

URBAN STREAM REHABILITATION – LESSONS (TO BE) LEARNED FROM URBEM PROJECT*

Čedo Maksimović (*invited*)¹

¹ Prof. Čedo Maksimović, Chairman of IAHR, European Regional Division Department of Civil and Environmental Engineering, Imperial College London, LONDON SW7 2AZ UK, (e-mail: c.maksimovic@imperial.ac.uk)

1. INTRODUCTION

One of the most important aspects in the development of the modern world is the rapid movement of people from rural places to urban centres. The environment of urban areas extends far beyond their boundaries; in the context of rivers, these are modified to meet the needs of the urban population and often act as conduits for wastewaters.

Historically, development of watercourses has been undertaken for a variety of reasons such as water supply, navigation or flood control. Throughout historic development urban watercourses have gradually been converted from natural river beds to confined narrow river corridors with the channels canalised in concrete and other man-made materials forming both the bed and banks of the river. In many cases they have been culverted and converted into covered combined sewers.

Within urban areas, management and control of a watercourse are used to prevent or reduce bank erosion, flooding and increased pollutant loads, but may also be used for the protection of the natural hydraulic conditions and urban aquatic habitats. The urban communities expect

protection from floods, and there are public health and safety issues from water quality and the proximity of running water. Resolving the conflicts over watercourse functions is particularly complex in urban areas, and urban watercourses are seen as an important element in an integrated urban water management cycle (Maksimović & Tejada-Guibert, 2001)

Many urban streams have been converted into closed conduit sewers, and now receive both storm drainage and raw or dilute sewage from the surrounding area. The pollutant loading also frequently leads to poor water quality, indeed this adverse impact of urbanisation often extends to the watercourses downstream of the urban area. In some cases the bacteriological or chemical quality of urban streams may present a severe threat to public health. The result is that many urban watercourses have virtually no aesthetic or amenity value, support a limited range of ecosystems, and do not meet the water quality objectives prescribed by the EC Water Framework Directive (WFD).

Modification of watercourses is recognised in European legislation through the Water Framework Directive, which defines a “heavily modified water body” as a “body of surface water, which as a result of physical alterations by human activity is substantially changed in character”. The WFD provides the basis for long-term,

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sustainable development, enhancement and planning of European rivers with an emphasis on natural ecosystems, and intrinsic wildlife value. The pressure on European urban centres has increased significantly over the past century, with higher population densities, together with expectations of many for an improved quality of life. Improvement of the river systems through urban areas in terms of quality, ecology, aesthetics and amenity values is vital in the movement towards an environmentally sustainable future for cities in Europe.

The URBEM project (<http://www.urbem.net/theproject.html>) investigated various aspects of new techniques and materials for bringing life back to urban streams in order to provide long term sustainable solutions and to enhance the visual and ecological values. The approach of URBEM is based on the belief that the whole river corridor and its interactions with the urban environment are an integral part of the system (Gardiner, 1992).

This paper (and the lecture that follows) presents the educational – capacity building component of the project. The educational tool that will be developed at the end of the project is an overarching framework which integrates the educational elements of the other 10 work packages and presents them in the form suitable for running various forms of training – capacity building of the defined target groups.

2. GENERAL INFORMATION

2.1. Introduction

The main objective of the Training Module (TM) is to enhance the awareness of the general public and develop the capabilities to public, professional and environmental authorities about how to plan, implement and maintain an urb

an rehabilitation scheme.

The TM is designed so that it can be tailored to suit the three selected target groups of audience with a different level of interest and understanding: top level decision maker (that includes high level ministerial officers, chief city planners and alike), professionals (water and environmental planners, developers and designers) and general public. In addition to the conventional material (books, reports etc.) the TM includes guidelines for preparation and running training programs are series of Power Point slides sorted out in accordance with project deliverables and supported by written material. It is anticipated that those involved in the presentations will have an understanding of the subject area and the technical knowledge to undertake the training programme in the first place and than to get involved in rehabilitation project hopefully on the project developed paradigm.

2.2. The concept of the training module

The TM is provided on a CD with adequate number of folders and art designed slides (about 350). It can be used directly from the CD or copied on a hard drive and used from there.

The hardware requirements are a personal computer (PC) with the operation system Windows (version 95 and above), 64 MB RAM and Microsoft's programmes Word and PowerPoint (version 97 and above).

More detailed documents about lesson subjects are provided by invoking the document on the screen.

Slides can be added into the group of slides for particular training (copy and paste from other resources) or temporarily hidden (command hide/unhide in PowerPoint Slide Sorter View, invoked by right mouse button click on the slide). The slides provided are as follows:

Individual, simple graphs and photos

Animated slides, consisting of several sequential images and

Slides with buttons for more information about specific subject.

2.3. The contents of the TM folders

The contents of the TM folders are as follows:

Guidelines for the TM

This folder consists of only this text file – URBEM Guidelines for the Training Module.

Training Slides

The folder has the main training slides:

Training Slides – Target Group A

Training Slides – Target Group B

Training Slides – Target Group C

Meta data – List of all slides sorted by the group

3. TARGET AUDIENCE

The primary use of the Training Module is to provide assistance in the training of water and environmental planners in mastering the basics of planning, implementing and maintaining an urban rehabilitation scheme. (Target Group B). The materials are selected so that they can serve both young specialists that are entering this profession and the senior specialists. As mentioned, there are also two other groups of slides which are meant to be used in briefing the professionals from the Target Group A (top level decision makers) and in running public awareness sessions for the Target Group C (general public).

The TM is specifically designed for the three above mentioned target audiences, each with different levels of interest and technical knowledge. The audience is assumed to have a general

understanding of the particular project and subject area.

3.1. Target group A

Top level decision makers - governmental officials working with environmental issues, top executives, mayors or their deputies in charge of the environmental planning and alike. This audience is in principle responsible for a broader spectrum of problems at the governmental, regional and local (municipal) level and thus does not necessarily have an insight into modern concepts and technologies of urban stream rehabilitation. Since this group is not assumed to have a deep technical knowledge on the subject, the TM is supposed to provide them with a brief, concise overview of the modern concepts of solutions, available technologies and basic criteria for technology selection depending on the local conditions. However, this group relies on the advice and support of the second target group. Technical specialists are meant to propose the options for the final considerations and possible criteria for technology selections. The typical duration of briefing sessions for this group is between half a day and one day. A short evaluation session should be held at the end of the briefing session.

3.2. Target group B

Water and environmental planners, designers and developers - this audience has a high level of technical knowledge and is interested in the technical aspects of the planning, operation and maintenance of urban stream rehabilitation. This major target group has a very important role to play in spatial planning, co-ordination of plans among various specialists, advising the key decision makers on technology choice and in co-operating with experts in tech-

nology, design, analysis and operational management. However, it should be mentioned that even this group is not supposed to make a detailed design of the systems, which still remains to be done by the other specialists in analysis, design, construction, and operational management of river rehabilitation. To provide vocational training for this group of specialist is beyond the scope of the present TM, though the basic principles presented here have to be mastered.

3.3. Target group C

General audience (general public, teachers, journalists, school children, NGOs) - this audience has very little or no technical knowledge and no experience with either planning or implementation of the urban rehabilitation schemes. They belong to the broader category of the beneficiaries, users of these solutions and should be made aware of the general concept of rehabilitation and on its implementation. This target group plays a major role in public hearings and if not properly made aware of the basics, could potentially be misled by various groups for their own goals and agendas. This group can make the system work or even fail in the extreme cases. They should be consulted in the planning process, and thus should be properly informed. The TM can be used for presentation to this target audience but can also be used for development of the other training material.

4. TRAINING MODULE MATERIAL

4.1. General outline

Training module consists of 11 teaching – training blocks - lessons (kept in separate folders), presented in Power Point presentation (Fig 1):

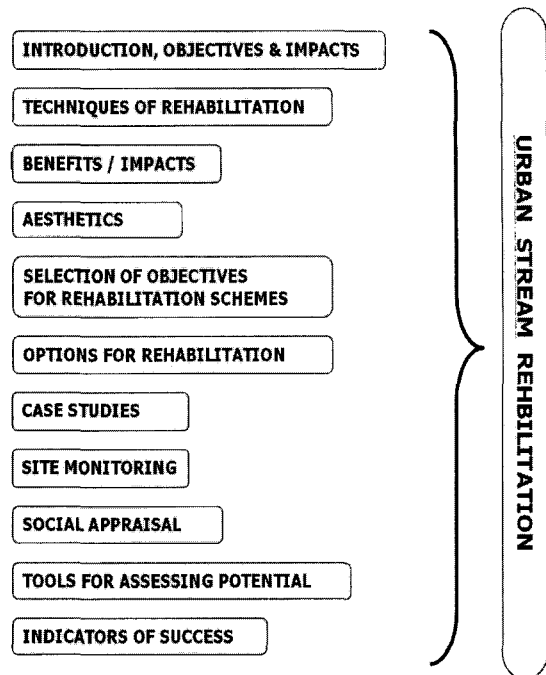


Figure 1. Structure of folders in the TM

Although each of the training blocks presents a self-contained unit it makes sense to refer to that other blocks when running the class with individual target group on a particular topic.

The principles of modern graphics design are used, and the slides are meant to be easy to understand to master their essence (see Fig. 2).

4.2. Training slides

A core group of slides is selected so that it covers the major topics and enables fast learning of the essential concepts. The training slides are divided into three separate files, one for each of the target groups A, B and C.

An example of education the tool illustration

Early civilisation – defecation in nature – stream as a recipient

Initial settlement “down by the river side” – pollution started

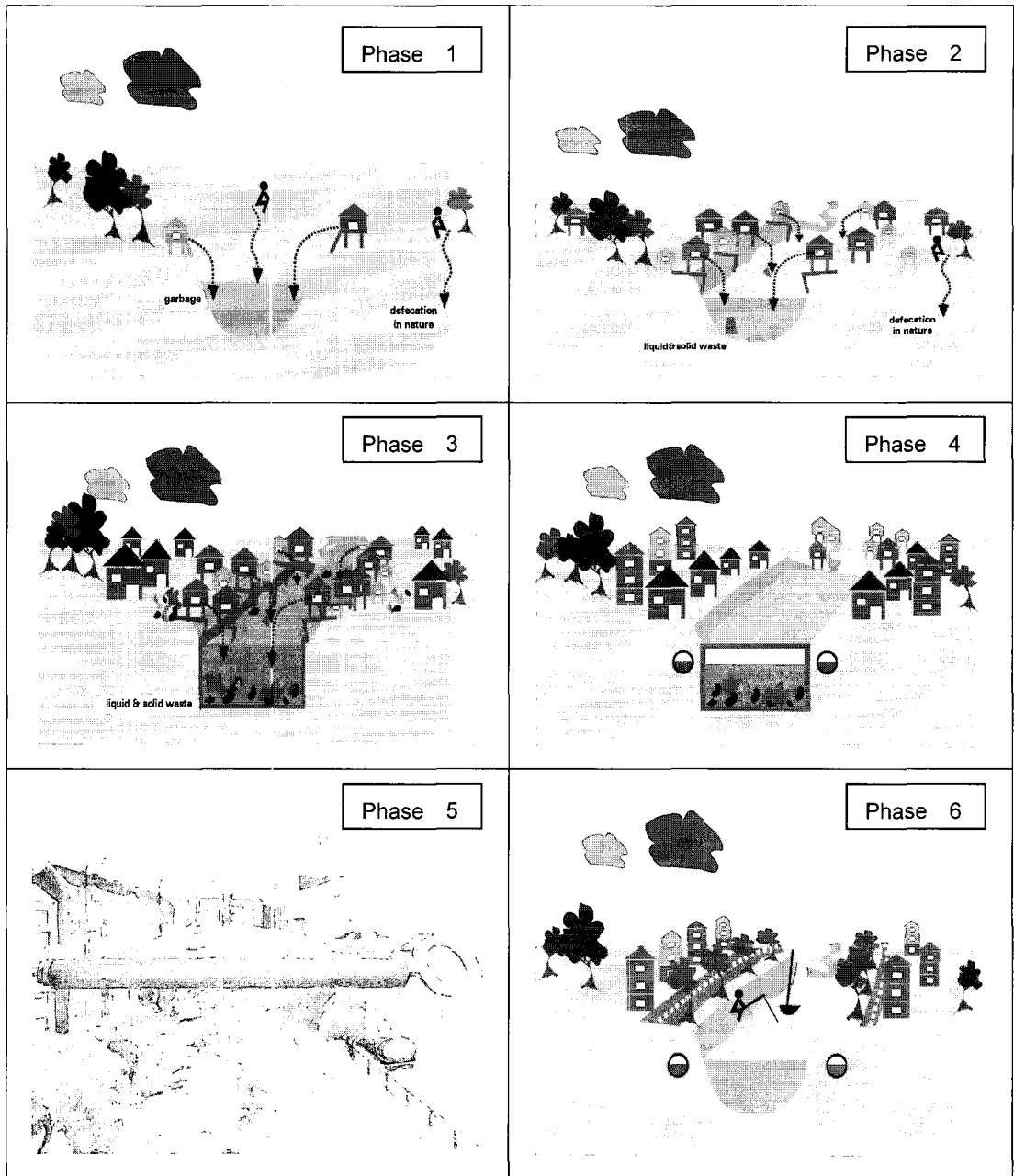


Figure 2. Six phases in urban stream development

Channelling as a trial to remedy the “carrying capacity” issue

Culverting to create “urban space” – far from site /mind

Daylighting in the end

Back to nature – urban streams “naturlised” - habitat created

4.3. Additional information material

For those interested in additional details, there is a group of text documents that can be selected from appropriate slides or contained in the separate reports covering individual topics. These texts enable users with a broader spectrum of interest to have a better access to the optional material. The add-on modules are based on an adequate level of the general technical knowledge of the audience and can be accordingly prepared. The material includes presentation of the selected case studies.

The Training Module has been developed so that further updates and upgrades can easily be made. Separate modules can be specifically designed for various regions, written in the appropriate language and adapted to the local culture. Detailed examples and case studies can also be included. Its translation into various languages would make it available to an even wider audience, and should enhance the process of creating additional local modules.

Internet-based versions of the TM could be made available to those with Internet access. This new form of distribution would greatly increase the Training Module's popularity, as it would be user-friendlier, providing interactive links between the slides / figures and the text.

The future local trainers should send their individual comments to the author of this paper and suggestions, which can then be included in upcoming versions of the TM.

5. CONCLUSION & LESSONS LEARNED

The TM is a concise document presenting the URBEM project deliverables which adequately assists lecturers in running three basic forms of knowledge transfer and awareness raising

through:

- Briefing sessions for top level decision makers
- Training programs for water and environmental planners specialists and
- Public awareness exercises for general public.

The slides and text are relatively simple to follow, and carefully designed to suit the specific target audiences. They are particularly suited for translation into other languages and for adaptations and adoptions for the global use in both developed and developing countries. It can serve as an excellent foundation for the development of future material for other projects and publications.

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URBEM project (Urban River Basin Enhancement Methods) web site <http://www.urbem.net/theproject.html>

and Environmental Engineering, Imperial College
London, LONDON SW7 2AZ UK,
(e-mail: c.maksimovic@imperial.ac.uk)

APPENDICES

Appendix 1. PP Presentation

Prof. Čedo Maksimović, Chairman of IAHR,
European Regional Division Department of Civil