

## Company Background - Overall Service Capabilities

SLR Heggies is a progressive firm of consulting engineers and scientists providing services in the following specialist engineering and environmental fields:

- Environmental Management
- Wind Engineering
- Acoustics & Vibration
- Structural Dynamics
- Risk Assessment
- Water Quality
- Hazardous Materials
- CFD & Ventilation Studies
- Solar / Lighting Studies
- Environmental Monitoring
- Climate-Meteorology Analysis
- Energy Efficiency / ESD
- FE Analysis, Fatigue
- Air Quality / Dust / Odour
- Ground Contamination
- Site Remediation
- OHS / Occupational Hygiene
- Ecological Assessment

Our consultants apply advanced technologies and innovation to manage risks, optimise opportunities and enhance the cost effectiveness of project solutions. Guidance is provided from planning and design through to compliance assessment and the ongoing operational stages of transportation, architectural, construction, industrial, minerals extraction and infrastructure development projects.

With approximately 140 staff and offices in Sydney, Brisbane, Newcastle, Wollongong, Canberra, Melbourne, Perth and Singapore, SLR Heggies is able to provide specialist resources in all states of Australia, New Zealand, Papua New Guinea, the Middle East and South East Asia. Whether the project is large or small our consultants pride themselves on providing a high standard of service and technical expertise.



## Company Expertise in Air Quality

Over the past several years, SLR Heggies has employed key staff to extend the company's traditional areas of expertise into the area of air quality. Projects in this field embrace a wide variety of technologies including wind climate analysis, pollutant emission predictions, wind tunnel testing, computational fluid dynamics, computer modelling of pollutant dispersion, development of strategies to control pollutant impacts and air emission inventory studies.

SLR Heggies also has a wide range of equipment for measuring noise, vibration, dust, pollutants, temperature, displacement, pressure and strain. Our consultants routinely use the latest software packages for noise modelling, dynamic signal analysis, pollutant dispersion modelling, energy rating, finite element analysis, computational fluid dynamics, modal analysis and general engineering software.

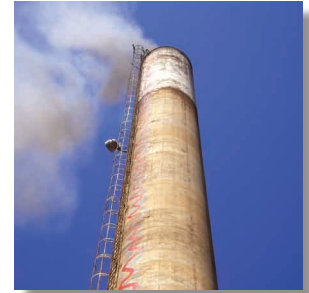
SLR Heggies offers the following specialist services in Air Quality:

- Impact Assessment
- Atmospheric Dispersion Modelling
- Computational Fluid Dynamics
- Carbon Accounting and Audits
- Field Monitoring
- Pollutant Emissions Assessment
- Climate Analysis
- Greenhouse Gas Assessment

## SLR Heggies Air Quality Capabilities

### Impact Assessment

- Preparation of Technical Environmental Assessment Reports covering Air Quality
- Community Consultation with regard to Air Quality
- Development of Air Quality Management Plans
- Integration of Air Quality issues into ISO 14001 systems
- Greenhouse Gas Assessments
- National Pollutant Inventory reporting
- Emissions quantification for industrial sources (power generation, incineration, petrochemical, mineral processing and metallurgical etc.), transportation (road, rail, air) and other sectors
- Dust emissions: quarries, landfills, mining operations and construction sites
- Odour emissions (landfill and composting, smelting, food processing and preparation, waste water treatment)



Industrial emission assessment



Area Source Odour Monitoring

### Field Monitoring

- Dust deposition gauges, high volume air sampling, real-time monitoring
- Monitoring of SO<sub>2</sub>, CO, NO<sub>x</sub>, air toxics and particulates (TSP, PM<sub>10</sub>, PM<sub>2.5</sub>)
- OHS personnel monitoring (NOHSC) compliance studies
- Automatic Weather Station Monitoring
- Odour Monitoring and Analysis
- Monitoring network design, operation and management



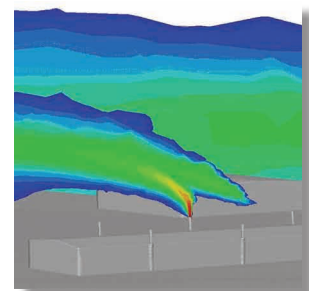
Atmospheric Dispersion Modelling

### Atmospheric Dispersion Modelling

- Meso-scale (AUSPLUME, ISC3, AERMOD, ADMS3)
- Regional / Complex terrain (CALPUFF, TAPM)
- Specialized (CALINE4)
- Stack Height Determinations

### Computational Fluid Dynamics

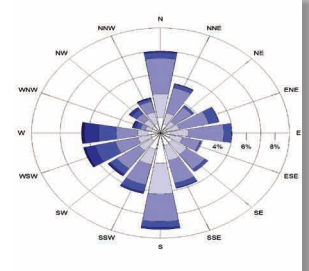
- Real Time (Transient Analysis) of pollutant transportation, especially in cases where measurement is too hazardous or would change the flow
- Distributions of particulate and gas pollutant species incorporating multi-phase flow modelling capability
- Typical applications include air flows and dispersion induced by vehicles or aircraft, contaminant migration into buildings, smoke management and thermal comfort of building interiors
- Modelling technologies utilised include: Reynolds Averaging and LES turbulence modelling, structured and unstructured meshing options to suit domain complexity and front-end advanced 3D CAD capability for complex geometries



Computational Fluid Dynamics

### Climate Analysis

- Analysis and development of local, meso-scale and regional models for windfield and temperature inversions
- Meteorological data analysis and presentation
- Cyclone Risk Assessment (damage studies, insurance risk)



Meteorological Assessment

## Recent Projects Undertaken By SLR Heggies

### Transportation

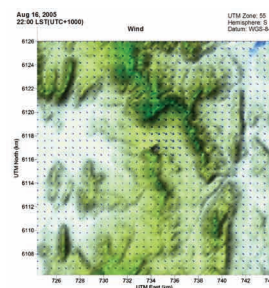
- Albury-Wodonga Bypass (External Route) EIS
- Ipswich Motorway (Brisbane)
- Fairbairn Avenue Duplication (Canberra)
- Leppington Rail Link
- Auckland Point Road/Rail Corridor, Gladstone, QLD
- Parramatta-Chatswood Rail Link
- Sydney Harbour Bridge Environmental Monitoring Program
- Brisbane Urban Corridor



Vehicle Emissions

### Industry and Buildings

- Gas Turbine Power Station, (Bamarang, NSW)
- Sydney Desalination Plant -Preliminary Impact Assessment
- Brickworks Air Quality Impact Assessment (Oxley, QLD)
- Bomen Asphalt Plant (Wagga, NSW)
- Battery Recycling Plant (Wagga, NSW)
- HUB Waste Transfer Station, (Orange, NSW)
- Woodlawn Recycling Facility, (Goulburn, NSW)
- Kwinana Biorefinery



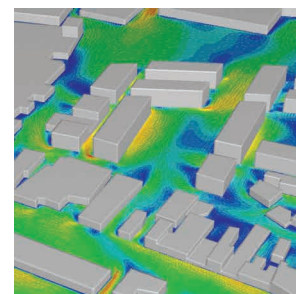
Woodlawn Recycling Facility

### Occupational

- Sydney CBD Cable Tunnel
- Artarmon Waste Management Centre
- Greystanes Estate Asbestos Works
- RAAF Richmond Indoor Air Quality Assessment

### Computational Fluid Dynamics

- Woodlawn Methane Capture Power Plant
- Bluescope Diesel Forklift Study
- Generator House Upgrade (Canberra)



Computational Fluid Dynamics

### Quarrying/Mining

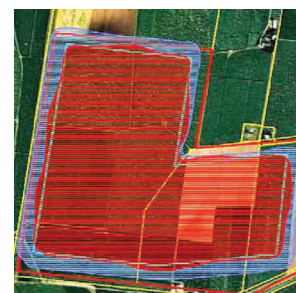
- Hidden Valley Gold Mine PNG
- Werris Creek Coal Mine
- Guyong Hard Rock Quarry NSW
- Albion Park Quarry
- Eurobodalla Quarry
- Belmont Coal Mine
- East Boggabri Coal Mine
- Broula King Gold Mine
- Somersby Fields Sand Mine
- Peak Downs Coal Mine
- Particulate Study



Peak Downs Coal Mine

### Odour

- Visy Pulp and Paper Mill (Tumut, NSW)
- Coffs Harbour Asphalt Plant
- Wirong Dairy Farm
- Dairy Farmers (Wetherill Park, NSW)
- Harrington Park Poultry Farm
- Mackay Effluent Reuse Project QLD
- Woodlawn Bioreactor Landfill
- Abattoir Complex (Scone, NSW)
- Waste Reprocessing Facility (Orange, NSW)



Mackay Effluent Reuse Project

Visit us at [www.heggies.com](http://www.heggies.com) or call **1300 434 443** to find out more.

Heggies Pty Ltd is a member of the International SLR Group  
[www.slrconsulting.com](http://www.slrconsulting.com)

## Carbon Accounting and Audits

SLR Heggies are qualified, experienced and independent greenhouse gas inventory and abatement consultants and verifiers. Specific services offered include:

- Greenhouse gas inventory, benchmarking and reporting
- Energy and greenhouse gas management planning
- Design and validation of carbon reduction projects
- Service, product and project life cycle assessments
- Greenhouse gas accounting, carbon audits and abatement verification

## Transparent, Traceable and Compliant GHG Accounting

Greenhouse Gas (GHG) Assessments are undertaken for all industry sectors by applying suitable local and international protocols and procedures such as:

- The Australian Greenhouse Office (AGO) Factors & Methods;
- Australian Standard AS ISO 14064 (2006) for the quantification, reporting and verification of greenhouse gas emissions and removals; and
- 2006 IPCC Guidelines for the Preparation of National Inventories.

The AGO Workbook provides a single source of current greenhouse gas emission factors for Australian organisations to estimate their emissions and abatement. The emission factors in the latest version of the Workbook have been harmonised with the international reporting framework of the Greenhouse Gas Protocol Initiative. In the quantification, monitoring and reporting of greenhouse gases in forest projects, our consultants are guided by Australian Standard AS 4978.1 (2006).

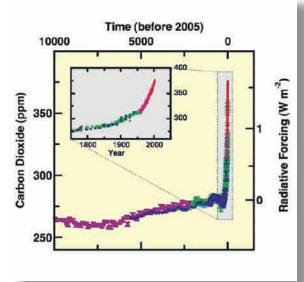
The use of local and international protocols and methodologies ensures that greenhouse gas assessments undertaken are transparent, traceable, repeatable and compliant. Reporting requirements for various schemes such as AGO, NSW GGAS and UNFCCC are supported.

SLR Heggies has completed many greenhouse gas quantification and assessment projects, including several greenhouse gas assessments for coal mining activities using Scopes 1 to 3 (direct and indirect Greenhouse Gas Emissions) as defined by the Internationally recognised Greenhouse Gas Protocol Initiative (World Resources Institute / World Business Council for Sustainable Development).

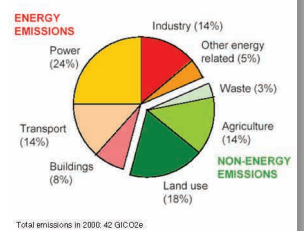
## Carbon Trading and Audits

Advice is provided on the various voluntary and mandatory State, National and International schemes and requirements relating to carbon offsetting, carbon trading and the acquisition of carbon neutrality. In the quantification, reporting and verification of greenhouse gas emissions and removals, SLR Heggies ensures that its approach is compliant with internationally recognised carbon trading protocols.

Finally, SLR Heggies offers practical guidance to our clients on financial opportunities arising from realising real carbon reductions. Support is provided for resource use reduction planning and clients advised on how they can capitalise on incentives offered by National and International carbon markets whilst maximising environmental benefits.



Carbon Dioxide Increase  
(Source: IPCC, 2007)



Global GHG Emissions in 2000  
(Source: Stern, 2006)



Coal – bed Methane As A Greenhouse Gas Emission



Power Generation – A Major Contributor



Renewable Energies (Solar)