

## **ANNUAL MEETING 2011**

### **Jim Stirling, Technical Director, British Waterways**

Good afternoon.

What I am going to talk about is how we manage our infrastructure risk and how we allocate our scarce funding. This leads on to how we would suggest the viability of the Canal & River Trust is assessed.

Scarce funding is a key point. We never have enough –yes, we have said it again. If we had enough money you would think that we could just hand it out and let all decisions be taken locally and have some kind of monitoring system. It is never that easy. How would we know we had enough money? We have never had enough and regrettably probably never will.

So our job is to fight for as much funding as we can and then do the best job we can with the amount we have. We need to have some method for assessing and justifying the funding we are seeking and some method for allocating the funding we actually manage to achieve and for managing the inevitable risks that arise.

While we are under government control all the risk must ultimately lie with them. Thus we may have to carry more risk than we would like, in which case we must make government aware of those risks.

Once the waterways are under the control of the new Canal & River Trust the risk position changes – and changes significantly. We would all agree that the Trust must be viable and must have sufficient money to avoid carrying more risk than it can sensibly manage. But it will not be risk free and the new Trust will have to have a way of calculating and then managing risk.

So I hope to give you a clearer picture of how we do that and the challenges involved.

- **2528 Km Canals**
- 550 Km Rivers
- **187 Km Feeders**
- 72 Reservoirs (Reservoirs Act)
- **3700+ Km Vegetation Boundary**
- 65 SSSIs
- **311 Conservation Areas affecting BW**
- 2819 Listed Buildings (3<sup>rd</sup> Largest owner in UK)
- **98 Scheduled Monuments**
- 9 Historic Battlefields affecting BW

It is worth just taking a moment to remind ourselves of the fantastic legacy for which we have the honour and pleasure to be custodians.

Locks etc:	Water:
<ul style="list-style-type: none"><li>• 1568 Locks</li><li>• 86 Safety and Flood gates</li><li>• 5647 Gate Leaves</li><li>• 4702 of which are Timber</li><li>• Workshops manufacture 190 leaves per annum</li></ul>	<ul style="list-style-type: none"><li>• 72 Reservoirs covered by Reservoirs Act (Top 5 owner)</li><li>• <b>3238 Million litres – capacity of largest (Killington)</b></li><li>• 2000 Megalitres per day available (Top 3 Water Company)</li><li>• <b>59 Pumping Stations</b></li><li>• 1000+ Water monitoring points – majority linked to SCADA</li><li>• <b>4 million lock operations per annum</b></li><li>• Busiest lock – 9500 per annum using 760 million litres (New Marton). Hillmorton pair is busiest overall with combined total of 10765.</li></ul>

The waterways are comprised of many thousands of physical assets. We break them – actually many are already broken – we break them into two categories with the straightforward titles of Principal Assets and non-Principal Assets.

<b>Principal Assets</b>
<p>‘Key operational infrastructure assets, the failure of which would lead to major disruption or have serious consequences for our business, customers or neighbours’</p> <p>‘Core building assets, owned and occupied by BW, and essential to our business’</p> <p>10,000 Principal assets split into 25 asset types</p> <p>AIP 2008</p>

Here is a definition of Principal assets. It’s the big stuff. The stuff which is the foundation of the waterway network. The stuff which if it fails will have significant consequences.

## Non – Principal Assets

'Assets outwith the dimensional or operational significance criteria of Principal assets, but nevertheless perform an essential function in the operation of our navigations.'

11,000 approx.

Non-Principal Assets split into 30 types

We also have non-principal assets. It's the smaller stuff, often linear stuff that is important operationally - i.e. for our day to day customers. Failure would still cause disruption, but more like an inconvenience.

We need to be able to look after all this stuff and sensibly apportion our available spending money to manage the risks of failure. We do this by having what is called an Asset Management System. This is fundamental to understanding our assets and understanding the risks posed by the failure of these assets.

## Asset Management

1970s      inadequate knowledge of condition  
reactive, fire fighting  
many failures & closures of w'way lengths

1980s      rudimentary AM system devised  
directed at prioritisation of urgent projects  
**NO** corporate asset inventory  
continued unforeseen failures

We have developed the system from infancy in the 1970's to a system to-day that is acknowledged by other organisations as being top class. Just two days ago I sat down with experts from other organisations to assess our approach once again. I am pleased to say we did very well.

## Asset Management

1990s	Growing awareness at Board level of potential risk due to lack of knowledge of asset condition.
1992	First codified inspection and maintenance regimes set out.
1997	More comprehensive & mandatory asset inspection procedure <b>AIP97</b> BW appoints first strategic Asset Manager!  Regional inventories cleansed & merged but still lacked vital data to support submissions to Govt. for increased grant.  Rapid national assessment of asset condition using hand held data recorders.

Inspection; classification; the identification of problems and consequences; then deciding how to deal with them is really what an asset management system is about. It is not some theoretical system to feed bureaucracy it is crucial to managing risk and keeping people and the waterways safe. It is the unseen backbone of the waterways themselves.

## Asset Management

2002/03	SAP goes live in BW  Discussions begin on longer term approach to grant funding.
2004	Group set up to develop Steady State Model

Asset Management in British Waterways improved steadily over the years and in the mid-2000's we moved it to a new level with the concept of Steady State.

## Steady State – Original Brief

May 2004

A good understanding of our underlying maintenance costs for core waterway is essential in planning for the future. We need to move away from historical budgets and define what is the target expenditure on each waterway given the nature of the asset base and other waterway attributes.

Here is the original brief for the team that created Steady State back in 2004 – which is not really very long ago!

## Steady State – Original Brief

May 2004

A project is to be carried out to establish a methodology for calculating this cost base and its sensitivities. There is a danger that we arrive at an idealised and 'perfect' maintenance regime which in practice is inappropriate and not affordable. **It is essential that some risk is built into the model and a large element of realism is achieved.**

You will see that it was never intended to be an idealised scenario, but was always designed to be pragmatic and realistic.

## Asset Management / Steady State

2005	First Steady State calculation
2011	Latest version of Steady State is third major iteration

Steady State itself has now developed and has been improved. It is now in its third iteration and is hugely beneficial in helping us manage our risks and share out our scarce spending money.

Let's just talk about what Steady state means before we talk about monetary values. There are two approaches to considering how much money is required to manage and operate the waterways.

The first way is to work out what it would cost to make everything great and to keep it great. Great navigable channels, great lock gearing, perfect vegetation management, perfect asset profile.

It is not going to happen.

It has never happened and I would suggest never will happen. We rarely if ever have perfect houses with perfect gardens populated by perfect people.

The other way is to use judgement to assess what is reasonable and allows all risks to be sensibly managed. This is probably how most of us look after our own possessions etc. - This way is Steady State.

Let's go back to waterway speak to put a bit more flesh onto Steady State. What do we need to do? What are our obligations?

We have statutory obligations. Things we are required to do under statute. These can be described as the obligation to keep the waterways generally available for public use for inland navigation and to maintain them to defined dimensions.

## Statutory Obligations

The obligation to keep the waterways generally available for public use for inland navigation and to maintain them to defined dimensions.

+ important duties relating to environment and heritage conservation

I will just say that again: - the obligation to keep the waterways generally available for public use for inland navigation and to maintain them to defined dimensions. Plus some important duties relating to environmental and heritage conservation.

### Direct Costs:

Inspections

Asset:

Repair

Maintenance

Renewal

Dredging

Water control

Customer service etc:

Lock & bridge keeping

Vegetation management

Facilities

Anti-social behaviour issues

### Indirect Costs:

Plant, Craft, Equipment

Operational Buildings

Non-productive time

The Steady State model is a line by line analysis of each component of maintenance and repair requirement for every infrastructure asset, principal and non-principal, together with an analysis of customer service and vegetation management on an activity by activity basis. These component costs are then aggregated across all waterways and annualised.

Bit of a mouthful, but that is how we see Steady State.

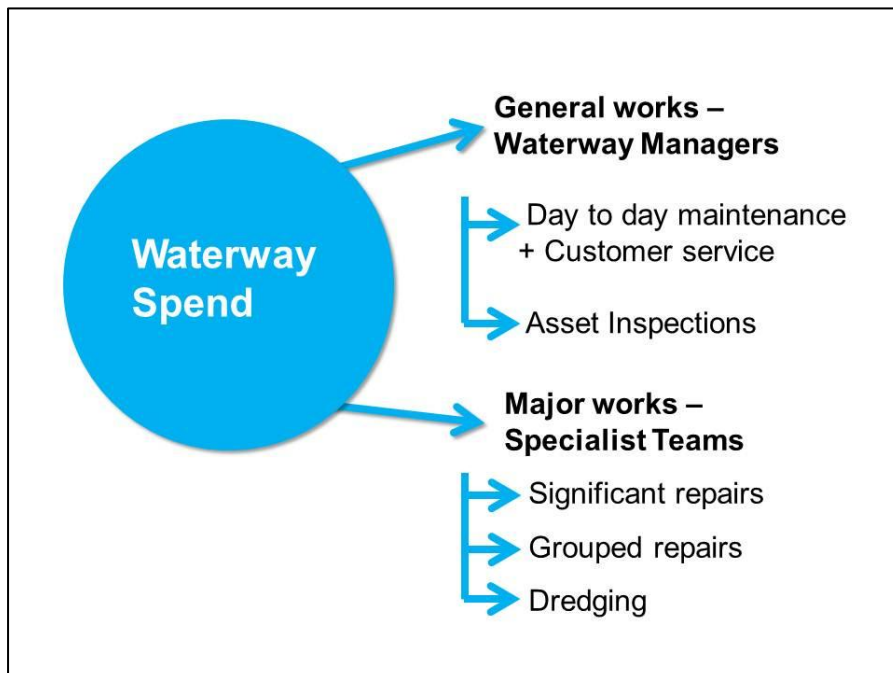
## Steady State

Steady State is the model used to calculate the required annual spend for operating and maintaining the waterways in a stable condition that is fit for the purpose of meeting the required statutory standards at a manageable level of risk.

Or if this language is more helpful: - Steady State is the model used to calculate the required annual spend for operating and maintaining the waterways in a stable condition that is fit for the purpose of meeting the required statutory standards at a manageable level of risk.

You know we do not have enough to spend at steady state levels never mind the fact that the waterways are not actually at Steady State.

So how do we manage this funding problem and what does it mean?



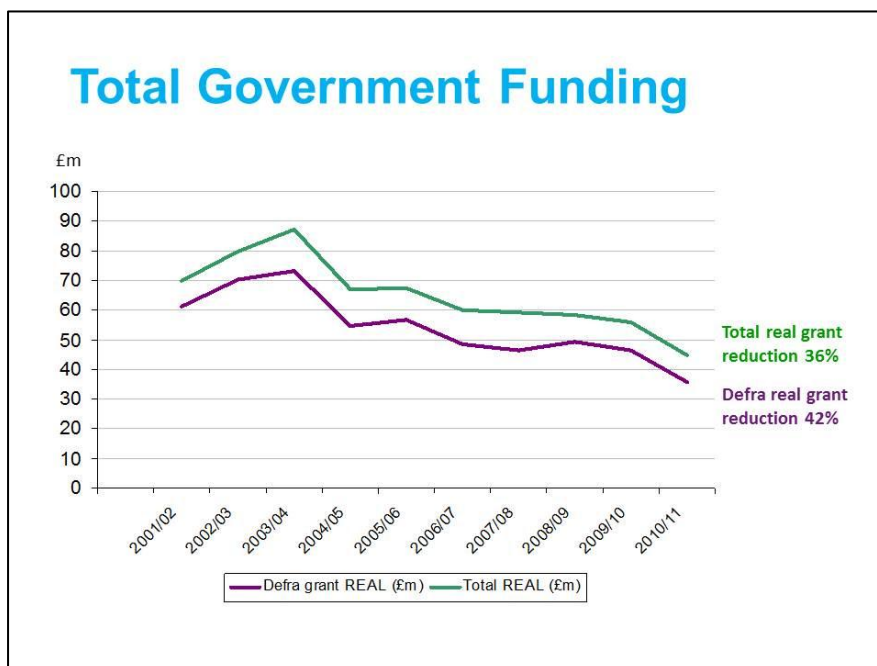
As far as maintaining and operating the waterways is concerned we have two headings for funding. The first is GWP or General Works and this is the budget that is managed by the waterway managers. It is used for day to day maintenance and customer service as well as the critically important asset inspections and length inspections. The waterway managers could responsibly spend all the waterway funding we have, but we cannot allocate all of it to them. So they are always stuck trying to balance local priorities while meeting the critical requirements of inspecting and understanding the assets.

The other heading for waterway funding is labelled Major Works and is generally managed through specialist teams and delivered through national framework contracts. Major works funding is used for significant repairs or for grouped smaller repairs where that is the most efficient way of dealing with them and for most dredging. Again we do not have enough money to do everything necessary and we have to prioritise.

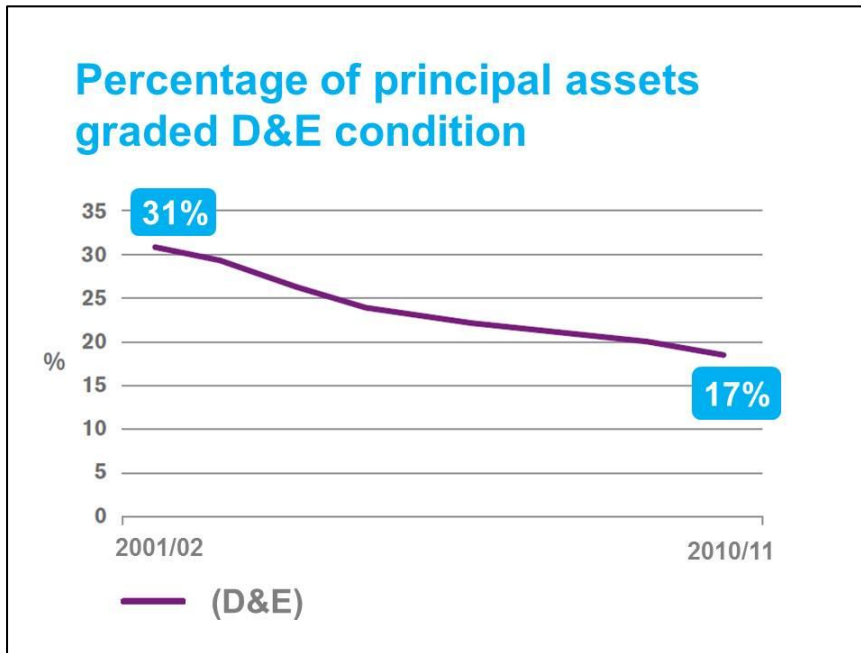
So we face challenges.

The first challenge is to decide how much to allocate to General works and how much to allocate to Major works. This is not easy. It is all about managing risk. There are safety risks, there are stability risks, there are operational and reputational risks for example.

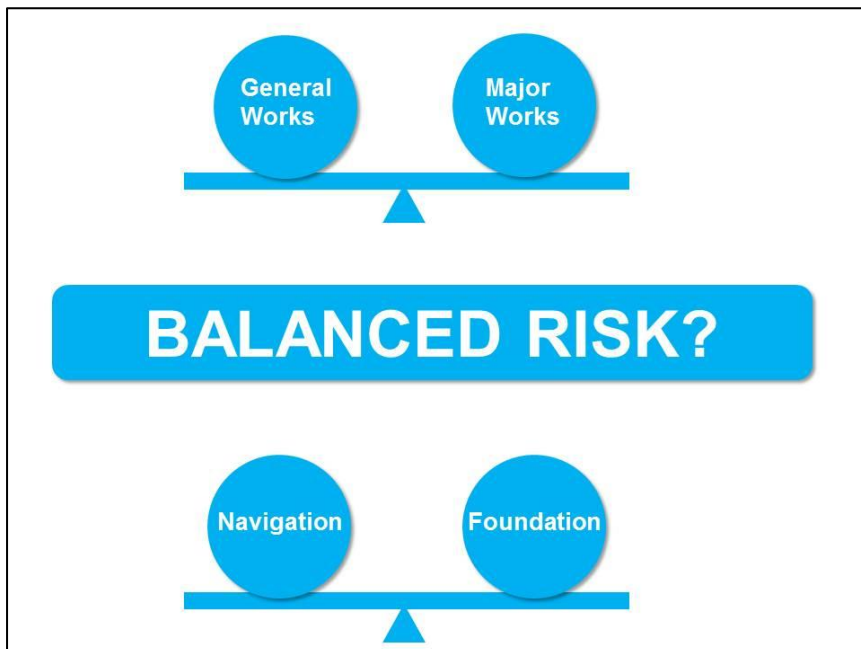
In recent years we have taken the conscious decision to safeguard the foundations of the waterways. Let's look at a profile of Government Grant in recent years.



This slide was used at last year's Annual Meeting. You all know the grant has continued to go down. Let's now look at the proportion of our Principal assets that are in poor condition.



If we allow principal assets to get out of control we will lose the waterways all together. We must have a firm foundation of the main infrastructure assets to ensure the network will survive. To achieve this improvement in Principal Assets we have had to squeeze general works and dredging.



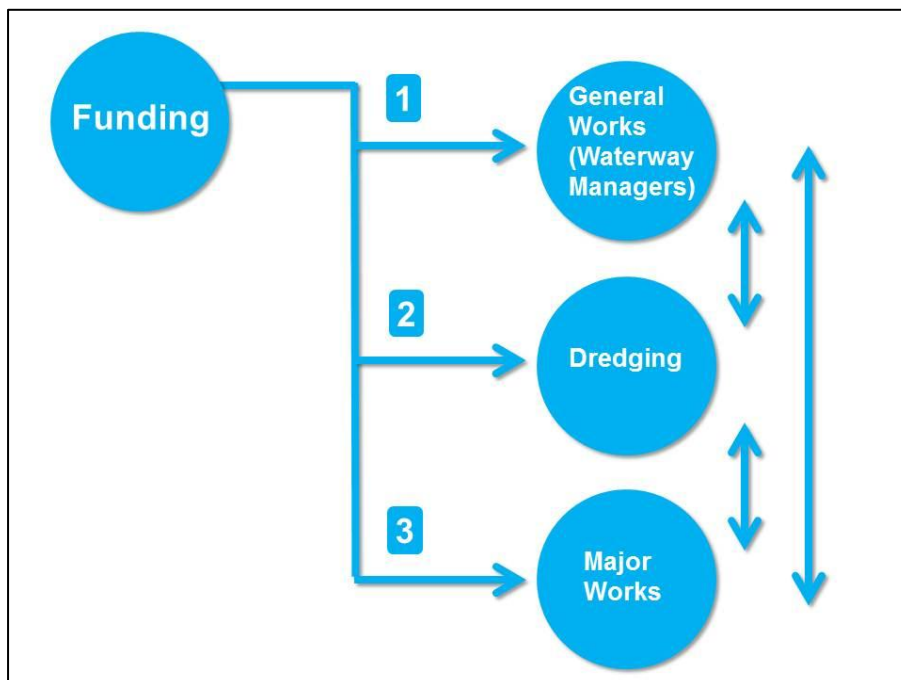
We would prefer to control the proportion of Principal Assets in poor condition and to control the general condition of the waterways. Currently, we are unable to do that. If we put more money into general works the principal assets will deteriorate and we will lose our foundation. We do seek to provide a balance based on managing risk. Currently that balance means that dredging is inadequate and the state of the waterways generally is deteriorating.

Thus we have to acknowledge that as a navigation the waterways are currently deteriorating.

Let us just remind ourselves that we have been saying the funding of the waterways is inadequate for a while and you will remember we said so very noisily in 2007. It has not got any better since then. We have made great strides to save costs, but grant has been reduced to match. That is why the transfer to the new Trust is so important. But the Trust must be viable and have sufficient funding to maintain the waterways and halt the deterioration.

So we need to understand what viability of the waterways really means. This is where talking purely financial numbers does not create the right picture. The waterways must be viable as a navigation and not just because that is enshrined in our statutory obligations, but because the waterways are poorer places without boats passing by. But you cannot just think about a navigable channel and lock paddle gearing and the like. You need to have a stable underpinning asset infrastructure – the foundations as I said earlier. But you also need accessible towpaths etc. The bulk of future voluntary fundraising is likely to come from people who do not go boating. So again we have to balance a number of competing claims on our spending money.

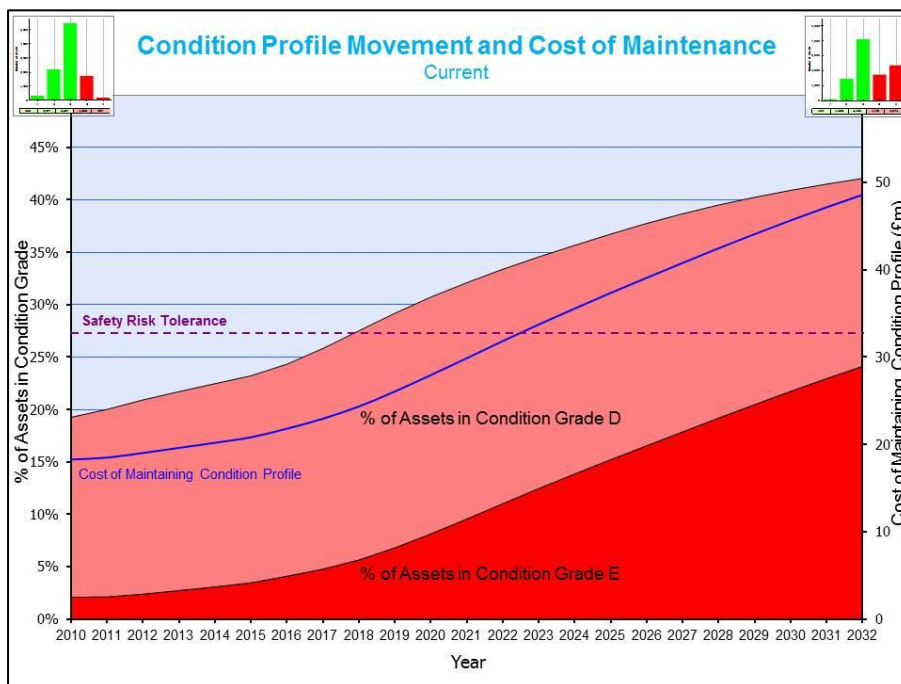
Steady State is a key tool to help us achieve this balance. It informs us as to what we should be spending and where. It also helps us to judge where we can safely survive for a period with less spending.



Our approach is to look at the amount of money we have available to spend on maintaining and operating the network. We provisionally allocate money to general works – i.e. to the waterway managers. And to dredging. Our aim is to allocate sufficient to hold the waterways from deterioration.

We then allocate the remainder to major works and we predict the profile over time of the number of Principal Assets in the poorest conditions. We can do this because we have such good information on these assets. It gives us a picture of the stability if you like of the foundation that holds up the network.

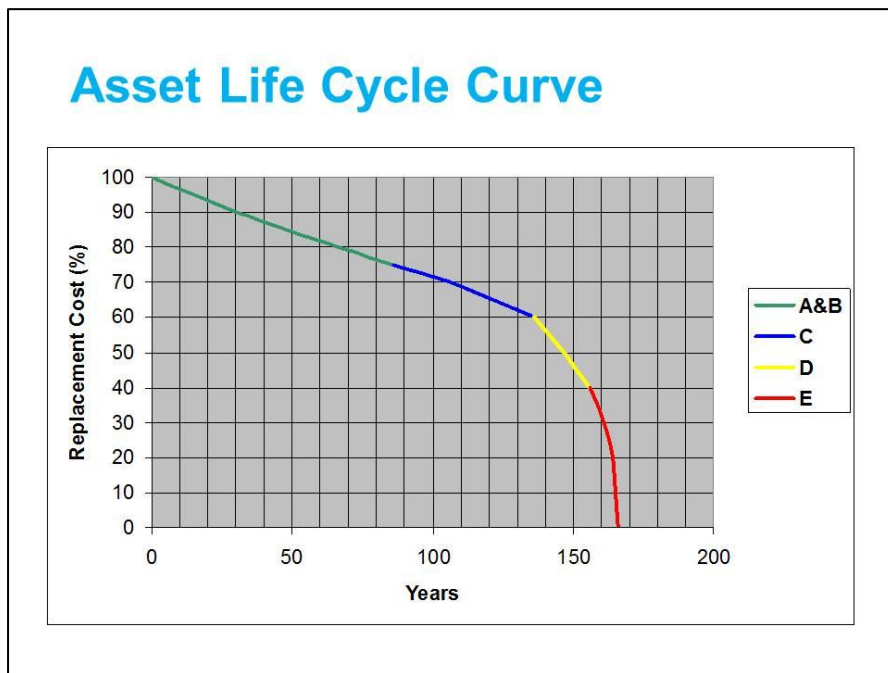
Let me show you what this profiling looks like.



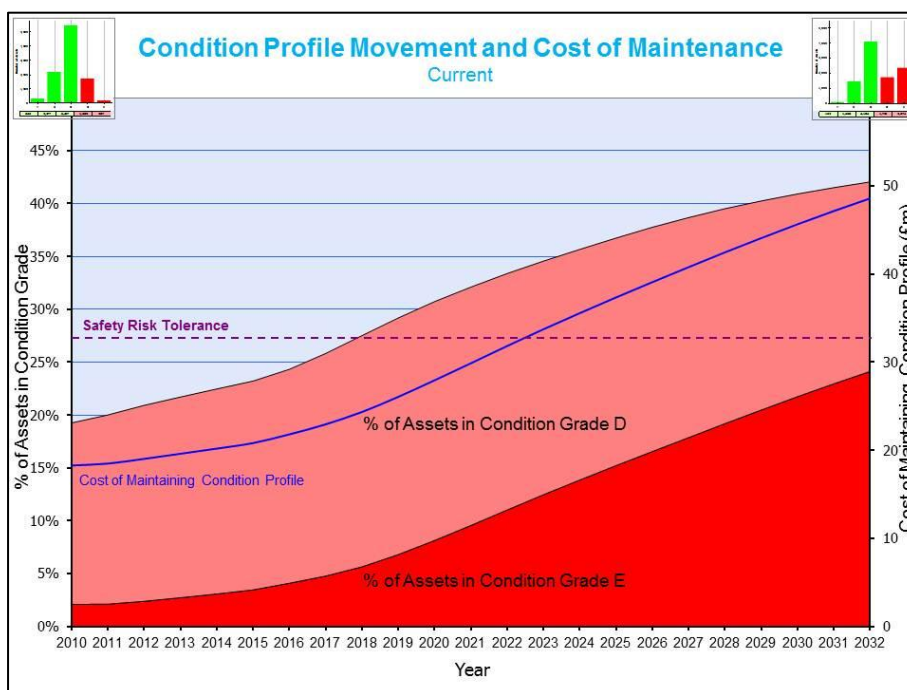
Bear in mind that we do this after provisionally allocating money to general works and dredging. We can iterate the approach by moving funding between the headings until we get to a balance that is in our judgement the best balance we can achieve. As mentioned earlier we have concentrated on getting principal assets into better condition in the last few years so these curves start at the current position. While we genuinely believe the current percentage should be celebrated as a success, there is still risk. Not so long ago we had a target agreed with government to get the figure down to 10%. When we gave evidence to the EFRA Committee in 2007 we said we could not reach 10% and were targeting 15%. We are now at 17% or 18% and managing the attendant risk. I have already said this has been achieved at the expense of navigation - principally dredging and offside tree management because that was our judgement on risk given the reduced funding available to us.

This is a prediction of what will happen if the waterways stay in the public sector and the Grant stays as announced and we continue to split our funding as we do now. You will see that the percentage rises immediately and over a short period the assets deteriorate to unmanageable levels. Remember the percentage has been dropping for at least the last 10 years so this is a major reversal. We have been clear for quite a while that this was the case and it was unsustainable.

As the assets deteriorate the attendant risks increase until they become unmanageable. As the percentage climbs we would have to cut more and more from general works and the feel of the waterways would be pretty dismal.

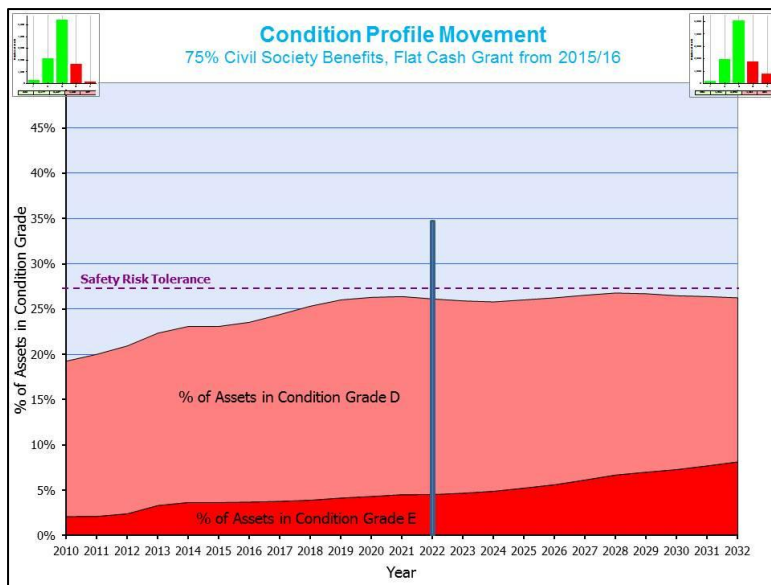


This is the shape of the way a physical asset deteriorates over time. As it gets older it requires more maintenance or it deteriorates at an ever increasing rate. Most organisations would set a limit beyond which they would replace an old asset. With the waterways, the age of the asset is often one of its most important attributes. So we tend not to replace assets, but keep refurbishing them. Clearly it is wise to spend money on planned preventative maintenance to halt or prevent deterioration. This is a priority for us where we can afford it.



Remember we are only charting here the big stuff in the poorest condition grades. Something similar will be happening to the smaller stuff, but we do not have the data to properly chart it. We need to keep it in mind – which is why we firstly provisionally allocate funding to the waterway managers - but we use these Principal Asset profiles as our measure of structural viability.

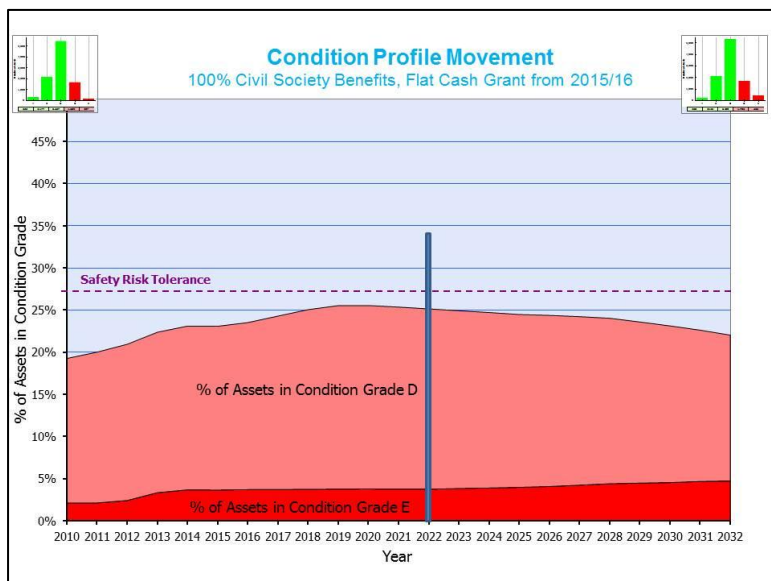
So let's look at what happens when we plug in the projected benefits of moving to the Trust and keep everything else equal.



We have applied a prudence factor to the projected benefits as many of you suggested during the consultation.

The graphs are pretty sensitive to relatively small amounts of money and sensitive to the timing of money.

Moving to the trust is clearly beneficial compared to staying in public sector if nothing else changes.

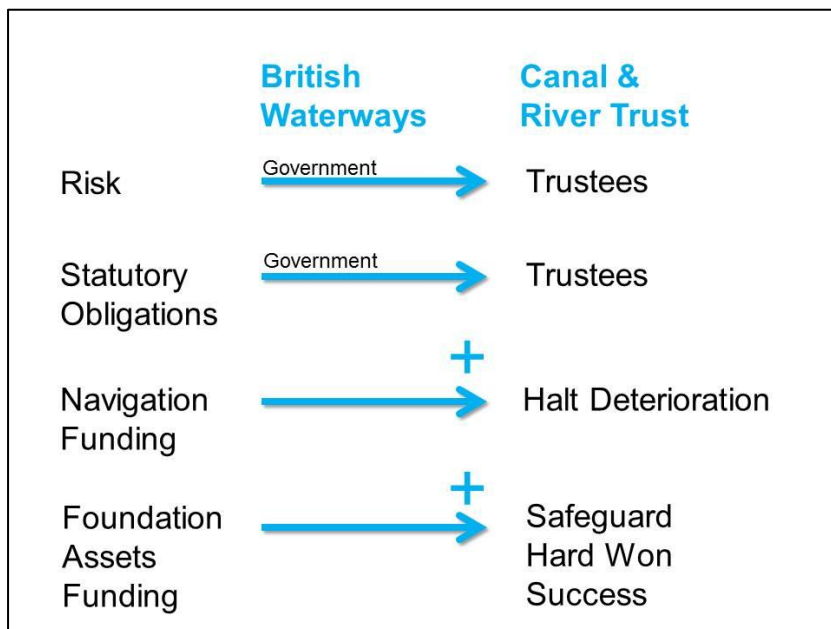


The Trustees are clear that more needs to be allocated to navigation and general works to halt the general navigation deterioration and to provide the right climate of support for the Trust. So the asset curve will get worse for a given amount of total funding.

The Trustees are also clear that they do not wish to see the Principal Assets deteriorate. This means further additional funding will be needed to prevent deterioration from the hard won success in bringing them down to 17% or so.

How much more? Well I am not going to give such figures here to-day as we are in negotiation with Defra on the funding package for the Trust. You would not expect me to reveal the Trustees position.

It is worth looking at the Steady State figures to at least give you a feel for the scale of the funding issue. I expect the numbers you are familiar with are £125m or £130m and a £30m gap. Most people assume the number is growing. It is actually now lower and not just because we are only looking at England & Wales now – i.e. without Scotland.



Here are two slides that show the change in the total amount assessed as needed by the Steady State model since 2009. The first slide restates the 2009 total. Starting at the top and the Group total of £129.4m the big change is due to Scotland being out. Some duplication was found as we worked through the model again and there were some accounting changes due to our budget headings changing - leading to a comparative total of £110.7m for E&W.

## Steady State – Movements 2009

	Figures in £m		
<b>Steady State 2009</b>	<b>Group</b>	<b>Scotland</b>	<b>E&amp;W</b>
Direct Costs (inc. Manned Structures, Energy)	101.1	(9.7)	91.4
Dowries	3.8	-	3.8
Indirect costs*	24.5	(4.0)	20.5
<b>Total</b>	<b>129.4</b>	<b>(13.7)</b>	<b>115.7</b>
Duplication of Activities in the Model (Feeders, Swing Bridges, Locks)			(2.9)
Teams moved to Central Services in the 2009 Restructure	(2.4)	0.2	(2.2)
<b>2009 Model Restated</b>			<b>110.7</b>

\* Operational Buildings, Craft, Plant and Equipment, Unattributed People Costs (e.g. Training)

The second slide shows the real changes in the 2011 version. We have made real savings of £6.8m per year since 2009 leading to the new total of £103.9m.

## Steady State - Movements 2011

	Figures in £m	
	<b>E&amp;W</b>	
<b>Real Change (National Contracts, Better Ways of Working, Efficiencies)</b>		
Direct Costs		(4.5)
Dowries		0.0
Indirect costs*		(2.4)
<b>Total</b>		<b>(6.8)</b>
<b>Steady State 2011</b>		
Direct Costs		84.1
Dowries		3.8
Indirect costs*		15.9
<b>Total</b>		<b>103.9</b>

\* Operational Buildings, Craft, Plant and Equipment, Unattributed People Costs (e.g. Training)

This only tells us what we should be spending to maintain our statutory obligations if we were already doing so.

In this current year with the current level of grant we are spending directly against the Steady State headings a total of approx. £76m which leaves a gap of £28m not much different from the £30m of a few years back. In addition though we need to consider the effect of the money we raise from local authorities and third parties through our Enterprise teams. A sizeable proportion of this money is spent delivering outcomes that are within the Steady State model. This year we estimate that to be in the order of £8m or so, reducing the gap to £20m. Efficiency improvements already achieved are built in to the 2011 figure, but we keep pushing on further efficiencies through better planning, better procurement etc.

So the gap between actual spend and Steady State assessed spend has been coming down and is forecast to be somewhere around £20m in each of the next 10 years based on the announced grant. This is not a cumulative figure – i.e. the deficit is not an accounting deficit that carries forward and is added to the subsequent deficit. Some underspend will lead to accumulating deterioration and some will not. Clearly we seek to balance things to minimise any cumulative effect.

The upward sloping asset profile curve I showed earlier shows what happens when we cannot achieve this balance – then things do accumulate.

So here to-day, I would summarise by saying it is all about Trust



I would suggest that you have to trust that we might actually know what we are doing. That we might actually understand the waterways and the risks they face.

I would suggest that you have to trust that the transition Trustees will take the right decisions and will not sell the waterways short.

They could sell the waterways short by accepting a deal that was too little. Equally, I would suggest that it would be selling the waterways short to hold out for an unrealistic amount and fail to launch the Trust.

It will not be and cannot be risk free.

The challenge is there. It is within our grasp.

Let us all agree that ultimately it is the waterways themselves which are the most important in all of this.