

[RETURN TO ONLINE PROFILE](#)

## EXAMPLES OF GOOD PRACTICE

### CONSERVING WATER



Encouraging staff and guests to save water through notices is basic good practice. Monitoring water use, sub-metering and setting targets are additional ways to save water. Pictured here a notice in Mela Kothi The Chambal Safari Lodge to encourage guests to re-use towels.



Svasara Jungle Lodge encourages its guests to reuse towels and linen as part of their approach to saving and recycling water. [Read case study.](#)



Guest communication in rooms and bathrooms at Pugdundee Safari lodges explains the need for water conservation and encourages guests to reuse towels and bed sheets.



Water saving notice at Paatlidun Safari Lodge.



Aerated taps and other aerated or low-flow faucets can save up to 75% of the water used by regular versions.

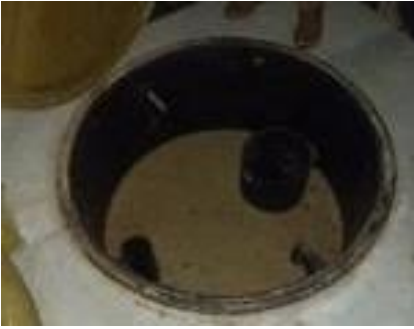


Dual-flush toilets, in use by numerous PUG rated lodges, are also positive for saving water. The best models use only 3-6 litres per flush compared to 10-13 litres in single flush models while still achieving equal or superior performance.



Indian skimmers over the Chambal river: Photo: Eling Lee / Mela Kothi The Chambal Safari Lodge.

## WATER TREATMENT AND RECYCLING



Grease traps are good practice to prevent oil and grease from entering water treatment systems and creating problems. The process is cost effective and requires very little investment. Pictured here grease trap behind the kitchen at Limban Resort.



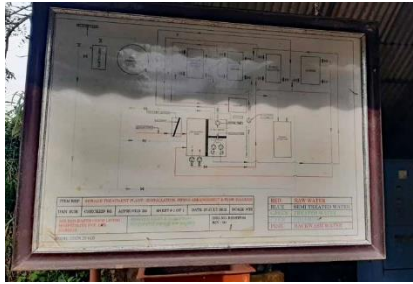
Sewage treatment plants are the most effective way to treat grey and black water combined in comparison to septic tanks which are the most common, small-scale treatment system. Pictured here the STP at Oberoi Vanyavilas.



Evolve Back Kabini uses a grease trap and 100 KLD capacity sewage treatment plant. Treated water (pictured here) is stored and used for irrigation. [Read case study.](#)



Spice Village Thekkady has a sewage treatment plant for treating black water. Grey water and discharge from the STP is treated by an effluent treatment plant (pictured here) for reuse. 45 KL of water is recycled daily through the combined treatment.



Red Earth Kabini treats its entire waste water with a sewage treatment plant using the electrolysis method. Treated water is analysed and cleared by the environment department and recycled for irrigation using drip lines on the property.



A range of lodges are harnessing natural processes as an alternative to commercially available STPs and septic tanks to treat water effectively. Aahana, The Corbett Wilderness, uses Root Zone treatment, the largest facility of its kind in Asia to clean black and grey wastewater for reuse on the land. [Read case study.](#)



A DEWATS reed bed system is used to filter grey water from the kitchen at Forsyth Lodge. Grey water from guest cottages passes through filtration pits to lily ponds. A septic tank is used to treat black (sewage) water. [Read case study.](#)

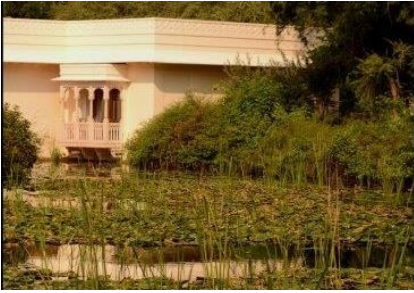


Limban Resort uses a grease trap, effluent treatment plant and, pictured here, a phytoid treatment system to treat wastewater. [Read case study.](#)



Reverse osmosis is used by many lodges to clean water to safe standards and reduce the use of plastic.

## RAINWATER HARVESTING



Oberoi Vanyavilas has created a series of lakes providing a picturesque landscape and a haven for wildlife which, combined with rainwater collection tanks, harvest approximately 1,600,000 litres of rainwater each season. [Read case study.](#)



A waterhole fed by rainwater harvesting was enlarged from a pond to thriving habitat at Kipling Camp. A portion of the lake is lined. Thanks to the contouring, the lake fills up in the monsoon and remains throughout the year even in the severest droughts.



Pashan Garh - Taj Safaris, studied the natural flow of water during the 2015 monsoon. One large and six small check dams built in 2016 and 2017 have created a rainwater harvesting waterbody with a total holding capacity of 1,342,522 gallons of rainwater.



A process of clearing silt from the river and building natural check dams to prevent flooding and catch monsoon rains by Tiger Trails Tadoba combined with landscape restoration has led to a rise in the water table and has attracted an abundance of wildlife. [Read case study.](#)



Jim's Jungle Retreat has six water bodies - four natural and two artificial to harvest rainwater attracting an abundance of wildlife for guests to view. [Read case study.](#)



Five new recharge wells have been installed at Singinawa Jungle Lodge with a depth of 10 ft, diameter 5 ft and capacity of 250 cubic metres per year to harvest rain and recharge groundwater.

## LANDSCAPE AND PLANTING



Khem Villas has created an oasis of green in an arid landscape by extensive indigenous planting which acts as a natural aquifer and through six water bodies designed to harvest the monsoon rains. More than 700,000 trees have been planted on lodge grounds and in the surrounding area. The lodge gives back more water than it uses. [Read case study.](#)



Evolve Back Kabini is a further example of successful transformation of denuded farmland through indigenous planting combined with a water body. [Read case study.](#)



Jim's Jungle Retreat is one of a range of lodges using natural materials for pathways to allow water to percolate back into the ground. The lodge has transformed fifteen acres of denuded farmland into a landscape which acts as a natural aquifer through extensive planting with trees, grasses and plants indigenous to Corbett's forests.

## PROVIDING LOCAL COMMUNITIES WITH WATER



Aahana The Corbett Wilderness provides villagers with access to a channel of water flowing through their resort pictured here. They have also donated a piece of land for a tube well. Red Earth Kabini is a further example of a lodge bringing water to its local community through installing a pipeline to supply water in the local village.



Barahi Jungle Lodge has provided 70 water pumps in nine villages covered by the Meghauli Village Development Committee, to enable local communities to benefit from easier access to water.



Singinawa Conservation Foundation, linked to Singinawa Jungle Lodge, is one of a range of organisations helping to provide water purifiers for local communities for safe drinking water.

See Community Liaison and Support profile for further examples.



*Blue bull at Khem Villas water body. Photo Mittal Gala / Khem Villas.*

# CASE STUDIES

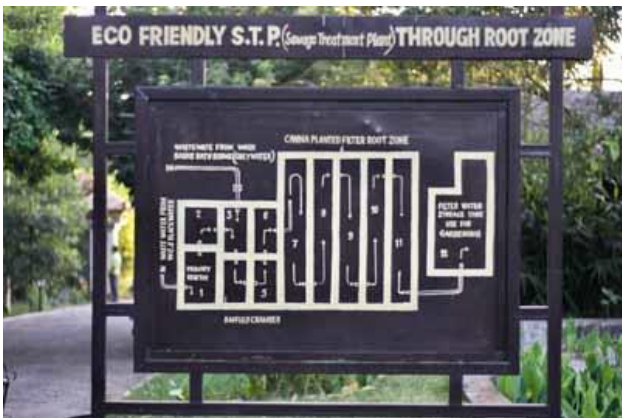
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# Aahana - The Corbett Wilderness, Corbett

## Harnessing the Power of Nature to Clean All its Wastewater



Aahana houses one of the largest natural STPs in Asia



A large number of trees, shrubs and grasses planted on the lodge premises act as natural aquifers to help recharge groundwater levels. All pathways have been designed and laid out to allow maximum percolation of groundwater. The lodge has provisions for rainwater harvesting. A water pathway has been created on the property to help villagers access free-flowing water channels.

Aahana – The Corbett Wilderness treats all its wastewater through a natural sewage treatment plant (STP), one of the largest of its kind in Asia using root zone technology. Black (sewage) and grey wastewater (from baths, basins, showers, kitchen etc) goes into five Canna Planted Filter Root Zone Chambers for treatment over a ten to twelve day period. The treatment enables water to be safely recycled for irrigation.

A UV-technology based filtration system has been installed to recycle water from the swimming pool. 45% of overall water used by the resort is recycled; the remainder is sourced from a tube well. Drinking water is cleaned using reverse osmosis to ensure high standards.

Guests are encouraged to conserve water through notices encouraging the re-use of towels and linen. Dual flush toilets and aerated taps are in place to reduce water consumption.



UV filter is used to treat water from the swimming



Encouraging guests to save water.



Pathway created on the lodge premises to enable villagers to access a free-flowing water channel.

## Khem Villas, Ranthambhore

### Giving Back More Water Than the Lodge Consumes



One of six rain-fed water bodies surrounded by indigenous planting recharging groundwater levels and enabling wildlife to thrive.



Wild inhabitants. Photo: Mittal Gala / Khem Villas.

By planting indigenous shrubs and trees, harvesting rainwater to store monsoon rains and by carefully reusing recycled wastewater, Khem Villas manages to give back more water than it takes from groundwater. Six artificial waterholes created long ago now look like natural wetlands and are a haven for wildlife. The

extensive planting with indigenous trees, shrubs and grasses acts as a natural aquifer; pathways made with natural materials allow rainwater to percolate back into the ground.

Grey water is recycled into the lodge's ponds after going through a grease trap and reed filter using Khus grass. Black water is treated in septic tanks. Water in the chlorine-free plunge pool is fed back into a pond.



Aerated taps, one of several measures to conserve water.

Drinking water is cleaned using reverse osmosis and bottles with the filtered water provided to guests to minimise the use of plastic. Dual flush toilets, aerated taps and low flow showerheads minimise water use. Guests are encouraged to reuse towels and linen. A drip irrigation system is used to water the kitchen garden.

The lodge sources its water supply from open wells rather than bore holes. Thanks to their efforts, the water table is stable and around 40 feet just after the monsoon and 80 to 90 feet in summer months



Khem Villas - an oasis of green in an arid landscape.



## Forsyth Lodge, Satpura

### DEWATS - Effective, Low Cost Decentralised Wastewater Treatment



*Reed bed system to filter grey water from the kitchen.*

Forsyth Lodge uses a combination of different techniques for cleaning wastewater from different areas, an example of an effective low-cost decentralised wastewater treatment system (DEWATS). Water from the kitchen is treated using a simple, ancient reed-bed filtration system. This natural solution is enjoyed by a host of bird species and dragonflies.

Grey water from guest cottages passes through filtration pits to lily ponds. A gravel, sand and charcoal filtration pit is used to clean grey water from washing and overflow pits before being released into nallah sand beds. A septic tank, a small-scale sewage treatment system, is used to ensure safe disposal of black (sewage) water.



*Grey water from cottages passes through filtration pits to lily ponds.*



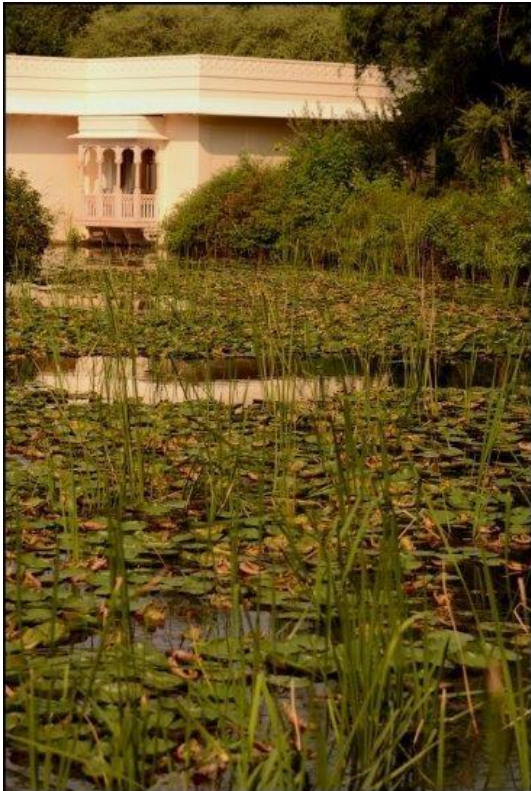
*Gravel, sand and charcoal filtration pit to clean grey water from washing and overflow pits before releasing into nallah sand beds.*

The swimming pool has an auto-aeration system to recycle water. The grounds are planted with trees, local shrubs and grasses which act as natural aquifers and help to recharge groundwater.

Guests are provided with herbal non-polluting toiletries. Drinking water is cleaned through reverse osmosis; steel bottles are provided in the rooms. Aerated water taps and dual low flush toilets are in use to minimise water consumption. Guests are encouraged to save water and re-use sheets and towels.



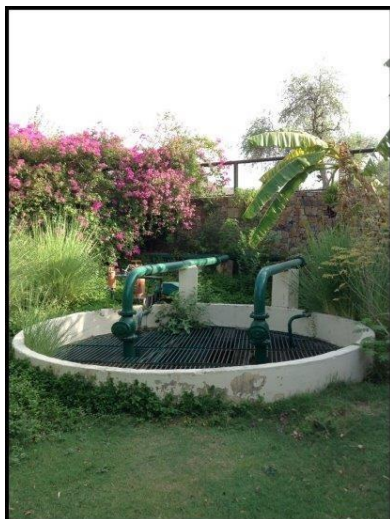
## Oberoi Vanyavilas, Ranthambhore Harvesting Rainwater and Conserving Water



Oberoi Vanyavilas has created a series of lakes which harvest approximately 1,600,000 litres of rainwater each season and have become a haven for bird and pondlife. The rainwater across the property flows towards the lakes by gravity and enriches the ground water level. 135 different bird species have been recorded in the grounds including summer and winter migrants. A 300 feet deep well stores additional rainwater for irrigation.



*A series of pond ecosystems have been created harvesting the monsoon rains.*



*300 feet well for rainwater harvesting.*

Each tent has aerated water taps, low flow showerheads and dual flushing toilets to reduce water use. Guests are encouraged to save water through notices.

The resort's sewage treatment plant enables water to be recycled for irrigation using a sprinkler and drip irrigation system reducing their use of ground water. The grounds, planted with trees, plants and naturally grown wild grasses which help to replenish the water table, cut a green swathe in the dry area of Sawai Madhopor.



*Sewage treatment plant.*



*Grounds from the observation tower.*

# Limban Resort, Tadoba

## Phytorid - a Natural, Integrated System for Cleaning Wastewater



Phytorid water treatment...

An organic Phytorid sewage treatment plant is installed at Limban Resort to clean black (sewage) water and wastewater from bathrooms and the kitchen and to maximise water recycling. A treatment bed made of mixed materials such as bricks, stones and sand in which aquatic and semi aquatic plants are grown, is used to remove effluent through a series of natural biological processes. Treated water is pumped into nearby water bodies created by the resort to provide water for wildlife.

A grease-trap skims off grease and oil from kitchen and utility areas before treatment.



Grease trap behind the kitchen.

Toiletries provided in guest rooms are non-polluting and biodegradable. Laundry wastewater is treated using an effluent treatment plant (ETP). Water is collected in a primary tank and pumped into a reaction tank where the water is treated with lime to bring the pH value down to eleven. This is further treated with alum to balance the pH value to seven. The mixture is allowed to settle, separating the sludge. The treated water is then fed through the phytorid system for further purification. Treated water is used for irrigation at the resort and on the adjacent farm.



...with aquatic and semi aquatic plants ...



...for safe release of used treated water into water bodies.



ETP Unit for laundry wastewater.



Encouraging the reuse of towels.

Notices in guest rooms encourage water conservation and re-use of towels and sheets. Water efficient taps and showerheads and dual flush toilets are in place to reduce water use. A swimming pool filtration system is in place to enable water to be recycled.

Water from a bore well and an existing well is softened and filtered to the highest standards using reverse osmosis. Bottled mineral water is discouraged to reduce plastic.



Filtering water to the highest standards for use.



One of several waterbodies created to harvest rain and provide water for wildlife.

Indigenous trees, shrubs and grasses planted in the resort help to recharge ground water. Land adjacent to the property has been leased and converted from farmland to wild pasture. Fencing has been removed adding to the forest and allowing the free movement of herbivores and carnivores.

## Jim's Jungle Retreat, Corbett

### Harvesting Rainwater, Recycling Water and Avoiding Pollution



*One of six water bodies for wildlife and for rainwater harvesting and extensive indigenous planting to recharge groundwater.*

Black (sewage) water is treated in septic tanks. Grey wastewater undergoes three levels of treatment in two separate water treatment units made up of pebble stones. The treated water is used for irrigation.



*Garden irrigated with recycled water after three levels of treatment.*

Water for drinking and cooking is cleaned using reverse osmosis and glass and copper drinking bottles are provided in guest rooms to avoid the use of plastic bottles. Water use is minimised through the use low flow showerheads and dual flush toilets.

The lodge makes its own organic toiletries from the soapnut/reetha (*Sapindus mukorossi*) grown on site for guest shampoos and soaps, a positive step avoiding pollution.



*White-breasted waterhen and chicks enjoying the waterbody.*

Jim's Jungle Retreat has created an oasis for wildlife on its fifteen acres of restored farmland with six water bodies – four natural and two artificial - harvesting rainwater, and extensive indigenous planting which recharges groundwater during the monsoon rains. The use of natural materials for pathways allows rainwater to percolate back into the ground.



*Natural pathways allow water to percolate back into the ground.*



*Making soap from soapnuts/reetha grown on site.*

## Evolve Back, Kabini

### From Denuded Landscape to Oasis and Waste to Fertiliser



*Restored landscape and water body help to recharge groundwater.*

Evolve Back's approach to water conservation has been rooted in restoring the land. A landscape denuded through over grazing has been restored into a verdant oasis with planting creating a natural aquifer for recharging ground water combined with rainwater harvesting.

A grease trap cleans grey water discharged from the kitchen. A 100 KLD capacity sewage treatment plant converts black water (sewage) and grey water into clean water for irrigation. The remaining sludge is used as organic manure. Swimming pool water is recycled through a filtration unit.



*Sewage treatment plant.*



*Treated water is recycled for irrigation saving water. Sludge is converted to organic manure for use on neighbouring farms.*

Aerated taps and dual flush toilets help to reduce water consumption. Guests are encouraged with notices to re-use sheets and towels. The resort measures its water consumption and sets targets to reduce consumption each year.

## Svasara Jungle Lodge, Tadoba – Communication and Recycling



Svasara Jungle Lodge encourages its guests to save water via clear briefing materials on reusing towels and linen in all guest rooms.

Water efficient taps and showerheads are in use with dual-flush toilets saving 60% per flush over single flush systems. En-suite



Phytotreatment of wastewater.

facilities have only showers to reduce water consumption and although the lodge has a swimming pool, it recycles its water using an eco-friendly filtration system. Staff are briefed to conserve water and carry out routine preventative maintenance checks to identify and mend leaks. Rainwater harvesting provides water for secondary uses such as garden irrigation and the use of native plants requires less water.

The sewage treatment plant at Svasara uses phytotreatment technology, a system using the root systems of plants and other materials in several chambers to act as filters and clean the water. The treated water is used for irrigation.

## MV Mahabaahu -All Aboard for Clean Water and River Conservation



Water saving measures are no exception for MV Mahabaahu which treats water conservation as a norm and encourages guests to save water through notices in all cabins. Water for daily use is sourced from the river and cleaned to safe, high standards using reverse osmosis (RO). Each cabin is equipped with a RO machine for safe and unlimited supply of clean drinking water. Steel flasks are placed in each cabin making plastic bottles redundant; dispensers for herbal toiletries cut down on plastic further.

Swimming pool water is sourced from the river and is recycled using a swimming pool filtration system.

The ship uses vacuum driven toilets and is equipped with a bio-vacuum sewage treatment plant with an integrated vacuum generator. Organic substances in the wastewater are converted to carbon dioxide and water through an aerobic process which avoids the production of methane gas. Herbal toiletries and herbal cleaning agents are used to avoid interference with the aerobic process.

Black water (toilets and urinals) is digested by a bacterial colony flourishing in the aerobic conditions in an EVAC chamber ensuring almost complete digestion of organic matter and eliminating odour and pollution. Grey water (galley, showers and sinks) is treated in a bio-tank with similar aerobic treatment techniques. The resulting wastewater is non-polluting and clear and is treated to a sufficiently high standard to be discharged in a water-course or at a government facility post filtration

## Tiger Trails Jungle Lodge, Tadoba A Conservation Success Story Rooted in Water



*Chichghat Valley in 1996 devoid of green cover*



*... and today.*



*Clear waters are now home to an abundance of phytoplankton and fish species.*

In 1996, the Tadoba Stream in the Chichghat Valley bordering Tadoba Tiger Reserve only flowed during the monsoon, flooding the overgrazed, compacted farmland cleared of its trees and sweeping away topsoil. Today the 250 acres restored by Tiger Trails Jungle Lodge has been transformed into a conservation success story with five different habitats and an abundance of wildlife. The story of renewal began with water.

Over a number of years, the lodge cleared the silt from the river to its original depth and used local stones to create miniature check dams to break the monsoon water rush. Dozens of natural springs which were clogged were cleared allowing aquifers to be replenished. The original three ponds were deepened

and today have water all year round. Salt licks and mud baths materialized naturally. Thanks to the ponds, the water table has risen from 48-50 feet below the surface to 8 feet today in peak summer.



*Visiting tiger.*

As the water table was restored, habitat regeneration started to occur naturally. Assisted land regeneration catalysed the process further. Compacted soil was aerated and indigenous grasslands seeded. Locals were enlisted and trained to establish plant nurseries and take part in the restoration. More than a million indigenous trees have been planted over the decades, further helping to retain the monsoon rains.

The lodge grounds are now home to an abundance of wildlife including honey badgers,

crocodiles, gaur, wild boar, wild dog packs, pangolin, caracal, jackal and a wolf. Tiger, leopard and sloth bear pug marks can often be seen within 100 feet of the lodge. 165 species of birds and 45 different species of butterflies are also found on the lodge's lands. Water quality in the Chichghat Valley has increased with two studies from the Nagpur University Fisheries Department revealing a substantial rise in phytoplankton and fish species.



*Gaur enjoy water in the grounds all year round.*



Guests viewing gaur in the lodge's grounds.

A series of machans and nature walks and safaris with the lodge's five naturalists provide lodge guests with exceptional wildlife viewing on their doorstep. The Forest Department has also benefited from the lodge sharing its extensive monitoring of wildlife movements on the restored ecosystems through camera traps since 2003. A tiger identification study has recorded more than 25 cubs and a dozen adult tigers at the lodge over the last twenty years.

Local communities are mutual beneficiaries in this rewilding story. All lodge employees are from the local Gond tribe. 25 are employed directly with a further 100 members of the local community involved in initiatives linked to the tourism trade through a neighbours first scheme. Through having alternative livelihoods, cattle grazing and bush meat hunting has stopped on the lodge's land and dramatically decreased in the adjoining Tadoba forest. 80 further acres of farmland owned by the lodge is being used by members of the local community to grow rice and turmeric for sale following training by the lodge and initial support with seeds. A further four waterholes have been created on this farmland with the rising water table bringing benefits for local water security across a much wider area. A habitat regeneration success story; all the wildlife viewing possible on the lodge lands today are a testimony to the lodge's enlightened habitat restoration combined with the involvement of the local community as key stakeholders allied with strong support from the Forest Department.

## MAJOR HABITATS

### Dry Deciduous



Home to two packs of wild dogs, a host of herbivore such as Chowsinga (four horned antelope), sambar deer and three generations of tigers born and raised on the land. Also home to a rich diversity of birdlife from wood-peckers, to arboreal birds such as orioles and fruit eating hornbills.

### Riparian Forests



Home to more than a dozen crocodiles, along with a vibrant diversity of phytoplankton, providing a rich habitat to all manner of fresh water fish, feeding grounds for brown fish owl as well as fishing eagles, also smaller flycatchers white eyes and waders.

### Grasslands



Grazing areas to a wide range of herbivores, including gaur, spotted deer and nilgai (blue bull), as well as smaller cats and ground birds such as quails, francolins, sand grouse, night jars and lapwings.

## MICRO HABITATS

### Sandbars

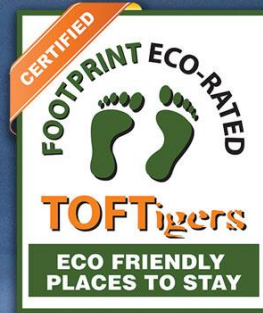
Host habitat for insects, reptiles as well as roots, bulbs and berries providing habitat for honey badgers and their pups.

### Wetlands

Habitat for nesting lesser whistling teals, open bill storks and pied kingfishers.

## HELP US DRIVE THE CHANGE

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TOFTigers is a global business-to-business nature travel charity with a mission to improve the ecological and economic sustainability of wildlands and wildlife across Asia. Well-planned and well-managed responsible tourism is a force for good bringing economic benefits to rural areas, restoring habitat, supporting conservation and local communities, changing poachers into protectors and giving visitors inspiring experiences of nature. We work with the travel trade, destinations, accommodation providers, governmental and conservation organisations to make this happen through training, advocacy, certification, promoting best practice and partnership working.

Our **certification programmes** place local communities, nature and environmental sustainability at the heart of business operations. They are a symbol of assurance for travellers and the travel trade that the places they select to stay at have been reviewed by environmental experts and exceed a minimum standard on a journey towards best practice. The PUG certification is recognised by the United Nation's Global Sustainable Tourism Council (GSTC) and is aimed solely at nature focused accommodation. The Footprint certification has a broader client base that is not wholly nature focused and encompasses accommodation providers in rural, natural or more urban landscapes.

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