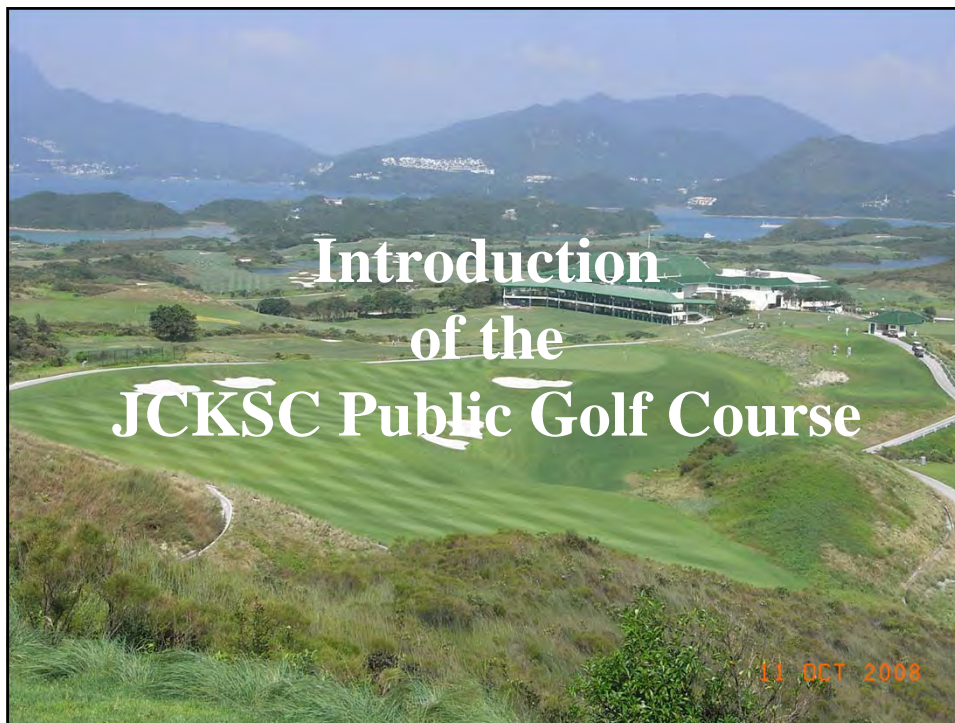


Seminar Outline

- 1. Introduction of the JCKSC Public Golf Course***
- 2. Environmental Achievement***
- 3. Maintenance Challenges : North & South***
- 4. Maintenance Challenges : East***
- 5. Question & Answer***



*One of the large **COMMUNITY PROJECTS** between HKSAR Government and the Hong Kong Jockey Club*



*The **LAND** is on **LOAN** from Government without charges, and the Hong Kong Jockey Club donated HK\$500 million to build all facilities*



*The **MISSION** is to **PROMOTE** the game of **GOLF** to the people of Hong Kong*



Operations commenced in mid-December 1995



An **INDEPENDENT** Company, **MANAGED** by the Hong Kong Jockey Club **ON BEHALF** of Government



A **NOT-FOR-PROFIT-MAKING** organisation, and on a **SELF-FINANCING** basis



NO MEMBERSHIP required. The **ONLY PUBLIC** golf course in Hong Kong



Fees / charges staying at **REASONABLE** and **AFFORDABLE** levels, **ACCESSIBLE** by the public, but making ends meet

- *Fulfilled the Baseline Study (EIA) for building the existing Golf Course*
- *Converted the barren, uninhabited island to a scenic place abundant with habitats*



- *Prevention of Soil Erosion*
- *Hill Fire Control*



Soil erosion due to bomb damage

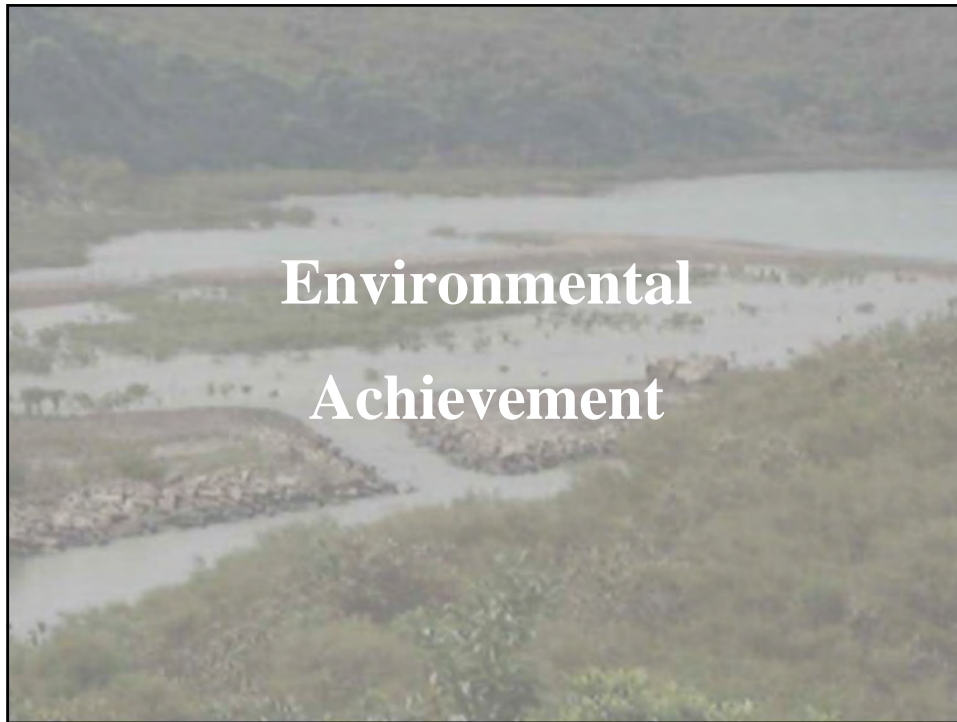


Now

Popularity of the Game of Golf

- *Golfers from all walks of life between 3 and 4 years old and over 70 years old*
- *The 1st millionth golfer registered in late May 2005*
- *160,000 rounds of golf each year*
- *210,000 visitors each year*
- *900 official tournament players each year*
- *Over 149,000 students taught, including 72,000 juniors*
- *Over 9,600 JCKSC Golf Pass holders*





Environmental Achievement

Audubon Program

*Recognized by Audubon Inc in environmental
protection works in 2005*



Asian Golf Course Environmental Award



*Asia
Pacific
Golf
Development
Summit
in
December
2008*

Ecological Monitoring (Annually)



**47 species of
Butterfly**
(19% of HK species)



**39 species
of Dragonfly**
(35% of HK species)

Bird: 148 species
(33% of HK species)
(20 species in 1994)



Mammals:
Wild boars,
civets,
porcupines,
feral dogs, rodents



**Amphibians
and Reptiles:**
Frogs, toads,
snakes



**Established
egretry,**
bat boxes and
bird nests for
roosting

(June 2010)

Mangroves and Protected Marsh

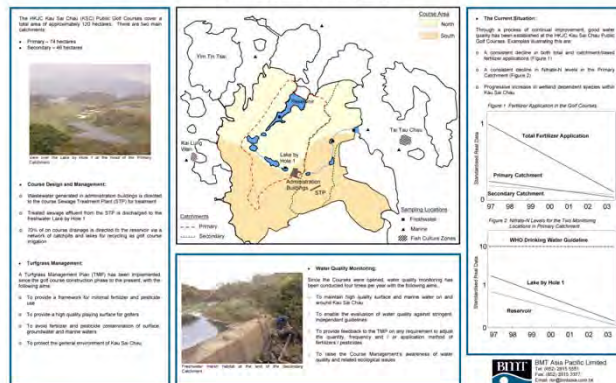
- *Located in coastal inlets around Kau Sai Chau*
- *Kwat Tau Tam inlet (reservoir site)*



(30/6/2005)

Water Quality Monitoring (Quarterly)

Hong Kong Jockey Club Kau Sai Chau Public Golf Courses WATER QUALITY MANAGEMENT



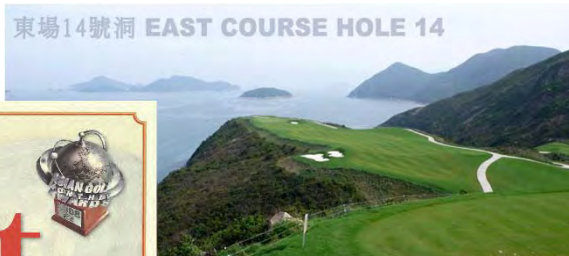
Turf Grass Management Policy



*Effectively
implementing
environmental
friendly
practices
turfgrass
management*

Best New Golf Course in Asia

- *Grand opening on 29 April 2008*
- *More Benefits to People of Hong Kong*
- *Enhance the habits at the eastern part of Kau Sai Chau*



*Asian Golf Monthly
in December 2008*



Environmental Protection Measures of the East Course

- In the HK\$ 300 million construction cost of the East Course, HK\$ 50 million was earmarked for environmental and ecological conservation works
- Employment of experienced consultants to carry out comprehensive studies to protect the environment



Maintenance Challenges (North & South Course)

Golf Course Maintenance

**North and South Course constructed in 1994 &
Designed by Mr. Gary Player**

Location	Type of Turf	Maintained Area (ha)
Greens	Tifdwarf Bermudagrass	2.5
Tees	419 Bermudagrass	1.5
Fairways & Roughs	419 Bermudagrass	44
Bunker Faces	Japonica Zoysia	2

Total Coverage Area of North & South Course : 130 ha

Bermudagrass (百慕達)

- ☞ Bermudagrass is a common warm seasons grass widely used in tropical and sub-tropical climates.
- ☞ A lot of varieties that would use in the golf courses.
- ☞ Seeded vs vegetative (most common).





Major Challenges at KSC

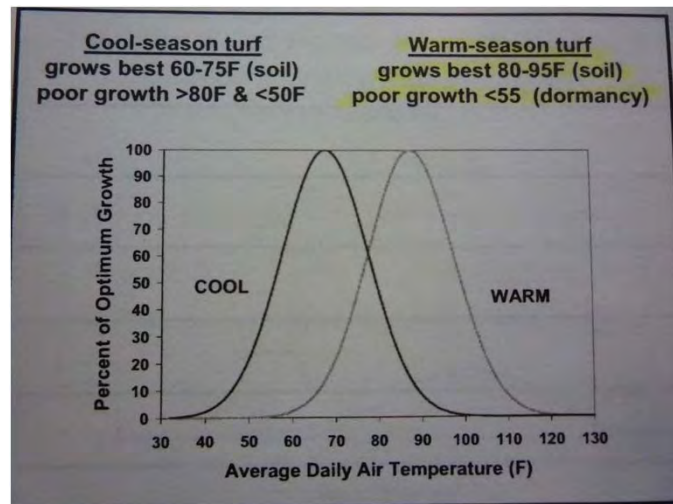
- 📖 Course open daily from 7:30 am to sunset
- 📖 Each day with 160 – 200 players
- 📖 To maintain the greens with smooth, firm and consistent for play in all year round
- 📖 Greens are the most important area for golfers to dedicate the golf course condition
- 📖 Greens with close mowing height at 3.8 mm to 5.2 mm (depends on seasons)



Bermudagrass

- 📖 However, growing bermudagrass in HK faces different challenge.
- 📖 Peak golf seasons is autumn and winter, but not the optimum time for growing bermudagrass as soil temperature usually below 15 degree.

Graph for warm season grass temp vs cool



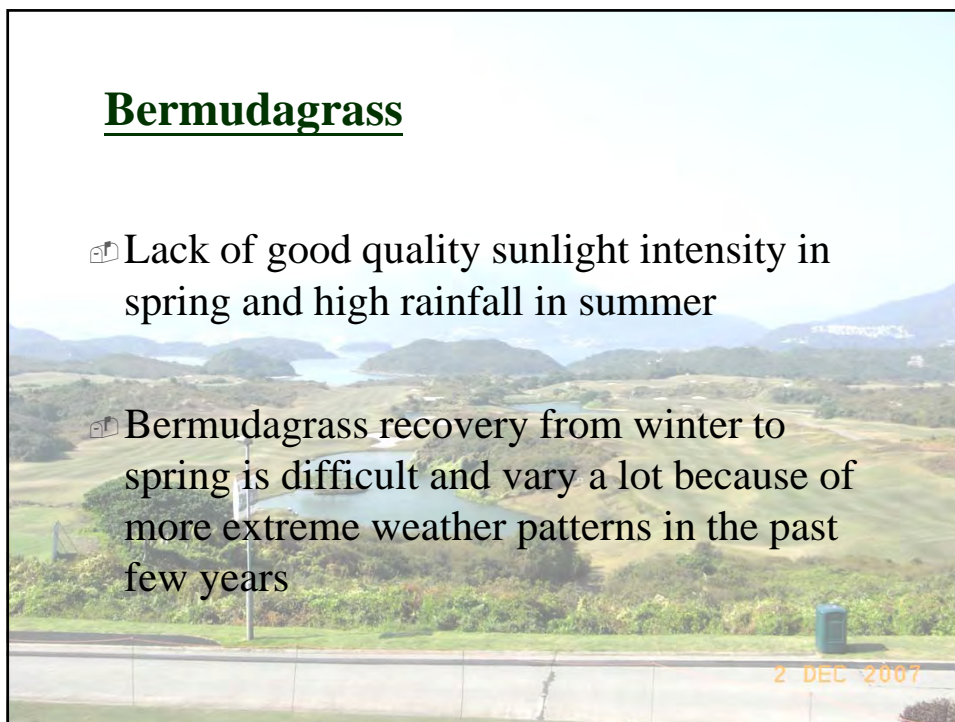
Mean Air Temperature (°C)

	2010	2009	2008
Jan	15.7	14.2	14.5
Feb	17.1	19.1	12.3
Mar	18.8	18.4	19.5
Apr	19.8	22.0	22.1
May	24.5	24.8	25.3
Jun	26.4	27.3	26.2
Jul	28.5	28.4	27.8
Aug	28.3	28.7	27.5
Sep	27.3	27.8	28.0
Oct	23.8	25.3	25.5
Nov	21.2	16.3	21.0
Dec	N/A	13.7	17.1

**Kau Sai Chau
Solar
Radiation
Station**

Bermudagrass

- ☞ Lack of good quality sunlight intensity in spring and high rainfall in summer
- ☞ Bermudagrass recovery from winter to spring is difficult and vary a lot because of more extreme weather patterns in the past few years



Monthly Mean Total Sunshine Duration (Hours)

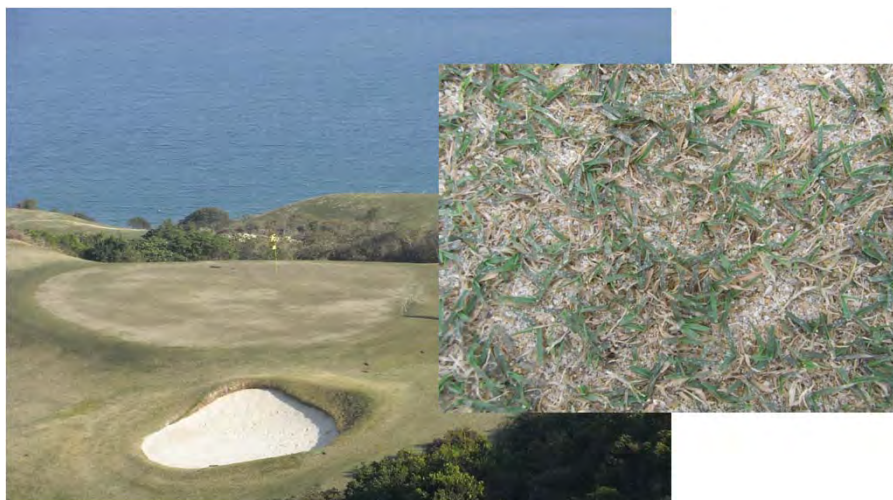
	2010	2009	2008
Jan	75.9	213.0	97.6
Feb	19.9	101.3	87.5
Mar	73.4	51.2	176.8
Apr	30.5	119.3	53.0
May	73.2	169.8	124.8
Jun	66.5	123.0	80.3
Jul	230.8	189.8	183.2
Aug	229.7	201.8	212.5
Sep	165.1	172.6	204.9
Oct	137.4	199.0	158.8
Nov		154.0	199.6
Dec	N/A	199.0	173.5

**Kau Sai Chau
Solar
Radiation
Station**

Rainfall Record at Kau Sai Chau

	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>HKO</u>
Jan	28.2	0	34.5	24.9
Feb	22.6	3	101.5	52.3
Mar	77.6	129	14	71.4
Apr	199.5	141	90	188.5
May	283	178	283	329.5
Jun	1336	544.5	637	388.1
Jul	564	279	396.5	374.4
Aug	191.5	99.3	193	444.6
Sep	101	252	443.5	287.5
Oct	83	17	13.5	151.9
Nov	0	59.5	45	35.1
Dec	10.5	43	N/A	34.5
Total	2896.9	1745.3	2251.5	2382.7

Greens always show high traffic wear in
later winter and early spring





How to compete this?

By installing physical barriers to distribute wear.



Promote Growth & Strong Root System before winter

Aeration:



Hollow coring (3 times/year)



Solid tyne (4 -5 times at
different sizes and depth)

Hydroject (3 times/year)



Spiking (2-3 times/week)

Promote Growth & Strong Root System before winter

- 2) Use of fertilizers and bio-stimulants as per regular soil analysis to promote root growth and strong leaves

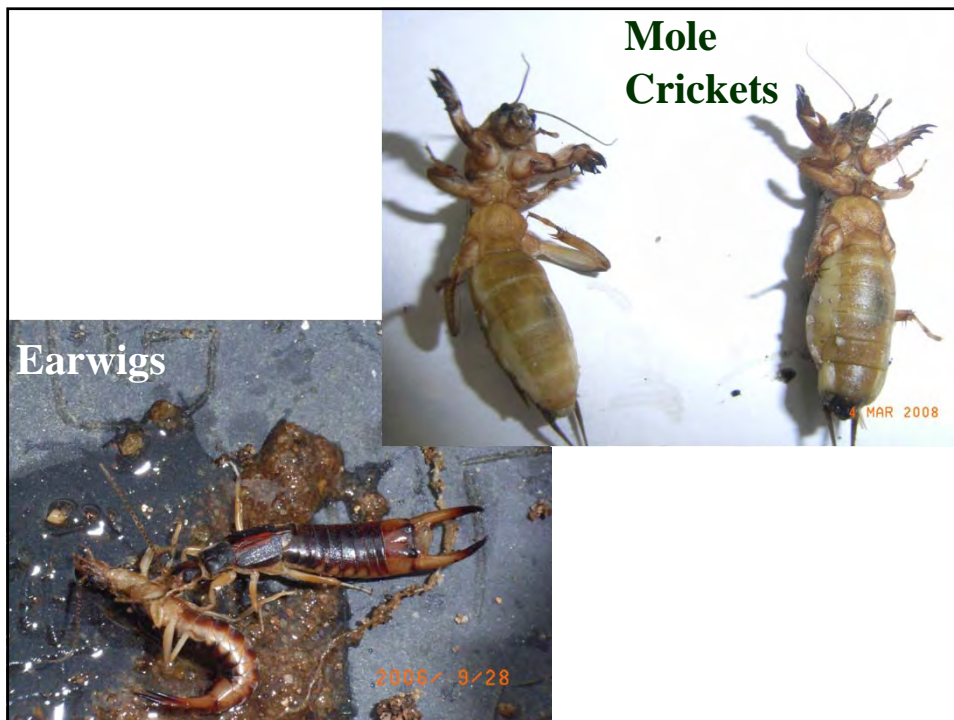


- 3) Use of pesticides as the last resort and as per the Turfgrass Management Plan's thresholds and Integrated Pest Management Plan (IPM)



Insects

- 📁 Set threshold at different locations as per TMP and Integrated Pest Management Plan (IPM)
- 📁 Greens – apply when found
- 📁 Use of beetle trap to identify pest life cycle





Maintenance Challenges (East Course)

Golf Course Maintenance

East Course constructed in mid 2006 & open in Apr 2008
Designed by Nelson & Haworth

Location	Type of Turf	Maintained Area (ha)
Greens	Sealsle Supreme	1.5
Tees	Salam – Seashore Paspalum	10
Fairways & Roughs	Salam – Seashore Paspalum	26
Bunker Faces	Salam – Seashore Paspalum	1.5

Total Coverage Area of East Course : 120 ha



Reasons for using Seashore Paspalum (海濱雀稗草)

☞ Provide golfers to have an other choice of turfgrass.

☞ 5 major stress tolerances:

Salinity, Drought, waterlogging/low oxygen, low light intensity, traffic = wear/compaction

17 MAY 2007



Compare Bermuda vs Seashore Paspalum

*Seashore
Paspalum*

Bermuda

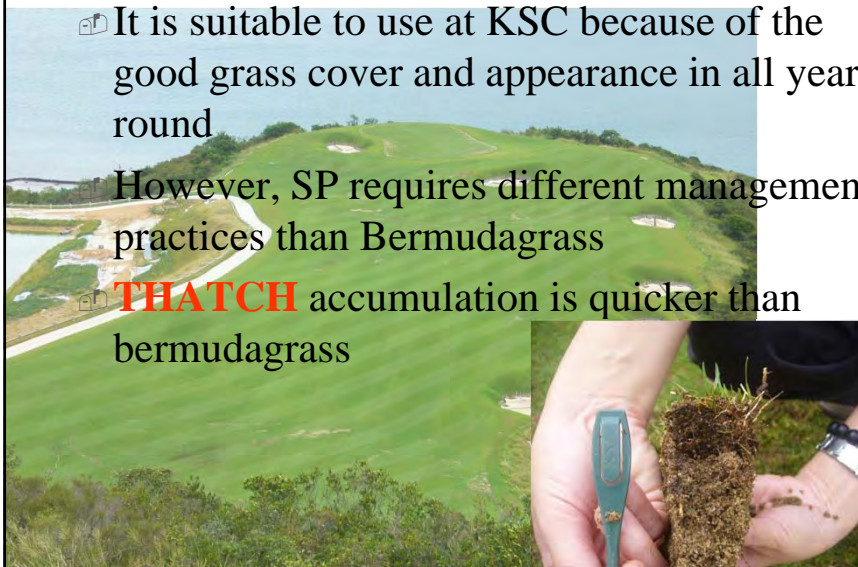
11 OCT 2008

- ☞ Reduced fertilizers and pesticides requirements
- ☞ Faster establishment than bermudagrass, usually 2- 4 weeks shorter
- ☞ Deeper root system that suit the terrain of the East Course for fast stabilization during construction



Challenges

- ☞ It is suitable to use at KSC because of the good grass cover and appearance in all year round
- ☞ However, SP requires different management practices than Bermudagrass
- ☞ **THATCH** accumulation is quicker than bermudagrass



Fairway Verticutting



Putting green surface at SP is much denser than Bermudgrass





Conclusion

There is no utopian grass or a miracle grass

It depends on the site, soil types, resources (eg. Capital investment, maintenance budget)

There are good turfgrass if managed properly

A knowledgeable and well trained team is the success for the golf courses condition



