

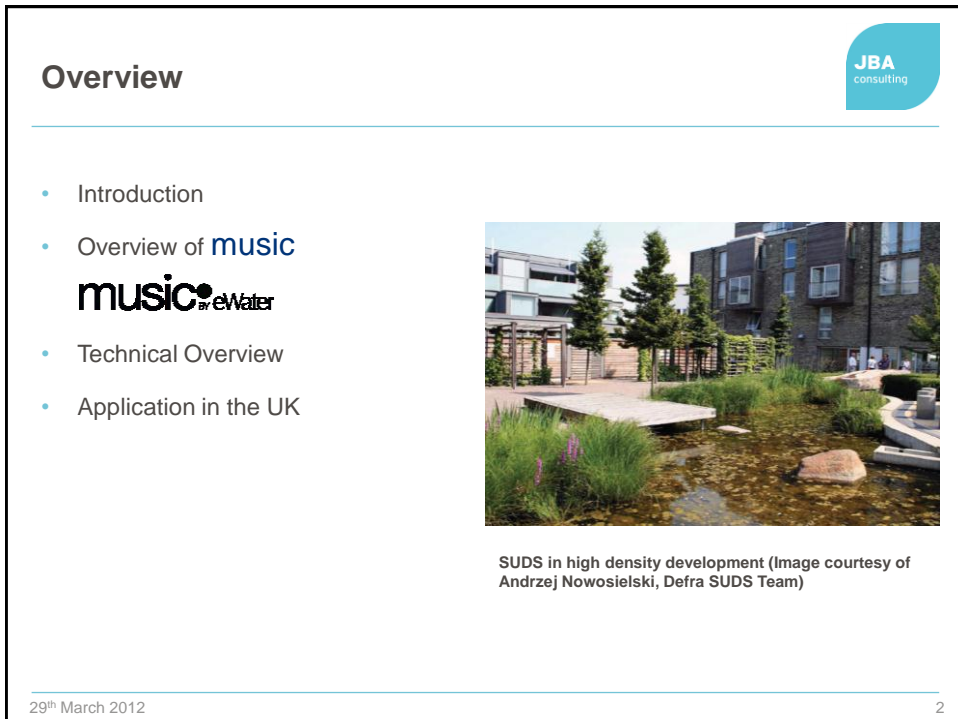


The slide features a light blue and lime green background. On the left, the JBA consulting logo is displayed in white on a blue rounded rectangle. To its right, a circular inset image shows a natural water feature with a sandy bank and green vegetation. Further right, the title 'music for Water Sensitive Urban Design' is written in blue and black, with 'Oliver Francis' below it. At the bottom left, a blue award badge reads 'Consultants of the Year 2010 Winner'.

JBA
consulting

music for Water Sensitive Urban Design
Oliver Francis

Consultants of the Year 2010
Winner




The slide has a white background with a blue JBA consulting logo in the top right corner. The title 'Overview' is in the top left. A bulleted list contains four items: Introduction, Overview of music, Technical Overview, and Application in the UK. The 'music' logo is repeated below the second bullet. To the right of the list is a photograph of a modern residential building with a landscaped area featuring a water feature, rocks, and plants. Below the photo is a caption. At the bottom left, the date '29th March 2012' is shown, and at the bottom right, the number '2' is displayed.

Overview

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- Introduction
- Overview of **music**
- Technical Overview
- Application in the UK

music for Water




SUDS in high density development (Image courtesy of Andrzej Nowosielski, Defra SUDS Team)

29th March 2012

2

Introduction: Water Sensitive Urban Design (WSUD) JBA consulting

- What is WSUD?
 - Integrated design of urban water cycle
- WSUD principles
 - Treat all streams of water in the urban cycle as a resource
 - Minimise environmental degradation
 - Improve aesthetic and recreational appeal
- How is WSUD achieved?
 - Through a land planning and engineering design approach

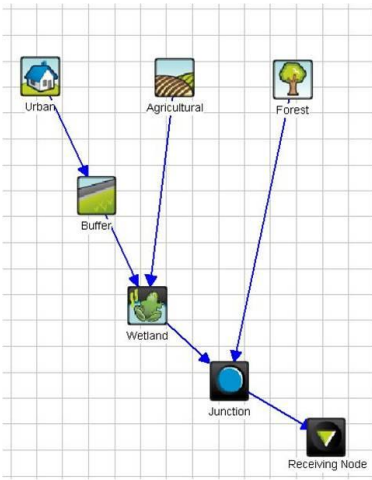


SuDS in new development Melbourne, Australia (Image courtesy of Tony Weber, BMT-WBM)

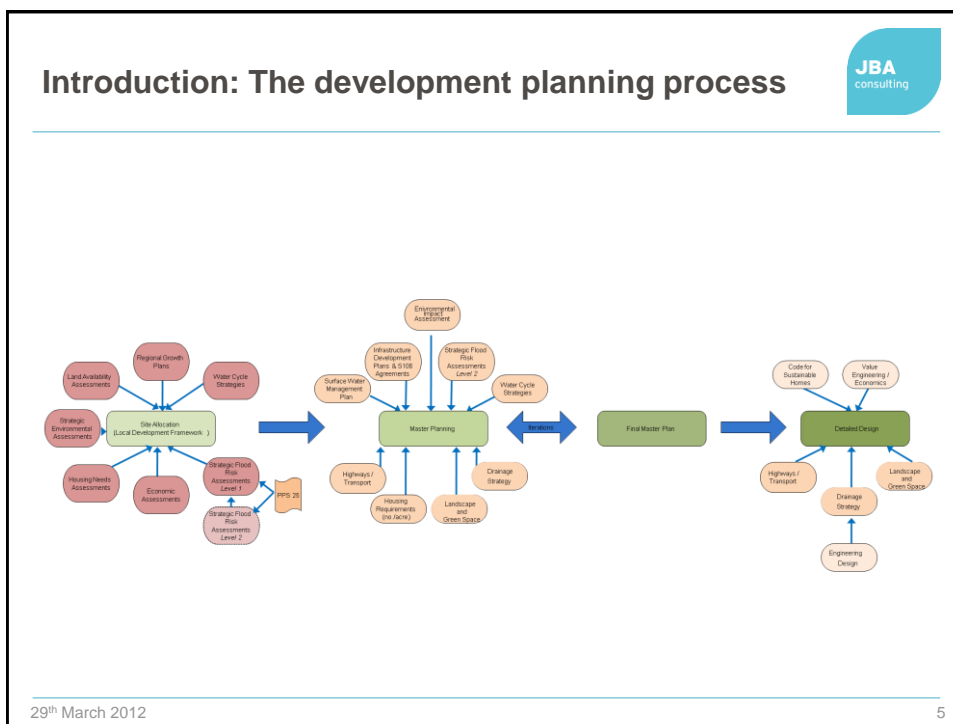
29th March 2012 3

Introduction: What is the **music** Software? JBA consulting

- Software was originally developed in Australia as a tool to inform WSUD
- Models the flow and quality of urban stormwater including the generation, transport and treatment of pollutants.
- A conceptual tool **not** intended for detailed design
- Can be used to evaluate SuDS for both attenuation of peak flows and water quality
- Enables users to assess whole life costs of a scheme and aids decision making



29th March 2012 4

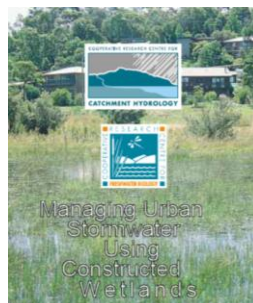


- ## Introduction: SuDS approval
- Approving Bodies (ABs) will be responsible for approving, adopting, and maintaining any SuDS (drainage) serving more than 1 property
 - ABs are expected to be Lead Local Flood Authorities (LLFAs)
 - Developments with drainage implications will not be able to begin construction until the AB approves the drainage scheme
 - Draft national standards on SuDS design are under consultation, there is provision for more rigorous local standards where desired
 - **music** can be used to set local standards and water quality targets
 - ABs may wish to satisfy themselves the schemes that they are adopting and become liable for perform as intended
 - continuous simulation using music can assess performance over long time period and whole life costing can determine likely maintenance costs
- 29th March 2012 6

Overview of **music**: Software Development

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- Development of the software began by the Australian Co-operative Research Centre (eWater) in 2002
- Initial aim was to produce software to tackle urban stormwater management issues
- Software incorporates findings from significant amounts of leading research undertaken on SuDS
- JBA Consulting have worked with eWater to enhance the software for UK application



29 March 2012

7

Overview of **music**: Users

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- Software has more than 1,200 users worldwide
- Software of choice for SuDS regulatory and adopting authorities in Australia
- Used by developers in the masterplanning process
- Used by regulators to evaluate SuDS design
- Used for both new developments and retro-fitting



29th March 2012

8

Overview of music: Setting Standards



- In Australia **music** has been used by local councils and state governments to set targets for the removal of pollutants by SuDS
- Water quality criteria in the Draft National Standards specify the number of treatments required rather than a target for reduction
- **music** offers ABs the opportunity to specify local targets and the software enables simple compliance checks

	Sources	Residual Load	% Reduction
Flow (ML/yr)	482	2.82	41.5
Total Suspended Solids (kg/yr)	607	92.9	84.7
Total Phosphorus (kg/yr)	1.54	0.374	75.8
Total Nitrogen (kg/yr)	12.7	4.68	63.2
Gross Pollutants (kg/yr)	228	0.00	100.0

Overview of music: Planning Process

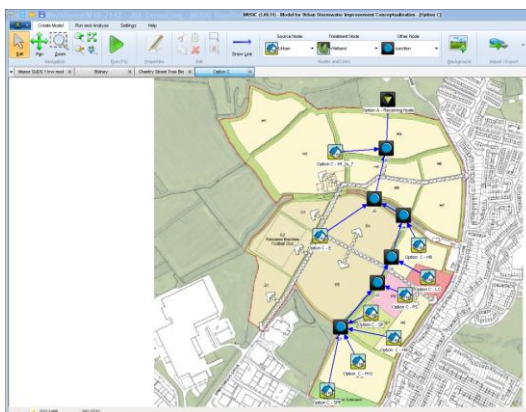


- Informing Design
 - Software can be used to assess the baseline for a potential development site or as part of a wider strategic allocation assessment
 - Interface enables rapid testing of concepts to determine scale and variety of SuDS measures to achieve targets at the masterplanning stage
 - Outputs from models can be taken forward to detailed design using other packages such as WinDes
- Assisting Approvals
 - A model of a proposed SuDS installation can be quickly produce to determine whether any applicable targets are met
 - Continuous simulation enables the use of observed data to test how a system would have performed historically
 - Whole life costing module aid decision making in regard to maintenance liabilities

Technical Overview: Interface



- Logical and simple to use interface enables a rapid production of a model
- Model is comprised of nodes (sources, treatments, and receptors) and linkages
- Model can be geo-referenced and include background images
- Comprehensive help file includes reference material
- Training course available



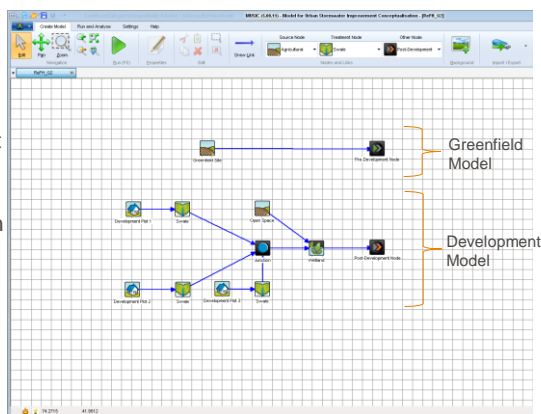
29th March 2012

11

Technical Overview: Building a Model




- Model build occurs in simple step-by-step process.
- The simplest model would consist of a source node with linkage to a receptor which might represent a greenfield site
- A meteorological template is then selected to provide input data to the model. This should be locally obtained where possible
- Model can be run for different lengths of record and different timesteps. Run times are in the order of minutes




29th March 2012


12


Technical Overview: Treatment Nodes





- The wide variety of treatment methods which can be modelled in series or parallel with **MUSIC** are:


 Buffer Strips


 Gross Pollutant Traps


 Swales



 Bio-retention Systems

 Media Filtration Systems

 Wetlands


 Infiltration Systems

 Ponds

29th March 2012 13

Technical Overview: Key Features



- Use of continuous simulation to assess system performance
- Data import function to utilise local data
- Construction of treatment trains to see the effects of multiple treatments
- Quick look up for the performance of the whole system or specific nodes
- Whole life costing
- Powerful graphing tool to plot model results

29th March 2012 14

Application in the UK:



- Strategic planning
 - Water cycle strategies
 - SFRA (SuDS measures)
 - Setting standards and targets to compliment National Standards
- Pre-development consultation
 - Setting standards and targets
- Outline design / masterplanning
 - Demonstrating effects of SuDS on runoff and water quality
 - Whole life costing
- Inputs to detailed design tools
- Evaluation of performance
 - Testing of existing schemes or designs submitted for approval

29th March 2012

15

Further Information



For further information please visit the website:

www.music4water.co.uk

Or contact us directly:

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16