Floodplain Management – The Engineer’s Role

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ABSTRACT

Engineers employed in Local government help deliver and maintain the facilities and land to reduce losses caused by flooding. To fulfil this role, they need ongoing access to the latest technical information and the counsel of their peers. However, the remoteness and spread of Floodplain engineers and planners requires careful planning to meet these needs. IPWEA (NSW) has a role to Educate, Connect, Represent and Lead public works professionals including those engaged by local government in a flood management role. This paper explores how IPWEA is establishing new paradigms to meet these professional needs. The lessons which IPWEA is learning have relevance and application to operation of the FMA.

1. INTRODUCTION

Floodplain Management Authorities including local government have responsibility for managing the floodplains to reduce future flood losses. This management draws together many disciplines including political, hydrological, engineering, environmental and land use planning. Many of the professional engineers engaged by Local Government, Utilities and Catchment Authorities have a direct and strong contribution to flood plain management. They have diverse roles; covering design, operation and maintenance of relevant facilities along with monitoring and measuring the flows and impacts of floods on the environment and community.

2. THINGS MY PROFESSORS NEVER TAUGHT ME

Our engineering education at University does not always equip engineers with the skills to deliver satisfying outcomes.

The technical skills for managing hydrological issues are often not covered in our undergraduate courses.

Engineers also need to understand the legislative and regulatory environment in which they operate and how they are expected to discharge their responsibilities.

Engineers need to be able to seek the counsel of their peers and to collaborate on finding solutions to problems. This often presents a problem as the membership of FMA attests; over 80 organisations scattered throughout NSW. Many professionals are operating in isolation without the regular contact and networking opportunities afforded by large centralised organisations.

Contrary to many popular commentators, “the science is not all in” on floodplain management. Engineers have a requirement to maintain their skills and expertise through continuing professional development.

As an example, the Australian Rainfall and Runoff Handbook is in the course of revision. Practitioners will need to undertake professional development; understand the changes; and implement appropriate policies, processes and solutions to utilise the new information and data.

Can these issues be addressed by a professional organisation? IPWEA seeks to meet these needs!
3. **THE INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA**

The IPWEA is a membership based organisation. Each State operates as a separate division but with a National body drawing representatives from each of the States.

In NSW, IPWEA has members in a number of categories:

- Professional Engineers,
- Works Officers and Supervisors,
- Road Safety Officers
- Trainees
- Students.

In its formative years IPWEA and its predecessors drew its membership predominantly from Local Government. However, an increasing number of members are employed by State Government, Utilities, private contractors and consultants.

As Public Works Engineering embraces a range of activities, the Board and Staff of IPWEA have been allocated responsibilities across a number of interest areas. These include:

- Professional Development
- Skills Shortages
- Conferences and Events
- Asset Management
- Roads & Transport
- Road Safety
- Stormwater & Floodplain Management

The “portfolio” of Stormwater and Floodplain is an emerging activity; evolving initially from the Department of Environment, Climate Change and Water (DECCW) seeking an outlet for the dissemination and development of Stormwater documents. Within these portfolios IPWEA seeks to serve its members in four main ways.

A. **EDUCATE**

Successful Public Works Engineering relies on the development and refreshment of unique skills. These outcomes are delivered by numerous activities including:

- Interstate and overseas study tours
- Scholarships for post-graduate studies
- Relevant training workshops, conferences and trade exhibitions
- A comprehensive Professional Development program
- Best practice manuals to assist in the workplace
- Production of Specialist handbook and publication
- Technical Tours to input the latest methods employed by Public Works Professionals

B. **CONNECT**

The opportunity to connect and network with other public works professionals is essential to maintain a vibrant and progressive industry. IPWEA undertakes this “connecting” in various ways:

- Maintenance of a strong regional group network. There are 12 regional groups throughout NSW who meet regularly.
- State and National Conferences
• Regional Conferences. A new initiative introduced in 2010
• Other Social Events
• Mentoring opportunities in collaboration with Engineers Australia

C. REPRESENT
The interests of Public Works Professionals are represented by both the State and National bodies at IPWEA by such methods as:
• Lobbying at all three tiers of Government
• Involvement in technical committees
• Reviewing documentation and legislation
• Preparation of submissions to contribute to future government policies

D. LEADS
As the pre-eminent organisation representing Public Works professionals, IPWEA seeks to promote the skills and expertise of its members through communication and contact with their customers, employers, contractors, etc. Some examples include:
• Engineering Field Days (CivEnEx) displaying the latest in Public Works Technology and equipment.
• Regular e-newsletters and discussion forums
• A showcase journal promoting excellence in Public Works Engineering
• Special interest panels to assist in program development and funding from experienced practitioners.

4. NEW PARADIGMS IN MEETING PROFESSIONAL NEEDS
There has been increasing concern regarding how organisations such as IPWEA can reach their members and meet their training and skills development needs in a timely and effective manner. Observation, as noted above concerning the isolation of professional engineers; and given the small size of some of their work teams, shows some reluctance to be absent from the workplace for extended periods. This can affect conference attendance and participation in professional development programs.

IPWEA is implementing several strategies to help overcome these concerns:

(A) E-Learning solutions. Professionals can undertake "learner-managed" courses either by the web or by course materials delivered electronically. The first of these courses has been developed by IPWEA on financial management. Utilising video, Powerpoint presentations and printed course notes, participants can proceed at their own pace and after successful completion of assignments submitted to IPWEA for assessment, receive recognition for completion of the course. IPWEA is seeking to have these course accredited in the future so that they will be formally recognised.

(B) Short-Duration Regional Conferences
IPWEA has introduced these “forums” in 2010. The regional conference core one-day proceedings including technical presentations; networking opportunities; and contact with suppliers. These regional forums offer significant benefits:

(i) Reduced time away from the workplace.
(ii) Reduced costs in terms of registration and travel (the registration fees are significantly subsidised by sponsorship)
(iii) Broad coverage of topics with immediate relevance
5. IMPLICATIONS FOR FLOODPLAIN MANAGEMENT AUTHORITIES

Professionals engaged in floodplain management have a continuing need to access training and resources. The training must be relevant and timely; the resources must be easy to use and understand.

We have presented a model for future training which could benefit the FMA. The issues encountered by FMA members are not dissimilar from those encountered by IPWEA members; indeed many are co-incident.

The techniques which IPWEA has utilised to engage its members could find application with the FMA. As IPWEA develops its resources in relevant disciplines it would welcome cooperation with the FMA in meeting the technical needs of its members.