


Derby River Bus

City Centre to Darley Abbey Mills Feasibility Study

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1. Introduction and Previous Operation

BACKGROUND TO THE REPORT

- 1.1 This report has been commissioned by Derbyshire County Council acting for the Derwent Valley World Heritage Site Partnership to investigate the feasibility of providing a river boat service from the city centre to Darley Abbey Mills, about 3 km upstream of the city centre on the River Derwent. This report examines the type of service that could be offered, the potential demand for such a service and the practicality of delivering it. The likely revenue to the operator is explored, along with the benefits in providing access to Darley Abbey Mills by non-car transport.

PREVIOUS OPERATION

- 1.2 In 1991 Derby City Council granted a license to operate a 12 person pleasure craft over council owned property between Derby City Centre and the Silk Mills at Darley Abbey. It was subject to several conditions including:
- ◆ A license fee of £15 per month.
 - ◆ The acquirement by the licensee of necessary licenses, certificates, planning approvals and other statutory consents.
 - ◆ The rights of navigation granted only where the City Council is the riparian owner of the riverbed. The licensee needed to obtain appropriate approval from all other land owners and interested parties with regard to the passage of the boat.
 - ◆ The maximum speed of the boat to be restricted to 4 miles per hour. This to be interpreted as 5 miles per hour with the current and 3 miles per hour against the current.
 - ◆ The licensee to be responsible for the cost of clearing the outfall of the Markeaton Brook in the River Gardens for the purposes of the secure mooring and providing suitable doors to be approved by the Director of Leisure Services.
 - ◆ The licensee to provide all necessary temporary moorings for the operation of the craft. Also to obtain third party insurance to cover for liability for any passengers which are carried or any damage or injury which may be caused to any other person or property.
 - ◆ Boat and moorings to be kept in good repair and no alterations to be made to the moorings without the consent of the Director of Leisure services;
 - ◆ Certificate of worthiness to be obtained from a qualified Marine Surveyor. This certificate to be endorsed by the Director of Leisure services. A record to be kept of the number of persons on board the boat at any time to be kept on the shore.
 - ◆ Licence not available during the Derby Regatta;
 - ◆ The boat to be only used as a public pleasure boat. No alcohol to be sold;
 - ◆ Nothing to be done in the boat that will cause annoyance, nuisance, disturbance or damage to the City Council or any other owner, tenant, or occupier of any land adjoining neighbouring property.

- ◆ The license does not create the relationship of landlord and tenant between the parties and the licensee may not transfer the license to any other party.
 - ◆ The city council reserves the right to resume possession at any time of the whole or part of the land by giving one months notice in writing.
- 1.3 The operational license was issued on the 18th July 1991 with an expiry date of 18th July 1992. This was amended in January 1992 for the second season with an operational season outlined commencing on the 1st May 1992, running until 30 September 1992. The license fee was increased from £15 per calendar month to £30 per calendar month, although the rest of the terms and conditions remained the same as the original.
- 1.4 In March/April 1992 a major issue regarding mooring was raised. The pleasure craft, Cosby 3, was to have permanent mooring at the outfall of the Markeaton Brook in the River Gardens. However, the channel was apparently too narrow for the vessel so the previous season it had been moored on a small island in the middle of the river at the rear of the Police Station off Full Street. A letter was sent to the National Rivers Authority (NRA) enquiring whether their permission would be required to moor the boat on the island and requesting any objections to this situation, to which they responded suggesting that they would not grant consent. Various correspondences continued between March and June 1992, the main reasoning for the NRA's stance being as follows:
- ◆ The boat would reduce the channel capacity and flow;
 - ◆ Precedent would be set for similar moorings;
 - ◆ The boat would be susceptible to damage from floating debris during a flood event, which may ultimately cause more debris to float downstream.
- 1.5 Derby City Council urged that the NRA reconsider this stance, suggesting the following wider implications should be considered:
- ◆ The boat being relatively small would have minimal impact upon channel capacity, especially as it is moored directly adjacent to an island;
 - ◆ the boat would be moored securely and would be unlikely to break free;
 - ◆ the idea of a pleasure boat had been discussed with the NRA for several years previous and a considerable amount of money was spent on a new mooring area;
 - ◆ There are stringent licensing restrictions and there is no intention to grant licenses to other boats by the City Council.
- 1.6 On the 23rd June 1992 the National Rivers Authority reconsidered its stance, albeit reluctantly and agreed to issue a formal consent under the Water Resources Act



Figure 1.1 – Cosby 3

1991, for mooring between 1st May and 30th September for two seasons, providing a fee was paid and the boat was situated appropriately and secure.

- 1.7 After this date the operation ran until the end of the season relatively successfully. A letter was received from the NRA, warning of high voltage electricity cables located beneath the mooring area. Discussions were also started with regard to the granting of a five year license for the pleasure boat, which was formally outlined in March 1993.
- 1.8 The 1993 season saw several issues arising. Patronage was particularly poor and the Operator requested assistance from the council in terms of increased attractions at the Silk Mill and the possibility of the council taking over the operation. The council's stance regarding the sale of the trip boat as a going concern was also requested, to which they responded that they would have no objections. Complaints from residents of Folly Road, just outside of the navigable area were received, suggesting the boat was straying from its permitted area and interfering with residential privacy. As well as this the Operator became in arrears with their rent.
- 1.9 The trip boat did not operate in 1994 and in August of that year a request was sent from the Council to either continue the service or surrender the license. The Operator eventually responded suggesting that they provide additional amenities in the form of children's fun fair rides, at the silk mills to attract visitors but these ideas were discredited and the trip boat service was never resumed.

COMMENT

- 1.10 There were numerous problems for the previous operator and it appears with hindsight that some elements were not thoroughly considered before the operation started.
- 1.11 The previous operation was run using a small fibreglass cruiser style hull with a canopy and limited superstructure. The vessel would have been cheap to purchase but proved to be vulnerable to vandalism, which does not appear to have been anticipated. The mooring originally planned was not useable. Only once operations had begun was permission sought from the then National Rivers Authority for a mid-stream mooring: by the time this was given the boat engine had been stolen.
- 1.12 The previous operation did not appear to adhere to any timetable. This is a critical weakness for an operation of this sort, as many customers will plan their trip ("there's time for a walk/meal/ tour of the cathedral before the boat goes") and anyone travelling a distance needs confidence about the service provided.
- 1.13 There appears to have been a somewhat tense relationship with the former City Council (which was then a district of Derbyshire). In one instance the owner of the craft wished changes to the license as the operation was losing money. Most of the proposals that were made were dismissed and those that were accepted would only be granted if the licence payment were increased: as the operation was losing money this was counter productive.
- 1.14 In the early 1990's, the tourism potential of the Derwent Valley Mills, and in particular the Derby/Darley Abbey Mills area had not been fully recognised. It was not until

2001 that the Derwent Mills World Heritage Site was inscribed and this will have considerably raised the visitor/tourism potential of this area to the north of Derby. Whilst there was clearly some local recreational demand for the trip boat during the period of its operation, there was little tourism infrastructure in place to sustain the operation within a wider tourism market.

- 1.15 The boat used in the previous operation (Cosby 3, shown in Fig.1.1) is now in operating a service in Belper.

2. The Proposed River Bus Service

- 2.1 It is suggested that the proposed River Bus would operate from Derby City Centre to Darley Abbey Mills. The exact termini are discussed later in this section. The purpose of the River Bus is two fold; to provide non-car access to Darley Abbey Mills, which has an awkward road access, and to promote the Derwent Valley Mills World Heritage Site, thereby increasing the number of visitors to the area overall.
- 2.2 It is intended that the service would primarily serve a tourism market, which will dictate the timetable that is offered. The population of Darley Abbey is insufficient to sustain a viable public transport service to the city centre.

THE RIVER DERWENT

- 2.3 The length of the River Derwent being considered for the operation is defined by two weirs, the Long Bridge Weir in Derby City Centre and The Darley Abbey Mills Weir at Darley Abbey Mills. Both of these weirs are impassable to craft, and thus they represent the limits of practical navigation on the river.
- 2.4 This length of river is remarkably wide and deep considering it is not part of navigation. There is a depth of two metres in the main channel for the full length between the weirs, and the river has a depth of at least a metre remarkably close to each bank, such that vessel could easily approach the banks along the entire length. In consultation with Derby Rowing Club, several areas of shallows were highlighted; however these were not shown on plans acquired from the Environment Agency. The only obstacle in the river is the old Copper Mills weir, approximately 100 metres above the long bridge weir. This lies just under the surface at summer levels and could only be navigated by light craft such as canoes. There appears to be a break in the weir at the north bank, but investigation would be needed as to whether this is safe or practical for navigation. If the weir proves not be passable, the Council House becomes the downstream limit for navigation.
- 2.5 There are four bridges over the length of river subject to this proposal, these are:
- ◆ Derwent Street
 - ◆ Causey Bridge (carrying St. Alkmunds Way)
 - ◆ St Mary's Bridge
 - ◆ Old Railway Bridge (now carrying a footpath)
- 2.6 Of these Derwent Street is the most restrictive, as the soffit level is 2.1 metres above summer water level. As the bridge is arched, the air draught is only available under the centre of the arch. All the other bridges offer at least 3.5 metres air draught, comfortably in excess of any likely requirement.
- 2.7 The location of the weirs and bridges can be seen in Fig's 2.1a and 2.1b.

History

- 2.8 This length of river has been navigable for several centuries, although in its present isolated state there has been no use of the river in recent years. It is believed the Romans used the Derwent for navigation, but in more recent times the river was improved for navigation by an act of parliament in 1719. This included the construction of weirs and locks.
- 2.9 With reference to the length within the study area, the Copper Mills Weir maintained a head of water up to the Silk Mill (now the industrial museum) where another weir (St Michael's weir) stood to provide a head of water for the Silk Mill. The Copper Mills Weir was bypassed for navigation by a lock in the southern branch of the river (known as the Mill Fleam) past the Holmes. Thus boats could reach the Silk Mill from the River Trent.
- 2.10 There is reference to navigation up to Darley Mills at this time, but this is likely to have been local navigation as there was no lock at the Silk Mills to allow passage upstream. It is possible that Darley Mills only had need for navigation to Derby itself, or that transshipment occurred to get goods around St Michael's weir.
- 2.11 This situation remained unaltered until the Derby Canal was constructed under a 1793 Act of Parliament. The canal crossed the River Derwent on the level, a highly unusual arrangement, just downstream of the Copper Mills weir. Sometime after this arrangement was introduced, a weir was built downstream of the crossing point, presumably to ensure a navigable depth in the river. As this weir was just downstream of the Long Bridge, which carried the canal towpath, this otherwise nameless weir has been dubbed "Long Bridge Weir" in this report. The Canal's construction appears to have severed navigation on the Mill Fleam, thus stopping boats reaching the Silk Mills. The Derby Canal proprietors would not have worried greatly about this, as any boat loading at the Silk Mills would have travelled on the Derwent and not their canal. Thus at this period navigation on the river in Derby was restricted to crossing the river between these two weirs, and to any local trade between weirs on the river itself.
- 2.12 At some point between 1815 and 1859 the Derby Canal company built a short branch from their canal to link to the river Derwent above St Michaels Weir, and thus for the first time boats could reach Darley Mills from the River Trent. Although the Derby Canal company did not administer the river, there seems little doubt that trade did pass onto the canal from Darley Mills as well as the Silk Mills. Indeed, there was little point in building this branch otherwise, as the Silk Mills were close enough to the canal for goods to be taken to a wharf by horse and cart. At this point, therefore, two sections of the river were navigated, the crossing above Long Bridge weir and the length from the Silk Mills to Darley Mills.
- 2.13 This position remained the same until the canal's demise in the middle of the 20th century, except that at some point the copper mills weir moved upstream by about 20 metres, such that it was upstream on the Mill Fleam rather than downstream of it. After the Derby Canal closed, several changes occurred on the river, until today there is no weir at the Silk Mills, and the copper mills weir is submerged. Photographic and circumstantial evidence would suggest that the Long Bridge Weir is somewhat higher than when the canal was in operation, which would explain why the Copper Mill Weir

is submerged. The effect of this is that there is now an uninterrupted reach from Long Bridge Weir to Darley Mills

RIGHT OF NAVIGATION

- 2.14 Rights of navigation are often hotly contested in cases where no navigation has occurred for many years. In principle, there are three ways in which a right of navigation can be created. These are:
- ◆ Tidal water
 - ◆ Established use
 - ◆ Legislation
- 2.15 Clearly the Derwent cannot qualify on the grounds of being tidal, but either or both of the other two may apply. The 1719 act will almost certainly have contained a clause giving a right of navigation on the river, as the navigation company would not have owned the river banks and thus without a right of navigation, riparian owners could have objected to the use of the river. In addition, it is clear that navigation on the river had been a feature for some time before the navigation was built and thus there may well already have been a right of navigation as a result of established use
- 2.16 The Navigation Act of 1719 was never repealed and thus the rights conferred under it still apply. Whether these extend to Darley Abbey is a moot point as there was never navigation past St Michaels Weir, despite there being navigation above and below it. However, Derby City Council is the riparian owner on both banks for much of the length, and is the riparian owner for the west/south bank for the entire length between Long Bridge weir and Darley Mills Weir. Being the riparian owner, the City Council has the right to navigate this length of river or to give permission for others to do so. The only exception is that, where Derby City Council own only one bank, the river could only be navigated (without reference to other parties), up to an imaginary line in the centre of the river.

EMBARKATION POINTS

- 2.17 There appear to be four or five possible points where passenger embarkation could take place for the river bus service: these are:
- ◆ Bus Station
 - ◆ Council House
 - ◆ Silk Mills
 - ◆ Old stage at Darley Abbey
 - ◆ Darley Mills
- 2.18 The first three of these are at the Derby City end of the route, the other two at the Darley Mills end. Their locations can be seen in Fig's 2.2a and 2.2b. Taking these in turn:

Bus Station

- 2.19 This is just about the lowest point that any craft could safely navigate given the proximity of Long Bridge Weir. At this point, the south bank of the River next to the bus station is stepped and has a hard concrete edge. There is more than one metre depth of water at the waters edge which increases to two metres in depth, just a few centimetres into the channel, thus a very large craft could approach the bank at this point.
- 2.20 This location is next to Derby Bus station, and thus immediately accessible to anyone arriving in the city by bus as well as being at the heart of the city's activity. A boat starting from here is likely to collect incidental trade from customers who take a trip on impulse. However, navigation to this point is dependent on being able to make a passage around the old Copper Mills Weir.
- 2.21 Work would be needed to be carried out to the bank, in order to allow disabled access to the boat.

Council House

- 2.22 Only about 100 metres upstream from the Bus Station, but with the advantage that passage of the Old Copper Mills Weir is not required. Although further from the Bus Station, it is still highly accessible and visible to potential users.
- 2.23 With both the bus station and Council House options the maximum air draught would be restricted to 2.1 metres due to Derwent Street Bridge, and there would be a need for an additional stop at the Silk Mills for collection of passengers from this point.

Silk Mills

- 2.24 The Silk Mills are about 500 metres upstream from the bus station and once again there is a good depth of water right up to the waters edge. The principal advantage of serving the Silk Mills is that it is part of the world heritage site and many visitors to the Silk Mills are likely to have an interest in visiting Darley Mills. The main disadvantage is that there is presently little natural footfall within this area of the City Centre, and thus part of a potential market may be missed. It is understood however, that the City Council and consultants acting on behalf of the Derby Urban Regeneration Company have both recognised the potential tourist linkages between the River/Silk Mill, the Cathedral and the heritage sector of the City Centre and that this may result in proposals coming forward that will raise the profile of this part of the city. Even if the Silk Mill is not the downstream terminus, it would be necessary to stop here to pick up and set down passengers.

Old Stage at Darley Abbey

- 2.25 The previous operation used a purpose built landing stage at Darley Abbey, which is still in position and appears to be in good repair. However, it is not accessible for the disabled and would only be suitable for a vessel similar to the small one used in the original operation. In addition, this stage is about 500 metres downstream of Darley Mills, and the walk, while attractive, will only appeal to those who are willing and able to walk this far (bearing in mind that the return walk is a kilometre plus any distance walked while at Darley Mills). This would potentially preclude a large number of

users, including any party with either young children or a disabled/infirm member of the group.

Darley Abbey Mills

- 2.26 It would be quite practical to take a substantial vessel to within a few metres of Darley Abbey Mills and although the current increases towards the weir, this would be perfectly safe given that the boat will be operated by a professional skipper. Significant works to allow disabled access to the boat would be required as the water level is about two metres below bank level (although there is no point around Darley Abbey Park where this would not be the case).
- 2.27 It would also be necessary for the craft to remain in the Western side of the river channel to avoid leaving Derby City Council's riparian ownership. This location should be considered with sensitivity to the local residences on the east bank, who complained of lack of privacy during previous operations. This will be partially mitigated by the fact that boat passengers would be lower than anyone standing on the bank, and thus their impingement upon residential privacy would be minimal. It is, however, an issue that needs to be sympathetically dealt with and Derby City Council must ensure that in considering navigation rights, full lines of communication are opened to these stakeholder groups.

LANDING COSTS

- 2.28 The cost of constructing landing stages varies depending upon the size of vessel and whether disabled access is required or not. Assuming a large boat with disabled access then a ramp will be required to a stage that the boat can moor to, and be more or less level with. At each landing point the water level is normally around 2 metres below the bank level where the public currently have access.
- 2.29 Part M of the Disability Discrimination Act (DDA) states that the maximum gradient for ramps below 2m in length should be no more than 1 in 12; ramps of 5m, 1 in 15 and a wheelchair ramp longer than 10m should be no more than 1 in 20. Therefore, for a wheelchair to negotiate the 2 metre difference a ramp 40 metres long at a gradient of 1 in 20 is required.
- 2.30 We have costed for this to be achieved by having a floating pontoon as the landing stage, with a flexible ramp between the stage and ground level. This will allow for changes in water level and thus remain accessible to the disabled. This arrangement is estimated to cost £125,000 per stage.
- 2.31 In our view this arrangement is not suitable for any stage at the Council House as it would be visually prominent and the bank already shelves down to the water level. At this location, a pair of mooring rings and modifications to the steps for wheelchairs would suffice. Thus the overall cost of two landings, one at Silk Mills and one at Darley Mills, would be £250,000
- 2.32 In the event that the operation ceases to trade, the constituent parts of the floating stage could be sold for approximately £30,000 for reuse at another site.

- 2.33 At the other extreme, a 12 seat boat with no disabled access using the old Darley Abbey landing stage would have no capital costs for stages.

STORAGE OF THE BOAT WHEN NOT IN USE

- 2.34 While the cost of stages between the smallest and largest scale of operation is extreme (zero to £250,000) it should be remembered that the vessel used for the larger operation could be accommodated bank-side as it could be chained and padlocked to a landing stage and secured completely. A small cruiser would require some form of security arrangement which may well have cost associated with it. The previous arrangements are known to us, but it is not clear that they were ideal and in any event a mid river mooring (whether to an island or not) requires a separate vessel to get the crew off which must then itself be stored. Given the problems of vandalism that vessel, which would presumably be a rowing boat of some description, would either need to be retrieved and stored or padlocked to the bank where it would be prone to sinking and damage from vandals.
- 2.35 The Environment Agency would prefer to see all boats stored offline and any moorings and pontoons aligned parallel to the river flow, constructed so as not to pose a river maintenance problem. The main concern expressed by the Environment Agency is that any mooring, whether along the bank or midstream, must ensure that risk to others, or risk of blockage is eliminated or minimalised as far as possible. Further comments from the Environment Agency can be seen in Chapter 6, Para. 6.26.

3. Options for Vessel

SMALL VESSEL WITH NO DISABLED ACCESS

3.1 Under Maritime and Coastal Agency regulations any vessel carrying 12 passengers or fewer does not need a safety certificate (commonly known as a DTI certificate, as they were originally issued by the Department of Trade and Industry), therefore the standard of the vessel can be lower and the paper work for the operator significantly reduced. This is why many trip boats around the UK carry only 12 passengers, even if they have the capacity to carry more. This included the Cosby 3, the boat that previously operated on the River.

3.2 As indicated in Chapter One, Cosby 3 was a small fibreglass boat with an outboard engine with canopy. The boat was open but the canopy offered protection from the rain and from sunburn.

3.3 There are several forms that a small vessel could take if access for disabled people is not required. The launch type, similar to the Cosby 3, is one, while a small narrow boat might also offer a service, with either open sides or large windows. Narrow boats, so called because of their beam of seven feet (2.1 metres) are common on the canal system. A narrow boat (such as the one illustrated in Fig.3.1) would be more robust for security and vandalism, as it would be built of steel with an inboard engine and the potential to lock everything up. However, passengers sit lower in a narrow boat and thus see less. Of greater importance is that the low sitting position in a narrow boat means care is required in the design if access is not to be restricted even further; a flight of steps into the cabin is preferable to a ladder!



Figure 3.1 – Small Narrow Boat – “Jubilee” Operated by the Ashby Trip, Sutton Cheney.

3.4 So long as the vessel carries no more than 12 passengers then the Maritime and Coastguard Agency need not inspect it and no certificate of safety is required. Nevertheless, it would be wise to ensure that the boat has a Boat Safety Certificate (BSC), or at least would be capable of getting one. This certificate is required by British Waterways and The Environment Agency for any boat on their waters; it covers basic safety items such as fuel systems, electrical appliances and fire extinguishers. Having a BSC would not indicate that the boat is intrinsically safe for fare paying passengers, but it would at least indicate that the boat is not likely to catch fire, capsize or explode.

SMALL VESSEL WITH DISABLED ACCESS

- 3.5 Like the previous category a small boat carrying less than 12 passengers would be exempt from various safety requirements, but in this case the boat would be capable of accommodating disabled passengers in wheelchairs.
- 3.6 For access to boats, being wheelchair bound or infirm is the biggest obstacle, as other forms of disability, such as visual impairment can simply be dealt with by supervision during boarding and alighting. For the mobility impaired, the problems of getting on and off a boat are two fold:
- ◆ The boat is at water level, and the bank may be somewhat higher;
 - ◆ All but the largest boats (as in less than about 60 passengers) require the passenger to descend into the boat.
- 3.7 For a small boat only carrying twelve passengers, it would be normal for passengers to effectively sit in the hull, with their feet (and probably the seat itself) below the water line. To do this the passenger has to descend into the boat, and as there is no room for a ramp this precludes anyone who can't use steps. It is possible to fit a hydraulic lift that would lower a wheelchair and occupant into the boat, but these take up a lot of room and are prohibitively expensive for a small boat. In addition, room needs to be created for a wheelchair in the passenger area.
- 3.8 The reason people descend into the boat is for stability, 12 passengers weigh around three quarters of a tonne, and this load above the waterline may make a small boat, which might itself only weight 1.5 tonnes, unstable. The solution to this is either to ballast the boat, which makes it sit deeper in the water, or to look at alternative designs:
- 3.9 Pontoons are much more stable for their size than similar deep hulled vessels; and a boat based on a pontoon allows passengers to sit above the waterline. As a result, level access is possible from the bank. One such vessel, (pictured in Fig.3.2) is available on the River Thames for self drive hire.
- 3.10 There are some problems with these boats; being built from aluminium they may not be as hardwearing as a steel boat or as easy to repair as a fibreglass one. Also, the passengers effectively sit on the boat rather than in it, and thus can fall off into the water. It is not really practical to put a cabin on a boat of this type, as the boat is light weight and a cabin would make the boat almost impossible to handle in a cross wind. Nevertheless, such a boat would offer a good view for passengers and be a little bit different from the norm, thus offering promotional opportunities.



Figure 3.2 – Pontoon Boat – “Balmoral Lady” – Self drive hire operated by Kris Cruisers on the River Thames.

LARGER VESSEL WITHOUT DISABLED ACCESS

3.11 The vast majority of trip boats on the canals and rivers are not accessible to the disabled. One website (<http://www.surftech.co.uk/canal/frontpagelinktripset.htm>) lists trip boats on the navigable waterways of Great Britain, where out of 103 listings only 13 are disabled accessible, and the site admits that even this is open to interpretation as to what “disabled accessible” means. Of the 13 that offer disabled access, some are large vessels (100+ seats) on river navigations and may not be appropriate on the Derwent, as they would be too big to turn at Darley Mills and too high to fit under Derwent Street bridge.

3.12 The options for a boat of between 12 and 60 seats that is not disabled accessible are numerous. The most common by far is the canal narrow boat: a 72 feet (21 metre) long narrow boat can accommodate around 50 passengers as well as a bar area and toilet. An example of this “Rose” is illustrated in Fig.3.3. These vessels are popular simply because of their availability; there are a number of boat builders who can produce a narrow boat to almost any specification and boats become available



Figure 3.3 – 72ft Narrow Boat – “Rose” – Operated by the Ashby Trip - Fully enclosed with toilets, central heating and bar.

second hand on a regular basis. Because the interior of a narrow boat is purpose built and not part of the structure, these boats are adaptable, thus having a resale value. This may be a factor in weighing up the risk of the enterprise: a narrow boat would have a resale value in the event that either the operation doesn't work or is so successful that a bigger vessel is needed.

3.13 It is also possible to obtain a narrow boat style vessel with a greater beam. There is no restriction on the Derwent so there is no need to adhere to the 2.1 metre beam of a narrow boat. Wider craft are not as flexible and thus resale values are lower, nevertheless, so long as the beam is kept below 4 metres there will be a resale market. A broad beam vessel of this type offers extra carrying capacity and more space without increasing headroom, and as the extra beam increases stability it may be possible to put the seating higher in the boat. An example of this type of boat is shown in Fig.3.4.



Figure 3.4 – Narrow Boat Style Vessel with greater beam – “Countess of Evesham” – Restaurant Boat operating at Stratford-upon-Avon.

3.14 Alternatively river cruiser type vessels of a similar size might be used. These look more stylish than narrow boats and again offer a distinct selling point, even though in practical terms the characteristics are virtually identical. However, there is a limited

market for boats such as these, and one would almost certainly have to be ordered from a specialist builder. Resale would be more problematic.

- 3.15 Boats of this size would fall under the Maritime and Coastguard Agency regulations, which are specific on a number of details of passenger safety, including separation of the engine and fuel systems from passenger areas and the provision of safety equipment. One of the provisions of these regulations is that the boat must be inspected out of the water once every two years: as there is no dry dock on the Derwent the vessel would have to be craned out. This factor should be considered when determining which type of boat is suitable for the river.

LARGER VESSEL WITH DISABLED ACCESS

- 3.16 Two factors make disabled access to larger craft much easier. These are:
- ◆ The extra room makes provision of hydraulic lifts etc much easier, while the extra costs are the same as, if not lower than, for smaller craft
 - ◆ A wide beam craft can have the load higher due to greater stability.
- 3.17 It must be remembered however, that a load of fifty passengers will weigh over three tonnes and placing this load above the water line has to be done with care. A wide pontoon type craft could have level deck for passengers making disabled access straightforward. Such a craft would be bespoke and may be difficult to dispose of later.
- 3.18 The primary factor in determining how to accommodate disabled visitors on a larger boat will be a financial risk. At the outset, it may be desirable to have a 21 metre narrow boat with hydraulic lift as this will have a resale value in the event that the operation fails. If the operation is outstandingly successful, the narrow boat could be sold (there may even be a buyer who wants one with the lift in place) and a bespoke vessel ordered.

VESSEL SOURCES

- 3.19 In the above we have alluded that a narrow boat type vessel may be the most appropriate for a variety of reasons. These include:
- ◆ A number of boat builders familiar with this type of vessel
 - ◆ A healthy second hand market to either acquire or dispose of the vessel
 - ◆ Comparative ease of road transport, bearing in mind the stretch of river is isolated
 - ◆ Comparative ease of craning out for inspection



Figure 3.5 – “Sapphire” Waterbus operated by Cardiff CATS – Formally a Tender for Ocean Liner “Kungsholm”.

3.20 However, boats in use as water buses around the country have varied and colourful backgrounds: the Cardiff CATS waterbus on Cardiff Bay uses two boats that were actually built as tenders for an ocean liner, to get passengers to and from the shore (see Fig.3.5). Bristol Ferry and Waterbus use six boats, one of which was a replacement for a fishing boat lost in the Lynmouth Floods of 1952, another of their boats was built to take trips round Scarborough Harbour in the 1920's. For obvious reasons we cannot make a recommendation about the use of this type of boat, as what is on the market at any one time is constantly changing, but it may be worth considering vessels from these sorts of sources in order to give a unique cruising experience.

MOTIVE POWER

3.21 Whatever vessel is chosen motive power needs to be considered: there are broadly five options:

- ◆ Horse drawn
- ◆ Petrol
- ◆ Diesel
- ◆ Electric
- ◆ Solar

Horse Drawn

3.22 There are some very successful horse drawn trip boats around the UK (see Fig.3.6), and this does have an extra appeal. However, this is not really practical on the Derwent as three of the four bridges can not accommodate a horse at the waters edge, requiring the tow rope to be unfastened. In addition, horse drawn boats are not that manoeuvrable, the horse must be kept and fed, and if there is any significant current (say after heavy rain) the boat will start to overtake the horse on the downstream leg. Much of the riverbanks are vegetated and overhung by trees and there are also safety implications - a boat with no motive power drifting towards Long Bridge Weir does not bear thinking about.



Figure 3.6 – Horse Drawn Trip Boat on Llangollen Canal

Petrol

3.23 Petrol should only be used with a small boat using an outboard motor for power. Larger boats with inboard engines tend to use diesel, which is both more efficient and safe.

Diesel

- 3.24 Diesel is the industry standard for marine inboard engines: spares for a marinised diesel engine will be readily available and the fuel itself is comparatively safe. A means of delivering diesel to the boat will need to be devised. At present boats can use untaxed red diesel, making the fuel much cheaper than petrol; however, the European Union have regularly questioned this exemption, and this may change in future.

Electric

- 3.25 Some trip boats are powered by electricity and this does give a very quiet and environmentally friendly form of power. The principal problem in this case would be a recharging point, as the batteries on an electric boat would have to be recharged overnight, whereas a diesel tank can be topped up in minutes. This charging point would have to be secure, as the boat would be vulnerable while moored at it, and the equipment is easily vandalised. A vandal taking a knife to the power line for the boat would not only cut off the power, but would place themselves at risk.

Solar Power

- 3.26 An alternative to mains electric power could be solar electricity. Solar marine technology has advanced considerably in recent years and globally there are several solar powered passenger trip boats in operation. Locations include Hamburg and Gaienhofen, Germany, and Steckborn, Switzerland. The UK's first solar powered trip boat has been operating on the Norfolk Broads since 2000. (See Fig.3.7)
- 3.27 The 30 ft, 12 seater boat "Ra" is powered by three rows of seven panels. It cost the Broads Authority £55,000, attracting substantial funding from Norfolk waste management company, Norfolk Environmental Waste Services Ltd., (NEWS) and an enabling contribution by the Countryside Agency. In 2003 it carried more than 2000 passengers. "Ra" and many of its global counterparts was constructed by specialist German company Kopf Inc, and each solar boat has become a tourist attraction in its own right.



Figure 3.7 – Solar Powered Boats – “Ra” (top) operating on the Norfolk Broads – “Ra 66” (bottom) operating between Gaienhofen, Germany and Steckborn, Switzerland

(<http://www.solarserver.de/solarmagazin/anlageaugust2000-e.html>)

- 3.28 The major drawback would be the sheer expense of obtaining a solar powered boat, which will almost certainly have to be custom built. However, as the Norfolk Broads

example illustrated, this is option bring in additional grant funding and private sector investment due to its environmentally sustainable nature and will almost certainly become a tourist attraction in its own right.

VESSEL COSTS

3.29 Assuming standard types of vessel are proposed the relative costs are likely to be:

Small vessel: no disabled access

3.30 A brand New 20 foot (6.5 metre) long narrow boat would cost approximately £17,000 to purchase. This would come fitted out as required by the operator. The main element affecting this figure is the cost of steel.

3.31 A brand new fibreglass boat similar to the vessel used previously would cost approximately £10,000 to purchase. This would be a standard design and except for options such as power unit, changes cannot be made to the specification as fibreglass boats are built from a mould.

3.32 A second hand narrow boat might cost as little as £7,000 but is likely to need modification

3.33 A second hand fibreglass boat might cost as little as £3,000. However caution is required as fibreglass vessels are vulnerable to damage and to osmosis.

3.34 As a guide, a second hand day-boat, wooden built of carvel construction and full MCA certification for 12 passengers (this was necessary for the particular boat as it took passengers to sea) was recently advertised at £8,500

3.35 As an alternative, an unusual vessel might be purchased. By definition placing a price on this is difficult, but a “gentleman’s launch”, a rather elegant Edwardian cruiser that would be suitable for 12 passengers, was recently advertised at £16,995.

Small vessel with disabled access

3.36 There is only one known option for such a vessel: The Pontoon boat. These were previously sold by Kris Cruisers of Windsor, who also have a 12 seat self drive model for day hire. Kris Cruisers no longer sell Pontoon boats as a matter of course but estimate that one could be acquired as per theirs for £14,000. The boats are manufactured in the USA but they have been imported often enough that the paperwork is straightforward.

Larger Vessel: no disabled access

3.37 A 72 feet narrow boat fitted out as a trip boat would cost approximately £40,000 Liverpool Boats have estimated £45,000 as the interior of a residential narrow boat is a lot more complex than a trip boat, (a live aboard narrow boat 72 feet long would cost of the order of £68,000). This comes down still further if the sides of the passenger area are rolling plastic blinds rather than glass windows.

3.38 It can not be guaranteed that a second hand boat would necessarily be 72 feet long, and shorter lengths would reduce capacity. If a suitable second hand model became

available it is expected to cost around £20,000. Some modification may be needed or some refurbishment (such as replacement seats) required.

- 3.39 For a broad beam vessel, costs would be about 50% higher for new boats. Quoting for a wide beam second hand vessel is tricky as these only occasionally appear on the market

Larger Vessel with Disabled Access

- 3.40 The main increase in cost over and above the price for a brand new narrow boat is for a hydraulic lift to be fitted. This would cost of the order of £2,000.
- 3.41 We have not found any second hand boats for sale that are accessible to the disabled. It is likely one would be comparatively expensive as these craft are in demand. It would probably be cheaper to buy a second hand boat and pay for modification. However, checks should be made to ensure that the chosen vessel is suitable for modification. There is currently a (rather derelict) work boat advertised for £500, having been purchased for use by a disabled group and found to be incapable of adaptation.



**Figure 3.8 – “Waveney Cruiser”
purpose built disabled access
boat used on Norfolk and Suffolk
Waterways.**

4. Timetable and Fares

TIMETABLE

- 4.1 Assuming only one boat is operating, the timetable is dictated by the length of the trip and the time before the boat can return to its start point to take the next trip. With a suitable vessel, it would be possible to get from the Silk Mills to Darley Mills in about ten minutes. However, this involves travelling at over nine miles an hour and could create a significant wash. Larger vessels could probably not travel at this speed.
- 4.2 It might be more realistic to assume that the vessel could make the journey in twenty minutes, although even this assumes a speed of around 4.5 miles per hour (the typical speed on canals is 3mph). A narrow boat in open water with a suitable engine and large pitch propeller will attain this average speed. The stream flow is unlikely to make a noticeable impact upon the duration of trips up and down stream; therefore we can assume that boat trips will take the same amount of time in either direction, a situation that may be altered by heavy rainfall. The depth of water should ensure that wash is not excessive. A broad beam boat may struggle because of the extra resistance: when any boat is ordered it should be specified that this average speed is achievable. If a second-hand boat is to be acquired then a test run will be required to ensure suitability.
- 4.3 The reason for attempting to get the single trip undertaken in twenty minutes is that the boat could then start from each end every hour, providing a clock face timetable at a reasonable frequency. With any large vessel, and with disabled access, turn round times at each terminus will be significant.
- 4.4 Alternatively the time could be extended to around half an hour, with the vessel travelling at canal type speeds. However, this means a departure from each terminus every hour and a half, giving passengers the choice of an hour and a half at Darley Mills, or three hours, or walking back. The overall trip would extend to two and a half hours, which is approaching a half day.
- 4.5 To achieve the twenty minute journey time, it would be desirable for the city centre terminus to be at the Silk Mills, to avoid the need for an additional stop, and to reduce the overall route length to approximately two kilometres.
- 4.6 Typically there is a limited demand for the use of water buses for leisure travel in mornings, and travel demand peaks in afternoons at summer weekends and school holidays. This basic core time period can be supplemented with special evening cruises timed to suit an evening visit to Darley Mills, where there is a restaurant. A larger boat could also serve drinks and snacks en route, making the evening cruise an attraction in its own right (Boats under way do not need a license to serve alcohol). However, these evening cruises are likely to be better served by starting from the Council House rather than Silk Mills.
- 4.7 In view of all these deliberations it is recommended that the boat operate from the Council house calling at Silk Mills. An approximate timetable might be:

Depart Council House	11:45	13:30	15:00	16:30
Depart Silk Mills	11:55	13:40	15:10	16:40
Arrive Darley Mills	12:15	14:00	15:30	17:00
Depart Darley Mills	12:30	14:15	15:45	17:15
Arrive Silk Mills	12:50	14:35	16:05	17:35
Arrive Council House	13:00	14:45	16:15	17:45

- 4.8 The two trips in italics would not be expected to carry many passengers; they are actually in place to get the boat to the other terminus for the next trip. The 11:45 departure allows lunch at Darley Mills, the 13:30 one allows lunch in Derby before making the trip. An evening trip would probably leave at either 18:30 or 19:00, returning at around 21:00 or 21:30.

FARES

- 4.9 The fares would be very similar regardless of the size of the vessel. The fares for similar operations vary significantly within a range of £2 single/£3 return (Cardiff CATS) to £3.50/£4.50 (Bristol Ferry). Concessionary fares are much more variable, from a notional £0.50 reduction to half price. Some operators offer family tickets at a little over the cost for two adults. One even offers a “small” family ticket where only one adult is present, for approximately the cost of one adult and one child.
- 4.10 It would seem to be reasonable for the charges on this operation to be approximately £2.50 single/£3.50 return. Concessions might be pitched at £1.50/£2.50 with a family return ticket priced at £8.

MARKETING AND PROMOTIONAL COSTS

- 4.11 Marketing and Promotion can take many forms and can be done very cheaply with potentially successful results.

Signage

- 4.12 At the very basic level it is important that the River Bus is well sign posted, with all embarkation points clearly advertised with a range of signs. This will not only attract passing trade, but will also assist people intent on using the river bus in finding it. A major criticism of the previous operation was the lack of signage and the operators were advised by the council to display signs in various locations around Darley Abbey and Derby City Centre.
- 4.13 If the River Bus becomes a successful attraction then it is likely that it could be signposted as part of wider tourist signing, possibly with other attractions in the Derby/Darley Abbey areas as part of a tourist trail, and inclusion on the brown tourism road signs maintained by local authorities.

Leaflets

- 4.14 At the very least the River Bus should be publicised through leaflets available at TICs, tourist hubs and at embarkation points. These should contain timetables, details of special cruises and events, contact information and prices. Printing costs vary considerably depending upon the desired product and quantity, as well as the individual Printers. The cheapest on-line quote for double sided colour leaflets was £314.26 for 100,000 (www.rcs.plc.uk).

Internet

- 4.15 Websites promoting such attractions as the River Bus are now common practice and will give the service an international internet presence for very little capital outlay. Many tourists plan their trips online before they arrive at a destination and a River Bus website could be linked to other websites such as www.visitderby.com, which offers a comprehensive guide to attractions in Derby.
- 4.16 Websites vary enormously in price, depending upon what is required. However, a simple site written in HTML language can be designed easily by anyone with a computer and internet access for a very small amount of money. Many web hosting companies offer free or inexpensive webspace (in the region of £15 per annum for an adequate basic service) and domain names are now very cheap (derbyriverbus.co.uk can be purchased for as little as £5 per year for example (www.idealhosting.co.uk). A slightly more complex website, requiring additional webspace is likely to cost in the region of £50-£100 for hosting. A professionally designed website will be considerably more.

Media

- 4.17 An operation of this size would probably not benefit from regular media advertising, such as in the local press or radio, however special events such as the launch of the service may benefit from such activities. The cheapest form of advertising is in local newspapers. Display Advertising in the Derby Evening Telegraph range from £10 per square centimetres to £2960 for a full page.
- 4.18 Radio advertising can reach an even wider audience, although is likely to be expensive. To advertise on Century FM, which has an audience of 311,000 people in the East Midlands region it is usual for 30 spots a week to be required in order to allow each listener on average three listens (which is apparently the minimum for a successful campaign). This would cost approximately £1000 for a week, with a minimum of £180 for the production of the advert. Unless a very large operation is to take place this is prohibitively expensive.
- 4.19 Effective Public Relations can be just as effective as adverts and can potentially cost nothing. Events, such as the launch should be well publicised through press releases, ensuring that they are mentioned in the media before hand. Representatives from the local press, TV and radio should be invited to all special events in order to obtain free coverage. An idea prior to the official launch could be a Press Day, whereby the press are invited to experience the attraction in advance of it opening, thus allowing review articles to appear in the media prior to the official event.

Joint Marketing

- 4.20 In all of the above cases it will almost certainly more cost effective to promote the River Bus with other attractions as part of a wide strategy for the Derwent Valley Mills World Heritage Site, or the City of Derby. Press or Radio advertisement would almost certainly be more cost effective if marketing the Darley Abbey Mills and Silk Mills as a full attraction package, with the River Bus as an element of that attraction. Smaller attractions may also benefit from a leaflet/website about the River Bus.

5. Likely Patronage and viability

PATRONAGE

- 5.1 To maximise patronage it is necessary to create a profile for the water bus. It is imperative in the first instance that the trips are run on schedule as advertised, and that the boat sells itself with its livery and appearance. From the proposed timetable, the maximum patronage in any one day is approximately three times the capacity of the vessel: that is, 36 return trips with a twelve seat vessel and 150 with a fifty seat. Because of the limited time for which the service is in demand the only way to increase this capacity significantly is to either speed the boat up or to acquire a second vessel.
- 5.2 In addition to the boat being attractive and reliable, the service needs to be effectively marketed. This must go beyond simply putting up notices in Derby and leaflets in the City TIC. The boat must be part of the wider strategy to market Derby and the Derwent Valleys World Heritage site. The boat will carry more passengers if visitors arrive in Derby with the intention of using it.
- 5.3 Finally incidental custom must be maximised. A weakness of the previous operation was that the starting point at the Silk Mills didn't attract enough incidental visitors, although the nature of that operation (in particular, the lack of timetable) made the business entirely dependent on incidental visitors. Even so, there must be some concerns about starting from the Silk Mills, where the boat is comparatively invisible, compared to the Council House, where the boat can be clearly seen from Derwent Street Bridge. The scale of the problem is illustrated by reference to the daily visitor numbers to the Silk Mill (Fig.5.1).

Table 5.1 – Daily Visitor Numbers to the Silk Mill (2002)

Count Date	Actual Count Numbers
Friday 26 July	173
Sunday 28 July	56
Wednesday 31 July	170
Saturday 24 August	122
Monday 26 August (Bank Holiday)	123
Wednesday 28 August	129

- 5.4 From this, it can be seen that there are days when a fifty seat boat would not be used to capacity even if every visitor to the Silk Mill were to use it. The alternative of a twelve seat boat may seem attractive, but as the subsequent costings show, the daily operational costs are not much lower and these would have to be met out of just 36 fares. A 12 seat boat could not readily be used for evenings and special events either, so the opportunity to capture other markets would be lost.

- 5.5 Regrettably, from the above figures, we have concluded that any service must be extended to the council house and that perhaps measures to promote visitors for the Industrial museum in the Silk Mills are also required.
- 5.6 Given an extension to the Council House, it is estimated that a small boat would typically carry an average of 30 passengers per day (return) while a large boat of up to 50 seats would typically carry an average of 100 passengers per day
- 5.7 These levels of patronage would yield revenue of £90 per day for a small vessel and £300 for a large vessel.

VIABILITY

- 5.8 The daily cost of operating the boat is dependent on two factors: the wages of the crew and the cost of fuel. These costs are illustrated in Table 5.2

Table 5.2 – Daily Operating Costs

Cost	Price
Steerer (who must have a boat masters certificate)	£6 p/hour
Mate (unqualified)	£4.50 p/hour
Fuel (Red Diesel)	£0.30 p/litre

- 5.9 In a day's cruising on the timetable suggested the crew will be on duty for 8 hours (including start up and shut down). The boat will consume approximately one litre of fuel per single trip. Thus salaries will amount to £84 per day and fuel will amount to £2.40. On costs for the staff, plus handling costs (delivery of fuel, banking of fares etc) can be assumed to increase these costs by 50%. This makes a total of £130 per day to operate the boat.
- 5.10 This does not include the profit from any refreshments sold on the boat. It is assumed that these will at least cover the cost of their provision.
- 5.11 In addition, the boat will require insurance, maintenance and repair; these are fixed costs relatively unaffected by the level of use of the boat. Estimating exactly what these are may prove difficult, however, *Waterways World* Magazine state that the cost of maintaining a private narrow boat, including moorings, insurance and maintenance, is £1,950 a year. A commercial boat on the main canal system would pay more than this. Current charges to a boat on the main system are approximately £700 in terms of license fees and mooring fees, however on the River Derwent, the actual charge to trip boat will remain at the discretion of Derby City Council.
- 5.12 As each trip yields a surplus of £170. Ten days of operation would be required to break even assuming the maintenance etc came in at £1,700. This would easily be achieved as the boat is expected to operate weekends, bank holidays and school holidays from 1st April to 30th September. This is at least 100 days, and therefore an operating surplus of £15,300 might be expected. Revenue from evening trips and charters would improve these figures.

- 5.13 This WILL NOT repay the capital costs, however. For the larger vessel to break even, the capital to establish the operation must be written off.
- 5.14 For the smaller vessel, the main difference is that a single crew member would suffice. Although the skipper would not need a boat master's certificate, it must be assumed that £6 per hour would still need to be paid. If the boat were powered by diesel, then the fuel costs would be largely similar. A petrol engine would be more fuel efficient, but fuel costs would then be £0.80 a litre, and the overall cost would be at least equal to the cost of fuel for a diesel engine. Thus the cost of operating a small vessel for one day would be £48 in salaries and £2.40 in fuel. Once again on costs and handling charges can be expected to increase these figures by 50%, resulting in a daily operating cost of £75.
- 5.15 The maintenance costs for a small boat will not be quite as high as a large vessel, simply because there are fewer fittings etc to maintain. However, it must be assumed that costs will still be of the order of £750 per annum, given the need for insurance and the increased vulnerability of the craft. Given a daily surplus of £15, a small craft would have to operate 50 days a year, with 30 passengers a day, to break even. A small boat also has no option to sell refreshments and limited charter options. An operating surplus of £750 may be expected.
- 5.16 The choice between the two types of operation depends on several factors: can the capital cost of setting up be written off, and can the risk associated with a forecast operating surplus of £750 be accepted. IF the set up costs of nearly £300,000 can be found, the larger vessel offers a much more robust option.

6. Environmental Impacts

6.1 The key potential impacts are:

- ◆ Ecology
- ◆ Noise
- ◆ Intrusion
- ◆ Conflict with other users.

These will be dealt with in turn

ECOLOGY

6.2 The length of the river Derwent is a county wildlife site and as such protected from adverse impact by planning policy. However, the river is also wide and deep, with deep water up to the banks for most of the length affected.

6.3 The main impacts from boat traffic are oxygenation through use of the propeller, marginal disturbance through wash and pollution from any discharges into the river.

6.4 The proposal is for a single craft that will make the passage four times a day. If the craft were to be operated for longer periods it is still highly unlikely that more than ten return passages a day would be made. Days of operation are limited to summer weekends and the main tourist season.

6.5 The citation for the CWS status states that:

“The river corridor has a variety of habitats associated with it including wet woodland, tall herb fenn, river cliff and lowland swamp. The Clean part of the river has white-clawed crayfish present, and a number of typical clean water damsel flies and dragon flies have been recorded along the river. Kingfishers have been recorded breeding on the river course, as have sand martins”

6.6 Anything that is not in or over the river is not affected by the operation. The key effects are to the water side margins, and to fish and birds.

6.7 Much work has been done on the effect of boat passage on wild life and ecology. The conclusions generally refer to much smaller channels with higher traffic than is proposed here. It should be noted that all the features identified in the citation thrive on waterways considerably smaller and considerably busier than the Derwent. No adverse impacts are expected through such low traffic flows on the river Derwent.

6.8 The landing stages will not in principle affect river bank habitats or nesting sites. However, a full ecological survey should be undertaken at the precise location where stages are proposed to assist in minimising any wildlife impacts.

6.9 In the event that the proposal precedes the possibility of undertaking a habitat survey and monitoring the river should be considered.

- 6.10 The only discharges from the vessel should be some grey water (washing up etc) and tiny amounts of lubricant from the propeller shaft. Care must be taken when refuelling and maintaining the vessel to ensure that oil based products do not enter the water. That said, it would take a spillage of massive proportions (equivalent to at least the contents of the boat's fuel tank, say 500 litres, and possibly more) to have a significant effect. If the boat is equipped with a toilet this must have a holding tank on the boat.

NOISE

- 6.11 As the boat is likely to be powered by a diesel engine some noise is anticipated, although in practice it is the Steerer that is most affected by this. The noise of the engine is usually audible from the bank, however, silencing equipment can be obtained that will reduce the noise levels so that if there is any background noise, the engine will not be audible over it. Water cooling of the engine (via skin tanks, so that river water does not enter the engine cooling system) also reduces noise compared to air cooling.

INTRUSION

- 6.12 The previous operator was required to remain downstream of the residential properties on the east bank at Darley Mills. However, the intrusion here is more perceived than real. Passenger numbers on the boat will be lower than any visitors utilising the bank and the boat should stay in the city-owned half of the river in any event. If the operation stops short of these residences then possible intrusion would not occur, however, as noted elsewhere, this has operational disadvantages.

CONFLICT

- 6.13 There is the potential for conflict with other users of the river. These may arise with un-powered vessels (especially coxless pairs, fours and eights), rowing boats and Anglers, although it should be appreciated that the length of river that is little used at present and will be therefore comparatively unaffected by the introduction of the River Bus.

Regatta

- 6.14 It is noted that the previous operation was forbidden to operate during the Regatta. While the logic of this is obvious (and more so should a large boat be operated) it does mean the vessel is not in operation on days when a large customer base is drawn to the river. Means should be considered of overcoming this conflict without suspending operations altogether. This may be achieved by means of an adjusted timetable, to reflect gaps in waterborne activity, or extra low speed restrictions of say 2mph through the regatta.

Rowing Club

- 6.15 Derby Rowing Club has expressed several concerns via letter regarding the proposed River Bus and the limitations of the River for both small and larger craft. Of particular concern are:

- ◆ **Areas of unmarked shallow water** – there is area of shallow water marked with buoys on the downstream side of St. Mary's Bridge. However the Club have pointed out that there are several other hazardous areas along side the river bank;
 - ◆ **Vegetation** – particular problem during summer months according to the club, with the width of navigable water restricted, causing a particular problem to propelled vessels. The effect is to force crews out into the middle of the river giving rise to the number of potential collisions. Overhanging branches are said to be an increasing problem through unchecked natural growth and dying trees. The riverbank is also eroding causing tree roots to become exposed. There have already been a number of capsizes due to crews becoming tangled in the roots or striking the branches.
 - ◆ **Floating debris** - the club list branches, logs, shopping trolleys, dead animals and cars amongst the floating obstacles regularly encountered on the river.
- 6.16 The primary concern expressed by the club from their own perspective, is the safety of their crews and their ability to stop in the event of a collision course with a water bus. The club's busiest times are said to be Saturday's and Sunday's during summer months (likely to be the peak operational times of the River Bus). Concern is also expressed with regard to how club regattas and events could be run safely alongside the River Bus.
- 6.17 The issues above should be straightforward to mitigate. The primary need for a competition rowing crew (who will presumably be training rather than in competition most of the time) is to be able to maintain their course and not be unduly affected by wash. The river is on average 25 metres wide with a good depth of water throughout. It should be perfectly feasible for the trip boat to move to one side and reduce speed to dead slow while passing a rowing boat. This is the standard practice on much busier waterways such as the Cam and the Thames.
- 6.18 Also the issues of shallow water, vegetation and floating debris can be resolved fairly easily with clear marking of shallow water, regular attention paid to the cutting back of overhanging or dead vegetation and exposed roots, together with swift action in removing debris.
- 6.19 Shallow water near to the banks is only likely to be a hazard for a River Bus operation near to the landing stages. If a steel boat is decided upon, shallows are an inconvenience rather than a hazard as a steel boat is unlikely to be damaged by grounding and are likely to be freed easily.

Canoe Club

- 6.20 The Midland Canoe Club is the only club of its kind on this section of the River and had no objections to the scheme. The Club mainly use the area above Derwent Abbey Mills Weir and therefore outside of the area where the River Bus would operate. Although the Club occasionally do trips downstream to Derby, no problems were foreseen as long as the River Bus had a timetable that was kept to.
- 6.21 The idea of the River Bus was generally supported by the Club representative, seeing increased usage of the River, particularly in the Darley Abbey area as a positive step. The issue of shallow water was raised as a potential problem for any

River Bus operation and it was suggested that the boat would need a low draft in order to cope with this issue. The desire for the increased participation of the Canoe Club within the Derwent Valley Mills Partnership was also expressed.

Anglers

- 6.22 If there is a conflict with anglers the main issue will be wash. Unlike fishing on canals the Derwent is so wide that there is no prospect of a roach pole being used to fish the opposite bank, or of them casting the width of the river. So long as Angling pitches are known to the steerer of the vessel, it should be practical for any conflict to be minimised. In practice, some anglers actually favour occasional passage, as this disturbs the fish and makes them more likely to bite.
- 6.23 Three Derby based angling clubs were contacted: The Derby Railway Angling Club, The Pride of Derby Angling Association and the Earl of Harrington Angling Club.
- 6.24 The Derby Railway Angling Club suggested that there would be minimal impact caused by a river bus to their member, partly because the river was so wide and no-one uses pole rods, but mainly because they do not concentrate many of their activities on this stretch of the River.

ENVIRONMENT AGENCY COMMENTS

- 6.25 As statutory consultees and having assumed powers from the former National Rivers Authority, the Environment Agency (EA) was invited to comment upon proposals for the River Bus and provide further comment on the stretch of the River Derwent.

Development Control / Flood Defences

- 6.26 From a Development Control / Flood Defences perspective, the EA made the following comments with regard to piers and moorings on the River Derwent:
- ◆ Ideally all boats should be stored offline, with purposely designed facilities such as marinas to ensure that the impedance of flow and risk of blockage during flood is minimalised;
 - ◆ Moorings and pontoons should be aligned parallel to the river flow and constructed so as not to pose a river maintenance problem. They should not project more than 1.0 metre from the water edge at normal water level and be firmly secured. It may also be necessary to protect banks to prevent erosion adjacent to the structure.
 - ◆ There should be adequate means of allowing the moored boats to rise and fall with the varying water levels.
 - ◆ Marinas and significant piers will require planning permission, upon which the Environment Agency should be consulted within its normal role as a planning consultee.
 - ◆ Any new mooring or landing stages or amendments to existing structures will require the prior written consent of the Agency. Under the Water Resources Act 1991 and associated Byelaws, works in, over, under or adjacent to main rivers require the Consent of the Environment Agency. Consents are only available from this Agency and a fee of £50.00 per Consent will be charged. The Agency

will want to see full details of the work proposed, at least two months before works commence. Temporary works such as dams or scaffolding required within the watercourse will also require Consent.

- 6.27 General comments from the Environment Agency's Flood Defence team state that any mooring, whether along the bank or midstream, must ensure that risk to others, or risk of blockage is eliminated or minimised as far as possible. Further issues raised by the Agency's Environmental Management Team for Water are the stirring up of silt by boat traffic and oil pollution from the boats themselves, or from the refuelling of boats.

Land Interests

- 6.28 The Environment Agency has two land interests within the stretch of water in question. These are:

- ◆ Land and Water rights (including weir and sluices) owned by the Agency – this is let to the Midland Canoe Club;
- ◆ Land leased to the Agency for a gauging station.

The locations of these can be seen in Appendix 1.

Nature Conservation

- 6.29 The Agency lists ten sites of Importance for Nature Conservation (SINCs) for which they hold the records within a 1km radius of each site and the river:

- ◆ River Derwent;
- ◆ Nutwood and Darley Tip;
- ◆ Watermeadows Ditch;
- ◆ Nooney's Pond;
- ◆ Breadsall Railway Cutting;
- ◆ Darley Park;
- ◆ Beech Wood;
- ◆ King Street;
- ◆ Markeaton Brook System;
- ◆ Friargate Station.

- 6.30 The Agency has records of Great Crested Newt, Crayfish, Bat and Water Vole within the specified area, all of which are protected under the Wildlife and Countryside Act 1981. Any works that may impact these species will require a survey.

SUMMARY

- 6.31 None of the identified environmental impacts appear to block the proposal

7. Conclusions

- 7.1 From the findings outlined within this report we can conclude that a River Bus operating between Derby City Centre and Darley Abbey Mills would prove to be feasible, providing tangible benefits to the local economy and community, especially at Darley Abbey Mills where the River Bus could help to encourage visitors and potentially provide an alternative to private car transport. It would also provide a useful and pleasant tourist attraction on the River Derwent, currently unutilised by visitors to the area.
- 7.2 There appear to be very few conflicts with any proposed River Bus. Efforts should be made to mitigate the effects of the River Bus on local residents, as well as established river user groups such as the Derby Rowing Club and the angling groups. We would recommend that all groups are kept informed of progress and consulted at every stage of the project.
- 7.3 In terms of the preferred craft to be used as the River Bus, we can conclude that if a source for capital outlay is found, a large boat with disabled access should be pursued.
- 7.4 We would recommend that the 72 ft narrow boat be the first option pursued. A new boat of this type could be designed with disabled access, a second hand one readily converted. A narrow boat would also have a higher resale value should the project for any reason fail, or should a larger vessel be required at a later date.
- 7.5 As an alternative to a 72ft narrow boat, a second hand historic vessel should be considered at the acquisition stage. Although such a craft may be more difficult to arrange disabled access for, it will provide an interesting and unique feature on the river which would add to the attraction potential. It is also likely to have a high resale value should operations fail, or a larger craft be needed. The chosen vessel should be capable of carrying at least fifty passengers.

Appendix 1

Environment Agency Land Interests