Ecological Footprint Report

Prepared for:

Anthony and Ele Waters
Pentiddy Woods,
Attwood Lane,
Pensilva
Liskeard
Cornwall
PL14 5QU

April 2009

4th WORLD ECOLOGICAL DESIGN
KEVERAL FARM,
ST MARTINS,
LOOE,
CORNWALL,
PL13 1PA
ediblewolfpeaches@btopenworld.com
01503 250 343

CONTENTS

Page

Acknowledgements

4th World Ecological Design would like to acknowledge the generous support and advice provided by Best Foot Forward ltd www.bestfootforward.com who produced the Personal Stepwise™ software tool used in the analysis for this report and were the authors of the Stepping Forward – a resource flow and ecological footprint analysis of the South West of England, from which details have been drawn of the impacts of a typical resident of the South west. Also the Global Footprint Network www.footprintnetwork.org who are the authors of "the Ecological Footprint Tracking human demand on nature" utilised in Appendix B to describe how ecological footprint relates to the carrying capacity of the planet. Also The Stockholm Environment Institute at the University of York for the Caradon District footprint provided via the REAP project data www.sei.se/reap .

Summary report

4th World Ecological Design sustainability consultants carried out an Ecological Footprint analysis of Anthony and Ele Waters with children Elowen and Adeon and the business activities based at Pentiddy woods. Ecological Footprint is a widely recognised internationally adopted indicator of relative sustainability and is recognised by the UK Audit Commission[10]. Ecological Footprint is measured in Global Hectares (gha) see Appendix B for more details.

The study was based upon data from the combined impact of all activities, gathered between Oct 2008 and Jan 2009. Worse case scenarios were used to determine the data for the footprint analysis including incorporating impacts from work on the site as a separate analysis.

The data was compiled and subjected to analysis using the Personal Stepwise™ software tool developed by Best foot Forward Ltd which is entirely compatable with the other published Ecological Footprint studies cited and thus allows comparisons to be drawn between the outcomes of the analysis and published data on the average ecological footprint of a typical citizen of Caradon District, the South West of England and that of an average citizen of the United Kingdom.

The Waters family's Ecological Footprint was 44% that of the average UK citizen. The energy & transport policies, modest low impact housing, land management practices, and the interaction of activities that the family practice has reduced their footprint significantly from the average. Their carbon footprint based on the study period was 4 tonnes 37% of the UK average at 10.92 tonnes[1].

The familiy's Ecological Footprint is 44% that of the average UK citizen. The transport use & land management practices, and the interaction of activities that the family practice and their modest low impact dwellings have reduced their footprint significantly from the average. If everyone else in the nation adopted a similar regime we could be meeting the targets of the Climate Change Bill[2] interim target of 34% reduction in carbon dioxide emissions by 2020 and 80% by 2050. Instead the nation looks like it will miss its voluntary national 20% target for CO_2 by 2010 by about 10 percentage points[18] and emissions are expected to rise further.

The draft Regional Spatial Strategy 2006 - 2026 for the South West sets the proposed spatial framework for the future development of the region over the period 2006 to 2026. It seeks to tackle the major challenges that the region faces over this period, including accommodating a substantial increase in population and a growing economy, tackling climate change and reducing the region's ecological footprint as defined by the consumption of natural resources and energy.

The Waters have chosen a slightly unconventional route but have achieved a remarkably low environmental impact as measured by ecological footprint. The report concludes that the careful use of resources, transport, onsite renewable energy production, modest low impact dwelling and land management **practices adopted by the family represent a substantial step towards achieving both the national goal of reduced carbon emissions and the goal of reducing the region's Ecological Footprint.**

Introduction to Ecological Footprint

The ecological footprint is a powerful tool for measuring and communicating environmental impact and sustainable resource use. It expresses the relationship between consumption and availability of natural resources. Comparing the ecological footprint with the global availability of productive area gives an indicator of environmental sustainability, which can then be monitored over time to determine trends. If more bioproductive land and sea is required than is available, then it is likely that the rate of consumption is not sustainable (Chambers et al., 2000) [3]. In contrast, if everyone lived within their earthshare (see below), we would consume only as much as the planet is able to provide, which can be considered as sustainable. Within this report any reference to "footprint" will mean the ecological footprint.

As an indicator it is broadly comparable to Carbon Footprint which is measured in tonnes of carbon generated. Ecological Footprint analysis includes more parameters than Carbon Footprint and is a more concise way to examine resource use. To give comparison the results are also expressed below as a Carbon Footprint.

The Ecological Footprint analysis involves collecting data about a range of activities such as transport, energy use, materials and product consumption and waste produced. The impacts of these activities are converted into a common currency, global hectares (gha). Because the ecological footprint uses a common currency, a broad range of impacts can be aggregated to derive ecological footprints for products, individuals, processes, organisations, regions and countries. It is a 'snapshot' measure and is based on a time-specific data set.

Ecological Footprinting was introduced by Mathis Wackernagel and Bill Rees from the University of British Columbia, in their 1996 book "Our Ecological Footprint" and developed with Nicky Chambers and Craig Simmons of Best Foot Forward Ltd (BFF) [4], Oxford in their 2000 book "Sharing Natures Interest" It has been developing as an idea and system for over ten years. Many researchers world wide are now contributing to its development. It is a widely used system of analysis utilized in 154 countries and 100 regions world wide as well as individuals and corporations.

The Ecological Footprint is adopted as an official indicator by many organisations such as; WWF International[5], Welsh National Assembly[6], & Bristol City Council[7]. Ecological Footprint has been recommended within; the European Common Indicators Programme[8], European Parliament (STOA) [9] and the Audit Commission indicators project[10].

The South West Regional Development Agency supported Stepping Forward, the Ecological Footprint Analysis of the South West region. In the foreword to the report Juliet Williams the chairman of the SWRDA states "*By providing us for the first time with a clear understanding of the region's resource and material flow, together with good quality data, it represents an important step towards a more sustainable South West"* Policy makers find it to be useful tool to determine the comparative benefits & harms from different approaches to addressing the needs of a population as it provides comparison of the impacts from widely differing activities by presenting them in a similar format as one indicator and thus can enable comparative judgements to be made.

It is a vertically integrated indicator and BFF analysis tools have been developed to provide comparable results at differing levels of application. For example, allowing an individual's footprint to be compared with the results for a region or nation. This is most

relative in relation to this report in that it allows comparison to be made between this analysis and the results published in Stepping Forward – a resource flow and ecological footprint analysis of the South West of England, Best Foot Forward, and April 2005.

The earthshare is the average amount of global resources available per person. To calculate earthshare, the total available bioproductive land and sea area of the planet is divided equally among the current global population. It is estimated that the current earthshare is 1.8 gha[5] A hectare is about the same as 1.3 football pitches. If one's ecological footprint meets or falls short of this earth share then this strong indication that it is more likely to be sustainable. If it exceeds it then it is likely that it is not sustainable.

References

1. UK average Carbon Footprint from "Carbon News Spring 2007. Published by the Carbon Trust. www.carbontrust.co.uk/energy/startsaving/carbon_news.htm
2. Climate Change Bill http://www.defra.gov.uk/environment/climatechange/uk/legislation/pdf/climate-change-bill-summary.pdf and April 2009 Budget statement.
3. Chambers, N., Simmons, C., Wackernagel, M. 2000 Sharing Nature's Interest: ecological *footprints as an indicator of sustainability*. Earthscan: London.
4. Best Foot Forward www.bestfootforward.com
5. WWF Living Planet report 2006 http://www.wwf.org.uk/filelibrary/pdf/lpr2006.pdf
6. National Assembly for Wales (2004) Sustainable Development Indicators for Wales 2004, Statistical Bulletin 18/2004; http://www.wales.gov.uk/keypubstatisticsforwalesheadline/content/sustainable/2004/hdw20040323-e.htm
7. Indicators of the Quality of Life in Bristol, 2005 report
8. European Common Indicators Project EUROCITIES The use of Ecological Footprint and Biocapacity Analyses as Sustainability Indicators for Sub national Geographical Areas: A Recommended Way Forward Final Report 27th August 2001
9. European parliament Scientific and Technological Options Assessment ECOLOGICAL FOOTPRINTING Final Study March 2001 http://www.europarl.europa.eu/stoa/publications/studies/20000903_en.pdf
10. Local quality of life indicators – supporting local communities to become sustainable A guide to local monitoring to complement the indicators in the UK Government Sustainable Development Strategy - Audit Commission, August 2005

Introduction to this Ecological Footprint Analysis

This footprint analysis was carried out through a survey of the Water family's consumption of resources and production of wastes.

The data was gathered for over the period 1st Oct 2008 to 31st Dec 2008 via diary/recording chart and the collection of till receipts and utility bills. The consumption and waste records were followed up by interviews with the subjects to pick up any atypical factors which, if not considered, might impact on the analysis, such as annual trips etc.

The data was compiled and subjected to analysis using the Personal Stepwise™ software tool developed by Best foot Forward Ltd which is compatable with the other published footprint studies cited and thus allows comparisons to be drawn between the outcomes of this analysis and published data on the average UK footprint. For more details of the data gathering methodology, the datasets gathered and any assumptions made during the analysis see Appendix A.

Survey – The survey assessed the subject's consumption and waste levels. The subjects were given a briefing on the data required, a typical data capture sheet and methods of collecting. They then recorded their own consumption under a number of different component headings and sub headings over the survey period. They recorded how far they travelled, how (car, bus etc), what food, goods & services they consumed and how much waste they produced, recycled, landfilled or composted. Their spend on local services was also assessed.

Interviews –The interviews allowed an assessment of longer term issues likely to effect the levels of consumption recorded during a limited time period of the study, such as seasonal variations in for example the amount of fuel required for heating, the amount of food grown for domestic consumption, occasional holiday flights, travel to visit family and friends further afield a number of times during the year, periodic disposal of larger waste items and items consumed as part of wider activities which should be allocated across a typical year and were not included in the individual's data gathering.

Desk top study – The desk top study allowed for the consumption of items purchased occasionally during a year to be included within the analysis as appropriate mitigating the effects of analysing a snap shot time period and ensuring the results tend towards a conservative high end assessement of impacts.

Boundaries to data capture – It is usual for footprint analysis to set a boundary around individual's domestic lives and allow the impacts of their working lives to be carried by the employer or by the business's customers within any individual analysis and picked up in regional or national analysis. Hence the impact directly allocated to the individual stops in the car park of the work place.

Similarily the share of wider public infrastructure & services impacts which might reasonably be thought to shared by all citizens equally are not all gathered within the data capture exercise. The analysis tool contains a mechanism for incorporating the per capita impacts from broader national infrastructure and services which might not be recognised by an individual as "owned " by them. Therefore the contibution these indirect items make to supporting an individual are reflected in the result of the analysis and an appropriate comparison can thus be made with other published figures.

However in an example such as this project the integrated nature of the activities on the site are so closely meshed with the subject's lives that it was considered appropriate to consider the impacts of all activities on the site and to allocate the impacts from these to the family to produce a largest impact, worse case scenario. Thus the responsibility for the impacts created by living and working on the site during the study period will be fully represented seperately within this analysis despite the convention being that the impacts attributable to the Pentiddy business should be owned by the consumers of the produce of that business.

Not all work is carried out entirely on the site throughout the year. Direct impacts incurred whilst at any other places of work such as chainsaw fuel and maintainance are included in this study as is the impact of travelling to work.

The analysis – The Personnal Stepwise™ software tool uses a component based calculation. An estimate of footprint across the 5 land use catagories (see Appendix B) is devised for each parameter or activity surveyed and these 5 results added, this is the component's footprint. The footprint of each component is then added together to obtain the overall ecological footprint of the subject concerned. Thus this is a "bottom up" approach appropriate for examining individuals and small enterprises as opposed to the compound calculation method used to examine the footprint of a large business, a region or nation.

In compound calculation the analysis is carried out from the whole to the individual parts. Material and energy flows into and out of a given region are analysed the results allow an analysis of footprint across the same range of land use types. These are then added to obtain the footprint of the region. This regional footprint can then be divided by the population of the region to give an estimate of the per capita footprint of the average individual which will take into account factors such as the infrastructure used to support the population and the impacts of wider economic activity, employment etc.

The Caradon District footprint figure was extracted from published figures for the University of York's REAP project.

These systems of analysis are comparable provided standardised methodology is adopted. The Stepwise™ tools provides this standard methodology and is subject to scrutiny and review. Thus a comparison can be made between the individuals in this study and the district, regional & national average.

The detail of how the individual component parts of an individual's consumption are analysed in an footprint analysis and how this can be compared to the carrying capacity of the planet is also briefly examined in Appendix B

Standards – This report has been prepared in compliance with the Ecological Footprint Standards (2006) set out by the Global Footprint network.

Limitations of Ecological Footprinting

A major benefit of footprint analysis is that activities that are not normally comparable can be accounted for by a single indicator and thereby compared. For example the impact of driving a petrol car 100km can be directly compared to that of growing 50 cows for consumption.

But, as not all activities are directly related to a land use, some parameters have to be estimated in another way (see energy below) and some others considered statisticaly insignifciant are not accounted for at all. The analysis is by necessity an educated approximation. These approximations are discussed in more detail below.

There is a degree of sensitivity associated with the precise ecological footprint figures stated. However as all the Personal and Regional Stepwise™ & REAP analysis tools are derived using the same assumptions, based upon pier review the footprint results obtained can still be compared between individuals, regions and nations. The outcome represented as a relative percentage, and useful conclusions can be drawn from this to inform decisions.

Some assumptions have to be used to account for factors that have not been adaquately recorded, or that are too complex to record easily. This analysis has attempted to address any of these issues by a combination of recording over a period of months the typical consumption presented by the family. The analysis of existing records held by the family for longer term trends in consumption and interviewing to take into account any longer term trends not revealed by the other two data capture methods.

Necessary simplification – Differences in technology and production practices can mean that the footprint of any one type of product may vary from manufacturer to manufacturer. footprint analysis allows for this by working on data from a range of published life cycle analysis and then making a judgement as to the most appropriate median value for the particular region in question.

In the case of this analysis most of these assumptions have been made by BFF in the production of the Stepwise software tool. So that the items consumed by the family can be collected together into similar groups of items. For example fresh vegetables produced in the UK or vegetables imported from elsewhere or items made from animal products would form three separate groups of products, which the previous published academic works on ecological footprinting tells us can be analysed based on a group assumption that for example the footprint of 1kg of potatoes is statistically very similar to 1kg of cabbage or 1kg of apples and therefore all the vegetables in this group can be combined into 3kg of fresh vegetables.

Likewise the food items consumed can be combined into three general groups, a weight of fresh unprocessed foods, a weight of those that derive from animal products and a weight of those that are processed and/or imported. Though the analysis performed by the software uses assumptions based on research to calculate the footprint of these three groups of items the ouput is statistically robust.

The data gathering exercise is potentially subject to errors from a number of sources; The data depends upon the accurate recording of data by the subjects, any omissions or estimating of quantities or errors in measuring devices will impact upon the outputs. It is

estimated from previous experience of houshold recording that the margin of error is within +/- 15%.

The Ecological Footprint is an ecological accounting tool. The Footprint's technical integrity Is grounded in the fact that the Footprint assesses past consumption and bio capacity, based on actual production and consumption data. The Footprint does not attempt to predict future consumption or bio capacity, nor predict technological innovation. It just documents what is. To measure overall progress towards sustainable development in all its facets, the Ecological Footprint needs to be complemented by other measures.

Energy footprint Footprint analysis essentially accounts the use of the planet's renewable resources (its 'interest' rather than its 'capital'). Non-renewable resources are accounted for only by their impact on, or use of, renewable, bioproductive capacity. Apart form biomass power, energy generation is not readily connected to land use. Therefore the energy footprint is based on the neutralisation of the adverse effects of energy production by ecosystems. Ie carbon is incorporated into new growth forests at a rate that can be determined. Simply put X kg of carbon = Y gha of forest growth. In the case of site based renewable energy the non renewable energy embodied in the generating plant is the principle component.

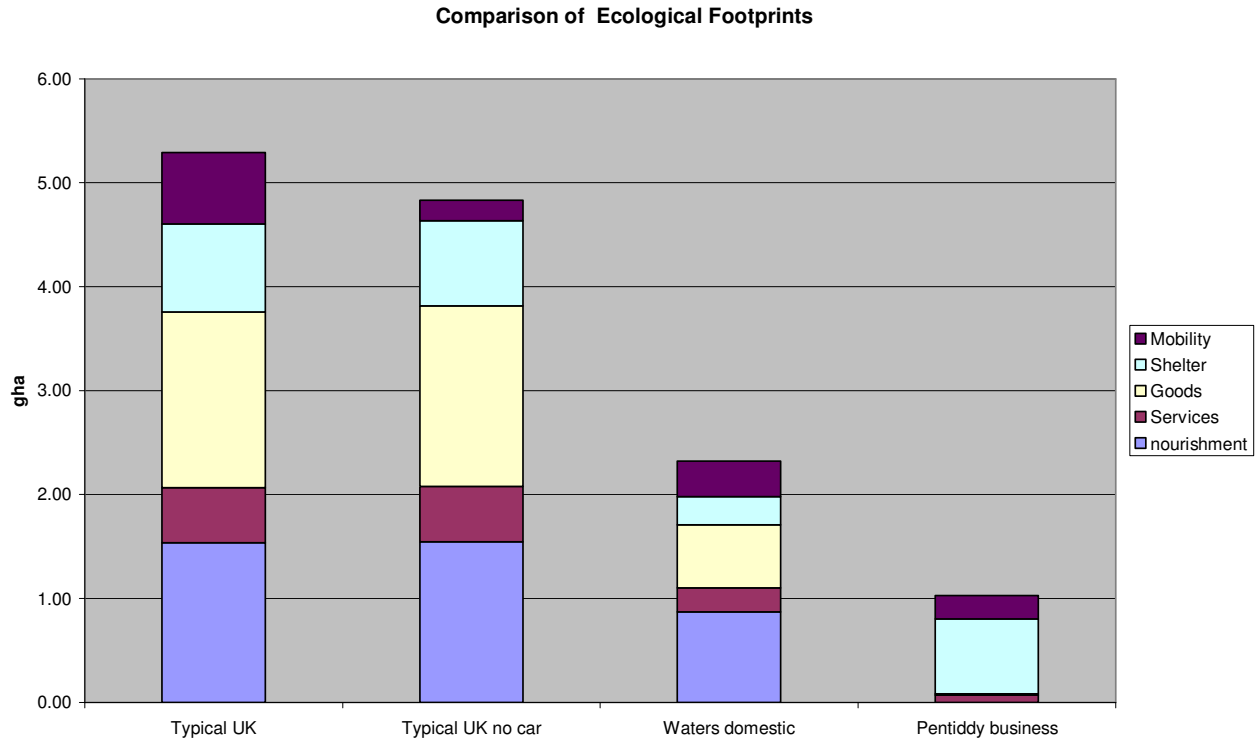
Pollution Cannot be readily accounted for. The main consequence of pollution may be the destruction or destortion of an ecosystem or the well being of it's inhabitants, so that land can become less productive which globally would equate to less land to go around and therefore an increased impact from the same footprint. An example would be toxic fumes produced by incineration or industrial processes.

Low footprint does not always mean there is little environmental concern. For example it would be possible for items to be highly polluting in their production or on disposal but for this to not be fully taken into account by the footprint analysis.

Ecological risks Practices carrying a potentally high risk to the environment if things go wrong for example a serious incident at a nuclear power station resulting in widespread damage to the local ecology would not be reflected in the footprint of 1kwh of power generated by the same power station.

The Waters family Results

The following chart shows a comparison of the results from the analysis shown as Ecological Footprint and measured in global hectares (gha). The contributions from the 5 different lifestyle components examined are shown and the culmulative total is represented by the height of the columns.



The Ecological Footprint of a typical UK individual[11 & 5] at 5.29 to 5.4 gha and the typical UK individual without a car at 4.83 gha is shown for comparison.

The per capita Ecological Footprint of the Waters family was 2.32 gha. 44% of the UK average. The breakdown of the figures is recorded below.

The additional impact of the business activities which support the family was assessed as 1.03 gha (0.52 gha each). Clearly if this impact was attributable to the family, rather than to the customers of the business as methodology dictates, the combined impact would still be considerably less than the UK average.

Breakdown of Ecological Footprints by gha					
	UK typical	UK typical	UK typical no car	Waters domestic	Pentiddy Business
	%	gha	gha	gha	gha
contribution from:					
Nourishment	29	1.53	1.55	0.87	0.00
services	10	0.53	0.53	0.23	0.07
Goods	32	1.69	1.74	0.61	0.01
Shelter	16	0.85	0.82	0.27	0.72
Mobility	13	0.69	0.19	0.34	0.23
Total Footprint	5.29	**5.29**	**4.83**	**2.32**	**1.03**

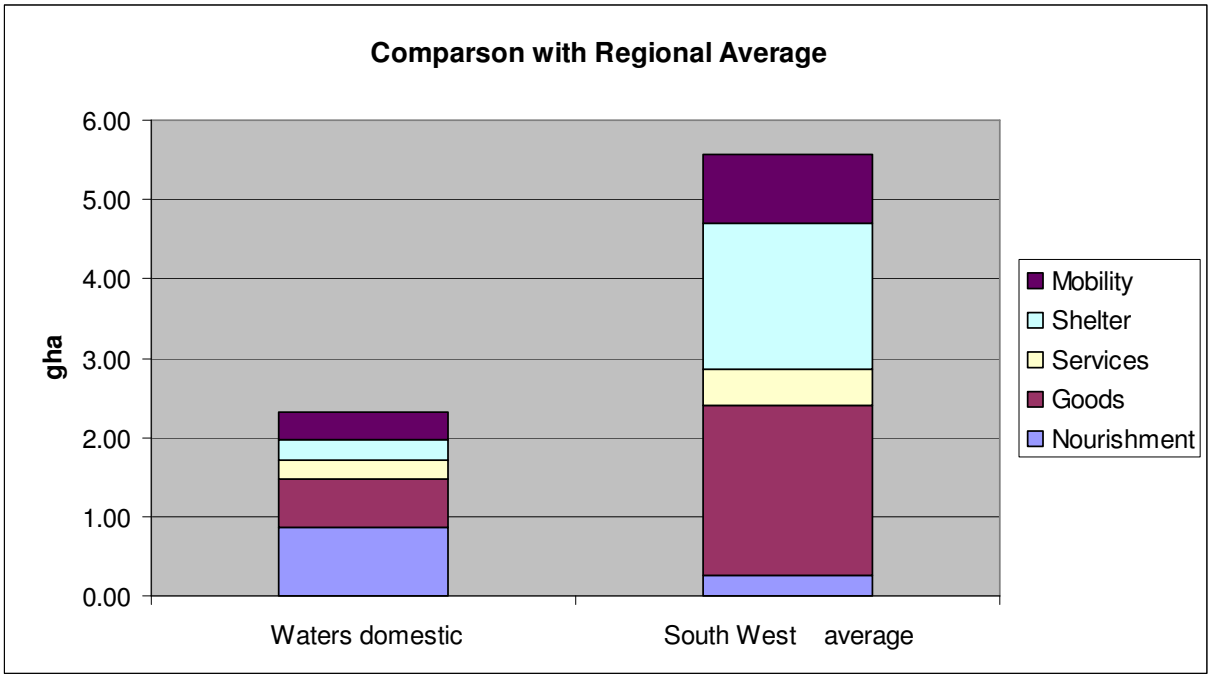
The average per capita carbon footprint of the families activities was 4 tonnes 37% of the UK average at 10.92 tonnes[1].

The amount of global resources available per person, known as Earthshare is estimated as 1.8 gha[4]. If everyone on the planet achieved an Ecological Footprint of 1.8 gha then there would be enough renewable resources available upon the planet to provide for all the resources humanity needs and to process wastes and absorb the excess carbon products being produced by our energy and transport needs.

The The Waters family member's Ecological Footprint is approximately 44% that of the average UK citizen. The lifestyle choices & management decisions that they have made has reduced their footprint significantly from the average. If everyone else in the nation adopted a similar regime we could be meeting the UK contribution towards some of the recommendations of the recent Stern Report which recommended reducing global carbon emissions by 30% by 2020 and 60% by 2050.

If everyone on the planet consumed a similar amount we would need 1.2 planets to support global resource consumption sustainably. Very close to our aspiration.

By comparison if everyone on the planet consumed like the current average UK citizen we would need 3 planets to support global resource consumption sustainably.



The Waters family & South West Regional average

A comparison of the members of the Waters family with the average resident of the South West as documented in Stepping Forward – a resource flow and ecological footprint analysis of the South West of England, shows the following.

Comparison of the Waters family & South West average Footprint

	Waters domestic	Southwest average[2]
	gha	gha
contribution from:		
Nourishment & Goods	1.48	2.41
services	0.23	0.46
Shelter	0.27	1.82
Mobility	0.34	0.87
Total Footprint	**2.32**	**5.56**

** In the stepping forward report the nourishment contribution related only to agriculture with impacts from food packaging, processing and distribution accounted for in the total for goods. Hence in the table above it is useful to examine the contribution from both components together to obtain a direct comparison.

Based upon these figures in 2001 the South West's Ecological Footprint was 5.56 gha per person. If everyone on the planet consumed a similar amount we would need 3 planets[11] to support global resource consumption sustainably.

The components where the Waters family lifestyle differs from the average citizen of the South west by order of impact are:

Shelter – The data for these components was derived based upon the static caravan that the family is resident in. Despite being a relatively poorly insulated dwelling by adopting a simple and space limited solution to shelter and most significantly by being energy efficient & utilising on site renewable sources of heat & electrical energy the Waters family have reduced their impact on the environment over the average per capita as measured by ecological footprint by 85%.

Note – construction accounts for 29% (0.54 gha) of the total impacts from shelter in the South West average, hence the low energy choices adopted by the family are as significant as the simple mobile home that they live in. i.e. the measures they take to reduce their need would be just as significant in reducing their impact in a more conventional dwelling.

Mobility – Despite the rural location, by consciously striving to reduce the amount of miles that they drive & fly and choosing to travel by train and bus for longer journeys where possible, the family has reduced their impact on the environment from the regional average as measured by ecological footprint by 60%.

The family could reduce their mobility footprint further by use of bio fuels from locally derived waste vegetable oils which has a lower impact per km than fossil fuel diesel. Published estimates vary up to an 80% reduction in impacts over fossil fuels[13].

Nourishment and Goods – The choices that the family make about their purchasing of foodstuffs, consumables and other day to day items have reduced the impact on the environment as measured by ecological footprint by 40%. This is largely due to the consumption of meat produced at a small scale on site. The fresh locally produced, simply packaged produce consumed is also an important contribution. Many of the fresh vegetables consumed were produced on the site as were many preserved items. This quantity was lower than the maximum that it might be due to the time of year when the survey was conducted. Low intensity livestock consumed on site and produced on marginal land, especially when part of an integrated system such as the one practiced by the Waters has a lower impact than that assumed by the analysis tool and therefore it is likely the nourishment footprint of the family is lower than this. The much lower consumption of packaged goods, white goods and consumer goods generally and the greater utilisation and repair of those items purchased is also a significant factor in achieving this reduction. Evidence of this comes from the much lower than average amounts of wastes leaving the site (41%) and the low electrical consumption of the family.

Services – The family impact from telecommunications, the internet, local cafes, cultural facilities and other public and professional services is less than half as much as the average for the South West.

The Waters family & the caradon District average

The average resident of Caradon District has an ecological footprint slightly less than the regional average at 5.23 gha as documented in the REAP project results, published by the University of York, Stockholm Environment Institute[14].

By comparison the Waters family have an ecological footprint around 44% of this.

References.

11. Ecological Footprint of a typical UK individual from WWF Living Planet report 2004 http://www.wwf.org.uk/filelibrary/pdf/lpr2004.pdf

12. South West average Ecological Footprint from Stepping Forward – a resource flow and ecological footprint analysis of the South West of England http://www.steppingforward.org.uk

13. Impacts from biodiesel from waste rapeseed oil. Defra April 2008 Review of work on the environmental sustainability of international bio fuels production and use. See Table 6.2 Summary of GHG or CO2 savings compared to diesel for biodiesel produced from different first generation feedstocks http://www.defra.gov.uk/environment/climatechange/uk/energy/renewablefuel/pdf/biofuels-080414-1.pdf

14. The REAP project results, published by the University of York, Stockholm Environment Institute. http://www.sei.se/reap/local.php

Conclusions

The South West's Ecological Footprint has been estimated at 5.56 gha per person. If everyone on the planet consumed a similar amount we would need 3 planets[10] to support global resource consumption sustainably.

Footprinting convention states that impacts from business activities should be owned by the consumers of the products of that business. However, in this analysis the additional impacts from the family's business activities on site were taken into account and presented seperately as if owned by the family **the combined impact of all activities currently occuring on site produced a max ecological footprint of 3.35 gha, a carbon footprint of 5.5 tonnes per capita**.

The Waters family's Ecological Footprint is approximately 44% that of the average UK citizen and 42% of the regional average. The energy & transport policies, modest low impact housing, land management practices, and the interaction of activities that the family practice has reduced their footprint significantly from the average. Their carbon footprint based on the study period was 4 tonnes 37% of the UK average at 10.92 tonnes[1].

If everyone else in the nation adopted a similar regime we could be meeting the UK contribution towards the Climate Change Bill[2] interim target of 34% reduction in carbon dioxide emissions by 2020 and 80% by 2050 and the UK contribution towards some of the recommendations of the recent Stern Report which recommended reducing global carbon emissions by 30% by 2020 and 60% by 2050. If everyone on the planet consumed a similar amount we would need 1.2 planets to support global resource consumption sustainably, compared to 3 planets which matching the current average UK citizen would require.

The G8 Climate Scorecards[18] are intended to help policy makers and a wider public to identify the path leading to a global low carbon economy by tracking the progress of the major nations towards their carbon reduction goals. The 2008 edition ranks the United Kingdom as the nation that has achieved the most progress towards its carbon reduction targets. But points out that emission reductions have stalled since 2000 and the voluntary national 20% target for CO_2 by 2010 will be missed by about 10 percentage points and emissions are expected to rise further. The UK population as a whole appears to have very little concept of what changes are actually required to cut emissions to approach anywhere near the 2020 targets of 34%.

> **If there are no examples set of the behavioural changes required within the population to actually achieve the challenging climate change targets set by the Government for 2020 then the nation will ultimately fail to achieve these objectives.**

The Waters family have chosen an unconventional route but have achieved a remarkably low environmental impact as measured by ecological footprint. Their experiences are valuable for us all as they provide a base point demonstrating that self reported satisfying lifestyles approaching sustainability are possible in the UK context. The lessons learnt from this could provide valuable input to the design of more conventional settlements and family structures.

The draft Regional Spatial Strategy 2006 - 2026 for the South West[15] sets the proposed spatial framework for the future development of the region over the period 2006 to 2026. It seeks to tackle the major challenges that the region faces over this period, including accommodating a substantial increase in population and a growing economy, tackling climate change and reducing the region's ecological footprint as defined by the consumption of natural resources and energy. The results of the examination in public published in Dec 07[16] stated "We support the objectives of reducing the region's ecological footprint and decoupling growth and carbon dioxide emissions"

The new Planning Policy Statement (PPS): Planning and Climate Change[17] was published in late 2007, making clear that tackling climate change is central to what is expected of good planning.

The careful use of resources, transport, onsite renewable energy production, low impact modest dwellings and land management **practices adopted by the Waters family represent a substantial step towards achieving the goal of reducing the region's Ecological Footprint.**

References.

15. Draft South West Regional Development Strategy 2006 to 2026 http://www.southwest-ra.gov.uk/media/SWRA/RSS%20Documents/Final%20Draft/draftrssfull.pdf

16. South West Regional Development Strategy 2006 to 2026 examination in public, Panel report Dec 07. http://www.southwest-ra.gov.uk/media/SWRA/RSS%20Documents/EiP%20Panels%20Report/SW_RSS_EiP_Report_-_in_full.pdf

17. Planning Policy Statement (PPS): Planning and Climate Change http://www.communities.gov.uk/publications/planningandbuilding/ppsclimatechange

18. G8 Climate Scorecards 2008, Ecofys, commissioned jointly by Allianz and WWF http://www.wwf.org.uk/filelibrary/pdf/g8_scorecards_080625.pdf

About the author

My name is William Knight. I hold a degree in Civil Engineering (BEng.Hons) from Oxford Brookes University. I am a member of the Association of Environment Conscious Building and the UK Permaculture Association. I have studied Ecological Design at Schumacher College, Dartington.

I am an Associate of Best Foot Forward ltd - ecological footprint consultants and am trained in data collection and analysis for ecological footprinting studies. I have published a short book on ecological footprinting.

From 1983 until 1996 I worked for a variety of Private sector consultants and Public bodies as a civil/structural engineer involved in infrastructure design, construction and family development.

My particular field of interest is in the sustainability of human activities and I have researched issues relating to this for 16 years. I have run my own Ecological Design Consultancy service since 2002. I offer project management, design and appraisal services to reduce the ecological footprint of clients and raise awareness of issues relating to ecological sustainability. My clients include Local Authorities, an Urban Regeneration Company, Farmers, Universities, Architects, Private companies and individuals.