Sustainability Reporting in Australia: An Important Part of the Solution

Dr Gavin M. Mudd
Environmental Engineering, Department of Civil Engineering, Monash University,
CLAYTON, VIC 3800

ABSTRACT
It is critical for all manner of organisations to ‘walk the talk’ and show that “actions speak louder than words” with respect to sustainability. A rapidly growing way of demonstrating sustainability performance is through public sustainability reporting – akin to financial reporting but focussed on the environmental, economic and social pillars of sustainability. Many major organisations in Australia now produce annual sustainability reports, including public and private companies, utilities, charities, community groups and even select government departments. The most popular protocol for public sustainability reporting is the ‘Global Reporting Initiative’ (GRI), a coalition of United Nations, civil society, government and industry partners. Using the GRI, reports include data and analyses of social issues, including human rights and labour conditions, energy consumption, solid, liquid and gaseous wastes, especially greenhouse gas emissions, land use, and economic contributions (taxes, wages, royalties etc), amongst other indicators. This paper reviews the GRI, and presents a broad ranging survey of the use of such reporting across Australia. The principal focus is on mining, gas, water and electricity utilities and consulting engineering groups as well as some government departments and major financial institutions such as banks. A brief comparison to overseas practice will also be incorporated. It is critical for many organisations that they can reliably demonstrate their sustainability performance with more than mere marketing buzz phrases – and GRI-style sustainability reporting facilitates such substantial evidence very well. In order to continue on the journey towards sustainability, public sustainability reporting will become increasingly common and, perhaps, just as important as statutory financial reporting (if not more so).

1. INTRODUCTION
There is no doubt that many companies in Australia have been early adopters and global promoters of sustainability reporting. The need for this style of reporting has grown in conjunction with the global shift to embrace the case for sustainable development. Although regular financial reporting has been well established for more than a century, sustainability reporting has only become important over the past decade.

The concept of sustainable development is essentially a values-based judgement, a decision of where and how we want our societies to thrive on this planet. That is, we want our communities, economies and environment to be sustainable so that future generations can enjoy the same (or better) opportunities than the present. This has often lead to the concept of the ‘triple bottom line’ of the three social, economic and environmental pillars which underpin sustainable development.

Despite the strong growth in sustainability reporting, there remains virtually no substantive analysis of this area within the engineering sector and its common industries (infrastructure, mining, chemicals, electronics, water, electricity, etc.). This paper analyses the current state of sustainability reporting within mining and chemical companies, utilities and major financial institutions such as banks. Links to key environmental issues such as energy efficiency, climate change and pollution emissions will be analysed and discussed. A brief review of sustainability reporting is incorporated to facilitate a comparison of the reporting across the various industry sectors in which engineers play a crucial role. The paper provides a valuable
overview of sustainability reporting and its current level of development in Australia – an area which will continue to grow in importance for all fields of engineering and related industries.

2. **SUSTAINABILITY REPORTING: A VERY BRIEF REVIEW**

The recent emergence of annual sustainability reporting is essentially an ongoing evolution from environmental management systems of the 1970s and 1980s, which in turn were a product of earlier quality systems of the 1960s era. Essentially, sustainability reporting is broadly intended to demonstrate how an organisation is performing with respect to a diverse range of sustainability issues such as water, energy, employment, education, economic flows, waste burdens, pollution loads, labour conditions and so on. The main drivers are varied for different companies or regions, but commonly relate to significant perceived or actual impacts on many of these aspects. For example, some mining companies began reporting to demonstrate their environmental performance to critics sceptical of their claims, some investment companies wanted to show they were not investing in ‘questionable’ projects (eg. conflict diamonds, poor labour conditions) while many South African companies needed to demonstrate their commitment to ‘black economic empowerment’ in the post-apartheid era.

In Australia, a range of industries have joined the sustainability reporting era, especially mining companies, financial institutions, electricity, gas and water utilities, chemicals producers, and many others. It appears that major civil construction companies have either not yet adopted annual sustainability reporting, or only produce annual reviews which are mostly qualitative in content. Given the range of looming issues with respect to sustainability (such as climate change, peak oil and energy), it can be expected that the impetus for reporting on numerous sustainability ‘metrics’ will continue to grow.

2.1 **The Global Reporting Initiative (GRI)**

Key issues for an organisation’s sustainability performance are transparency and accountability. The Global Reporting Initiative (GRI) was established for this very purpose – to facilitate a high standard of sustainability reporting comparable to financial accounting and reporting. The GRI is a coalition of the United Nations, industry, government and civil society groups. Established in 1997, the GRI released a draft reporting protocol in 1999, launching the first edition in 2000 and the third edition in October 2006 (GRI, 2006). Following the Johannesburg Earth Summit in 2002 (‘Rio+10’), increasing numbers of companies and organisations now report annual sustainability performance based on the GRI protocol. Specific sector supplements are available, such as the mining, finance, electrical utilities, public agencies and so on, allowing for additional sector-specific information and data.

Overall, there are a range of sectors in which engineering plays a crucial role and are of clear relevance to sustainability – either for a single project, region, company, government or community. The GRI outlines a range of qualitative and quantitative reporting indicators which allow a company or organisation to demonstrate their sustainability performance across the ‘three pillars’ of social, economic and environmental issues. Some indicators are considered core while others are additional (ie. voluntary). The GRI itself is a voluntary system and the extent to which an organisation follows the GRI allows an ‘application level’ to be assigned, giving a measure of how thoroughly the GRI is utilised in a given report. The focus areas for GRI indicators include (GRI, 2006):

- Economic – 7 core and 2 voluntary indicators;
- Environmental – 17 core and 13 voluntary indicators;
- Labour practices – 9 core and 5 voluntary indicators;
- Human rights – 6 core and 3 voluntary indicators;
- Society – 6 core and 2 voluntary indicators; and
- Product responsibility – 4 core and 5 voluntary indicators.
Recent work investigated sustainability reporting in the mining industry (Yongvanich & Guthrie, 2005; Mudd, 2009), the food and beverage sector (Guthrie et al., 2008) or the Australian public sector (Farneti & Guthrie, 2009). To date, there are few studies examining sustainability reporting in major engineering sectors such as utilities, construction and other industries. Although all areas of sustainability are often closely linked and are clearly important, this paper will focus primarily on the environmental pillar.

2.2 Environmental Issues and the GRI

Environmental issues contains the highest number of indicators in the GRI guidelines. Given the prominent role that engineers can and do play in this area, they are worth a closer examination. The various indicators must also be considered in light of ongoing policy and legislative developments with respect to energy, greenhouse gas (GHG) and pollutant emissions. For example, the recent introduction of the *Energy Efficiency Opportunities Act 2006* now requires mandatory public reporting by all organisations in Australia which consume energy above 0.5 PJ/year. Further indicators in specific sector supplements are referred to in results. Another major area of similar statutory reporting is the National Pollutant Inventory, whereby emissions of specific pollutants above certain loads requires public reporting to the Commonwealth by facility (see NPI, 2009).

2.2.1. Energy

The GRI has two core and three voluntary indicators for energy consumption (GRI, 2006):

\- **EN3** – direct energy consumption by primary energy source (core);
\- **EN4** – indirect energy consumption by primary energy source (core);
\- **EN5** – energy saved due to conservation and efficiency improvements (voluntary);
\- **EN6** – initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives (voluntary); and
\- **EN7** – initiatives to reduce indirect energy consumption and reductions achieved (voluntary).

2.2.2. Water

The GRI has two core and two voluntary indicators for water consumption (GRI, 2006):

\- **EN8** – total water withdrawal by source (core);
\- **EN9** – water sources significantly affected by withdrawal of water (voluntary);
\- **EN10** – percentage and total volume of water recycled and reused (voluntary); and
\- **EN21** – total water discharge by quality and destination (core).

2.2.3. Wastes

The GRI has two core and one voluntary indicators for wastes (GRI, 2006):

\- **EN22** – total weight of waste by type and disposal method (core);
\- **EN23** – total number and volume of significant spills (core); and
\- **EN24** – weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally (voluntary).

2.2.4. Pollution Emissions

The GRI has five core and one voluntary indicator for pollution emissions (GRI, 2006):

\- **EN16** – total direct and indirect greenhouse gas emissions by weight (core);
\- **EN17** – other relevant indirect greenhouse gas emissions by weight (core);
\- **EN18** – initiatives to reduce greenhouse gas emissions and reductions achieved (voluntary);
\- **EN19** – emissions of ozone-depleting substances by weight (core);
\- **EN20** – NO, SO, and other significant air emissions by type and weight (core); and
\- **EN23** – total number and volume of significant spills (core).

3. METHODOLOGY AND APPROACH
To investigate the extent, state and quality of sustainability reporting in Australia in major areas related to engineering, a broad survey of companies was undertaken, primarily via their public reports and/or websites. The companies were analysed for reporting year 2008 only (or closest year). All companies were assessed for the extent to which they report on the specific GRI environmental indicators noted previously. This approach allows a comparison of various companies within a given sector, such as mining, or cross-comparison of different sectors, such as banking and consultants.

4. RESULTS
The overall survey results are compiled in Table 1, showing a summary of the main sectors and principal extent of detail or data reported for each major environmental issue. The variability both across and within sectors is readily evident, and is discussed further below.

4.1 Extent of Sustainability Reporting
Based on Table 1, most companies have utilised a hybrid of the Global Reporting Initiative and an internal system as the primary basis for their sustainability reporting. The extent to which the GRI is followed, as well as data and information presentation, can still vary significantly. For example, all gas companies use GRI but do not provide data or information on energy sources as required by indicators EN3 and EN4. There are, however, numerous companies who do not publish annual sustainability reports in any manner. Some organisations now include such matters in a single annual report combining normal corporate and sustainability reporting. Given the rapidly increasing global popularity of the GRI, both by organisations using it as well as a wider array of stakeholders expecting it, the extent of GRI-based reporting is likely to continue increasing across many varied sectors, companies and organisations, including government agencies or departments.

4.2 Energy
Energy sources and consumption are a fundamental area with respect to sustainability – given the urgency of climate change due to greenhouse gas emissions from widespread fossil fuel use, the impending challenges of peak oil and continuing growth in global energy demands (eg. China in particular). It is therefore surprising to see the variability in Table 1 in energy reporting by the five main sectors analysed. For example, some companies only give total energy consumed but do not state the source (as required by EN3 and EN4), while others give detailed energy data by site or operation. Site-specific data is especially useful for examining performance over time, as it allows an assessment of trends in energy efficiency. For organisations such as banks, individual site data is clearly impractical given the voluminous number of branches operated, but for major industrial projects such as power stations or mining projects, site data is invaluable. There is ample room for innovation in compiling, reporting and analysing data site and group energy data, such as per employee, per office space, and so on.
Table 1: Environmental aspects of sustainability reporting in Australia (2008)

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<td>Total</td>
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Note: This table and analysis is intended as an indicative list – there are, of course, many more companies and organisations involved in each sector.

Notes: NR – not reported; Dir+Indir – Direct and Indirect; Al – aluminium; Au – gold; Cu – copper; U – uranium. A-M-G-H-W – Air (NOₓ, SOₓ, CO, PM10, etc), Mine (tailings, waste rock), General, Hazardous and Water wastes, respectively. ¹Internal – these are often still rated against the GRI. ²Sub-Group for reporting of countries but not individual mines. ³BHP Billiton do release individual site reports but they are not done regularly and only for a small number of sites (see their website – www.bhpbilliton.com), also BHP Billiton only publish high and low quality water consumption totals. ⁴Single operation company (ie. one mine and/or power station complex). ⁵Origin and Woodside only report some data by site. ⁶Sites are by country only (not offices or branches). ⁷Mainly paper consumed and/or cardboard.

An excellent example of combined energy-greenhouse emissions reporting for platinum group metal mining is given in Figure 1, showing the breakdown of energy sources and the principal mining stages where energy is consumed and GHG emissions are released. In addition, the energy intensity over time for coal mining in the Illawarra is given in Figure 2, as well as anonymous examples of energy reporting.

![Figure 1: Anglo Platinum Ltd energy supply-demand and greenhouse gas emissions for 2007 (AP, 2007)](image-url)
The level of detail of energy reporting at present is commonly insufficient to allow assessment of important aspects such as the extent of renewable (i.e., low GHG intensive) energy sources, efficiency improvements over time or the true impact of new technologies, project expansions or upgrades to infrastructure. For industrial sectors especially, variations in energy consumption from year to year associated with changes in production can often mask increasing energy intensity of operations, with the Illawarra example in Figure 2 being a rare exception in this regard. It is important to report long-term data (i.e., ideally at least several years), as this facilitates more substantive analyses of energy issues.

Finally, few companies are publishing realistic ‘stretch’ targets for total energy consumption and/or intensity for their facilities or group. While targets are established by some, they are often not achieved (with virtually no consequences). Targets can be very useful tools, both to help operations reduce ongoing energy costs as well as demonstrating that real progress is being achieved to external stakeholders (investors, government, critics, etc.).

### 4.3 Water

There are numerous issues relating to water and sustainability, with reporting reflecting this complexity in the variability of reporting shown in Table 1. The major issues in the GRI are the volume of consumptive use (EN8), impacts on water resources from withdrawals (EN9), extent of recycling and reuse (EN10), and the quality and receiving environment of any water discharges (EN21). As can be seen from Table 1, most organisations do not report recycling – despite many mines and power stations practicing recycling as part of normal operations. Examples of water reporting are shown in Figure 3.

#### Table 1: Water reporting examples

<table>
<thead>
<tr>
<th>High-quality water consumption</th>
<th>Megalitres</th>
<th>120,800</th>
<th>132,630</th>
<th>153,000</th>
<th>153,200</th>
<th>160,230</th>
<th>161,670</th>
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<td>Megalitres</td>
<td>33,800</td>
<td>25,600</td>
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#### Figure 3: Typical examples of reporting of water consumption (top) or metals in water discharges

Note: top – company/group totals from years 2001/02 to 2006/07 (left-to-right); bottom – water discharges and quality for four mine sites (by row).
Another critical issue which is poorly addressed by the GRI is the quality of consumed water. A particular water quality is required for each purpose (eg. drinking water, irrigation). At numerous mines in arid regions the water ‘consumed’ is often brines from hypersaline groundwater, even up to 300 g/L (see Sparrow and Woodcock, 1993).

In Australia, most major populated regions are already facing prolonged drought. Clear reporting of water consumption, recycling, quality and impacts on water resources to demonstrate improvements in water use is of significant public interest and benefit.

4.4 Wastes

The extent of wastes reporting in Table 1 is variable, a somewhat surprising result given the long-term focus on waste disposal and management within the engineering profession and by industry and government. For example, some mining companies do not report “waste rock” (classified as barren rock with no economic metal or mineral content), which can reach tens of millions of tonnes annually for large open cut mines, but do report the relatively small tonnages of landfill wastes, recycled steel, batteries, tyres etc. Two of the gas companies in Table 1 do not report any general (ie. municipal landfill) or hazardous (ie. industrial) wastes, while most electricity companies do not report annual coal ash volumes from coal combustion. An example of waste reporting for the Mt Isa mining field is given in Figure 4 (note no waste rock reported).

An important part of waste management is to increase the extent of recycling wherever possible. Reporting of these results are highly variable, with no clear pattern across industry sectors. Banks mainly focus this area on paper wastes, while industrial facilities tend to focus on recycling or reuse of tyres, batteries, steel and so on. There is very little reporting of hazardous waste data or management.

4.5 Pollution Emissions

Over the past few decades, there has been a major focus on sources and control of gaseous pollution, particularly for sulfur dioxide (SO$_2$, a contributor to acid rain), nitrous oxides (NO$_x$), particulates and GHG’s such as carbon dioxide (CO$_2$ and equivalents). These can be emitted directly or indirectly, with reporting varying accordingly by sector. Reporting of GHG emissions rarely discerns between Scope 1, 2 or 3 emissions, and mostly excludes Scope 3.

At present, there are various systems and statutory requirements for monitoring and/or reporting pollution issues. First, major industrial facilities will have ongoing environmental monitoring of air, water and soils, commonly through a state environmental regulator (eg. EPA). It is still relatively rare for this data to be included in sustainability reporting, though some companies refer to or discuss results (and show a graph in the odd report). Second, the National Pollutant Inventory (NPI) in Australia requires reporting of specified pollutant emissions if they exceed threshold loads (eg. 10 t/year; see NPI, 2009). The main NPI-listed pollutants are organics (eg. polycyclic aromatic hydrocarbons, benzene, etc.), heavy metals (eg. As, Hg, Cd, Be, Pb, Zn etc.), particulates (as
‘PM\textsubscript{10}’) and gaseous pollutants (SO\textsubscript{2}, NO\textsubscript{x}, CO, etc). There appears to be very little integration of statutory NPI data into sustainability reporting, even for major industrial facilities (Mt Isa being a rare exception, which has included NPI information for several years now; see Xstrata (2009) and precursor reports).

For some major industrial projects, such as mines or gas plants, sustainability reporting can be used to show the progress of long-term efforts in reducing pollution loads. An example from Origin is given in Figure 5, showing wide variability over several years.

![Graph showing SO\textsubscript{x} and NO\textsubscript{x} emissions over time for Origin's gas exploration and production facilities](adapted from Origin, 2008)

**Figure 5:** SO\textsubscript{x} and NO\textsubscript{x} emissions over time for Origin’s gas exploration and production facilities (adapted from Origin, 2008)

### 4.6 Presentation

The presentation of all inputs, outputs and recycling for an individual site/project, or a group as a whole, can be a very useful way to communicate annual performance. Such diagrams tend to be uncommon, with one example from (former) WMC Ltd given in Figure 6. Given the importance of visual presentation in almost all forms of public reporting, these diagrams add value by showing the relevant processes, links and data in a simplified view for all audiences.
5. DISCUSSION
The extent and quality of sustainability reporting in Australia continues to evolve, across a range of industry, business and government sectors. Critical issues emerging are now discussed further.

Arguably, the most common reason why many companies invest in sustainability reporting is to improve their public reputation, especially among critical stakeholders such as local communities, financial institutions, governments or even environmental groups (from local to international). Whether this is ‘greenwash’ or sincere is effectively in the eye of the beholder. Based on the author’s extensive review and knowledge of sustainability reporting for a wide variety of companies, it is clear that for the majority they take it very seriously and are continually improving over time. Some companies, however, are obviously using it more as a marketing tool, probably to ensure they aren’t seen as lagging behind industry leaders.

The GRI has now been available for over a decade, and its rapid uptake since 2002 is helping to ensure that more companies are aware of their target audiences and primary purposes in preparing and publishing annual sustainability reports. For some companies, the process is helping to identify and manage business risks, find cost savings, address social concerns and reduce environmental impacts, amongst other outcomes (Brown et al., 2009). There is clear scope for continuing improvement in this area of sustainability reporting.

Another important issue observed in many reports is data consistency. That is, some of the data reported is changed in subsequent years with little explanation or justification. Ensuring a high degree of data consistency over time is critical, and this is underpinned by thorough internal protocols, quality control procedures and technical rigour in preparing public sustainability reports. External, as opposed to internal, verification and quality assurance will undoubtedly become more important in the future.

In financial reporting, the overall performance of a business is often reduced to one or two single indicators – such as annual profit or return on investment. For sustainability, however, there is no realistic methodology to show a similar over-arching single indicator.

As such, the approach used by various companies is quite different. Some companies present trends over time for a range of separate aspects, such as energy, water or emissions, with examples shown in Figure 5. Although many companies present similar graphs in their reporting, very few cover more than a few years. This is problematic, since issues such as project expansion, production variability or implementation of efficiency measures can all affect trends over time. In order to be able to discern the effects of such factors on trends over time, it is important to present a longer time series, up to several years or more (as available), and using common methods and scales. In addition, it is important to present not only unit efficiencies, as in Figure 2, but also totals...
– since it is totals of resources such as water or energy or emissions which is critical with respect to environmental limits at a local or even global scale. A primary objective for true sustainability is to drive total down consumption and emissions in the long-term while maintaining or even enhancing productivity. All primary data should therefore be included, in tables or an appendix, so that such claims can be demonstrated – and by graphing both totals as well as unit efficiency over several years.

A major aspect of sustainability reporting is the extent of quality assurance and independent auditing which is included in the process. There is no compulsory way in the GRI to undertake quality assurance. Almost all companies have internal assurance programs or verification systems in place of varying scales, with some undertaking external assurance. The GRI recommends external assurance, but leaves the extent and manner up to individual organisations to establish and justify in their reporting. For many stakeholders, especially community or environmental groups, external assurance is increasingly being seen as a way to discern ‘greenwash’ from genuine sincerity in sustainability reports. Further aspects in this regard are the extent to which the external assurance is allowed to audit the source data, or whether they are only assessing the final report itself. As the awareness of the GRI increases, it is very likely that demands for similar auditing standards to financial accounting will be required for sustainability, and could even become a statutory requirement.

Although there are well understood targets for returns on investment or profitability, sustainability reporting offers substantive opportunities to set ambitious targets which can be both used internally and externally. There are some excellent examples in this regard in the water sector. Many major water utilities in Australia have now pledged difficult stretch targets on renewable energy and/or carbon neutrality in the near future – Melbourne Water to use 100% renewable energy and carbon neutral by 2018; Sydney Water to be carbon neutral for electricity and energy by 2020, as well as Water Corporation’s (WA) ‘aspirational’ target of being carbon neutral by 2030. Strong sustainability targets, without doubt, are critical in setting clear directions and facilitate transformative change – crucial on issues such as energy, climate change and greenhouse gas emissions, water efficiency and so on. It is better to aim for a high target and come close, than aim low and have a pyrrhic victory.

A final, brief comment needs to be made on the timeliness of sustainability reports compared to financial reports. The latter are invariably a legal requirement, and as such have very strict timelines for preparation and release. Sustainability reporting, however, has no statutory basis and their publication is largely up to corporate policy and goodwill. Many companies are improving by releasing their sustainability reports at the same time as annual financial reports, although many choose to take more time and release them shortly after financial reports. Either strategy has merits and issues, and it remains unclear as to whether a particular approach should be enforced. Furthermore, while group reports are often produced in a timely fashion, for many large industrial companies (miners, oil-gas, etc), individual site reports can often take a considerable amount of time to be produced and released (sometimes up to 3-4 years later). Achieving timely release of sustainability reports (group and individual) will help to ensure that they are viewed and taken more seriously.

### 6. SUMMARY OF KEY MESSAGES

- The Global Reporting Initiative is proving a viable protocol for sustainability reporting and is growing very rapidly across numerous sectors and organisations in Australia;
- Environmental issues requires a comprehensive approach to reporting a wide array of data and communicating an organisation’s performance;
- Sustainability reporting affords the opportunity to set challenging stretch targets for both internal and external use, thereby helping an organisation to substantively improve their performance; and
- Sound sustainability reporting should allow an organisation to be recognised as an industry leader, based on demonstrated performance over many years.

### 7. CONCLUSION
The overall status of sustainability reporting is improving and evolving rapidly in Australia, as more organisations and sectors join the initiative. At present, many large utilities, industrial companies and even banks now publish annual sustainability reports, most commonly as stand alone reports alongside annual financial/corporate reports. The Global Reporting Initiative (GRI) remains the most popular protocol or basis for sustainability reporting, and offers a broad scope for presenting information and data on environmental, economic and social performance. There remains significant variability in the level of environmental detail reported, such as water, energy, wastes, and so on, but this is reducing as understanding of the GRI improves and confidence grows in the value of such reporting. The data from such reports is invaluable in understanding the energy costs of water, gas or metals, and allows an organisation to demonstrate its successes and discuss its failures fairly. This is a noble outcome indeed, allowing transparency and accountability – at site-specific, company/group or even industry level. Given the numerous fundamental challenges facing the planet at present, such as climate change, water security, peak oil, peak minerals, and so on – the continuing evolution and improvement in sustainability reporting is most welcome indeed and bodes well for the future. Sustainability reporting is an important part of the solution and engineers will continue to play a critical role in this area.

8. REFERENCES

9. BIOGRAPHY
Dr Gavin M. Mudd joined Monash University in May 2003 and is presently Lecturer and Course Director for Environmental Engineering. His broad ranging experience has included research, teaching and advocacy, with a particular focus on environmental management and impacts associated in mining, as well as important contributions to groundwater resources and management. He continues to be very active in research and teaching, adopting a strong multi-disciplinary approach to all of his work, including industry, community and government groups.