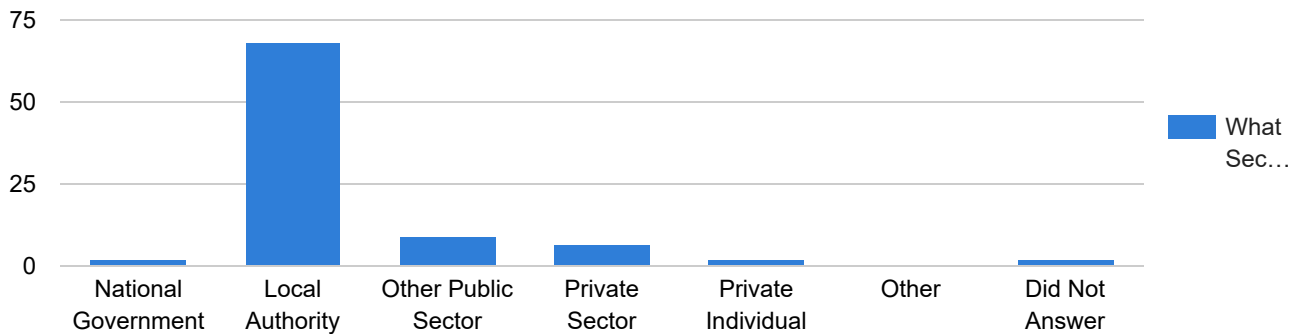




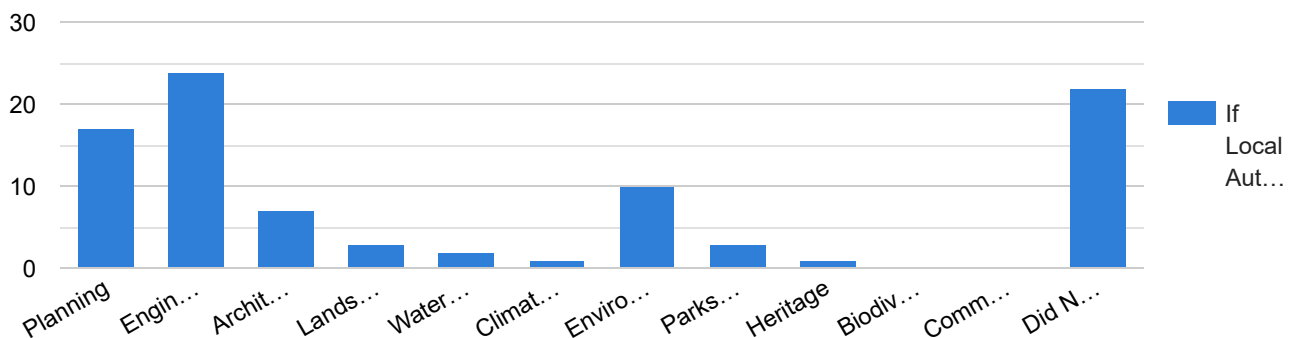
# URBAN PLANNING AND NATURE BASED SURFACE WATER MANAGEMENT. FROM THEORY TO PRACTICE. PARTICIPANT SURVEY

What Sector do you represent



Number of responses: 90

If Local Authority - what function most accurately describes you



Number of responses: 90

## If you chose Engineers, please select from below



Number of responses: 90

## If you chose Planning, please select from below



Number of responses: 90

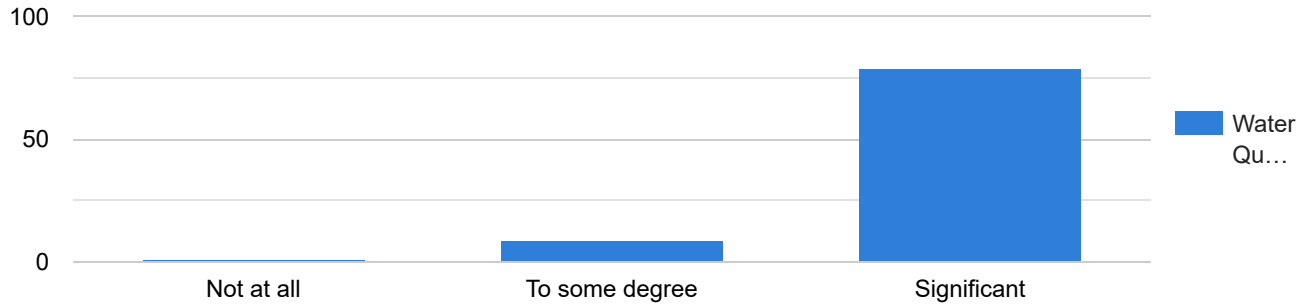
## If Private Sector please select from one of the following options



Number of responses: 90

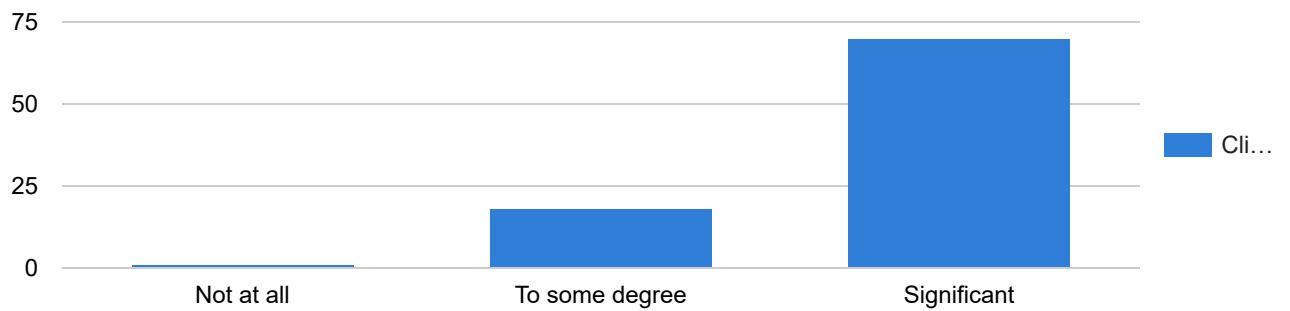
# In your view, how beneficial are Nature Based Sustainable Drainage Systems to

## Water Quality



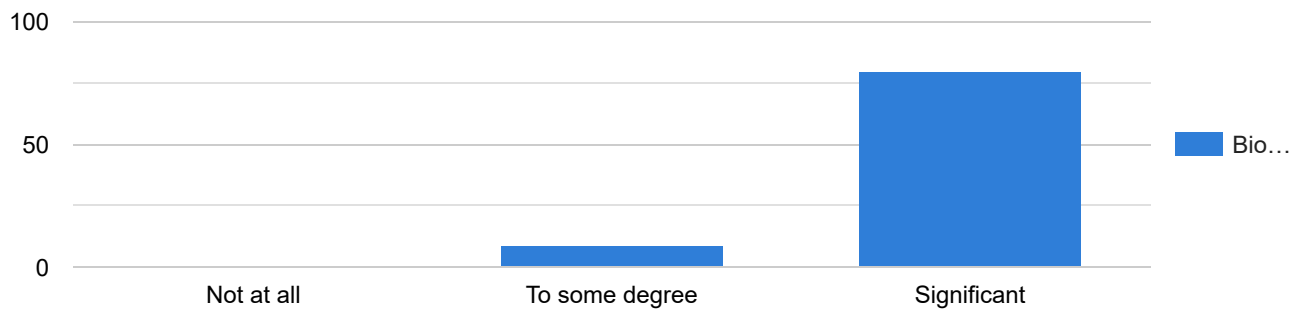
Number of responses: 89

## Climate Change Adaptation:



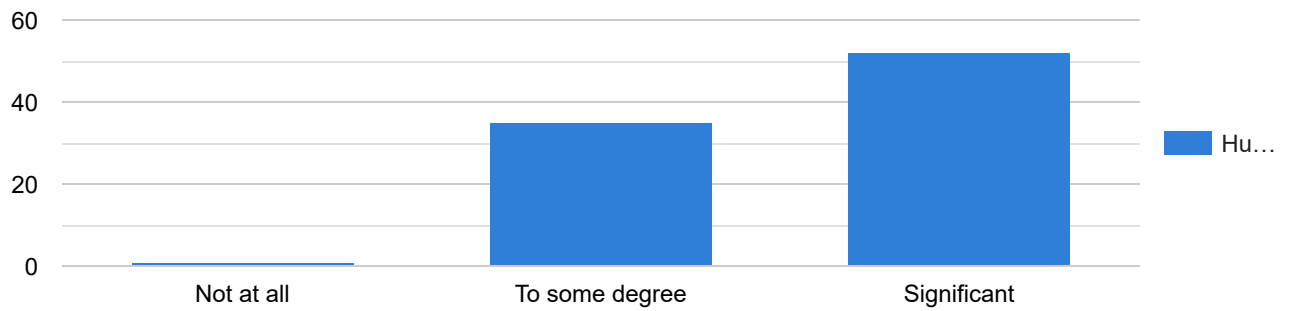
Number of responses: 89

## Biodiversity



Number of responses: 89

## Human Wellbeing



Number of responses: 88

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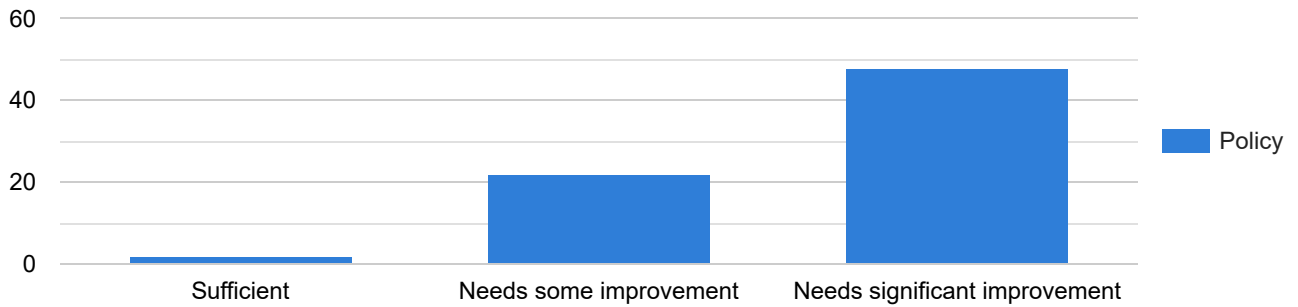
## Are Nature Based Sustainable Drainage Systems being adequately implemented in Ireland ?



Number of responses: 90

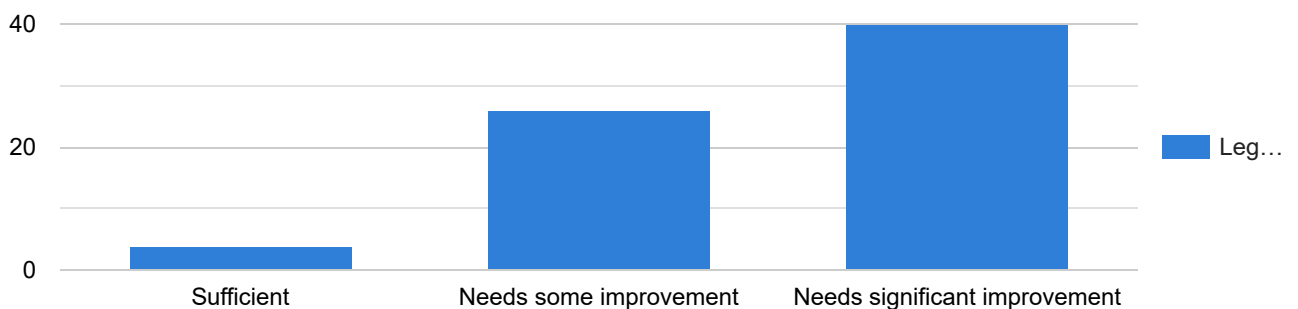
## 6. If Nature Based Sustainable Drainage Systems are not being adequately implemented in Ireland to what extent are the following factors contributing?

### Policy



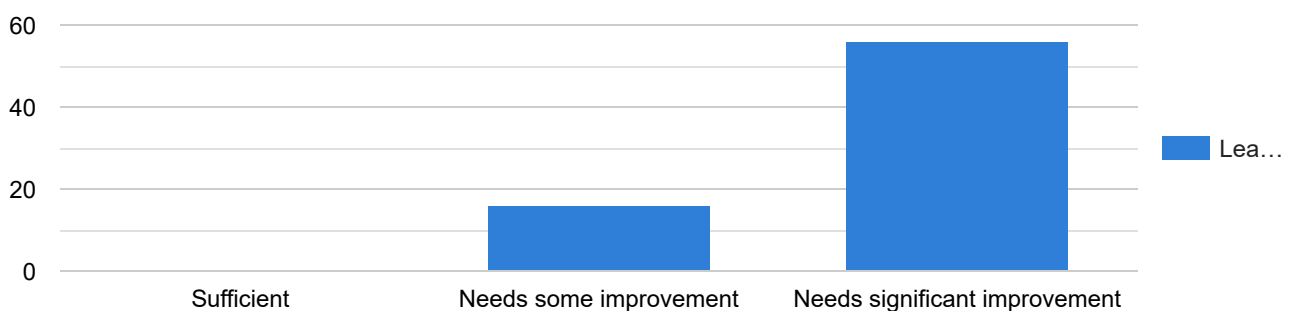
*Number of responses: 72*

### Legislation



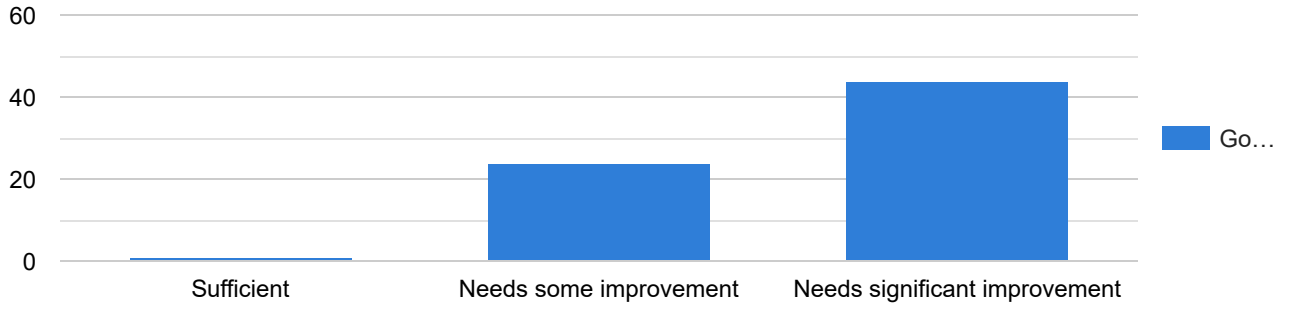
*Number of responses: 70*

### Leadership



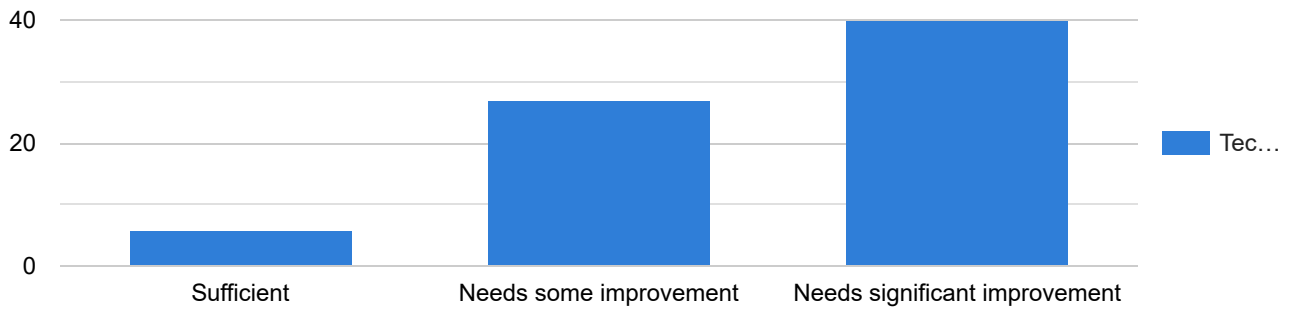
*Number of responses: 72*

# Governance



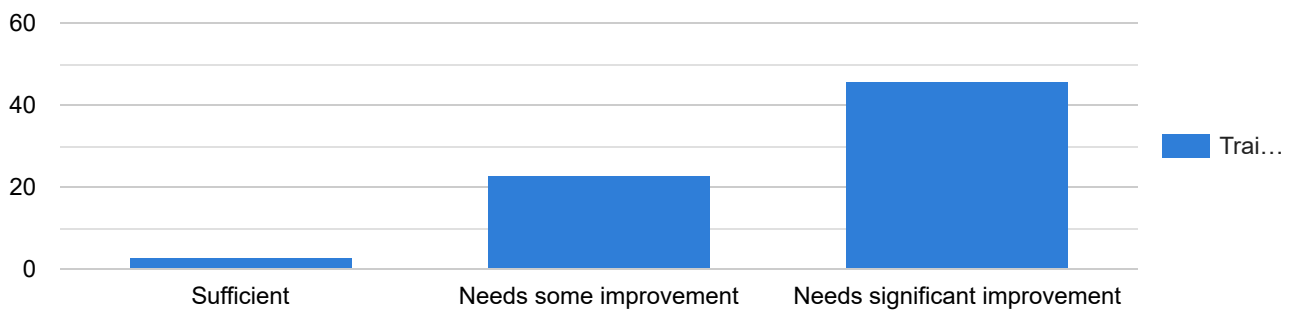
Number of responses: 69

# Technical Guidance



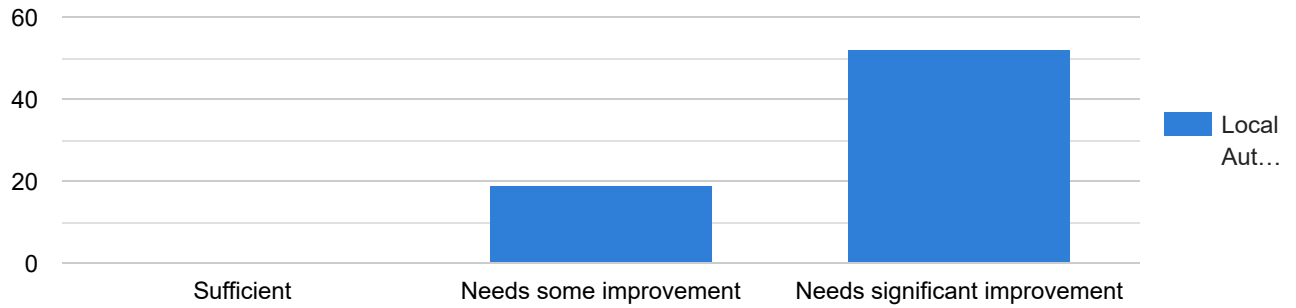
Number of responses: 73

# Training



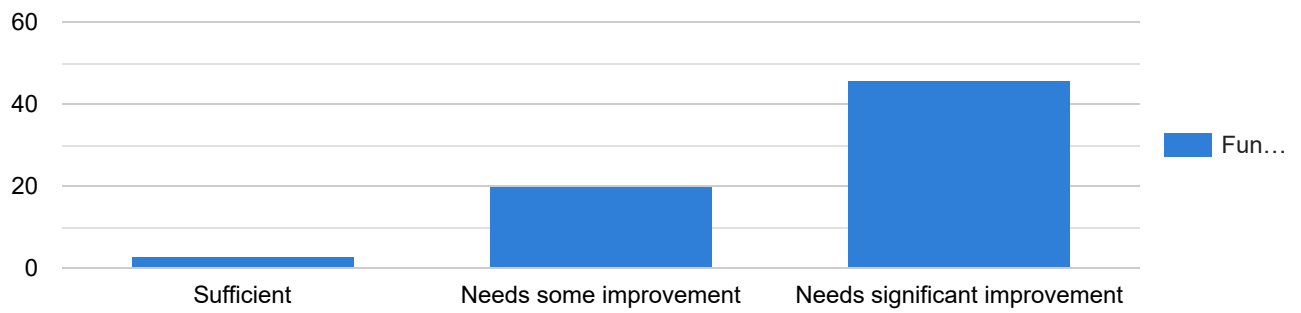
Number of responses: 72

## Local Authority Capacity



Number of responses: 71

## Funding



Number of responses: 69

## Are there shortcomings and/or challenges with implementing Nature Based SUDS?



Number of responses: 90

## If Yes, what are those shortcomings and/or challenges with implementing Nature Based SUDS?

- There are challenges in relation to accessibility of technical information to implement these changes in projects. Clear practical guidelines referenced in the development plan would be useful. The overall idea of what is to be achieved is clear and sound, how to do it is still a work in progress.
- Additional cost. Insufficient understanding of the benefits
- Competition for space, concerns about maintenance and safety from client departments and end users.
- From a maintenance perspective Local Authorities are not set up to maintain the new SUDS infrastructure coming on stream.
- Listed above - training, implementation, political will and support of planning policy, leadership.
- lack of detailed technical guidance
- contractor and consultant inexperience. potential increased capital expenditure and space requirements.
- Poor uptake at scale (usually restricted to pilot studies). Needs to be implemented on a larger scale and become more mainstream to be recognised as a suitable alternative to traditional "hard" engineering.
- The current challenge we face in cities is that we are mainly retrofitting GI or SuDS as there is no concrete legislation that calls for SuDS to be prioritised over conventional drainage systems when these systems are being implemented in new construction.
- currently no protection in planning regulations to ensure SuDS elements such as permeable paving and water butts etc. within private curtilages are retained and maintained. Guidance on maintenance is required. Monitoring and recording of data from constructed SuDS elements is key to calculate all benefits, monetise them, and encourage private developers to implement SuDS measures.
- financing and buy in from developers etc
- In urban setting, competing policies - building footprint covering site for increased housing occupancy; historic surfaces; roof design as per neighbours, i.e. pitched roof; open spaces not used as multi-functioning (preserved as recreational use only). Lack of knowledge/buy-in /leadership - surface water policies overruled. Need specific "regulations" to encourage implementation.
- Cost, public perception, lack of policy / legislation
- Perception that they require a large land area to be effective leads to a reluctance to propose them. Also concerns about health & safety and management & after-care leads to a reluctance to propose them. If they are more beneficial than the engineered underground storage tanks they should be mandatory in certain scenarios so that policy makers and developers have no choice but to implement and manage them.
- Major difficulties achieving buy in with Developers and Senior Management, a lack of awareness and trust in the effectiveness of Nature Based SUDS exists. The lack of easily accessible Guidance Information together with the lack of available training results in conventional drainage solutions being employed as a safer option. There is also a significant public perception that open water SUDS devices, drainage ponds, detention basins etc. pose a significant hazard, particularly in residential developments.
- budget, and informing clients the benefits of using nature based SUDS
- Developer aversion to perceived land take Attenuation is regarded as sufficient SUDS Perceived O&M costs once TIC Safety
- Lack of ecologist, biodiversity-earth scientists working in local authorities. More measurements and evaluation of SUD's developments during Development Plan review stage- associated legislative provisions required to make review mandatory.
- Perceptions are that nature based SUDS are difficult to maintain and it is difficult to measure their efficacy . Need to develop confidence in using/prescribing nature based solutions as an option. Need to ensure that nature based solutions are the first option to be considered for SUDS rather than a token measure added in or last resort.



- lobbying to elected members/kick back by developers in perception of 'loosing' space to implementing nature based SUDS
- Full understanding of the holistic benefits among engineers, planners and developers. They are a difficult area to retrofit in terms of public support and so need to be integrated into the development from the start Understanding of maintenance requirements Many are fended off due to perceived dangers Great Webinar needs to be more like it. Well done
- Require more consideration and planning than hard structures, community engagement required, catchment-based approach more effective but ultimately the benefits should out-weigh the input resources required.
- general public understanding of and proper maintenance of suds systems once they are operational is an issue. Fear of open water by developers and local authorities is also a big issue
- Issues mentioned in previous question. Lack of guidelines for Planning Authorities. Lack of awareness among relevant professionals (hopefully improved due to your conference); Land use policies in retrofitting to existing situations.
- There is a lack of complete understanding about what NBS are and their benefits amongst professional staff in Local Authorities, in particular Planners and Engineers. Planners in Development Control play a key role in ensuring that SuDS policies are implemented appropriately and to achieve this, significant upskilling is required. The same is true of council design engineers and architects. This carries through to a lack of incorporation of NBS both in projects designed by council staff and in tender briefs sent out to consultants. There are also misconceptions about costs, land take and maintenance which require to be debunked. There are issues which do require to be address regarding maintenance, but they are more to do with reallocation of resources within LA rather than a need for additional resources. On the whole, the resources required are likely to be less, just different. Many LA's do not employ landscape architects, which appears to be a expertise in developing and implementing these systems. There is a lack of awareness and buy in at senior level in LA's . Greater engagement at CCMA level would assist in addressing this. There seems to be a skills deficit amongst consultants designing schemes, probably because they have not been required to upskill in this regard by pressure being brought to bear through the planning process.
- In a city like Cork, very hard to straighten or un-culvert the rivers, and land is very expensive so hard to set-aside sufficient land to implement various schemes.
- Designers on behalf of developers are submitting applications that default to conventional/engineered SUDS because of risk aversion and wish to get approval, GDSDS needs to be revised (Just like Traffic Management Guidelines were revised to DMURS) to default to NB SUDS as mandatory unless not technically feasible. Developers will happily implement NB SUDS to green wash their development, if they can get re-assurance that will fly with Planning Authority.
- They are not suitable for deployment in city centre locations due to the proximity of cellars and basements of old buildings that lack the necessary waterproofing.
- perceived initial cost & maintenance
- - Lack of buy in and support at senior management level - Need a more multidisciplinary approach to ensure the development of Nature Based SUDS - Needs to be flagged as a requirement at pre planning stage - Need to have very strong and implementable policies in CDP - Need to get landscape architects on board at the outset of developments as well as engineers/planners
- There needs to be a change of mind set amongst engineers regarding the management of surface water run off to move towards less engineered solutions which also help improving water quality and the biodiversity crisis. Change is slow in Local Authorities and this needs to be championed by Section Heads. A short video of an existing nature based SuDS in operation in Ireland at different scales from city / town centre to small village would be useful and such visual presentations tend to be powerful.
- There are too many planning applications getting approval where Nature Based solutions are not being applied or even investigated into at the design stage.

- Potentially cost (developer) more to implement than connect straight to storm water, need to highlight gains.
- A change in thinking away from the typical engineered solutions
- Lack of experience of implementing into proposed designs at the earliest stage possible.
- Confidence that they work ultimately in higher density developments and ensuring induction of the end user and ongoing maintenance. Overall the introduction of NBS is very positive and essential. I am of the opinion that NBS should be designed into projects in conjunction with the landscaper at the initial masterplan stage..etc...and not introduced as an add on later in the project, ...The Development Plans will drive action ultimately and the market.....the end users are starting to require such solutions.
- Lack of expertise in the planning system
- Planning Policy contains conflicts between densities, open space requirements & SUDS promotion. It's difficult to achieve. ABP have issued some very disappointing judgements in this regard. Working hard in this LA to come together to promote this through all departments.
- Resistance from developers/engineers. Lack of understanding from Planners/engineers/landscape architects
- It is all down to good planning practice. In the examples in the the Inland Fisheries "PLANNING FOR WATERCOURSES IN THE URBAN ENVIRONMENT" Guidelines there was poor planning as housing and car park were granted permission immediately adjacent to the rivers. Buffers zones reduce the area of available land a developer has to develop by having to leave a buffer zone between the development and the river. He/she will natural resist this. Ultimately it is down to good planning by planners to ensure the required buffer zone is maintained in the planning process. Good planning is required in development plans to de-zone the riparian zone from residential development to prevent building on it
- In urban environments, spatial constraints is one of the biggest challenges to be overcome for the provision of ground level nature based SuDS where surface water attenuation is incorporated. However, other objectives such as water quality, bio-diversity and amenity value are easily achieved even in dense urban settings. Green roofs are successfully implemented in the Dublin local authorities but are rarely used in other parts of the country. This, in my opinion, is largely due to a lack of strong policy, understanding and appreciation for the environmental benefits of nature based SuDS. Nature based SuDS needs to be embedded in national and local policy. More resourcing for planners and engineers would be required for consultation and review SuDS proposals at pre-planning stage. Dedicated staff would need to be employed to carry out inspections during construction stage and during operation. Additional funding to local authority Parks Sections would be needed for increased maintenance works. More training needs to be provided to local authorities and consultants on the design of SuDS. GDSDS still is not adopted by all local authorities even though it is the most progressive and comprehensive national guidance document on SuDS. Legislation needs to be developed to put greater responsibility on developers and management companies to maintain SuDS. The use of buried tank structures and petrol interceptors are being used extensively throughout the country. However, I would have reservations about whether these are regularly maintained. Developers should be explicitly conditioned as part of planning permission to submit annual maintenance records (additional LA staffing requirement to process this) . The building regulations could also be updated to include soakaways with overflows as mandatory for houses. This would greatly reduce the impact of first flush even in moderately draining soils. In my opinion, the government has missed a vital opportunity to include the handling of surface water in the mandate given to Irish Water. This would have allowed a single common approach to dealing with surface water drainage and the implementation of SuDS. There is also a lot of overlap in the expertise required for design of both utilities. In this model, all properties disposing of surface water into a public surface water sewer would be charged. This has been successfully implemented in England and Wales (by OFWAT) and in Scotland (by Scottish Water). This part of the Irish Water utility charge would then be allocated to developing SuDS in local communities. Furthermore, local authorities would be

levied for the disposal of surface water from roads not utilising SuDS, thereby creating incentive. This model could be limited to urban areas (where the biggest gains are to be made) and mainline sewers in Local authority ownership. The typical suburban housing estate in Ireland comprises of houses with front and back lawns surrounding a communal grassed amenity. Financial incentives in

the form of rebates could be offered to homeowners for retrofitting SuDS to their properties. Communal areas could incorporate SuDS for roads. In its simplest form, this could involve soakaways in the gardens of houses (where it is deemed not to be an issue for foundations) and communal areas with an overflow to the surface water sewer.

- I believe that a sizable % of LA staff have currently insufficient knowledge to implement/enforce Nature Based SUDS. Staff require training and the LA must ensure it is built into their County and Local Area Development Plans.
- A major challenge is the mindset of Developers to Nature based SuDS
- Lack of will / imagination on part of public and private sector
- In my opinion there is an issue with resourcing and joined up thinking in relation to this. The barriers I see in my own local authority are that there is an inherent fear of nature based systems among many decision makers as they worry about safety with open water bodies, maintenance with natural features and trees and fear a move away from traditional engineering solutions for taking in charge purposes. The surface water drainage function is falling between stools at a time when this can least be afforded. In many rural local authorities this is a roads function as flooding and gullies affect roads! Other issues such as surface water pollution and loss of biodiversity are an afterthought and not on the main issue list with the relevant decision makers who's main concern is road safety and maintenance of the roads budget. The move of foul drainage to Irish Water has further exacerbated this. The experience of drainage areas who now generally only do Irish Water work is being lost. Where you have a pollution incident that is traced to surface water drainage it is very difficult to locate the responsible party and environment departments have little budget to resolve issues even if they have the resources to trace the source, which they more than likely do not. While the works going on in the GDA are excellent and of great benefit to other local authorities in terms of technical guidance, inspiration and best practice, unfortunately rural authorities do not have the resourcing to achieve the same results. All local authorities should have a drainage department. The standards can be led by robust planning policy but planning departments do not have budgets to implement the works. Improved leadership and vision is needed to further the implementation of Nature Based SUDS. I would suggest a government led mapping project across all Local Authorities to map and quantify what exists and try to get a better understanding of the benefits. This could be measured and valued as part of Local Authority Climate Adaptation Strategies and targets set to improve coverage.
- Clients find they are too expensive to implement any SuDS other than green roofs and tanks. Amenity at these types of developments would be improved with many other SuDS methods although it seems as though they and Architects are not entirely aware of how much this could improve with other types of SuDS methods. I think some exemplar projects in the future will open their eyes to this as it has done in the past. More visible SuDS measures will also trigger the end user to think more about surface base water and how it can be effectively managed.
- Cultural shift needed backed and enforced by clear coordinated legislation and guidance that is cross cutting to cover both proposed new development and the retrofitting of existing urban and rural areas. Both need a bespoke and dedicated funding mechanism, something similar to what SEAI does for realising for energy conservation and renewables at a local level
- Overall technical understanding both in public and private sectors; willingness to embrace nature based SUDS at project development stage and understanding of inherent benefits to the broader community &

environment from the implementation of such systems in flood risk management & biodiversity within urban areas and in a rural context also.

- Ongoing 'long period' maintenance, e.g. sediment removal every 5 or 10 years
- Building Industry tends to be more disposed to long term storage of water in underground tanks rather than nature based systems which are seen as being excessively land hungry. It is necessary to give developers a credit in terms of development rights, possibly in other areas, when they contribute a large portion of a site to a natural water management regime. Many developers develop smaller sites where a nature based system may become too onerous in terms of land take. It is necessary to clarify at development plan stage what land will be used in nature based systems so that a developer does not buy a site without being aware of the implications when he purchases the land.
- Training and guidance for engineers, planners, architects in their design and multifunctional benefits Not strong enough policy requiring their use and not accepting alternatives. Not enough existing sites that have been monitored to show that they do work and to show the construction and maintenance costs associated with them
- lack of guidance/direction to planners and developers/consultants. insufficient inclusion in County/National Development Plans. none/lack of completion and implementation monitoring.
- Lack of appropriately trained individuals to supervise installation
- little or no previous experience resulting in little knowledge on the topic
- Buy in from all stakeholders
- - Other local authority policy and procedures i.e. complications around taking in charge permeable paving etc. disincentivising delivery of such green infrastructure - Perceived additional cost / space requirements for private developers - Concern around maintenance in longer term etc.
- The cost of SUDS in comparison to traditional drainage needs to be made clear and the benefits emphasized. I think knowledge is limited, in terms of planners who check drawings and other design professionals such as architects. Simple guidelines need to be made available, so that design teams know what is required for SUDs and can integrate SUDs into designs from inception onwards.
- Planning consultation between all bodies-Local Authorities/National Government/ semi state/ Public education
- The main issue is that SUDS are implemented without fully understand them. There does not seem to be site specific study ( soil study, rainfall...) before implementation. SUDS should be considered at the beginning of the design stage of any development. As a Park professional, I also think we underestimate that park, open spaces and street trees are SUDS and do not need SUDS retrofitted into them. It also seems to me that planners and engineers dismiss too easily the professional opinions of people who work with nature all the time i.e. Parks superintendents, Landscape architects...
- The desire to stick with what's known or the fear of change. There is an attitude of 'this works' or 'this is the way things are done around here'. Public awareness around such schemes needs to be heightened also. I regularly hear people complaining about areas of public open space on housing schemes flooding or gathering water when the features are in fact swales and these are not highlighted to prospective house buyers.
- A per question 6 above, lack of planning related guidance, lack of willingness to embrace SUDs; lack of leadership, lack of legislation.
- Lack of education to the relevant authorities regarding the benefits. Lack of coordination between different sectors including the public.
- Maintenance, in particular budgets for maintenance. An added maintenance burden for any nature based SUDS which are taken in charge is a significant disincentive to their implementation.
- Needs to be better integrated in county development plans/local area plans and become a 'shall do' with more detailed consideration at design/planning application level. Implementation needs leaders across the local authority to ensure it is in integrated in all developments, including local authority own developments.

- Land required in urban areas, integration into planning requirements, political resistance particularly for developments, lack of awareness and understanding by the public and other groups
- There is an additional cost in some cases.

Number of responses: 66