



# Richer Experiences, Less Resources

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## *Guest behaviour change in tourist accommodation*

We have successfully developed an innovative system that delivers exceptional guest service and saves resources. In a 17 month trial at a 4 ½ star accommodation, guests were persuaded to use significantly less electricity, gas and water while they enjoyed richer personalised experiences. Partners are now actively sought to trial this system which includes research support plan.

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# Richer Experiences, Less Resources

## ICRT initiative: IY2017 Sustainable Tourism for Development

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### **1. Introduction**

Buildings account for 40% of CO<sub>2</sub> emissions. Hotels, in particular, and tourist accommodation in general, are one of the most energy and water intensive building groups, making tourism a major contributor to global emissions. Saving energy and water and positively contributing to biodiversity are goals set by tourism (e.g. WTTC and ITP) and the Sustainable Tourism Programme 10 YFP and UN Sustainable Development Goals.

How we consume resources at tourist accommodation is therefore an important contributing factor to achieving sustainable consumption and production, and targeting guests' behaviour represents an important opportunity. There is also a secondary benefit. Guests on holiday have time at their

disposal. This creates occasions to learn new sustainable lifestyle practices which could build their capacity for change. Consequently, reducing consumption impacts at tourist accommodation through education could work hand in hand with learning new ways to consume at home. This desirable outcome may also be achievable through innovative *green* meetings, conferences and events.

Our research shows positive psychology can help transition individuals from their current consumption behaviour to more sustainable alternatives; whilst at the same time make them happier (Warren & Coghlan, 2016a). Using experience design at tourist accommodation we have drawn out people's strength of character to motivate behaviour change. The result is that people enjoy this richer personalised experience that decouples consumption from resource use. In this way we can create richer experiences from using less resource (Warren & Coghlan, 2016 b)

Our 17 month test shows that persuasive communication techniques (PCT) did change behaviour using interpersonal communication and eco-feedback (Warren, Becken, & Coghlan, 2016). Results achieved savings in electricity (30%), gas (22%) and water (17%) with 75% of guests satisfied that the intervention added to their stay experience. Positive reviews were also generated on TripAdvisor. We now wish to collaborate with partners to help them offer enriched guest experiences and consume less resources (Warren, 2016).

## 2. Background

Understanding systems is at the heart of sustainability (Gossling, Hall & Weaver, 2009), so a deeper knowledge of the elements within the system of tourist accommodation resource use is essential if we are to reduce unsustainable consumption to a level below continued escalating growth. Likewise this knowledge will help sustainable production.

Tourist accommodation is a complex subsector of tourism which contains hotels, resorts, serviced apartments, lodges, guest houses, B&Bs, holiday homes, cottages and shared accommodation. They use a variety of building types, facilities, management structures and offer different levels of service delivery in various environments. Their consumption of resources will be equally diverse, affected by the nature of their type and also climate, building materials, design and occupant behaviour. Consequently a one size fits all approach to resource saving may not reflect the unique characteristics of each site.

### *Accommodation Types*

Figures on the number of accommodation establishments in each type are difficult to quantify as national registers do not always reflect the nature of the market (Warren, 2014). However, the market is clearly not dominated by hotels. For example, Airbnb has managed 100 million guests, staying with over 2 million hosts located in 34,000 cities (Goodwin, 2016), giving them a 2.3 million room inventory which is larger than Hilton, Marriott and Intercontinental hotels combined (Abboud, 2016). Likewise TripAdvisor lists over 800,000 bed and breakfasts worldwide (Drury, 2016) highlighting the appeal of smaller accommodation types which has been a trend discussed in the media for some time (Merchant, Wiltkowski, Benson, & Harriet, 2002). Accommodation types are also not harmoniously split worldwide, for example in Europe 35% of the 570,000 accommodation providers are hotels (Eurostat (2016) yet they represent 20% of the formally identified Australia accommodation stock, or less than 2% if one includes the shared economy (Warren, 2014).

Global share split of tourist accommodation is changing. Using hotels as an example, Western Europe is a mature market whose growth is slowing while Asia Pacific will shortly become the biggest hotel region. Strongest annual growth is expected to come from Eastern Europe (9.5%

2013) and Latin America (5%) with Africa now also a focus for hotel growth (e.g. Marriott to open 30 new hotels in Sub-Sahara Africa) (Passport, 2014). This indicates that while developed nations are a dominant focus for hotels, new growing economies with their unique climate, seasonality, building systems and visitors profile will increasingly contribute to the global tourism growth and resource share.

Growth has an impact on overall resource use. While progress in emissions reductions and resource management is recorded by a small number of travel groups (e.g. TUI and IHG), absolute consumption, unchecked, will increase as tourism grows, above global economic trends, (Passport, 2014; WTTC, 2015) and is compounded by expansion at the luxury end (at the expense of smaller room sizes 1-3 star properties) (ITB, 2015). Left as a “business as usual” scenario energy and water are forecast to double before mid-century (Gossling & Peeters, 2015).

### *Building Types*

Determining the best strategies to reduce resources is not so clear because there is a “lack of consistent data” for building types to fully understand changes that improve efficiency (Perez-Lombard, Ortiz, & Pout, 2008 p.398). The problem is compounded as energy demand is forecast to grow 71% in the non-OECD countries, where residential energy use (relevant for shared economy and self-contained accommodation sectors) is expected to increase by 48% (EIA, 2016). Relying solely on *green* certified building programmes to cut energy and water use will be insufficient as they have had mixed levels of success (Scofield, 2013), requiring adjustment and longitudinal studies to identify ROI for tourist accommodation (Walsman, Verma, & Muthulingam, 2014).

### *Management Structures*

Management of buildings also presents problems as hotel management companies frequently do not own the property they operate in. While there is a need for user friendly systems that can benchmark individual properties and help saving strategies, many hotels monitor consumption and provide reports to comply with financially based and consolidated expenditure (Bohdanowicz, 2009) i.e. they assess the accommodation resource system from a fiscal and historic perspective rather zoning down to a localised system and their elements. In the case of SMEs, they may own properties, but have poor energy literacy (Coles, Dinan, Warren, 2014) and lack staff to manage retrofitting to save energy (Tsoutsos, Tournaki, Santos, & Vercellotti, 2013).



### *Climate*

Climatic factors are relevant to energy consumption (Chan, 2009; Wang, 2012) and influence water use (Barberan et al, 2013). A reason for this is that guest comfort is an important prerequisite for accommodation, consequently HVAC systems are used to standardise internal environments and may contribute 32%-35% of total hotel energy use (Deng & Burnett, 2000; Beccali, Gennusa, Coco, & Rizzo, 2009). These systems are also influenced by outside climate (Santamouris et al., 2007) and building design (e.g. allows occupants to open windows). Outside temperatures can be affected by localised elements like city heat islands (Santamouris et al., 2007), rural shady trees (Akbari, 2002) and gardens (Cooper, 2008). Location is therefore important. Since overnight stays are split between rural areas (36.1%), cities (33.8%) and towns (30.1%) (Eurostat (2016) the context of a destination's location will have a bearing on saving strategies.

### *Guest Behaviour*

Guests use over half of the energy and water in a hotel (City of Melbourne, 2007) and logically a far higher share in residential buildings (B&Bs, flats and houses used by the shared economy). This building group's energy use is affected by weather, design and energy systems (Perez-Lombard, Ortiz, & Pout, 2008), but the most significant factor is human behaviour and the interplay between technology, occupants' knowledge, and routines and context, which needs to be better understood (Gram-Hanssen, 2014). To add to the complexity guests from different countries consume at different rates (Wang, 2012). This has implications when comparing accommodation in similar destinations but with different guest profiles, for example the Canaries, 94.3 million nights and dominated by inbound visitors, while the majority of Provence-Alpes-Cote d'Azur's 35 million overnight stays are from France. Since individuals generally can have poor comprehension of what action to take to be comfortable and save energy (Brown, & Cole, 2009) guests' local climate knowledge may be an important influence on energy and water use. This is a factor that may require more consideration in destinations like southern Spain and Italy (with high levels of inbound visitors) where troublesome supply pressure occurs during peak summer demand (EIA, 2016).

Technology also is central to resource saving to achieve greater efficiency (Chan, Au, Wang, Yao, & Jiang, 2014) and to provide alternatives to electricity generated by coal by using equipment which uses gas or renewables (EIA, 2016). Smart technology, already widely used to facilitating guest behaviour change for marketing purposes (Passport, 2014), is being applied to guest resource use

monitoring (Breaking Travel News, 2010) which Spataru and Gauthier (2014) considered critical to save resources. In fact human behaviour is “the most important factor for the best energy management practices is people” Juaidi et al 2016.

### *Conclusion*

These elements contribute to the system of resource use in tourist accommodation, but as (Gossling, Hall & Weaver (2009) and Bohdanowicz (2009) explain it is the interplay of elements at a local level that impact sustainable tourism and accommodation resource management. We therefore need interventions which help change behaviour of guests and staff, and link with the other influencing elements of the accommodation resource system (climate, location, type of accommodation and so forth). To be commercially acceptable the intervention has to tread between achieving guest satisfaction, staff motivation and consumption reduction.

To address the guest behaviour data gap Warren, Becken & Coghlan (2016) tested a persuasive communication intervention to engage guests at four tourist accommodation sites. Results showed that applying interpersonal communication with sequential influence techniques and smart metering did reduce electricity, gas and water use. When the host provided a higher level of recommended action to guests, savings increased. Overall guest satisfaction was not negatively affected and those guests who valued the intervention recorded higher levels of satisfaction with staff, facilities and value for money.

Reasons guests saved or did not save were complex (personal motivation, group motivation, health, activities), as the intervention was sufficiently flexible and personalised there did not appear to be negative outcomes for the business (Warren, Becken & Coghlan, 2016) and no negative comments on TripAdvisor, in fact the reverse with a number of guests in support. Research shows positive psychology can help transition individuals from their current consumption behaviour to more sustainable alternatives, and at the same time make them happier (Warren & Coghlan, 2016a). Experience design at tourist accommodation using the persuasive communication with eco-feedback elicited people’s strength of character to motivate behaviour change. The result was that people enjoyed this richer personalised experience that decoupled consumption from resource use (Warren & Coghlan, 2016 b). In this way we appear to be able to create richer experiences from using less resource.



### 3. 10 YFP Project – Your Opportunity

We invite partners to use our innovative behaviour change system in a controlled trail. This can be researched by Griffith Institute for Tourism to measure behaviour change, resource use and guest satisfaction. The project will include full training and free use of the system. Results will provide insightful benchmarks for property managers and fill data gaps.

Christopher Warren, director of the International Centre for Responsible Tourism, has invented this behaviour change intervention system\* that has been successfully tested for 17 months. This system contributes to sustainable consumption by enabling accommodation providers to measure, monitor their resource use (including renewables), persuades guests using eco-feedback, comfort, activity advice and calculates fiscal savings, which can be directed to biodiversity conservation. It enables the accommodation manager to offer exceptional customer services that enrich the guest experience which in turn persuades them to use less resource.

The intervention also contributes to sustainable production because it can measure renewable energy, biomass and water, to influence consumption. The system is tailored to each individual site and is easy to install.



*\*Combines excellent customer service with voluntary guest resource conservation using pro-environmental infrastructure, comfort recommendations and activity advice (using intelligent system, patent: 2016202033), where fiscal savings are directed to local CSR programme.*

#### 4. Impact of project so far

The results of a 17 month trial on four sites achieved significant savings. The system was run at the same time as the control sample so that similar weather affected guests. The control group resource use rose significantly above the intervention group using the system (Table 1)

**Table 1: Resource use relative change Control verse intervention**

Results: Relative Change			
During the same months			
'Control' resource use rose above 'Intervention'			
Comparison experiment conducted over 17 months, using four hosts applied to each site			
	Electricity	Gas	Water
Site A	34%	29%	27%
Site B	34%	28%	21%
Site C	31%	10%	13%
Site D	36%	13%	23%

E: kWh mean per hour per guest  
 G: LPG litres mean per hour per guest  
 W: Litres mean per hour per guest

N: 1101 guests  
 Control N 649  
 Intervention N 452

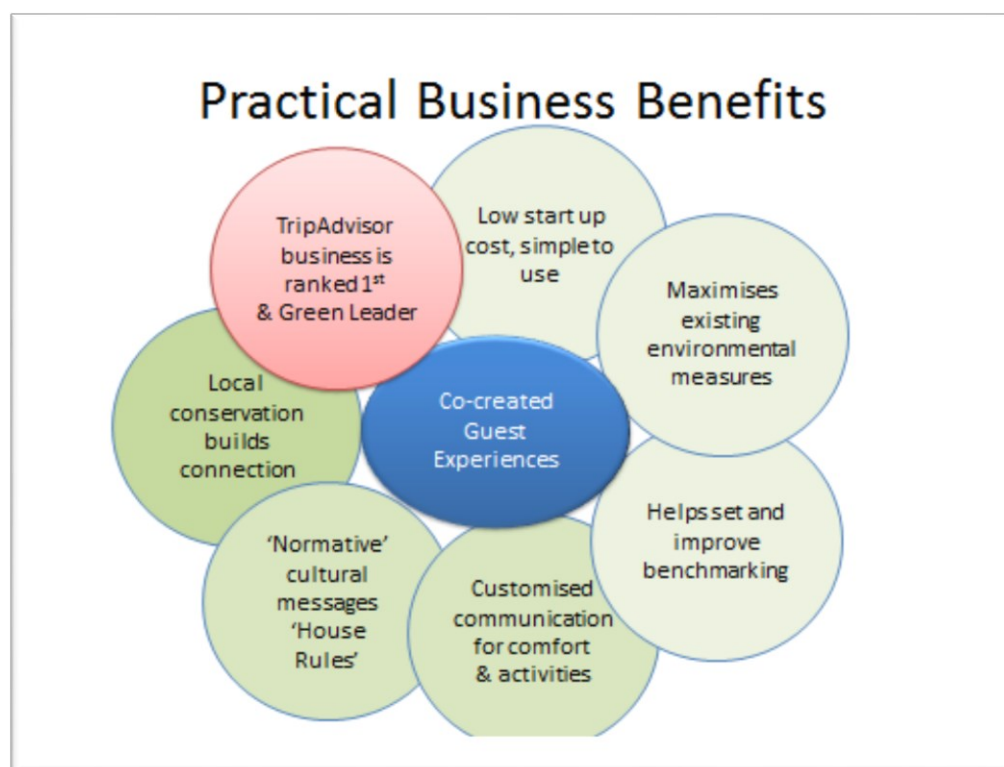
Table 2 shows combined relative change for all four sites and the results from the satisfaction survey. Control sample consumption was much higher than intervention. Eco-feedback experience was more positive than guests expected and the intervention added to their stay experience. Fiscal savings were put to positive use which added a competitive point of difference to the guest's stay.

**Table 2: Combined results**

Results	
<b>Control Guests Higher Resource Use</b> (mean average per hour per guest) Electricity: 34% Gas LPG: 20% Water: 22%	<b>Satisfaction</b> <ul style="list-style-type: none"> <li>Intervention vs. Control held same level of stay satisfaction</li> <li>Intervention 60.8% 'agree' happy to receive eco-feedback vs. 39.6% Control</li> <li>76.5% Intervention felt daily information sheet 'added' to stay experience</li> </ul>
<b>Biodiversity</b> Sponsor: 14 baby wombats Wallabies: Monitoring and research to protect	

Eight business benefits were identified (Figure 1). Using the system involves low investment, it is designed to maximise existing pro-environmental measures and output will improve the property's benchmarking. The persuasive communication improves guests' comfort and applies local cultural values which add to the authenticity of the stay experience. The fiscal saving help the company's CSR programme, builds guest appreciation and contributes to the business' 'licence to operate'. Finally, in the example of the test business, the programme supported their TripAdvisor's Green Leaders ranking and generated additional positive guest reviews. Other benefits of resource saving use would be reduced wear on equipment and lower carbon emissions.

**Figure 1**



## 5. Aims: moving from research to responsible action

- a) Drive change in tourism by encouraging the uptake of sustainable practices by trialling the system with partner tourist accommodation sites to save energy and water, encourage guests to take sustainable activities and direct fiscal savings to local biodiversity conservation
- b) Build the capacity of tourism staff through persuasive communication training that empowers their guest engagement – training by International Centre for Responsible Tourism, so accommodation business can be scaled up
- c) Introduce building owners and tourism practitioners to sustainable reporting (measuring, monitoring and setting saving benchmarks) that increases technical knowledge
- d) Conduct mixed method research data collection during trial to assist savings guest engagement, impact on guest satisfaction and identify capacity building opportunities from existing staff
- e) Attract grant funding support progress from research to action by sharing findings with STG 10YFP, an example of the International Year 2017 of Sustainable Tourism for Development and contribute to the SDG's for:
  - Water to increase efficiency (Goal 6.4)
  - Energy to improve efficiency (Goal 7.3)
  - Biodiversity to halt biodiversity loss (Goal 15.5)
  - Training to builds technical assistance and resilience (Goals 8.11 & 13.1)
  - Technology to help sustainable reporting and capacity building (Goals 12.6 & 17.6)

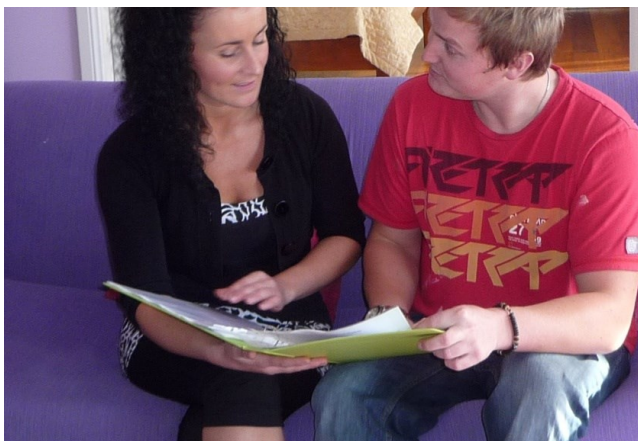


## 6. How will our initiative lead to sustainable modes of consumption and production?

Resource use in buildings is complex (section 2). So our system is flexible to each building's unique characteristics to optimise maximum persuasive power. It builds the capacity of staff, provides technical insights, interlinks infrastructure to guide occupants to use less resources whilst adding to their stay experience (Warren, Becken & Coghlan, 2016). This 'Richer Experiences Less Resources' project focuses on experience design and incorporates:

- Tailored comfort recommendations and activities
- Links pro-environmental infrastructure
- Resource use monitoring, renewable production, eco-feedback and benchmarking
- Local weather conditions

It is this combination (patent: 2016202033) of elements and the training of staff that drives behaviour change and sustainable consumption and production.





## 7. Activities underway

- We are continuing behaviour change intervention at original test site to build longitudinal data.
- Partnership agreement with Griffith Institute for Tourism to undertake site research
- Partnership agreement with Ecotourism Australia to identify additional sites
- Commenced approaching potential STP 10YFP partners





## 8. How Partners can get involved

Potential partners who are interested in the project and would like to learn more should arrange for a free webinar with Christopher Warren ([info@icrtoruisismcom.au](mailto:info@icrtoruisismcom.au)) (+61244651408) to assess suitability.

Partners could come from the following sectors of tourist accommodation however other sectors are welcome to make an approach:

### *Accreditation/Certification Programmes*

Dovetail with their resource efficiency and benchmarking programmes, identify properties to conduct trial. Use findings to refine schemes and integrate behaviour change programme into their environmental management system to take accreditation to the next stage.

### *Destination Management Organisations*

Use behaviour change programme as part of a capacity building strategy to build technical expertise with member businesses. Conduct trial with leading operators as a reward for their endeavours. Use data to measure destination consumption and impacts. Link sustainable activities and supply chain with behaviour change programme to have broader destination benefits. Fiscal savings can be grouped to maximise benefit to local biodiversity conservation or cultural heritage project.

### *Large scale hotel/resort/apartment companies*

Select test property(s) and use project to trial guest engagement and staff involvement. Use research provided to measure outputs and overall satisfaction levels and staff involvement. Data from smart meters will enable property engineers to learn more about guest and housekeeping resource use and assist with retrofitting. Fiscal savings directed to local CSR programme.

### *SME accommodation providers*

Use the project as a capacity building exercise to learn more about consumption on site, guest use and how to improve their comfort and satisfaction. Data will enable owners to make retrofitting decisions to reduce resource use and adjust linkage to supply chain and local sustainable tourism activities. Owners should select local biodiversity or cultural heritage cause to contribute to.

## 9. Timetable & Budget

**December to March** - Discuss and consider project – ICRT will conduct a series of webinars to brief partners and provide details of each phase

**April** - Site audit

**April to May** - Select sensors manufactures, install and link to monitoring system

**April to May** - Select biodiversity or cultural heritage conservation programme to link with

**June** - Conduct Guest Sustainability Faculties/Activities Audit

**June to July** - Conduct two month data collection to understand characteristics of site(s) and set benchmarks

**August**- Training of host

**August to November**- Conduct researched trial

**November**- Review research findings

**December** - Plan and implement full property(s) roll out

### **Budget:**

ICRT to provide training and cloud based system

Partner to provide site, sensors and their instillation

We are seeking funding support for the provision of research services, travel and expenses.

Full details of ICRT and partner contributions are set out in 'Terms of Research'

## 10. Pro-environmental Infrastructure & Amenities

Prospective partners would need to select suitable sites that can incorporate pro-environmental infrastructure to give guests options in saving energy and water. The more amenities exist to help guests, the stronger the opportunities for engagement. For example:

- installing a stand-by 'green' switch will enable guests to turn off their TV and computer recharging, and thus empower them to partner with host and save energy
- measuring jug to boil the exact amount of water for beverages reduces energy waste
- provision of fly screens, opening windows and ceiling fans will help guests moderate temperature using lower energy options (DC ceiling fans would be preferable) and enjoy fresh healthy air
- voluntary linen/towel change option saving water and energy

The site should also offer responsible tourism activities (activities e.g. locally arts & crafts, and supply chain e.g. local fruit plantation) to maximise sustainable tourism output.

Table 1 indicates a desired range of pro-environmental infrastructure that would enable guests to self-help to save resources. They are listed by desirability. Guests could be motivated to support the conserving proposition if the full fiscal savings were put to a worthy CSR programme. This might also include a private visit to the environmental programme with personal interpretation (at pre-set times to make this efficient) and or use of an electric car/bicycles.

**Table 1: resource saving services and pro-environmental services**

	<i>Essential</i>	<i>Preferable</i>	<i>Helpful</i>
WiFi			
Each room sub meter			
Air conditioner			
Opening windows & fly screens			
Fly screen door (balcony)			
Ceiling fans			
Sound system			
TV			
Recharge computer/mobile			
Hairdryer			
Electric kettle			
Towel/linen reuse			
CSR project			
On site solar or Green Power			
On-site weather station			
Stand by power switch			
Solar window film			
Rainwater harvesting			
Use of electric car			
Other			

## 11. Research Plan

It is proposal to test the behaviour change intervention to guests in selected room/villa/apartments at a chosen site.

Prior to the experiment we would need to conduct a two month period to monitor guests' consumption to establish benchmarks. This would be automatically done by the intelligent system and involve:

- installing sub metering by room for electricity and in-room temperature
- recording and reading the electricity meter before and after each guest occupancy in both planned intervention and control room/villa/apartments
- recording temperatures of occupied room/villa/apartments by time of day
- weather readings by time of day and forecasting accuracy
- solar generation (if available)

Conduct experiment with guests over a 3-6 month duration. There could be two options for recording guests' stays:

- either partner provides a guest booking calendar, updated daily/weekly, which we would be manually entered into the system.
- or (preferred) the behaviour change intervention system could be synchronised with the accommodations. Only room/villa/apartments, party size and an identification id would be transferred, no personal details.

All control room/villa/apartments during the same period would have their consumption, occupancy and guest numbers also recorded. Post experiment analysis and reports provided.

**Table 2: Research Plan**

<i>Prior to experiment</i>	<i>Conduct experiment</i>	<i>Post experiment</i>
<b>Establish target savings and site characteristics</b>	Intervention: consumption recorded by the hour  Control: consumption recorded start and end of each guest stay	Analysis
<b>Monitor electricity for each room, solar generation (if applicable), inside temperature, outside weather. Calculate target savings</b>	Monitor electricity at each dwelling, solar generation (if applicable), inside temperature, outside weather. Calculate ‘best performers’. Measure intervention and control satisfaction with departure survey. Record number of towel/linen saving occurrences	Electricity consumption by hour/guest numbers, ‘Green Guest Relations’ intervention versus control, weather , guest satisfaction, and business owner’s feedback

*Note: behaviour change system can also process gas, water and renewables if Partner Properties wished to expand the scope.*



## 12. Additional Benefits

### *Surveys*

Guest self-completing departure survey would be sampled using an amended version of the one used at Crystal Creek Meadows. This will enable us to compare and evolve learnings.

Partner will be asked to provide feedback through the research period and staff would be asked to complete a survey at the end designed to assist in refining the system and maximising its potential for the benefit of all concerned.

### *Laundry*

Two options exist for running the laundry saving programme:

- either partner properties audit the guest reuse towel/linen occurrences and provide weekly room-by-room report which we would compile into the final project report
- or (preferred) the staff enter the guests' towel/linen reuse action directly into the behaviour change system and so that it is integrated into the guest's daily report and indicates savings as part of the eco-feedback report.

### *Conservation*

Partner property selects a CSR project (social/wildlife/nature/carbon offset conservation), which would receive 100% of the electricity/laundry savings. Details will appear on the behaviour change intervention communication tools.

Calculating the target saving and measuring the fiscal savings is provided within the system.

### *Additional Resources*

The accommodation management can request the inclusion of gas, water and other renewable resources or waste as part of the system and eco-feedback and advisory tips. There will be no charge for the incorporation of additional resource. The business will be responsible for purchase and installation of sensors from specified manufacturers to ensure compatibility with the system.

### 13. Training & System

Partner properties would receive:

1. Guest Sustainability Experience Audit (identify the accommodation's pro-environmental infrastructure, activities and receive debrief on CSR project). Outcome: co-created experience opportunities that help reduce resource consumption and increase benefits at the destination
2. Two day training programme tailored to the business' unique features (1). Outcome: learners achieve competency as *Green Guest Relations* (accredited)



3. Mentoring of *Green Guest Relations* so that they build their confidence and discuss feedback with the trainer
4. Webinar and coaching to complete the system's entry fields 'activities', comfort tips', personalised comments
5. Personalisation of the behaviour change system including mobile friendly access for guests, for the duration of the project and research support and analysis

## 14. Terms of Research

Partner properties agree to:

- a) Assist in conducting research; 2 month initial data collection and 3-6 months trial, to provide feedback through the trial.
- b) Provide booking calendar and occupancy numbers during the trial for the rooms/cabins under investigation
- c) Select members of staff who will participate in the *Green Guest Relations* training (2 days), plus mentoring throughout the project
- d) Present the behaviour change intervention to guests at the selected accommodation and produce a feedback report using the system by 7:30 a.m. daily to the guests receiving the intervention
- e) Complete the fields on the computerised system we are testing to populate the activities, comfort tips and personalised remarks (training and support will be made available)
- f) Offer guests the departure survey and forward surveys for analysis by the research team
- g) Partner properties' team to provide feedback to the researchers to assist them in refining the product
- h) Install the electricity and temperature monitors (type/manufacture to be discussed to ensure system compatibility)
- i) The research team would estimate the energy savings. Partner property would direct savings to the conservation cause, and be responsible for updating details on the system (assistance will be provided) so guests have updated progress on the printed sheets and the mobile friendly access site
- j) Sign a Non-Disclosure Agreement to cover the intellectual property bought in by the research and development team
- k) Provide training facilities for staff, accommodation and travel for trainer
- l) Make a contribution to research costs for Griffith Institute for Tourism. Costs are dependent on scope of research method and output based on final site selection and size of Intervention and Control Group

Research & development team agrees to:

- a) Keep the identity and exact location of the accommodation confidential
- b) Undertake the Guest Sustainability Experience Audit, *Green Guest Relations* training and system software at no charge for this test
- c) Provide a webinar training programme to support *Green Guest Relations* completing the activity, comfort and personalisation fields on the system

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- d) Agree with the business owner on a savings target
- e) Provide Partner properties full analysis of guest consumption
- f) Griffith Institute For Tourism to support data collection, analysis, debrief and report
- g) The research data can be shared by the business owner and the development team. If the development team use the data no identification will be made of the participating accommodation provider, unless otherwise requested by the business owner
- h) At the end of the trail period and following refinements the Partner Properties will be offered to continue using the system at preferential rates.



### **15. Project Supervisor - Christopher Warren MSc., PhD. Candidate**

Christopher Warren is the director of the International Centre for Responsible Tourism. He has a new product development (Craton Lodge & Knight and WZM London) and marketing communications background (Team Young & Rubicam and Synergy MENA region).

Recently Christopher gained tourism knowledge first hand as a partner in the family run accommodation business (Crystal Creek Meadows in Kangaroo Valley). He has won the Australian Tourism Award – Qantas Award for Excellence in Sustainable Tourism in 2009 and 2013, winning the Climate Action Award in 2010 and being awarded the EcoTourism Medal in 2010. Christopher established the first destination carbon calculator in 2006 ‘Green Kangaroo’ and has been an active voluntary member of community, local government, state and national tourism bodies for fourteen years in Australia.

As a Cert IV Trainer & Assessor he provides capacity building packages and innovation programmes for tourism. Currently Christopher is completing his [PhD](#) on sustainability-oriented innovation at Griffith University (supervisor Professor Susanne Becken) where he is an advisory board member to Griffith Institute for Tourism. His PhD has tested a new guest engagement invention which was presented to UNEP/UNWTO at [COP22](#), the World Travel Market (London) and findings published in the Journal of Sustainable Tourism (2016) – copy can be found [here](#).

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