SuDS not duds - Local authority guidance on SuDS

LANDF♦RM event: E10510

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LANDF♦RM is a new network primarily for local authorities to share experiences and discuss policy and research outputs regarding drainage and flood risk management. LANDF♦RM is funded by the Environment Agency.

Speakers

Vicky Dawe	Defra
Meyrick Brentnall	Gloucester City Council
Simon Bunn	Cambridge City Council
Ruth Newton	London Borough of Islington

Chair

Martin Osborne	Mouchel

THE ISSUES

The government response to the Pitt review of the 2007 flooding and the Flood and Water Management Act (2010) drove forward the delivery of sustainable drainage systems (SuDS) within developments. However, there is still a lack of knowledge of delivering SuDS.

Local authorities have a vital role in closing this gap and thus the delivery of SuDS. The proposed National Standards for Sustainable Drainage will reinforce this role and formalise the approach for the approval of SuDS and their associated maintenance.

In lieu of the Standards, some local authorities have developed their own guidance setting out their aspirations and approach to SuDS delivery within the context of their Local Development Framework and characteristics of their local area. This approach seeks to bring together spatial planning, urban design and engineering disciplines, providing clarity for developers and their consultants on the delivery of high quality SuDS schemes.

LEARNING POINTS

1. Defra's SuDS Policy Team is working with key groups, including local authorities (LAs), the Environment Agency and other professional bodies on building LA capacity to implement the Flood and Water Management Act (2010), including SuDS, Surface Water Management Plans (SWMPs) and other strategic frameworks.
2. A firm policy base, clear guidance, early involvement of local authorities in infrastructure planning and attention to detail are required for successful delivery of SuDS.
3. Parks, landscape, planning, highways, drainage and engineering professionals should all be involved in the process.
4. Developers appreciate good guidance that clarifies local authority requirements.
5. Upfront designs that are delivered by multi- disciplinary teams and that pay due attention to the provision of amenities are most successful.
6. Urban areas such as parks, housing estate green spaces have potential for retrofitting cost effective landscaping solutions the deliver SuDS. These interventions deliver wider benefits, eg improved appearance, biodiversity, reduced need for irrigation, in addition to flood mitigation.

VICKY DAWE, Defra

The Regulatory Context for Sustainable Drainage Systems (SuDS): Flood and Water Management Act 2010

- *Vicky is the Head of Sustainable Drainage and Non-Agricultural Diffuse Pollution at Defra. Vicky joined the Civil Service in 2003 as communications manager for the Office of the Deputy Prime Minister's New Dimension programme, and then led the department's business planning unit. She established and ran the executive and non-executive Boards during the creation of Natural England, and led a Defra project to apply Better Regulation principles to Defra's enforcement policies. More recently Vicky worked on the Department for Energy and Climate Change's flagship Home Energy Saving Programme.*

The purpose of this presentation was to go through the main provisions on SuDS in the Flood and Water Management Act 2010, to discuss the four pieces of secondary legislation on SuDS stemming from the Act; and to present the development of National Standards for SuDS, how SuDS maintenance might be funded, and how the Defra team is proposing to implement SuDS.

The Flood and Water Management Act (2010), which received Royal Assent in April 2010, will, when commenced, establish a SuDS approving Body (SAB) in county or unitary local authorities. The responsibility is located at the county and unitary authority level because they also have responsibilities for highways- many SuDS will be in roads- and are Lead Local Flood Authorities. County or unitary authorities may choose to delegate the SAB functions, although they would retain legal responsibility.

The Act requires a SAB approval of drainage systems in new developments and redevelopments to be obtained before construction can commence. It also requires that the proposed drainage system meets the new National Standards for design, construction, operation and maintenance of SuDS that will be issued in due course. Water and sewerage companies, the Environment Agency, British Waterways, internal drainage boards and the Highways Authority are all defined as statutory

consultees to the SAB during the consultation process which should start once the SAB application is submitted.

In terms of surface water drainage, the Act requires the SAB to adopt and maintain approved SuDS that serve more than one property. In this context, SuDS serving one property remains the responsibility of the property owner. The Act also amends Section 106 of Water Industry Act 1991 to make the right to connect surface water to public sewers conditional on the SAB approving the drainage system as meeting the National Standards. This was one of the main recommendations of the Pitt Review of the 2007 floods.

Figure 1: A swale at Upton, Northampton

Developers may apply for SuDS approval process in two ways. If planning application is required, SuDS application can be made at the same time. In this context, the SAB becomes a statutory consultee to the planning process. The process is designed to encourage pre-application discussions between the developer, the local authority which carries the SAB responsibility and the planning authority so that they can reach agreement in principle before the applications are lodged. This process is also meant to facilitate the design of the SuDS solutions at the outset which invariably results in more effective SuDS. At the operational level, Defra is currently in discussions with the Department of Communities and Local Government (DCLG) and may develop an electronic application system to which both applications can be submitted at the same time in order to make the process easier for developers.

It should be noted that the SAB decision is independent of the decision made by the planning authority. In other words, a development could be granted planning permission but not a SAB approval and vice versa. In either case construction cannot commence until both approvals are in place. This again is designed to encourage pre-application discussions as it is in every party's interest that both approvals are granted at the same time.

In cases where a developer prefers not to lodge a joint application or where planning application is not required, the developers could make a freestanding application directly to SAB. In both application scenarios, SAB may charge a fee for drainage approval as well as a non-performance bond.

As stated above, SABs have a duty to adopt and maintain approved SuDS that serve more than one property to National Standards, provided that their construction and functioning comply with the approved design. This condition emanates from a very clear policy intention to make sure that all approved SuDS are adopted. SABs may adopt on their own initiative or at the developer's request. A developer can apply very early on in the process to have the SuDS adopted and the SAB may agree, provided that the SAB has confidence in the developer that the SuDS will be built to approved standards.

SABs do not adopt all SuDS. Highways authorities are responsible for maintaining SuDS in adopted roads to National Standards. If the road is maintained as a road, it is maintained as a SuDS component as well.

One of the obligations of a SAB on approving SuDS is to designate SuDS on private property (adopted or private) via local land charge. This provision means that the property owner cannot alter, move or damage that SuDS without SAB's permission. The idea behind this provision is to make sure that the SuDS functions effectively and thus the downstream impact is reduced.

Another obligation is that the SAB places SuDS on the local authority risk register. This provision is to ensure that the locations of all SuDS drainage assets are known. Currently, some drainage assets cannot be located but in the future the locations of all SuDS' will be identifiable because of this obligation.

SABs have been given the power to hold non-performance bonds which are released if everything goes well during the adoption process. Defra is likely to issue guidance on the levels of bonds that can be charged. The bond provides some security for the SAB because sometimes the developer goes out of business half-way through the construction of the system which has been approved by the local authority and which has implications downstream. The bond allows the local authority to complete the building of the SuDS as planned. In most cases, the threat of the use of the bond will be enough for the developers to comply with the approved design and deliver the SuDS accordingly.

In summary the main framework of the Act is that the SAB approves the drainage application and has a duty to adopt the facility as long as it is built to the approved design (and serves more than one property). There are four pieces of secondary legislation on SuDS stemming from the Act.

Defra is currently working on the regulations. However, there is a review of all Government regulation as part of the Better Regulation Action Plan announced by the Department for Business Innovation and Skills. There is also the localism agenda. These and similar initiatives all have implications for how the regulations are shaped. Therefore, only limited information on the detail of the regulations can be provided at this stage.

The main issue to determine is what will require approval. The Act states that all developments with drainage requirements will need approval. This statement will need to be refined as its implementation in these broad terms was not the intention. This regulation allows Defra to narrow the requirement down. How far this refinement will go is up for discussion and debate. Defra is planning to phase the implementation. That will mean that only a small number of developments will require approval at the start. Both local authorities and developers will thus be able to build capacity over time. There are several options as to which types of developments will be subject to SAB approval when the Act is first commenced, and these will be put to public consultation. For example, approval may initially be required for large developments or developments in flood risk areas.

There are also regulations setting a framework for the application process, such as timeframes for approval and adoption. This approach provides security for the developer and ensures the planning process is not delayed. The time-frame for a SuDS application will probably be linked with the time scales of planning applications.

It is likely that the SAB will have slightly less than the 13 weeks that is required for a major planning permission decision to be made.

Definitions of a SuDS and a single property are also being discussed in relation to the SAB adoption duty. For example, it is likely that a block of flats will be defined as a single property. Fees that can be charged for applications, appeals against decisions and conditions of approval, the duty to adopt and enforcement are also being considered.

The National Standards set out the requirements for the design, construction, operation and maintenance of SuDS in England and Wales. They may set out a hierarchy of approaches. Standards will apply to domestic and commercial developments and redevelopments which require SAB approval. Defra is working with a Project Advisory Board guiding developments in this area.

These standards will be guided by principles and there will be a consultation on the standards. Principles should guide developers and local authorities. They may include:

- Drainage should be considered at the earliest stages of site design.
- SuDS can be multi-functional spaces, eg operates as both a SuDS and for example car parking or gardens on site, or makes use of public spaces such as parks, car-parks, footpaths and verges etc. Gets around issues about space particularly in high density environments.
- SuDS should follow the management train. Have as many components as close to the its source as possible.
- Rainwater should be managed as close as possible to where it falls.
- Connection to foul sewers is not permitted.

National Standards will allow flexibility for the site. It is likely to cover:

- Run-off destination - Where runoff from highway/development may be discharged. Connection to the sewer should be the last resort.
- Peak Runoff Flow Rate - minimise the risk of downstream flooding.
- Volume of Run-off - manage the rainwater as close as possible to where it falls.
- Visibility, adaptability and biodiversity - ensure that SuDS are visible on the surface, incorporate vegetation, are attractive and can be adapted.
- Water Quality - minimise risk of pollution to water bodies.

With regards to funding, the SAB can charge a fee for approving applications and inspections on a cost recovery basis. Funding for SuDS maintenance will be covered for the first few years through savings to local authorities arising from transfer of private sewers to water companies. This funding will be reallocated centrally based on a formula which will be worked out by Defra. This solution will have to be complemented with options for long term funding for adoption to secure the uptake of SuDS. It is acknowledged that a sustainable long-term funding stream is needed but there is not an easy solution, mainly because there are different views on where the funding should come from.

Defra is working with key groups including local authorities, the Environment Agency and other professional bodies on building LA capacity to implement the Act, including SuDS, SWMPs and other strategic frameworks. SuDS provisions in the Act need to be commenced by Ministerial Order. Defra will consult on the date for

commencement for SuDS provisions (which is likely to be 2012) and work with key groups to make sure information is available beforehand. It aims to publish the National Standards and Regulations in advance of commencement.

MEYRICK BRENTNALL, GLOUCESTER CITY COUNCIL

SuDS guidance in Gloucestershire

- *Meyrick is involved in sustainability issues as a Principal Planning Officer. He has a degree in Geology and Environmental Science, a Post Graduate Diploma in Regional Planning and an MSc in Town and Country Planning. Meyrick changed career and retrained as a Town Planner after working in the oil industry for a number of years. He worked for Aylesbury Vale District Council in Policy and Development Control before moving to Gloucester City Council. Meyrick's work at Gloucester focuses on sustainable development issues increasingly linked to Climate Change.*

This presentation focussed on the RAF Quedgeley application in order to illustrate the development of SuDS guidance in Gloucestershire. RAF Quedgeley is a large site to the South of Gloucester. It is flanked by a railway line to the East, the A38 to the West and Daniel's Brook. It is close to a 1990s development which has flooded since then.

The Ministry of Defence (MoD) embarked on making plans for decommissioning in the late 1990s. The local authority started drawing up a planning brief for the site around the same time. There was an accompanying Environmental Impact Assessment (EIA) document which was the first one for Gloucestershire and which had a whole section on drainage. This section made references to SuDS and associated provisions. The EIA map was based on the existing road layout of RAF Quedgeley and made provisions for a mixture of uses on the site as well as green open spaces.

Figure 2 The Quedgeley site

The applicants, a consortium of four housing developers, appealed against non-determination. In the meantime, they had formed a separate company, Quedgeley Urban Village Ltd (QUVL), to take associated infrastructure negotiations forward. Thus, the applicant that was dealing with the infrastructure and the actual developers were not connected.

The Inspector wanted to make sure that only non-controversial issues were discussed. As a result, drainage was not discussed in detail as part of the appeal process. However, Condition 55 was one of the sixty-eight conditions with which the appeal was upheld. It stated that:

> *"Prior to the commencement of development… comprehensive strategy for the provision of works for the disposal of foul sewage and surface water involving a Sustainable Drainage System shall be submitted to and approved in writing by the LPA. The approved scheme shall thereafter be fully implemented on a phased basis, to serve the development"*

The negotiations that followed the appeal decision were difficult mainly because the developers did not want to provide SuDS. QUVL, City Council Drainage Engineer, City Council Planners, City Council Highway Engineer, County Council Highway Engineer, Applicant's Consulting Engineer, and the Landscape Architect were all involved in the negotiations. QUVL approached the Chief Executive and Leader of the Council during the negotiations claiming that the SuDS requirements were an obstacle in the way of developing social housing and other public amenities on site. This resulted in pressure to issue the permission. In effect, construction on site had already begun despite the fact that Condition 55 was still to be discharged.

Further negotiations prompted policy change in that the City Council agreed to adopt SuDS features (swales, etc). This probably was one of the first adoption cases in England and was a huge task in itself. Eventually, Condition 55 was discharged after a significant number of houses had been built on Phase 1 with a conventional system.

The result is a two-tier system on the site where adopted highways are drained by a conventional system and porous paving is only used on private drives. The County is still not convinced with this solution. There are problems with infrastructure planning (QUVL) being separate from housing development. This has been a problem all the way through the project. There is still some porous paving on private drives, some token swales, some strategic swales, some filter drains and some wetland areas on the site.

Having discussed the issues associated with the RAF Quedgeley Site, the next section of the presentation focussed on an example planning application which incorporates a strategic swale, some smaller swales and filter drains in the back gardens. The main problem associated with such approaches to sustainable drainage is that different areas are controlled by different parties, eliminating the chance of dealing with the drainage issues from a strategic perspective.

Since the RAF Quedgeley Project, there have been problems such as the loss of engineering capacity in the Parks Department. The new partnering arrangement led to loss of experience with no one left to adopt open space. Severn Trent Agency agreement was lost. Highway engineers were also lost. There were also problems with the company charged with delivery. Last, but not least, the 2007 floods hit the area badly.

As a result of problems such as the above and some anomalies on developed sites such as houses built in an area lower than the road, the Council came to the conclusion that something more useful was necessary for Development Control and Parks (now Streetcare) staff so that they both had some knowledge in dealing with developers to deliver SuDS. It was decided that a simple guide showing what to negotiate and what to adopt had to be developed, and that the guide should also show developers what to expect and therefore what to build into purchase value. An external consultant was appointed to develop this guidance which is simple and clear.

Figure 3 Poor detailing of a swale

A joint strategy document to cover the areas of Tewkesbury, Cheltenham and Gloucester is being developed. This strategy will take the form of a Supplementary Planning Document. It is expected that the Flood and Water Bill will present both threats and opportunities and that the District Council Development Control Officers will benefit from having the SAB dealt with at the District level. Countywide guidance which could potentially be overseen by a 'mini-agency' could provide the opportunity to deal with the issues at a larger scale. One of the threats is that drainage such as highways could lead to mono-specific solutions that are over-engineered and nominally cheap to maintain but difficult to integrate in a wider system.

There is the need for a firm policy base. SuDS requirements should be a core strategy in the Development Planning Guidance. There should be clear guidance in terms of what should be achieved in particular areas. Local authorities should be involved early in the process because infrastructure planning cannot be done part way through the process. It has to be done at the master planning stage. It is of the utmost importance that parks, landscape, planning, highways, drainage, and engineering professionals are all involved in this process.

SIMON BUNN, CAMBRIDGE CITY COUNCIL

Promoting SuDS in Cambridge

- *Simon has been a Drainage Engineer for 15 years. He has worked for consulting engineers on projects both large and small, including commercial, retail, educational, transport and residential both nationally and internationally. He has been employed by Cambridge City Council for the last two years to provide a co-ordinated approach to surface water management- especially the implementation of SuDS.*

This presentation focused on Cambridge City Council's approach to SuDS including the preparation of a Design and Adoption Guide and a SuDS Design competition.

SuDS are essential to protect Cambridge as it grows as a city. There are numerous drivers behind this strategic move. The first driver is growth. Cambridge is a relatively small city but it is under a lot of development pressure. It is an affluent city with associated problems regarding availability of affordable housing. The Council Members have decided that this problem is to be addressed through growth. So, growth influences everything that is done at the City Council.

Another of the drivers is the existing Infrastructure. The City maintains all of the existing watercourses through the city and they take up most of the drainage. There are some 1960s developments which drain directly into the watercourses. This results in problems with the maintenance of the existing infrastructure. Therefore, the Council's aim is to provide the right solutions through the new developments.

Moreover, the Elected Members are very keen for the City to grow and not have a detrimental impact on the existing housing stock and the existing nature of the City. Flood risk is a concern for the residents and the Council. As a result, it has been decided that SuDS should be adopted where they are in the public domain. The main rationale behind this decision was that the lack of an adopting body was stifling the development of SuDS on new development sites.

Sustainability is at the heart of what the City Council does. There is a small Sustainable City Team which included a member who was instrumental in pushing the SuDS agenda forward.

A quick overview of the development going on around Cambridge illustrates the scale of development and the acute need to work with all developers to implement SuDS. Developments in and around the City range from a residential development consisting of 1200 homes to a medical research campus which is destined to create 9000 jobs.

Having taken the decision to adopt SuDS and to promote growth, the Council had to decide how this was to be done. Their options were to either react to developers or have a more considered approach which would enable a more strategic approach to the issue of drainage. The latter approach was taken. Thus, the Sustainable Drainage Guide was developed to inform the developers what was to be expected as part of the SuDS development. This was deemed to be an approach that would reduce the amount of risk the Council would take in adopting the SuDS.

Figure 4 Cover of the adoption guide

It should be noted that the guide does not seek to replicate existing guidance. The guide, which is landscape and urban design focussed, makes reference to the CIRIA SuDS manual. The Council plans to continue along these lines when the National Guidance becomes available by introducing references to it from the Cambridge Guide.

The Council aims to get quality neighbourhoods to be built around Cambridge and to get high quality and high standard SuDS incorporated into those developments. The new developments are also to reflect the existing cultural character of Cambridge.

The aim is to make sure that the guidance is Cambridge specific in order to address the developers who come with preconceived ideas that the combination of clay and the flatness of the City prohibited the development of SuDS in Cambridge. The guidance also promotes early input from a multi-disciplinary team into the design as the best way to approach SuDS.

The Guide also includes a section on the adoption process and outlines what the City will adopt. The City has an adoption process which follows the current planning system. It gives developers guidance on the information that needs to be provided to the Council and when.

Principles of adoption are at the hearth of the guide. Performance is of the utmost importance. SuDS have to perform. They should also be designed through an integrated approach to health and safety which should be considered at the outset of SuDS design and should be of high quality design. Defining the latter and communicating it to developers was one of the difficult aspects of developing the guidance. This difficulty was overcome through the landscape and urban design approach that was adopted.

A typical section in the guidance document has a brief introduction on what the feature is, what it does and what it aims to achieve. This enables both parties to work from the same understanding. Therefore, definitions feature first in the different sections, followed by Cambridge specific design considerations. Minimum standards for adoption are outlined in each section. Some planting guidance is also included in order to make sure that generally native species are used, avoiding invasive species. The Council considers this to be quite important in terms of ease of maintenance of the watercourses to which new developments will connect. They will also become part of the City's wildlife sites.

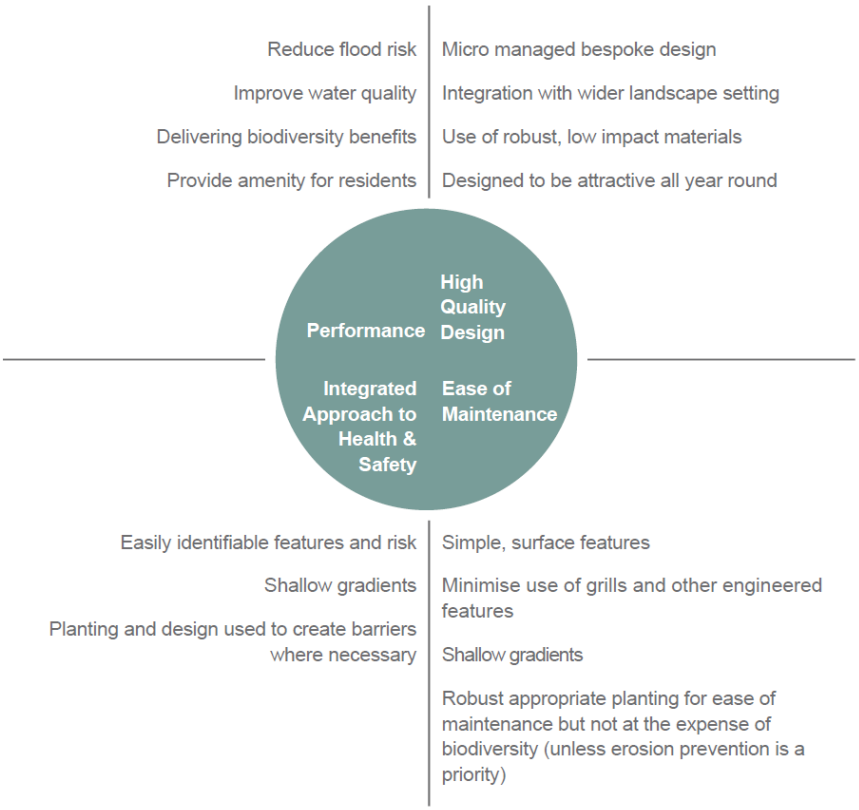

Figure 5 Principles of Adoption (Cambridge Design and Adoption Guide)

The guidance also includes a section on practical issues and solutions. Some of this information is based on CIRIA guidance. There is a table which lists the common problems that developers come across and their possible solutions. This section is very useful particularly for some of the less-experienced developers and also for the maintenance team once the SuDS have been adopted. The latter need to have an idea of what the problems are likely to be and what potential solutions are.

Maintenance requirements are also covered in the guidance. The developers are required to provide the City with a maintenance schedule as part of the design. A list of planting for certain areas is also provided. This is mainly to avoid failed planting, especially at times when SuDS are not wet.

Another very important section is on-site verification, which outlines how the design will be constructed on site. Maintenance costs are also covered to enable the Council to recover that cost as part of the Section 106 agreement. These costs are based on Spons Pricing Book. There is also a document checklist so that the developers know what to provide to the Council and when.

Comment [PW1]: Not sure if this is correct?

The feedback that the Council received on the Design and Adoption Guide is that the developers appreciate good guidance. This enables the Council to be clear about its requirements. The significance of working in multi-disciplinary teams, good up front design and the landscape-focus have also been confirmed through the experience of using the guidance.

Having discussed the guide, the latter part of this presentation focussed on the SuDS design competition which was run by the City in order to promote it. The competition generated a lot of interest, resulting in a large number of good quality design entries. The winner was Royal Haskoning with a fully integrated, multi-use SuDS design and lots of amenities within the development. Second place was Giles Hopgood with a really good proposal for a broad-walk. Their presentation on the design illustrated how the design would cope with lots of water in such an event. Third place was Mott McDonald. The outstanding part of this entry was the Cambridge Community Centre which incorporated some truly innovative techniques such as natural outdoor swimming pools.

The conclusion that the judging panel came to was that those entries that used up-front design and the actual parameters of the site layout to suit the SuDS were the most successful entries to the competition. Those entries that had integrated design and considered amenities throughout their designs also scored very highly. Often those that had scored highly had multi-disciplinary teams working on the SuDS.

RUTH NEWTON, LONDON BOROUGH OF ISLINGTON

Delivering SuDS in the London Borough of Islington

- *Ruth is a Senior Sustainability Officer (Planning). She works with planning and development management teams. Her responsibilities include promoting sustainability within planning, both through policy development and involvement with individual developments, and developing policy and practice around SuDS, which has been the focus of Ruth's work in the last 18 months. She led the development of SuDS Design Guidance for Islington in conjunction with Robert Bray Associates.*

This presentation started with an introduction to role and design of SuDS in dense urban areas such as Islington where limited space is one of the potential barriers to the incorporation of SuDS. A couple of development case studies of an inner city housing scheme and school redevelopment followed this introduction to illustrate what can be achieved in dense urban areas. A summary of challenges incorporating SuDS in the city was also provided before a summary of work on retrofitting SuDS in Islington was presented.

One of the drivers for incorporating SuDS in Islington is to reduce surface water flood risk. The borough does not know the exact scale and location of this risk. What is known is that this risk will probably increase with the impact of Climate Change. Another pressure that Islington faces is the extent of development (ie up to 2000 units annually) that is taking place within the borough. This results in increased need for sewerage capacity for which SuDS can provide a solution. SuDS also bring clean water back into an urban environment for reuse, play and biodiversity. This is an important development in a borough which used to include a large number of springs and rivers that are now all underground. Bringing water back to the borough also helps to reduce the need for artificial watering and may help subsidence, which is already a problem for social housing, by rehydrating clay soils. It is also anticipated that SuDS will yield reduced capital and maintenance costs and benefits from improved water quality. In the main, SuDS are considered to be a means to enhancing the urban environment as well as providing water-related benefits.

Figure 6 Green roof and photovoltaics (Ropemaker)

SuDS guidance refers to large amenities such as swales which are less relevant to dense urban environments. SuDS in dense urban areas have different characteristics. Thus, different principles need to be adopted when considering SuDS in such places. These are detailed in Islington's SuDS guidance. In essence, every urban surface must act as a rainfall collector. Multi-functionality of elements is vital because there is no space for anything not to have the SuDS function. An example is a green roof on an office block to the South of the borough. This facility is providing a roof for the building; an accessible open space for the office workers; a run-off and bio-diversity benefit; and it is also collecting rainwater to flush the toilets.

Moreover, the techniques that are appropriate in urban environments are slightly different. It is sometimes necessary to adopt more engineered techniques, such as permeable paving, to make the most of confined spaces. Important techniques include green roofs, permeable surfaces, 'rain-gardens' and urban water features. Quality becomes important, mainly as precursor for use of water in the urban area.

Green roofs are a key technique for places like Islington purely due to the fact that up to 90 per cent of the development areas in the borough may be roof-space. It is important to use this space effectively. A storage tank can also be incorporated underneath some green roofs to add another function. This may be particularly important where space is very limited and underground attenuation is not possible.

Pedestrian surfaces are the next largest areas in Islington where SuDS can be incorporated as there are not that many developments which include car-parking.

Figure 7 Permeable paving, Islington Town Hall

Techniques that can be incorporated in such areas include permeable paving, rain-gardens and bio-retention planters, filter drains, storage boxes, simple basins and urban ponds or wetlands.

SuDS designs were developed for five developments in the borough to provide examples for the implementation of the above guidance. Two of these were presented for illustration purposes. The first example was a brownfield housing development. There was no need to change the layout of the development in order to incorporate SuDS. The whole roof was designed as a green roof. The water falling off the roof is absorbed by permeable pedestrian surfaces. At various points water features are also proposed. Soft landscaping within the scheme also provides a drainage function. This example shows that it is possible to benefit from SuDS even on a small site. The second example was a school. Again, the layout was left as it was planned. Similar techniques which had a bit more potential were incorporated in this scheme. Planters and permeable surfaces were used. The purpose of the building also provided a chance to build in educational features.

Islington has been very good at promoting individual techniques, particularly green roofs. There were only a couple of major developments in the last few years that do not include a green roof. Permeable paving is beginning to become an accepted technique. The key question for the borough is to move from the incorporation of individual techniques to a more holistic SuDS approach and bring water to the surface to bring biodiversity to the area. This is an issue that some developers are finding difficult.

Figure 8 Islington's guidance

It is interesting to note another issue which adds further challenges to implementation. Although there is national guidance on SuDS, it is inconsistently interpreted across London boroughs. This condition puts pressure on boroughs which have higher SuDS standards and expectations. Hence, a culture change is required alongside policy change.

As well as focusing on planning and new developments, guidance also looks at retrofitting. There is a huge potential for retrofitting particularly around housing estates. Simple landscape

techniques can be used to turn the open spaces on housing estates to SuDS. A couple of schemes were designed in the guidance to illustrate how this could be achieved.

DISCUSSION

Q? Would you please clarify whether drainage application will be required for every development which needs it? Would you also clarify the time-frames? SABs are unlikely to have the full time-frame because it will have to be condensed to comply with the planning-time frame. Level of fee guidance is needed. When will this be issued?

A The Government only wants guidance which is absolutely necessary, but it will bear in mind that this is an entirely new process for many LAs.

The Act states that approval is required for any development with drainage requirements. However, it is necessary to phase the implementation. There will not be the need for approval for everything from Day One. We will perhaps start with large developments first, eg 10 or more houses or in an area of flood risk- we will consult on what will require approval. The Act is a catch-all but in reality this will be refined.

Development cannot start before the drainage consent is given. This is to ensure that SuDS are designed from the early stages and that the developer has talked to the SAB at the pre-application stage. Both parties will be guided by the National Standards for SuDS. Enforcement powers regarding both applications to be approved are not set out yet, but will be part of the consultation package. Powers may mirror planning enforcement and are likely to include inspection and stop-notices powers.

Regarding time-frames developers have a legitimate right that their developments are not held up. The best solution is to have pre-application discussions to agree the principles before the applications are made, but regulations will set out clear time-frames to ensure the planning process is not delayed.

Guidance on fees will be part of the consultation package. Fees can only be charged on a cost-recovery basis.

Q? The Planning White Paper that was published yesterday would potentially bring a lot of changes. The current system is unworkable. So how will the new approach to planning applications and applications to the SAB fit?

Defra is considering the impact of planning reforms on the SuDS provisions in the Act, and subsequent secondary legislation and guidance. This is one of the reasons Defra has not yet consulted on proposals.

Q? How did you fund your adoptions at Cambridge City?

A It is still early days to develop a consistent approach to funding adoptions. We have so far used paid commuted sums.

Q? For how long do the commuted sums cover the adopted facilities?

A The time-frame depends on the scheme and the ability of the officer negotiating. In Cambridge we aim for 15 years but we have some that are less.

Q? Do you charge maintenance costs at a specific rate as a percentage of the capital cost?

A Cambridge guidance already sets out the maintenance costs. We expect the developer to calculate the maintenance costs based on this guidance and make allowances in their budgets.

A Islington has less of an issue of adoption because currently SuDS are not in public spaces.

Q? What sort of period should commuted sums be paid over?

A Generally our starting point is 30 years. Some local IDBS go for 60 years. Sometimes we do not get 30 years. Section 106 cover such a large amount of items that some items end up being reconciled.

A In our Council it varies between 10 to 20 and 25 years. 30 years is great to have but we have not yet achieved that.

Q? It was interesting to hear the comments on retrofitting. But, isn't there a conflict with retrofitting in cash strapped times?

A We are lucky to have funding to implement this small scheme which will hopefully become an example. The key question is whether we can get to a position where those who benefit from the scheme in addition to local councils and residents, for example water companies, might also contribute to the cost.

A In Gloucester, retrofitting the School saved the authority on insurance premiums. So, we used that money to fund the retrofitting.

A It is interesting that everybody mentioned this. Defra is going to publish a Water White Paper and a Natural Environment White Paper next year. These may include proposal for SuDS retrofitting. If you have any thoughts on these matters, please go to the Defra web-site and provide feedback or comment for the white paper teams.

Q? What is the likelihood of a local water company covering London and large areas of the Thames to become a SAB?

A The Act sets out that county and unitary local authorities are the SAB, but they can delegate this function by agreement under the current arrangements. So, Thames Water should negotiate with the local authority if they want to take on the role, but this would be by agreement and the local authority would still have the legal responsibility. The Minister does also have powers in the Act to allocate the SAB function to other bodies by area. However, water companies would need to put forward a very compelling case.

Q? South West Water has an official policy not to allow SuDS to connect to their sewer. They will not even look at the plans. How would the local authority be expected to fulfil its legal responsibilities in this context?

A I will look into this case because I cannot see how this can be legally binding under the provisions in the Act, once they are commenced. The Act clearly says that a developer can connect surface water to a sewer if SAB approval has been given.

Q? Thames Water has also blocked a number of SuDS applications. Would you comment on this as well please?

A The Act sets out a *new framework* for the management of surface water, with clear responsibilities. There are real benefits to the water companies from the construction and local authority adoption of SuDS. The National Standards are being developed in collaboration with water companies, local authorities and other relevant bodies. We are also talking to Ofwat. Theoretically I do not see that connecting SuDS to their sewers will be a problem provided they meet National Standards and have been approved by the SAB.

Q? The surface water management plans that now need to be produced have not been mentioned. SuDS will be part of the local surface water management plans.

A One of the reasons for placing the SuDS responsibility with unitary development authorities is to make sure these two provisions can be considered at the same time.

Q? Will the local authorities have to maintain a register of SuDS?

A This requirement only applies to the new SuDS that are approved.

GROUP REPORTS ON THE SUDS DELIVERY INTERACTIVE SESSION

Groups of delegates were asked to work together on tables to design a SuDS scheme around a theoretical development site that demonstrates:

- How water volume and flows are managed.
- How water quality is improved.
- How the design will deliver biodiversity and amenity benefits.
- How water can be managed on the surface.
- How multifunctional public open space (POS) can be utilised to deliver SuDS.
- How water can be managed close to where it falls.
- How the SuDS Management Train can be delivered

Figure 9 Theoretical site

Group 1

The group started working from the NE corner of the site. This is considered to be a high density area. The private space at the back of the community block is to be used as a water feature. The other gardens are rainwater gardens. There is a swale on both sides of the road. There are no cars in this neighbourhood. A green roof was put on the NE block because the other blocks are likely to have pitched roofs. The public space is to be used as a retention area. The water goes through the rain gardens, the roofs drain to the swales that flank the streets.

Most difficult aspects of this design included thinking how to retrofit the green roofs onto an existing building. Finding the space was also difficult. The difference in approaches between designers and engineers became apparent during our

discussions. Engineers came across ideas that they would not have thought of before.

Group 2

This group developed vague ideas rather than hard facts. They worked back from the public open space. The community building was the only building that could receive a green roof. Water butts were proposed for the gardens. The group could not conclude how the gardens could be connected to the main system. The fact that gardens would have been divided up made it difficult to use these areas as a SuDS aspect. A grass filter strip is used on the eastern end of the site, assuming that there is a road to the east of the strip. The group aimed at having a sequence of water drainage towards the green strip.

Group 3

Rainwater is to be collected from the back of the residential buildings to a rainwater harvesting system. There is a soak away in the middle of the road. Bio-retention areas are to pick up the road drainage, whilst public space could accommodate two thirds of the storage need. The commercial area could house a communal water facility. Roof drainage from the front of the properties uses a retention system but this aspect of the design has not been completed.

Group 4

The group tried to limit where the water went by using water butts. A wetland system was considered. The main idea was to keep the water as close to source as possible and then treat it. It is presumed that the road on the eastern edge of the site can become part of the wetland area. The community building is to become an educational tool. Trees are also included in the design.

CHAIRMAN'S SUMMARY

The interactive session has demonstrated that incorporating SuDS to an existing scheme is a challenge. Each group immediately went for above ground features which were not traditionally used. The exercise has also revealed that there are still some barriers as to whether certain ideas can be implemented or not. Communal rainwater harvesting is a good example. Although there are still some barriers, there is also a lot of innovative thinking.

The presentations have pointed to the fact that multi-disciplinary teams are important in the delivery of SuDS. A team that can look across all the relevant issues is needed. Competencies of the design team are also important. It may be that a competency framework to determine that the team has all of these competencies even before pre-application discussions start should become a prerequisite to the commencement of the discussions.

The presenters also agreed that pre-application discussions are important. There is a view that you cannot start these discussions early enough. It is necessary to pay attention to detail to get the SuDS work.

Examples of sites that effectively incorporate SuDS have been presented. This experience shows that capacity is building. As such there are people who know how

to effectively incorporate SuDS into developments. There is guidance and examples of good practice but in some cases people are not aware of them.