SECTION NINE

Clubhouse and Facility Management

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SECTION 9: Clubhouse and Facility Management

KEY CONCEPTS

- Clubhouse operations can be a major cost in golf course operations.
- Choosing more efficient products and properly maintaining current equipment can reduce operating costs.
- Waste avoidance and minimisation and re-using and recycling resources where ever possible can significantly reduce costs.

9.1 INTRODUCTION

The principal environmental concerns in golf course management centre on water, pesticide and fertiliser use and the potential for water pollution. These issues centre on turf management and are the responsibility of the superintendents and green keeping staff.

There are also significant environmental and economic benefits to be achieved in sound management of the clubhouse and facilities. The clubhouse and associated members' facilities use water and energy and produce wastes in the process. The design and positioning of these facilities can have a significant impact on energy use through cooling and lighting.

The clubhouse produces wastes, including:

- organic (e.g. food scraps etc.);
- recyclables (glass, paper, recyclable plastics and metal);
- residual waste (non-recyclable plastics); and
- cooking oils/fats.

9.2 WATER EFFICIENT CLUBHOUSES

Water use in clubhouses can be significantly improved through the installation of water efficient appliances. This makes both economic and environmental sense. Appliances such as AAA rated shower heads and water efficient taps and dual flush toilets will reduce water consumption by as much as 20 per cent. Many councils are now encouraging the installation of rainwater tanks in addition to the appliances already mentioned. Consult your water authority and/or council for advice and assistance.

9.3 ENERGY EFFICIENT CLUBHOUSES

The Department of Environment and Climate Change NSW has produced a document specifically for clubs to assist them in improving their energy efficiency. The document, *Club of the Future*, is a practical model to assist clubs in adopting energy efficiency features while improving profitability and reliability. The following information has been adapted from the *Club of the Future* document.

Good energy management offers clubs mid-and long-term returns. The club will benefit by: being more reliable because of better quality plant that requires less maintenance and by being considered more environmentally responsible within the community because when you reduce the amount of energy used there is an automatic reduction in the level of harmful greenhouse gas emissions. Energy efficiency can be achieved through investing in some of the following key energy efficiency features.

Building Management System (BMS)

A computerised control system for managing all the operating systems in the club gives tighter control and the ability to switch systems on and off when required. This means big cost savings.

- a BMS should at least cover air conditioning, domestic hot water and lighting;
- large, good quality video monitors give operators tighter control;
- robust, reliable sensors allow operating systems to be switched on and off as required;
- Computer-based lighting and air handler software allows non-engineers to access the BMS.

Air conditioning

The air conditioning system determines the quality of the internal environment of the club and is the major energy consumer.

- outside air economy cycle allows for free cooling in winter and spring;
- 3-stage centrifugal chillers are twice as energy efficient, and cost effective, as packaged air conditioning;
- a gas-driven chiller reclaims heat for the swimming pool or domestic hot water needs;
- high-efficiency pumps and motors cost little or no more than less efficient motors;
- variable speed drives on selected motors cut energy consumption by 50% with only 12.5% reduction in flow of water or air;
- an air-to-air heat exchanger cools hot air coming into the building with outgoing cool air instead of throwing it away;
- electronic expansion valves improve the flow of refrigerant in chiller compressors.

Metering and sub-metering

By installing meters on each energy source it is possible to identify areas that are using excess energy.

- smart meters allow the accuracy of the main account meter to be checked;
- put meters on each mechanical and electrical switchboard to know where the energy is being used;
- power factor correction makes the energy supply system more efficient.

Lighting

Lighting contributes to the ambience and excitement of the club but can be an unnecessary expense. Try new energy efficient lighting.

- new T-5 fluorescent tubes, tri-phosphor fluorescents, metal halide and fibre optics can all reduce the annual lighting bill while providing the right light output;
- with retrofitted silver lux reflectors you only need half as many light tubes for the same lighting level;
- do not use low voltage downlights except where needed for aesthetic reasons, use electronic ballasts and 35w globes, which provide the same light as a 50w;
- control and dimming of lighting is essential to minimise energy use;
- occupancy sensors save money by cutting power use when it's not needed.

Car park ventilation

When car park ventilation runs 24 hours a day, it can represent up to 20% of the operating costs.

- use natural ventilation if possible;
- by monitoring carbon monoxide levels you can shut down the ventilation system at times of low car park use;
- ensure the BMS switches off the ventilation system after hours.

Swimming pool heating

Swimming pools, particularly open air pools, use large amounts of energy. Supplying the energy from other operating systems can reduce costs.

- reclaim heat for the pool from air conditioning chillers;
- reverse cycle air conditioning units de-humidify the environment in closed pools and inject heat into the pool water;
- solar hot water system provides free energy for pool heating all year round;
- look at cogeneration as a way to make both hot water and electricity cost-effective.

Commercial refrigeration

All clubs need commercial refrigeration. The way the system is operated will affect the operating costs.

- Air cooled condensers need good air flow and should be located on the roof;
- ensure BMS switches off refrigeration in beer and wine rooms when not in use in the early morning hours;
- electronic expansion valves improve the flow of refrigerant in compressors.

Commercial kitchen equipment

Look for 5-star energy efficient kitchen equipment, now available from manufacturers, to save you money.

- modern refrigerated display units have triple glazed fronts and highly insulated walls for reduced power use;
- gas-fired dishwashers, which use much less energy than electric, are now on the market;
- a Maxomicer cuts energy used for making ice by 30% by using water draining out of the icemaker to cool incoming water.

Domestic hot water

The significant amounts of energy and water used to provide domestic hot water for showers, amenities and washing up can be reduced.

- a gas-driven chiller reclaims heat for the domestic hot water needs;
- solar cells with gas boost or solar heat pump hot water units cut energy costs;
- reclaim heat energy lost down the shower drain with a 'GFX' drain reclaim unit.

Passive solar design

Where clubs are being renovated or designed from scratch, simple architectural features which minimise air conditioning and lighting needs can be built in.

- vertical louvres on east and west sides of building;
- planting provides shade around exposed walls and glazed surfaces;
- awnings and shading protect large glazed areas from direct sunlight;
- locating premises appropriately ie with NE focus.

Building integrated photovoltaics

Photovoltaic cells located on the outside of the building provide a source of power which is fed into the grid and credited to the club.

More information can be obtained at www.environment.nsw.gov.au

9.4 FOOD SENSE

The waste generated within the clubhouse can be significant and needs to be attended to as part of the overall environmental improvement program for a golf course. The Department of Environment and Climate Change NSW has addressed the issue of waste generated in the clubhouse and in particular food waste and have produced a very good guide for clubs called *Food Sense – a guide to reducing waste in the hospitality industry* (1998). The following information is taken directly from the booklet and from other NSW DECC publications. These can be purchased from the NSW DECC (Ph: 131 555) or viewed on the website: www.environment.nsw.gov.au

In NSW, green waste (garden, food and wood waste) represents approximately 30% of the total waste material generated. About 150,000 tonnes of food waste from businesses and industry is buried in landfill each year in NSW. In landfill this potentially valuable resource is wasted. The organic matter cannot be put to any productive use once it is mixed with different types of waste and buried. Food waste- along with garden waste and other organic materials -creates some of the biggest environmental problems associated with landfills. It's the food in waste that attracts birds and rats, which means that valuable landfill space is used up by covering the waste each day with a thick layer of soil. As the organic wastes compress and break down under this cover, gases and liquid are formed:

- **Landfill gas** — which consists mainly of two gases (carbon dioxide and methane). This has a strong smell and contributes to the Greenhouse effect.
- **Leachate** — which is the liquid that forms in landfills when water passes through it. The water picks up dissolved organics that can cause havoc in our waterways if not properly collected and disposed of.

Because of these problems, special landfills are needed. These cost more to manage, as they must meet higher environmental standards.

Take the first step towards reducing your waste

Once your organisation is committed to reducing kitchen waste, it is good to establish a baseline from which you can set goals and evaluate your improvements. You can do this by undertaking an environmental review of your current operations. (Ideally, a review or audit of your kitchen operations should be part of a review of all parts of your business.) Here are seven simple steps to get you started.

Step 1. The paper audit: Check how often your waste is picked up and how full the bins are. Check purchasing records to work out whether poor stock rotation or spoilage is leading to wastage. Work out how much waste disposal costs your business.

Step 2. The walk-through: Check what's in the garbage every day for one week. Note the types and amounts of wastes thrown out. (Note: You need to wear protective clothing (including gloves and masks) while checking through garbage, and to follow occupational health and safety requirements for this work at all times).

Step 3. Talk with staff: Discuss options with staff for reducing waste. Ask staff for their ideas.

Step 4. Prioritise the waste streams: Identify waste by checking items against the '3 Rs'. First, ask what waste you can (in order of preference): - Reduce - Reuse - Recycle.

Step 5. Develop a plan: Set some goals – (e.g. to reduce your waste by half in one year). Work out which wastes to target to reach this goal.

Step 6. Talk to staff, waste contractors and suppliers: Discuss your plan with staff, contractors and suppliers. Ask them to help achieve the waste reduction goal.

Step 7. Let your customers know: Promote your environmental aims to your customers and the local community. Now you are ready to make changes. A comprehensive review of operations may include looking at ways of reducing energy, water, chemicals and wastewater.

Apply the 3 Rs — Reduce, Reuse, Recycle

Often when we think about reducing waste, the first thing that comes to mind is recycling. While this helps recover resources, it is far more useful to avoid creating waste in the first place.

Reduce: Reducing waste means that the production of waste is avoided. Examples relevant to the food and catering industry include: reducing portion sizes if most customers are not eating all of their meal; buying less, more often- to avoid spoilage and reduce refrigeration needs.

Reuse: Reusing products means using something more than once. For example, you can: encourage staff to use coffee mugs rather than disposable (especially polystyrene) cups; reuse plastic condiment buckets or drums; replace disposable cutlery and plates with washable, reusable items.

Recycle: Recycling waste involves collecting certain products, which are then processed to make a similar product. Examples of recyclable products are cardboard boxes, glass bottles and jars, PET plastic bottles and aluminium and steel cans. By composting food waste, food scraps are recycled to form a valuable resource.

Reduce your waste and save money

The less rubbish you throw out the smaller your waste bill. By recycling as much as possible, preventing waste being created as far as possible, and finding ways of dealing with your surplus food waste, your business should be able to reduce its waste by at least half. Some businesses have reduced their waste by up to 90%! That represents more money for their business and a better environment.

Here are some suggestions

Purchasing: Avoid buying disposable items such as plastic containers and cutlery, paper towels and napkins. Use reusable table linen, crockery and cutlery. Ask suppliers to take back and reuse transport packaging such as crates, waxed cardboard and foam boxes. Avoid buying single-serve portions such as tomato sauce, jam, butter, sugar, salt and pepper. Buy in bulk and refill where you can into Health Department-approved dispensers. If storage space allows, buy shelf-stable products in bulk to reduce packaging and unit price. For example, buy bulk bar mixes in concentrate form and then dispense. Buy your coffee by the whole bean and grind it on site. Buy cleaning supplies -such as washing- up detergent — in concentrate. Use multi-purpose cleaners rather than job- specific ones. Look at the amount of food spoilage. If food is spoiling before it is used, you may need to buy less of it more often.

Support recycling by buying paper products made from recycled paper. Available items include toilet paper, paper towels, brown paper bags, chip buckets, take-away containers and paper for menus. Choose suppliers that provide recyclable packaging and packaging that has recycled content.

Product handling and storage: Check deliveries for rotten or damaged products and return any substandard goods. Rotate perishable stock at every delivery to reduce spoilage. Arrange with a local welfare organisation to take leftover prepared food.

Food preparation and storage: Adjust inventory levels on perishables to minimise waste due to spoilage or dehydration. If you are constantly throwing out dairy products or vegetables, you may be stocking too much inventory or not rotating it properly. You may need to adjust either the quantity or frequency of your orders. When preparing food, only trim off what is not needed. Over-trimming typically occurs during preparation of bulk meats and whole vegetables. If your waste audit reveals excessive waste from over-trimming, you may need to retrain your preparation staff or buy these foods already proportioned. Store raw vegetables in reusable airtight containers to prevent dehydration and spoilage.

Behind the scenes: Keep equipment well maintained to avoid unnecessary spoilage through breakdown. Clean fryers and filter the cooking oil regularly. Store used cooking oil and arrange to have it picked up by a cooking-oil recycler. This is generally a free service: the recyclers will supply you with a drum and arrange regular collection. Place rubber mats around dishwashing stations to reduce breakage of glass and china.

Front of house: Throwing out prepared food is a real waste of invested dollars, staff time and resources.

- Adjust meal sizes if meals are routinely returned unfinished.
- Offer half portions and children's meals.
- Encourage 'doggy bags'.

Worming down your Waste

Composting or worm farming to reduce your food waste can really make a difference. It reduces disposal costs and preserves a valuable resource.

Composting

Composting converts organic matter- such as food, grass, leaves, soiled newspaper and the like -into a sweet-smelling earthlike substance. Compost can be used as an alternative to artificial fertilisers: it improves the quality of soil by increasing its ability to hold water and nutrients. It's easy to make compost. Basically, it involves layering nitrogen-poor materials (described as poor or brown, these include dry leaves, straw, paper and sawdust) with nitrogen-rich materials (described as rich or green, these include fruit and vegetable scraps, weeds and animal manure). With the right mix of ingredients, plus water and air, rich soil-like compost can be produced in about 8-10 weeks.

Worm Farming

Feeding a worm farm with your food waste is also an option. Worms are voracious feeders, eating up to half their own body weight of fruit and vegetable scraps, juicer pulp, shredded paper, soaked cardboard and eggshells in one day. They turn your food scraps into worm castings, a rich fertiliser-like material that can be used straight on the garden. When making the decision to compost or worm farm, you might want to consider the following factors:

Space: How much space is available for the compost or worm farm system? Worm beds generally need less space than composting systems. How close are the nearest houses or businesses? Buffers of 250-500 metres are recommended for composting, as odours can be released when compost is turned.

Materials: What types of organic wastes are produced, and are storage facilities available? If only food wastes and some paper or cardboard wastes are produced, a worm bed is ideal. Composting requires the addition of a bulking agent to food wastes. Garden wastes such as leaves, grass and chipped tree branches make excellent bulking agents, but wetted cardboard, newspaper, paper towel or sawdust can also be used. Access to storage space for compost additives should be taken into account.

Cost/benefit: The following costs need to be considered:

- equipment costs
- labour costs
- material costs
- operating/maintenance costs

and weighed against the benefits:

- lower disposal costs
- reduced environmental impact and higher social benefits
- lower mulch, soil and fertiliser needs
- reduced need for pesticides and herbicides

9.5 CASE STUDIES

Two preliminary eco-efficiency studies have been undertaken on Queensland golf courses to determine the potential for improved resource management. The golf courses studied were Horton Park Golf Course and Gainsborough Greens.

The findings from these studies indicate some fundamental but important efficiencies that can be made in clubhouse operations. These improvements include:

- the replacement of incandescent lights with compact fluorescent lamps;
- the replacement of 42 lights has the following cost benefits:

Cost	$630
Annual saving	$134
Payback	4.6 years

- replacement of seals on refrigeration and freezer units;
- better control of air conditioning systems so that those in empty rooms can be switched off and come on only when a person enters the room (i.e. using sensors);
- keeping external doors closed with good sealing to prevent the entry of warm and humid air. Potential cost savings = $1000/annum;
- improved maintenance of air conditioning units (e.g. cleaning filters);
- reduction of heat loading to the building as a consequence of north-facing windows by using shade sails or reflective film on windows:

Cost of reflective film	$6,500
Energy savings	$4,500
Payback	1.5 years

- use of dual-flush toilets for water conservation (33% saving);
- improved waste recycling;
- collection of rainwater for use in the buggy facility to reduce equipment corrosion:

Cost of tanks etc.	$13,000
Savings	$3,800
Payback	3 years

- use of water-efficient shower roses (33% saving).

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