





The benefits of water play

some ideas, for use in a risk-benefit assessment

You can probably think of other benefits as well - or ask some children playing to help you. A risk benefit assessment can be a shared, dynamic process; it is not simply done once then filed away.

- Intrinsic pleasure and enjoyment from playing
- Sensory experience of water as a substance that stimulates all the senses (sight, sound, smell. touch, taste).
- Physical exercise (running, chasing and splashing).
- Physical strength and stamina (children finding out how long they can hang from their arms, and comparing one arm with two; children seeing how long can keep their hands in cold water).
- Proprioception (or body awareness) and gross and fine motor skills (jumping across a stream).
- Experiential learning about throwing and catching objects speed, distance, height, trajectory (standing on opposite sides of a stream, and dodging the splash from an object thrown in).
- Intuitive risk assessment and management (trying to cross some wet stepping stones).
- Everyday social skills taking turns, deferring to others, working as part of a team, resolving arguments, making things fair, how and when to offer to help others, standing up to peer pressure, learning how to respond to hostility and bullying.
- Benefits for health and well-being, through contact with green outdoor environments and nature.
- Child-initiated learning through experimentation and observation (looking at the variety of bugs in a jar of river water).
- Devoting attention, focus and application to a task (catching an elusive fish).
- Caring about a location, understanding why looking after it matters, and coming to appreciate the importance of conservation and wider environmental issues.
- Getting to know other children and families, neighbours and others in the community through regular visits.



Photo: Tim Gill

Introduction

This briefing looks at how to create natural water areas by rivers or streams that are enjoyable, engaging places for children to play. It has been produced in response to growing interest in the goal of restoring urban rivers and their natural flood plains through de-channelling, de-culverting and similar measures.

This briefing aims to help those involved in river restoration and other natural water projects to clarify their goals and objectives, and to embrace play in a natural environment. It summarises the legal position, and challenges risk-averse thinking about what might be possible or allowed by law. While it should help to improve projects, it is not a detailed explanation of project planning, community engagement, construction and management.

Background

Most adults have vivid childhood memories of adventurous times spent out of doors. More often than not rivers, streams, ponds, lakes, beaches and canals feature strongly in these memories.

Children and young people today lead more constrained lives, and are more cut off from the outdoors and natural places. Most people agree that children are missing out as a result, and should be spending more time out of doors: playing, relaxing, meeting and making friends and getting their hands dirty and their feet wet. River restoration projects offer a wonderful opportunity to get more children out of doors and enjoying the pleasures of natural landscapes, introducing new play experiences and helping to bring nature back into the lives of children, families and other visitors.

Of course, water is not without its dangers. The risks – which are sometimes overstated - can be managed, but they cannot be eliminated. Accidents can happen in rivers and streams, as they can in a paddling pool, or at a beach (even one patrolled by lifeguards). This fact does not stop many local authorities and other landowners from allowing people access to rivers, canals, lakes and coastline, with millions of people visiting water locations each year.

Park managers and landowners are becoming more interested in issues around the inclusion and management of natural water features. This is in part due to concerns about flood management, and a realisation that heavily engineered culverted and channelled rivers have created flash flooding problems of their own. De-channelling rivers to create floodplains has been shown to help mitigate the risk of flooding downstream by allowing harmless flooding of public open space upstream. The wider and shallower a stream is, the better it is both for flood mitigation and for play.

Not every water management project will be suitable for play. But unless the possibility is seriously considered at the outset, a valuable opportunity may be missed.

Why are rivers and natural water features great for play?

Water is an inherently playful and engaging substance for people of all ages. It can be splashed, poured, poked, flicked and stirred. It can be paddled in, waded through, floated on and swum in. Its feel is cool and refreshing, yet it can be a weapon, a provocation, and a cue for mischief, even mayhem. Light, ripples and eddies create patterns of infinite complexity. Water is an artistic medium (use it for painting on pavements on a hot summer's day) and a construction material (combined with sand or dirt, the possibilities are endless).

Ponds, streams and rivers often teem with wildlife. Water habitats provide a parade of insects, plants, fish and birds that change every second, evolve every hour and unfold with the passing of the seasons. A net and a jam jar are all that is needed to inspire a young naturalist. And who does not appreciate the simple pleasure of sitting by a river or a pond, all cares floating away on the surface of the water?

Water in the natural environment can also be enjoyed throughout the year. Alternatives such as manufactured water play areas are great in hot weather, when children can get soaked in swimming suits, but they are typically only switched on for two or three months of a year, and can be expensive to maintain.

Children's play and wildlife conservation need not be in opposition. London Play has worked closely with London Wildlife Trust to bring play to their wildlife sites. Oasis Nature Garden in Stockwell has been combining play with appreciation of the natural environment for many years.



Photo: Quaggy River Restoration group

The law

Landowners and managers are required to take reasonable measures to keep visitors safe, as set out in the Health and Safety at Work etc Act (1974) and the Occupiers' Liability Act (1984). There is a higher onus to protect younger and more vulnerable users, as common sense would suggest. Civil case law paints a similar picture about the common law duty of care. This legal framework sets the bar fairly low, and allows for a proportionate approach. It means balancing the benefits against the risks, not reducing or eliminating the risks – even with children. This is shown clearly by the fact that recent years have seen many new skateparks in public parks. These facilities obviously and inevitably lead to more risk and greater numbers of child injuries within the park boundary, but can be justified because of the wider benefits.

There is a great deal of confusion around what the law requires. This confusion can lead decision-makers to take risk-averse positions, fearful that they may be sued or blamed if anything goes wrong. However, the climate is changing. Public bodies are recognising that the so-called 'compensation culture' is largely a myth, while fear of litigation and wider perceptions of a 'blame culture' – which are real problems - can be tackled by a thoughtful stance on risks and benefits. New guidance, landmark legal judgements and a changing professional and public culture are all leading to a more balanced approach. The Young Review report Common Sense, Common Safety published in 2010 is likely to support this move; its recommendations have been accepted in full by the Prime Minister.

HSE advice on paddling pools

"Sensible health and safety is about managing risks, not eliminating them all. HSE is not in the business of stamping out simple pleasures wherever they appear and at whatever cost. We recognise the benefits to children's development of play, which necessarily involves some risk, and this shouldn't be sacrificed in the pursuit of the unachievable goal of absolute safety."

A number of important legal cases have shown that landowners do not have to protect against obvious and natural features of a landscape. Perhaps the most important of these is Tomlinson v Congleton Borough Council, a civil liability claim arising from a young man who suffered permanently disabling injuries as a result of diving in shallow water in a lake in a country park. The case went to the House of Lords in 2003, where the claim was rejected, even though the park management had identified the risk, but had failed to carry out planned safety measures.

A reasonable approach: balancing risks and benefits

This briefing uses risk-benefit assessment as a guiding principle for thinking about safety. Risk-benefit assessment is a new form of risk assessment that has been developed by experts in play safety, and is seen as the best way to manage risks in contexts in which children play. The approach is set out in the publication *Managing Risk in Play Provision: Implementation Guide*, which has the support of Government and the endorsement of the Health and Safety Executive, along with leading safety and play agencies. The Young Review gave an explicit statement of support for the approach, saying that "with regard to children's play we should shift from a system of risk assessment to a system of risk-benefit assessment, where potential positive impacts are weighed against potential risk."



Sutcliffe Park, Greenwich. Photo: D Yearly

According to Managing Risk in Play Provision: Implementation Guide, risk-benefit assessment: "involves consideration of risks, benefits, and the possible effects and side-effects of measures proposed as a result. It needs to take into account local circumstances. It should allow for learning and sharing of approaches from other, comparable provision and from other relevant contexts."

Open water is, for most adults, and many children, an obvious hazard. We come across it many times in our lives, and almost always treat it with due respect, alongside an appreciation of its benefits. In the terms of Managing Risk in Play Provision: Implementation Guide, water is in and of itself a 'good risk': the risks are obvious, and while they can be managed, they cannot be removed without thereby losing the benefits.

What is more, de-channelling rivers may make watercourses less dangerous (a factor that risk-benefit assessment can take into account). Channelled river sections often have high vertical sides where, if someone gains entry and falls, they may be at greater risk of injury and may find it harder to get out or be helped by others. Such sites can also give rise to deep, fast-flowing water in areas that are out of sight, and possibly at greater risk of dangerous or anti-social behaviour.

Enhancing the benefits

As already noted, natural water locations such as streams and riverbanks are intrinsically playful places. Their qualities can be enhanced by measures such as:

- Decking or raised walkways
- Footbridges, stepping stones and other crossings
- Paths



Sutcliffe Park, Greenwich. Photo: D Yearly

- Artificial beaches and other edge treatments
- Natural play features such as rocks or logs
- Natural landscaping such as raised banks
- Trees, planting and other soft landscaping
- Hard landscaping such as terracing
- Benches and other seating
- Materials to create dams

What are the risks?

Water gives rise to various risks, discussed below. The overall picture is that water in the landscape does not present unacceptable levels of risk, and the risks can be managed, while also preserving benefits, through good design and site management. The significance of the risks will vary greatly depending on local factors and circumstances. In particular, water levels and flows in some river systems can rise dramatically and quickly, potentially increasing the level of risk and/or creating new risks.

One key factor will be the user profile of a site. Numbers and ages of likely users will have a bearing on decisions about appropriate design and site management. Formal supervision at sites will also be a factor. Sites that have a permanent staffed presence may be able to accommodate activities and features that would present greater problems at unsupervised locations. All the relevant factors should be considered by carrying out a sound risk-benefit assessment and acting on the results.

Drowning and accidental injury

The most obvious risk is drowning. Figures suggest that for children, drowning in inland water is a comparatively rare occurrence. The Royal Society for the Prevention of Accidents (RoSPA) states that in 2005, 16 UK children aged 0 - 14 drowned in rivers, canals or lakes. Most were children aged over 8 years old. Cases over the years have shown that spate and peak flow periods have led to a number of drownings. By comparison, in the same year, 13 children drowned at home, and eight drowned in the sea. Road fatalities provide another contextual comparison that helps to put these figures into perspective. In 2005, about four times as many child pedestrians were killed in Great Britain (63 fatalities aged 0 - 15), while 141 children were killed on the roads overall.

A geographical breakdown for drownings is not readily available, but based on the figures above, one might expect around one or two children drowning each year in London's rivers, lakes and canals, out of a child population of around 700,000.

Accidental injuries can occur in rivers and streams, as they can in any outdoor (or indoor) environments. The level of risk in many situations is likely to be low. However, the risk may be increased where there are wooden, rock or hard landscaping features (for instance stepping stones or timber decking) which can become more slippery when wet. Even in these circumstances, the risk may be acceptable when looked at in the round: such features also have benefits, and most people are aware that extra care may be needed on wet surfaces.

Underwater debris such as shopping trolleys and other large discarded or abandoned items can lead to accidents or drowning, and can be difficult for the public to spot. Managers should ensure that management and inspection regimes are able to monitor and respond effectively to such hazards.

Mitigating the risk of drowning

The risk of drowning can be reduced through good design and site management, informed by a sound site-wide risk-benefit assessment. While there is a theoretical risk of drowning even in shallow water, in practice the risk is likely to increase with water depth, especially where water is fast-flowing. Hidden underwater hazards are also likely to increase the risk of both drowning and serious injuries, for instance from diving. Weirs can be particularly hazardous, due to fast currents and hidden structures. Steep slopes immediately adjacent to water can make falls more likely, so they should be avoided where possible.

Generally it is best to have as wide and shallow a watercourse as is practical, with the wide, shallow banks acting as flood plains. This both mitigates risk in play by keeping the water shallow, and means that current speeds do not increase so much during flood episodes. Flood gauges to show water height in prominent positions can alert people to water depth, and to the increase in risk during flood episodes and when river levels are high.

Fencing or other boundaries can be used to prevent access to more hazardous sections. Planting suitable shrubs or aquatic plants is another way to manage access to water. However, these measures should be used thoughtfully, and may not be needed. While they can appear to offer a way of reducing the risk, they may not always do so, and can sometimes lead to increased risk. For instance, fencing can increase the possibility of falls where people try to climb them. Fencing can also make it more difficult for others to come the aid of anyone who has fallen in.

Footpaths and access routes can help to manage risk as well as improving amenity and access. Clear access points and routes will guide visitors to parts of a site where a public presence is unlikely to cause problems, and away from areas where the risks may be greater. Decking, footbridges, stepping stones and raised walkways can have a similar function.

Public rescue equipment (PRE) such as life rings and throw bags may be appropriate in some higher-risk locations. However, the provision and maintenance of PRE is not straightforward. It can be misused, vandalised or stolen, and missing or damaged equipment may create new problems. The use of PRE is not a total solution, and in general, as RoSPA notes, should play only a minor role in a water safety strategy. Again, a sound risk-benefit assessment will help.

Entry/exit points from culverted/channelled sections of streams and rivers need careful design, since they can create hazards such as foot, head or arm traps, fast currents or tunnelled areas. These sections can give risk to hazardous conditions because of increased currents during flood episodes. Specialist expertise will be vital to ensure that the engineered designs and other mitigation measures (such as PRE) at these locations are appropriate.

Site supervision may offer another way to manage the risk to users in larger, more popular sites. Where existing staff already supervise a wider site, there may be scope for revising locations, rotas and routines to provider greater supervision at times of high use. Additional staff training may also need to be considered.

Water quality

Poor water quality can give rise to the risk of disease or ill health. Leptospirosis (which covers a range of infectious diseases, including Weil's disease), blue-green algae and pollution are the main potential problems. Leptospirosis, a water-borne bacterial disease spread via the urine of animals, is very rare indeed in the UK. The NHS website states that around 40 cases are reported each year, with only three known fatalities since 1996. The following preventative guidance is given on the website: *Due to the fact that the rates of leptospirosis are very low in England and Wales, there is no reason why you cannot participate in freshwater recreational activities, such as swimming, sailing, water skiing or windsurfing. However, if you are regularly involved in freshwater activities, it is a sensible precaution to cover any cuts and grazes with a waterproof dressing. Shower or bathe after your activity. The risk has been considered by the half-dozen children's canoe clubs along the Regents Canal in London, at which children regularly practice total immersion. These clubs follow the NHS advice stated above.*

Blue-green algae is a form of algae that can, if present in excessive amounts, create risks to humans and animals. Other forms of algae (such as duckweed) are harmless, though it can be difficult to distinguish blue-green algae from these. Hazardous toxin levels arise once there are visible blooms or scums of algae (often accompanied by a strong odour). According to the Environment Agency, these are more likely in nutrient-rich waters in high summer. Skin and eye irritation can result from contact, while ingestion can lead to more severe reactions, including liver damage. There have been no recorded cases of fatalities in the UK (although animal fatalities have been observed). There are no accurate prevalence figures for illness. The Environment Agency advises landowners to "consider how your water is used when assessing the risk to humans and animals from exposure to a blue-green algae bloom or scum". The Agency's website does not offer any detailed guidance on risk management of blue-green algae.

The water quality of most rivers and streams in London is such that pollution from chemicals or effluent is not usually a problem. The Thames is one of the least polluted major rivers in Europe, and this is in part a consequence of tackling pollution problems in its tributaries. However, some river courses have stormwater outlets that, with adverse weather conditions such as severe rainstorms, may lead to the controlled emission of untreated or partially treated sewage. This will effect water quality downstream, and also lead to rapid rises in water levels. Where this is an issue, site managers should have management procedures in place. The Environment Agency and local water authority will be aware of any issues in specific locations, and can give advice and arrange for water testing if there is any doubt.

Signage

Signage (both permanent and temporary) can help to inform visitors about risks and hazards. However, signs should be used thoughtfully. Excessive signage can detract from the intrinsic qualities of natural sites, be visually intrusive, and communicate an unwelcome tone of bureaucracy. Permanent signs with warnings about hazards that are rarely present (such as ice) or with irrelevant messages (such as 'no swimming' in locations where water is never deep enough to allow swimming) can undermine effectiveness, since visitors may hold them in low regard. What is more, signs have limited value in law and are not a defence against claims. Regulations and standards exist for safety signs, and sign manufacturers and suppliers should be aware of these. A depth guage in a prominent position can help to make it obvious when there is a flood happening. It can be pictorial or use pictograms.

Case studies

Quaggy River, Lewisham

Since 2002 a number of sections of the Quaggy River have been de-channelled. To date, these include three sites in parks and public spaces. The initiative has been driven by a local community group, the Quaggy Waterways Action Group (QWAG). It is a Commission for Architecture and the Built Environment (CABE) case study, and has described as "a great example of environmental action" on by the Homes and Communities Agency (HCA).



Chinbrook Meadow in 2002 before restoration.

Photo: Quaggy River Restoration group

The river is now open, and free to meander naturally across the park. The QWAG website states:

"It has been integrated into the park as an attractive feature which people of all ages can enjoy. It has added immeasurably to the value of the park. An outdoor classroom with boardwalk over the river has made it into an educational resource. Benches and riverside paths have made the river and its wildlife something that adults of all ages can enjoy. And open, safe access has made the Quaggy a place of excitement, adventure and play for children."



Chinbrook Meadows after the restoration.

Photo: Quaggy River Restoration group

Ladywell Fields, Lewisham

The River Ravensbourne, which flows through this public space, was diverted via a new secondary channel through the park in 2006 and now flows through a man-made meandering channel. The site is open to the public 24 hours a day, with a park warden presence during daylight hours.

The project was funded by the European Union and led by the London Borough of Lewisham. It aimed to address flood alleviation while also improving the urban environment. The positive response from the public, including children and families, has been a big bonus for children, who are often seen wading in the river fishing for sticklebacks.

Wandle Park, Croydon

Plans are progressing to open up the River Wandle at Wandle Park, Croydon, which was culverted in the 1960s. The project is being taken forward by a partnership including LB Croydon, the Environment Agency, Greater London Authority and Heritage Lottery Fund. Public reaction to the idea of reintroducing the river has been very positive. The aim is to complete the scheme by 2012 (subject to funding).

Other precedents

Jeskyns Community Woodland (Forestry Commission)

Work at this site near Gravesend in North Kent began in 2005 and is ongoing. The site, which has public access via footpaths, includes four newly-created lakes and ponds. Three have fenced perimeters to prevent dog access (which was leading to erosion), but the largest, Henhurst Lake, has about 1/3 of the water's edge open. Raised timber walkways and platforms have been constructed as part of the landscaping. Visitors are made aware of the risks through the use of signage (including temporary signs warning about ice in winter) and depth gauges.

Swimming is not permitted in the lake and ponds, and this position is stated on signage and enforced by rangers. However, rangers are aware that children and adults do occasionally swim at Jeskyns, especially in hot weather.



Photo: D Bird, Forestry Commission

Cassiobury Park, Watford

Cassiobury Park is the largest public open space in Watford, and attracts over 800,000 visits each year. The River Gade, which flows through the park in a natural channel, includes shallow areas where children can paddle.

Next steps

- Do a risk-benefit assessment of the location/water/activity etc including the benefits as listed on page 2. This should include factors such as the depth / current strength / gradient / water quality / user profile / heritage / supervision features (among others).
- Ensure that your risk-benefit assessment is informed by appropriate specialist expertise, and considers the range of measures available
 – including doing nothing, planting, footpath routing, supervision, re-profiling, signage and if needs be fencing. See the section on page 14 for both PLAYLINK and London Play worked examples of risk/benefit assessments.
- Consult user base and other key stakeholders and develop an agreed solution.
- Review.

Other issues to consider

Waterside projects raise other issues alongside safety. Maintenance and upkeep including ongoing inspection regimes - will need to be addressed, as will the related issues of site access and security. At popular locations improvements to toilets, hand washing and/or drinking water facilities may need to be considered, especially if visitor numbers are likely to increase significantly. Whether or not washing facilities are in place, site managers should take reasonable steps to bring to the attention of organised groups visiting sites (such as youth groups or conservation groups) the importance of good hygiene after contact with water.



In some areas, there may be conservation or biodiversity issues (though these are not likely to be to the fore in river restoration contexts, as such sites rarely have special wildlife significance). Likewise, heritage issues may need to be addressed in some contexts, for instance in relation to listed buildings or important monuments. Even in more sensitive sites, conservation and heritage concerns can be balanced with play and recreational access, as shown at Oasis Nature Garden, the London Wildlife Trust site mentioned above.

Rope swings can be present in waterside locations, often having been installed by local residents. Site managers should take a thoughtful approach to these. While they give rise to additional risks, their automatic removal may have the effect of increasing the risk, if the result is that ropes are replaced with those of poorer quality, or installed in more remote or out-of-sight locations – or if public rescue equipment is abused instead. A risk-benefit assessment may lead to the conclusion that a rope can remain, or even that it can be replaced by a more secure construction. London Play's companion guide to rope swings, *Children's Tree Swings: A guide to good practice*, gives useful advice on the topic.

Conclusions

River restoration projects can provide a win-win-win for local communities: reducing the risk from flooding, creating new nature areas for conservation and environmental benefit, and improving play and recreational opportunities for children and families. This briefing shows that these outcomes can be achieved without exposing the public to unacceptable levels of risk. A risk-benefit approach will help to ensure a balanced, thoughtful consideration of the issues, and will also allow local authorities and other managers to show that they have exercised the degree of care and reasonableness that is required by law. River projects are likely to be more complex in construction terms than other projects typically taken forward in parks and open spaces. This briefing touches on these issues, but they will need specialist input, and will need to be explored in more detail as projects progress.

Risk/Benefit Assessment – worked examples

London Play - Briefing on Risk / benefit assessment for play structures in public space www.londonplay.org.uk/document.php?document_id=1513

PLAYLINK - Two worked examples of design risk/benefit assessment www.playlink.org/pubs/Risk-benefit-examples8.02.10.pdf

References, further information and resources

Association of Rivers Trusts: www.associationofriverstrusts.org.uk/

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Forestry Commission Jeskyns Community Woodland: www.forestry.gov.uk/jeskyns

HSE press release on paddling pools: www.hse.gov.uk/press/2005/e05005.htm

National Water Safety Forum: <u>www.nationalwatersafety.org.uk/index.htm</u>

NHS Leptospirosis page on prevention:

www.nhs.uk/Conditions/Leptospirosis/Pages/Prevention.aspx

Oasis Nature Garden, London Wildlife Trust: www.oasisplay.org.uk/naturegarden.html

Quaggy Waterways Action Group: www.qwag.org.uk/home/

Quaggy CABE case study: www.cabe.org.uk/case-studies/quaggy-river

River & Lake Swimming Association: <u>www.river-swimming.co.uk/index.htm</u>

RoSPA pages on child accidental drownings: www.rospa.com/leisuresafety/statistics/child-accidental-drownings-2005.aspx

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