

# SUSTAINABLE WATER MANAGEMENT FOR MUSIC FESTIVALS

## THE BASICS

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### WATER CATEGORIES

It is important that event organisers recognise the importance of water at the planning stage of organising an event.

As a starting point, event planning needs to categorise water. This will aid your attempts in reusing water, as your choices will be dependent on the category of use and the waste produced. Meegan Jones' summarises these categories brilliantly in her book "*Sustainable Event Management*" (2010).

- **Clear water** – For drinking only, supplied from standpipes if water is 'potable' (drinkable) or from bulk dispensing tanks.
- **Blue water** – For washing, showering and other human contact activities. This can be bore water, from a dam, river, tanks or other supply. It is **not** suitable for drinking.
- **Grey water** – Used water from showers or other washing operations. The water doesn't have any organic contamination. This grey water can be recycled to toilet flushing once filtered, used for non-contact activities, or stored on site and used for irrigation.
- **Brown / Black water** – Effluent from toilets and sullage from food stall washing up. This usually goes straight down the sewer drain, into a septic tank or, for temporary events, kept in tanks and then taken by 'suck trucks' (aka "sludge gulpers") which dispose of it into the sewer system.

### LEGISLATION

It should also be noted at the planning stages that currently in the UK, the category of 'Clear water' must be supplied by a commercial water supplier as outlined in the **EU Drinking Water Directive** and legislated in the UK by **The Water Supply Regulations Acts 2000** and 2010.

The vast majority of festivals will use tanks to store water on site and run pipe networks from these to standpipes and taps across the site. This can aid larger festivals to meet demand during peak times and allow the festival supply to be met without affecting the surrounding local area.

This also allows organisers to set up an internal temporary pipe network and the ability to switch of certain sections and areas whenever necessary.

As soon as tank storage occurs, The **Private Water Supplies Regulations 2009** should be adhered too. This factor was raised as an area of concern by a licensing authority. Although these regulations are similar to the acts listed in the paragraph above, many festivals are currently been undertaken by organisers who do not fully recognise the level of health and safety they are actually responsible for regarding on site water use. Incidents at Latitude and Big Chill this year verify this area of concern; if your water does not meet the strict health and safety criteria, you are liable to be shut down.

### **SUSTAINABLE DEVELOPMENT IN THE UK FESTIVAL INDUSTRY**

The premises licence which festivals across the UK are subjected to is currently granted by local authorities. Clearly much of the UK festival industry has taken a firmer grasp on the concept of sustainability since the late nineties. That said, there is minimal legal obligation for any festival to commit to sustainable resource use such as water. Most legislation is concerned with public health and safety.

That said, there are management frameworks such as BS 8901 and the recent addition, ISO 20121, although in my opinion these are not attractive to the majority of event organisers and in my opinion neither of these frameworks offers much in the way of guidance – and nor do they come cheap! A framework is evidently needed to create a sustainable vision, but this will not happen without much needed guidance.

Luckily the industry does have voluntary schemes which are far more popular. Both AGF's award scheme and JB's 'Industry Green' badge, and to an extent the 10:10 campaign, have given the industry a motive to share, conceive and develop ideas and new technologies whilst giving every festival in the country an aim and goal to strive towards. The list of reputable festivals who have sought and achieved the Greener Festival Award is a clear indication of how highly sought after that Award has now become.

There are two key factors underpinning both the AGF and the JB schemes. Firstly, as with any business every festival should be recording internal benchmark figures (i.e. volume use, emissions totals) and events should seek to improve on these figures year on year. Both award schemes reward festivals who meet and better their internal targets, whilst also measuring them on an industry submitted (and confidential) external benchmark. Secondly, the consumer now looks for these credentials before purchasing a ticket. And it is important: AGF's Claire O'Neill wrote in 2006 that whilst the individual impact of a single festival might be small, with around 500 festivals taking place in the UK, the collective impact of all of these combined can be deemed substantial.

Sustainability offers your festival economic value and targets. The vast majority of the following ideas will save you money too.

### **NECESSITY FOR INDUSTRY FOCUS AND ACTION**

I decided to undertake my sustainable water study after working through (and in) the heat of Glastonbury 2010, a festival with a superb state of the art water infrastructure involving reservoirs and permanent pipe networks. Clearly this is not a viable option for a great deal of festivals with very few lucky enough to have a permanent year round home. However, even this state of the art infrastructure was put under severe strain as the audience sought to keep cool, refreshed and avoid the searing heat. Apart from Meegan Jones' book, "*Sustainable Event Management*" and sections of the AGF blog and Information pages, there was very little literature available regarding sustainable water use for festivals. It also became quickly apparent that because of the unique infrastructures of green field music festivals those guidelines from organisations such as the World Health Organisation were unsuitable and set unrealistic targets with a huge array of variables.

### **PER CAPITA PER DAY FIGURES**

Per capita per day figures are heavily dependent on a vast array of factors; your audience demographic, festival size, weather conditions and infrastructure being the key ones.

It is not realistic to compare the usage figures of Reading Festival with a predominantly young audience of 90,000 to those of say, Shambala Festival, with a largely environmentally ethos driven audience of around 10,000. We could throw in (as an example) that Reading was undertaken in scorching heat whilst Shambala suffered a rainy year. As my main study shows, dry festival per capita per day figures can be up to twice as much as a wet festivals. Clearly the combination of all of these scenarios would heavily affect Reading Festivals final usage figures.

### **BENCHMARKING**

It is therefore essential that organisers record and set internal benchmarks. This can be done by measuring and monitoring shower usage, tap usage, compound usage (i.e. security and police) and market use amongst others. It is vital to pinpoint any heavy users, whilst this system will also allow you to analyse, address and dismiss any suspicions. To fully address and measure progression of sustainable water use at your festival it is obviously also vital to have figures to measure your changes too!

Julie's Bicycle will be publishing per capita figures in the near future (<http://www.juliesbicycle.com>). These will be displayed as a per capita per audience day figure.

**For example: Glastonbury sells 140,000 5-day tickets (140,000 x 5 = 700,000), 20,000 and 30,000 Sunday tickets (30,000 x 1 = 30,000) giving a total of 730,000 audience days.**

**Glastonbury uses 10000m<sup>3</sup> of water over the event course (1000 x 1000 = 10,000,000 litres of water)**

**10,000,000 (water volume) / 730,000 (audience days) gives the per capita per audience day figure of 13.69 litres.**

Once benchmarking has materialised and problematic areas have been outlined, it is then essential for organisers to create an environmental policy which every stakeholder of the festival should adhere to.

## **ENVIRONMENTAL POLICIES AND THE POWER OF SOCIAL SUSTAINABILITY**

Another important factor which materialised again concerned the unique set up of music festivals, this time the unusual human resource structure. The majority of staffing at festivals is temporary or voluntary, with very few permanent staff. Add on to this the array of markets and stallholders, staging, production, generator and fencing companies (to name but a few!) who are all hired in to do a job. The only interest the vast majority of these stakeholders will have in your festival will be a financial one. At the very least, an environmental policy which covers resource use should be submitted throughout the entire festival hierarchy, from management to workers to the audience.

This is not a new concept, festivals such as Burning Man (US) and Boom (Portugal) not only publish their policies online for both their audience and staff to adhere by, they rely heavily on the use of social networking websites such as Facebook to relate to their audience. Facebook is a free tool and used by over 25 million people in the UK, which clearly opens up all types of opportunities for organisers to address social sustainability and increase their performance even further. I don't think many could argue with the following statement: Burning Man and Boom are the two most recognised and celebrated festivals in the world regarding their environmental ethics and ethos.

The use of green teams such as Glastonbury's 'Green Police' is now common fixtures at festivals. As an example of best industry practice, Burning Man takes this one step further by utilising a team of 'Earth Guardians', a voluntary group. Their job is to portray the seven principles of Burning Man's 'Leave No Trace' program to all participants of the festival by emailing ticket holders (a list of email addresses should be easily obtainable from your ticketing agent), themed area leaders, at annual training events, through social media outlets and then continued by expanding the voluntary team during the festival. These messages are continuously portrayed all year round, so participants of Burning Man are fully aware of environmental policy and expectations. Burning Man Festival Earth Guardian Project Manager, Karina O'Connor, reported outstanding results using these methods.

Of course, whether you want to portray environmental information to your audience is entirely at the discretion of the organiser. There was a definitive split of opinion in the organisers who took part in my study, whether festivals should be supplying lifestyle changing information or whether the audience should be allowed to do as they wish. However there was clear agreement that festivals have huge societal and cultural importance and the ability to be the industry which can influence the public in societal issues such as water efficiency.

The Centre for Ecology and Hydrology, a branch of the government's Natural Environment Research Council, suggested the use of their monthly hydrological summaries (available from [http://www.ceh.ac.uk/data/nrfa/nhmp/monthly\\_hs.html](http://www.ceh.ac.uk/data/nrfa/nhmp/monthly_hs.html)) to pre determine current and past rainfall maps, reservoir and river levels. If enough interest can be generated, they also agreed to the future proposition of creating a 'festival based' summary report exclusively for the UK industry. This information is used by the Environment Agency and the Met Office to determine flood and drought warnings. Festival organisers can use such information to portray it to their audience through the festival website and social media outlets, in case of times where water levels might be low. Tens of thousands of people ascending on a rural area for a weekend can be highly damaging to the surrounding environment and they struggle to cope with spike demands. By pre determining weather conditions and water levels, organisers can then be ready for the possibility of restrictions and the need to execute a hot weather contingency plan, discussed further below.

### **ON SITE INFRASTRUCTURE**

What taps are you using, how old is your equipment, why are you still using flushing toilets and do you really require showers? Taps are probably the most basic form of sustainable water management at a festival, but highly effective also. Twisty taps which can be (and will be) left on are not ideal for unsupervised use. They not only give out variable water pressure, being left on will also make the surrounding area liable to become a quagmire and can result in contamination issues. Closed taps, which require the user to press down to operate, will ensure that the waste is minimal whilst ensuring a pre determined water pressure. This then requires the user to be slightly more vigilant and responsible; it is not easy to fill up three bottles of water at the same time with one hand operating a tap! Closed taps are heavily in use now in the industry, the only (slightly) negative response coming from Boom Festival who reported a minority of their audience destroying the taps to gain unlimited access.

Minimising the risk of leaks across site is essential; you can save yourself a lot of man hours and money by simply investing in good quality equipment to begin with. Rusty old equipment such as washing basins were outlined as heavy wasters of water, whilst poor quality pipe connections have the ability to lose hundreds of litres of water a day. Once you have installed your temporary pipe infrastructure, it is then absolutely vital to create and sustain a constant

water pressure. Fluctuating water pressure is a huge issue and can be unavoidable for many festivals, especially at peak usage times. It can be manageable though. You will be inviting leaks by allowing the pressure to become too inconsistent, whilst allowing the pressure to become really low during peak times will cause queues and upset your audience, which will then probably upset your licensing authority. Although we are ultimately trying to save water, it is also highly important not to place water points where they cannot be seen or accessed. The lack of use will be detrimental to the quality of the water and in a worst case scenario a lack of use can see the water point become contaminated.

### **BOTTLED WATER AND HAND SANITIZERS'**

Free water is a legal requirement of any outdoor event in the UK and one which should be respected or even celebrated. Simply persuading your audience to buy bottled water in an attempt to lower volume figures is unethical and unprofessional, whilst the extra plastic packaging, delivery miles and emissions created will just add to other figures you should be trying to lower. Several festivals reported future plans to either ban plastic bottles on site altogether, whilst Sunrise Celebration reported plans to supply each audience member with a reusable bottle upon site entry and have tanks of spring water available for free use. The environmental effects of hand sanitizers were also addressed by an environmental professional, whilst this was further questioned by the participating licensing authority who suggested that hand sanitizers could be used as a substitute for a hand washing point, the ratio of which is outlined in The Event Safety Guide. If this avenue is going to be taken, then it is important the sanitizers are biodegradable and organic, causing minimal impact if the solution was to hit the floor and causing no risk to the surrounding eco system.

### **SHOWERS**

The use of showers is again highly dependent on the festival's audience and location. The licensing authority who took part in my study reported that there was nothing written in the premises licence requiring the festival to supply showers; this was undertaken at the discretion of the festival. However, the Reading Festival premises licence from 2010 clearly states that the organisers need supply 50 showers on site. It is not certain whether this was because of the arena / camp site layout of Reading or whether this was simply at the discretion of the different licensing authorities. Simple techniques such as 2 minute timers are highly effective; many festival showers are gas operated meaning they take a good few seconds to heat up. This 'cold' spell after the 2 minutes should act as a deterrent and keep showering times down to a minimum. The use of eco shower heads and keeping water pressure down are also vital; the shower hire company should be able to assist in all of these measures. The study also concluded a large majority of festivals are charging, or contemplating charging their audience to use shower facilities whilst almost every festival I spoke to have now implemented opening

hours into the shower facilities, perhaps a few hours in the very early morning and a few hours in the late evening so those who really want a shower have the opportunity to have one.

## **TOILETS**

Although flushing toilets should all but have disappeared from the festival scene, there are still 36 at the top of Big Ground at Worthy Farm. This year, for the first time, grey water from the crew showers was used to flush these. Although this can save a considerable amount of water, there are many health and safety aspects to sending grey water directly to toilets in this manner so it is advisable to seek professional help from a plumber and your licensing body before attempting this! Nevertheless, flushing toilets are always going to be present at festivals, mainly in the staffing areas. Contractors and staff who stay on site all season will require them, whilst some campervans and caravans have them installed. Your audience however, do not need them. Although many dread using the portaloos at music festivals, the recent welcome addition of composting toilets into festival infrastructures is, excuse the dreadful pun, a breath of fresh air. These might cost more than conventional plastic toilets to hire but they are far more environmentally friendly to transport and build, generate a small fraction of waste which needs tanking compared to portaloos and are hugely popular with festival audiences. The 'end' product can also be recycled on site, so a vast amount of fuel and transport costs are saved as there are far fewer trips to the sewage plant.

## **HOT WEATHER**

Discussed previously, hot weather can cause per capita figures to become unmanageable and uncontrollable. It is therefore imperative for festival organisers to have a hot weather contingency plan in case of such a scenario. Although some festivals are blessed with access to lakes (which in itself is probably not the most hygienic of solutions), others have vast shaded areas which the audience can use. The use of misters (many of which are more economical than you think!) and the erection of temporary shaded areas are cost effective measures to include in such a contingency plan, offer your audience a solution to keep cool and out of direct sunlight which in turn will keep your water bill and usage figures down.

## **GREY WATER MANAGEMENT**

With water based toilets becoming a thing of the past at most festivals, grey water management systems would currently be of little to no use at the majority of events. The primary creator of grey water would be showering utilities, which need to be free from organic contamination – this means monitoring cleaning detergents and chemicals being brought into site and then being used in showers, an impossible dilemma for a large festival. It can be done however, with reports of festivals who manage their shower facilities so that they can supply all

their own organic detergents. These showers are run using rain water, which is discussed further later.

Without flushing toilets, the only other realistic option for grey water is irrigation. The study uncovered that many licensing authorities do not permit grey water to be used on site during the event, which means it would only be of any use afterwards - not an ideal proposition for a festival which lease their site. Sunrise Celebration reported they transport their grey water off site to be processed locally. It is important to understand that processing systems require a constant year round supply of grey water to operate correctly; reed bed systems for example will simply dry out and die without a water supply. As festivals are held annually, the success of a grey water system would rely heavily on other activities taking place on the festival site during the remainder of the year.

In fact, the more water sustainable a festival becomes the lower the success rate for a grey water system becomes. By restricting shower usage, where the majority of grey water will come from, a variety of factors occur. By charging for shower use, restricting hours or simply lowering the amount of showers on site, this will mean that only the audience members who are really desperate for a shower will be willing to queue – the majority of these are likely to be very dirty and in the event of a muddy festival, filthy. This combined with a restricted water supply due to the use of economical shower heads, shower timers and a low water pressure means that less water will be mixed with the dirt, which will make the grey water of a far higher concentrate than an average grey water system as less water means less dilution. With nowhere to use this grey water immediately, it will need to be stored on site. The temperature and weather conditions mean storing this very dirty grey water will be extremely hazardous and potentially invite all sorts of micro biological growth. What you do with it afterwards is an even bigger risk; spraying contaminated water all over a leased eco-system could be harmful to the local natural environment and eco system. It was therefore agreed by several ‘professionals’ that grey water systems are currently not technologically advance or reliable enough to be relied on by the festival industry as a potential sustainable water aid.

## **RAIN WATER HARVESTING**

Rain water harvesting opens up a variety of exciting opportunities for festival organisers. It is categorised as ‘**Blue**’ water, a higher grade than that of ‘**Grey**’. This simply means it has a greater number of uses, whilst realistically it is far easier to come across (especially in the UK!). Meegan Jones’ reported on Meredith and Golden Plains Festivals in Australia in her book “Sustainable Event Management”, which both share a site situated in areas affected heavily by drought. Even in drought conditions, the festivals reported saving 240,000 litres of water per year. Rain water harvesting also significantly reduces greenhouse gas emissions, reducing the need for water tankers and sewage plant treatment whilst as the festival becomes more and



more self sufficient the reliance of mains water is reduced also – although we still need to fulfil our ‘Clear’ water obligations! Water can be collected from a variety of sources, such as roof tops, marquees and purpose built storage facilities. UV technology is available to treat and sterilise collected water, which can be used in almost every situation – Boom Festival are even currently developing a treatment system in which rain water will then be fit for human consumption. International water charity Water Aid currently uses rainwater harvesting as their main water technology for the third world.

## **PARTNERSHIPS**

As well as the Centre for Ecology and Hydrology (<http://www.ceh.ac.uk>), commercial water suppliers also reported an interest in forming an alliance with festival organisers as they struggle to relate water efficiency to their customers. Water suppliers have access to the majority of the basic technology organisers will require for their festival to become water sustainable, whilst the water company will also be able to train staff properly and make sure infrastructure is correctly installed. In turn, a music festival is a superb way for water companies to come and relate to the consumer who are far more partial to take notice than they would be in the realms of everyday life.

Another superb opportunity for festivals is already in use by a few; forming alliances with one another. This can allow many positive factors, such as the ability to share the costs in equipment and technology which is highly logical if one festival takes place in June and the other in August. Mid to large festivals could also look into forming a ‘buddy scheme’ with their smaller cousins in trialling new technologies. A technological trial flop at a major festival will not only lose consumer focus but will also shine badly on the festival itself. Such an occurrence at a small festival would have far less impact, whilst allowing the technology to be further developed in necessary. For such a service, the larger festival can aid with costs. This could only be beneficial to both parties, as currently the small to mid festivals have the vast majority of the sustainable water ideas which are obviously easily to implement on the smaller scale.

And more here <http://www.agreenerfestival.com/blog/?p=2692>