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INLAND WATERWAYS AMENITY ADVISORY COUNCIL

INNOVATION ON THE UK WATERWAYS

Report (March 2000) by IWAAC Working Group

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INNOVATION GROUP MEMBERS

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EXECUTIVE SUMMARY

1 Introduction

The Group was set up early in 1999 with aim of promoting discussion about potential innovation within the waterways system as a whole. The brief for the Group was an open one. Distinguished people from a diverse range of creative roles were invited to join the discussions. The Group has met four times. This is the final report.

2 Report

The report combines a summary of discussions together with sketch briefs for future development possibilities.

3 Ideas and discussions

Discussions have been wide ranging, covering ideas from the very practical and small scale to ambitious new infrastructure projects. They include:

- Context: The need for a change in emphasis in the way the waterways are thought about and promoted;
- Waterway Lifestyle Accommodation: The exceptional potential for radical water-based approaches to waterway lifestyle development to be explored with a centre for design of national and international repute.
- Inland Port: The scope in the longer term for exploring an ambitious new canal and distribution network in central England linking the East and West coasts and all the attendant potential for an environmentally friendly new town and associated commercial and social facilities;
- Transport proposals for boat design: The need for encouraging and supporting innovative boat design including modular constructions, faster but less damaging boats, boats which will accommodate industrial processes, boat trains, pond skaters, amphibious boats and other possibilities;
- Canals in a integrated transport policy: The potential for canals to make a far higher contribution to the distribution of people and goods including possibilities for new canals and other associated developments;
- Travelling educational facilities: The Group was aware of existing proposals and discussed their potential, exploring possibilities of more extensive developments using interactive technology and driven by a multi-disciplinary approach to the environment;
- Art/Cultural Environment: The scope for more innovative commissioning and funding generating challenging and exciting outcomes. Various examples in the USA and approaches to funding organisations were discussed.

The Group strongly recommends further development, including funding, of these ideas.

4 Research and development

There is a need to consider creating a research unit supported with funding from established sources to promote innovation, research and development throughout the waterways system coupled with proposals for identifying one or more innovation zones.

5 A strategy for influencing policy

The waterways need to be pushed higher up the political agenda. While there is current interest from a number of Ministers the canal system barely features in strategic thinking about the future of the environment or transportation systems. This needs to be changed.

6 Conclusion

The language of 'daring-do' which was typical of the early days of the canal system needs to be rediscovered. A change in emphasis is required. The Group is enormously excited about the possibilities but powerless to implement anything. Resources are required to move the agenda forward and establish the validity of some of the ideas.

1 INTRODUCTION

1.1 The Group was set up by the Council in January 1999 with the first formal meeting being held in May. The membership (see page 2) was drawn from a range of distinguished people representing a diversity of creative talents including: engineering, architecture and landscape architecture, the arts, strategic planning, transportation, business development, the waterways, local and central government politics and administration. The Group was given a deliberately wide brief with the opportunity to explore topics covering all aspects of the waterways potential without worrying about their success.

1.2 The Group recognised that its discussions were likely to cover ideas and proposals which had been previously explored and/or were under discussion elsewhere. This was seen to be advantageous as it would provide opportunities to support others, reflect on why key suggestions may or may not have succeeded in the past as well as introduce new elements into the discussion about the future of the navigable system.

1.3 This report is a summary account of the discussions. The Group has crystallised its thinking on a shortlist of ideas and possibilities which the Council has endorsed for wider distribution. The Council would welcome feedback on any or all of the suggestions in the report.

1.4 The Group met on four occasions. It has had neither the authority nor the resources to research and develop the themes beyond an initial appraisal. The report should therefore be seen as a starting point for others to take forward. In this spirit the Group has formulated its ideas.

2. THE REPORT

- 2.1 The report is in two parts:
- A summary of the Group's ideas and discussions;
- A series of briefs for the development of future work (Annexes A-D)

3. THE IDEAS AND DISCUSSIONS

3.1 Context

3.1.1 The Group recognised that there are two important contexts for the waterways. First, there is the tremendous enthusiasm, commitment and interest in the canal system as a major heritage feature supporting extensive leisure and tourism activities. This is evidenced in many ways including publications produced by British Waterways and the results of repeated market research. It is a key reason for many people's interest in the system and the *raison d'être* for much of the restoration work and expansion of waterway activities which have taken place over the past 30 years. Second, there is the industrial and commercial (non-leisure) context and the major potential of the system in a national transportation strategy which reflects the need of the 21st Century. The Group is of the view that the canal system, once a key component of the industrial revolution, could again be

instrumental in contributing to a modern, environmentally friendly, commercially attractive, means of carrying people and goods from place to place.

3.1.2 In order to achieve this however there would need to be a significant change in the way the waterways are thought about and projected. Considerably greater emphasis would need to be placed on:

- research and development
- innovation and change
- strategic planning integrated with national planning policies
- innovative design and technology

These are issues for the Board of British Waterways, Government and others to reflect on. Without creating a renewed emphasis on the integral importance of the canals in the future of the country, little real benefit will accrue from innovative ideas and developments. This is of fundamental importance to any consideration of the ideas outlined below.

3.1.3 In this context the Group discussed a range of issues and ideas. These are outlined in subsequent sections.

3.2 Waterway Lifestyle Accommodation

3.2.1 There is pressure nationally for new housing. This led to a discussion on the scope for developing a 'lifestyle' housing project on the canals and the potential for new boat design for housing. Disused gravel pits which are full of water could also be used in conjunction with waterways. The use of mobile homes could be very attractive to people - particularly those who may have to relocate from time to time. This would need to be really imaginatively looked at e.g. through a research and design project on 'water villages' linked with a top UK design school. There are many attractions to this e.g. mobility, sustainability, flexibility, quality of life, cost etc. Services could be laid under water.

3.2.2 The concept of floating accommodation is strongly supported by the Group. Obviously there is a history of canal usage in this way but more radical steps could be taken in all sorts of ways including working with top designers and engineers and/or a design centre of national or international repute. There are possibilities for housing in modular units, modular units grouped together, long thin lines of modular units, two-level units and other configurations.

3.2.3 Canal boat housing is relevant for students, professional people on the move, life-style housing in urban and rural situations, mobile housing and so on. The emphasis should be on quality of life, cost and the environment. Local authorities have been known to be resistant to the idea of homes on water on any scale because they can attract unsociable and unconventional uses. A proposal was put to three authorities but they turned it down. This reinforces the need not only for something new to be done to put this back on the agenda as a part of a national strategy but also to expand the whole concept of water-related living in a major study.

3.2.4 Based on this discussion, <u>Annex A</u> sets out an outline brief for the concept of Waterway Living at alternative locations and levels.

3.4 Inland Port

3.4.1 This was the most radical and ambitious idea in the discussions. It would involve:

- building major new canals between the East and West coasts of England capable of taking large ships;
- creating a full scale port in central England in close proximity to where the existing road, rail and canal networks meet;
- developing a comprehensive range of buildings equivalent to a small town and including housing, workplaces, offices, retail and leisure as well as the new transport facilities;

3.4.2 The anticipated outcomes of such a proposal would be:

- a major new environmentally-friendly town with outstanding communications and quality of life;
- a radical restructuring of the transport and distribution networks within the UK;
- major improvements to roads as a result of the impact of the new distribution system;
- a shift in emphasis of communications and density of development from the South East to Central England;
- a cheaper and faster route for ships trading between Atlantic seaboard countries and Scandinavia, Northern Europe, Russia and the Baltic states saving costs, speeding journeys, avoiding congestion in the English Channel and making Central England one of the world's foremost trading areas. The idea might also be linked with designs for new kinds of boats (semi-submersibles) which would cross the North Sea or for boats which can be broken down into constituent parts after crossing the Atlantic (see following section).

3.4.3 Members thought that there would be real potential in developing this idea as a long term project. It is obviously extremely ambitious and would require considerable thought and investment. Nevertheless it was agreed that the concept merited being formulated in more detail and ways explored in which the idea might be taken forward. It has, for example, a pan-European dimension which would be helpful in planning ands funding terms. As such a project would, of necessity, be on a massive scale, it would also be a vehicle for highlighting a whole range of other possibilities in relation to the canal system.

3.4.4 The suggested location of an Inland Port is roughly in central England where the motorway, rail and canals are all adjacent. As the inland port would then be the distribution point using rail, the canals and motorways it could be a joint venture with Railtrack, BW, Associated British Ports etc.

3.4.5 Naturally this proposal raises many substantial questions with major political, economic and social consequences but the Group strongly recommends that an initial appraisal be undertaken.

3.5 Transport Proposals for Boat Design

3.5.1 The Group was aware of new thinking taking place in boat design (allied with the introduction of sophisticated satellite guidance and identification systems) and considered that these provided the basis for radical new thinking in the design of water-based transport. In this context it explored a range of topics from specific design issues to the way in which the relatively slow speed of canal boats could be an asset rather than a disadvantage. This section records some of the discussion which took place.

- **Boat design**: There is a need to develop boats which may be able to travel faster, displace less water (therefore causing less of a wake), be modular in their design so that they can be hooked together in different ways for different types of journey e.g. doubled/tripled up, in trains, as semi-submersibles in the sea and so on. On the canal system itself there is an opportunity to utilise boats powered with energy storage devices e.g. using flywheels which will produce efficient, clean water based craft. With regard to flywheel technology there is an opportunity for a joint funding application involving the private sector, BW, the Council, a university and others to research the possibilities. There are strong possibilities for research funding in all aspects of transport/boat design on the canal system.
- The industrial process boat. An idea was put forward that boats could be used to complete industrial processes and/or be used for warehousing while goods are in transit. For example, concrete products require 7-10 days for 'curing' before despatch from the manufacturer. They are made from sand, water and cement. A fleet of concrete-producing barges could make, cure and distribute reinforced concrete products. This can not be done on other forms of transport because the vibrations would cause the products to crumble. There may be other 'beneficial' cargoes. The final stages of processes such as brewing could also take place on a slow moving boat.
- **Boat trains**: The concept of investing in a regular shuttle service between major cities was considered. A lot of goods have a guaranteed delivery time of say 5 days. A shuttle service involving barges leaving one place for another e.g. London to Birmingham every two hours would result in a significant shift of goods from the roads to the canals and a much more environmentally friendly form of transport. It was reported that some work had been done in this area. There had been a proposal for developing canal transport which involved bolting two or three boats together e.g. to cross the North sea and separated them to travel through the canals in the UK. Is there any point in developing articulated boats? What are the possibilities for greater use of transferable containers?
- There is potential for boats to be developed using flywheels in their keels for stabilisation. This is a slightly broader area of discussion but is of potential interest.
- Pond skater boats are worth investigating as are other forms of amphibious boats.
- How much exploratory work has been done on zero emission boats? Is there scope for inventive new forms of traffic on or beside the canals?
- Is there scope for a travelling market based on canal boats which continually travel up and down the system? Various examples were given e.g. the railway in Sierra Leone where a slow moving train which traversed the whole country became a travelling market, always full of people.
- Planning authorities in the Yorkshire/Humberside region where the canals are generally much wider may be interested in some developmental/research work

on water-based transport systems related to new ideas about settlement planning.

3.6 Canals in an Integrated Transport Policy

3.6.1 As a general point there was strong support for the development of a national transport strategy for the waterways system as a whole which was integrated with other forms of transport. The Group felt the canals had an important role to play but their contribution depended on clear strategic thinking, on pressure to get the planning system to allocate land for exchange wharves to accommodate commercial use of the waterways and on increased grant funding opportunities.

3.6.2 There was a lot of discussion around the transport theme. The New Economics Foundation is looking at how to quantify 'quality of life' criteria in assessing projects rather than simply their contribution to the GDP. This could benefit the way people perceived and use the canals. One suggestion centred on the potential scope of employing boat owners/people on a national basis for transporting goods on a franchised basis. People who are interested in living on the canals, could thereby enhance their income and maintain their quality of life.

3.6.3 This is particularly true at a time when other forms of transport are facing serious problems (congestion on the roads etc.) whereas the canals offer free corridors through urban areas. There must be scope to explore innovative new forms of transport using the corridors. Suggestions included amphibious vehicles (that avoided the use of locks), people-movers on the canal towpath (an example of a proposal running from Islington to Richmond was cited), boats which could run between centres carrying containers which could be lifted out and transferred to another vehicle, overhead links etc.

3.6.4 New canals/water areas need to be on the agenda. There is scope for forward thinking on the scale of the 60-year old proposal for a 310 foot contour canal connecting London, Birmingham, Manchester and Newcastle. In Holland, the most densely populated country in the world, new digging is constantly going on. Water can add value to a development. Along the Danube there are rectilinear lakes with housing all along their perimeter. Work is going on in discussion between the Treasury and BW about future partnership arrangements for developing BW assets/property. New mechanisms should be explored to realise the full potential of strategic initiatives such as buying land and former gravel pits, generating new water areas, building new canals etc.

3.6.5 These various strands of thinking on the transport front are further developed in the two briefs attached as <u>Annexes B and C</u>.

3.7 Travelling Educational Facilities

3.7.1 The Group was aware that suggestions for floating classrooms have been introduced but considers there is scope for something more extensive. Boats could take people as part of an integrated approach to touring/education e.g. whereby children were introduced to all sorts of activities. Football matches etc. might be arranged when two boats 'cross'. The Fens Tourism Strategy by British Waterways promoted the use of the waterways as part of an integrated network of rail/cycle/walking and boating transport options linked to education and leisure learning (including a floating library), focusing on heritage and nature conservation

features in the area and active sporting activities. There are possibilities elsewhere for such an approach.

3.7.2 The Open University is the most experienced provider of flexible learning. It might be worth contacting them given that they are extremely successful at what they do. It might also be worth contacting one or two local education authorities. As an example Sandwell and Coventry could provide an excellent basis for a joint venture linking two places in the same region with a collaborative, floating, *interactive*, educational facility. This should not be a conventional 'room on the water' but linking all aspects of the environment, design, regeneration, geography, natural sciences, art, architecture, economics and so on. It would tie in with facilities located along the edges of canals as well as buildings and schools along the canal corridor. The Group believed there was a lot of support for this concept.

3.7.3 Thinking along parallel lines has been going on in BW and in the Council. The feeling of the Group was that there is significant scope for this to be something really outstanding. There is a danger that such a scheme could be limited if not opened out to new technology, the role of the waterways in the city and be genuinely inter-disciplinary and interactive. The scheme could be developed on a modular basis both educationally and physically in relation to a number of barges which could be joined together at different times in different ways. Thought would need to be given to the costs, capital, revenue etc. as well as to the management and organisation of such a venture and approaches made to potential participants. Once some initial ground work has been undertaken and matching money identified, an application could be made for lottery funding.

3.8 Art/Cultural Environment

3.8.1 Public art has been widely promoted in recent years. Public art schemes have been developed for a multitude of sites including canals and canalsides. While the projects are considerable they also inevitably reflect the aspirations of funders and commissioners which, if limited, can unnecessarily constrain the role, quality and extent of the artists involved. Art and the cultural environment should be challenging, questioning and inspirational. There is significant scope for more innovative commissioning and exciting outcomes.

3.8.2 The use of art and cultural projects reflecting digital/new technology in relation to canals and canal users is a potentially key area of exploration for the future. The opportunities for a multi-disciplinary approach to art and the environment based on and around the canals are extensive. So much could be done to create new cultural projects.

3.8.3 Various examples were discussed. Some of these involved artists and the role of ecological art in contaminated sites. There is potential for an art/environment/ecology project. Artists in the USA have worked directly with the ecological processes. Mel Chin's 'Revival Field' near Minneapolis has worked with hyperaccumulators to extract cadmium and zinc from contaminated soil, and Viet Ngo in the USA has adopted a similar approach to remove pollutants from water. Viet Ngo's now world famous work on four miles of canal at Devil's Lake in North Dakota provides a useful model - particularly as it generates revenue through a visitor centre and the harvesting of duckweed as an organic fertiliser and animal feed. A strategic approach to dealing with contaminated land through a joint art, engineering and science approach could, at a national level, attract funding from

NESTA . At local levels partnerships could be developed with Health Action Zones and New Deal urban regeneration initiatives.

3.8.4 These educational and art/cultural ideas are developed further in <u>Annex</u> <u>D.</u>

4. RESEARCH AND DEVELOPMENT

4.1 There are fundamental questions to be explored about the way in which a major organisation such as British Waterways should research, develop and promote new ideas. Should such organisations have a single research unit or is the need for improved co-ordination and integration among existing market research, technical research and commercial activities? If a single unit is preferred, how should it be funded and how can management be sure that research programmes will be effective and acted on? These are difficult questions to resolve and the Group did recognise the current commitment to quality within the canal system. Nevertheless at a time when Government is concerned with modernisation and there are urgent national needs in relation to such fundamental issues as housing, transport, education, wealth generation and the creation of new jobs as well as pressing environmental challenges and a concern that industry in the UK does not undertake sufficient research, it is difficult not to conclude that a research unit would be valuable.

4.2 There are significant sources of funding for research and many of the topics which would be uppermost for BW fall within their guidelines. For example the DETR has funded research programmes. Some of the topics within this would be suitable sources of potential support for research and development. It was understood that BW has not sought money from these programmes in the past. Further ideas could be developed in partnership with an academic institution, the private sector and BW.

4.3 The Group discussed the value of BW putting together a paper before someone like Lord Sainsbury who is co-ordinating a senior group of Ministers in relation to technological developments. Transport and Built Environment have been brought together for Government research funding. Waterway-related research and development will need to fit their requirements.

4.4 IT/The Internet could be used further by BW to raise the profile of the waterways. There are the obvious things which can be done like illustrating and describing the assets, qualities, history of the waterways etc but there are all sorts of other interesting and innovative ideas which could be developed. Part of the site could simply be the record of a video camera attached to the front of a boat all day and all night constantly showing the view as it moves around.

4.5 The idea of a specific innovation zone remains for further development. Preferably this should link urban and rural areas so that all types of development are covered. It should involve promoting positive forward-looking ideas, policies, projects, high-quality and innovative design, planning frameworks etc, taking into account relevant Government policies and objectives. A zone could be a trigger for all sorts of things to happen.

5. A STRATEGY FOR INFLUENCING POLICY

5.1 There is an need to push the waterways agenda higher up the political agenda. At the moment although the Secretary of State for the Environment is personally interested in waterways there is a dearth of thinking at senior level (as the forthcoming daughter White Paper may well reveal!). This must change if the waterways are to become an integral part of a national transportation strategy. Strategies need to be developed at local government levels as well at a national and regional level. It is essential that people who are currently engaged in drafting strategies, for example the Regional Development Agencies, are informed about the potential for innovation on the waterways.

5.2 The Group believes that there is far greater potential yet in exploring and developing ideas about the future of the canal system The discussions summarised here have spanned only four meetings. Far more could be done within an organised and funded process, for example through videos and other visual presentations, to stimulate interest in the breadth of the discussions and the exciting and innovative possibilities of the waterway system. This could be used to influence thinking and put the waterways much higher on the political agenda. It would not be a video of the waterways themselves but of the ideas the Group, and others, have been discussing.

6. CONCLUSION

6.1 When the canals were first built there was a real sense of something innovative and exciting being done.

'With heartfelt joy a work to see, cut out for grand utility.Blest Navigation.'

Thus the poet Freeth in his 1769 'Ode to Navigation' (celebrating the opening of the canals in Birmingham) which is an unabashed cry of excitement. This is not surprising given the nature of the enterprise:

'..to enter, and to bore, dig, cut, trench, sough, remove and lay Earth, Stone, Gravel or Sand...Trenches, Passages, and Gutters...'

6.2 The language of both texts is of daring-do -- exciting and innovating. Two hundred years later it might be difficult to find excitement and innovation in a context which could be described as being 'too nice/too heritage'. Perhaps the actions which will encourage innovation are more invasive (enter, bore, dig, cut, etc.) than those normally associated with stewardship - maintain, manage, restore. A change in emphasis is fundamental to the future of the waterways system. There is a huge opportunity for BW to "reinvent itself" at the heart of a positive network.

6.3 While everyone supported the need for a high quality approach to conservation and heritage issues, this should not be the only or even the main determinant of thinking about issues which affect today's environment and the opportunity for BW to play a leading role in new thinking about transport, leisure,

housing and other topics of major importance to today's and tomorrow's society. Innovation can help to mitigate worst excesses and provide new opportunities unfettered by conservative standards and processes. Therein lies its value.

6.4 The Group is excited about the possibilities for innovation and change within the canal system. It strongly believes that greater emphasis needs to be placed on research and development in partnership with business, academic institutions and other bodies. Ideas such as those in this report should be the subject of future investigations by others with adequate resources. Individual members of the Group would welcome the opportunity to play a role in that work.

INTRODUCTION

The following paper explores a different concept for living on and by waterways. In defining the opportunity, a number of factors have been considered which help to frame the concept:

- □ To explore opportunities to maximise the waterspace of inland waterways and extend the range of uses on and users of that space.
- □ To spatially integrate particularly living and leisure activities so that they are mutually supportive
- □ To explore the use and development of un-powered floating accommodation (static or moveable)
- □ To explore contemporary/ innovative design solutions in the waterway setting that can establish a new urban and rural character
- □ To explore technological innovation as part of the concept
- □ To explore modular flexible systems for use with a variety of accommodation types for different phases of development

The concept is capable of being defined as a spatial zone as well as have generic application across the waterway network.

CONCEPT: 'WATERVILLE'

A new water village community for 2,000 people offering a range of services and facilities that will support a wider rural community. (see diagram 1 for rural location but the concept could transfer to the sub-urban neighbourhood)

The community could be located at the junction of 2 waterways, maximising the extent of navigation available to act as transport arteries. Particular features include:

- D' Located to use rural 'brownfield' sites e.g. extractive industries
- Development of specific sectors to cover waterside residential, leisure and retail
- D Movement of people across the village by water
- □ A structure and form to accommodate long term residential, short-term residential and holiday lets.
- □ Addressing the needs of young adults (student) market for residential accommodation
- □ Water leisure festival spaces to attract rural tourism and recreation
- Re-use of existing water spaces and creation of new purpose made water bodies and lagoons
- □ Landscape setting of quality and unique marketability

An important aspect of the concept requires that design, technological and environmental innovation permeates all aspects of the initiative, from the overall planning and design of the village to the systems required for its functioning, servicing and management. A management trust or company would oversee the implementation and management of the concept long term.

INNOVATION CREDENTIALS

Very few ideas are truly unique. This initiative embodies some traditional concepts with contemporary thinking in a special water focused environment.

- Previous studies have tended to be sector based, ie looking at the leisure or residential market rather than deal with waterway settlements in an holistic/integrated way. (although there is historical precedence for doing do eg inland ports)
- □ Such a concept would test the planning policy framework, particularly at Development Control level and require planning policy innovation.
- □ This is an opportunity to apply **all** the concepts of sustainability, in a waterbased settlement, using the water resource as imaginatively and fully as possibly
- □ Opportunity to incorporate private and public sector R&D and embody monitoring exercises to test the validity of the concept.
- □ Could apply the concept nation-wide, and within Europe.

JUSTIFICATON

- □ The concept fits with the Government's announcement on need for substantially more houses for the future, split between urban and rural environments.
- □ The concept matches Government objectives for sustainable development, transport and healthy living
- It fits with the future role of Waterways as launched by Government in 'Unlocking Potential', particularly in urban and rural regeneration and the increased flexibility for commercial enterprise.
- □ It reflects market demand for certain types of accommodation e.g. student, rental, lifestyle, short-break holiday, rental tenure.
- □ It maximises the use and management of natural resources and the underuse of urban and rural waterspace, docks and inland basins
- □ Regional Development Agencies all have/will have innovation strategies and this concept fits neatly with their thinking. It could be eligible for funding.

HOW TO TAKE FORWARD

With little opportunity to validate the concept a period of research will be necessary to:

- □ Define the scope for development/capacity to fulfil the concept. E.g. Should this be a 'high-level' marketing initiative or a business venture?
- Carry out a targeted exercise to identify land in government/public ownership next to the waterways
- □ Identify potential partners
 - □ Endorsement by Government R&D group led by Lord Sainsbury
 - D Possible developers/manufacturers
 - □ Technology colleges/universities
 - Local Authorities
- Explore an option to let a number of design and innovation competitions (directed by a Steering Group of British Waterways, National Association of Boat Owners, Ideal Home exhibition, IWA and others) for 'lifestyle designs'. This would identify the opportunity for innovation and promote the concept e.g.
 - New lifestyle boat
 - □ Low energy boat
 - □ The utility boat
 - □ The residential boat
- □ Take a single generic aspect e.g. floating accommodation and explore the opportunities for contemporary design and innovation (not necessarily based on a boat)
- □ Identify potential Model Sites to illustrate the concept
 - □ Choose a range of locations and types
- Identify Potential Funding sources for feasibility and specific technological research e.g. Special Design Project Funding- Design Council/ Department of Trade and Industry

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INLAND WATERWAYS AMENITY ADVISORY COMMITTEE - INNOVATION GROUP

Draft Brief: Strategic Transport/ Inland Port

Context

This note responds to discussion in the Innovations Group (IG). It is not intended to cover the whole range of potential for transport use of the waterways system: this is dealt with very adequately in a number of BWB publications¹. Rather, it focuses on the potential for new and unconventional approaches to:

a) extending the rationale for waterways in strategic transport and land-use planning;

b) possible projects and implementation/funding mechanisms.

Rationale

The Government has placed great emphasis on a new set of strategic principles for urban and regional regeneration. These include:

- sustainable development
- urban renaissance
- reducing social exclusion
- strategic partnerships.

A major difficulty in applying these principles is that methods of appraisal of specific proposals still focus heavily on narrowly-defined, short-term and quantifiable *outputs* such as property values and transport user time-savings. More holistic concerns and longer-term *outcomes* are marginalised.

Development of (and around) waterways has great potential to contribute significantly to aims such as:

- making older urban areas more attractive places to live, work and invest 'urban renaissance'
- maximising the use of brownfield land for new development
- reducing the output of greenhouse gases and local atmospheric pollutants by the freight transport sector.

However, this will require well-coordinated action across a range of activities, purposefully pursued for many years to deliver worthwhile results. The social and economic processes involved are subtle, but of enormous power: they are the processes which have driven the evolution of the urban form and pattern of development that we have inherited from previous generations.

Changing social make-up, accessibility, environment and services drive choices of location by people and businesses within the *existing* built stock ('churn') in either a 'vicious circle' of decline or a 'virtuous circle' of regeneration. This turnover is an order of magnitude greater than the amount of *new* development². Figure 1 illustrates some of the processes involved, and how these can produce contrasting results, depending on whether action in related spheres is well-coordinated.

¹ notably 'Encouraging Debate on the Future Role of Inland Waterways in Intgrated Transport and Land-Use Planning', BWB, June 1999 and the recent range of regional strategies (undated)

 $^{^{2}}$ for example, 90% of housing moves are made entirely within existing stock, and this is critical in establishing the location and nature of demand for new construction





The potential for development around waterways to activate a virtuous cycle of change is clear: canals penetrate the hearts of our cities and often pass through areas of derlict or under-used land and buildings. Yet the magic of water can add substantially to the attractiveness of imaginative schemes that exploit this quality.

A different approach to evaluating such multi-dimensional schemes is outlined in Figure 2 (taken from my submission to the Standing Advisory Committee on Trunk Road Assessment)

Potential projects

Within a broader scheme of evaluation, such as that outlined above there is potential for

- innovative approaches to funding the use of waterways for transport, integrated with their urban regeneration role.
- new telecommunications technologies can be combined synergistically with waterway characteristics

For example:

1. Using Planning Obligations

Waterways are well-suited to bulk carriage for forestry, mining and quarrying products and for waste disposal. Often the barrier to exploitation is the high cost of establishing (or reestablishing) a link compared with the low threshold cost of road transport. An approach which could be used is to link planning permission for the operation through a Planning Obligation agreement under s106 of the Planning Act to such provision. Benefits to the operator could include increasing the scale of the land bank or the time-scale of the operation, as well as any grant aid³.

² a proposal on these lines is included in the draft Regional Planning Guidance for Yorkshire & Humberside, currently undergoing consultation

2. Using satellite tracking as part of an integrated logistics operation

Technologies exist for satellite tracking of consignments by rail and sea. Because location and ETA can be continuously monitored and up-dated⁴, relatively lengthy transit times need not be a disadvantage for time-critical delivery: rather, it can be regarded as inventory in a (free) mobile warehouse. Market research could identify products, materials and components which could be the subject of demonstration projects.

3. Intermodal transfer nodes and 'Inland Ports'

Relatively few loads for which waterways might be suitable are likely to offer the opportunity for the whole journey from source to user by water. The size of the potential market depends critically on slick inter-modal transfer, with minimum handling cost - road/water, rail/water, inland waterway/shipping. The Inland Port concept has been developed with some success for railways, combined with containerisation, swap-bodies, 'piggy back' and small-wheel waggons. The increasing cost and unreliability of road freight as pricing measures and increasing congestion bite should give added impetus to these developments. There is a need to look afresh at how parallel technologies could be developed for waterways: this could be put forward as a research proposal under the UK Foresight or EC Framework programmes.

4. New canal barge technologies

Allied to the above, there may be potential to extend the range of narrow gauge barges to operate in estuarial waters (eg Ian Wallace's 'Pond Skater' proposal, a variable geometry catamaran, which can operate in broad or narrow gauge configurations' – see attached). This is close to starting bulk waste transfer operations on the River Lea/Thames, and might also be relevant to containerised loads and places where a conventional narrow boat would not be able to complete the link to deep-sea transport.

Conclusions

- Most of the above ideas are likely to require some form of public funding assistance in the development and feasibility study phases. Given the need for complementary action in other spheres, and the long-term and uncertain (though potentially very large) benefits, an innovative aproach to project evaluation will be necessary, as described in the first part of this note.
- Venture capital may also be necessary, on rather different terms than current forms of Government grant (which tend to be so hedged around as to deter any except the most well-established businesses).
- The risks and difficulties of commercial development and exploitation are more often to do with applied technology than basic science. This needs to be recognised more explicitly in the criteria of Foresight-related programmes (eg Vehicle LINK Programme).

Alan Wenban-Smith 13 August 1999

⁴ eg by a 'bar code' on the top of the container or barge

Figure 2: A broader approach to project appraisal



Transport impacts, benefits and disbenefits - chains of reasoning

* 'Processes' and 'Impacts' are dynamic effects over time, whilst 'Benefits' are comparisons at a specific future point in time between outcomes with alternative courses of action, or without action ('baseline')

ondskater Platform Barge



Traditional dumb barge design has changed little since this painting by Constable the only concessions being to steel construction and self-propulsion

Pondskater is a revolutionary new design

- Variable Geometry Catamaran
- Predominantly plastic-Polyethelene construction
- 90 % weight reduction compared to conventional steel craft
- * Low power to weight ratio
- ✤ Lower fuel usage
- Low maintenance
- ✤ Flexible loading RORO-Roll On

Roll Off or ISO - high cube containers





Front



BRIEF FROM JOHN PARRY

POTENTIAL TOPICS FOR RESEARCH AND DEVELOPMENT INITIATIVES IN CANAL TRANSPORT

Introduction

Transport by canal in contemporary British circumstances is disadvantaged by several factors. There is a rationale for creating an R & D programme aimed at mitigating these factors, which are:-

- 1. Speed restrictions to 4 mph on most routes due to wash generation
- 2. Delays and capacity constraint during transit through locks
- 3. Air pollution from internal combustion engines in confined spaces, including tunnels
- 4. High energy consumption due to excessive vessel displacement and inefficiencies in prime movers used, and
- 5. Difficulties integrating canal transport with the other modes which provide the beginning and end to journeys, to places which are not near the canal system.

Opportunities

Transport over much of Britain is in varying degrees of crisis due to the growth in road traffic. There is general reluctance to allow more roads to be built in either town or countryside.

Attention is turning to 'non road corridors' to be used to reduce pressure on existing road routes. Canals exist in many areas where there is considerable difficulty getting people and freight through by road at busy times.

The public like to see boat traffic but rarely consider the waterways as a transport corridor due to the time it takes to travel even short distances.

1. 8mph instead of 4mph?

Many urban road journeys are now averaging below 10mph due to road congestion. To increase the speed of a water craft without increasing the wash may be achievable by technical innovation. While innovation is normally motivated by private suppliers in the market concerned, in the case of the waterways of Britain the assumption may be that 'nothing ever changes' on the question of vessel speed.

Some preliminary work in this area commissioned by British Waterways may be necessary to spur private sector interest. It could, for instance, concentrate on hull profiles and configuration, hydrofoil technology and means of reducing vessel displacement.

2. Any way round the locks?

The leisure industry has developed a variety of ways of repeatedly and rapidly changing the height level of 'water borne craft' (log flumes and white water rides) for the entertainment of the public. These and other methods might be looked at to speed up movements of certain vessels on some canals or more particularly if new canals are to be built in undulating topography. Alternatively new forms of amphibious vehicles/vessels might be encouraged by provision of slipways and roadways between levels leaving locks to be used only by larger vessels. New types of amphibious craft will need to be developed to exploit this opportunity. British Waterways might take on the role of defining specifications for potentially acceptable varieties of amphibious craft.

3. Innovations in nil-emission and hybrid propulsion technologies?

Battery electric powered vessels are fairly common place in water transport, however, as with road vehicles, there are performance and environmental limitations and disadvantages. Alternative means of vessel propulsion should be investigated including the use of flywheel energy storage and various forms of gas power.

One technology which seems particularly suitable for boat propulsion is the **fuel cell** which converts hydrogen into electricity. Boats propelled by fuel cells/flywheel drive would be able to combine long range with efficient nil emission propulsion using the stored energy in the flywheel for the energy surges in acceleration and stopping. Work will be needed to target the best combination of performance features to operate on present and future waterways.

4. More energy-efficient vessels?

The self weight of vessels more than the payloads accounts for the major part of energy use in waterway movement, particularly for leisure and other public transport. Use of lighter weight materials in vessel construction should be researched to reduce displacement. Hybridisation of propulsion systems as now being introduced in road vehicles will provide opportunities for energy conservation. A rationale for encouraging this type of development needs to be written.

5. Opportunities for integrating with other modes?

To contribute more to Britain's transport needs, technical innovations are needed to make use of waterways more user-friendly and convenient, especially where water only comprises a part of the potential journey, by people and cargo. Areas where technical innovations could contribute include convenient passenger interchange points and freight handling using suitable modular unit sizes. More facilities for 'piggybacking', carrying suitable wheeled vehicles on boats with easy transhipment to road, could increase the attractiveness of making journeys by waterway.

Any or all of the above five topics may be investigated further prior to preparation of project documents for submission for R & D funding. Not only should the subject area be subjected to fairly detailed analysis from a technical standpoint, but the availability of qualified industrial and academic resources to undertake the technical development should be identified, together with a clear route to commercial exploitation.

| P M Parry. 29 July 1999.

INLAND WATERWAYS AMENITY ADVISORY COUNCIL

Innovations Group

DRAFT BRIEF

Travelling Educational Facility

David Patten - July 1999

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RUNNING ORDER

- 1. Main Proposition
- 2. Task and Instruction
- 3. Starting Points (Innovation Group Meeting 10/06/99)
- 4. Positioning the IWAAC Travelling Educational Facility (Education Context)
- 5. Briefing Statement One
- 6. Culture Shifts
- 7. Briefing Statement Two
- 8. The Corridor of Innovation Wolverhampton to Coventry
- 9. Study Area Proposition
- 10. The Corridor or Route
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- 14. Ufl Proposition
- 15. Metier and NetGAIN
- 16. Metier Proposition
- 17. Jubilee Arts and Public Remarks
- 18. Jubilee Arts Proposition
- 19. Resource Needs
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DRAFT BRIEF

IWAAC Travelling Educational Facility

1. Main Proposition

The IWAAC Travelling Educational Facility is a unique opportunity to deliver the full range of Government initiatives in lifelong learning and sustainable regeneration along the inland waterways. By bridging national policies to regional/local requirements, the project's mobility ensures that the differing needs of different communities are met by providing access to a single, flexible resource. Through this single resource, fragmented, excluded and under-resourced communities are connected to creative and cultural opportunities which benefit local economies, employment and the engendering of a sense of place.

2. Task and Instruction

The draft brief should be concise and non-prescriptive, highlighting what is being put forward, how it is innovative, what validation has been done, and initial thoughts on how the proposition can be taken forward.

3. Starting Points (Innovation Group Meeting 10/06/99)

- collaborative, floating, interactive, educational facility linking all aspects of the environment, design, regeneration, geography, natural sciences, art, architecture, economics – genuinely inter-disciplinary;
- example Sandwell and Coventry;
- tie-in to facilities located along the edges of canals as well as buildings and schools along the canal corridor;
- new technology interactive;
- modular development of physical form joined together at different times in different ways year one, web site;
- costs, capital and revenue, management and organisation.

4. Positioning the IWAAC Travelling Educational Facility (Education Context)

In May 1999 the Government published the report 'All Our Futures: Creativity, Culture and Education' (the Robinson Report) prepared by the National Advisory Committee of Creative and Cultural Education. The report concluded with a section entitled 'Looking Ahead' which commented:

"In the future, far more than in the past, education will be a shared enterprise. It will not stop at 16, or 18 or 21, as it has done for the majority, but will be continuous and open-ended. It will be provided not only by schools and colleges, but by businesses, commercial organisations, new technologies, by artists, scientists, other professionals and the community at large."

Since the 1997 election, the Government has produced a strategy for lifelong learning – 'The Learning Age'. This incorporates the University for Industry, Individual Learning Accounts, Learning

Direct, the National Skills Taskforce, and the revision of National Learning Targets. More recent Government actions, policies and structural proposals relevant to the IWAAC Travelling Educational Facility include:

- the New White Paper on Learning 'Learning to Succeed A Framework for Post–16 Learning' (DfEE);
- the public consultation on 'Small Business Service' (DTI) ending on 30/09/99;
- 'National Traineeships and Time for Study and Training' legislation (DfEE) being introduced on the 1st September 1999 and covering the rights of young employees;
- 'Bridging the Gap New Opportunities' (Social Exclusion Unit) which addresses the issue of why 160,000 (9%) of young people are not engaging with education, training or employment between the ages of 16 and 18.

Also of relevance is the Government's continued commitment to Key Skills which sets targets for adult education and training under the categories of Information Technology, Working with Others, Communication, Application of Number, and Improving Own Learning.

All of these initiatives provide a context within which the IWAAC Travelling Educational Facility can be innovative and defined more fully in terms of its function and possible funding base. To these ends, the developing education context for the IWAAC Travelling Educational Facility can be understood and summarised as:

- expanding the range of learning providers and delivery mechanisms (creating new partnerships);
- learning as a continuous lifelong activity (widening the access);
- access to Information and Communication Technologies [ICT];
- targeted delivery (ie. young people, socially excluded, etc);
- learning being underpinned by creative and cultural activities.

5. Briefing Statement One

Converting this into a briefing statement, the IWAAC Travelling Educational Facility should establish real and virtual partnerships to deliver, through new Information and Communication Technologies, innovative and unique creative and cultural lifelong learning opportunities for all, with a particular emphasis on local enterprise and business development, young people and the excluded.

6. Culture Shifts

In the emerging information or knowledge society, 90% of knowledge will become obsolete after only seven years. In response to this, the current trends in education and training are attempting to extend the concept of learning beyond the two core established intelligences (linguistical and logicomathematical) towards the other intelligences – spatial, temporal, interpersonal and intrapersonal. As a result of this, current forms of education will no longer be effective because they will not adjust easily to a life in constant change or requiring continuous renewal.

To be effective, the IWAAC Travelling Educational Facility will need to be more than a floating school. It will need to be a place of intensity and excitement (spatial and temporal, inter and intrapersonal);

without threshold anxiety (ie. learning does not mean going back to school); and with the characteristics of popular or club culture rather than those of high or dominant culture. In realising its innovative possibilities and ensuring its future effectiveness, the IWAAC Travelling Educational Facility will be a difficult place to design, build and operate.

7. Briefing Statement Two

Converting this into a briefing statement, the IWAAC Travelling Educational Facility should put the learner 'centre stage' in a dynamic and responsive environment. Its internal facilities and operational activities should encourage the interpersonal and intrapersonal in a built form which emphasises the spatial and temporal.

8. The Corridor of Innovation - Wolverhampton to Coventry

The IWAAC Travelling Educational Facility has a national role in fulfilling Briefing Statement One. Indeed there could be several regional facilities which link national policies and resources to local need. Extending the proposed 'study area' to create a Corridor of Innovation linking Wolverhampton, Birmingham and Coventry raises the profile of the project to a regional scale.

9. Study Area Proposition

That the study area for the IWAAC Travelling Educational Facility be extended to include Wolverhampton.

10. The Corridor or Route

Horseley Fields Junction (Wolverhampton)

- major city centre
- university and further education colleges
- night time economy .
- Wyrley & Essington Canal
 - areas of social deprivation (eg. Heath Town)

Walsall town centre

- new Arts Lottery funded art gallery
- further education colleges
- Birchills Canal Museum

Walsall Canal

- areas of social deprivation (eg. Darlaston, Wednesbury)
- new Arts Lottery funded art gallery
- further education colleges
- Wednesbury Old Canal
 - areas of social deprivation (eg. Smethwick)
 - further education colleges
- Old Turn Junction (Birmingham)
 - major city centre
 - university and further education colleges
 - night time economy
- Birmingham & Fazeley Canal
 - areas of social deprivation (eg. Aston, Nechells)
 - rural areas (eg. North Warwickshire)

Coventry Canal

rural areas (eg. North Warwickshire)

- further education colleges (Tamworth and Nuneaton)
- Coventry Canal Basin
 - major city centre
 - university and further education colleges
 - night time economy.

This route tests Briefing Statement One against a number of different backdrops – major city centres, urban sprawl, de-industrialised dereliction, small towns and townships, rural areas – and identifies a number of potential land-based partners – art centres, universities, colleges and schools. It also locks the IWAAC Travelling Educational Facility into several regional and local agendas and funding sources – New Deal, Local Agenda 21, etc – under the broad heading of regeneration.

This consolidates the stated 'Opportunities for the West Midlands' in the British Waterways document 'The West Midlands Canals – Realising the Potential'.

It also extends, or defines further, British Waterways understanding of 'regeneration'. By providing innovative learning opportunities, the IWAAC Travelling Educational Facility enhances the quality of life of the people who live and work in the area as much as it does the infrastructural renewal and economic development of that area.

11. Briefing Statement Three

Converting this into a briefing statement, the IWAAC Travelling Educational Facility should operate as a development tool through which the agendas of sustainable regeneration can be integrated. This will be achieved by:

- initiating and supporting learning opportunities which inspire creativity and imagination, whilst benefiting the local economies, employment and the engendering of a sense of place (local and regional);
- strengthening the capacity for business and community activity and involvement in the issues of sustainable regeneration and environmental improvements;
- promoting the contribution of the region's waterways to sustainable regeneration, external identity and internal perception.

12. Networks, Co-Operation and Delivery

The increasing use of information and communication technologies in all areas of life is fracturing established infrastructures into new 'communities of trust and co-operation'. This is clearly true of education and training. The traditional hierarchy of education provision (statutory pre-16 schools and post-16 FE/HE) and funding is currently fragmenting into more flexible networks where resourcing follows agenda-agreed partnerships. It is self-defeating, therefore, to try and authenticate an innovative proposal such as the IWAAC Travelling Educational Facility by presenting it as merely an extension to a university or a local authority education department.

The IWAAC Travelling Educational Facility will succeed (and secure funding and resourcing) by becoming part of one of the new and flexible networks or 'heterarchies'. In identifying an appropriate network, IWAAC should be aware of the importance of, and the possible gains to be made from, positioning the Travelling Educational Facility between different Government departments, particularly DETR, DCMS and DfEE, and the work of the Social Exclusion Unit.

13. The University for Industry (Ufl)

The Ufl is a new public-private body which seeks to:

- stimulate demand for lifelong learning amongst businesses and individuals;
- promote the availability of, and improve access to, relevant, high quality and innovative learning opportunities through the use of information and communication technologies.

The Ufl is at the heart of the Government's plans to improve national levels for learning and skills development. Its aim is to create through new partnerships a coherent and effective provision which is focused on the needs of learners and is attractive for those for whom traditional learning opportunities have been inaccessible or inconvenient.

The Ufl is establishing LEARNING CENTRES across the country which:

- provide access to Ufl learning products and qualification accreditation;
- provide local learning facilities to learners who lack such facilities at home or work;
- deliver Ufl learner support services.

Learning Centres are co-ordinated by HUBs which act as the main centres linking Ufl funding to learner experience. The Ufi is looking to establish Learning Centres and Hubs from either a geographical or a vocational area.

14. Ufl Proposition

The IWAAC Travelling Educational Facility becomes a Ufl Learning Centre because it could:

- create and focus new and mobile partnerships which stimulate demand for lifelong learning amongst businesses and individuals;
- provide accessible and relevant ICT learning opportunities which are innovative and of high quality;
- provide a coherent and effective learning provision for the socially, geographically or educationally excluded.

15. Metier and NetGAIN

Metier is recognised by the Government as the lead body responsible for vocational training in the arts and entertainment industries. It was one of only two National Training Organisations (NTOs) to secure a Ufl-ADAPT project grant.

NetGAIN will provide on-line support structures and guidance tools for employees in SMEs and the arts and cultural industries. There are four national 'gateways' for delivering NetGAIN, two of which are in the West Midlands – Jubilee Arts in Sandwell and CCTE in Coventry.

16. Metier Proposition

The IWAAC Travelling Educational Facility collaborates with the two West Midlands based NetGAIN gateways to:

- secure a partnership based on the creative use of new technologies;
- develop costings and staffing requirements;
- access NVQ assessment and accreditation of its learning opportunities;
- gain status and validation by working with a successful NTO.

17. Jubilee Arts and Public Remarks

With Arts Lottery funding (A4E), Jubilee Arts has also established a cross-discipline training programme exploring the role of culture and creativity within urban form renewal and sustainable regeneration. This has been a very successful programme, not least in raising the aspirations of urban planners.

18. Jubilee Arts Proposition

The IWAAC Travelling Educational Facility incorporates Jubilee Arts' Public Remarks programme into its remit to:

- extend the work of the Innovations Group by making practical opportunities available to other artists, engineers and architects to progress ideas;
- develop these ideas as an interactive or dedicated display internet site to raise profile and promote the work of, IWAAC and the Innovation Group.

19. Resource Needs

The IWAAC Travelling Educational Facility can be understood as four discrete types of resource:

- the seminar barge (for group instruction);
- the ICT barge with full internet capacity;
- the sound and image barge (for digital development and mixing);
- the exhibition/exposition barge (for public access).

Whether these are delivered as four separate units is open to design development.

David Patten - July 1999

20. Contacts & Further Information

Ufl Learning Direct 0800-100-900 or www.open.gov.uk/dfee/ufi/index.htm

Duncan Sones (contacted) Chief Executive Metier 01274–391566

Zoey Fencott (contacted) NetGAIN Co-ordinator Jubilee Arts 0121-553-6862

Ann Gallagher Policy & Resources West Midlands Arts 0121-631-3121

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New White Paper on Learning – Learning to Succeed DfEE Publications Fax: 0845-603-3360

Small Business Service – Consultation Document DTI 0870–150–2500

National Traineeships and Time for Study or Change DfEE www.dfee.uk.tfst.htm

All Our Futures – the Robinson Report DfEE Publications Fax: 0845–603–3360 :0

21. Useful Quotes

"Historically, creativity and innovation have been the lifeblood of cities. Yet there are special reasons for thinking about the problems of cities today in terms of creativity and innovation – or the lack of it. Old industries are disappearing – value added in cities is created less through what we manufacture and more through the application of new knowledge to products, processes and services. The factors that once shaped city development – transport, rivers, proximity of raw materials – have become less relevant.

As we approach the 21st century there is a widespread understanding that it will be the creativity and innovativeness of our cities that will determine the future success of Europe and elsewhere. The modern urban malaise is a complex crisis, which cannot be solved by traditional urban planning and policy. The hard sciences of urban planning need to be reformed and enriched by mobilising the experiences of different disciplines and people currently marginalised from decision making – many of these might be from the cultural arena. Culture is crucially important. It is the often forgotten glue that may hold things together in cities. It is in the cultural arena that the battles of the future will be fought – won and lost. Thus a cultural perspective needs to move centre stage in the planning of our cities."

Charles Landry, Comedia

"Lifelong learning, living in multiple economies and greater cultural diversity will make the inhabitants into 'creative citizens'.

Bert Mulder, Information Adviser to the Dutch Parliament