



GEO Certified[®]

GEO Certified[®] Report Tapiola Golf Club

Prepared by Independent Verifier, Sanni Sjöblom

Certified by GEO Foundation: January 2021
Valid until: January 2024

GEO Certified[®]

 **GEO
Foundation**
Sustainability in and through golf

“As a seven-year-old golf club built on a former landfill site, the speed of development at Tapiola Golf is impressive. The club is different to others in many ways and management of the course is very specific. It is the goal of Tapiola Golf to benchmark the methods of such management and become a case study for future land uses and naturalisation of disused landfill sites.

At the same time, these areas will produce work, health and wellness for people and space for wildlife. Leaching from landfill is shown to be safely managed and the gas generated below-ground can be collected and used for heating.”

Sanni Sjöblom

GEO accredited Independent Verifier



Introduction

GEO Foundation is pleased to confirm that Tapiola Golf Club has successfully achieved GEO Certified® status for its outstanding work to foster nature, conserve resources and support the community.

GEO Certified® is the most respected certification for golf, based on a credibly and transparently developed modern sustainability Standard of best practice.

Tapiola Golf Club has:

1. Met the required certification criteria for sustainable golf operations
2. Successfully completed the official third-party verification process
3. Successfully passed the final evaluation by GEO Certification Ltd. (autonomous subsidiary of GEO Foundation)

GEO agreed with the conclusions of the official verification report, that, having achieved all mandatory criteria; and with specific Continual Improvement Points set for the future, Tapiola Golf Club should be awarded GEO Certified® status.

For the certification period stated above, Tapiola Golf Club can therefore claim a position as a leader in advancing sustainability in golf – making important contributions in protecting nature, conserving resources and strengthening communities.

The GEO Certified® Report that follows comments on the actions undertaken against the criteria, as observed by the Independent Verifier during the assurance process.

Certification is nearly always the result of a dedicated team effort resulting in many practical and valuable social and environmental results around the golf course, maintenance facility and clubhouse. These dedication and leadership qualities are an important part of ensuring the resilience of the golf facility and the golf industry into the future and also as part of society's wider effort to pull together for people and planet.

We congratulate all involved.

Jonathan Smith
Founder and Executive Director, GEO Foundation
GEO Certification Ltd. Board Member

Kelli Jerome
Executive Director, GEO Foundation

Richard Allison
Manager, GEO Certified Facilities



Verification and Certification

Verification

The official third-party audit was carried out by an independent verifier, accredited by GEO to undertake verifications of golf facilities applying for certification.

Verification involves reviewing practices and data, using the International Voluntary Standard for Sustainable Golf Operations as the guide to ensure comprehensive and consistent evaluation of performance. A detailed verification report is submitted for evaluation by GEO Certification Ltd, a subsidiary of GEO Foundation.

Certification

GEO Certification Ltd, an autonomous subsidiary of GEO Foundation [both not-for-profit entities], undertook a full review of all content submitted through the OnCourse® online platform and the report submitted by the verifier, ensuring:

- Comprehensiveness – that activities undertaken touched on all elements of the Standard
- Consistency – that the verification approach was balanced, well weighted and with consistent depth of evaluation across each theme
- Accuracy - matching the verification report with evidence submitted by the golf facility to ensure statements and claims were accurate

GEO Foundation is an international not-for-profit founded to advocate, support and reward sustainability in and through golf. Over more than ten years, the group has worked collaboratively with dozens of golf industry associations and government and non-government organisations around the world, to help golf become a sustainability leader, striving for a net positive social and environmental impact. In addition to managing and assuring GEO Certified®, GEO Foundation also provides a suite of credible, practical programmes for golf facility management, new golf developments and golf tournaments called OnCourse®, often delivered in partnership with national golf bodies. Find out more at www.sustainable.golf

Credibility

GEO Certified® is part of the ISEAL Alliance, a group of the world's foremost credible certification systems including Fairtrade, Rainforest Alliance, Forest Stewardship Council, Marine Stewardship Council and many others. GEO Foundation earned and retains full membership of the ISEAL Alliance global association following a rigorous evaluation against the ISEAL Codes of Credibility in Sustainability Standards and Certification. The ISEAL Codes cover standard-setting, assurance, and monitoring and evaluation. Find out more at www.isealalliance.org



Verifier's Report

The Sustainability Agenda for golf covers the following themes and action areas:

THEMES	ACTION AREAS
Nature	<ul style="list-style-type: none"> • Habitats & Biodiversity • Turfgrass management • Pollution prevention
Resources	<ul style="list-style-type: none"> • Water • Energy • Materials
Community	<ul style="list-style-type: none"> • Partnerships & Outreach • Golfing & Employment • Advocacy & Communications

Included below are the observations made by the Independent Verifier against each item in the Standard.

NATURE			
N1 Habitats and Biodiversity			
Objectives	Requirements	Mandatory Practices	Verifier Notes
N1.1 Understand the site and surroundings	N1.1.1 Sound understanding of the nature and landscape value of the site	Map all habitats and vegetation types on the site; Regularly update landscape / biodiversity surveys	Tapiola Golf is an interesting site. It is different to any other golf course I have visited. The reason is, that it is built on a former landfill. The naturalization of the site has begun only 8 years ago. The nature developing is widely different than that of Finland in general and it

			<p>resembles quite closely links type of landscape that one might associate with Scotland or Ireland.</p> <p>The waste was sealed by first capping the site with a layer of clay and then a bentonite layer thus sealing the contents and preventing release of landfill gasses and any ingress of rainwater from above.</p> <p>The Bentonite fabric is covered with a 1m layer of clay followed by the shallow sandy rootzone of 10-25 cm depth. Tapiola is special in so far as rainwater and nutrients move down vertically only to the depth of the rootzone and then laterally to the walls of surface drainage pipes. Therefore, it is very important to only apply that level of nutrients and in a form that the plants can use. We do not want over nutrification in low lying wetter areas of the fairways. It is essential for the greenkeepers to carry out continuous maintenance of the surface drainage and rootzone drainage.</p> <p>Tapiola Golf Club leases the site for the golf course from the City of Espoo.</p> <p>A private company owns the building that contains the clubhouse & changing rooms, restaurant, golf shop, golf school, golf fitting and a travel agency. They are tenants and the landlord is responsible for their combined ecology matters. Tapiola Golf rents part of the clubhouse.</p>
	N1.1.2 Knowledge of legal designations for protected areas, habitats and species	Understand legal responsibilities for protected landscapes and species; Record and monitor protected, endangered, or rare species found on the site	There are no special or designated sites on the golf course. Adjoining the North end of the course is a protected area of peatland that has a forest cover.
	N1.1.3 Understanding and respect for cultural heritage	Protect any archaeological, historical or cultural designations on the site	There are no archaeological, historical or cultural designations on the site.
N1.2 Opportunities to naturalise the course	N1.2.1 Measures taken to identify and minimise the required area of managed turfgrass	Observe, track and / or monitor golfer play	<p>Tapiola Golf is an exposed site and does not have an own source of natural water. This fact made the site at Tapiola Golf ideal to grow fine fescues more often associated with the finest 'links' golf courses of Great Britain & Ireland. Fine fescues thrive on low inputs of fertilisers, water and pesticides. Fescue grasses are uniquely adapted to survive windy and exposed sites and periods of drought. It is under these conditions that fescue grasses offer firm and fast playing surfaces and allow the golfer to play 'the running game'.</p> <p>Undulating roughs and maintained meadows are prominent. Open areas of the rough are home to ground nesting birds during the summer. Sand bunkers cover an area of almost 1 hectare and in places these provide an</p>

			<p>open sand landscape. There are no historical features on the course, nor are there any protected species of birdlife.</p> <p>Since the golf course is situated in a built environment it has not yet developed specific habitats, but it is well on the way there. Trees are not allowed to root or be planted on that part of the course overlying the former landfill. This is in order to protect the bentonite layer from disturbance or damage from possible windthrow should trees be encouraged to grow and be blown over. The open drains on the west side of the course are slowly being naturalised by plants and animals adapted to wetland environments. The drains are maintained to ensure proper flow of water.</p>
N1.3 Actively manage habitats for wildlife	N1.3.1 Projects to manage habitats in the best way for wildlife and golf	Regularly review and follow a habitat management plan; Prioritise native species when planting and landscaping	<p>Since the golf course is situated in a built environment it has not yet developed specific habitats, but it is well on the way there. Meadows thrive on the well-drained sandy parts of the site. Slowly nature seems to do its job and it is warmly welcomed alongside the open 'links' style.</p> <p>There are no special or designated sites on the course. There are 2 small patches of forest within the course. Adjoining the North end of the course is a small protected peatland.</p>
N1.4 Conserve key species	N1.4.1 Practical conservation measures for priority species		For ongoing improvements, data of wildlife will be collected. Also, bird boxes, nesting areas for small mammals and for pollinators will be set up. Beehives are also interesting. The first goal is to learn and plan about managing beehives in golf courses in general.
N2 Turfgrass			
N2.1 Maintain optimum turf and soil health	N2.1.1 Appropriate turfgrass varieties adapted to climatic and other geomorphological factors	Select appropriate grass species for climate	In turf management the club follows the recommendations of Scandinavian Turfgrass and Environment Research Foundation (STERF). The selection of grass seed and cultivars are based on this research and suggestions from Scanturf and data from other seed producers. The course is exposed and dry and therefore the turf species must withstand periods of drought.
	N2.1.2 Practices to maintain good soil structure and condition		
	N2.1.3 Careful and responsible fertiliser application throughout the year to avoid over-fertilisation	Undertake soil tests and nutrient analysis	Soil test analysis of the rootzone is carried out in the autumn along with measures of organic matter percentage in the upper layer of the rootzone. This gives information such as pH and cation exchange capacity which helps make better choices on fertilizer and maintenance requirements.

			<p>Slow release and low salt index granular fertilisers are applied 1-2 times per year. Liquid fertilisers supplement Nitrogen levels and soil improvement products as well as wetting / water conservation agents are used to maintain conditions for optimum plant growth.</p>
N2.2 Prioritise mechanical maintenance	N2.2.1 Non-chemical pest, disease and weed management	<p>Sharpen mowing blades; Remove surface moisture; Hand weeding</p>	<p>Turfgrass maintenance follow principals of IPM. Mower blades are proactively kept sharp. A sharp cut is a healthy cut. An effective aeration programme is carried out that incorporates frequent top dressing in order to achieve an optimum level of organic matter (thatch) in the rootzone.</p> <p>Irrigation is applied from data obtained from volumetric soil moisture content meters and weather forecast data on weekly evapotranspiration levels. Towards the end of the season in autumn surface moisture is actively minimized to help make conditions less favourable to outbreaks of fungi and disease.</p>
N2.3 Use chemicals responsibly	N2.3.1 Application of chemicals only when necessary to prevent or cure defined / identified turf health issues	<p>Establish patterns and levels of risk for pests and diseases; Scout the course daily for early signs of pests and disease; Accurate pest and disease identification; Map and track pest and disease hotspots; Establish pest and disease thresholds</p>	<p>To prevent diseases, the aim is to keep the turf dry and deep rooting. Spraying is carried out only locally, and if 20-30% grasses are found diseased.</p> <p>Fungicides used are approved by Tukes (Finnish safety and chemicals agency). Usually two applications of systemic and contact fungicides is sufficient.</p> <p>In autumn, dew control is an important step to make conditions less favorable to the spread of fungal spores. Spraying is carried out only locally when disease spots cover 20-30% of surface area of greens. Optimal irrigation plays a part in</p> <p>Herbicides are spot sprayed to control clover on the course and horsetail (<i>Equisetum arvense</i>) in the bunkers. Timing of herbicide spraying is based on temperature and humidity, as well as the growth phase of the leaf. Herbicides used are targeted to specific species only.</p> <p>The sprayers are Tukes licensed, tested and calibrated once a year.</p>
	N2.3.2 Application of chemicals with full safety precautions	<p>Use only legally registered and approved products; Ensure staff are fully qualified and licenced to use pesticides; Regularly calibrate and test applicators; Use appropriate protective equipment; Dilute and dispose of leftover product on untreated areas of turf</p>	<p>Storing and mixing is done indoors in well ventilated space. Chemicals are stored in sealed and ventilated closet where they are identified. The use of all the chemicals is recorded.</p> <p>The sprayers have been tested and passed by a TUKES appointed assessor and are fit for professional use until 2020. Testing thereafter is carried out every 3 years. They are calibrated by the greenkeeper once a year.</p>

			<p>Before washing, clippings are blown off the mowers by compressed air. Machines are then hand washed in an indoor washing area with a low-pressure washer to minimize water consumption. Here clippings are collected and later added to the compost pile.</p> <p>Wash water flows via oil & grease separation wells and then to the common sewer. There is also an outdoors washing area, where the two large fairway machines are washed.</p>
N3 Pollution Prevention			
N3.1 Prevent pollution across the entire site	N3.1.1 Practical measures to ensure pollution risks are minimised from golf course operations	<p>Document procedures for emergency spill responses;</p> <p>Maintain mowing buffer zones around water and all ecologically sensitive areas;</p> <p>Maintain spraying and spreading buffer zones around water and all ecologically sensitive areas;</p> <p>Create a map / aerial visual reproduction, drawing etc of the course showing buffer zones and no-spray, no-spread areas.</p>	<p>Application of plant protection products near watercourses follow water body restrictions outlined by Tukes. Operators applying plant protection products possess the appropriate qualifications and permissions issued by Tukes. Plant protection products are not applied if rain is forecast.</p>
	N3.1.2 Practical measures to ensure pollution risks are minimised from clubhouse operations	<p>Ensure all hazardous materials are safely and securely stored;</p> <p>Ensure compliance with all required standards and systems for hazardous waste and wastewater discharge</p>	<p>Clubhouse is owned and operated by a separate business</p>
	N3.1.3 Practical measures to ensure pollution risks are minimised from maintenance facility operations	<p>Ensure wash areas are on impermeable, leak-free surfaces;</p> <p>Mixing and loading of pesticides and fertilisers over an impermeable surface;</p> <p>Triple rinse pesticide containers and applicators</p>	<p>In washing area, the clippings are collected and composted. Washing takes place with low pressure on asphalted and covered washing area. Water is collected to separation wells and then to common sewer. There is also an outdoors washing area, where two large machines are washed.</p> <p>Waste oil is collected in specific container with pool below it, and it is emptied once a year by a licensed contractor. Chemicals are stored in sealed and ventilated closet where they are identified. The use of all chemicals is recorded.</p> <p>Petrol and diesel are stored in double hulled containers.</p> <p>Well maintenance is main issue in pollution prevention. As it is former landfill, the runoff is strictly controlled and monitored. The runoff from the top layer of the landfill, that consists also the runoff from the golf course, is collected to wells. That water is mostly reused in irrigation. Partly it</p>

			flows to wetlands that surround the course. The water from the bottom layers of the landfill is managed by the city. Fertilizers are stored in metal silo.
N3.2 Safely manage hazardous substances	N3.2.1 Legal compliance in the storage, handling, application and safe disposal of all hazardous substances	Maintain a register of hazardous materials available to authorised staff; Safe storage in secure and ventilated concrete or metal building; Sufficient storage capacity; Impermeable flooring; Spill containment kits present; Emergency wash area; Fire extinguisher in the immediate area; Secondary containment for fuel, either externally constructed, or integrally manufactured; Regular inspection of storage tanks	Confirmed As a point of continual improvement, the fuel station will be renewed and modernized soon. The soil below the old station will be capsulated.
N3.3 Responsibly manage waste / storm water	N3.3.1 Appropriate wastewater usage and discharge licences	Wastewater discharge licence; Appropriate treatment of machinery wash water (impermeable surface, oil / grease / clipping separation)	Confirmed

RESOURCES			
R1 Water			
Objectives	Requirements	Mandatory Practices	Verifier Notes
R1.1 Minimise water demand	R1.1.1 Measures to reduce the need to consume water	Target irrigation to essential playing surfaces only	Initial selection and annual reseeding of fine fescue grass species that are suitable to a dry environment and have a low requirement for supplementary irrigation apart from rainfall. Rainbird IC irrigation system allows for targeted irrigation to essential playing surfaces only by putting in place an irrigation network that provides optimum coverage to essential parts of the course. The Rainbird Eagle 700/750 rotor series offers precise

			control and water conservation by irrigating only a sector of a full rotation if required. The need for irrigation is based on daily observation and data from soil moisture content sensors and data from weather forecast providers.
R1.2 Maximise water efficiency	R1.2.1 Practical measures to use water more efficiently on the golf course	Conduct regular irrigation performance checks; Provide staff training on efficient irrigation practices; Ensure effective application of water to target areas; Ensure irrigation schedules are informed by weather patterns and soil moisture analysis	<p>The need for irrigation is based on data obtained from the soil scout TDR350 soil moisture meter as well as continuous visual inspection and observation of clippings yield. Deep and infrequent irrigation is found to be the best practice at Tapiola Golf. Irrigation takes place if the soil moisture level drops below 8%, with an ideal level between 10-15%. Excessive irrigation impairs turf quality and health and causes wasteful runoff to the wells.</p> <p>The drainage system under the south end of the course collects and redirects unused rain and irrigation water back to the irrigation water pond to be reused. During 2020 irrigation took place only in June, since the rainfall amounts were otherwise ideal throughout the summer monitoring the need with TDR humidity meter. Also, continual visual inspection takes place.</p>
	R1.2.2 Practical measures to use water more efficiently in buildings	Audit water use regularly; Review bills frequently and look for irregularities; Encourage water-saving practices amongst staff and visitors; Categorise and track water consumption	<p>The quality of inflow and outflow water is inspected regularly by the consultation company. There are specific water quality monitoring stations where specific attributes such as color and transparency of the water are followed.</p> <p>As the water use is strictly controlled and planned by the consultants, improvement aims will also be added by them.</p>
R1.3 Source water responsibly	R1.3.1 Measures towards alternative, lower quality sources of water	Ensure appropriate water abstraction permit and reporting, as required	Confirmed
R2 Energy			
R2.1 Reduce energy demand	R2.1.1 Measures to reduce the amount of energy consumed in course maintenance	Minimise areas of managed turf to reduce mowing, irrigation, and turf inputs	Reductions in energy consumption from course maintenance have been achieved by slowing growth rate of grass through reduced inputs of fertilisers and water.

			Recent purchases of job specific machines carry out duties such as rough management and hollow coring with considerable reduction in fuel and man-hours.
R2.2 Maximise energy efficiency	R2.2.1 Measures to use energy and fuels more efficiently in buildings	Audit energy use regularly; Regularly review bills; Categorise and track energy consumption	Maintenance of heat pump. Toilets and bathrooms were fitted with motion sensor lights 2020. 2020 enforced a campaign for all the workers to turn out the lights when leaving a room or maintenance hall every evening.
R2.3 Source energy responsibly	R2.3.1 Measures to source alternative, renewable forms of energy	Determine potential sources of renewable energy in the area and on-site, through renewable energy providers	Situated adjacent to the machinery hall are deep bore wells used to house a geophone to listen to seismic activity of the drilling of the deep bore geothermal plant at nearby Otaniemi carried out by ST1 Deep Heat Oy. Once the project has finished the wells may be suitable for use as geothermal heat wells possibly supplying energy to the maintenance hall at Tapiola Golf. <i>To be addressed at a later date.</i> -The roof of the maintenance hall could be ideal for a solar panels. Some studies on solar panel efficiency on site can be done as CI.
R3 Materials			
R3.1 Reduce materials demand	R3.1.1 Products and materials selection based on necessity, including opportunities for recycled, reused and locally sourced alternatives	Undertake a review of materials consumed	All the products used for course maintenance are purchased from recognised companies.
R3.2 Purchase responsibly	R3.2.1 Practical use of an ethical / environmental purchasing policy	Adopt a sustainable, or ethical / environmental purchasing policy to maximise the use of locally sourced goods and goods made from	Waste from the kitchens is collected, mixed with soil and composted for use on the course.

		recycled, recyclable and certified materials	
R3.3 Reuse and recycle	R3.3.1 Waste stream separation for maximum recycling and re-use opportunity	Demonstrate waste separation, reuse and recycling; Track how much waste goes to landfill, or is reused / recycled	All the waste is collected and separated according to the requirements of the municipality.
R3.4 Demonstrate legal compliance	R3.4.1 Compliance with all local and regional waste management regulations	Use authorised waste and recycling contractor for general, hazardous, industrial and green waste	Restaurant and facilities are owned by a separate business. There is an opportunity to work together and promote sustainable initiatives across the businesses

COMMUNITY			
C1 Outreach			
Objectives	Requirements	Mandatory Practices	Verifier Notes
C1.1 Diversify access and provide multi-functionality	C1.1.1 Social and recreational activities at the facility		The course is always open for walking, and for example frisbee golf. Even when the course is closed there are signposts where it is safe to go. During the winter, if there is snow, there are skiing tracks along the course. Club facilities are regularly used for events and meetings etc.
C1.2 Provide for volunteering and charity	C1.2.1 Opportunities available for volunteering and support of charities and good causes		The course has offered its spaces for charity events operated by the restaurant.
C1.3 Establish active community partnerships	C1.3.1 Positive and constructive engagement with neighbours, the local community and other groups	Create a 'sustainability working group'	Sustainability is not a singular subject but dealt with as part of regular management across several committees. It could become more formal going forward. There is an opportunity to collaborate with different departments at the facility and bring about material change
C2 Golfers & Employees			

C2.1 Improve health and wellbeing	C2.1.1 Benefits to human physical and mental health from golf and facility activities		As continual improvements, there are few points: -To offer information about the health benefits of golf -To offer eg. calorie or stepmeter to advocate walking -To improve the signs to make it easier to navigate the course on foot -To improve the signage that informs about the wildlife on the course -To give information about the habitats in grassland and links
C2.2 Be open and inclusive	C2.2.1 Inclusivity and diversity in membership and visitor policies	Demonstrate inclusive policies for members and visitors	Confirmed
C2.3 Employ fairly and safely, and provide career opportunities	C2.3.1 Ethical and legal employment, working conditions and professional development	Follow all relevant national legislation and best practice for employment, health & safety etc	Confirmed
C3 Communications			
C3.1 Engage golfers and members	C3.1.1 Communications activities that raise awareness and understanding amongst members and visitors	Provide information on the facility's sustainability commitments, actions, or achievements	Website is clear and informative, but could provide more attention to environmental and social initiatives
C3.2 Celebrate and promote sustainability	C3.2.1 Activities that raise awareness and engage people in the wider community	Provide evidence of external communications and community engagement	Club facilities are regularly used for events and meetings

Golf and Sustainability

Among all sports, golf has a particularly close relationship with the environment and communities, golf facilities can bring many benefits to people and nature - from the protection of greenspace and conservation of biodiversity; healthy recreation for all ages; local supply chains; and jobs, tourism and other forms of economic value.

Adopting a more sustainable approach is also good for golf. It's about presenting a high-quality golf course and providing a memorable experience in natural surroundings. It's about being as efficient as possible. And it's about supporting the community in a range of ways that bring increased recognition, respect and contact.

At a broader level, it's important that golf credibly demonstrates its commitment, and its social and environmental value - strengthening the sport's image and reputation for the long term.

Golf facilities that participate in OnCourse®, an international sustainability initiative assured by the non-profit GEO Foundation, are taking a comprehensive approach and striving to be leaders in the community.

Find out more at www.sustainable.golf