



## Jim Finlayson

B.E.(Hons), FIEAust, CPEng, NER

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### Areas of Expertise

geotechnical engineering, geomechanics, site investigation, soil structure interaction, excavations, basements, retention system design, deep foundations, pile design, shallow foundations, footing design, settlement analysis, bored piles, drilled shafts, pile sockets, CFA piles, cut-off walls, construction management, earthworks

### Qualifications

- ◆ Bachelor of Engineering (Civil) Honours, University of Melbourne, 1991

### Professional Memberships and Affiliations

- ◆ Engineers Australia (Fellow) and Chartered Practising Engineer (CPEng.)
- ◆ Australian Geomechanics Society (Member)
- ◆ National Engineering Register – civil and subdivisional geotechnics

### Career Overview

Jim Finlayson is a principal geotechnical engineer with FSG Geotechnics + Foundations and has over 25 years of experience as a consulting geotechnical engineer. His experience is primarily Melbourne based but he also spent five years working in the UK. Jim has extensive experience of numerous aspects of geotechnical engineering including site investigation, analysis, design of footing and retention systems and major earthworks projects.

Jim has particular expertise in geotechnical engineering for tall towers and deep basements and has worked on many of the buildings over fifty levels constructed in the Melbourne CBD over the past twenty years.

Jim is a Fellow of Engineers Australia and a Chartered Professional Engineer.



## Employment History

*May 2019 – current*

### **Principal, FSG Geotechnics + Foundations (formerly Foundation Specialists Group)**

Jim has recently joined FSG with a view to developing and expanding the geotechnical services offered by FSG for major building developments

*2001 – 2019*

### **Senior geotechnical engineer (2001 to 2005), Associate (2005 to 2001), Principal (2011 to 2019), Golder Associates Pty Ltd – Melbourne, Australia**

Responsible for the management of geotechnical investigations, analysis, design recommendations and construction phase advice for a wide range of projects including major building projects, significant earthworks projects, deep basements, bridges and pavements.

*2000 – 2001*

### **Senior geotechnical engineer, Arup Pty Ltd (formerly Over Arup & Partners) – Melbourne, Australia**

Responsible for geotechnical investigation and design for a wide range of predominantly civil engineering projects. Projects typically included road and bridge duplications though some low-rise building and civil subdivision works were also undertaken.

*1998 – 2000*

### **Geotechnical engineer, Arup Pty Ltd (formerly Over Arup & Partners) – London, England**

Responsible for geotechnical design and specification production for a variety of projects in the United Kingdom and the Channel Islands. This included design of deep basements and high capacity piled footings for a variety of ground conditions. Also completed site supervision works of instrumentation and site investigation contracts undertaken in both Africa and Europe.

*1996 – 1998*

### **Geotechnical site manager, A. F. Howland Associates – Norwich, England**

Geotechnical site manager for a major site investigation to support the design and construction of a 6 km flood relief and sewerage tunnel. Responsibilities included management of all site activities, liaison with local authorities, the production of a detailed report and input to tender design meetings.

*1995 – 1996*

### **Geotechnical field engineer, (contract positions) – England**

Undertook site investigation works through secondment to a number of site investigation contractors across the UK. Projects included tunnel projects, site contamination assessments and supervision of bulk earthworks.

*1991 – 1995*

### **Graduate geotechnical engineer - Golder Associates Pty Ltd – Melbourne, Australia**

Responsible for the management of geotechnical investigations, analysis, design recommendations and construction phase advice for a wide range of projects including major building projects, significant earthworks projects, deep basements, bridges and pavements.



## **Selected Projects**

The following major projects represent a small selection of the building projects where Jim Has provided all or some of the following services; geotechnical investigation, analysis, reporting and construction phase advice. The buildings include numerous high-rise developments, deep basements constructed across a large variety of subsurface conditions.

### **Aurora Tower, La Trobe Street, Melbourne**

Ninety level tower and two level basement located immediately adjacent to the Melbourne Central underground station. This project was the first time in Melbourne a building of this size was supported on spread footings rather than piles.

### **Collins Arch, Collins Street, Melbourne**

Six level basement and two towers of about thirty levels covering an entire city block. The variable subsurface conditions across the site required different retention and footing solutions.

### **Australia 108, City Road, Southbank**

Hundred plus level tower with a single level basement. The subsurface conditions across the site were highly variable and deep deposits of soft sediments provided significant challenges with respect to the resistance of lateral loads.

### **Green Spine by Beulah, City Road, Southbank**

Preliminary advice on concept design for a two to five level basement and footings for two towers up to ninety nine levels.

### **Yarra's Edge – various stages of development, Lorimer Street, Docklands**

Several mid rise towers in proximity to the Yarra River with deep alluvial sediments. The impacts of piling work on the existing promenade / wharf structure was a particular challenge.

### **Collins Place, Collins Street, Melbourne**

Sixty level tower on a very narrow site. A layer of basalt was used as a founding stratum for bored piles without the requirement to extend the piles into the deeper siltstone as the traditional footing approach would require.

### **Upper West Side and West Side Place, sites north and south of Lonsdale Street, Melbourne**

Seven towers ranging from about twenty-five to ninety levels with multiple level basements. The subsurface conditions were highly variable across the sites requiring different footing solutions for different towers.

### **Sky One (constructed) & Sky Two (proposed), Box Hill**

Thirty level towers and three to seven level basements.

### **Various sites including the ATO, Box Hill**

Numerous sites in the general area of Box Hill central. Predominantly proposed twenty to thirty level towers with four to five level basements.

### **The Glen shopping Centre redevelopment, Glen Waverley**

Redevelopment of parts of the shopping centre with a three level basement car park extended to the north and three proposed residential towers up to fifteen levels.



### **Eastland shopping centre redevelopment, Ringwood**

Redevelopment of the shopping centre including a deep excavation for the multiple level basement in proximity of the major Melbourne Water supply main. Significant analysis of the retention system and construction phase monitoring was required to confirm the proposed development did not adversely impact the water main.

### **Chadstone shopping Centre redevelopment, Chadstone**

Numerous stages of development including the mid-rise hotel and office building south of the main shopping precinct. The site contains variable subsurface conditions..

### **Caulfield Village – Stages 1 and 2**

Major residential developments incorporating one to two level basements and several mid-rise residential buildings. Basement excavation below the groundwater level in sandy conditions was a particular challenge.

### **Prima Tower, Southbank, Melbourne**

Geotechnical investigation and consulting services for a sixty level tower. Challenges included variable founding conditions for bored piles and a 10 m deep excavation in soft clays for construction of the core.

### **Abode 318, Russell Street, Melbourne**

Multi-level residential development located near the Melbourne Underground Rail Loop tunnels beneath La Trobe Street. Services provided included geotechnical investigation, pile design and modelling of potential impact of the development on the nearby railway tunnels.

### **171 Collins Street, Melbourne**

Multi-level residential apartment building with a five level basement. Services provided included geotechnical investigation and site assessment services. Design of the basement incorporated passive rock bolting of the basement excavation faces with soldier piles terminated well above the design excavation level.

### **Melbourne Convention Centre, Southbank**

This development included the construction of a twenty level hotel and a two level basement with a permanent perimeter cut off wall. The subsurface geology was highly complex and variable. Responsibilities included the geotechnical investigation, hydrogeological modelling and footing design and assessment.

### **Media House, Docklands, Melbourne**

Multi-level building constructed on a deck built over the rail corridor at Southern Cross Station. Responsibilities included management of the investigation within the rail corridor, provision of a geotechnical report presenting design recommendations for the footings to support the crash walls supporting the concrete deck. Site assessment services during construction of the footings were also provided.

### **MCG Northern Stand, Melbourne**

Construction of a new stand around the northern half of the MCG. Responsibilities included management of the investigation, reporting and design of the spread footings and bored piles supporting the structure. Site assessment and pile design services were also provided during construction.

### **Village Docklands, Melbourne**

Geotechnical investigation, reporting and provision of design advice for the proposed development of a 13 000 square metre site in Docklands. The proposed development included a single level basement and four towers with piled footings in varying ground conditions.



### **Eureka Tower, Southbank, Southbank**

Geotechnical consulting services for an eighty eight level residential tower with a single level basement. The subsurface conditions included two layers of discontinuous basalt separated by sediments of the Yarra Delta all underlain by high strength weathered siltstone. Responsibilities included geotechnical investigation and foundation analysis and design.

### **Freshwater Place – Stages 1-3, Southbank**

Four towers ranging between about 40 and 60 levels with an eight level podium structure and a single level basement. The subsurface conditions were highly variable with a layer of soft clay over a layer of discontinuous and variable basalt underlain by Yarra Delta sediments and weathered siltstone. Responsibilities included geotechnical investigation, basement and foundation analysis and design and supervision of footing installation. The footing solution included a combination of spread footings, CFA piles founding on both basalt and siltstone and bored piles socketed into the weathered siltstone.

### **HWT Development, Flinders Street, Melbourne**

A residential and commercial development of approximately 30 levels behind a retained heritage listed façade. A double level basement was also constructed with the tower supported on spread footings. Increased allowable bearing pressures were adopted following detailed site investigation including the use of high pressure in situ pressuremeter testing.

### **Royal Domain Tower, St. Kilda Road, Melbourne**

A forty level residential development located on St Kilda Road, Melbourne. A single level basement was also constructed as part of the development. The subsurface conditions consisted of weathered siltstone from a relatively shallow depth, however a deep weathering profile was present and significant dykes were also encountered. Responsibilities included geotechnical investigation and footing analysis and design. In situ pressuremeter testing was utilised in order to optimise the design of bored piles.

## **Publications**

- Ervin, M.C. and Finlayson, J.E. (2003). Deep footing solution for Eureka Tower Project, Melbourne, Australia. BGA International Conference on Foundations Dundee, Scotland. Thomas Telford, pp 269-281.
- Colls, S., Finlayson, J. & Goad, D. (2010). "Settlement behaviour of deep engineered fill, former basalt quarry, Niddrie, Victoria." Australian Geomechanics, 45(1), pp 27-36.
- Chapman, G.A., Finlayson, J.E. (2016). Key note paper for the AGS Vic symposium on Excavations and slope stability in Melbourne geology: experiences and recent developments.
- Haberfield, C.M, Finlayson J.E., Lochaden, A.L.E (2019). Foundation investigation and analysis for tall tower developments. Geotechnical Engineering Journal of the SEAGS & AGSSEA Vol. 50 No. 2, June 2019.