Department of Natural Resources, Mines and Water, Queensland, Australia

### Qualifications

- Bachelor of Applied Science, Surveying (With Distinction), Queensland University of Technology, 1983. Awarded three prizes, including the "Surveying Staff Prize" for the graduate with the best academic record throughout the course;
- Registered Cadastral Surveyor, Surveyors Board of Queensland, 1985;
- Master of Surveying and Mapping Science, University of Queensland, 1988;
- Presently a PhD Candidate (part time) at the University of New South Wales.

### Awards

- The National Excellence in Surveying Award from the Institution of Surveyors Australia in 1994.
- Australia Day Achievement Medallion in 1999;
- Award for Continuing Professional Development from the Institution of Surveyors Australia, Queensland Division in 2000;
- Elected a Fellow of the Institution of Surveyors Australia in 2001, which has since also been recognised as a Fellow of the Spatial Sciences Institute;
- Australian Spatial Sciences Institute Award for Professional Eminence and Excellence in the Spatial Sciences; awarded in 2005. This is the highest award presented to an individual in a given year.

### Career Highlights

Recognised as Queensland and Australian expert on operational, physical and satellite geodesy with extensive experience in Global Navigation Satellite Systems (GNSS) since 1985:

- Publication in 1987 of parameters for transformation between Australian Geodetic Datum and World Geodetic System 1984 (WGS84) as used by GPS;
- In 1988, completed a Masters Degree specialising in GPS and geodetic datum issues;
- Study tour in 1989 of North American organisations in the development of GPS surveying and geodesy;
- Leader of GPS related research including involvement in development of the first civilian application of GPS Controlled Photogrammetry in Australia, which, in 1994, was a winner of the Institution of Surveyors Australia Excellence in Surveying Award;
- Technical Advisor on development of Queensland's Geodetic Infrastructure in support of Australia's move to a Geocentric Datum and for Height Modernisation and including the Queensland 100km GPS Network;
- In 2001, led a Pilot Project to develop a real-time-kinematic surveying GPS Network using the Virtual Reference Station (VRS) concept. This was the first VRS installation outside Europe;
- In 2006, worked with the European commission and European Space Agency to convene the first ever Galileo Information Forum in Australia.

### Significant Representations

- Queensland representative on the Geodesy Group of the Australia and New Zealand Intergovernmental Committee on Surveying and Mapping (ICSM) working on issues such as horizontal and vertical datum, standards and practices for control surveys and legal traceability;
- Departmental representative in research and development collaborations with the Cooperative Research Centre for Spatial Information (CRC-SI) and the CRC for Satellite Systems (CRC-SS);
- Past Member of the Editorial Advisory Board of the US based magazine "GPS World";
- Chair of International Federation of Surveyors (FIG) Commission 5 on Positioning and Measurement for the period 2002 to 2006;
- FIG representative on the UN mandated International Committee on Global Navigation Satellite Systems;

### People Skills

Matt enjoys working with people, as demonstrated through relations with clients and participation in work teams during his time with the Department, while seconded to the Private and Academic Sectors and in Industry Representation activities nationally and internationally. He regularly interacts with colleagues from all over Australia and on all the continents of the world. In many cases, these working relationships have developed into strong friendships and created a global network of like-minded professionals.

### Communication and Training Skills

Matt's ability to communicate effectively has been demonstrated through project reports, technical papers (see Publications section below), and in face to face communication through providing technical advice and presentations at conferences, seminars and workshops. Matt developed a successful training course on satellite surveying that has been run through the Queensland Division of the Institution of Surveyors Australia. Versions of that course have also been run for specific organisations. The most recent was for staff from the Australian and Indonesian mining and construction operations of Thiess, in March 2005. Matt has also taught geodesy and satellite positioning courses as a guest lecturer at both Queensland University of Technology and the University of Queensland.

### Publications

- Rizos, C., M.B. Higgins and S. Hewitson, 2005, New GNSS Developments and their Impact on Survey Service Providers and Surveyors, To be published in Proceedings of SSC2005 Spatial Intelligence, Innovation and Praxis: The national biennial Conference of the Spatial Sciences Institute, September 2005. Melbourne: Spatial Sciences Institute, ISBN 0-9581366-2-9.
- D. Kumar-Mills, D., J. Homer, K. Kubik and M. B. Higgins, 2004, Efficient RTK Positioning by integrating Virtual Reference Stations with WCDMA Network, Presented at GNSS 2004, The 2004 International Symposium on GNSS/GPS, Sydney, Australia. 6–8 December 2004.
- Higgins, M.B., 2002, Australia's Changing Surveying Infrastructure from Marks in the Ground to Virtual Reference Stations, XXII FIG International Congress, International Federation of Surveyors (FIG), Washington, DC, USA, 19-26 April 2002.
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- Higgins, M.B. and N. Talbot, 2001, Centimetres for Everyone: Initial Results from an Australian Virtual Reference Station Network Pilot Project, SatNav 2001, The 5<sup>th</sup> International Symposium on Satellite Navigation Technology and Applications, Canberra, Australia, 24 – 27 July 2001.
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- Foster, R.W., M.B. Higgins and J. Ryttersgaard, 2001, Spatial Information Management in the 21<sup>st</sup> Century, 7<sup>th</sup> United Nations Regional Cartographic Conference for the Americas, United Nations, New York, USA, 22 – 26 January 2001.
- Higgins, M.B., 2000, Towards Precision GPS, Measure and Map, Issue 11, November – December 2000.
- Sproule, D.M., A.H.W. Kearsley and M.B. Higgins, 2000, Impact of BRAGS'99 Airborne Gravimetric Data on Geoid Computations in Australia, and Possibilities for Utilisation of Bathymetric Information, Presented at: IAG Conference on Gravity, Geoids and Geodynamics 2000 (GGG2000), Banff, Alberta, 31 July - 4 August, 2000.
- Cross, P.A., M.B. Higgins and R. Lott, 2000, Reference Frames in Practice: The Role of Professional, Scientific, Standards and Commercial Organisations, FIG Working Week 2000, International Federation of Surveyors (FIG), Prague, Czech Republic, 22 - 26 May 2000.
- Higgins, M.B., 2000, Heighting with GPS: Review of Limitations and Possibilities, GIM International, Vol 14, No. 2, February 2000.

## Resumé

- Higgins, M.B., 1999, Positioning and Measurement into the 21<sup>st</sup> Century, A Keynote Paper at the 6<sup>th</sup> South East Asian Surveyors Congress, Fremantle, Australia, 1 –6 November 1999.
- Higgins, M.B., 1999, The Use of GPS for the Maintenance and Investigation of Tidal Datum, 6<sup>th</sup> South East Asian Surveyors Congress, Fremantle, Australia, 1 –6 November 1999.
- Paul A. Cross, P.A., P. B. H. Davies, A. H. Dodson and M. B. Higgins, 1999, Reference Frames In Practice – FIG Working Group 5.5, FIG Working Week 1999, International Federation of Surveyors (FIG), Sun City, South Africa, May 1999.
- Higgins, M.B., 1999, Heighting with GPS: Possibilities and Limitations, In the Proceedings of: Geodesy and Surveying in the Future: The Importance of Heights, Jubilee Seminar: 25 Year of Motorised Levelling, Sponsored by Commission 5 of the International Federation of Surveyors (FIG), Gavle, Sweden, March 15-17 1999.
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- Higgins, M.B., 1989, The Space Industry and the Surveyor, 31st Australian Survey Congress, Hobart, Australia, April.
- Anderson, W. and Higgins, M.B., 1988, The Cases Where a Metre is Enough, International Symposium on Global Positioning Systems, Gold Coast, Australia, October.
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