The value of the Australian Golf Industry has been measured at approximately $3 billion dollars.

A social and recreational activity enjoyed by over 1.25 million Australians each year.

Directly employing over 23,000 people.

A strong and vibrant Australian golf industry will contribute approximately two jobs for every 100 people that play the game.

Source: AGIC 2007
ECONOMICS OF GOLF AND THE GOLF COURSE ARCHITECT

- ENVIRONMENT/PLANNING
- WATER
- MAINTENANCE
- DESIGN
- GOLF IN CHINA
- GOLF IN AUSTRALIA

Course Condition

- 0
- 2
- 4
- 6
- 8
- 10

Historical Events:
- 1700: New golf equipment technology (Mechanical push mower)
- 1720: Stroke play introduced
- 1740: Guttaperca ball
- 1760: Rubber core ball
- 1800: Formal maintenance recorded
- 1820: Old Tom Morris - Greenkeeper
- 1840: Greens rebuilt at St. Andrews
- 1860: 1st turf research
- 1880: 1st turf pesticides
- 1900: Major improvement in machinery
- 1920: Turfgrass breeding
- 1940: Fairway irrigation
- 1960: Education
- 1980: Competition
- 2000: Golf boom - golfer expectation increases

Limit of sustainability

1st turf research

1st turf pesticides

Major improvement in machinery

Turfgrass breeding

Education

Fairway irrigation

Competition

Golf boom - golfer expectation increases

New turfgrasses

Limit of sustainability

New golf equipment technology
Environment

- Climate change – whether it is man made or natural it is having a profound influence on golf courses.

- It is affecting:
  - Weather patterns
    - Extreme events
    - Rainfall
    - Storms
    - Temperature
    - Fires
  - Water availability
  - Water quality

“I love a sun burnt country, a land of sweeping plains, of ragged mountain ranges, of droughts and flooding rains”.

My Country
© 1904 Dorothea MacKellar
Golf courses occupy significant tracts of urban land that may be in ecologically sensitive areas.

Golf courses provide a number of benefits to the community and the environment including:
- Recreation and Tourism.
- Green space.
- Wildlife refuges and corridors.
- Remnant vegetation and indigenous flora reserves.
ENVIRONMENT

- Carbon storage
- Biodiversity value
WATER

- Single greatest threat to Australian and golf courses worldwide is the lack of a sustainable water supply.
- Deteriorating water quality.
- Competition for water.

The Australian golf industry rates favourably compared to other major industries in terms of its economic value per litre of water consumed.

On average, Australian golf courses use 45.9L of water for every dollar generated (45.9L/$) or generates $21.77 for every kilolitre of water consumed.
MAINTENANCE

□ What drives course quality?

- Architects
- Golfer expectation
  - “Augusta Syndrome”
  - Low/high Handicappers
  - Old blokes
  - Corporate groups
- Golf Course Superintendents
  - ….because he/she can (ego)
  - Lifted the bar too high
  - Sustainability
- Competition between Clubs

Can your vision be fulfilled

Cost versus Quality
Does the course you design have the budget to meet the expectation?
For golf courses, sustainability is about providing playing surfaces of a suitable quality within economic and environmental constraints.

Golf clubs will only survive if they can afford to maintain playing surfaces to a suitable standard.

Golf course design and the golf architects’ vision can sometimes conflict with whether the business associated with the golf course is sustainable.

<table>
<thead>
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<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
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<tbody>
<tr>
<td>Golf Course Architects have a responsibility/obligation to;</td>
</tr>
<tr>
<td>Design within the sites environmental values.</td>
</tr>
<tr>
<td>Introduce environmental values into the design.</td>
</tr>
<tr>
<td>Make water conservation a priority within the design.</td>
</tr>
<tr>
<td>Consider long term sustainability as a design priority.</td>
</tr>
<tr>
<td>Convert degraded sites into areas of great conservation value.</td>
</tr>
<tr>
<td>Ensure that every project has an Environmental Management System.</td>
</tr>
</tbody>
</table>
DESIGN CONSIDERATIONS

- **Size/area**: The area of greens and fairways are a critical consideration.

- **Rough**: Plant selection/mowing requirements/playability.
DESIGN CONSIDERATIONS

- **Bunkers**: Bunkers are still hazards – they have become significant time soaks (up to 25 - 30% of available labour).

Environmental Economics & The Golf Course Architect

*Ross Perrett*
ENVIRONMENT

KEY ISSUES

- The Planning Environment
- Creating biodiversity and Habitat
- Water availability and usage
- Promotion of the benefits of Golf Courses
THE PLANNING ENVIRONMENT

The planning environment in Australia is:
- Bureaucratic
- Expensive
- Time Consuming
- Uncertain

This is a major impediment to the development of new courses.

THE PLANNING ENVIRONMENT

- Contradicting government policies
- Desirable outcomes VS planning constraints
THE PLANNING ENVIRONMENT

Case Study 1 - Apollo Bay
After 9 years of planning, over 2 million dollars, 2 successful planning hearings, The Ministry of Planning rejected the project leaving a vibrant coastal resort without a golf course.

Case Study 2 - Hamilton Island
After 14 years and a commitment to 28 separate environmental managements, the Hamilton Island golf has opened in a World Heritage Marine Park.
THE PLANNING ENVIRONMENT

Case Study 3 - National Ocean

The National Golf Club is now Australia’s largest golfing facility - 3 courses on 900 acres of land and has won awards for - ‘outstanding sustainable landscape’.

CREATING BIODIVERSITY & HABITAT

- Use of indigenous plants
  - reduced capital and maintenance costs
  - reduced lead times
  - Improved habitat and biodiversity
WATER AVAILABILITY AND USAGE

- Australia is a dry continent
- Extended drought conditions for over 10 years.
- Global Climate Change Debate is complicated and ongoing.
- What can we do to stop wasting water?
  - Improved grass selection
  - Better irrigation systems
  - Less irrigated area
  - Use of indigenous landscape
  - Use of recycled treated water
  - Use of storm water harvesting

PROMOTION OF THE BENEFITS OF GOLF COURSES

The industry needs to change the common perception that golf is elitist and damages the environment.

- Golf Ruling bodies
  - R&A, USGA, Golf Australia
- Golf Course Architects
  - EIGCA, ASGCA, SAGACA
- Golf Course Superintendents
  - USGCSA, AGCSA, BIGGA
- US Golf Foundation, AGIF, AGIC
- Advocacy Groups
  - GEO, Land For Wildlife, Audubon Society

Let's all get on the same bus and work together for change.
PROMOTION OF THE BENEFITS OF GOLF COURSES

Benefit to the community and the environment

1) Provide a recreational resource promoting physical and mental wellbeing
2) Promote indigenous flora and fauna and the Australian landscape experience
3) Provide wildlife sanctuaries
4) Preserve open space and remnant vegetation within urban environments
5) Utilise and treat water resources such as sewage and urban runoff
6) Protect valuable water resources
7) Rehabilitate degraded landscape
8) Improve air quality and moderate heat
9) Protect topsoil from degradation
10) Beautify the environment and aid community education on environmental issues

QUESTIONS
The Economics of Water for the Golf Course

George Diakogeorgiou

Sustainable water supply to a golf course for long term viability
Pressures on Water Resources

- 97% of world's water is salt water
- 3% is fresh water
  - 68.7% is trapped in glaciers and icecaps
  - 30.1% is groundwater
  - 0.3% is surface water
  - 0.9% is other forms

- Quality of fresh water on the decline

Earth’s Water Consumption

- Agriculture (79%)
- Industrial Power (5%)
- Household (4%)
- Livestock (3%)
- Landscapes (3%)
- Golf (2%)

Source: U.S. Dept. of Agriculture
Consumption Withdrawn from Supply

- Household: 4%
- Golf: 2%
- Agriculture: 79%
- Industrial Power: 9%
- Landscape: 3%
- Livestock: 3%

Only 25% of water supplies are withdrawn
75% of water remains in lakes, rivers, aquifers

Source: U.S. Dept. of Agriculture

Water Resources for Golf Courses

Percentage Breakdown of Water Sources

- Dam: 8%
- Recycled water: 8%
- Ground water: 52%
- Storm water run-off: 10%

Source: AGIC (Australian Golf Industry Council)
Guide to Operating Costs of Water

<table>
<thead>
<tr>
<th>IRRIGATED AREA</th>
<th>WATER USED</th>
<th>WATER/HA</th>
<th>OPERATING COST</th>
<th>COST/ML</th>
<th>COST/KL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Ha)</td>
<td>(ML)</td>
<td>(ML/ha)</td>
<td>($)</td>
<td>($/ML)</td>
<td>($/KL)</td>
</tr>
<tr>
<td>32</td>
<td>130</td>
<td>4</td>
<td>12250</td>
<td>100</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Technology costs will come down when more golf course designers and managers implement these systems.

Cost of Reticulated Water is AUD$1.35/KL

Source: AGCSA (Australian Golf Course Superintendents Association)

### Average Cost for Ground Water Use with On Site Storage

<table>
<thead>
<tr>
<th>Irrigated Area (Ha)</th>
<th>Water Used (ML)</th>
<th>Water/HA (ML/ha)</th>
<th>Operating Cost ($)</th>
<th>Cost/ML ($)</th>
<th>Cost/KL ($)</th>
</tr>
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<tr>
<td>32</td>
<td>130</td>
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<td>12250</td>
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<td>0.1</td>
</tr>
</tbody>
</table>

### Desalination Plant (Treated Recycle Water)

<table>
<thead>
<tr>
<th>Volume produced/day (KL)</th>
<th>Volume produced/year* (KL)</th>
<th>Capital Cost ($)</th>
<th>Operating Cost/day ($)</th>
<th>Operating Cost/irrigation season ($)</th>
<th>Cost/KL ($/KL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>94000</td>
<td>300000 - 900000</td>
<td>325 - 750</td>
<td>54000 - 126000</td>
<td>0.65 - 1.50</td>
</tr>
<tr>
<td>600</td>
<td>108000</td>
<td>360000 - 1.08 million</td>
<td>390 - 900</td>
<td>65520 - 151200</td>
<td>0.65 - 1.50</td>
</tr>
<tr>
<td>1000</td>
<td>168000</td>
<td>600000 - 1.8 million</td>
<td>650 - 1500</td>
<td>109800 - 252000</td>
<td>0.65 - 1.50</td>
</tr>
</tbody>
</table>

* assumes 6 month irrigation period

- Technology costs will come down when more golf course designers and managers implement these systems.
- Cost of Reticulated Water is AUD$1.35/KL.
- Source: AGCSA (Australian Golf Course Superintendents Association)

---

WHAT NEEDS TO HAPPEN?

- Less dependence on fresh water supply and increase use of storm water and treated recycled water.

[Bar chart showing water usage and cost]
Future Concerns on Water Resources

- Competition of available water source will be the next issue to overcome – only limited supply to go around
- Conservation of water from any resource is a priority
- Golf Architects need to encourage the use of treated effluent, storm water and design to harvest as much as possible from the golf course site for reuse

Conservation Strategy

- Increase use of technology tools associated with irrigation (weather stations and soil moisture sensors)
- Only apply water when required – daily monitoring of data collection – i.e. APPLY LESS WATER
- Daily Monitoring prolongs and sustains water supply while minimising costs
- Apply a Water Management Plan (WMP)
  - Reducing Water frequency
  - Apply wetting agents
  - Install more efficient sprinkler heads
  - Change to less water turf types
QUESTIONS

The Cost of Golf Course Maintenance

*Phil Ryan*
The Cost of Golf Course Maintenance

How does Golf Architecture affect the cost of golf course maintenance?

Some Issues I wish to discuss are:
- Length of the Golf Course
- Capital investment versus maintenance costs
- Number of Bunkers
- Design of Features

As a guide
Based on established Golf Courses
For each additional 100 metres of golf length
You add 1.7 to 2% to the annual $ maintenance budget
As a guide
Take a single city that 15 years ago had no golf
In the last 15 years new golf courses in Beijing, China versus great golf from around the world

Par 72
Over 300 yards longer

Note: Beijing list from 2008

Capital Investment versus Maintenance Costs – Example

- Year 1999. An 18 hole Golf Course in high rainfall area (Malaysia)
  22 Staff x half a day repairing bunker faces following rain

- Year 2009. An 18 hole Golf Course in high rainfall area (Thailand)
  280mm of rain in an hour, 2 staff x 3 hours repairing Bunker faces

- The difference? Technology & Capital investment in bunker construction
On an established Golf Course
How do the number of bunkers relate to the cost of maintenance?

*AGCSA – Bunkers take up 25 to 30% of labour time

Design of Features

- Grass faced bunkers
  Established Signature GC in Melbourne
  Manual mowing with hover mowers
  5 staff x 6 hours x 4 days to maintain
  The required “look”

Sharp grassed faced bunker which requires all hand mowing but is so sharp that is continually scalped.

This course had all 18 holes like this.
Design of Features

- Green Design
- hand mowing
- hand watering

One or two interesting greens on a Golf Course is good but if too many then it becomes a maintenance / budget issue

QUESTIONS
Design Considerations on Economic Impact

Paul Mogford
WHAT DOES DESIGN CONSIDERATIONS ON ECONOMIC IMPACT ACTUALLY MEAN?

- Our ‘Design Response’ forms an integral piece of the puzzle in determining the economic health of a project.
- Golf Courses which have been designed and constructed cost effectively contribute to a ‘Sustainable Golf Model’.
- Part A. of this presentation looks briefly at understanding the framework in which design ‘fits’ and ‘overlays’ within this context of a ‘Sustainable Golf Model’.
- Part B. we will look at the Golf Course Architects’ 5 core ‘Design Response’ topics which, during the course of decision making, sets the parameters and foundations for the creation of a cost effective development.

A. ‘SUSTAINABLE GOLF MODEL’

- Sustainability is not just about the environment.
- Golf clubs will only survive if they have been designed and constructed cost effectively - and if - the legacy is a course which is able to be maintained to a suitable standard - for an affordable sum. This is our core contribution to a ‘sustainable golf model’.
- So how do we as designers participate in this model for sustainability?
- 6 key components have been identified as detailed on up coming slides.
WHAT IS A “SUSTAINABLE GOLF MODEL”?

1. UPFRONT CAPITAL COSTS
   - COST OF LAND
   - INFRASTRUCTURE
   - PLANNING & STATUTORY APPROVALS
   - ALL OTHER CONSULTANT FEES

2. BUSINESS MODEL
   - POSITION IN THE MARKET
   - REVENUE SOURCES
   - RUNNING COSTS

3. CONSTRUCTION
   - COST TO BUILD COURSE & ENVIRONS (C/H, ACCOM, OTHER FACILITIES)
   - PROTECTION & MINIMISING IMPACT ON THE ENVIRONMENT

4. ENVIRONMENT
   - COST OF RECLAMATION, REHABILITATION ETC
   - CREATION OF ENVIRONMENTAL VALUES, I.E FLORA & FAUNA
   - WATER MANAGEMENT AND QUALITY
   - COST TO MAINTAIN EXISTING & PROPOSED ENVIRONMENT

5. ACCESSIBILITY / FLEXIBILITY
   - ACCESSIBLE TO WIDE CROSS-SECTION OF COMMUNITY
   - FLEXIBLE & INTERESTING FACILITIES I.E. SHORT COURSES, PRACTICE FACILITIES

6. MAINTENANCE
   - PROVISION OF SUITABLE QUALITY PLAYING SURFACES
   - MINIMISE IMPACT ON LOCAL AND BROADER ENVIRONMENT
   - COST OF MAINTENANCE (QUALITY) COMMENSURATE WITH FACILITY

WHAT IS A “SUSTAINABLE GOLF MODEL”?

B. DESIGN RESPONSE

1. SITE SELECTION & INFORMATION COLLATION.
2. SITE ANALYSIS.
3. DESIGN VISION & ROUTING.
4. COMPONENT SIZE & SPECIFICATION.
5. AGRONOMIC APPROACH
1. SITE SELECTION & INFORMATION COLLATION
   - Suitability of site / location for golf.
   - Opportunities & Constraints.

2. SITE ANALYSIS
   - Detailed site inspection.
   - Topography.
   - Soils.
   - Flora & fauna.
   - Hydrology.
   - Water resources.
   - Prevailing winds.
3. DESIGN VISION & ROUTING
- Style harmony – A natural fit.
- Working against or with nature.
- Earthworks – The path of least resistance.
- Loops of returning nines.

4. COMPONENT SIZE & SPECIFICATION
- Green area and slope.
- Tee size appropriateness – cost vs managing wear and tear.
- Bunker size, profile, situation and orientation.
- Fairway area – cost vs design principles.
- Roughs – type and width of maintained roughs.
- Construction specification – USGA vs other.
- Maintenance legacy – Ease & cost.
5. AGRONOMIC APPROACH

- Grasses selected for their correct environment.
- Not just ‘a look’ – can it be sustained?
- Other considerations;
  - Trees & turf – shade the No. 1 grass killer.
  - Efficiency of the designed slopes.
  - Introducing environmental weeds.
  - Egress points location.

CONCLUSION

1. Golf clubs will only survive if they have been designed and constructed cost effectively. A critical component is to ensure that the course has been designed to be maintainable to a suitable standard for an affordable sum. This is our core contribution to a ‘sustainable golf model’.
2. What is your design response?
3. How can we as golf course architects better contribute to a ‘sustainable golf’ model?
The Economics of Golf in China
Affordability of Golf in 2010

Some statistics

- The first modern golf course was built in 1984
- In late 2008 there were about 300 courses open for play
- 54% of golf courses were built after 2000
- 50% are private members only clubs
- There are no ‘public’ (government owned) golf courses as we know them in Australia
The Economics of Golf in China

Some statistics

- Demand has been driven by the leisure and tourism industry and residential development.
- An average Club has about 570 members although in Shanghai the average is about 1000 – this is very low compared to Europe and Australia.
- 87% of members are male.
The Economics of Golf in China

Some statistics:

- Golf in China is very expensive even by Western Standards
- Membership fees are amongst the highest in the world
- Daily green fees are also very high on average
- The quality of golf course for fees paid, is low
- Considering income levels – golf remains beyond reach for the vast majority of Chinese.
- However, 825,000 Chinese have assets (excluding their home) >10,000,000RMB (US$1.47 Million) Hurun Report 2009
The Economics of Golf in China

Factors that Influence the cost of golf in China

- Start-up costs for new projects
  - Land acquisition
  - Land purchase/leasing costs
  - Relocation costs and compensation
  - Government payments

Golf Benchmark Survey 2008 - KPMG
Factors that Influence the cost of golf in China

- **Construction costs**
  - Tend to be relatively high because:
    - Many sites are poor and require major cleanup and earthworks
    - Qualified labour is not cheap
    - The demand for ‘high quality’ projects (clubhouses, halfway houses, security, cartpaths etc.)
    - ‘Other’ payments

- **Running costs**
  - Annual government fees and taxes
  - Huge staffing levels and service costs
  - Maintenance/reconstruction
The negative image of Golf in China

- Elitist recreation activity for rich, old people and business men
- A user of valuable land resources
- Forced relocation of local people
- No recognition of local culture and traditional land users
- Over indulgent and unsustainable

How can Golf in China become more affordable and how can the negative image become more positive?

1. Reduce costs
   - Construction
   - Maintenance
   - Land
   - Relocation

2. Change expectations
   - Turf quality
   - On course facilities
   - Carts, caddies etc

3. Educate
   - Environmental benefits of golf
   - Physical and health benefits
   - Employment
If the poor image and perceptions of golf can be changed, then Golf in China will grow even faster

- This may result in;
  - Projects requiring less land and less earthworks
  - Better understanding of the importance of quality design
  - Smaller clubhouses and facilities
  - Lower costs
    - Lower membership costs
    - Lower green fees
    - Public access golf
    - More projects!

Food for thought......

- If just 0.1% of Chinas population play golf by 2030 – China will have about 1.3 million golfers.
  - This compares to 7-10% (a 70-100 times lower rate) in high participation countries such as Australia, the US, Great Britain etc.
- Assuming 650 golfers per golf course (the current average) this implies 2000 golf courses will be required by 2030
- This equates to 1,600 more courses or 80/year for the next 20 years
- Such growth is dependant on lower pricing policies and greater affordability – if golf can become more affordable, growth could be far higher

Golf Benchmark Survey 2008 - KPMG
QUESTIONS

Affordability of Golf - The Australian Experience

Neil Crafter
What is Affordability in a golfing context?

- “Inexpensive” and “Reasonably priced”
- Playing and equipment components
- Concentrate on the playing side of the equation in this presentation
Playing the game in Australia - Public Courses

- 470,000 social golfers in Australia in 2008
- Predominantly local council operated courses that are generally very affordable with 18 hole green fees in the range of AUD$25 to $30
- Fewer high end public access courses where green fees can range from AUD$75 upwards
- The “value for money” aspect will depend upon the golfer and what he/she is looking for in a golfing experience - regular play or “special” experience. Generally considered affordable.

Playing the game in Australia - Private Clubs

- 445,000 golf club members in Australia in 2008
- Around 1560 private clubs in Australia
- Range from small clubs of 100 members in small country towns with annual fees starting at around $150
- To large clubs with 3,000 members, 36 holes and annual fees in the order of $3,000
- An average club in the metropolitan area of a capital city may have 500 - 700 members and annual fees around $1000
Playing the game in Australia - Private Clubs

- “Affordability” will depend upon the usage a particular golfer can make of his membership.
- At one club surveyed, senior golfers over 65 averaged 41 games a year, costing them $35 per round.
- Members in the age range of 35 - 45 averaged only 20 rounds a year, costing them $87 per round.
- This imbalance is an issue for many golf clubs in Australia to address.

Why Build a New Course?

- As part of a golf residential estate.
- As part of a resort development.
- Relocation of a private club course to a new site coupled with the sale of the old site for housing. This has happened quite frequently in recent years, especially in Melbourne.
- Standalone public access course.
Golf Course Construction Cost
Impact on Project Feasibility

- Average cost of construction around $15 million spread over a 2 year period
- One was as low as $5 million
- Planning approvals process has tightened in most states and longer timelines for approval impact on the overall project cost

What will a New Course Need to be a Success?

- A mixture of both members and public
- An immediate membership base of at least 600 in year 1, growing to 1000 as soon as possible
- A course that is fun to play for all levels of golfer, not too difficult with minimal ball eating rough
- Genuine sustainable rounds from public golfers - not just “I’ve played it once and not going back”
- Total annual rounds in excess of 40,000 per year and a balanced mix of member and public play
- An average green fee in excess of A$70 (ex carts)
What will a New Course Need to be a Success?

- Decent levels of cart hire
- Member, public and community support for food and beverage services
- Operational efficiencies in administration, pro shop and F&B
- An excellent marketing program that resonates in the golf and broader communities
- Course maintenance budgets in line with green fee pricing
- Minimal debt to service

The extent to which these challenges are faced and the above requirements met, will determine the success - or otherwise - of a new golf course. Providing a “value for money” approach of not building unsustainable facilities will enable Australian golf developments in years to come to earn their place within our golf community.

Sources:
Jeff Blunden Advisory Services - ‘Back of the Cup’ newsletters
Golf Australia
ECONOMICS OF GOLF AND THE GOLF COURSE ARCHITECT

KEY POINTS

- **Environment**
  - Planning is an impediment to golf course development.
  - As an industry we must promote non-golf values as part of the design concept – can this facilitate the planning process?
    - Green space
    - Biodiversity
    - Carbon
    - Health and well-being
    - Rehabilitation of degraded sites

- **Water**
  - Probably the greatest threat to the golf economy.
  - Water management planning/new technology/water conservation designed into every project – capital investment.
### KEY POINTS

- **Course maintenance**
  - Golf course design = on-going maintenance costs.

- **Design**
  - Sustainable golf model
    - Economic
    - Environmental
    - Social
  - Much to consider – golf course architect is the team leader.

### WHAT IS A “SUSTAINABLE GOLF MODEL”?

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<td>- Cost of land</td>
</tr>
<tr>
<td>- Infrastructure</td>
</tr>
<tr>
<td>- Planning &amp; Statutory Approvals</td>
</tr>
<tr>
<td>- All other consultant fees</td>
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<table>
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<th>2. BUSINESS MODEL</th>
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</thead>
<tbody>
<tr>
<td>- Position in the market</td>
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<tr>
<td>- Revenue sources</td>
</tr>
<tr>
<td>- Running costs</td>
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<table>
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<th>3. CONSTRUCTION</th>
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<tr>
<td>- Cost to build course &amp; environs (C/H, accom, other facilities)</td>
</tr>
<tr>
<td>- Protection &amp; minimising impact on the environment</td>
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<table>
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<th>4. ENVIRONMENT</th>
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</thead>
<tbody>
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<td>- Cost of reclamation, rehabilitation etc</td>
</tr>
<tr>
<td>- Creation of environmental values, i.e. flora &amp; fauna</td>
</tr>
<tr>
<td>- Water management and quality</td>
</tr>
<tr>
<td>- Cost to maintain existing &amp; proposed environment</td>
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<th>5. ACCESSIBILITY / FLEXIBILITY</th>
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<td>- Accessible to wide cross-section of community</td>
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<tr>
<td>- Flexible &amp; interesting facilities i.e. short courses, practice facilities</td>
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</tbody>
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<th>6. MAINTENANCE</th>
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<tr>
<td>- Provision of suitable quality playing surfaces</td>
</tr>
<tr>
<td>- Minimise impact on local and broader environment</td>
</tr>
<tr>
<td>- Cost of maintenance (quality) commensurate with facility</td>
</tr>
</tbody>
</table>
KEY POINTS

- **China**
  - A burgeoning market.
  - Can we afford sustainable philosophies (or not!!)
  - As golf course architects are you/we responsible for the social issues.

- **Australia**
  - ...a course that is fun to play for *all* levels of golfer.....

QUESTIONS
Thank you