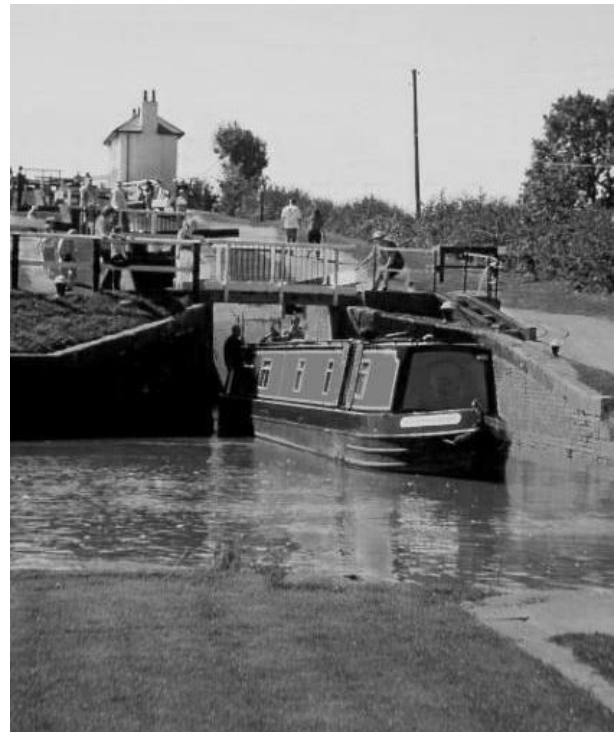


## **THIRD PARTY WORKS' PROCEDURES**

### **SECTION 4**

### **DOCUMENTS**



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# APPENDIX 1: NOTIFICATION FORM

## Information Sheet

### Initial assessment of effect of the works on the waterway

Is procurement by Design and Build envisaged?  Yes,  No

#### Bridge works

Do the works involve a new bridge? ( road bridge,  railway bridge,  footbridge)

New bridge installation least clearances maintained to the towpath  Yes,  No, canal  Yes,  No?

Is it possible to improve or create towing path accesses from the public highway?  Yes,  No

Is a  striking modern bridge design or  one reflecting the canal environment envisaged?

#### Utilities installations, parallel to - and crossing the waterway

An  overhead,  buried utilities installation is proposed.

The installation is  parallel to the waterway beneath the towpath,  crossing the waterway

Installation of  power,  telecommunication,  water pipe,  foul sewer,  gas,  storm sewer

trenchless installation technique,  open cut construction is proposed for crossing the waterway.

Is a permanent point of  surface water discharge or  water abstraction/return proposed?

#### Towpath works

Utilities are affected by  surface load application,  excavations,  trial pits,  ground penetrations

#### Demolition works

Undertaking of demolition works  adjacent to the waterway,  over the waterway?

#### Miscellaneous works

Is grit blasting/water jetting proposed to take place over or near to the waterway?  Yes,  No

Temporary works  on the towpath,  over the navigation?

#### Dredging works

Will dredging be needed?  Yes,  No,  to be confirmed

Is material to be dredged contaminated?  Yes,  No,  to be confirmed

Will the lining of the canal be affected?  Yes,  No

Is puddle clay to be used in lining of canal?  Yes,  No

#### Earth - and Piling works

It is proposed to make driven piles for  foundations,  sheet pile walls,  near to the canal.

It is proposed to use  vibro-compaction or  dynamic compaction near to the canal.

It is proposed to grout of  mine workings or  other voids near to the canal.

Excavations are proposed within  3 m,  6 m of the waterway

#### Use of the canal

It is proposed to transport  construction materials and/or  waste on the canal, use  floating plant.

#### Stoppages, restrictions, access suspensions

Is a stoppage of canal traffic envisaged?  Yes,  No,  to be confirmed

Need for temporary towpath diversion during the Works?  Yes,  No,  to be confirmed

Consideration has been given to access for less able-bodied users during the Works?  Yes,  No

#### Heritage and existing structures

The Works affect a  Site of Special Scientific Interest,  Scheduled Ancient Monument,  Listed Buildings,  bridges,  locks,  walls, .

#### Environment

The works affect  trees protected by Tree Preservation Orders,  hedgerows, .

<b>Other land use</b>	
The Works affect a <input type="checkbox"/> Conservation Area, <input type="checkbox"/> Public Open Space, <input type="checkbox"/> Public Right of Way It is envisaged to <input type="checkbox"/> dewater the canal and/or <input type="checkbox"/> divert the canal flow	
Signed:	Date:
On behalf:	
Do you have any objection to BW disclosing information regarding your proposed works in response to a request under freedom of information legislation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Verified by BW Works Engineer:	Date:
Verified by BW E And H Engineer	Date:

## APPENDIX 2: TYPICAL COSTS UNDERTAKING

To be completed on Promoter's headed paper and sent to British Waterways as a temporary cost recovery contract, until a such time as a permanent agreement for the works has been negotiated

British Waterways

...  
...  
...  
...  
...

Address available from APPENDIX 3: BRITISH WATERWAYS ADDRESSES

Dear Sirs

[insert Scheme Title]  
**COSTS UNDERTAKING**

[insert name of Promoter] is proposing to construct [describe works] affecting the interests of British Waterways at [location]. The requirement to cover the costs of British Waterways is acknowledged as follows:

1. In consideration of your proceeding to negotiate and instructing your solicitors, engineers, surveyors or other appropriate professionals (whether external or in-house) to advise you and to subsequently proceed with the requisite work involved in the grant to us of a Contract in respect of [scheme title] affecting British Waterways we hereby agree and undertake to defray your costs and fees (including VAT and disbursements) in relation to the matter and to follow the requirements and conditions set out in the Schedule of Costs in Section 1: Guidance Notes.

2. This undertaking will apply whether or not the proposal proceeds to a legally binding Contract provided always that in the event that the Board unreasonably withdraws from the negotiations in respect of the Contract in circumstances where we are ready, able and willing to proceed forthwith to a legally binding Contract on terms that have been settled between us in writing then (and in those circumstances only) no liability for costs on the part of this company accrue.

3. This undertaking is given on the basis that fees in relation to this matter shall be charged at the rates set out in the Annex to this letter [but shall in no circumstances without further discussions with us exceed the sum of £[insert agreed sum] (plus Value Added Tax and disbursements).

4. If by [insert agreed date] no Contract has been completed (and accordingly no payment pursuant to this undertaking has been made) you will be entitled to deliver to us (and we agree and undertake to pay) a reasonable interim bill (and any further reasonable interim bills thereafter) on account of services rendered to the Board in connection with this matter. Such interim payment or payments shall not in any way affect or compromise the continuing liability of this company pursuant to the terms of this undertaking.

5. The sum of £380+VAT is enclosed as an Application Fee which is a contribution to the costs of British Waterways in making an initial assessment of our Application. We acknowledge that the payment of that sum to British Waterways does not place British Waterways under any further obligation to us in respect of the Application or in the execution of any Works that may arise in connection with the Application. We further acknowledge that the sum paid is non-returnable whether or not our Application proceeds and that the acceptance by British Waterways of that sum does not constitute any representation or warranty on British Waterways' part that it will accept the Promoter's Works.

Yours sincerely

.....

[Director/Officer duly authorised to bind plc/company/organisation]

## APPENDIX 3: BRITISH WATERWAYS ADDRESSES

### SCOTLAND LOWLANDS

British Waterways  
Canal House  
Applecross Street  
Glasgow G4 9SP  
Tel: 0141 332 6936

Forth & Clyde Canal, Union Canal, Monkland Canal,  
Crinan Canal

### SCOTLAND HIGHLANDS

British Waterways  
Canal House  
Seaport Marina  
Muirtown Wharf  
Inverness, IV3 5LE  
Tel: 01463 725500

Caledonian Canal

### NORTH WEST WATERWAYS

British Waterways  
Waterside House  
Waterside Drive  
Wigan  
WN3 5NZ  
Tel: 01902 405720

Lancaster Canal, Leeds & Liverpool Canal including Rufford and Leigh  
branches, Sankey (St Helens) Canal

### NORTH EAST WATERWAYS

British Waterways  
Fearn Wharf  
Neptune Street  
Leeds LS9 8PB  
Tel: 0113 281 6800

Aire & Calder Navigation, Calder & Hebble Navigation, Huddersfield Broad  
Canal, Pocklington Canal, River Ouse, River Ure and Ripon Canal, River  
Tees, Selby Canal and River Aire, Sheffield & Tinsley Canal, Sheffield &  
South Yorkshire Navigation, including Stainforth & Keadby Canal, New  
Junction Canal

### MANCHESTER & PENNINE WATERWAYS

British Waterways  
Red Bull Wharf  
Congleton Road South  
Church Lawton  
Stoke on Trent, ST7 3AP  
Tel: 01782 785703

Trent & Mersey Canal (from south portal of Harecastle tunnel), Macclesfield  
Canal, Peak Forest Canal, Manchester Bolton & Bury Canal, Rochdale  
Canal, Huddersfield Canal, Ashton Canal

### NORTH WALES & BORDER COUNTIES WATERWAYS

British Waterways  
Navigation Road  
Northwich  
Cheshire CW8 1BH  
Tel: 01606 723800

Llangollen Canal (including Prees Branch), Montgomery Canal & Guilsfield  
Arm, River Weaver, Shropshire Union Canal to Autherly Junction (including  
Middlewich Branch), Shrewsbury & Newport canal

### CENTRAL SHIRES WATERWAYS

British Waterways  
Peels Wharf  
Lichfield Street  
Fazeley  
Tamworth B78 3QZ  
Tel: 01827 252000

Trent & Mersey Canal (from South portal of Harecastle Tunnel), Coventry  
Canal & Leek Branch, Grand Union Canal (Leicester Line from just below  
Kilby Yard), River Soar

### **EAST MIDLANDS WATERWAY**

British Waterways  
The Kiln  
Mather Road  
Newark  
Nottinghamshire  
NG24 1FB  
Tel: 01636 704481

Chesterfield Canal, Erewash Canal, Fossdyke & Witham Navigations,  
Grantham Canal, River Trent, Nottingham & Beeston Canal, Cromford Canal

### **SOUTH WALES & SEVERN WATERWAYS**

British Waterways  
The Dock Office  
Commercial Road  
Gloucester GL1 2EB  
Tel: 01452 318000

River Severn Navigation, Gloucester & Sharpness Canal, Stourport Basin,  
Worcester & Birmingham Canal (from Diglis to Kings Norton), Droitwich  
Barge Canal, Droitwich Junction Canal, Monmouthshire & Brecon Canal,  
Swansea Canal

### **WEST MIDLANDS WATERWAYS**

British Waterways  
Peel's Wharf  
Lichfield Street  
Fazeley  
Tamworth B78 3QZ  
Tel: 01827 252000

Staffordshire & Worcester Canal, Stratford-upon-Avon Canal, Stourbridge  
Canal, Wyrley & Essington Canal, Grand Union Canal to Radford Lock,  
Birmingham & Fazeley Canal Navigations

### **SOUTH EAST WATERWAYS**

British Waterways  
510-524 Elder House  
Elder Gate  
Central Milton Keynes  
MK9 1BW  
Tel: 01908 302500

Grand Union Canal bridge 82 to Kilby Bridge, including Market  
Harborough, Welford, Aylesbury, Buckingham & Northampton Arms

### **KENNET & AVON WATERWAYS**

British Waterways  
The Locks,  
Bath Road,  
Devizes,  
SN10 IQR  
Tel: 01452 318000

Bridgwater & Taunton Canal, Kennet & Avon Canal,

### **LONDON**

British Waterways  
1 Sheldon Square  
Paddington Central  
London W2 6TT  
Tel: 020 7985 7200

Grand Union Canal Main Line south of Lock 82 (Stockers) , Docklands  
(West India & Millwall Docks), Hertford Union Canal, Bow Back Rivers,  
Limehouse Cut, Limehouse Basin, River Lee Navigation, Old River Lee  
River Stort Navigation, Abbey Creek, Bow Creek, City Mill River,  
Channelsea River, Prescott Channel, Pudding Mill River  
Three Mills, St Thomas Creek, Waterworks River, Grand Union Canal  
Slough Arm, Grand Union Canal Paddington Branch  
Brent Reservoir, Silk Stream & Brent Feeder, Regent's Canal

## CENTRAL UNITS

New Marinas Unit  
Fearn's Wharf  
Neptune Street  
Leeds  
LS9 8PB  
Tel: 0113 281 6800  
Fax: 0113 281 6886

First point of contact for new marina developments.

Email: [nmuenquiries@britishwaterways.co.uk](mailto:nmuenquiries@britishwaterways.co.uk)

Website: [www.britishwaterways.co.uk/marinadevelopment](http://www.britishwaterways.co.uk/marinadevelopment)

Utilities Team

National Involvement concerning utilities in, over or under BW Property with National (Omnibus) Agreements, B SkyB Network, Masts, Hydro, Wind Turbines Water used for heating and cooling buildings, Water Transfer Abstractions, Abstraction licences and Discharges

Utilities Team  
64 Clarendon Road  
Watford  
Herts  
WD17 1DA

For involvement with water cooling/heating projects, sale of water, abstractions and abstraction licenses.  
[watersalesenquiries@britishwaterways.co.uk](mailto:watersalesenquiries@britishwaterways.co.uk)

Utilities Team  
Canal Lane  
Hatton  
Warwick  
CV35 7JL

For other Utilities enquiries contact:  
[Utilitiesenquiries@britishwaterways.co.uk](mailto:Utilitiesenquiries@britishwaterways.co.uk)

## OTHER USEFUL ADDRESSES

BWML (British Waterways Marinas Ltd.)  
Sawley Marina  
Sawley  
Nottinghamshire  
NG10 3AE Tel: 0115 973 4278

*NB Waterway boundaries and office addresses and telephone numbers may change from time to time; check on [www.britishwaterways.co.uk](http://www.britishwaterways.co.uk)*

British Sky Telecommunication Services Ltd [formerly Easynet, IPSARIS, formerly Fibreway Ltd.] (Optic fibre cables in towing path)  
British Sky Telecommunication Services Ltd,  
70 Buckingham Avenue,  
Slough  
SL1 4PN

British Sky Telecommunication Services Ltd, Service Management Centre  
available 24 hours for emergency calls  
Tel: 08000 273242.

British Waterways 24 hour emergency number  
Freephone Canals Service: **0800 47 999 47**



## APPENDIX 4: OUTLINE POLLUTION RISK & HYDROLOGICAL ASSESSMENT

The following information is required from the Promoter at an early stage in order to assess the viability or feasibility of the proposal.

Note that this checklist only applies to surface water discharges. Other types of discharge such as sewage effluent and trade effluent should be treated on a case by case basis, but are not usually accepted.

Scheme Title \_\_\_\_\_

Promoter \_\_\_\_\_

### **Pollution hazards**

Information on the pollution hazards within the areas to be drained:

Planning use class \_\_\_\_\_

Use of area to be drained to canal \_\_\_\_\_

Nature and quantities of chemicals, fuel/oil, wastes, liquid food products, and other potentially polluting substances that may be used on area drained \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Details of any activities which will occur in the drainage area, which could contaminate surface water. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Whether the site requires or has authorisation from the Environment Agency under section 6 of the Environmental Protection Act 1990 (IPC authorisation), or hazardous substances consent from the local authority under the Planning (Hazardous Substances) Act 1990 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Any previous contaminate uses of the site, and if so, any soil contamination found from any site investigations \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If highway drainage is included, average annual traffic density, and whether industrial premises access directly to the road \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### **Management controls**

Any documentation relating to the environmental commitment and environmental track record of the Promoter, and of the person ultimately responsible for the drainage if different. It should be relevant both to design and construction and to the use operation and maintenance of the areas drained and of the drainage system with respect to prevention of water pollution, eg:

- Company Environmental Policy
- Environmental Management System
- other relevant procedures or standards
- where the discharge is an existing one, details of any prosecutions, enforcement notices or cautions from any environmental regulator within the last 5 years relating to the discharge.

## **Hydrological**

The applicant is referred to *BW Surface Water Discharge Guidance – Producing an Outline and Detailed Impact Assessment*. The aim of this document is to provide an applicant wishing to discharge surface water into British Waterways' network with the necessary technical guidance to produce an impact assessment acceptable to British Waterways.

British Waterways believe that the assessment should reflect the additional risk and a two stage process is adopted of an outline impact assessment (Section 2.1 of the BW Surface Water Discharge Guidance) followed by a more detailed impact assessment (Section 2.2 of the BW Surface Water Discharge Guidance), if necessary.

If the applicant can demonstrate, to British Waterways satisfaction, that the peak rate of discharge from the site to the waterway, the 1 in 100 year return period event, after development (including an allowance for climate change (20%) and urban creep (10%)) will be less than (or equal to) the pre-development situation (including an allowance for climate change (20%)) then a statement of this, accompanied by supporting calculations (see Section 2.1), will be regarded as an acceptable Outline Impact assessment.

From the Outline Impact Assessment the following information should be provided:

<b>Information to be provided</b>	<b>Included?</b>
Written description of the development site (accompanied by photographs if appropriate) detailing: Pre-development use and proposed development extent and characteristics of the site. Existing site drainage arrangements and proposed drainage scheme Relationship of site to British Waterways waterway	
Plan of site showing: development site catchment area, outline or detailed drainage design and relationship to any part of BW's system (e.g. waterway pound(s), river navigation, reservoir, feeder channel etc.).as hard copy or digitally (AutoCAD® DWG, DXF™, and DWF files)	
Details of catchment parameters: area, soil, percentage impermeable, percentage permeable etc. used to estimate pre and post development site runoff.	
Description of method of runoff estimation employed for pre and post proposed development.	
Estimates of pre and post development site runoff (l/s in a 1:100yr event - see Guidance document).	
Digital copies of drainage design calculations and, if available drainage model data and result files, for both pre and post proposed development.	

## APPENDIX 5: INDEMNITY FORM

### INDEMNITY FOR WORKS AFFECTING BRITISH WATERWAYS

**IN CONSIDERATION** of your permitting  
(name of organisation) \_\_\_\_\_

(address) \_\_\_\_\_

of

the works (as specified below) adjacent to the property of the British Waterways Board ("the Board")

between the hours of \_\_\_\_\_ hrs and \_\_\_\_\_ hrs

commencing on the \_\_\_\_\_ day of \_\_\_\_\_

and expiring on the \_\_\_\_\_ day of \_\_\_\_\_

located at \_\_\_\_\_ ("the Property")

for the purpose of \_\_\_\_\_

**I/WE HEREBY UNDERTAKE AND AGREE**, notwithstanding any supervision given or approval expressed by the Board

1. To fully and effectually indemnify the Board, their servants and agents against:
  - (a) all liability whatsoever for damage to property whether owned by the Board or third parties and
  - (b) any other damage loss costs and expenses howsoever caused or incurred and
  - (c) any liability that may arise to the public or employees of the Board in respect of personal injury death damage or loss of property however caused

which would not have arisen but for the exercise of this permission save where the same are caused by or arise out of any negligent act (subject to and without prejudice to paragraph 3) by the Board their servants or agents.
2. To insure with an office of good repute against my/our liability to the Board and a third party under paragraph 1 above and produce to the Board prior to undertaking works adjacent to the Property a certified copy of the policy and receipt for payment of the premium or other evidence of the terms of the policy or evidence of payment for inspection whether demanded or not PROVIDED THAT if the indemnifier is self-insured it supplies the Board on request with evidence of self-insurance.
3. To obtain and comply with all safety and statutory requirements affecting our activities.
4. To be responsible for ensuring the Board's Property is suitable for the purpose we propose and to be responsible for informing any operatives / participants of any potential risks and dangers.
5. To assure ourselves of the stability of the Board's Property and the safety of towpath / waterway users: before the works commence and make all necessary enquiries of statutory undertakers of other bodies as to whether there are any cables pipes wires or other medium which might cause any obstruction or injury whatsoever to the individuals taking part in the event;

to bring to the attention of all operatives the dangers of water-borne diseases particularly Weil's Disease, as follows:

- (i) unlike tap water, the water in canals, rivers and reservoirs is untreated and micro-organisms are naturally present. However, although the risk of contracting illness (including the much publicised but rare condition of Weil's Disease) is extremely small, sensible precautions should be taken as follows:
  - avoid full immersion in the water
  - cover all cuts and abrasions with waterproof dressings before contact with the water
  - wash all exposed skin after contact with water and before eating
  - do not put wet ropes, fishing lines or other objects in your mouth
- (ii) Should any illness occur within 2 weeks of contact, you should seek medical advice and inform your doctor you have been in contact with untreated water.

6. Subject to my / our Statutory rights that the Board may withdraw this permission at any time:

- (a) without any liability by the Board for consequential or economic loss to the organisers, members, guests invitees, appointed servants.
- (b) in which case the Board's Property shall immediately be vacated and any necessary reinstatement carried out at our own expense to the satisfaction of the Board.

7. Not to use the Property other than for the purpose specified above.

8. To comply with the **Code of Practice for Works Affecting British Waterways**.

9. If any term or provision in this Indemnity shall in whole or part be held to any extent to be illegal or unenforceable under any enactment or rule of law that term or provision or part shall to that extent be deemed not to form part of this Indemnity and the enforceability of the remainder of this Indemnity shall not be affected.

**SIGNATURE**

For and on behalf  
of

**DATED**

this \_\_\_\_\_ day of \_\_\_\_\_ of \_\_\_\_\_

**SIGNATURE**

For and on behalf  
of

**DATED**

this \_\_\_\_\_ day of \_\_\_\_\_ of \_\_\_\_\_

**Company**

Name Surname

**British  
Waterways**

Name Surname

# APPENDIX 6: SKY NETWORK SERVICES NOTIFICATION FORM

## NOTIFICATION OF WORKS IN THE VICINITY OF THE SKY NETWORK SERVICES NETWORK

**Minimum 14 days Notice** (to be completed for all work in the location of the SNS network).

### For Use by British Waterways Staff Only

Scheme Title \_\_\_\_\_

Site Location: \_\_\_\_\_

Nearest access point: \_\_\_\_\_

National Grid Reference: \_\_\_\_\_

Stage of the project:

<input type="checkbox"/>	Preliminary design stage	<input type="checkbox"/>	Initial site investigations
<input type="checkbox"/>	Pre-construction 3 months notice	<input type="checkbox"/>	Pre-construction 14 days notice
<input type="checkbox"/>	Change of construction methods	<input type="checkbox"/>	Emergency intervention

Date of issue: \_\_\_\_\_

Works Start Date: \_\_\_\_\_ Works End Date: \_\_\_\_\_

Promoter name: \_\_\_\_\_

(To whom plans will be sent) \_\_\_\_\_

Postal address \_\_\_\_\_

Contact number: \_\_\_\_\_

e-mail address: \_\_\_\_\_

Scope of Works: \_\_\_\_\_

Will trial holes be required?

<input type="checkbox"/>	Yes	Will the B SkyB network require total exposure?	<input type="checkbox"/>	Yes
<input type="checkbox"/>	No		<input type="checkbox"/>	No

Describe the nature of the work to be undertaken: \_\_\_\_\_

BW Contact name: \_\_\_\_\_

Contact number: \_\_\_\_\_ e-mail address: \_\_\_\_\_

#### Guidelines:

This form should be completed no matter how small the area of work. It also requires completion for towpath resurfacing work and bank protection works such as piling. please ensure no works take place until you have received SNS approval to dig,

Please forward to: sam.o'neill@britishwaterways.co.uk or simon.cleaver@britishwaterways.co.uk  
 Or post to: The Utilities Team, British Waterways, Canal Lane, Hatton, Warks, CV35 7JL

## APPENDIX 7: PUBLIC NOTICE

The Promoter is responsible for displaying the Works' Notice and, as required, the towpath diversion route map to inform the towpath users and the boaters that moor on the towpath canal side at temporary or visitors' moorings of the future and then ongoing works by which they are affected. It is not the Promoter responsibility to notify boaters at residential moorings sites and in marinas. These efforts are undertaken by the British Waterways' moorings team.

The notice is for display at the location affected by the works which may be the point of towpath closure or at the worksite depending on the type of notice (refer to Note 4).

All notices are made on the same form. It is not required that the form provided be used but it is required that at least the same salient information be displayed. The form may be edited to include own company logotypes, etc.

The notice is displayed two weeks in advance of the works, the 'Date of issue' is thus 14 calendar days prior to the 'Start date'.

The notice is displayed flush against a fence, wall or other suitable place, in plain view at eye level. Sign posts are to be used.

A notice of a closed towpath is displayed alongside a towpath diversion route map. The map may be a road map, any other suitable and also hand, drawn as long as it is clear which route to follow to move around the works.

The text in on the Public Notice should be edited to suit.

PUBLIC NOTICE: The title of the notice should read the following

ADVANCED PUBLIC NOTICE TEMPORARY TOWPATH CLOSURE  
PUBLIC NOTICE TEMPORARY TOWPATH CLOSURE  
PUBLIC NOTICE OF WORKS ON TOWPATH  
PUBLIC NOTICE OF OVERHEAD WORKS  
... and any other suitable title

Note 1: The notice number is the same as the project code and provided by the Works Engineer. The number is made up of the canal identifier and the functional location of the working area along the canal.

e.g. RE-01256. RE identifies the canal as the Regent's Canal. The functional location is at chainage 12560 m. Functional locations are rounded to the nearest 10 m.

Note 2: Name of the Canal/navigable river given in Note 1.

Note 3: Between bridge [X] and bridge [Y] or similar suitable reference. May be a street address and any similar location identifiable by landmarks.

Note 4: The type of restriction should clearly state the purpose of the notice being:

- Navigation (temporary) closure
- Towpath (temporary) closure
- Access (temporary) closure
- Construction works

- Suspension of access
- ... and similar

Note 5: Supply a paragraph detailing the reasons of imposing the restriction.

e.g. In the case of towpath closure to disassemble a scaffold the reason will be ...  
*Towpath closure to isolate the worksite for the purpose of disassembly of a scaffold located on the towpath.*

Note 6: Actions to be taken by the reader. Reference to maps and the like.

e.g. *It is advised to use the alternative route indicated on the map displayed alongside this notice and rejoined the towpath at the next nearest point of access at XXX Road.*

This section should also be used to inform of H&S risk. All H&S risk is assessed as per the prescriptions of the CoP. No risk shall be transferred to the waterway users but where it is impossible to put in place mitigation measures to eliminate risk the risk must be passed on.

e.g. *The demolition works may cause dust. Do not pass walk through the plume until it has dissipated.*

Note 7: Contact details of the Promoter, Contractor and British Waterways' responsible person (Works Engineer or Operations Supervisor). Provide out of office contact details.

Provide a copy of the completed notice to the Works Engineer for publishing a similar notice of the British Waterways website under: [www.waterscape.com](http://www.waterscape.com)

The A4 format notice fits into an upside down transparent plastic filing pocket to keep it dry while on display. Alternatively the notice can also be plasticized. Of course an A3 size enlargement can be used if it is thought that the A4-size is too small.



# PUBLIC NOTICE

<b>Notice no:</b>		<b>Date of issue:</b>	
<b>Waterway:</b>			
<b>Start date:</b>		<b>End date:</b>	
<b>Location:</b>			
<b>Type of restriction:</b>			
<b>Details and reasons for restriction:</b>			
<b>Special instructions:</b>			
<b>Up-to-date information regarding this stoppage/diversion and the works may be obtained from:</b>			

**Further details are available on our website [www.waterscape.com](http://www.waterscape.com)  
OUT OF HOURS CALL 0800 47 999 47 FOR EMERGENCIES ONLY**

**Please do not misuse the emergency telephone service with non-urgent calls**

British Waterways regret any inconvenience caused and in an attempt to minimise this, notices are posted locally. In order to improve the effectiveness of this information service please, contact:



## APPENDIX 8: DEFINITIONS

Code of Practice	The document referenced as: 'British Waterways, <i>Third Party Works Procedures</i> , <i>Code of Practice</i> ; <i>Section 2</i> ' available on request from the Works Engineer or obtainable at <a href="http://www.britishwaterways.co.uk/our-work/maintenance-and-improvement/working-safely">http://www.britishwaterways.co.uk/our-work/maintenance-and-improvement/working-safely</a> .
British Waterways	Refers to the British Waterways Board and subsidiary companies. Waterway The "Waterway" means any canal, inland or river navigation, feeder, reservoir or dock belonging to or under the control of British Waterways and includes any works, services, lands or premises belonging to or under the control of British Waterways and held or used by them in connection with its business.
British Waterways Property	The land (including land covered with water), Waterway, property, sub-soil and air space owned and/or managed from time to time by British Waterways.
Environment	The totality of surroundings of the British Waterways Property and the adjacent land as far as it affects British Waterways. The environment includes the fauna and flora, the people moving along and resident on and in the proximity of the waterway, all that is visual, the air, temperature, smell and noise.
Promoter	The "Promoter" referred to in this Code of Practice shall be the body or company or individual (or legal successors) procuring the work or activity. A Consulting Engineer or other advisor is viewed by British Waterways as an agent of the Promoter. In the case of agency arrangements such as in the water industry, the agent authority will be regarded as a Promoter.
Promoter's Representative	The person or organisation that has a mandate to act on behalf of the promoter, be this a consultant, as an engineer or architect, or a contractor.
Review	An 'environmental and technical' Review is undertaken by the Works Engineer to ensure that the proposed works are undertaken in terms of the prescriptions of the Code of Practice and other requirements, specifications, design codes and the like.
Safety Policy	The published British Waterways Safety Policy is obtainable at <a href="http://www.britishwaterways.co.uk/our-work/maintenance-and-improvement/working-safely">www.britishwaterways.co.uk/our-work/maintenance-and-improvement/working-safely</a> .
Third Party Works	Works of this description are those not undertaken by - nor instructed by British Waterways. Third parties are private, public and third sector bodies as well as individuals.
The Works Engineer	Refers to the British Waterways engineer responsible for the engineering of the project.
The Estates Manager	Refers to the British Waterways estates officer responsible for the project.

The Works	The "Works" mean all temporary and permanent works proposed and their associated maintenance where they affect the Waterway or British Waterways property.
Waterway	The "Waterway" means any canal, inland or river navigation, feeder, reservoir or dock belonging to or under the control of British Waterways and includes any works, services, lands or premises belonging to or under the control of British Waterways and held or used by them in connection with its business.
Work and Working	Performing an activity other than the recreational or licensed use of craft of and on the waterway. Any such activity undertaken on, by gaining access to, across and over British Waterways' property. Works include those works that affect British Waterways undertaken on neighbouring property.

## APPENDIX 9: ACRONYMS

<b>Acronym</b>	<b>Description</b>
BS	British Standards
BW	British Waterways
CDM	Construction Design Management
CHSW	Construction Health Safety and Welfare Regulations
CoP	British Waterways Code of Practice in current edition
H&S	Health and Safety
LOLER	Lifting Operations and Lifting Equipment Regulations
NASC	National access and scaffolding convention
PPE	Personal Protective Equipment
PUWER	Provisions and Use of Work Equipment Regulations
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
TPW	Third Party Works
OS	Ordnance Survey

## APPENDIX 10: WATERWAY TERMINOLOGY

Depth of the canal	The distance measured from the top of the coping stone (also referred to as the coping) to the base of the canal, thus the water depth plus the freeboard.
Canal	All structures containing the volume of water, the base, and the walls.
Canal bank	The earth structure that defines the limit of the canal.
Canal wall	The structure that defines the limit of the canal, typically a wall of masonry, concrete, concrete piles, steel sheet piles; or sloping face of masonry and similar.
Coping Stone	Sometimes in the case of a piled wall referred to as the capping beam. A stone or concrete lintel placed on top of the canal wall.
Craft	A floating vessel of any description, e.g. raft, dinghy, boat, workboat, pontoon, barge be it powered or dumb.
Nearside	The towpath side of the waterway.
Offside	The side of the waterway where there is no towpath.
Point of access	That point at which waterway users move from the neighbouring land onto British Waterways property. It may be an open access, a gate or barrier controlled access, steps and stairs or ramps. An access is a formally recorded point of access. A gap in the fence, and similar, is not a point of access.
Scaffold	Scaffolding is broadly defined as a temporary structure, commonly made of a lattice of steel poles arranged to create working platforms at desired levels. This scaffold is purely for access purposes and to hold some necessary building material/equipment while these are used. The scaffold is tied-back to the structure. The scaffold is either entirely suspended from the structure of stands on the ground (pontoon on water in some instances). The scaffold is designed and constructed to a design. A design certificate is provided. It is inspected on regular intervals, commonly weekly, and inspection records maintained.
Towpath	The towpath is often referred to as the footpath given it's present use. The towpath is the strip of land to one side, or in some cases, to either side of the canal, on which horses moved to tow barges.
Towpath users	Those persons that are on the towpath undertaking a habitual recreational activity (not working) such as walking, jogging, cycling, and the like; or a licensed activity such as boating.
Helmsman	A person in possession of a valid helmsman's licence to operate a craft.
Lengthsman	A person charged with managing the waterway.

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Licence	A permission issued by British Waterways to undertake an activity which may involve the use of plant, equipment, materials, and the like, on British Waterways' property.
Lock	Gated structures comprising of two sets of gates for passing a craft between distinct water levels. Locks may have either single or pairs of gates at either end depending upon beam, use and/or design.
Pound	The volume of water between locks.

## APPENDIX 11: REFERENCES FOR SUSTAINABLE PROJECTS

The following industry references provide further detail for the delivery of a more sustainable project, and should be used where appropriate:

SUBJECT	REFERENCES
SUSTAINABLE URBAN DRAINAGE SYSTEMS (SUDS).	<ul style="list-style-type: none"><li>• CIRIA Publication C523 <i>Sustainable Urban Drainage Systems – Best Practice Manual</i>.</li><li>• <i>Sustainable Urban Drainage Systems – An Introduction</i>. A 20 page booklet produced by EA, SEPA and Environment and Heritage Service.</li><li>• CIRIA Publication C522 <i>SUDS Design Manual for England and Wales</i>.</li><li>• CIRIA Publication C521 <i>SUDS Design Manual for Scotland and Northern Ireland</i>.</li></ul>
GREEN PROCUREMENT (E.G. TIMBER & RECYCLED AGGREGATES).	<ul style="list-style-type: none"><li>• Waste Reduction Action Programme (WRAP) – <a href="http://www.wrap.org.uk">www.wrap.org.uk</a></li><li>• AggRegain (the sustainable aggregates information service from WRAP including specification of use, supplier information &amp; case studies) – <a href="http://www.aggregain.org.uk">www.aggregain.org.uk</a></li><li>• Tarmac (leading UK supplier of building materials) – <a href="http://www.tarmac.co.uk">www.tarmac.co.uk</a>.</li><li>• WWF – UK Forest and Trade Network – <a href="http://www.wwf.org.uk/95+group">www.wwf.org.uk/95+group</a> (formally WWF 95+ Group).</li><li>• Building Research Establishment (BRE) – <a href="http://www.bre.co.uk">www.bre.co.uk</a>.</li><li>• Timber Research and Development Association (TRADA) - <a href="http://www.trada.co.uk">www.trada.co.uk</a></li></ul>
POLLUTION PREVENTION	<ul style="list-style-type: none"><li>• Environment Agency (undated), Pollution Prevention Guidelines – Works in, near or liable to affect watercourses: PPG5 – available from <a href="http://www.environment-agency.gov.uk/commodata/acrobat/ppg05.pdf">http://www.environment-agency.gov.uk/commodata/acrobat/ppg05.pdf</a></li><li>• Environment Agency (undated), Pollution Prevention Guidelines – Working at Construction &amp; Demolition Sites: PPG6 – available from <a href="http://www.environment-agency.gov.uk/commodata/acrobat/ppg06_25.03.03.pdf">http://www.environment-agency.gov.uk/commodata/acrobat/ppg06_25.03.03.pdf</a></li><li>• CIRIA Publication C532 Control of pollution from construction sites</li></ul>
WATER USE	<ul style="list-style-type: none"><li>• <b>ENVIRONMENT AGENCY, SAVEWATER -</b> <a href="http://www.environment-agency.gov.uk/subjects/waterres/286587/?version=1&amp;lang=e">http://www.environment-agency.gov.uk/subjects/waterres/286587/?version=1&amp;lang=e</a></li></ul>

## APPENDIX 12: CONTRACT PRINCIPLES

Contracts will normally:

- provide that the Promoter may be required to lift, shift or remove his or her Works where they subsequently interfere with the performance of British Waterways' statutory obligations and business.
- not provide rights of support, or accept the imposition of additional loads on the Waterway Property; the structures were not designed for that purpose.
- require appropriate indemnities/insurance/warranties to protect British Waterways from damage whether direct or consequential.
- require accommodation works, repair and decoration obligation to remedy any structural, safety, pollution, and environmental effects of the Promoter's Works.
- provide for cost recovery payments and an appropriate charge to be made for the use of British Waterways' property.
- be for fixed terms or subject to determination by notice. It is the policy of British Waterways not to grant Contracts in perpetuity.
- not provide for a stoppage or closure of the navigation and towpath to assist the installation of the Works. Occasionally British Waterways will organise a closure on behalf of the Promoter but as users of the Waterway need to be properly accommodated a long lead time is usually required and the Promoter will incur additional costs.
- confirm that all-Professional advisers, Consultants and Contractors have all the necessary insurance, including Professional Indemnity Insurance, where applicable.
- make provision for future maintenance, repair, alteration and demolition.
- include drawings, details and specifications, along with such relevant information deemed necessary.
- Require the provision for acceptance by the Works Engineer of Contractor's Method & Safety Statements & Temporary Works proposals.
- require that, where there is a discharge, no noxious, poisonous, polluting or solid matter is caused or knowingly permitted to enter the waterway, or to comply with the requirements of any consent or other authorisation from the Environment Agency (SEPA in Scotland) where such exists.

It must be remembered that:

- the Works Engineer, on behalf of British Waterways, reserves the right to supplement or vary these technical conditions and requirements by the issue of specific requirements when assessing the implications of a specific proposal or later during the construction if he or she considers it necessary, particularly where technical developments take place in the intervening period.
- acceptance of any drawings or proposals only implies that the Works shown thereon meets the requirements of the Works Engineer; the Promoter should satisfy him or herself that the Works are adequate to him or her.

- the Works must be carried out in accordance with the programme, method statements, designs, plans and specifications submitted to and accepted by the Works Engineer; the Promoter shall remain fully responsible and liable to British Waterways for the adequacy of such designs, plans and specifications, and shall be responsible for ensuring that the Contractor abides by them.
- notwithstanding any observations or comment made by the Works Engineer or his or her representatives, the Promoter shall remain fully responsible and liable to British Waterways for the adequacy of all investigations, design plans, programmes, working practices and other activities associated with the Works.



## APPENDIX 13: STOPPAGE CHARGES

### Notes:

- British Waterways will define in which category a particular waterway or location comes
- stoppages normally start on a Monday morning at 07:00 and end on Friday evening at 20:00 – a 5 day winter stoppage would be charged at the rate above
- a continuous stoppage of several weeks would incur a multiple of the appropriate 5 day rate plus the relevant daily rate for the included weekend days
- the weekly rate is only available from mid November to Mid March, excluding the Christmas / New Year period. During the remainder of the year the daily rate only is available
- when stoppages over-run beyond the agreed period the rate is doubled (see Example C)
- unauthorised stoppages are charged at double the standard rate
- if a late stoppage booking is accepted by the Works Engineer after 31 April, but more than 8 weeks before start date, the charge is increased by 25% if a late stoppage / restriction booking is accepted by the Works Engineer less than 8 weeks before the stoppage start date the charge is increased by 50% (see example D)
- compensation for freight carriers and other businesses may also be required
- stoppages will not normally exceed four weeks in duration

Length of Stoppage	Up to 30 min delay	Up to 5 hrs between 07:00 and 20:00	Over-night from 20:00 to 07:00	24 hours Mon – Fri	24 hours Sat / Sun	per 5 day period (Monday to Friday)
<b>Commercial Waterways</b>						
Ship Canal <i>e.g. Caledonian Canal</i>	<i>no charge</i>	£5,000	£2,100	£14,000	£15,500	<i>not available</i>
Commercial (heavy use) <i>e.g. Aire &amp; Calder Navigation</i>	<i>not available</i>	£2,200	£1,800	£6,500	£7,200	<i>not available</i>
Commercial (light use) <i>e.g. Gloucester &amp; Sharpness Canal</i>	<i>no charge</i>	£550	£350	£1,400	£1,800	£5,500
<b>Leisure Waterways</b>						
Busy <i>e.g. Llangollen Canal</i>	<i>no charge</i>	£500	£350	£1,050	£1,400	£4,100
Medium Use <i>e.g. Monmouthshire &amp; Brecon Canal</i>	<i>no charge</i>	£360	£220	£690	£1,150	£2,750
Light Use <i>e.g. Bridgwater &amp; Taunton Canal</i>	<i>no charge</i>	£180	£110	£330	£470	£1,375

To reflect traffic levels at different times of year a multiplier is applied. To represent the loss of availability for the period before and after a bank holiday, a fixed sum is added to the charge, except where the canal is not used at all for leisure purposes. These are defined below. This table is reviewed annually:

From	To		Commercial navigations	Leisure waterways	Holiday period fixed charge
02-MAR-12	30-MAR-12		2.5	5	
31-MAR-12	15-APR-12	(Easter Period)	4	10	£25k
16-APR-12	05-MAY-12		2.5	5	
06-MAY-12	13-MAY-12	(Bank Holiday Period)	3	8	£24k
14-MAY-12	01-JUN-12		2.5	6	
02-JUN-12	09-JUN-12	(Bank Holiday Period)	4	10	£30k
10-JUN-12	30-JUN-12		2.5	9	
01-JUL-12	24-AUG-12		2.5	12	
25-AUG-12	02-SEP-12	(Bank Holiday Period)	4	15	£30k
03-SEP-12	30-SEP-12		2.5	8	
01-OCT-12	11-NOV-12		2	5	
12-NOV-12	21-DEC-12	(low season)	1	0.8	
22-DEC-12	02-JAN-13	(Christmas & New Year)	3	6	£30k
03-JAN-13	22-FEB-13	(low season)	1	0.8	
23-FEB-13	22-MAR-13		2.5	5	
23-MAR-13	07-APR-13	(Easter Period)	4	10	£25k
08-APR-13	03-MAY-13		2.5	5	
04-MAY-13	12-MAY-13	(Bank Holiday Period)	3	8	£24k
13-MAY-13	24-MAY-13		2.5	6	
25-MAY-13	02-JUN-13	(Bank Holiday Period)	4	10	£30k
03-JUN-13	30-JUN-13		2.5	9	
01-JUL-13	23-AUG-13		2.5	12	
24-AUG-13	01-SEP-13	(Bank Holiday Period)	4	15	£30k
02-SEP-13	30-SEP-13		2.5	8	
01-OCT-13	10-NOV-13		2	5	
11-NOV-13	20-DEC-13	(low season)	1	0.8	
21-DEC-13	05-JAN-14	(Christmas & New Year)	3	6	£30k
06-JAN-14	21-FEB-14	(low season)	1	0.8	
22-FEB-14	11-APR-14		2.5	5	
12-APR-14	27-APR-14	(Easter Period)	4	10	£25k
28-APR-14	11-MAY-14	(Bank Holiday Period)	3	8	£24k
12-MAY-14	23-MAY-14		2.5	6	

**Stoppage Charge Examples (All figures were correct in 2010, please review rates applicable for actual stoppage dates required as rates may have changed)**

**Example A**

**August Bank Holiday (Friday to Monday) on Trent**

**(Light use Commercial)**

Basic rate for Friday & Monday £1,400  
Basic rate for Saturday, Sunday £1,800  
Multiply by 4 (August multiplier)  
Add £29,000 (bank holiday fixed charge)  
 $\pounds[(2 \times 1,400) + (2 \times 1,800)]4 + 29,000 = \pounds54,600$

**Example C**

Two weeks (Monday to Friday) in February on Llangollen Canal (busy leisure), with over-run of 7 days  
Basic rate for Monday to Friday £4,100  
Basic rate for Saturday & Sunday £1,400  
Multiply by 0.8 (February multiplier)  
 $\pounds[(4,100 \times 2) + (1,400 \times 2)] 0.8 = \pounds8,800$   
add  $[\pounds4,100 + (2 \times \pounds1,400)] \times 2$  (over-run)  $\times 0.8$  (time of year) for the over-run =  $\pounds11,040$   
 $\pounds8,800 + \pounds11,040 = \pounds19,840$

**Example E**

Three weeks (Monday to Friday) in February on Llangollen Canal (busy leisure)  
Basic rate for Monday to Friday £4,100  
Basic rate for Saturday & Sunday £1,400  
Multiply by 0.8 (Low season multiplier)  
 $\pounds[(4,100 \times 3) + (1,400 \times 4)] 0.8 = \pounds14,320$

**Example G**

Overnight in June on Selby Canal (medium use leisure)  
Basic rate for overnight £220  
Multiply by 9 (June multiplier)  
Charge  $\pounds1,980$

**Example I**

Ten weeks (Monday to Friday) on Monmouthshire & Brecon Canal (medium use leisure) from Monday early November to Friday mid Jan, including Christmas  
7 weeks (Monday to Friday) before Christmas  
12 weekend days before Christmas  
Christmas / New Year - 6 weekend days, 2 full weeks (including Bank Holidays) & 1 day.  
1 week (Monday to Friday) & 4 days after Christmas  
4 weekend days after Christmas  
Basic rate for Monday to Friday £2,750  
Basic rate for Saturday & Sunday £1,150

**Example B**

Two weeks (Monday to Friday) in February on Llangollen Canal (busy leisure)  
Basic rate for Monday to Friday £4,100 per day  
Basic rate for Saturday & Sunday £1,400  
Multiply by 0.8 (February multiplier)  
 $\pounds[(4,100 \times 2) + (1,400 \times 2)] 0.8 = \pounds8,800$

**Example D**

Two weeks (Monday to Friday) in February on Llangollen Canal (busy leisure) booked less than 8 weeks before the start date  
Basic rate for Monday to Friday £4,100  
Basic rate for Saturday & Sunday £1,400  
Multiply by 0.8 (February multiplier)  
 $\pounds[(4,100 \times 2) + (1,400 \times 2)] 0.8 = \pounds8,800$   
Multiply by 1.50 (late booking)  
 $\pounds13,200$

**Example F**

Ten weeks (Monday to Friday) on Monmouthshire & Brecon Canal (medium use leisure) from Monday early Jan  
10 weeks (Monday to Friday)  
18 weekend days  
Basic rate for Monday to Friday £2,750  
Basic rate for Saturday & Sunday £1,150  
Low season multiplier 0.8  
 $\pounds[(10 \times 2,750) + (18 \times 1,150)] 0.8 = \pounds38,560$   
Total charge  $\pounds38,560$

**Example H**

Up to 5 hours on a May Tuesday on Aire & Calder Navigation (busy commercial)  
Basic rate for up to 5 hours, day time £2,200 (= busy commercial)  
Multiply by 2.5  
Charge  $\pounds5,500$

Basic daily rate £690  
Low season multiplier 0.8  
Christmas / New Year multiplier 6  
Add £23,000 (bank holiday fixed charge)  
before Christmas  $\pounds[(7 \times 2,750) + (12 \times 1,150)] 0.8 = \pounds26,440$   
Christmas / New Year  $\pounds[(6 \times 1,150) + (2 \times 1,750) + (1 \times 690)] \times 6 + 23,000 = \pounds101,540$   
after Christmas  $\pounds[(1 \times 2,750) + (2 \times 1,150)] + (4 \times 690)] 0.8 = \pounds6,248$   
Total charge  $\pounds134,228$

# APPENDIX 14: SPECIAL REQUIREMENTS IN RELATION TO THE BRITISH WATERWAYS BOARD

## INTRODUCTION

The following should be inserted into Works Contracts with additional agreed clauses being added as required.

In these Special Requirements, the definitions vary from those in the rest of this Code to reflect the different contractual position:

- 'Employer' is used rather than 'Promoter'
- 'Board's Representative' is used rather than 'Works Engineer'
- 'The Board' is used rather than 'British Waterways'
- This section includes the contract clauses agreed with the Highways Agency (Guidance Note 28 MCD Special Requirements in relation to the British Waterways Board).

## SPECIAL REQUIREMENTS IN RELATION TO THE BRITISH WATERWAYS BOARD

1. In these Special Requirements the following terms shall have the meanings assigned to them:
  - a) 'The Board' means the British Waterways Board
  - b) 'Board's Representative' means the Engineering Manager of the British Waterways Board or other duly Authorised Representative and/or Agent appointed for the time being to act on his or her behalf by the Board
  - c) 'Waterway' means any canal towpath river culvert feeder reservoir watercourse or channel and/or property or premises of any kind administered owned leased or rented by 'The Board' in pursuit of or as part of its Statutory functions or its business
  - d) 'The Board's By-Laws' means the General Canal Bye-Laws dated 1965 and subsequent amendments
2. The Contractor shall particularly note that the Board is established by Act of Parliament and that its responsibilities for the Board's Waterway Property and Premises are the subject of Statutory Law and The Board's Bye-Laws with which the Contractor should familiarise himself.
3. The Contractor shall provide to the Board's Representative:
  - a) at least 14 days written notice before commencing any work or moving heavy plant or equipment over any portion of the Site on in or affecting the Board's Waterway Property or premises
  - b) at least 14 days written notice of all new temporary works including preparatory work for permanent works
  - c) at least 14 days written notice of all pile-line setting out
  - d) at least 14 days written notice all puddling processes
  - e) an outline programme for the Works
  - f) a Method Statement for all Works or operations which may affect the Waterway

- g) a Safety Plan that addresses the hazards and risks to users of the Waterway, the Board's employees, the environment under the control of The Board, the property of the Board and the property of legitimate visitors to the Board's facilities
  - h) details of any Temporary Works affecting the Waterway
  - i) subject to the Employer's agreement copies of Environmental Impact Assessments (if any) as may be required by the Employer under the Contract
  - j) the completed work before the Contractor moves off site.
- 4 The Contractor shall present and maintain to the satisfaction of the Board's Representative an up to date General Arrangement drawing of adequate scale and details showing the Permanent and Temporary Works as they affect the Waterway towing path property and/or premises of the Board.
  - 5 The Contractor shall provide to the Board's Representative **NOT LESS** than 7 days written notice of any change to the programme, the Method Statement/Safety Plan or details which affect the Waterway. The Board's Representative can be contacted at the following point:
 

Address:	(project specific)
Telephone:	(project specific)
Emergency telephone:	0800 47 999 47
Fax:	(project specific)
  - 6 The Contractor will be required to obtain the agreement of the Board's Representative for setting out of major elements of the Works on or affecting the Board's Waterway property or premises.
  - 7 All operations affecting the Board's Waterway property or premises shall be carried out in such a manner so as not to endanger or damage the Board's property and/or any persons entitled to be present thereon and to avoid (except to the extent agreed in writing) any interference to the free movement of any persons, pedestrians and/or road and waterborne traffic.
  8. The Contractor shall not commence any Works, particularly excavation piling or dredging work, until adequate provisions to the satisfaction of the Board's Representative have been taken to ensure the stability and security of any Waterway or associated supporting structures whether in the ownership of The Board or not and to prevent the escape of water there from.
  9. The Contractor shall if required by the Board's Representative provide temporary fencing to the satisfaction of the Board's Representative to provide safety and to prevent trespass or the straying of animal or poultry stock.
  10. The Board's Representative shall at all times have reasonable access to the Board's Waterways property or premises on the site.
  11. Unless otherwise agreed uninterrupted passage for craft on the Waterway is to be maintained at all times. All lights provided by the Contractor shall be so placed or screened so as not to interfere with any signal lights, navigation lights and/or beacons of the Board. Any Temporary Works which obscure signs signals or beacons shall not be erected without the written permission of the Board's Representative.
  12. In addition to any special marking or lighting requirements of the Board's Representative, warning notices/signs/lights must be displayed throughout the duration of the Works as follows:

- boards with the words "CAUTION - WORKS IN PROGRESS" in red letters 150 mm high on a white background shall be erected on both banks of the navigation at a distance of 100 and 200 metres upstream and downstream of the Works
- where appropriate, metal squares 450 mm by 450 mm of cruciform construction painted red shall be displayed to define the navigation opening upstream and downstream of the Works and also at the extremities of the lead into the navigation opening both upstream and downstream of the Works
- by night, lights shall be displayed to define the navigation opening upstream and downstream of the Works. Two red lights side by side, 300 mm apart should be fixed at each position and in addition an amber light should be displayed upstream and downstream of the Works to mark the centre of the navigation opening.

It should be noted that the requirements for signing and lighting may vary from Waterway to Waterway, but the above is to be regarded as a minimum requirement unless otherwise directed. The Promoter should check with the Board whether the navigation is affected by the navigation marker requirements of IALA, Trinity House and the Northern Lighthouse Board.

Where the completion of the Works in accordance with the Contract on or near the edge of the Waterway involves projections of any kind into the navigable channel and/or anywhere vertically above the line of its edge the Contractor shall conform to the Board's Bye-Laws in respect of signing, marking, lighting and fendering.

13. All lights provided by the Contractor shall be so placed or screened so as not to interfere with any signal lights, navigation lights and/or beacons of the Board. Any Temporary Works which may interfere with the sighting of such equipment shall not be erected without the written permission of the Board's Representative.
14. No construction equipment for the Works shall be allowed on the Board's property and, in particular, adjacent to the canal without the acceptance of the Board's Representative which may be subject to the prior submission of stability calculations.
15. The Contractor shall NOT without the specific written permission of the Board's Representative (and then ONLY under such conditions and restrictions as the Board's Representative may require) do any of the following:
  - a) Use or place plant and/or heavy vehicles which may cause damage to the Waterway and which shall particularly include but not be limited to damage to Waterway walls.
  - b) 'Crane' or otherwise similarly move plant materials and/or vehicles over any Waterway.
  - c) Use floating plant barges and/or pontoons and the like in any Waterway.
  - d) Excavate, tunnel or carry such other underground operations beneath any Waterway.
  - e) Display any advertisement or other material, except as specifically required by this Special Requirement, on or above The Board's Waterway property or premises.
  - f) Discharge trade or sewage effluent, or arisings, surface water of any kind in any way into or onto The Board's Waterway property or premises.
  - g) Abstract extract and/or draw water from the Board's Waterway property or premises.
  - h) Damage or remove flora, fauna, waterway relics, architectural heritage, industrial heritage, landscaping, towing paths or waterway walls.
  - i) Store fuel or oil re-fuel service vehicles or plant on or in proximity to the Waterway where there is a risk of pollutants entering the Waterway.

j) Access the Board's property or premises by any unauthorised route.

16. The Contractor shall take all necessary measures to prevent:

- a) Siltation of any Waterways.
- b) Damage to the Board's property and premises.
- c) Construction debris, materials or arisings of any sort which shall include but not be limited to bricks, timber, containers of any kind, reinforcing bars, polythene or plastic sheeting entering any Waterway.
- d) Contamination of the Waterway with any toxic, or other polluting matter or liquid of any sort which shall include but not be limited to grout, concrete, or silane.
- e) The creation of any hazard to the visitors to the Waterway which shall include but not be limited to oxy-acetylene burning, welding, grit blasting, water jetting or cleansing, spraying or pointing. Alternatively all such Works shall cease until the craft or persons are past and clear.
- f) The spread of any prohibited species which shall include but not be limited to Japanese Knotweed or Giant Hogweed.
- g) In the event of any of the above occurring the Contractor shall immediately inform the Board's Representative and the Engineer and shall immediately carry out the instructions of the latter to abate and remedy the situation.

17. On completion of the Works all surplus material attributable to the Works, including any temporary works, on the Board's property shall be removed from it and the property shall be made good to the satisfaction of the Board's Representative.

18. Prior to Works being carried out the cross section of the canal will be determined by the Contractor by dipping. During the carrying out of the Works all debris and material resulting from or used in connection with the Works, which may cause damage or danger to the Board's property and/or Waterway or those using it, must be removed immediately and to the satisfaction of the Board's Representative. After Works are complete the canal must be dipped again to ensure that no debris remains.

19. Where for the purpose of completing the Works in accordance with the Contract any Temporary Works are required above the Waterway the Contractor shall, except where otherwise specified in the Contract or agreed in writing by the Board's Representative, provide and maintain a minimum height clearance of not less than (...project specific...m) above the water surface of the Waterway or highest expected water surface where this is variable.

20. The Contractor should particularly note when planning any work in relation to the Waterway that the Board cannot guarantee any particular water level or depth not prevent any fluctuations to such water level depth or speed of flow in any Waterway.

21. If completion of the Works in accordance with the Contract necessitates the closure and/or the reduction in width of the Waterway or towpath the Contractor shall strictly comply and work within the arrangements and limits which shall have been the subject of an Agreement between the Employer and The Board for the closure and/or reduction in width of the Waterway or towpath.

22. Where the completion of the Works in accordance with the Contract on or near the edge of the Waterway involves projections of any kind into the navigable channel and/or anywhere vertically above the line of its edge the Contractor shall conform to the Board's Bylaws in respect of signing, marking, lighting and fendering.

23. Any vessel or craft on the Waterway for which the Contractor has obtained the permission of the Board's Representative shall be licensed used and moored in accordance with the Board's Bye-Laws.
24. If any plant, vessel or craft falls or sinks or is cast adrift the Contractor shall immediately inform the Board's Representative and the Engineer and take immediate steps to make the hazard known to users of the Waterway. The Contractor shall immediately arrange the salvage/re-securing of the plant, vessel or craft from the Waterway and until such salvage/re-securing has been completed the Contractor shall provide buoys and/or markers and erect warning notices indicating the navigation hazard to Waterway users to the satisfaction of the Board's Representative.
25. The Contractor shall keep the Board's Waterways property or premises free from rubbish. The Contractor shall not leave rubbish on or in Waterways property or premises and shall subject to the approval of the Engineer clear away and remove all constructional plant surplus materials and Temporary Works from Waterways property or premises as and when these cease to be required for the purposes of the Works. All damage to The Board's property shall be made good by the Contractor to the satisfaction of the Board's Representative.

## **EMERGENCY ACTION**

26. The following actions shall be taken by the Contractor in the event of any damage in the Waterway its containment and/or supporting structure or banking:
  - a) IMMEDIATELY inform the Board, the Engineer and (if required) the Emergency services.
  - b) Secure the area from the approach of traffic and/or the general public.
  - c) Render every assistance to the Emergency Services and/or the Board as shall be requested for the purposes of mitigating water loss and/or damage arising from the incident and/or for the purpose of securing public safety and the stability of other property.
- 27 Compliance with the above requirements shall not relieve the Contractor or any of his or her obligations under the Contract.



## **APPENDIX 15: SIGNAGE**

Common signage used at construction works on the waterway is:

**NO MOORING**

**CAUTION WORK IN PROGRESS**

**CYCLISTS DISMOUNT**

**NO  
MOORING**



**British  
Waterways**

**CAUTION  
WORK IN  
PROGRESS**



# CYCLISTS DISMOUNT



## **Introduction**

It is extremely important for British Waterways that applicants wishing to discharge surface water into inland waterways follow the principles of UK planning policy and in particular that any flood risk assessments are consistent with the processes outlined in the accompanying technical guidance to those policies.

This document provides detailed information to assist applicants in producing outline and detailed impact assessments which will be acceptable to British Waterways.

The responsibility for producing a site specific impact assessment is with the applicant and the assessment should accompany any planning application. If the applicant, as part of their site drainage plan, wish to discharge surface water into an inland waterway owned or managed by British Waterways then an impact assessment should be submitted for British Waterways approval. In order to deliver a successful outcome for all parties it is vital that British Waterways is consulted as early in the process as possible, even before the land is purchased.

British Waterways requires that the assessment should reflect the additional risk and a two stage process is adopted of an Outline Impact Assessment (section 2.1) followed by a more Detailed Impact Assessment (section 2.2), if necessary.

## **Producing an impact assessment**

The addition of surface water to a waterway is likely to increase the flood risk if the peak flow rate and volume are greater than the existing inflow. This increase will occur in all sections of canal until the water is discharged from the system.

If the applicant can demonstrate, to British Waterways satisfaction, that the peak rate of discharge from the site to the waterway after development (including an allowance for climate change and urban creep) will be less than (or equal to) the pre-development situation (including an allowance for climate change) then a statement of this, accompanied by supporting calculations (see Section 2.1), will be regarded as an acceptable impact assessment.

Where this is not the case, the aim of the impact assessment is to determine any increase in waterway water level as a result of a new discharge and propose mitigation works so that any change in flood risk is acceptable to British Waterways. The geographical extent of the assessment must include the waterway length from the point of discharge into the waterway (including to the upstream lock) to the point of exit from the waterway (including the downstream lock) see Figure 1 below.

For river navigations the applicant will need to discuss with British Waterways whether our agreement is required in addition to any permissions from the Environment Agency. riparian land

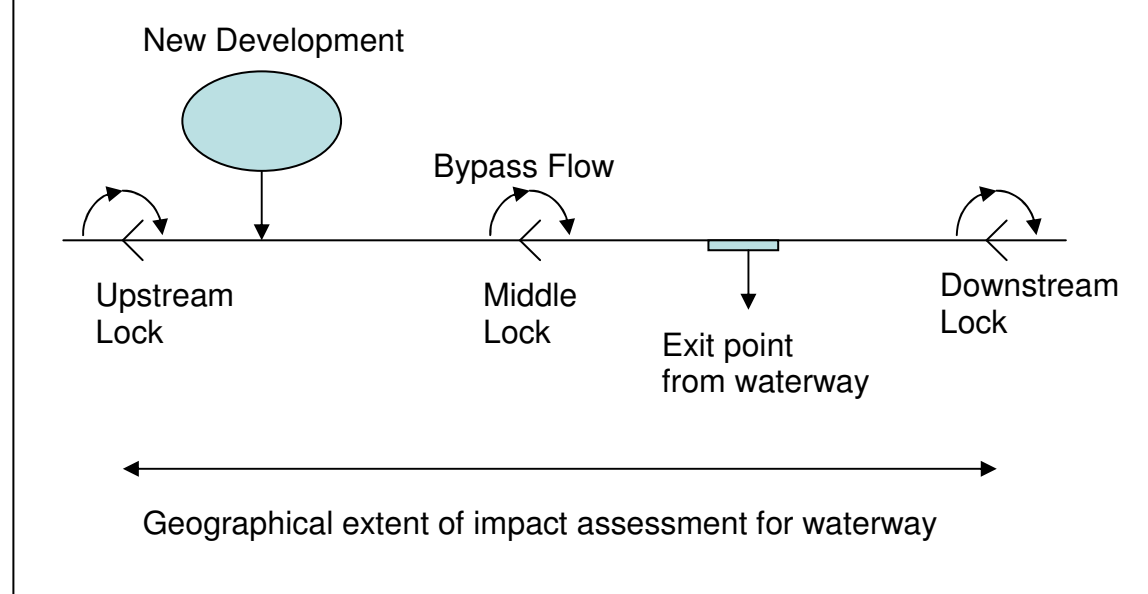


Figure 1 Illustration of typical geographical extent of Impact Assessment

### ***a. Determining change to inflows to the waterway***

The applicant will need to determine the quantity of water currently entering the waterway (pre-development scenario) and compare that with the post development quantity (post-development scenario). For both scenarios this will include the derivation of a full flood hydrograph for the development site. Where SUDS<sup>1</sup> schemes are proposed the applicant should demonstrate that any increase in inflow to the waterway is acceptable to British Waterways and that the long term maintenance is adopted either by a local authority or sewerage undertaker<sup>2</sup>. Where this is demonstrated to the satisfaction of British Waterways there will be no need to undertake any further hydraulic analyses of the waterway.

The use of drainage software models to produce the pre and post development hydrographs is encouraged. Various drainage simulation models are available commercially, for example BW currently utilise the WinDes modelling suite produced by Micro Drainage (V12.6, 2011) when auditing drainage designs.

<sup>1</sup> SUDS: Sustainable drainage systems or sustainable (urban) drainage systems: a sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques (may also be referred to as SuDS).

<sup>2</sup> The Flood and Water Management Act received Royal assent in April 2010, Schedule 3 of the Act, which is concerned with SuDS is yet to be commenced.

At the county and unitary level the Act establishes a SuDS approving body (SAB). The SAB will have responsibility for the approval of proposed drainage systems in new developments and redevelopments (in accordance with National Standards for Sustainable Drainage). The Act also requires the SAB to adopt and maintain approved SuDS that serve

The current land use, for the development site, is important in determining the pre-development runoff. For greenfield sites the applicant will need to determine the greenfield runoff rates for the 1 in 100 year flood event (1% annual exceedance probability), in Scotland SEPA may require the flood risk assessment to demonstrate the effect of the 1 in 200 year flood event. The pre-development rate will include a 20%<sup>3</sup> increase in peak flow to account for climate change.

The methods that British Waterways will accept for determining this flow are summarised in Table 1 below.

<p>Institute of Hydrology (IH) Report 124 Flood Estimation for Small Catchments (1994)</p>	<p>The Interim Code of Practice for SUDS recommends the QBAR equation in IH 124 for greenfield runoff estimation for areas up to 200ha (2km<sup>2</sup>). For areas smaller than 50ha (0.5km<sup>2</sup>), the recommendation is to use 50ha in the formula and linearly interpolate the flow rate based on site area. FSSR 2 and 14 regional growth curve factors should be used to calculate the greenfield peak flow rates for all year return periods from QBAR.</p>	<p>50 ha – 200ha, but see comments for smaller catchments.</p>
<p>Revitalised Flood Hydrograph Method (ReFH) (2005).</p>	<p>ReFH has superseded the Flood Estimation Handbook (FEH) method and IH 124 for most applications.</p> <p>Developed for catchments &gt;50ha.</p> <p>Analysts should refer to <a href="http://www.ceh.ac.uk/Feh2/FEHReFH.html">http://www.ceh.ac.uk/Feh2/FEHReFH.html</a> for guidance on the ReFH method and to download the free spreadsheet implementation.</p>	<p>Calibrated for return periods up to 150 years.</p> <p>For catchments &lt;50 ha, downscaling is acceptable. ReFH Method is not currently accepted by SEPA.</p>

The inflow hydrograph should be determined for different storm durations. As the catchments tend to be quite small the durations should start at 15 minutes and include up to 1440 minutes. These durations could be extended if the catchment size requires it.

If the development land is below the level of the waterway then the applicant will still be required to determine the 1 in 100 year return period water levels in relation to the waterway to demonstrate that there are currently no other flow paths to the waterway.

### Brownfield Runoff

Where the development land is currently brownfield the applicant should determine the 1 in 100 year inflows to the waterway. If the existing drainage system is known then it should be modelled using best practice simulation modelling, to determine the peak flow rates. If the system is not known, then the brownfield runoff should be calculated using IH124, described above, but with a Soil Type 5. The pre-development rate will include a 20%<sup>4</sup> increase in peak flow to account for climate change.

### Pumped Inflows



any other flow sources for the 1 in 100 year return period flood (including a 20%<sup>5</sup> increase in peak flow to account for climate change).

For example if the pump is only designed to cope with the 1 in 30 year flood, what happens to the additional water in a 1 in 100 year event?

## **ii. Calculating post development inflows**

The applicant should derive the 1 in 100 year return period flood flows into the waterway plus a 20%<sup>6</sup> increase in peak flows for climate change and a further 10%<sup>7</sup> increase in peak flows for urban creep (if the discharge is from a residential development or mixed use development). For mixed developments the 10% increase for urban creep should only be applied to the residential proportion. The percentage increases are not compound and the maximum increase is 30%. The applicant will have to demonstrate all flow paths to the waterway including pipe flow, pumped flow and overland flow. For example, if a piped network is only designed for a 1 in 30 year return period flood then the applicant will need to provide details of any overland flows which will enter the waterway in the 1 in 100 year event (plus climate change and urban creep).

The inflow hydrograph will be determined for different storm durations. As the catchments tend to be quite small the durations should start at 15 minutes and include up to 1440 minutes. These durations could be extended if the catchment size requires it.

## ***b. Predicting impact on waterway water levels***

The impact assessment must include the impact on waterway water levels for all pounds (length of waterway between locks) between the point of discharge to the waterway and the point of discharge from the waterway (see above for definition).

The inflow for the different storm durations should be input into a hydraulic model to determine the storm duration which gives the maximum canal water level. This storm duration will be the design storm duration for any mitigation works. The methods used to determine the water levels will range in complexity depending on the required accuracy of the solution.

## **i. Steady State Models**

Steady state models may be used (be it commercially produced software or via gradually varied flow backwatering calculations (Chow, 1973 and Chadwick and Morfett, 1999) However, since such methods do not incorporate temporary storage or routing effects they will result in the

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<sup>5</sup> PPS 25 Appendix B (Revised March 2010)

<sup>6</sup> PPS 25 Appendix B (Revised March 2010)

<sup>7</sup> Future Impacts on Sewer Systems in England and Wales Ofwat Report (2011) reports a median increase in

## ii. Hydrodynamic Models

The use of hydrodynamic models will not introduce the conservatism of the steady state approach in terms of the mitigation works. Various hydrodynamic models are available commercially, for example British Waterways currently uses the hydraulic modelling suite ISIS produced by Halcrow (2011) when considering flood studies. BW has much hydrographic data for the waterway system, which may be loaded directly into this modelling suite.

When water levels are forecast to exceed the bank levels and water would pass out of the waterway (offside or towpath on waterways) then the channel banks should be considered to act as weirs (or 'spills'). It is not acceptable to assume that all the flood water would be contained within the channel, this is commonly termed 'glass walling' of the banks.

## iii. Hydraulic Model assumptions and data requirements

When undertaking an hydraulic analysis reference should be made to BW (2011) for details of:

- How to hydraulically resolve in channel flow (e.g. guidelines for derivation of hydraulic roughness' for backwatering or hydrodynamic modelling);
- How to resolve head losses at bridges, tunnels and aqueducts.
- How to resolve hydraulic structures (e.g. side weirs, by-weirs, culverts etc.)

Table 2 below provides details of typical data requirements for the steady state, and hydrodynamic methods. BW often holds much of this information, however, there may be a need for the applicant to undertake or commission a survey to supplement existing data.

Table 2: Typical data requirements for Hydraulic Methods

Characteristic	Typical Data Requirements
Watercourse	<p>Cross sections are typically required at 50m longitudinal interval and lateral spot height separation of 1m. Bed type recorded (e.g. silt/ clay puddle, concrete, brickwork etc.).</p> <p>Cross sections are generally required at the centreline of each channel constriction (e.g. bridge or stop plank narrow) and at each portal of tunnel or limits of</p>

	any low spots.  Photograph of watercourse at each cross section to evaluate hydraulic roughness.
Structures	
Culverts	Diameter, invert levels (inlet & outlet), culvert material. Photographs of inlet chamber/ intake and outlet.
Weirs	Crest height, crest length, crest breadth, depth of channel immediately upstream of weir, any slot depths, any towpath support widths.
Locks	Effective height of top of lock gates (top beams), gate length, gate width, weir slot length, height of effective weir slots (to underside of balance beams) for both head and tail gates
Sluices	Gate opening width, maximum vertical gate opening, invert level of gate, culvert dimensions (see above) should sluice discharge into culvert.

Detailed guidance on key specific properties of each structural type is given in BW (2011); all levels should be quoted to a common datum throughout

In addition to the model data requirements the following model boundary condition should be used. To determine the flow from the upstream pound(s), 100 mm over the upstream bypass weir crest(s) should be assumed. If this level is high enough for water to flow over the top lock gates then this should be allowed for in the modelling. If this assumption does not result in at least 50mm being discharged out of the system over storm weirs then the u/s flow(s) should be increased iteratively until this minimum level is reached.

For river navigations with higher flows and more complex water control structures the model boundary conditions should be agreed with British Waterways during the application process.

#### **iv. Modelling Results**

The outputs from the modelling should be presented as pre and post development 1 in 100 year water levels (including a 20% increase in peak flow to account for climate change and an additional 10% increase in peak flow to account for urban creep for the post development situation) at a spatial resolution agreed at the application stage. In general, water levels will be produced at each model cross section and reported in the flood risk assessment. These water levels will be reported against bank levels, both offside and towpath side.

The applicant will also submit a copy of any hydraulic calculations and/ or hydraulic model data and result files along with any topographical surveys.

level in the waterway. If the analysis shows that the proposed discharge will increase water levels then the applicant must propose mitigation measures which will limit the increase in flood risk to a level acceptable to British Waterways.

### **i. Improvements to existing and proposed new infrastructure**

There are a number of improvements which could be made to a waterway length to mitigate the effects of the discharge. These could include:

- Raising bank levels
- Increasing the capacity of existing bypass and storm weir structures
- Increasing the size of a sluice
- Automation of structures
- Installing new weirs, culverts and sluices

These options should be discussed with British Waterways and once agreed revised calculations should be made on waterway water levels.

### **ii. SUDS schemes**

As an alternative to waterway improvement works the applicant could propose a SUDS scheme to attenuate in part or in whole the flood inflows at source. The technical design of SUDS schemes is well understood and described in detail in CIRIA's SUDS Manual C697 (2007). The applicant should provide all relevant information so that the scheme can be technically reviewed by British Waterways. In particular the applicant should comment on the maintenance requirements of the scheme and provide evidence of an agreement to adopt the scheme either with a sewerage undertaker or local authority (see footnote 2). If this evidence cannot be provided then the scheme will be assessed as if the SUDS scheme was not operational. In this instance the applicant should propose mitigation measures within the waterway.

### ***d. Impacts on downstream watercourses***

The identification of mitigation and improvement works could result, if built, in an increase in flow from the waterway to downstream watercourses. The consequences of this may require in certain circumstances the applicant extending the scope of the impact assessment to the downstream watercourse. This will be discussed and agreed with British Waterways during the application process. British Waterways may wish to undertake this assessment and would recover the associated costs from the developer.

## **Submitting the impact assessment**

summarised below. This table could be used as a check list for submission.

	<b>Impact Assessment?</b>
<p>Written description of the development site (accompanied by photographs if appropriate) detailing:</p> <p>Pre-development use and proposed development extent and characteristics of the site.</p> <p>Existing site drainage arrangements and proposed drainage scheme</p> <p>Relationship of site to British Waterways waterway</p>	
<p>Plan of site showing:</p> <p>development site catchment area, outline or detailed drainage design and relationship to any part of BW's system (e.g. waterway pound(s), river navigation, reservoir, feeder channel etc.).as hard copy or digitally (AutoCAD® DWG, DXF™, and DWF files)</p>	
<p>Details of catchment parameters: area, soil, percentage impermeable, percentage permeable etc. used to estimate pre and post development site runoff.</p>	
<p>Description of method of runoff estimation employed for pre and post proposed development.</p>	
<p>Digital copies of all pre and post development discharge hydrographs</p>	
<p>Digital copies of drainage design calculations and/ or drainage model data and result files for both pre and post proposed development.</p>	
<p>Description of the method of hydraulic analysis employed (if applicable)</p>	
<p>Location and dimensional details of proposed mitigation works (if applicable)</p>	
<p>Table comparing forecast pre and post proposed development water levels (quoted to nearest mm) and flows. Table should also</p>	

Digital copies of hydraulic calculations and/ or hydraulic model data and result files for both pre and post proposed development (if applicable)

Digital copy of any survey work commissioned for the investigation (if applicable)

1. Planning Policy Statement 25 (PPS25) : Development and Flood Risk (March 2010), Communities and Local Government
2. Planning Policy Statement 25: Development and Flood Risk - Practice Guide (December 2009), Communities and Local Government
3. Technical Advice Note (TAN) 15: Development and Flood Risk (2004), Planning Policy Wales, Welsh Assembly Government
4. Scottish Planning Policy (SPP) 7 Planning and Flooding (2004), Scottish Executive, Development Department
5. Institute of Hydrology (IH) Report 124 Flood Estimation for Small Catchments (1994)
6. National SUDS Working Group (2004). Interim Code of Practice for Sustainable Urban Drainage Systems
7. NERC, 1977, FSSR 2 The estimation of low return period flows – Flood Studies Supplementary Report, Institute of Hydrology
8. NERC, 1983, FSSR 14, Review of Regional Growth curves, Flood Studies Supplementary Report, Institute of Hydrology
9. The revitalised FSR/FEH rainfall / runoff method, Flood Estimation Handbook Supplementary Report No.1, Kjeldsen, T.R (2007)
10. Future Impacts on Sewer Systems in England and Wales: Summary of a Hydraulic Modelling Exercise Reviewing the Impact of Climate Change, Population and Growth in Impermeable Areas up to Around 2040. Ofwat (June 2011)
11. Chow, V.T., 1973. Open-channel hydraulics. International Edition. Published by McGraw-Hill Book Company. ISBN 0 07 085906 X. Available from: [Amazon.co.uk](http://Amazon.co.uk).
12. Chadwick A.J. & Morfett J.C., 1999. Hydraulics in civil and environment engineering. Published by E & F.N. Spon. Third Edition. ISBN 0 419 22580 3. Available from: [Amazon.co.uk](http://Amazon.co.uk).
13. BW Approved Standard : Hydraulic Design of Canal Works V3.1 (Jan 2011)
14. CIRIA, C697 The SUDS Manual (2007)

Additional references not specifically mentioned in text:

15. CIRIA, C624 Development and flood risk – guidance for the construction industry (2004)
16. Rainfall Runoff Management for Developments - Interim National Procedure from Defra/Environment Agency Flood and Coastal Defence R&D Programme Technical Report W5-074A/TR/1 Revision B (2004)