



2011 Report

# Sustainability

Our strength is our people



## Scope of this report

Gammon Construction Limited is a private company jointly owned by Jardine Matheson, an Asian-based conglomerate, and Balfour Beatty, a world-class engineering, construction and services group. The principal activities of the company are civil engineering, foundation works, building construction, manufacturing and supply of fabricated steel, manufacturing and selling concrete and rental of plant and machinery. This report covers the operations of the company and its subsidiaries in all markets for the 2011 calendar year.

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[www.gammonconstruction.com](http://www.gammonconstruction.com)

## Our Brands



*Civil, foundations, building, E&M  
and construction services covering  
plant and equipment, concrete  
technology and steel fabrication*



*Public-Private  
Partnership business*



*Engineering design services*

**Sustainability:** Our strength is our people

Through the case studies presented in this report, we demonstrate our people's ability to work individually and collectively to achieve sustainability for our clients and our company.

## Chief Executive's Statement

"Achieving our sustainability vision requires us to continuously challenge our practices, processes, behaviour and ambitions."

We are now entering a 'golden era' of construction with enormous investment from government and the private sector to improve infrastructure, which will benefit Hong Kong and Singapore as a whole. Our key markets hold the enviable opportunity to advance sustainability during a period of relative prosperity.

To capitalise on this opportunity, the industry must address challenges in the workforce and supply chain. It is crucial that we realise and promote the construction sector as a viable and safe career.

Although I am proud of Gammon's efforts to promote industry-wide safety over the past years, I was greatly saddened by the deaths that occurred on our projects in 2011. These tragic incidents were very distressing to me personally and to all of my colleagues at Gammon.

Deaths and near misses remind us of the weighty responsibility we have to remove risk. The Directors and I are resolute in our belief in Zero Harm, but we can and must do more.

Another challenge is the ageing Hong Kong workforce, over 40% of whom are over the age of 50, and the looming shortage of skilled trades. There are no shortcuts, and action by the whole supply chain is needed now; real investment is needed to attract new blood and build their skills.

At Gammon, we are working with our clients, government, industry groups and subcontractors to provide onsite training. We are using our influence in government and industry to encourage policies that call for apprenticeships as a requirement for awarding contracts.

We are also using our influence to promote the use of sustainable materials in our projects. As construction relies on a multi-level supply chain, we have been engaging our key suppliers and subcontractors and investing in building their capacity to provide sustainable materials. In 2011, I was pleased to formalise a policy on Sustainable Procurement that will guide our supply chain partners, who are keen to work with us on sustainability.

The sustainability of our business depends on our ability to change and innovate. At Gammon, we have embedded innovation in our culture and are constantly looking for innovative solutions. Building Information Modelling (BIM) and 3D modelling tools are just two examples of how we are using technology to achieve greater efficiency. Singapore has targeted the construction industry to use BIM widely by 2015.

Hong Kong is lagging in the transition to a low-carbon economy despite predictions by the Hong Kong Observatory that we can expect warmer weather, more variable rainfall, and a sea level that keeps rising.

Globally, buildings consume 40% of electricity, but in Hong Kong it is 89%. I hope the Hong Kong Construction Industry Council's Zero Carbon Building project propels more action on energy and carbon efficiency in our markets for new buildings, districts and the thousands of existing buildings.

I believe that setting priorities and working together with government and the supply chain will create a more sustainable future not only for Gammon, but also the industry and the communities in which we operate.

At Gammon, we are ready, able and committed.



**Thomas Ho**  
Chief Executive  
Gammon Construction Limited  
March 2012



## 2011 Performance

### Zero Harm

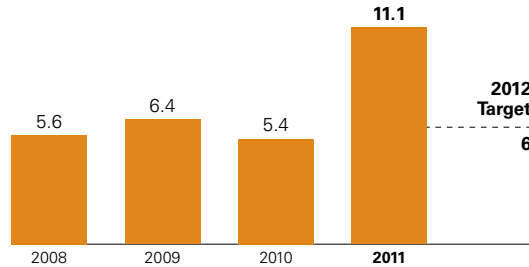
Reduction of risk leading to:

- Zero fatalities
- Zero permanently disabling injuries
- Zero injuries to members of the public

see page 8

### Accident Incident Rate

per 1,000 workers



Although our 2011 AIR rose, Gammon compares with the wider industry. The principal factors in Gammon accidents during the year were housekeeping, lifting or carrying materials, and moving objects.

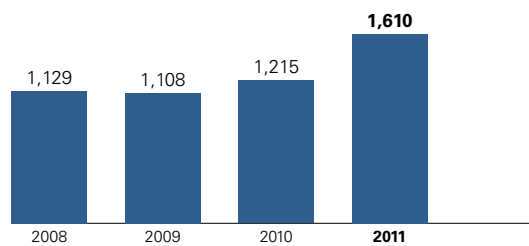
### Prosperous Markets

- Promote green procurement practices
- Increase supply chain capability and capacity
- Implement best practices in risk management
- Provide leadership in the construction industry

see page 12

### Turnover

US\$ millions



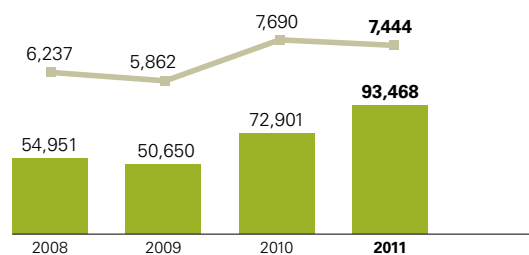
During the year turnover increased 32.5%, and our order book grew to an all-time high with commitments up to the year 2016. This allows us to plan and invest in our capabilities for the future.

### Environmental Stewardship

- Use resources wisely
- Waste less
- Emit less noise and air pollution
- Act as responsible stewards of the land and the resources afforded to us

see page 16

### Carbon Footprint and Intensity



Footprint (tonnes CO<sub>2</sub> equivalent)  
Intensity (kg/HK\$1m turnover)

Trends show a slight delinking of CO<sub>2</sub>(e) from our business growth. Whilst our total Scope 1 and 2 carbon emissions increased in 2011 in tandem with our business growth, our carbon intensity remained 40% below our 2005 baseline.

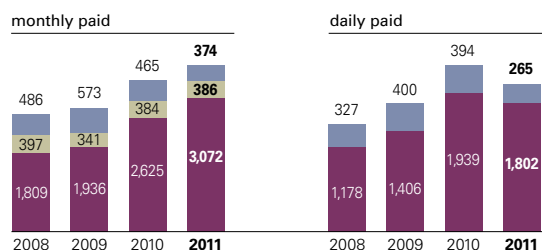
### Strong Relationships

- Develop our employees and workforce
- Contribute to the betterment of the communities in which we operate
- Encourage open dialogues among all our stakeholders

see page 20

### Workforce

monthly paid staff and daily paid workers



Hong Kong & Macau  
China  
Singapore

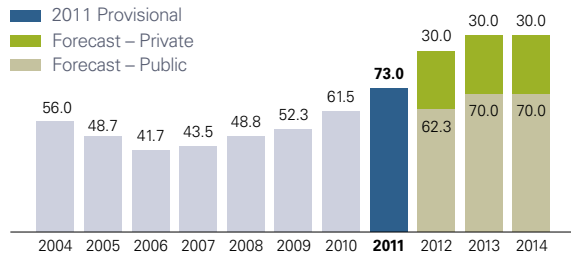
The workforce expanded significantly, mainly due to the upsurge in workload in Hong Kong. We succeeded at bringing in new blood during the year to meet our business growth and succession needs, and continued to invest in training and development to assure the quality of our human capital.



## Performance and Vision

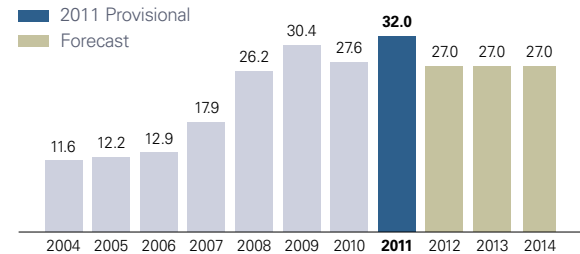
### Construction Market (Hong Kong)

in HK\$ billions



### Construction Market (Singapore)

in SG\$ billions



Construction work performed by contractors (excluding repair, maintenance, alterations and special trades). Information up to 2011 from the *Report on the Quarterly Survey of Construction Output* issued by the Census and Statistics Department, HKSAR Government. Forecast based on government estimates from 2012/13 budget speech and internal estimates for private sector of HK\$20–30 billion.

Value of contracts awarded. Projected demand for 2012 is an upper bound figure published by the Building and Construction Authority, Singapore Government. The range is S\$21–27 billion for 2012, S\$19–27 billion for 2013–14.

Source: Singapore Building & Construction Authority

## Our Sustainability Framework

Our unique sustainability framework is based on four interconnected pillars that incorporate not only the triple bottom line of 'people, planet, profit', but also a fourth pillar of health and safety. In this report, we address people issues under Strong Relationships; planet under Environmental Stewardship; profit under Prosperous Markets; and health and safety under Zero Harm.

## Our 2020 Sustainability Vision

By 2020, we will be the industry leader in helping clients deliver world-class sustainable infrastructure projects.

We will deliver products and services that are designed to use resources wisely and minimise negative social and ecological impacts. By focusing on sustainability, Gammon will capitalise on opportunities by leading with integrity; advancing engineering and environmental innovation; caring for the safety and health of our workforce; and engaging with our communities.

To achieve this vision, a roadmap will be rolled out across the company in 2012.

## Achievements and Challenges

Since 2005 our turnover has doubled, and the workforce on our sites has grown to about 16,000. Sustainability has enabled us to meet the challenges of a growing business and will help us continue meeting them in the coming years. One of the greatest challenges for the Hong Kong industry that we foresee will be a shortage in skills. We will continue to lead in developing the workforce but cannot do it alone. We need the collective action of government, clients and contractors.

As the health and safety of our workforce is a primary concern, we hired two central nurses as Healthcare Leaders to monitor workers' health and promote a healthier lifestyle.

Through our Green & Caring Site Commitment programme, we are embedding sustainability, the environment and caring in our culture with a view to engaging the workforce and communities at the project site level.

Over the next five years, material costs and global resource demands will escalate. These trends support our sustainable procurement policy and focus on key building materials. As efficient energy solutions, life cycle assessments and the lower-carbon economy begin to take hold, we must continue improving our skills and systems.

In 2011, alongside other leading companies we signed the Manifesto for Energy Efficiency in Buildings of the World Business Council for Sustainable Development. As buildings are core to our business, we are committed to practising energy efficiency in our own buildings as well as the projects we construct for clients.

During the year, we received a Silver in the Green Purchasing Award 2011 organised by the Hong Kong Green Council, as well as a Star, Green and Gracious Builder Award from the Singapore Building Construction Authority.

Staff volunteerism continued to rise in 2011. In just three years, the number of volunteer hours among our staff has risen from 1,700 to 5,226. We attribute this growth to the strength of our relationships with our CSR partners and focus on education, skills development and quality of life. Our staff recognise the relevance of these programmes to their lives, and are now much more enthusiastic about increasing their commitment to serving the community.

With good partners and core activities in place, we are prepared to take CSR to the next level. Our challenge is identifying the right activities that utilise our unique skills and capabilities to have the most meaningful impact. Further, we are working with our community partners to understand our legacy impacts on society.

## Listening to Stakeholders

In preparing this report, we carried out regular engagement sessions with our key stakeholders. Engaging stakeholders enables us to learn what issues are most important to them and to identify issues that have a significant impact on our business and sustainability agenda. This further allows us to communicate our progress and direction.

Stakeholder groups identified by us include employees, clients, consultants, subcontractors, suppliers, NGO partners, the local community and shareholders. Stakeholder engagement sessions during the year were held with key clients, consultants and suppliers.

Through surveys held every year, we solicit the opinions of employees, subcontractors and suppliers on sustainability issues and our sustainability report. This is supplemented by an annual client survey.

We also engaged our CSR partner-NGOs at a forum with directors that aimed to deepen our relationships and increase our impact.

One of the suggestions that emerged from our stakeholder sessions was to include more case studies in our sustainability report. Correspondingly, we have included four case studies in this report that illustrate our progress and go deeper into our abilities to deliver sustainability.



During the client stakeholder engagement session, WH Lam, Director of Wong & Ouyang (HK) Ltd., said, "Innovation is one area where Gammon has a high level of competence and can lead. Innovation should take one of the first priorities in your report."



At the second CSR Forum, directors from Gammon consulted with NGO partners on developing relevant programme initiatives that will have the greatest benefit in the community.



Frank Wan, Partner, Environmental Resources Management Hong Kong

"We use your report to see how the construction industry is doing in terms of sustainability. We can also see how you are sharing your experience implementing sustainability ideas with other construction-related parties."



John Latter, Executive Manager, Property Project Management, Hong Kong Jockey Club

"We look at what you're measuring and how you are evaluating your performance; this, in turn, influences how we judge our own environmental performance."

## Responding to Stakeholders

Key issues	
<b>Zero Harm</b> <ul style="list-style-type: none"> <li>• Safety compliance and response to incidents</li> <li>• Worker health</li> <li>• Frontline staff involvement</li> <li>• Green &amp; Caring sites</li> </ul>	<b>Environmental Stewardship</b> <ul style="list-style-type: none"> <li>• Greenhouse gas emissions and energy reduction</li> <li>• Plant &amp; Equipment replacement scheme</li> <li>• Controlling noise</li> <li>• Water recycling</li> <li>• Wise use of materials, reduce waste</li> </ul>
<b>Prosperous Markets</b> <ul style="list-style-type: none"> <li>• Labour shortage and wage inflation</li> <li>• Innovation and technology</li> <li>• Supply chain engagement and training</li> <li>• Green procurement</li> <li>• Risk management</li> </ul>	<b>Strong Relationships</b> <ul style="list-style-type: none"> <li>• Community engagement</li> <li>• Cooperation with NGOs, skills for the community/NGOs</li> <li>• Staff training, skills/labour development</li> <li>• Integrating new staff</li> </ul>

### Materiality

In preparing this sustainability report, we responded to the recommendations of our auditors in previous reports. They suggested that we identify key stakeholders in a systematic manner and address the material issues raised, and align the content with the GRI G3.1 reporting framework, particularly in regard to corporate governance and human rights issues.

In 2011, we formalised our stakeholder engagement process and took the views of our key stakeholders into consideration when determining the material issues covered in this report. Key stakeholder groups include employees, clients, consultants, subcontractors, suppliers, NGO partners, the local community and shareholders.

Material issues covered in this report include the actions we have taken in response to the fatalities on our worksites; training; environmental protection; green procurement; innovation; and engagement with our CSR partners. These issues are discussed in depth in the relevant sections of this report.

The content of the report is aligned with the framework of the GRI G3.1 Construction and Real Estate Sector Supplement.

Issues not addressed include corporate governance, as Gammon is a privately-held company, and human rights. Gammon complies fully with government legislation and international conventions regarding human rights and labour rights in all of the markets in which we operate; compliance by our supply chain partners is verified as part of the factory inspection process.



Natalie Cheng, Training Manager,  
Gammon Construction Limited

“The stakeholder engagement session was a very good platform for our clients and consultants to share their experiences, inspire each other and discuss new ideas. As the session moderator, I thought it was a valuable opportunity for Gammon to learn about the issues important to them.”





The traditional method of formwork (left) vs the mechanical formwork system (right) at the Cathay Pacific Air Cargo Terminal project. Using the latter system allows us to eliminate scaffolding, which helps us build more safely and with greater quality.

## A Culture of Innovation

Innovative ideas come to us from all levels of our organisation and our partners; the main challenge, however, is not innovation itself but the process of embedding change into our culture, thinking and practices on an ongoing basis.

Our approach to innovation is to develop methods and technologies for specific projects, which allow us to build up a store of knowledge that can be applied to future projects. We do this without losing our focus on doing the basics right.

Gammon's reputation for innovation was affirmed in the awards we received in 2011. These included the International Project of the Year prize in the category of Technical Excellence at the Ground Engineering Awards in London for the Mole Removal, Phase II Project. The Singapore Building Construction Authority also awarded us three Construction Productivity Awards – Best Practices and Innovations, which recognise best practices and innovative ideas in construction productivity.

### Championing new practices

In 2011, we introduced or developed a number of innovative new technologies.

One of these was GEMS (Gammon Engineering Management System), a database tool we developed internally for managing design changes. Unlike traditional paper-based systems, GEMS allows for quick and efficient design checking of site changes so that work can proceed safely and without delay. This makes tracking changes easier as all information is centralised. Changes thus become faster to implement and more transparent, leading to greater site safety and quality.

Started as a pilot project nearly five years ago, GEMS is now being used on every project managed by Gammon to save clients time and money.

Building Information Modelling (BIM) is another technology we have promoted in Hong Kong. Over the past year, we

extended the power of BIM and are developing our own plugins to incorporate a time component (4D) and quantity take-off module (5D).

Along with these advancements, we can now do virtual energy modelling and are working on ways to measure the embodied carbon in a project. We believe these capabilities will benefit our customers greatly, as energy efficiency is emerging as a key theme against a backdrop of rising energy consumption. According to the International Energy Outlook 2011 report (US Energy Information Administration), global energy consumption levels are projected to increase by 53 per cent from the year 2008 to 2035. For the same period, energy use in non-OECD Asia is expected to rise by 117 per cent, with China and India leading demand.

Gammon innovation will also be applied at West Kowloon Terminus Station North for the Guangzhou-Shenzhen-Hong Kong Express Rail Link. This joint venture project, which was awarded to us in 2011, includes a 250,000-square metre underground rail terminus building valued at nearly HK\$8.9 billion. To construct the terminus, we will make use of the innovative slab and beam construction technique we developed for the Cathay Pacific Services Ltd Air Cargo Terminal. The method eliminates the need for scaffolding through the construction of a mechanical formwork system, which helps us build faster, more safely and with higher quality.

### Promoting innovation at Gammon

Innovation is promoted at all levels of the company and with our suppliers and subcontractors, as we believe that everyone is capable of contributing.

To encourage innovation in our ranks, we hold innovation competitions on an annual and monthly basis. A further incentive is the seed money (HK\$2 million) we provide to help entrants grow their ideas. There were 42 entries in the 2011 annual Innovation Competition, with the winner receiving HK\$50,000.



## Creating value from mud

The Grand Prize in our annual Innovation Competition was awarded to the Green Treatment of Marine Mud for In-situ Backfilling at Housing Authority Kai Tak Site 1A in Hong Kong.

The common practice is to dispose of marine mud as a waste at marine dumping sites. This is not environmentally friendly, and obtaining a dumping permit is a time-consuming process. The Kai Tak team developed a method for mixing the mud with premixed cement and in-situ granular materials to make it suitable for backfilling work.

Applied for the first time to a site in Hong Kong, the technique has won numerous awards and set a benchmark for similar projects in future. It also demonstrates how Gammon challenges norms while helping the industry to conserve and protect the environment.



Awarding iPads or cash as prizes in the Innovator of the Month competition has helped to drive a high rate of participation among frontline workers.

Gammon's CEO Graduate prize introduced in 2010 and the on-going Balfour Beatty Chairman's Graduate Prize have proved invaluable for bringing in new tools to aid productivity, as well as making Gammon a more attractive choice in the extremely competitive market for young engineering talent.

Our annual Innovation Forum, held this year at the Hong Kong University of Science and Technology, brings together outside experts from the education and private sector. Through this forum, we are able to share ideas and best practices in construction technology and apply them in our projects.

To implement innovation throughout our business and make it standard practice, we hired a full-time innovation leader in 2009.

## Moving innovation into the future

Although we are adept at innovating on our works-in-hand, we see the need to apply ourselves for the longer-term. As such, we are developing an innovation strategy that is aligned with opportunities for business growth in Southeast Asia.

To implement this strategy, we will continue working collaboratively with our overseas partners, such as our shareholder Balfour Beatty, to address worldwide issues. We will also explore strategic partnerships with major global players such as GE and BASF.

With GE, we will be looking at new technologies for addressing energy use challenges; in cooperation with BASF, we will be exploring the development of construction chemicals and plant and equipment solutions, drawing particularly on their experience with other heavy industries.

We believe these partnerships will help us increase knowledge sharing, harness the expertise between our businesses and build knowledge networks.

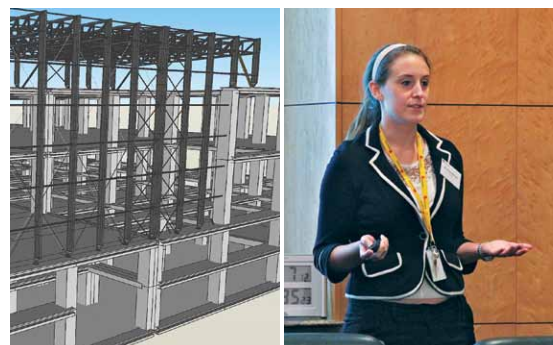
## New joiners, fresh thinking

The winner of the 2011 CEO Graduate Prize, Andrea Weight, produced elaborate and compelling animations for a project using inexpensive, off-the-shelf software – Google SketchUp.

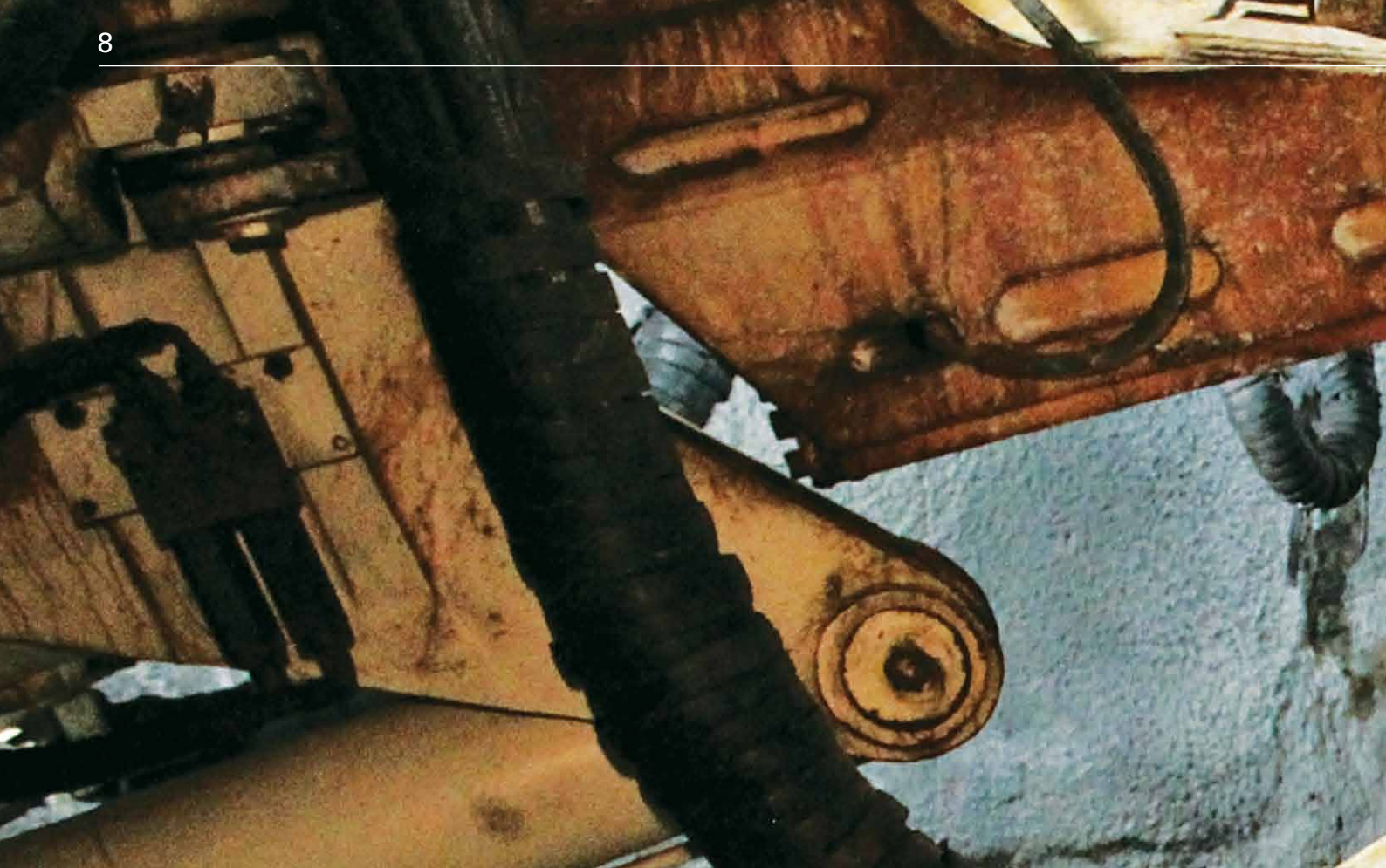
Working as part of the technical support team on the Cathay Pacific Air Cargo Terminal project, she was responsible for the highly complex temporary works. 2D drawings would normally have been used to show details of the works but these are often misunderstood on site. With Google SketchUp, Andrea produced a powerful video animation in just two days that improved safety, quality and communication.

Over a three-month period, Andrea has trained more than 100 engineers in this technology, which is now being widely adopted throughout Gammon.

The initiative further demonstrates how we tap into the fresh ideas that young talent brings to our company.







**How do you ensure safety as you drill and blast your way through solid rock at depths of up to 165 metres? Where the barometric pressure is so high (16 bar) that a burst of ground water would destroy equipment and almost certainly cause serious injuries?**

These were the questions foremost on Contracts Manager Max Ko's mind at the beginning of the Harbour Area Treatment Scheme (HATS), Stage 2A. The 12-kilometre sewage tunnel system runs parallel with the north coast of Hong Kong Island then under Victoria Harbour to Stonecutters Island.

When completed in 2014, the HATS tunnel will serve 1 million residents on Hong Kong Island and greatly improve water quality in Victoria Harbour.

The HATS project is a particularly challenging job with tremendous risks, which meant safety was at the top of every person's agenda even before the project started. When preparing the tender, we decided to complement our own expertise by bringing in an outside subcontractor with experience in internationally-proven shaft sinking and deep mining techniques. This has made a tremendous difference in reducing the risks associated with the project.

Innovation has also played a key role at HATS. One of several innovations we introduced is a Personal Tracking System

to monitor the precise location of every worker and all plant movements underground. This ingenious system makes use of ID tags, together with cables and sensors installed every 100 metres in the tunnels.

Grouting using high pressure injection techniques is being done to seal fractures in the rock and stop water from entering the tunnels, and shotcrete used on most of the tunnel ceilings to prevent falling rocks.

Instruments are also being installed in the ground of the tunnel. These permit real-time monitoring with the aid of the 'Geomon' system developed by Gammon, and provide valuable information such as alerts of any undue or abnormal water inflow, which is crucial to safety in the tunnel.

If the worst should happen, a multiple contingency plan is in place for major risk elements, such as tunnel excavations, fire, flooding and emergencies. Drills are carried out monthly for fire, electricity breakdowns and evacuation, and morning meetings are held daily to brief workers on potential hazards.





# HATS off to a safe, environmentally-friendly start

Tunnel project achieves high standards, 165 metres underground

Zero Harm

**27,000**  
tonnes

excavated rock  
recycled/reused

Alternative  
cofferdam  
design saved

HK\$ **38** million  
and 2 months

**4**

noise  
enclosures

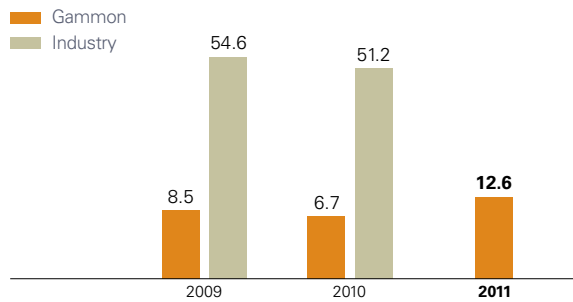
Noise  
reduced by

**>25** dB(A)  
(insertion loss)

HATS performance metrics

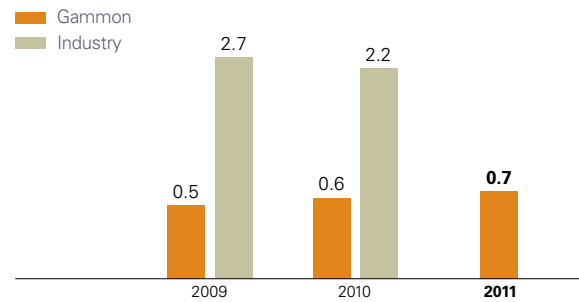
### Accident Incident Rate, Hong Kong & Macau

per 1,000 workers



### Accident Frequency Rate, Singapore

per 1 million man hours worked



Industry accident incident rates are those reported by the Hong Kong Labour Department and by the Singapore Government's Ministry of Manpower. 2011 industry figures not available.

Zero Harm is a fundamental requirement of our business success and growth. At the core of this programme is our Zero Harm Roadmap, which is targeting the elimination of risks that lead to fatalities or permanently disabling injuries.

### Our Zero Harm Roadmap

We experienced a difficult year in 2011 in terms of safety, and the fatalities on our work sites were profoundly disappointing for us.

However, we have looked deeply at the causes and firmly believe we have the right strategy with Zero Harm and our safety programmes to eliminate the potential for fatal accidents. We will continue our efforts to promote safety across all our divisions by educating our workforce, managing and eliminating risk, and launching programmes that demonstrate our care and concern for workers' wellbeing.

The main challenge we face is the size and experience of our workforce, which has grown from about 10,000 workers in 2010 to 16,000 in 2011. Most of these workers are employed by our subcontractors, and many lack experience. As a result, the need for skilled supervisors capable of managing works has grown.

Our Accident Incident Rate (AIR) increased in 2011, although it remained comparable with our peers. We have been examining why the five fatalities happened and how to remove harm from our worksites. From our findings, we are taking the following three key actions:

- 1) We will continue to promote mindful leadership and learning in our work.
- 2) We remain convinced that the four layers of protection – Engineering, Equipment, Process and People – are correct.
- 3) We are strengthening our leadership and taking particular care of new joiners.

We are also addressing the challenges to our safety record through visible leadership; reinforcing our culture of safety and accountability; setting baseline requirements; overhauling our Temporary Works processes; and holding risk workshops for our frontline staff. Most importantly, our senior management is taking a more proactive role and spending more time on sites to provide support to our frontline. This is part of our approach of mindful leadership, which emphasises taking responsibility over reacting to events.

### Managing safety risk

We have a comprehensive risk management programme to identify and mitigate the risks associated with our activities.

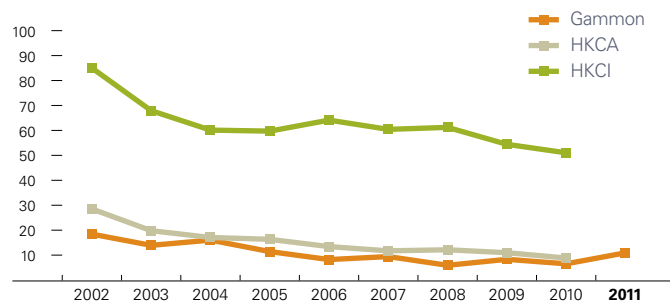
Our rigorous risk management process begins at the tender stage then continues with workplace risk assessments to foresee and forestall problems, as the greatest opportunity to remove risk is before works begin. We also draw up step-by-step method statements that reflect actual conditions and risks.

Innovation plays a major role in managing risk. For example, we are reducing risk at the design and engineering stages through technologies such as the mechanical formwork we developed for the Cathay Pacific Air Cargo Terminal project. This formwork system significantly reduces risks from working at height – the leading cause of fatal construction accidents – and will be used on the West Kowloon Terminus Station North for the Express Rail Link, as well as other projects in future.



## Accident Statistics Gammon vs Industry

Accident Rate per 1,000 workers



Conclusion: We continue to maintain a leading position against our peers in the Hong Kong Construction Association, who are ahead of the general construction industry in Hong Kong. This demonstrates the need to continuously develop programmes and initiatives to influence the entire industry.

## Green & Caring Site Commitment

Caring is about people, keeping them safe, and engaging and responding to the needs of workers and the public.

Introduced last year, our Green & Caring Site Commitment programme motivates frontline staff to make a visible commitment to good site housekeeping, a major contributor to site safety. At end of 2011, a total of 54 projects were participating.

The programme incorporates a defined set of standards and tools to guide project teams to visibly change conditions on our sites. As a result, physical improvements in welfare, access routes and housekeeping are becoming evident across the business.

Maintaining high standards in an ever-changing workplace requires diligence, teamwork and a strong commitment by all staff. Although progress has been made, we would like to see more staff fully embrace this strategy and deepen their commitment in the years ahead.

## Care for workers health

Health issues among frontline workers are common throughout the construction industry, but until now it was not a major concern for many companies.

To promote better health among our workforce, we began hiring health nurses in August 2011; they are the first to be centrally employed by a construction company in Hong Kong.

Our programme was started by Chief Executive Thomas Ho, who paid a personal visit to a worksite on a hot summer day. He recognised that older workers are particularly susceptible to heat stroke and recommended hiring nurses to monitor their health at several of our sites.

Our nurses now make regular visits to our Hong Kong project sites. More than 1,400 workers were checked in the first three months for weight, blood pressure, blood glucose levels, lifestyle habits, and medical history. The nurses also give



After warm-up exercises, workers are briefed on any incidents or near-miss cases, then they discuss specific risks and control measures, and review items in the Dynamic Risk Assessment (DRA).

health talks and advice on better lifestyle habits, provide tips on good posture, and lead stretching and strengthening exercises.

Every worker on our project sites is eligible for these free and voluntary checks, and all information gathered is kept in strict confidence.

What the nurses learned is that most construction workers do not get sufficient aerobic or cardiorespiratory exercise despite the physical demands of their jobs; many also have poor eating habits and smoke. As a result, a large number of workers were found to be in poor health – 70% of the workers examined were overweight and 41% (vs. 27% in the general male population) were discovered to have hypertension. In one case, a security guard was found to have extreme hypertension (200/100 mmHg). By informing the security guard about his condition and advising him to seek immediate hospital treatment, the nurses almost certainly enabled him to avoid a stroke and possibly saved his life.

We are encouraged to see that the Hong Kong Construction Association and Hong Kong Federation of Trade Unions have also begun providing health checks for 10,000 workers, and the Pneumoconiosis Compensation Board is offering checks to workers at risk from silica dust exposure.

Jo Ling, Healthcare Leader,  
Gammon Construction Limited

"Workers are happy with the service we provide and often thank us. They feel that Gammon cares about them."







**The topping out of Hysan Place in September 2011 was remarkable not only for the addition of a dazzling new commercial and office development in Hong Kong's Causeway Bay district, but also for the advances we made in green procurement.**

For Hysan Place, the client was determined to achieve LEED (Leadership in Energy and Environmental Design) Platinum certification right from the beginning and asked us to contribute our expertise in sustainable construction. Green procurement, a major contributor towards attaining LEED and BEAM (Building Environmental Assessment Method) Plus certification, played a significant part in this process.

Materials purchased for the construction of Hysan Place included the use of timber approved by the Forest Stewardship Council (FSC) for all formwork and doors, as well as recycled steel from a local mill in Hong Kong. The vast majority of the rebar used was regionally sourced (within 800km), and 70% of the rebar had 90% recycled content, exceeding LEED and BEAM Plus requirements. We also sourced water-saving sanitary wares and an E&M modular system to reduce material wastage during construction.

What we have learned from Hysan Place is currently being applied to other

projects, such as Hong Kong University's Centennial Campus project and the Innovation Centre, the first LEED project in Singapore. In both cases, the client specifically requested us to apply our expertise to achieve LEED objectives.

We have now formalised a Sustainable Procurement Policy based on international best practice as well as our own experience in sourcing FSC timber and green concrete. This policy will guide our efforts over the next 10 years to engage, support and develop our supply chain so it is safer, socially responsible and more environmentally friendly.

Our suppliers and subcontractors already see the value of having a green capability. According to a survey we held in 2011, 41% of the respondents said they definitely want to change to green products and 39% said they probably would. They understand that this capability, which we are helping them to develop, benefits not just our clients but also opens up new business opportunities.





# Green business is good business

Sustainable procurement for Hysan Place



**42%** Overall regional materials\*  
by value

\* largest contribution from curtain wall, cladding and block wall

Overall recycled materials  
**30.5%**  
by value

About **70%**  
of waste diversion from landfill and public fill\*

\* excludes earth material

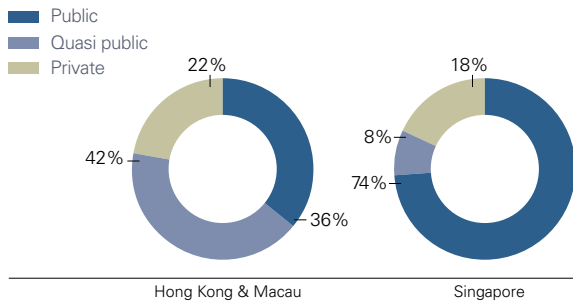
Low VOC paints, adhesives and sealants

**100%**

Sustainably sourced materials at Hysan Place

### Order Book by Sector

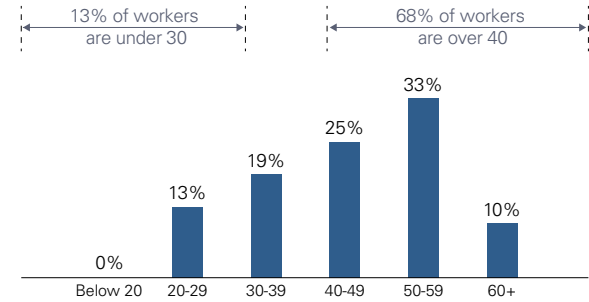
Percentage



The number of projects on our order book originating from the public and quasi public sector has grown markedly, and is likely to continue doing so in the years ahead.

### Industry Demographics (Hong Kong)

Percentage



Percentage of Registered Construction Workers as at 31 December 2011. The total number of workers is 287,104.

Source: Construction Workers Registration Authority, Hong Kong.

Sustainability is good business both for our clients and for Gammon. As more clients recognise the value of sustainability, they are turning to us for our expertise in areas such as green procurement, carbon reduction, waste management and social responsibility. But as our order book grows, we are faced with the daunting challenge of attracting new blood in a tightly constrained labour market.

### Training for tomorrow's workforce

As the shortage of skilled workers grows, we have been working with government and encouraging our subcontractors to provide training programmes in a number of trades so that we have the workforce we need.

With peak construction demand expected in late 2012/early 2013, the industry in Hong Kong will require more than 2,500 additional carpenters. Yet few carpenters are currently entering the construction industry. Even if we start immediately, we will be pressed to meet demand as the skills for these trades take from 12 to 18 months to develop and require on-site mentorship.

We are attempting to fill the growing need for carpenters together with our subcontractors and have started training programmes, either on our own or in cooperation with outside parties, for steel fixers, tunnel workers, locomotive operators, shotfirers and crane operators.

When we introduced the carpenters training programme in 2011, we received over 200 applicants and selected 15. They are currently being trained on site, with each trainee assigned an experienced carpenter mentor. This fast-track programme will turn out competent new carpenters in about 12 months.

Other construction companies are now also participating in training schemes, but these efforts must be scaled up dramatically if we are to meet the imminent needs of the industry.

As we recruit new workers, we must be mindful of the increased safety risks they face on our worksites. One of the measures we have undertaken is a Probationary Licence scheme launched in December 2011. Under this scheme, workers with less than six months of experience are provided with helmet stickers showing they are "new starters" and coached by experienced supervisors.

### Managing risk

With the growth of our order book, risk management assumes even greater importance in our projects.

Risk management at the company level is the responsibility of our Risk Management and Compliance Committee. Chaired by one of our shareholders and comprising senior directors of the company, the committee meets three times a year.

Our Risk and Opportunity Manager, who provides oversight on issues related to risk management at both the company and project level, considers business sustainability issues such as economic factors, the environment and social responsibility.



**Demand for workers\***

- **Bar-bending and Fixing**
- **Timber and Aluminium Formwork**
- **Metal Formwork and Concreting**
- **Drainlaying**
- **Metalwork**
- **Surveying and Setting-out**
- **Site Surveying**

\*Hong Kong



An apprentice carpenter puts up formwork at the Kwun Tong Swimming Pool Complex, where Gammon is working with C. Y. S. Engineering Company Limited to provide training and job opportunities.

We also have risk registers that take into account a wide range of economic, health and safety factors. In addition to these, we have opportunity registers. On every project, we encourage project managers to think about opportunities for advancing our knowledge base, including issues related to safety and social responsibility.

### A changing business model

A growing part of our business is based on joint ventures, the latest example being the HK\$8.9 billion West Kowloon Terminus Station North.

As jobs have grown larger, more complicated and technically challenging, this trend will continue across the industry. We will look for construction partners who complement our skill set on a project-by-project basis and are aligned with our sustainability goals. In doing so, we will remain committed to our high standards of safety, technological leadership and environmental performance.

### A role for government

We believe that government has a role to play in promoting a more sustainable construction industry, particularly in regard to green materials and methods, and productivity.

In keeping with our strategy of 'use wisely, waste less, emit less', we are making a strong effort to reduce construction waste through techniques such as factory cut-and-bend reinforced steel bars (rebar). This method can help achieve reductions in steel waste of up to 30% and mitigate the shortage of skilled steel benders.

Offsite cut-and-bend is already widely practised and promoted in Singapore and Europe. In 2011, our senior management visited one of the largest steel producers in Asia Pacific,

Natsteel, to view their cut-and-bend workshop. The bored pile caging and precaging produced in the workshop simplifies all in-situ work and removes associated hazards on worksites.

Our Executive Committee would like off-site cut-and-bend techniques applied in Hong Kong, and the Hong Kong Government has been asked to support this initiative by allocating land for steel fabrication.

Another technology that we feel holds great promise is Building Information Modelling (BIM), which we would like to see promoted more widely in Hong Kong. In Singapore, the Government currently mandates BIM for new tenders and has allocated S\$250 million to facilitate its adoption by industry through its Construction Productivity and Capability Fund. By 2013, the Singapore Government hopes to have all tenders submitted electronically.

### Responsible leadership

Infrastructure plays a vital role in society, and the entire industry must align their efforts towards building a sustainable, low carbon economy. As an industry leader, we have a role to play.

We are committed to staying at the forefront of sustainability in order to meet the needs of our clients and ensure the future prosperity of the markets in which we operate. Our ability to influence the industry is reflected in the leadership positions held by our senior management in organisations such as the Construction Industry Council, Hong Kong Construction Association, Climate Change Business Forum and Singapore Contractors Association Ltd. We also take an active part in industry debates, conferences, and standards committees and make our voice heard in the trade press.



**Less Water**  
**8.8%**  
reduction in water  
intensity, 2010 – 2011

**Direct reuse of  
inert materials**

**994,421**  
tonnes\*

\* 51% of total inert materials

**Overall  
recycled waste\***

**10,237**  
tonnes

\* plastic, paper, timber, metals, etc.

**Green projects  
account for**

**41%**  
of our turnover



# A model of sustainability

## Hong Kong's first Zero Carbon Building

**Covering an area of just 50,000 square feet on two floors, the Zero Carbon Building in Kowloon Bay may be small in scale but its impact on green construction will be long lasting and far ranging.**

Gammon was selected as the Management Contractor for the project by the Construction Industry Council because of our expertise in green construction technologies and practices, especially our capabilities in procuring green materials and managing embodied carbon during construction.

The project, which will be the first zero carbon development in Hong Kong, will showcase state-of-the-art eco building design and technologies to the local and international construction industry. After its completion in 2012, the building will produce more energy than it consumes – about 225 megawatt hours of electricity in total per year. Thirty per cent of the generated energy will be derived from solar panels and 70 per cent from biodiesel made from used cooking oil.

To promote the use of ecologically-friendly materials, we used green materials such as FSC Timber and recycled-content steel. We also introduced innovative materials for the

site formation and external features, such as a special concrete that we developed using recycled aggregate.

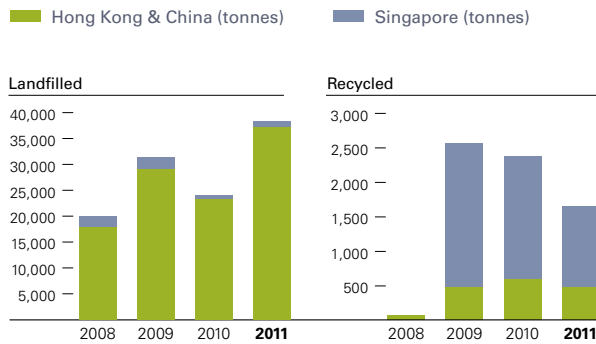
BIM technology was used extensively to minimise waste by determining the precise amount of cut-and-fill required during excavation. By employing the off-site cut-and-bend technique for rebar, we were able to reduce waste on site.

To account for the embodied carbon in the construction materials, we examined the transport of materials, energy consumption by tower cranes, site offices and onsite plants, and embodied carbon in concrete mixes, in order to identify opportunities for mitigation.

Whether it is carbon, waste or water, we will continue to look for ways to manage our business better and reduce the environmental impact of our projects. This is part of our approach to environmental stewardship, which means going beyond compliance to ensure a healthier environment and conservation of resources.

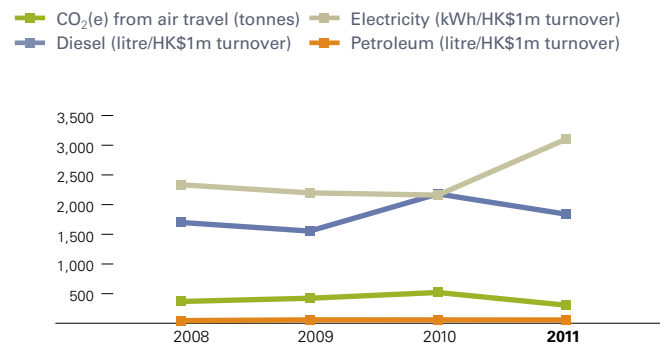


### Waste Landfilled and Recycled



In 2011, our Group waste intensity increased from 2.48 tonnes per HK\$1 million to 2.73 tonnes. Singapore's strong recycling infrastructure facilitates us achieving 50% recycling vs. only 1.3% in Hong Kong.

### Energy Usage



A clear relationship exists between carbon emissions and diesel use: Electricity intensity up 42.9%, diesel down 15.3%; carbon intensity down 3.2%.

Environmental Stewardship means recognising the short- and long-term impacts of our activities and the interdependency of our business with the earth. We have been working to minimise our social and ecological impacts so that the benefits of infrastructure for society can be realised.

### Reuse, recycle

Our sustainable procurement policy of 'use wisely' complements our initiatives to 'waste less' materials and resources.

At Gammon, we have three main waste streams – inert, Construction & Demolition (C&D) and chemical. C&D waste, which accounts for the largest amount of landfill, includes demolition, abortive works, temporary works and packaging waste. Our landfill disposal intensity rose marginally, due primarily to building construction, and we saw a dip in our recycling rate from a peak of 9.2% in 2010 to 4.6% in 2011. The amount of material diverted from landfill during the year was 1,640 tonnes.

As construction activities continue to grow in the region, recycling facilities will come under pressure. To manage the waste we generated in 2011, we emphasised segregation and set up central accounts with recyclers in Hong Kong. Space and resources for segregation are limited, however, so we need Government's help to increase recycling infrastructure.

We also see an opportunity for making use of inert materials in other construction works. By balancing our cut and fill needs, we can reduce the extraction of virgin materials, the impact of

transport and the burden on government fill facilities. Gammon has successfully directed inert materials for reuse from 34% in 2009 to 51% (994,421 tonnes) in 2011. Nevertheless, the surge in tunnelling works in Hong Kong is expected to create additional stress as government fill banks and private receivers reach full capacity.

Looking further ahead, construction in our dense urban environment will mean more underground infrastructure works. We believe that better infrastructure planning is needed so that inert material reuse becomes standard industry practice.

Toxic wastes such as contaminated marine mud or soils are another area of concern. In 2011, we widely promoted a process to treat and reuse contaminated marine mud. This new process demonstrates our ability and willingness to question traditional management practices and recommend better ways of reducing the impacts of waste.

### Silence please

Noise is probably the most intrusive aspect of our operations on communities, as well as being a health and safety issue in the workplace.

We make a concerted effort to reduce noise at our worksites, and operate within the restricted hours imposed by government or requested by our neighbours in the community. In Singapore, works on Saturdays, Sundays and holidays are restricted; in Hong Kong, Sundays and holidays are restricted.

We are also mindful of community expectations. To reduce noise pollution arising from our projects, we plan works during optimal hours, reduce noise generated by equipment and make use of noise barriers. Two examples are the decking at our West Island Line 705 project and the noise enclosures at HATS.

However, for some activities (such as breaking through rock) we cannot avoid noise. In these cases, we do our best to engage neighbours and clients to find practical solutions for keeping noise to an acceptable minimum, particularly in the early morning or during planned community events.



	2011 Target	Actual	2012 Target
Waste Diversion	20%	51%	<b>40%</b>
Water Recycled	30%	71%	<b>50%</b>
Energy Efficiency for Office	17kWh/m <sup>2</sup>	15.1kWh/m <sup>2</sup>	<b>17kWh/m<sup>2</sup></b>
CO <sub>2</sub> Intensity	Scope 3 Carbon accounting	Ongoing	<b>Scope 3 Carbon accounting</b>
Compliance Actions	Nil	Nil	<b>Nil</b>

5 composition fines totalling S\$17,000 in Singapore.



Hong Kong's largest horizontal acoustic deck at MTRC West Island Line (Contract 705) allows working at night, thereby helping to save two months on the project schedule.

## Keeping carbon under control

Through electrification, we can ensure that growth in our activities is not met by equivalent growth in emissions. Using the knowledge we have acquired on energy use in construction and green construction methods, we are able to look for opportunities to reduce emissions at the early stage of a project or during a contract tender.

In order to reduce emissions in our supply chain that far exceed our scope 1 & 2 emissions, we are able and willing to provide design alternatives. For example, the design alternative in the Tolo Highway case study (described in our 2010 Sustainability Report) reduced 32,667 tonnes of embodied CO<sub>2</sub>(e) emissions – nearly half of Gammon's total scope 1 & 2. In 2011, our Foundations Division suggested an alternative design that helped a project in Tsuen Wan achieve reductions in fuel, concrete and steel to an equivalent of 4,750 tonnes of CO<sub>2</sub>(e), or 12,350 trees.

Both examples show why embodied emissions from materials and transport, as well as whole carbon accounting and life cycle analyses, are in focus for the coming years.

We are now developing tools to track and account for scope 3 emissions so that we can more clearly report our efforts to reduce carbon in construction in the future. Projects such as the Zero Carbon Building and other client initiatives are allowing us to showcase these abilities.

## Conserving water

Recognising the very real stresses on water resources in our markets, we have succeeded at increasing recycling in our work from 29% in 2010 to 71% in 2011. Despite a rise in total water from public sources, we are working to delink the rate of water use from our business growth. In 2011, water intensity dropped from 88.7 to 80.9 cubic meters per HK\$1 million.

Our foundations business is leading the way in conserving water with an astounding water recycling rate of 95%, up from 6% just two years ago. Our current and future direction

### How Gammon recycles rain water at its sites



Shoe cleaning



Plant watering



U channels collect rain water



Rain water is stored



Toilet flushing



Dust control



Site cleaning

is on water audits to identify opportunities for improving our performance further in our other businesses.

## Green & Caring Site Commitment

Our Green & Caring Site Commitment programme includes critical elements to help us reduce our environmental impacts from energy, water, waste and resource usage.

As sustainability requires a shift in the way we value materials and waste, we are promoting material conservation on our project sites and setting targets to reduce resource burdens. Recycling and waste management, which are major elements of the Green & Caring Site Commitment programme, support improving and embedding segregation practices.

Most importantly, we can ensure good performance right from the start of a project with better site setup criteria and planning. This, coupled with increased stakeholder engagement, is helping to establish a culture of environmental responsibility at all levels of the company.





**5,226**  
volunteer  
hours

Participation in  
**106**  
community  
events



# Extending a hand to the community

Our Caring Ambassadors reach out at West Island Line

Strong Relationships

**Last year, an elderly woman collapsed as she was walking near the West Island Line (Contract 705) project site in Kennedy Town. But help soon came in the form of Yip Mei Lan, who rushed to the collapsed woman, called an ambulance and stayed with her until a medical team arrived. Afterwards, the woman's daughter visited the site to express her gratitude.**

For Ms Yip, it was just another day on the job. She is part of a team of six Caring Ambassadors, a programme that we first recommended in our tender for this project and is now part of many Gammon operations.

During the tender stage, we saw the need for a community outreach programme as many retirees with limited mobility lived near the site. This had not been identified by our competitors and was one of the key reasons for winning the project tender.

Recruited from our ranks, the Caring Ambassadors were assigned the task of guiding people who need help navigating their way around the project. Since then, they have been interacting on a daily basis with the community. Area residents now feel free to talk with the Caring Ambassadors every morning, and if there are problems or nuisances, they will call our Ambassadors first.

The Caring Ambassadors also identify potential public health and safety issues and organise community outreach efforts such as a Mid Autumn Festival celebration for elderly residents.

Through the Caring Ambassador programme, the West Island Line project has become well integrated and accepted among members of the community. Today, instead of regarding the construction as a disruption to their daily lives, they feel they have a stake in delivering the project together with Gammon.

On a larger scale, our CSR programme is successfully meeting our strategic objectives of engaging stakeholders so that we can identify the activities that have the most impact in the communities where we operate.







Gammon's CSR Forum opens up a valuable channel of communication that enables us to align our expertise with the needs of our NGO partners. At the 2011 Forum, we acted on a request by Hong Chi Association to help them in the preparation of architectural drawings for funding applications.

Gammon's strategic approach to social responsibility is underpinned by the strong relationships we have built with our stakeholders, including community groups, non-governmental organisations (NGOs) and employees.

This aligns with our policy of continuously engaging stakeholders to identify solutions that are meaningful and relevant to all parties. In 2011, we made substantial progress building on existing relationships within the community and making construction more rewarding as a career within our industry.

### Attract, develop, retain

Gammon recognises that the construction industry is often not the first choice for a career. To counter the negative perceptions associated with the industry among potential and existing staff, we have been making a strong effort to 'attract, develop and retain'. In 2011, we made excellent progress in this direction.

Our training programmes have been identified as one of the key reasons new graduates select Gammon and construction as a career. We see staff development as being critical not only to attract staff for the short term but also to build in capabilities for the future. Our Graduate Trainee scheme has been a success with a retention rate of over 80% after three years.

We are now working with the Construction Industry Council Training Association on cooperative training schemes to develop the workforce. We believe this is a positive step forward and have lent our support to an initiative by the Hong Kong Government and MTRC that will require contractors to train new workers.

We have already introduced similar training programmes in cooperation with Tin Wo Metal Mfy, our steel fixing subcontractor, and C. Y. S. Engineering Company Limited for training carpenters. Under these and other training programmes with other subcontractors, we contribute training support, coordination, recruitment and marketing to add value to the training process.

The Gammon Academy, which we launched in 2003, has been expanding its curriculum to provide training in hard skills such as BIM, safety and finance, as well as soft skills such as effective communication.

### Strengthening staff relationships

About 50% of the employees at Gammon are new to the company and, in many cases, the industry; in the Civil Division alone, the number of staff has more than doubled in the past two years.

The challenge we face today is ensuring knowledge succession from older employees to new staff. In 2011, we made a greater effort to integrate new joiners by providing mentoring opportunities, mixing new staff with experienced staff on our project sites, holding induction programmes and offering new courses in the Gammon Academy.

Last year, we also set up an internal blog, WAGtheBlog, to increase employee communication and feedback. Although reluctant to express themselves openly at first, our staff are now much more willing to provide feedback on work issues as well as social activities.

Activities and organisations such as the Young Professionals Group, our CSR volunteer programmes, the Spring Dinner and Family Fun Day contributed to building morale and cohesiveness within the organisation. Having staff members become involved in planning activities also helps them feel that they are part of the Gammon 'family'.

In 2011, Gammon's senior management began to engage our Project Managers more actively by involving them in bimonthly briefings. As Project Managers are the future leaders of our business, our senior management team recognised that it is



Silvia Ng, Operations Manager  
(Primary Health Service – Community Health), Haven of Hope Christian Service

“We have been working with Gammon on a programme that benefits more than 670 elderly residents in Tseung Kwan O. During the CSR Forum, we learned not only about the specific services provided by Gammon but also their rationale for participating in them. It’s a very useful channel for communication.”



important to have them invested in our core values and ensure they play a role in charting our future.

To motivate and reward our best performers, we have been offering a balanced and meaningful combination of rewards that go beyond financial benefits. We believe our core values, inclusiveness, transparency and engagement provide job satisfaction and the opportunity for engineers to use their skills for the benefit of their families and society.

### A meeting of hearts and minds

In 2010, we held our first CSR Forum, an extension of

our partnership with NGOs since 2008. The intent of the Forum was to give all parties a better understanding of our expectations and capitalise on the partnerships already established.

In 2011, we held the second CSR Forum and made further progress at identifying programme initiatives that are relevant to both beneficiaries and Gammon. Our relationships with organisations such as Tung Wah Group of Hospitals and Haven of Hope Christian Services are maturing, and we are now working to establish processes for measuring the long-term impacts of these programmes.

### CSR Champion Cliff Leung

Cliff Leung of the Building Division is discovering what a difference he can make as a Gammon CSR Champion.

For the past two years, Cliff has organised a walkathon to Guangzhou province to raise funds for Hong Chi Association, an organisation dedicated to training intellectually challenged people. In 2011, a total of 29 Gammon staff together with 3 trainers and 6 students from Hong Chi took part in this three-day event over a distance of 75 kilometres. Approximately HK\$220,000 was raised.

According to the students who participated, the activity helped them develop endurance and made them feel looked after by their ‘big brothers and sisters’ from Gammon.



Our relationship with Hong Chi began many years ago when individual staff began contributing their skills. It has since become formalised, and requests for help are raised at both our CSR Forum and on an ad hoc basis. Input from NGOs helps shape the programmes we develop and ensures they have the most impact.

As a CSR Champion, Cliff Leung brings Gammon’s unique culture, values and expertise to the community, while managing and coordinating specific activities. One of these activities is to help prepare architectural drawings needed by Hong Chi when applying for funding of new renovation projects. With Gammon’s help, the application process has been cut from up to two years to less than three months.

Cliff Leung, Senior Project Manager,  
Gammon Construction Limited

“I believe in giving back to the community, so my work with Hong Chi is a very rewarding and meaningful experience for me.”



## Waving the Flag: Green & Caring Site Commitment

Our Green & Caring Site Commitment programme recognises those projects that have achieved a high standard beyond what our client requires or the government mandates. Projects that exemplify the green and caring culture at Gammon are awarded a Green & Caring Flag to fly over their worksites. Since the launch of the programme in mid June 2011, a total of 54 sites have participated in the Green & Caring Site Commitment programme and 6 sites have been awarded the Flag with outstanding performance in 10 criteria.



### MTRC West Island Line (Contract 704 & 705), Hong Kong

- 80%+ of inert material (617,872 tonnes) reused
- Extensive noise and dust mitigation
- Caring Ambassadors for the community
- Good housekeeping and tidiness
- Energy-efficient office (Project 705)
- Playground equipment from site clearance donated to Crossroads charity (Project 705)
- Worker-defined rest areas

### Redevelopment of Kwun Tong Swimming Pool Complex and Kwun Tong Recreation Ground, Hong Kong

- Well-planned site setup, enhanced site tidiness and cleanliness
- Material storage, planting zones and other facilities clearly demarcated
- 12 photovoltaic panels for the site office
- Excellent cable management
- Safe access and egress for all workfronts



### Wan Chai Development Phase II – Central-Wan Chai Bypass over MTR Tsuen Wan Line, Hong Kong

- Daily cleaning of harbour
- Measures to prevent pollution of harbour
- Safe access to and barriers at marine work fronts
- Off-street loading area
- Efficient temporary works design used less material

### Design, Construction and Completion of ChinaTown Station and associated Tunnels and Downtown Line, Phase 1, Singapore

- Community Caring Plan
- 50% energy savings through energy audit
- Mobile hoarding and transparent noise screens
- Over 5 million accident-free man-hours
- LTA Annual Safety Award 2011 Certificate of Merit
- LTA Construction Environmental Excellence Award, 2011 Winner

### Electrical Systems for Marina Coastal Expressway, Singapore

- Special flag earned for a green site office
- Internal environmental trading scheme
- Energy-efficient design and occupancy sensors
- "Lights Off" lunchtime





## Verification Statement

### Scope and Objective

Hong Kong Quality Assurance Agency (HKQAA) was commissioned by Gammon Construction Limited (hereinafter called "Gammon") to undertake an independent verification of the Sustainability Report 2011 (hereinafter called "the Report"). The Report stated the past performance of Gammon on the sustainable development practices, performance and achievements for the period between 1 January and 31 December 2011.

The scope of the verification covered all reporting contents presented and included to:

- Verify the reliability of data and information management mechanism for gathering, collating, analyzing and presenting the data in the Report and online supplements;
- Assess whether the information presented is accurate and represents the sustainability performance of Gammon;
- Identify and recommend opportunities for future improvement in reporting.

The overall aim of this verification statement is to provide assurance that the information stated in the Report is material, complete, accurate, reliable and consistent.

### Methodology

The verification procedure included desktop review of report content, documentation review, interviews with responsible persons with accountability for preparing the Report, and scrutiny selected samples of qualitative and quantitative information consolidated in the Report. Accuracy of the sampled data and the underlying processes were tested through detailed examination of available evidence to support substantive comments and claims made in the Report. In this respect, the Report has been evaluated against the following criteria:

- Adherence to the principles as set out in the AA1000(2008); and
- The Global Reporting Initiative Sustainability Reporting G3.1 Guideline.

### Conclusion

After a thorough and detailed examination of the Report, our verification team concludes that the Report provided a material, complete and consistent representation of Gammon's sustainability performance of Gammon in the context of economic, environmental and social (including safety) aspects. We are satisfied that the Report includes factual statements and the data contained and referred to within the Report is accurate and reliable. The Report is a fair and honest representation of Gammon's initiatives, targets, progress and performance on its sustainable development achievements.

Opportunities for improvement on the reporting structure and content are separately submitted to Gammon for their consideration on the compilation of future sustainability reports. It does not affect our opinion on the Report.

Signed on behalf of Hong Kong Quality Assurance Agency



**Jorine Tam**

Assistant Director  
March 2012

Key Performance Indicator

In preparing the 2011 Report “Sustain**ability**: Our strength is our people,” we have made reference to the Global Reporting Initiative (GRI) G3.1 framework and the Construction and Real Estate Sector Supplement for certain sections and performance indicators. We selected key indicators as listed below to provide readers with a quick understanding of our group-wide performance. Comments on the scope and completeness of our reporting can be found in the Independent Verification Statement on page 25 of the print version of our Report.

GRI Reference	Performance Indicators	Units	2008	2009	2010	2011
Safety						
CRE6	Organization operating in verified compliance with OSH 18001 <sup>1</sup>	%	100%	100%	100%	100%
LA7	Fatalities	Number	2	1	0	5
LA7, PR2, PR4	Permanent Disabling Injuries	per 1000 workers	5.6	6.4	5.4	11.1
Economic						
EC1	Group Turnover (by region)	US \$millions	1,129	1,108	1,215	1,610
	Rest of Asia – China	US \$millions	5	1	0	0
	Singapore	US \$millions	220	292	212	128
	HK & Macau	US \$millions	905	815	1,003	1,481
EN1, EN26	Sustainable sourced timber, all sources	% value	51%	81%	85%	95%
EN26	Forest Stewardship Council Certified	% value FSC	4%	100%	100%	100%
Social						
LA1	Total Monthly-Paid staff (by location)	number	2,692	2,850	3,476	3,834
	China	number	397	341	384	386
	Singapore	number	486	573	465	374
	HK & Macau	number	1,809	1,936	2,625	3,072
	Vietnam	number	–	–	2	2
LA1	Total daily paid workers (all locations)	number	1,509	1,806	2,333	2,067
LA1	Total subcontract workers (by location)		4,533	5,524	5,943	9,411
	Hong Kong	number	3,350	3,733	4,970	8,923
	Singapore	number	1,183	1,791	973	488
	Gender, monthly-paid staff <sup>2</sup>	% male	79	79	81	83
		% female	21	21	19	17
	Graduate Recruitment <sup>2</sup>	number	89	52	120	105
	Technician Apprentice Recruitment <sup>2</sup>	number	50	65	60	51
LA8, LA10	Training hours per employee <sup>2</sup>	hrs/employee	17.7	18.2	21.3	22.3
SO1	Volunteer hours	hours	–	1,700	4,741	5,226
SO1	No. of Community Event	number	11	47	93	106
CRE8	Sustainability certification, rating and labeling schemes for new construction	number of project	–	12	17	28
PR5	Customer satisfaction	%	–	100	100	100
	Very satisfied	%	–	27	25	18
	Satisfied	%	–	61	75	72
	Neutral	%	–	9	0	8
	Dis-satisfied	%	–	3	0	2



GRI Reference	Performance Indicators	Units	2008	2009	2010	2011	2005 baseline
Environment							
CRE4, EN16	Carbon dioxide equivalent (CO <sub>2</sub> e) emissions (Scope 1 & Scope 2) <sup>* 3</sup>	kg/HK\$1m turnover	6,237	5,862	7,690	7,444	11,867
EN17	CO <sub>2</sub> e from air travel	tonnes	369	423	520	331	433
EN4	Electricity Intensity <sup>*</sup>	kWh/HK\$1m turnover	2,334	2,198	2,160	3,086	3,128
EN3	Diesel Intensity <sup>*</sup>	litre/HK\$1m turnover	1,699	1,555	2,180	1,845	3,625
EN3	Petroleum Intensity <sup>*</sup>	litre/HK\$1m turnover	47.2	58.9	58.3	57.2	160
CRE1	Energy Electricity for Office <sup>*</sup>	kWh/m <sup>2</sup> /month	14.4	15.7	17.0	15.1	–
EN8	Municipal Water Intensity <sup>*</sup>	m <sup>3</sup> per HK\$1m turnover	88.2	75.0	88.7	80.9	107
EN10	Recycle Water <sup>*</sup>	m <sup>3</sup>	–	20,721	339,656	2,508,253	–
		% of recycle	–	3	29	71	–
EN22	Total Waste Landfilled <sup>4</sup>	tonnes	19,564	30,487	23,541	34,298	223,475
	Hong Kong + China		17,393	28,205	22,659	33,107	219,307
	Singapore		2,171	2,281	882	1,191	4,168
EN22	Total waste recycled (divert from landfill)	tonnes	67	2,560	2,370	1,640	3
EN22	Total waste recycled (divert from landfill)	%	0	8	9	5	0
	Rebar/steel recycled	tonnes/HK\$1m turnover	618	690	998	685	–
		tonnes	5,444	5,962	9,465	8,597	–
	Major Materials used – Steel – Rebar	tonnes	–	–	81,339	73,662	–
EN22	Total waste recycled include rebar/steel	%	22	22	33	23	–
EN22	Total Inert Material to Public Fill	tonnes	617,027	514,188	797,607 <sup>5</sup>	958,014 <sup>5</sup>	233,032
EN22, EN2	Total Direct Inert Material Reuse	tonnes	–	267,279	364,728 <sup>5</sup>	994,421 <sup>5</sup>	–
	Hong Kong	tonnes	–	266,153	364,554	888,700	–
	Singapore	tonnes	–	1,126	174	105,721	–
		% of reuse	–	34	31	51	–
EN28, SO8, PR4	Compliance Convictions	number	1 (HK)	0	0	0	1
EN6	Renewable electricity generated	kWh	–	–	3,760	8,008	–

Footnotes:

1. OSH 18001 certification does not include JV projects.

2. Hong Kong Group only.

3. 2007-2011 Singapore Electricity to CO<sub>2</sub> factor was changed.

4. Correct data error from one project in 2010.

5. One project JV% revised from 100% to 50%.

\* additional data collected for 7 projects, principally due to year-end account reconciliation.

Date	Name of Award	Issued by	Recognition	Name of Project/Division
2011 Award List				
16 March 2011	Green Contractor Award 2010 – Gold Award	Architectural Services Department		Contract No. SST333 – Redevelopment of Victoria Park Swimming Pool Complex
11 May 2011	Winner, International Project of the Year in Ground Engineering Awards’11			Removal of a buried seawall at Marina Bay South, Singapore
19 May 2011	CPA – Best Practices and Innovations – Platinum	Building Construction Authority (BCA)	Recognise outstanding firms and industry practitioners for going the extra mile to achieve productivity improvements at the firm and project levels	Chinatown (for pipe work modularisation)
27 June 2011	2010 Innovative Environmental Award Winner – Waste Management Category	Hong Kong Construction Association		Gammon Construction Ltd – Marine Mud Cement Stabilization and Backfilling (Kai Tak Foundations project)
16 December 2011	Silver Award of Green Purchasewi\$e Award (GPA) in Large Corporation Sector	Green Council		Gammon Construction Limited

# GRI Content Index

Global Reporting Initiative (GRI)ʼs G3 Guidelines constitute a set of universal sustainability reporting indicators. The framework presents reporting areas and principles for organizations to evaluate on sustainability issues and performance.

The table shows where to find information that correspond with each GRI Indicator and provide indications of how the content of the 2011 report are in line with the GRI index

1. Strategy and Analysis			
Aspects	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
1.1	Statement from the most senior decision-maker of the organization.	P.1	–
1.2	Description of key impacts, risks, and opportunities.	P.2, P.3, P.10, P.14	–
2. Organizational Profile			
Aspects	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
2.1	Name of the organization.	Cover Page	–
2.2	Primary brands, products, and/or services.	Scope of the report	–
2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures.	Scope of the report	–
2.4	Location of organizationʼs headquarters.	Back cover	–
2.5	Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report.	Back cover	–
2.6	Nature of ownership and legal form.	Back cover	–
2.7	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries).	P.2, P.14	Refer to Key Performance Indicator Table on the Internet
2.8	Scale of the reporting organization.	P.2, P.14	Refer to Key Performance Indicator Table on the Internet
2.9	Significant changes during the reporting period regarding size, structure, or ownership.	Not applicable	No significant changes
2.10	Awards received in the reporting period.	P.3, P.7, P.24	Refer to the Award List on the Internet



3. Report Parameters			
Aspects	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
3.1	Reporting period (e.g., fiscal/calendar year) for information provided.	Scope of the report	–
3.2	Date of most recent previous report (if any).	www.gammon construction.com	2010 Sustainability Report – www.gammon construction.com
3.3	Reporting cycle (annual, biennial, etc.)	Scope of the report	–
3.4	Contact point for questions regarding the report or its contents.	Back cover	environment@gammon construction.com
3.5	Process for defining report content.	P4, P5	–
3.6	Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers). See GRI Boundary Protocol for further guidance.	Scope of the report	–
3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations.	Scope of the report	Refer to Key Performance Indicator Table on the Internet
3.10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g., mergers/acquisitions, change of base years/periods, nature of business, measurement methods).	–	Refer to Key Performance Indicator Table on the Internet
3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	Not applicable	No significant changes
3.12	Table identifying the location of the Standard Disclosures in the report.	–	Refer to GRI Index on the Internet
3.13	Policy and current practice with regard to seeking external assurance for the report.	P25	–

4. Governance, Commitments and Engagement			
Aspects	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight.	–	2004 Sustainability Report – <a href="http://www.gammonconstruction.com">www.gammonconstruction.com</a>
4.2	Indicate whether the Chair of the highest governance body is also an executive officer.	–	2004 Sustainability Report – <a href="http://www.gammonconstruction.com">www.gammonconstruction.com</a>
4.3	For organizations that have a unitary board structure, state the number and gender of members of the highest governance body that are independent and/or non-executive members.	–	2004 Sustainability Report – <a href="http://www.gammonconstruction.com">www.gammonconstruction.com</a>
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	P.4, P.5, P.22	–
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.	–	2006 Sustainability Report – <a href="http://www.gammonconstruction.com">www.gammonconstruction.com</a>
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation.	–	2010 Sustainability Report – <a href="http://www.gammonconstruction.com">www.gammonconstruction.com</a>
4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles.	–	2010 Sustainability Report – <a href="http://www.gammonconstruction.com">www.gammonconstruction.com</a>
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	P.10, P.14	–
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses.	P.10, P.11, P.14, P.18, P.19, P.22	–
4.13	Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization: * Has positions in governance bodies; * Participates in projects or committees; * Provides substantive funding beyond routine membership dues; or * Views membership as strategic.	P.15	–
4.14	List of stakeholder groups engaged by the organization.	P.4, P.23	–
4.15	Basis for identification and selection of stakeholders with whom to engage.	P.4	–
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group.	P.4, P.23	–
4.17	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting.	P.4, P.5	–



Economic			
Performance Indicators	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
Economic performance			
EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	P.2	Refer to Key Performance Indicator Table on the Internet
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change and other sustainability issues.	P.2, P.19	Refer to Key Performance Indicator Table on the Internet
EC4	Significant financial assistance received from government.	Not applicable	–
Indirect economic impacts			
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.	P.3, P.23	Refer to Key Performance Indicator Table on the Internet
EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts.	P.3, P.23	–

Environmental			
Performance Indicators	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
Materials			
EN1	Materials used by weight, value or volume.	–	Refer to Key Performance Indicator Table on the Internet
EN2	Percentage of materials used that are recycled and reused input materials.	P:12, P:13	Refer to Key Performance Indicator Table on the Internet
Energy			
EN3	Direct energy consumption by primary energy source.	P:18, P:19	Refer to Key Performance Indicator Table on the Internet
EN4	Indirect energy consumption by primary source.	P:18, P:19	Refer to Key Performance Indicator Table on the Internet
CRE1	Building energy intensity.	P:19	Refer to Key Performance Indicator Table on the Internet
EN5	Energy saved due to conservation and efficiency improvements.	P:19	Refer to Key Performance Indicator Table on the Internet
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.	–	Refer to Key Performance Indicator Table on the Internet
EN7	Initiatives to reduce indirect energy consumption and reductions achieved.	P:19	–
Water			
EN8	Total water withdrawal by source.	P:16, P:19	Refer to Key Performance Indicator Table on the Internet
EN10	Percentage and total volume of water recycled and reused.	P:19	Refer to Key Performance Indicator Table on the Internet
Emissions, effluents and waste			
EN16	Total direct and indirect greenhouse gas emissions by weight.	P:2, P:19	Refer to Key Performance Indicator Table on the Internet
EN17	Other relevant indirect greenhouse gas emissions by weight.	P:19	Refer to Key Performance Indicator Table on the Internet
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved.	P:19	–
EN22	Total weight of waste by type and disposal method.	P:16, P:18	Refer to Key Performance Indicator Table on the Internet
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.	Not applicable	No significant changes
Products and services			
EN26	Initiatives to enhance efficiency and mitigate environmental impacts of products and services, and extent of impact mitigation.	P:19	–
Compliance			
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.	P:19	Refer to Key Performance Indicator Table on the Internet



Social: Labor Practices and Decent Work

Performance Indicators	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
LA1	Total workforce by employment type, employment contract, and region, broken down by gender.	P.2, P.14	Refer to Key Performance Indicator Table on the Internet
Labor/management relations			
LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements.	No significant changes	–
Occupational health and safety			
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and by gender.	P.3, P.10, P.11	Refer to Key Performance Indicator Table on the Internet
CRE6	Percentage of the organization operating in verified compliance with an internationally recognized health and safety management system	–	Refer to Key Performance Indicator Table on the Internet
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.	–	Refer to Key Performance Indicator Table on the Internet
Training and education			
LA10	Average hours of training per year per employee by gender, and by employee category.	–	Refer to Key Performance Indicator Table on the Internet
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	P.22	–

Social: Society

Performance Indicators	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
Local communities			
SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	P.3, P.20, P.21	Refer to Key Performance Indicator Table on the Internet
SO10	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities.	P.19, P.21	–

Social: Product Responsibility

Performance Indicators	Description	Cross-reference/Direct answer	If applicable, indicate the part not reported
Customer health and safety			
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes.	P.2, P.10, P.11	Refer to Key Performance Indicator Table on the Internet
Product and service labeling			
CRE8	Type and number of sustainability certification, rating and labeling schemes for new construction, management, occupation and redevelopment	–	Refer to Key Performance Indicator Table on the Internet
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.	P.4	Refer to Key Performance Indicator Table on the Internet

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*We value and encourage dialogue on our reporting mechanism. Feedback provides insight that helps us to better communicate what is important and of interest to our stakeholders. We encourage questions or comments by contacting [environment@gammonconstruction.com](mailto:environment@gammonconstruction.com).*

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