



ABN 55 175 772 329

Founded in 1991

**Contact Person: Oliver Glockner, CEO**

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Email: [oliver@glockner.com.au](mailto:oliver@glockner.com.au)

**Regions Served**

Primary: Western Australia

Available: Australia, International



**LinkedIn Profile**

<http://www.linkedin.com/company/gems-glockner-engineering-&-mining-services->

**Senior Staff**

**Oliver Glockner, CEO**

30+ years mining and surveying experience

(Res) WA Quarry Managers Certificate

WA Grade 1 Authorised Mine Surveyor

LinkedIn Profile:

[au.linkedin.com/pub/oliver-glockner/42/941/10/](http://au.linkedin.com/pub/oliver-glockner/42/941/10/)

**Greg Valli, COO**

15 years mining and surveying experience

Mining Engineer and Surveyor

WA Grade 1 Authorised Mine Surveyor

LinkedIn Profile:

[au.linkedin.com/pub/greg-valli/52/7b0/30b/](http://au.linkedin.com/pub/greg-valli/52/7b0/30b/)

**Quinn Rowe, Underground Coach**

20+ years underground mining

Mine Development and Production Mentor

WA Underground Supervisors Certificate

## GEMS CAPABILITY STATEMENT

### BUSINESS SUMMARY

GEMS (Glockner Engineering & Mining Services) is a privately owned Mining Engineering, Planning, and Surveying contracting and consultancy service.

### CAPABILITIES – Core Competencies

- Mine Design and Modelling – Underground and Open Pit
- Mineral Resource Scoping and Pre-Feasibility Studies.
- Surveying – Engineering and Mining – Underground, Open Pit, Construction, and Exploration works.
- Management Plan and Procedures Development – Production Management Plans, Implementation and Execution Plans, Major Hazard Management Plans.
- Project Engineering and Supervision – Scheduling, Drill & Blast

### DIFFERENTIATORS – Expertise

*“... ensure the learnings from the field or the office are transferred between each other”*

- Mine designs are based on the experience of implementing them.
- Surpac, Whittle, and Mineshed mining software experience  
*We’ve been using Surpac since the days of its inception in 1985.*
- MineCad use in compiling Mine Plans – since 2004
- Trimble and Leica survey equipment – including development of “Trimble Mines Module” with Trimble (2009).

*“Instead of asking: How well did you do your job?”*

*We question: How much did you CHANGE the job?”*

### REPRESENTATIVE CLIENTS

- Mt Magnet Gold – Ramelius Resources
- Rosebery Underground – MMG
- North Laverton Gold Project – Bullseye Mining
- Cadia East Project – Newcrest Mining
- Clark Shaft Recovery – Olympic Dam – BHP Billiton
- Telfer – Newcrest Mining
- Southern Cross Operations – St Barbara Ltd (and Sons of Gwalia)
- Cockatoo Island Operations – HWE Mining



## More than just Peg Bashers!

### MINE GRID – Identification, Conversions, and Calibrations

We have an adaptive and proven process that enables us to resolve a lot of common issues with mine grids.

- ✓ Finding and re-establishing grids in areas of old workings,
  - ✓ Accurate conversions for mine grids to MGA94 or other grids,
  - ✓ Checking the integrity and calibrating for GPS.
- *Southern Cross Operations, Cockatoo Island, Norseman Gold*



### CONSTRUCTION – Mining Infrastructure

Knowing how and when to implement survey alignments that require millimetre type accuracy, is something we pride ourselves on. Over the years we have been called upon several times for survey support, and production team liaison, to ensure successful infrastructure establishment.

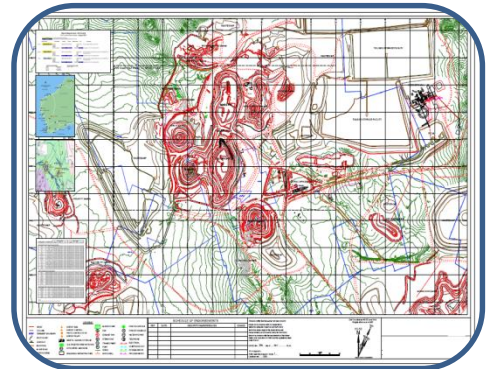
- *Telfer Underground Project, Olympic Dam Clark Shaft Recovery, Cadia East Underground Project.*

### MINE PLANS – Are yours readily assessable and up to date?

Having information on computer files is not good enough! Legislation requires that mines are to have an up to date set of mine plans available at all times.

Our Authorised Mine Surveyors also understand the safety and production benefits of having mine plans readily at hand.

With our new systems, you can even email or dropbox us the survey data, and we can promptly compile the mine plans, and send them to you as a PDF.

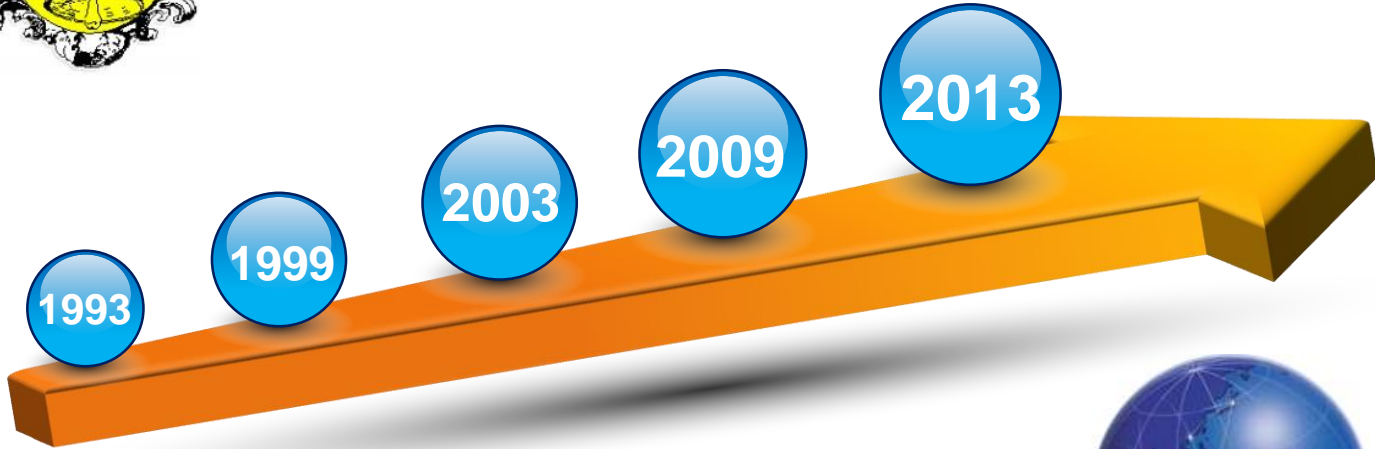


### DEVELOPING SURVEY SOLUTIONS

Over the years we've been involved in enhancing survey solutions. Such as;

- ✓ Direct involvement in development of "Trimble Mines Module" with Trimble (2009).
  - ✓ Mine stock reconciliation process utilising weighted adjustments based on accuracy of data inputs.
- *Has been used to resolve reconciliation issues on sites such as Woodie Woodie and Ellendale Diamond Mine.*

## Survey Mentoring & Systems Development



- 1993** Contracted to establish and manage underground and open pit survey systems at the Gunpowder Copper Mine in Queensland, Australia.
- 1999** Establishing survey systems and the training of nationals in modern survey equipment at the Maesod and Chatree mines in Thailand.
- 2001** Mentoring of survey staff in underground survey techniques, and the establishment of the GPS Site Calibration technique using Trimble RTK GPS for the auditing and verification of a surface control networks at the Southern Cross Operations, Western Australia.
- 2003** Compilation and distribution of the GEMS Mine Survey Standards document.  
Establishment of Open Pit – Sea Wall civil construction and mine surveying processes at Cockatoo Island, Western Australia.
- 2008** Developed survey routine and trained staff surveyors in process of keeping Emergency Plans and Mine Plans up to date, using Surpac and Minecad software, at the Southern Cross Operations, Western Australia.
- 2009** In a collaboration with Trimble, GEMS developed the Trimble Mines Module – an applications program Trimble uses for their total station survey equipment. GEMS has also been involved in the presentation and education of mine surveyors in its use.  
Development of the underground and headframe engineering infrastructure alignment techniques and mentoring of surveyors in the process, of the Clarke Shaft Recovery Project at the Olympic Dam mine in South Australia.
- 2010** Developed and mentored surveyors in an excavation and construction verification process for Cadia Valley Underground Project in New South Wales, Australia.
- 2012** Established systems whereby clients can send us their survey data, and we can efficiently compile up to date Emergency and Mine Plans, and quickly send back to the client as PDFs.
- 2013** Mentoring of staff surveyors at Mount Magnet in Western Australia.





# Mine Planning with Implementation Practicality

**It's not just about the design,  
but also about the quality  
and timing of the build!**



## MINE DESIGNS

- ☐ Are open pit mining benches, particularly in cut backs, designed such that they provide sufficient equipment working area?
- ☐ Are waste dumps designed such that they can be progressively rehabilitated during production operations?
- ☐ Are underground loading points and hoisting systems suited to handle both capital development and production materials?
- ☐ Are underground ventilation, egress, drainage, communication, and power systems designed to enable a progressive implementation as the mine is built?

## MINE SCHEDULES

- ☐ Have the rates used in mine schedules undergone achievability analysis, such as a simple PERT review?
- ☐ Is the critical path in the schedule clearly identified, and is the consequence of not completing a critical task on time quantified and communicated?

## MINE ECONOMICS

- ☐ Ensure evaluations do not mistake fixed cost parameters as an assumed variable, productivity related cost component .



## IMPLIMENTATION PLANS

- ☐ Ensure management plans are not just a listing of commitments and specifications, but actually give guidance on how to have the team support, carry out, and adhere to the process.



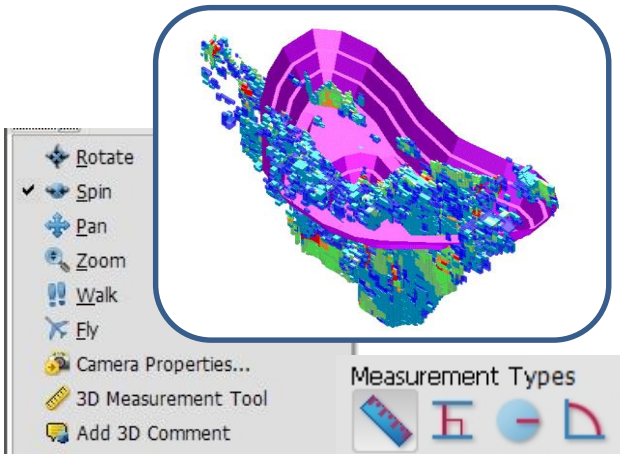


# 3D PDFs

## Add that extra level of detail and 'wow' factor to a presentation

At GEMS we offer the option of merging PowerPoint slides with 3D models to provide presentations that have a true 3D aspect.

Change from the boring presentation slides with superficial bullet point or sound animations to a presentation where you can:



- view a model in 3D;
- ✓ Mine Designs: Open Pit & Underground
- ✓ Geology Block Models
- ✓ Topography,
- ✓ Engineering & Construction Details
- spin around views,
- turn on or off various portions,
- carry out measurements,

Window systems with a recent version of an Acrobat Reader or similar, can display the separate or combined 2D and 3D presentation files.



On iOS devices (Apple iPhone or iPad) an app such as "3D PDF Reader" is currently needed to view a model.

*Apple systems can display a '2D' PDF using iBooks, but not yet 3D PDFs.*

**Demonstration 3D PDFs are available on our web site:**

[www.mineplanning.com.au/  
GEMS\\_Demo01\\_3D.PDF](http://www.mineplanning.com.au/GEMS_Demo01_3D.PDF)

Please contact GEMS to see how we can assist with helping you develop 3D presentations, eliminating the need for specialised mining, CAD, or GIS software.

Email enquiries to: [oliver@glockner.com.au](mailto:oliver@glockner.com.au)

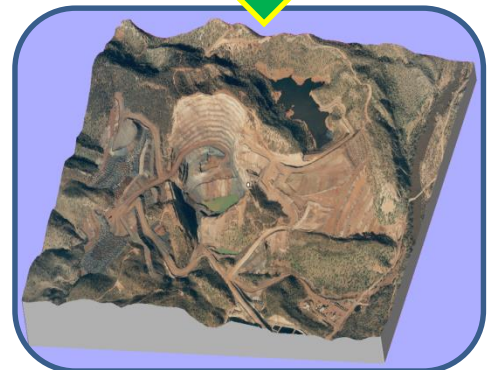
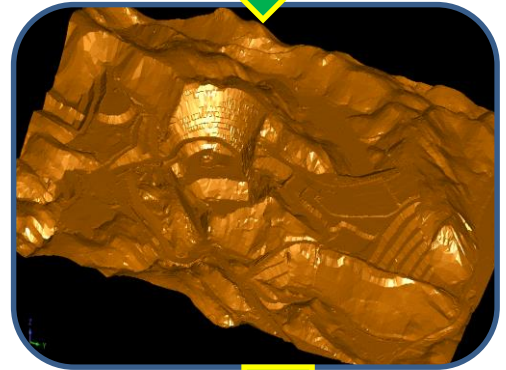
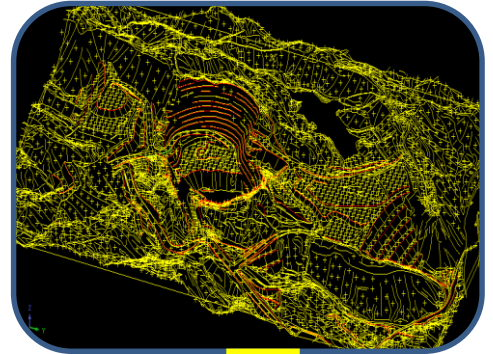
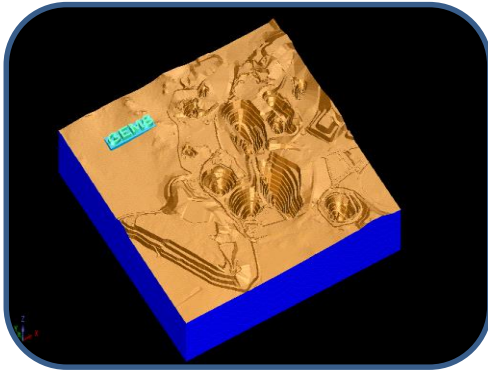
## Invest in **GEMS**



# 3D Printing

**From String or Breakline Data  
to Wireframe Digital Terrain Models  
to 3d Print Models**

At GEMS we offer the option of having terrain models of the mine site printed in 3D.



Whether a mine design, or actual topography, or combinations of the two;

**GEMS 3d Print Models are great to have on the desk, as a display to visualise mine site topography, without having to start a computer or any software.**

**How much do they cost?**

Costs are from \$800AUD, but will vary greatly due to size of model, and the time that may be taken to develop it. The better the data set we can start is, the quicker the development time is.

Please contact GEMS for a customised quote.

email enquiries to: [oliver@glockner.com.au](mailto:oliver@glockner.com.au)



# Mentoring and Coaching

**Let us share our learnings  
for a safer and more  
profitable industry.**



**Our team members have a vast array of mining experience,  
Over many years, on several continents,  
Covering many disciplines and tasks.  
To achieve our aim of  
being helpful and useful to our clients;  
We offer to pass on our learnings.**



*Ask this of your team: "Do you have many years experience?"*

*Or do you have one years experience repeated many times over?"*

## **MINE MENTORING**

Our team has members with extensive experience in disciplines of surveying, engineering, planning, and mine development and production.

As a mentor and coach, our select team members can provide operational support and a system of work, planning, and implementation or both open pit and underground mines.



## **SKILLS TRANSFER PLANS**

Our Skills Transfer Plans include a hands-on, face to face coaching approach, with clear and concise documentation of observations and recommendations, to assist in the transfer and impart of skills to your employees.



## **MOTORVATION for IMPLIMENTATION**

At GEMS we understand that in order to effectively implement a positive change, consideration needs to be given to the motivation and mind-set, of persons involved.

We know mining is not just about rocks, machinery, and equipment. People can make or break a mine.