



Forum for the Future

South West Sustainable Land Use Initiative

# **The Parrett Catchment Project**



Sustainability appraisal case study  
September 2005

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Forum for the Future is a sustainable development charity, and our mission is to accelerate the transition to a sustainable way of life. Our mission is one we share with partners drawn from business, local authorities, regional bodies and universities. It is also the organising principle behind our portfolio of leading edge projects. We provide advice on issues as diverse as climate change, procurement strategies, sustainability accounting and the digital divide. We communicate what we learn with our partners to a wide network of decision-makers and opinion-formers.

This report has been developed with help and advice from the Parrett Catchment Project's Management Group, project team and Stakeholders Group. Any omissions or inaccuracies are the sole responsibility of Forum for the Future.

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## Executive summary

Our land resource is finite and we need to find more integrated and sustainable ways of using it. The challenge is to safeguard and enhance soils, air, water and ecosystems at the same time as securing social equity and economic prosperity in rural areas.

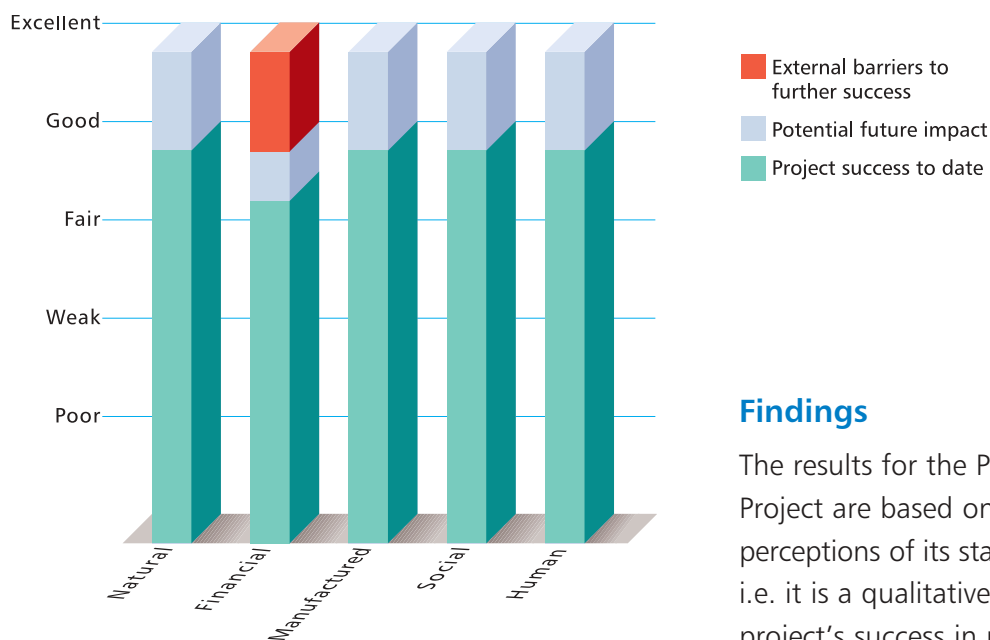
This report covers one of six case studies being undertaken by Forum for the Future in the South West, to test a sustainability appraisal tool to help develop a new evidence base of good practice for the region. The tool is based around the five capitals model – a sustainable development framework incorporating natural, human, social, manufactured and financial capital. The strength of this approach is that it enables very different projects and activities to be compared in relative terms using the appraisal tool.

**The Parrett Catchment Project** (PCP) was set up in 2000 as a partnership initiative in direct response to numerous local problems arising from flooding (see [www.parrettcatchment.info](http://www.parrettcatchment.info)). The PCP's aim was to tackle conflicts between land and water management activities throughout the river's catchment to resolve these problems. It is doing this by implementing the project's 50 year vision and Strategy through a series of 10 year Action Plans to achieve integrated, sustainable land use planning and resource management. The mix of land and water management related activities now underway to implement the first Action Plan are successfully integrating water quality and water flows, farming practices, soil conservation and biodiversity enhancement perhaps more fully than in any other English river catchment.

**The purpose of this appraisal was to identify:**

- a** how the project has and is contributing to catchment-wide sustainable development, and to further promote its successes;
- b** what more the project could consider doing to increase its impact on catchment-wide sustainability in the future;
- c** the external barriers to further project success and suggest ways these could be resolved.

The bar chart on the following page illustrates the project's impact on local sustainability, based on the views and perceptions of local project members and partners.



## Findings

The results for the Parrett Catchment Project are based on the views and perceptions of its stakeholders, i.e. it is a qualitative picture of the project's success in making the Parrett

Catchment more sustainable. The project is making a considerable impact on local sustainability, and there is clearly potential to do even more.

- Natural Capital** – the project has made considerable progress in resolving soil management and water storage issues to benefit local communities. River water and soil quality are improving as a result. Although not directly targeted landscape character is being enhanced. Biodiversity issues connected with water level management are the next priority.
- Social Capital** – the project has been extremely successful in bringing together a very wide range of stakeholders (especially considering the local tensions in recent decades) to both raise awareness of the issues, agree a comprehensive and forward looking strategy, and to celebrate the catchment's history and character with local communities, e.g. an annual Parrett River Festival.
- Human Capital** – directly investing in increased capacity for FWAG has greatly helped to build trust with local farmers, providing specialist advice on changing management practices, helping farmers to share ideas and try new techniques. EU funding meant that project partners benefited from collaboration with European partners, to spread the learning process. The project's outreach has since extended to working with local schools, special interest groups and communities through a number of recent initiatives.
- Manufactured Capital** – the project works with local planners on development issues in the catchment concerning flood risk management, including small-scale water storage features and more resilient building design. Improved soils and water management have reduced sediment washed over local roads and have reduced peat shrinkage to safeguard archaeological features. Efforts have been made to minimise the need for "end-of-pipe" hard engineering solutions by using land management alternatives. However, progress in implementing Sustainable Drainage Systems (SuDS) across the catchment has been slow due to uncertainty over maintenance responsibilities.

- **Financial capital** – key funding partners have worked through the project to optimise the results of disparate funding streams. The project partnership and shared strategy have provided a strong focus for agreement on spending priorities. The partnership obtained considerable EU funding to implement specific components of the strategy, enabling much more to be done within a shorter timescale. The main constraints on future success concern how CAP reform measures will impact locally (including the availability of Higher Level Scheme agri-environment funding) and whether national flood defence monies will be available to construct the tidal sluice. Until national cost-benefit methods use sustainable accounting principles it will be difficult for the project to attract the necessary funds.

#### This case study also demonstrates the importance of:

- A strong and locally trusted partnership that can co-ordinate and focus the efforts of several different partner organisations and groups. Strong partnerships with real leadership and vision help to develop considerable trust and facilitate effective collaboration between local people, businesses, farmers, regional bodies and public agencies.
- Clear lines of communication and collaboration between project partners, key groups, local businesses and communities is essential to achieving integrated and robust solutions to local sustainability issues, i.e. getting the issues widely understood and shared so that long term solutions can be more easily put in place.
- Developing a strong identity for the catchment with all of the stakeholders helps to make sustainability more relevant and worthwhile for local businesses, residents, farmers and local people, i.e. everyone can identify with the local ‘brand’. This makes it easier to use the brand to increase “sense of place” and a shared agenda through, for example, fun promotional events that both celebrate the area and raise awareness about the issues.

The PCP can use the results of this appraisal to help benchmark its success and measure future progress. It should also be useful in helping to identify ways of filling the few remaining sustainability gaps in its approach and for informing the review of the project’s strategy and structure. The biggest barrier to increasing the project’s impact on local sustainability remains the lack of resources to carry out of major flood defence works that will contribute to and help restore natural catchment function. This is because the national cost-benefit methods used are not yet based on sustainable accounting principles. In conclusion, the PCP demonstrates a considerable impact on local sustainability, within the context of its purpose and remit. It merits serious consideration as a national model for:

- implementing the Water Framework Directive;
- directly linking WFD timeframes and objectives to those for further CAP reform at the local level leading up to and after Structural Fund reforms in 2007
- demonstrating rural delivery under the new Rural Strategy agenda for England.

# 1 Introduction: context to the SW land use appraisal case studies, their scope and purpose.

## 1.1 What is sustainable, integrated land use?

There are several definitions of sustainable development currently in use, for example “At its most simplest sustainable development means ensuring a better quality of life for everyone, now and for generations to come” (Defra, 2004). Another widely-used definition comes from the Brundtland report of 1987, “development which meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Forum for the Future’s own definition similarly explains that “sustainable development is a dynamic process which enables all people to realise their potential and to improve their quality of life in ways which simultaneously protect and enhance the Earth’s life support systems” (1996)

At present, the costs of economic activity are largely accounted for without including all of the impacts on the land and its resources in terms of pollution, inefficient energy use and the production of materials currently considered as waste to be disposed of at further cost. A damaged environment impairs and threatens everyone’s quality of life and threatens long term economic stability e.g. climate change impacts. Obviously, land is a finite resource and we cannot make more of it or replace it. The challenge is to find more integrated and sustainable ways of using it so that natural resource function is not compromised or impaired in pursuit of short-term gain. This approach involves taking into account all of the goods and services that land is capable of providing society with in any given area.

To integrate simply means to bring together all of the parts or components of land use to result in more sustainable outcomes, i.e. social equity and economic prosperity are achieved in ways that work with the environment to protect and conserve natural resource function and natural assets such as biodiversity, water quality and landscape character.

Forum for the Future advocates the use of the Five Capitals Model<sup>1</sup> as a robust and practical way of thinking about using resources in more sustainable ways. The Five Capitals are:

**Natural capital** – is the basis of life itself, it is the stock or flow of renewable and non-renewable natural resources, sinks that deal with wastes, and processes that regulate the climate, e.g. use renewable resources only from well-managed and restorative ecosystems.

**Human capital** – consists of people’s health, knowledge, skills and motivation. Enhancing it through education and training and is essential to a flourishing economy for meeting basic human needs such as housing, food, freedom and security, creativity and leisure.

**Social capital** – helps us maintain and develop human capital in partnership with

<sup>1</sup> Also used by DFID for their work on sustainable livelihoods, and by Water UK and a growing number of commercial and public sector organisations.



others through trade unions, voluntary bodies, institutions and communities through effective communication based on trust, shared values and objectives.

**Manufactured capital** – means the material goods or fixed assets, like buildings, roads, pathways and machines, which contribute to the production of goods. It can be enhanced by harnessing natural systems to reduce wastes and treat them by efficient re-cycling and re-manufacturing,

**Financial capital** – represents the full value of natural, human, social and manufactured capital, i.e. by ensuring that financial costs and payments take due account of the other four capitals.

## 1.2 The South West land use initiative and case studies

The appraisal process trialled in this case study is being developed by Forum for the Future to help identify good practice in sustainable, integrated land use, the barriers to achieving it and to help in promoting solutions to these problems across the South West region. Using the Five Capitals Model as an overall framework, the appraisal methodology draws on the Regional Sustainable Development Framework (RSDF) and checklist, so findings from this initiative should help develop the land use strand of the South West's RSDF and help to refine its indicators. Other sustainability appraisal tools such as Quality of Life Capital have also been used to develop the appraisal process.

The Parrett Catchment Project is one of five initial case studies. The others are the Ruby Country Initiative in north Devon, the restoration of the lowland heath Natural Area/Character Area in Dorset, the Purbeck biodiversity project and Exmoor National Park Authority. The case study findings will be used to develop a user-friendly "how to do it" guide. This will be for regional, sub-regional and local organisations and groups interested in appraising their own area-based land related initiatives or in helping to design and monitor new ones. The appraisal process and the companion 'user guide' will be an end in themselves. However, they will also be a practical means towards the development of a regionally held body of evidence about what:

- good practice actually is and where it exists
- is necessary to turn good practice into common practice
- issues are common across the South West
- issues are locality specific
- processes and delivery methods work well
- needs changing, or requires further investigation in order for more sustainable, integrated land use to be mainstreamed.

Case study information will be held in a web-accessible database by the SW Regional Observatory. This database could be added to by other area-based projects and organisations as they complete their own appraisals. The Forum could act as a gatekeeper and co-ordinator for further case studies and development of the new regional evidence base.



## 2 The Parrett Catchment Project (PCP) and sustainable development

The Parrett Catchment Project (PCP) was set up in 2000 as a direct response to widespread local concern about numerous problems arising from flooding (see [www.parrettcatchment.info](http://www.parrettcatchment.info)). The project was developed as a partnership initiative to resolve conflicts between land and water management activities throughout the river basin. In this sense it was ahead of its time in bringing together land and water management agendas and issues to achieve practical, more sustainable solutions to these local issues. Its current vision and strategy were put together with the aid of initial EU funding from the LIFE environment initiative, the “Wise Use of Flood Plains”<sup>2</sup> with help from the Levels and Moors Partnership. Today the PCP covers 50% of the land area of Somerset and includes the Parrett and its four tributaries; the Rivers Tone, Isle, Yeo and Cary (see *Figure 1*)

The PCP has a formal Management Group led by a Chair elected by members of this group, most of whom are the core funding partners. In addition, there is a larger and fully representative Stakeholder Group led by an annually elected Chair and Deputy Chair; each stakeholder member has one vote. The Chair of the Stakeholder Group represents their interests on the Management Group (*the current project structure is illustrated in Figure 3, Section 4*). Details of the Management Group and Stakeholder Group membership are given at Annex A. The project’s structure and membership illustrate the impressively strong and inclusive partnership approach of the PCP.

The PCP’s ultimate aim is to secure “a sustainable approach to water and land use management that benefits the social, economic and cultural life of the Parrett Catchment, and conserves and enhances the environment”. It is doing this by implementing the project’s vision and Action Strategy through a series of 10 year Action Plans to achieve integrated, sustainable land use planning and resource management outcomes. Thus achieving local sustainability is central to the project’s aims. The mix of land and water management related activities now underway to implement the first Action Plan are successfully integrating water quality and water flow solutions with farming practices, soil conservation and biodiversity enhancement perhaps more fully than in any other English river catchment.

**Figure 1: The Parrett Catchment project area**



<sup>2</sup> See [www.floodplains.org.uk/pdf/area\\_case\\_studies/SomersetLevelsCaseStudy.pdf](http://www.floodplains.org.uk/pdf/area_case_studies/SomersetLevelsCaseStudy.pdf)

The PCP's vision and Action Strategy were developed through a wide-ranging and dynamic participative process with stakeholders and collectively agreed in 2001. Uniquely for any English river catchment, the vision and strategy cover a 50 year period for the purpose of developing and guiding integrated, forward-looking decision-making for the whole of the catchment in the longer term. There was widespread local acknowledgement that a range of interrelated issues affect land use and quality of life in the catchment, and will continue to do so. Importantly, 50 years was considered the most appropriate period over which to properly address the following issues:

- climate change impacts, e.g.increased rainfall and more extreme weather events, including increased flooding in winter and spring, but hotter, drier periods in the summer, possibly leading to drought.
- rising sea level as a result of isostatic readjustment and global warming, exacerbated by climate change
- changes in rural land use, including CAP reform and a move towards more sustainable farming and food production;
- local economic diversification and regeneration;
- continuing in-migration of people seeking to live and work in more rural areas, bringing with it the need for more housing development, and in particular, affordable housing for young locals;
- the need for better communication for everyone, so that there is widespread understanding of the flood management system and how it operates, to utilise local knowledge of flood management measures to best effect.

To address these issues in full the PCP's stated objectives are to:

- develop an integrated catchment management plan for the Parrett catchment
- provide a sustainable approach to flood management, including flood defences for towns and villages and safeguarding of environmental interest, particularly wildlife habitats
- promote measures to modify land use across the catchment

To meet these objectives the 50 year vision and strategy are being delivered through the annual roll forward of the initial 10 year Action Plan. This is sub-divided into short (1-5yrs), medium (5-10yrs) and long term (10+yrs) activities. These were brought together within a phased programme of work covering the 12 current components of the Action Strategy. Several of these components are parallel activities that are being scoped and implemented by the appropriate lead organisation, e.g. the Environment Agency (EA):

- i changes to agricultural land management to help improve flood risk management
- ii creating temporary flood storage areas on farmland
- iii controlling run-off from development and safeguarding roads, railways and other essential services
- iv creating new wetland habitats

- v dredging and maintaining river channels
- vi raising riverbanks to contain floodwater
- vii upgrading pumping stations to increase efficiency
- viii spreading floodwaters across the Moors more effectively
- ix building a tidal sluice or barrier downstream of Bridgwater for greater control of the lower river system
- x upgrading the Sowey's channel and perhaps creating new drains through Curry and North Moor to enhance gravity drainage
- xi restricting new development in the floodplain to avoid future flooding problems.
- xii woodland development to enhance water retention in soils in vulnerable areas

Implementation of the Action Plan to achieve the integrated outcomes envisaged under the Strategy has not been straightforward. Firstly, this is because no single organisation is able to fund all of the work. Secondly, key activities within different strategy components are core to the remit of partners such as the EA and English Nature (EN) and so are subject to national timescales and budget commitments. Thirdly, some activities such as strategic woodland planting and water storage facilities have not been easy to attract any funding for. The Somerset County Council based PCP team has a critical role in co-ordinating Action Plan activities on behalf of the funding partners. This helps to ensure clarity, avoid overlap and duplication of effort and, very importantly, to communicate progress to stakeholders.

Core funding for project administration and specific elements of the Action Plan comes from the key partners in the Project. The partnership successfully bid for and match-funded a grant of £650K for the EU Interreg IIIB Joint Approach for managing Flooding (JAF)<sup>3</sup> for a 3 year period running from 2002/01 to 2005/06. JAF monies directly fund the implementation of the first, second and twelfth component of the PCP's strategy and to raise public awareness about the issues and the solutions, e.g. the annual River Festivals held in Bridgwater in 2005, in Taunton in 2004 and Langport in 2003.

<sup>3</sup> <http://www.jaf.nu/> : five Dutch, German and English agencies active in the field of water management joined forces under JAF to jointly develop measures to be better able to control water levels and therefore to guarantee safety for local communities.

### 3 The approach to sustainability appraisal of the PCP

The purpose of this appraisal was to identify:

- a how the project has and is contributing to catchment-wide sustainable development, and to further promote its successes;
- b what more the project could consider doing to increase its impact on catchment-wide sustainability in the future;
- c the external barriers to further project success and suggest ways these could be resolved.

Following agreement by the Management Group to go ahead with the appraisal as a regional case study, stakeholders were introduced to the Forum's South West Land Use initiative, the '5 capitals' concept and appraisal process at the project AGM in November 2004. Forum for the Future subsequently arranged and ran meetings with groups of stakeholders to work through the appraisal process (see *Annex A for the appraisal tool*). A record of each discussion was circulated to the full stakeholder membership to enable everyone to add further comments and information. Information gaps were filled by phone interviews with key stakeholder representatives.

The resultant sustainability profile for the PCP illustrates how those project stakeholders who took part in the appraisal consider the project to be succeeding, and where it could potentially increase its impact in the future. Policy, regulatory and cultural barriers to further progress were also identified. The aim of this was to find possible solutions or ways to influence changes to particular local, regional and national policies, funding streams and regulations. For example, the PCP appears to have had some degree of success in influencing the design of the new agri-environment schemes under CAP reform. The project partnership has also worked to influence local planning policies concerning new development.

### 4 The PCP's Sustainability Profile in 2005

This section presents the findings from the appraisal process, particularly the discussions held with a representative cross section of stakeholders. The findings are summarised for each of the five capitals to describe the PCP's impact on local sustainability up to early 2005, within the context of the PCP's current role and remit. The external barriers preventing the PCP from achieving further success in its aims are briefly explained. Suggestions for how the PCP could increase its success in the future, by helping to realise potential benefits to local sustainability are set out in greater detail for each PCP strategy component in Section 5.

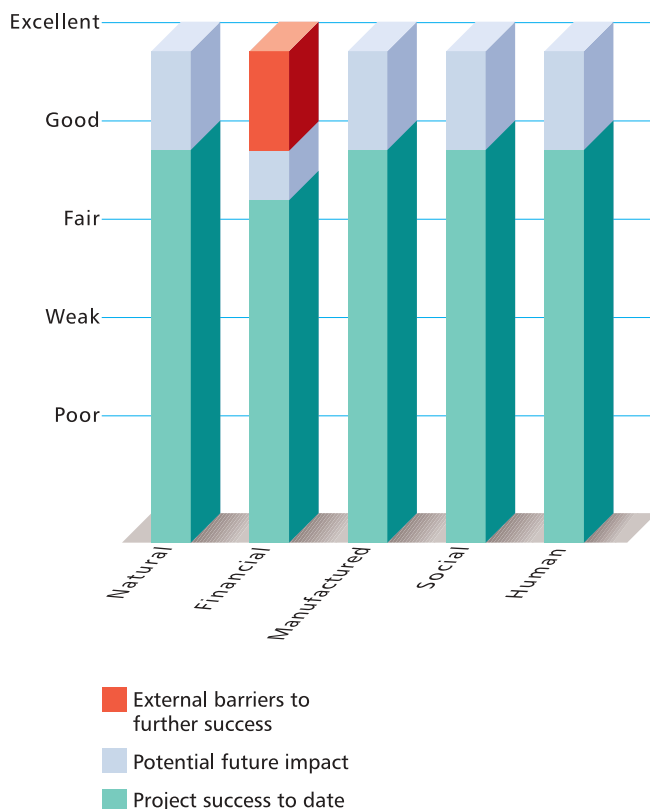
The PCP clearly arose out of recognised need. It was developed with real leadership and foresight by a broad coalition of local organisations: this is the PCP's strength and key to its success. It is the first UK initiative of its kind to secure the active support of all the major contributors – locally and regionally – for the preparation and implementation of

the catchment's 50 year strategy and Action Plan. This was all achieved through very real and active partnership working between all of the lead national agencies' local offices, various local funding bodies, NGOs and local stakeholders.

In 2005, the PCP's approach is still, perhaps surprisingly, unique in the UK and it remains a considerable achievement. The PCP perhaps deserves national acknowledgement as a forerunner of the type of partnerships the Environment Agency is now working to establish to progress catchment management and River Basin Management Plans for implementing the European Union's Water Framework Directive by 2015. The evidence shows that the PCP is still well ahead of the game.

The appraisal process illustrates how the PCP's current strategy and Action Plan have considerably helped move towards a more integrated approach to catchment management. As a result of more recent co-ordination by the Somerset County Council based project team, all of the building blocks now appear to be in place to put an innovative Integrated Catchment Management Plan (ICMP) together. However, there are still serious financial obstacles and related regulatory barriers to fully implementing such an ICMP. Most of these barriers require national policy and regulatory changes. The PCP's Lobby Group may wish to consider these issues further with a view to taking further action (see 5.3).

**Figure 2: The PCP's sustainability profile in 2005**



**Sustainability evaluation criteria<sup>4</sup>**

**Excellent:** the PCP makes a close to optimal contribution to catchment-wide sustainability

**Good:** the PCP makes a significant positive contribution to catchment-wide sustainability

**Fair:** the PCP makes some direct or significant indirect contribution to sustainability across the catchment

**Weak:** The PCP does little to contribute to catchment-wide sustainability and there are missed opportunities

**Poor:** PCP activities are limited or not relevant, so do not contribute to catchment-wide sustainability

**Undermining:** PCP activities significantly undermine area-wide sustainability

<sup>4</sup> These criteria are adapted from those developed by the Audit Commission for local authorities to measure their performance in delivering key public services

## 4.1 Natural capital (Evaluated as “Good”)

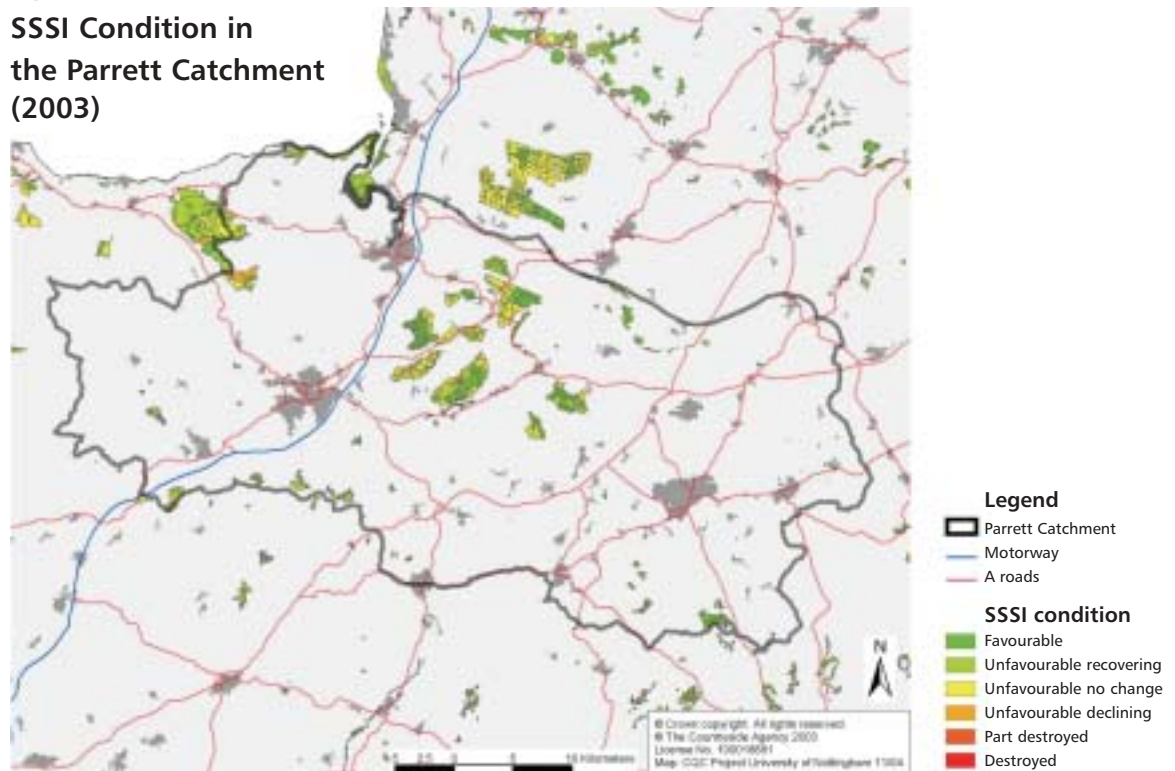
**What has gone well:** The PCP has been very successful as a catalyst for practical action to improve soil management and reduce localised flooding in vulnerable areas across the catchment, e.g enlarging Somerset FWAG to work closely alongside the EA to help local farmers tackle soil erosion and run-off problems. Similarly, water quality improvements are becoming more evident as a direct result of the partnership’s work with the farming community, e.g decreasing incidence of localised flooding and sediment on local roads over the last 5 years. Enhancing landscape character and historic interest across the catchment have not, so far, been a deliberate part of these activities. However, changes to land management and the wider landscape as a result of the PCP’s influence are directly and positively contributing to local landscape character, for example, the creation of water storage ponds on farms and the planting of new, strategically located native woodland. Improvement in water level management in recent years is beginning to help to reduce shrinkage in mineral peat soils, with benefits for road infrastructure and archaeological remains (*see manufactured capital*).

**What more could be done:** Stakeholders acknowledge that the PCP’s weakest influence on natural capital to date has been on biodiversity. This is especially true for the lower-lying areas of not only local but international importance for nature conservation. Water levels and related livestock grazing regimes in parts of the flood-plain would benefit from improvements to existing management regimes to ensure that specific SSSI sites and buffer areas on the floodplain are dry enough for viable farming but wet enough, especially in drier winter and summer periods, for habitats and species to flourish. At present a sizeable proportion of SSSI sites are in unfavourable condition (*see Figure 3*). The PCP’s immediate challenge will be to help broker acceptable management agreements with private landowners. This may well involve brokering more flexible and financially secure management agreements than agri-environment and ESA funding prescriptions have allowed for so far; much depends on how successful the local farmers and advisory services can be in working together to secure sufficient Higher Level Scheme funding.

**Barriers to be overcome:** Possible lack of sufficient agri-environment funding to enable adjacent farmers and landowners to develop a shared, strategic approach. There may also be issues over cross-compliance that will need to be locally or regionally negotiated.



**Figure 3:**  
**SSSI Condition in**  
**the Parrett Catchment**  
**(2003)**



## 4.2 Social capital (Evaluated as “Good”)

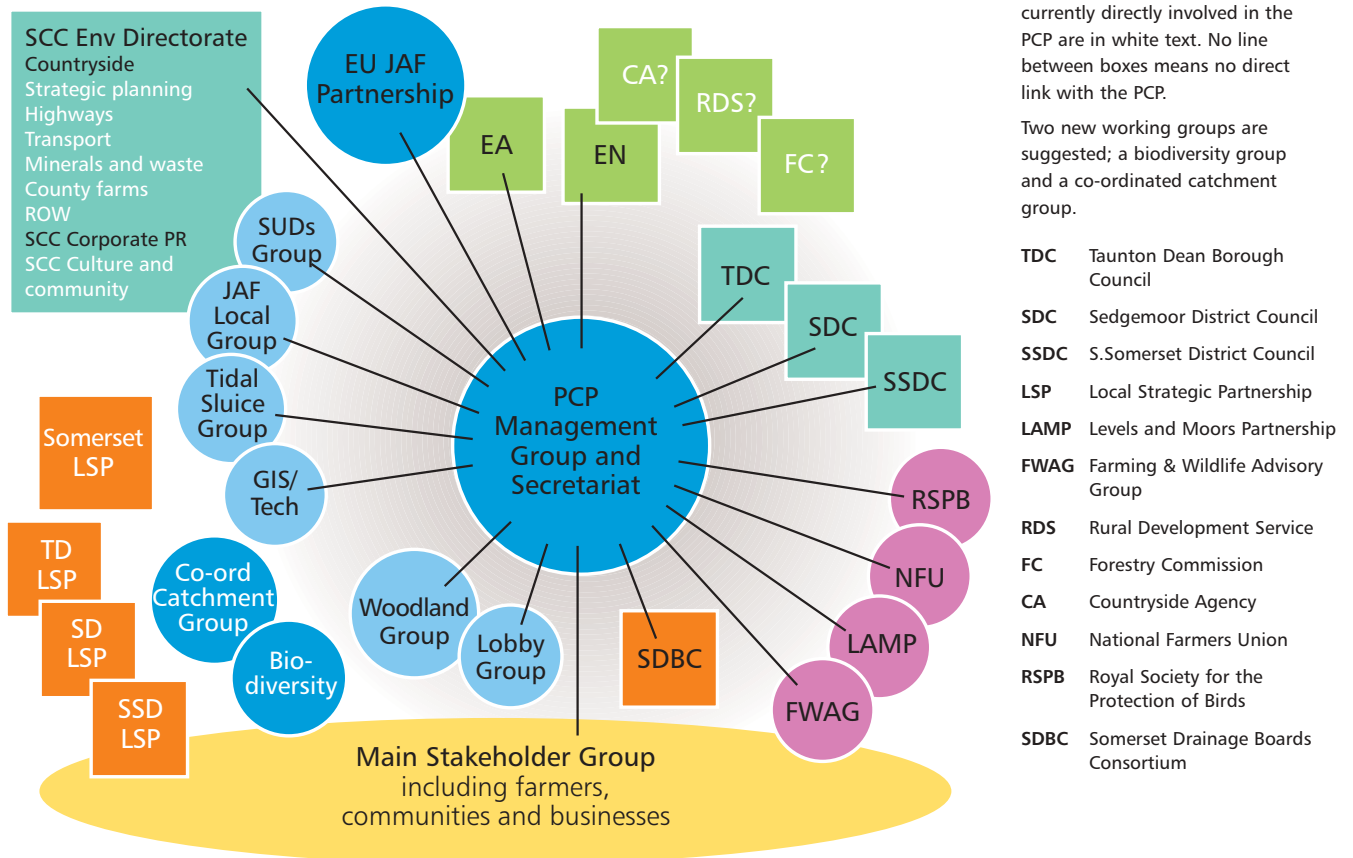
**What has gone well:** The PCP is widely considered a very successful and effective partnership because it has helped to foster close working and deepen collaboration within a broad forum of statutory, NGO and commercial partners in order to make land use and land management more sustainable across the catchment. Given the history of tensions in this area between the farming community, public sector agencies and environmentalists, the PCP’s enhancement of local social capital is perhaps even more striking. By directly funding, enlarging and guiding the work of the local FWAG team, it has done much to bring farmers together to share ways of changing and improving land management practices for wider social benefits throughout the catchment, e.g. to work collectively to apply for agri-environment funding. Simply enabling farmers to share the issues has helped create ownership of the solutions. Over the last year the project increased its awareness-raising activities fourfold to focus on re-connecting local farming communities and townspeople. The PCP roadshow events, annual river festival and specially targeted promotional initiatives, i.e. for householders and school children, all celebrate the catchment’s natural resources and effectively raise awareness about how the river systems need help to work more effectively for everyone’s benefit.

**What more could be done:** The PCP’s working group structure is broad and inclusive to encourage cross-organisational working. However, although the PCP is well established, the project team directly employed by SCC is still relatively new and perhaps not used as effectively (as a co-ordinating unit) by different departments/sections within the council as it could be. Completion of JAF funding, changes to the regional rural delivery framework (e.g. rationalisation of key statutory agency partners) and incoming Water Framework



regulations have prompted SCC to recently commission a consultancy study on behalf of the PCP to examine how the project structure could be revised to further develop partnership working. This will almost certainly include a review of the working group structure and reporting processes between each of the PCP working groups, the Management Group and the County's strategic planning and delivery services. The 5 capitals framework could be applied to double-check that solutions to issues are as integrated as possible (see Figure 4 below).

**Figure 4: PCP Stakeholder Connections Map**



Facilitating greater awareness about the issues and possible solutions to them, by enabling even wider collaboration between stakeholders is an obvious ongoing role for the PCP, to ensure that catchment issues retain their high local profile and are appropriately addressed in ever more sustainable ways. There is still a common perception that farmers and local residents (especially in Taunton and Bridgwater) don't fully appreciate how they are dependant on each other; especially the importance of the farming community to managing water quality and river flows to the benefit of everyone living in the catchment. The farming community and the Highways Services share a common goal in ensuring silt and sediment stay off the more rural roads (see *manufactured capital at 4.4*) and there could perhaps be a more explicit reference to this relationship and the role of the PCP in the SCC's Integrated Transport Strategy. There appear to be no insurmountable barriers to changing hearts and minds but some entrenched views still exist, which the partnership does well to manage in fostering a common agenda amongst the catchment's stakeholders.

There seems to be an unrealised opportunity for the PCP partnership to work much more closely with the Local Strategic Partnerships that cover the catchment. In particular, to encourage the LSP's to actively support the PCP vision and strategy as the new planning and rural delivery frameworks and 'new' sustainable community strategies are put in place over the next few years. Also, the PCP's relationship with the Levels and Moors Partnership (LAMP) would benefit from greater clarity to avoid any confusion and to ensure each helps the other without duplicating efforts.

Using JAF funding to celebrate the catchment with an annual river festival has been a really good way of raising the land and water issues with all of the catchment's different communities in the broadest sense. However, this is a costly exercise and EU funding is about to end (*see Financial capital at 4.5*). Despite this, the PCP is well placed to explore alternative social activities with parishes and local groups that could help retain and build on the momentum from the 2005 River Festival, e.g. parish "thank you" suppers to bring together local farmers and residents.

**What are the barriers to further success:** The PCP partnership approach is clearly continuing to evolve as needs dictate. There are no obvious barriers to further success for social capital at present.

### 4.3 Human capital (evaluated as "Good")

**What has gone well:** The PCP has done much to encourage skills sharing and information exchange within the farming community, particularly by directly boosting FWAG's local capacity and working through other advisory services and stakeholders to guide the delivery and content of advice, and formal and informal training events. More recently, the project's educational role was broadened to include awareness raising amongst local schools, special interest groups, parish councillors and local businesses. A new road show touring the catchment over 2005 will develop this approach further. Initiatives targeting local residents are also raising awareness about the importance of conserving water in summer, e.g. joint campaign with Wessex Water, and helping to conserve natural drainage by not replacing grass and gravel garden areas with hard-standing. The PCP appears to have successfully influenced the tailoring of support measures payable under the new 2005 agri-environment schemes to directly benefit farmers livelihoods in the catchment (*see Financial capital at 4.5*). Changing agricultural economics mean that livestock and grazing skills could be lost within the next decade unless these are more actively supported over the next few years. Again, the PCP partnership has an ongoing role to play in raising the profile of these issues in relation to sustainable catchment management.

**What more could be done:** The catchment faces issues common to the SW region as a whole, i.e. lack of affordable housing, a less well-qualified work force and long term employment particularly affecting young people. Health and well-being issues such as rising obesity and heart disease are also locally relevant. The PCP was not set up to directly address local health and well-being issues like these, but it could perhaps begin to explore the potential to engage with and link to the local Primary Care Trust (PCT) and education agendas by using the Parrett Trail and similar recreational 'hooks' to work with

the PCT and Local Education Authority to promote healthy exercise, the importance of local produce for healthy eating and the need to conserve and use water wisely, to help boost the direct retention of essential farming skills and security of income amongst local farmers.

**What are the barriers to further success:** At present there are no apparent barriers to overcome.

#### 4.4 **Manufactured capital (evaluated as “Good”)**

**What has gone well:** The PCP has successfully raised awareness about the relationship between development of all kinds and the incidence and severity of flooding, e.g. by holding a planning conference 2 years ago to highlight the issues and possible solutions with local planning and development control officers. Through its Strategy and Action Plan, the project has also done much to raise awareness of, and encourage essential scoping work to assess the role of the catchment’s drainage infrastructure in flood risk management. This includes the various partner scoping studies for a sluice below Bridgwater and practical developments such as the new farm water storage ponds, for demonstrating the potential of these features for helping to maintain and even restore catchment function in specific locations. These features have a dual role in that they will also help to mitigate the local impacts of climate change (see *natural capital at 4.1*) and can be used to irrigate on-farm crops in dry summers. However, farmers using the water in this way may have to pay a substantial annual licence fee under the 2003 Water Act to abstract more than 20,000 ltrs/day<sup>5</sup>. What isn’t yet clear is how many of these features would be needed to make a tangible difference to flood risk management across the catchment.

Some of the options identified are conventional measures that are not wholly sustainable, i.e. raising banks and dredging of specific channels. However, the PCP partnership has enabled the exploration and development of practical solutions that combine conventional river engineering practices with less hard-edged land management solutions. Although one or two scoping studies have yet to complete, most decisions have been made as to which mix of strategy components should be implemented and by whom across different parts of the catchment.

**What more could be done:** Under the auspices of the PCP, Wessex Water and the farming community are working together to re-cycle treated sewage sludge to farm land (maintaining soil organic matter and soil pH), and to optimise the effectiveness of fertiliser and pesticide use in specific parts of the catchment. However, the PCP’s potential to play a role in resolving wider waste management issues (especially at the farm level) and the development of local renewable energy capacity across the catchment, particularly in terms of farm business diversification and energy-efficient farming is perhaps still an unrealised opportunity for further integrating catchment management. For example, both existing and new woodlands have a multi-purpose role for flood risk management, carbon

<sup>5</sup> Providing this type of structure holds <25,000 cubic metres above ground level they do not need to comply with the Reservoirs Act (EA pers comm). An annual licence fee may be charged if the storage pond collects more than just rainwater and connects with the groundwater system/aquifer.

sequestration, local wood fuel production and informal recreation. Micro-hydro electricity generation is already happening in parts of the catchment so perhaps the PCP could help to promote this as part of a more sustainable approach to local sustainable construction, local energy production and consumption. This further development of the PCP's role as an effective influencer and enabler could perhaps be included as part of the consultants review of the project structure in 2005.

Another issue where further progress seems difficult but not insurmountable is that of SuDS (sustainable drainage systems). Unlike 'traditional' surface water sewerage systems which consist mainly of solid wall manholes, pipes and 'hard' structures that, when properly designed, constructed and used require virtually zero maintenance (they are also mainly underground and inaccessible to the public), SuDS are different. SuDS techniques include storage ponds, filter drains and other soakaway based systems that need regular maintenance, e.g. grass-cutting of swales and ponds and root-cutting of perforated pipes. For a large geographic area like the Parrett catchment these maintenance costs could be significant and there is uncertainty as to who is responsible for on-going maintenance and liability for the risk of system failure. There is also the issue of Health and Safety as ponds, wet or dry, will attract children. Unfortunately the Water Act doesn't currently allow water companies to adopt 'above ground' structures as part of their on-going maintenance systems. Neither are there any statutory obligations on local authorities or developers to use SuDS techniques, although there are clearly economic and environmental benefits in doing so. The new Planning Policy Statement (PPS) 25 on development and flood risk should help clarify matters and strengthen the role of SuDS. In the meantime, the PCP partnership may find it helpful to look at where SuDS have been successfully implemented (see [www.ciria.org.uk/suds/cs\\_bristol\\_business\\_park.htm](http://www.ciria.org.uk/suds/cs_bristol_business_park.htm), [www.ciwem.org.uk/water/suds/index.asp](http://www.ciwem.org.uk/water/suds/index.asp) and [www.ciria.org.uk/suds/cs\\_dunfermline\\_eastern\\_expansion.htm](http://www.ciria.org.uk/suds/cs_dunfermline_eastern_expansion.htm)).

**What are the barriers to further success:** Besides water level management on the flood-plain using the rhynes system, another major issue for the lower catchment is that of managed coastal retreat, which the PCP successfully drew attention to at national level. Measures necessary for coastal realignment of the Steart Point peninsula have been agreed in principle but funding, including compensation monies for commercial and private landowners, has not been secured as the area is not a national priority (see *financial capital below*).

#### 4.5 Financial capital (evaluated as "Fair to Good")

**What has gone well:** The PCP has been highly effective in many ways and at several levels in raising awareness about the importance of integrated catchment management for achieving practical, sustainable outcomes. It successfully helped to influence the development of the new agri-environment schemes so that resource protection payments are, in theory, available for capital works towards reducing flooding both now, and in the future from climate change impacts. European grant helped to implement key components of the partnership's vision and strategy from 2000 but this funding will end in 2005/06.

Core funding for the partnership will continue in the immediate future and may be revised as a result of the imminent partnership structure review. The implementation of several of the strategy components will continue to be part funded through specific grant schemes and also directly paid for by partner organisations as part of their statutory remit, e.g. the Environment Agency<sup>6</sup> and English Nature (via their Wildlife Enhancement Scheme).

**What more could be done:** There appears to be nothing much more that the PCP can do at this stage to develop financial capital across the catchment, unless it can actively promote renewable heat and power development via partnership demonstration projects.

**What are the barriers to further success:** Whether the new agri-environment payments are set at the right level for local uptake to optimise sustainable soils management, grazing regimes and water level-management may not be clear until the new schemes have run for a year or two. Neither is it yet clear whether sufficient HLS funding will be available to meet local demand. Thus the PCP clearly has an ongoing role in helping to lever in and guide the use of sufficient Environmental Stewardship funding, particularly HLS monies, towards the implementation of the PCP's Action Plan. Also, approval to spend on strategic flood risk management measures is wholly dependant on a national budget allocation process centrally determined by Defra via the EA and Wessex Flood Defence Committee. Thus the Bridgwater Sluice, although a cost-effective investment for a more sustainable Somerset in the long term, may well not come high enough in the list of immediate national priorities for scheme approval for several years to come. However, a draft Rural Renaissance bid to the South West Regional Development Agency has been prepared and Sedgemoor District Council is writing to each Sluice Partnership body for contributions. These are likely to be channelled through the PCP as the most appropriate partnership and stakeholder body for the bid.

## 5 Conclusions and ideas for an Integrated Catchment Management Plan

This section of the report draws together some broad conclusions from the appraisal exercise, before making suggestions for how the PCP's current strategy could be further developed to help prepare an Integrated Catchment Management Plan (ICMP) that meets local and national objectives under the EU's Water Framework Directive and improves local sustainability.

### 5.1 How the project has and is contributing to catchment-wide sustainable development

The sustainability profile presented in section 4 of this report illustrates the PCP's impact on local sustainability. Out of necessity, the PCP concentrated initial efforts on ways to tackle the most immediate problems – soil management and flooding issues – working directly with farmers and other land managers. It has achieved considerable success in doing this

<sup>6</sup> Catchment Flood Management Plans are in place for the Axe, Brue, and Parrett. The EA have also prepared their own Catchment Water Management Strategy Action Plan related to the wider PCP Strategy and Action Plan.

through influencing and facilitating relationships between the public sector agencies, advisory services, NGOs and local landowners, farmers and communities to join up the land and water management agendas at the local level. This development of trust and capacity-building greatly helped to increase knowledge and communicate the issues and practical solutions to every stakeholder group; this is an on-going and invaluable process that should enable the most effective local implementation of new CAP reform measures and incoming Water Framework regulations. The PCP's partnership approach is the project's overriding strength and the key to its success; it is an excellent 'model' for other catchments to use.

## **5.2 What more the project could consider doing to increase its impact on catchment-wide sustainability in the future**

There are a number of existing county-wide assessments that perhaps have not yet been used to best effect by the PCP. These include:

- a** the recently completed (2004) and digitised Historic Landscape Character Assessment prepared by Somerset's County Council Heritage Unit with assistance from English Heritage.
- b** New detailed district level landscape character assessments, e.g. Sedgemoor
- c** The earlier county-wide landscape assessment
- d** English Nature's Natural Area framework and new Nature Map approach
- e** Local forestry framework(s)

In addition, there are data sets that could be used in a more integrated and practical way with the spatial frameworks listed in a) to e) above.

- f** The Environment Agency's LEAP guidance and water quality data for the catchment, including information on specific pollutants (spot source and diffuse)
- g** NSRI's soil survey data commissioned for the catchment by the PCP
- h** Bristol University's hydrological model for the Parrett catchment (NB application of this model is under review by the PCP's Modelling Group and Management Group).

There are also forthcoming reports and plans that will need to be referenced by the Project Partnership:

- i** the EA's Parrett Catchment Flood Management Plan and Water Level Management Plans including the Somerset Levels and Moors Water Level Management Action Plan.
- j** the strategic SW River Basin Management Plan in compliance with the Water Framework Directive

All of these data and information could be used to develop a detailed map of the catchment that subdivides it into landscape/land units, i.e. a much more detailed version of the joint Natural Area/Character Area units, that link directly to hydrological units or characteristics depending on their location in the catchment. Ideally these land units

would need to be developed with help from all of the PCP's stakeholders so that the resulting land and water management guidelines were widely accepted and actively used. Practical applications could include the following uses:

- by developers, for designing new development and infrastructure, including renewable energy development, etc..
- for Farmers and landowners, or their representatives, in preparing individual agri-environment grant applications that contribute to wider catchment function and character;
- by planners in considering new development and infrastructure
- for the statutory agencies for implementing their policies and programmes at a local level
- by local schools and colleges for learning about the local area as part of the national geography curriculum
- by the Local Strategic Partnerships, for implementing County and District Sustainable Community Strategies
- by local interest groups and community associations and initiatives who wish to enhance their local environment

Each individual land unit could have its own management guidelines, which could collectively add up to a coherent whole to form the basis for the Integrated Catchment Management Plan for the Parrett. The following table (Table 1) uses the results of the appraisal process, and the ideas set out above, to identify opportunities for developing and building on the current PCP Strategy. It looks at each component in turn to see where sustainability performance can be enhanced. It also suggests the addition of a new component for communicating the key messages and lessons learnt, because, although this activity already happens it is not as explicit as it could be. Whether and how these ideas are taken up, and who could take the lead for each, will obviously need careful consideration by the PCP Management Group and the project's stakeholders.



**Table 1: Ideas for developing and extending the PCP Strategy.** *Suggested changes or additions to components are in red italics.*

PCP strategy component and objective(s)	Opportunities for increasing the PCP’s sustainability impact
<p><b>1 Changes to agricultural land management</b> change cultivation and grazing management across the catchment to:</p> <ul style="list-style-type: none"> <li>● increase the ability of the ground to hold rainfall, delaying the time it takes storm water to reach the floodplain</li> <li>● <i>enhance landscape character</i></li> <li>● develop an ecosystem approach to conserving biodiversity</li> </ul>	<p>The county’s landscape character assessment and more recent historic landscape character assessment could both be used to underpin the Integrated Catchment Management Plan (ICMP) and ‘masterplan’ further improvements to the upper and mid catchment’s soils by restoring and enhancing landscape elements and features such as increased permanent pasture, river corridor buffer strips, historic built features and new woodland. This would directly link to LBAP implementation needs and also help target and optimise use of HLS grant monies, i.e. provide a local spatial framework for closer, more effective targeting of agri-environment grant.</p> <p><i>Shared management guidelines for each landscape unit could be developed as a key part of the ICMP using existing information held by local authorities and agencies</i>, e.g. SCC, RDS, EN and EA. Involving local stakeholders, including the Local Strategic Partnerships, could help to raise awareness and shared ownership of these guidelines for sustainable catchment management. The <i>local farming community would also obviously need to be involved from the outset to help to shape the ‘master plan’ and guidelines</i>. User-friendly spatial data could be made available to farmers and other stakeholders using either the LaMIS or a similar system. This would help land managers to develop their own, individual and more detailed management plans within a shared context. This approach ties directly into the EA’s flood risk management plans and thus would link into the wider River Basin Management hierarchy under the Water Framework Directive. <i>By demonstrating how river and flood risk management planning can be combined with landscape assessment, the PCP would be breaking new ground</i> and worth consideration as a possible model for other river catchments for sustainable farming and WFD delivery.</p> <p>SCC’s PCP team could co-ordinate efforts to develop shared management guidelines for each landscape unit. One option would be to employ consultants to help develop the detailed landscape assessment and land management guidelines for each landscape unit in the catchment. It would be cost-effective to extend this to the whole of the catchment, not just the upper and mid reaches.</p> <p>Shortage of staff resources, lack of funding for consultants and for using LaMIS, and shortage of national HLS funding could be barriers to further success.</p>
<p><b>2 Creating temporary flood storage areas on farmland;</b> restored and new water storage areas would greatly reduce flood events and provide on-farm water for irrigation in the summer months;</p>	<p>This activity is beginning to yield localised benefits for the farmers involved. It <i>could be extended to other ‘target’ areas using HLS funding as part of an ICMP strategy for adapting to climate change impacts</i>. The landscape guidelines proposed above, together with information from the catchment’s hydrological model, would help to identify the most appropriate locations and inform the design of new water storage features. Perhaps a working group comprising interested farmers or their</p>

PCP strategy component and objective(s)	Opportunities for increasing the PCP's sustainability impact
<p><b>2</b> <i>continued</i></p>	<p>representatives, FWAG, the EA, Local authority planners and countryside staff would be able to <b>develop a detailed plan for how these features could be designed and constructed across the catchment as part of the ICMP. This plan could be implemented on a prioritised or phased basis as agri-environment or local monies can be raised.</b> This work is not of national strategic importance and so will not attract national or regional flood risk management funding.</p> <p>Shortage of local funding is a real barrier for necessary capital works under this component (see <i>Financial Capital at 4.5 above</i>). Higher Level Scheme (HLS) funding is the most obvious source of national funding but it cannot be guaranteed, thus a well prepared case for grant-aid will be important. Planning consent, as a regulatory barrier to storage pond creation, was successfully addressed by the PCP through the County Council. However, <b>overly restrictive regulations and licensing arrangements under the Reservoirs Act still remain an issue for farmers. Perhaps it may be possible for the EA to pilot a more sympathetic regulatory approach to water storage and on-farm irrigation in the catchment as a national case study</b> for future River Basin Management Planning under the Water Framework Directive?</p>
<p><b>3 Controlling run-off from <i>new and existing</i> development:</b> improved storage of storm water in designated areas of developed land in the upper and mid catchment to allow floodplain water courses to cope better in flood events by reducing peak flows</p>	<p>The PCP has had some success in influencing District level Local Plan policies and measures that would help towards controlling storm-water run-off from new development. Given the recent changes to the planning system and the recent national consultation "Making space for Water", it could be useful for the PCP to host a second event for local planners to review the potential for more sustainable development in the catchment.</p> <p>The PCP's new awareness-raising campaign amongst householders in the catchment began in 2004. Part of this approach is the joint campaign with Wessex Water to provide low cost water butts to households across the catchment. <b>The "Big Sponge" initiative is aimed at schools in the catchment, raising-awareness amongst tomorrow's home-owners, water users and farmers. Other measures include providing advice against replacing grass and gravel areas with hard-standing, e.g. patios and driveways to help retain water and encourage infiltration of rainfall and storm water.</b> This approach could perhaps be further developed along the Australian concept of "rain gardens" to highlight how gardens and municipal green space can act as a sponge to soak up unwanted additional water in wet conditions and retain it in drier periods, especially if drought conditions are to become more frequent in the future with climate change.</p>

PCP strategy component and objective(s)	Opportunities for increasing the PCP's sustainability impact
<p><b>4 Creating new wetland habitats and enabling 'species permeability' in response to climate change:</b> the creation of new wetland habitats to intercept and store floodwater during flood events. (Could be a standalone measure, or as a consequence of more even dispersal of floodwaters).</p> <p><i>[Links to 8 and possibly 10]</i></p>	<p>The creation of new wet grassland, fen, reed beds and wet woodland would help to restore the natural function of the catchment to attenuate flood waters. Few and bigger sites would bring more benefits to biodiversity (increasing habitat and species viability) and may also make reed and sedge production economically viable. There could also be considerable recreation and 'green tourism' benefits which could be considered by the PCP in discussion with the district and county Local Strategic Partnerships in relation to the various Sustainable Community Strategies covering the catchment.</p> <p>Candidate areas have been identified by the EA and EN, with advice from various PCP stakeholders. Funding for these measures is again, however an issue.</p> <p><i>[N.B The Bristol University model of the catchment is being used to help resolve how floodplain storage capacity could be affected by the size and location of these new elements in the landscape]</i></p>
<p><b>5 Dredging and maintaining river channels:</b> to improve the efficiency of the lower river system, particularly in the tidal reaches, by removing silt deposition regularly.</p> <p><i>[Links to 6]</i></p>	<p>Reinstating past dredging regimes would provide for a maximum increase of 20% improvement in storage capacity during flood events. However, this activity would adversely affect biodiversity and water quality. It would also be energy intensive and may exacerbate the effects of surge tides.</p> <p>The EA study to monitor the efficiency and the impacts of dredging activities will need to continue for a further 2 years to obtain sufficient data on which to make a decision. The project is taking longer to complete because of low flows over the last 2 winters which made dredging unnecessary. The rate of siltation normally makes it necessary to re-profile the channels every 2 years, which is very expensive. Until full data are available it will not be possible to re-assign any expenditure to other, more sustainable strategy components.</p>
<p><b>6 Raising riverbanks:</b> 10 year programme of restoration of riverbanks to planned design levels and, in tidal reaches, to accommodate rising sea-level.</p>	<p>Although not very sustainable option on the whole, given issues over bank stability and effectiveness in view of projected sea-level rise and climate change impacts, this activity is worth doing where it offers immediate protection to properties in very specific areas of the catchment. This remains the case even if the sluice scheme for Bridgwater were to go ahead, although the activity could be reduced.</p> <p>The outcome of the recent Defra-led consultation on "Making space for water" may well influence the implementation of this component in the longer term, especially where built property is not an issue, i.e. where alternative approaches can be taken with benefits for the landscape, biodiversity and possibly local recreation (see component 4). Banks may be able to be re-aligned and set back to protect communities vulnerable to flood risk. The EA and EN have been collaborating on these issues, and will continue to use the PCP as a conduit for dialogue with local stakeholders.</p>

PCP strategy component and objective(s)	Opportunities for increasing the PCP's sustainability impact
<p><b>7 Upgrading pumping stations and developing other infrastructure assets:</b> upgrading or replacing pumps and pumping stations will ensure that they are reliable, efficient and cost-effective components in the operation of the catchment's flood management system.</p> <p><i>[links to 4 above and 8 below]</i></p>	<p>The PCP strategy acknowledges that a more sustainable approach would be to remove surplus water by gravity drainage wherever possible. However, once all available flood storage features are full, there would be no available capacity for the next flood. This makes it necessary to ensure that appropriate pumping stations are still available in key, specific locations. Much work has been done between various PCP stakeholders to develop a better understanding of the opportunities and issues on a geographic basis across the catchment. <b>This component has an influence on the favourable condition status of SSSI sites in the lower catchment where conservation management targets for the SPA are under consideration. Things are almost at the point where an action plan can be drawn up for implementation.</b></p>
<p><b>8 Zonal spreading flood-water across the Moors:</b> to lessen the average depth and duration of flooding, without affecting settlements, property and roads. Moors that could be efficiently drained by gravity to the main rivers would be favoured.</p> <p><i>[links to components 2, 4, 7 and 10]</i></p>	<p>Primarily applies to Kings Sedgemoor, Aller Moor and North Moor. This component would help to alleviate deep and prolonged flooding on Curry and Hay Moors which affects local residents and road users. It would also enable favourable condition status to be achieved for most of the Special Protection Area. <b>This component could be mapped as a key part of the catchment 'masterplan' and have an agreed set of management guidelines for use by conservationists, land managers, planning and DC officers and transport planners.</b></p> <p>Since the new Environmental Stewardship Scheme was only introduced in spring 2005, there will be some delay before it is clear whether or not the payment levels and availability of grant is sufficient to encourage the restoration and maintenance of "washlands" in the lower catchment. <b>The review of EU Structural Funds to deliver a new Environmental and Agriculture Fund for Rural Development (EAFRD) may also present opportunities for local farmers and organisations from 2007.</b> The PCP lobby group may wish to keep both of these sources of funding under regular review over the next few years.</p> <p>The Lower Tone Water Level Management Strategy EA study concluded that spreading floodwater would not help alleviate flood risk to vulnerable properties; there are around 2000 below the 10m contour line and these vary between whole communities to dispersed and isolated dwellings. However, <b>spreading floodwaters would have a beneficial impact on biodiversity, thus it should be possible to phase appropriate work using funding for habitat creation, as and when this becomes available (most probably as a combination of agri-environment funding, local drainage works funding and special wildlife enhancement funding). This will need to include funds for the modification of physical constraints such as road bridges in order to fully accommodate this approach.</b> It is still not completely clear as to how big an obstacle the legal issues (property rights and Human Rights Act) might be concerning individual property, both land and buildings. However, the PCP's role as influencer and facilitator should be an asset for those agencies needing to secure local agreement on the details.</p>

PCP strategy component and objective(s)	Opportunities for increasing the PCP's sustainability impact
<p><b>9 Building a tidal sluice or barrier downstream of Bridgwater:</b> to exclude all tides, bringing greater control to the management of the lower river. This would also moderate silt deposition and the effects of tidal surges in the lower reaches.</p> <p><i>[Links to 2, 4, 7, 8 and 10].</i></p>	<p>The loss of salt-water ecology in specific tidal sections of the Parrett and Tone will need to be avoided or minimised, but on the whole <a href="#">recent, complimentary scoping studies and socio-economic research commissioned by members of the PCP partnership strongly suggest that this component would be a very sustainable option for the longer term. Investment now would be a far-sighted measure taking sea-level rise and climate change impacts into account</a>, i.e. a highly cost effective approach with clear social, economic and environmental benefits.</p> <p>To date, the lack of an appropriate cost-benefit method using sustainability accounting methods has been a major issue in progressing this element of the PCP's strategy, i.e. <a href="#">there needs to be a more sustainable accounting system at a national level for schemes such as this</a>. However, the PCP's Sluice Partnership approach has encouraged Sedgemoor District Council and the Sedgemoor Strategic Partnership to work together to submit a Rural Renaissance bid for funding from the Regional Development Agency (see <i>Financial capital analysis</i>).</p>
<p><b>10 Upgrading channels to enhance gravity drainage:</b> to increase the volume of floodwater that can be evacuated by gravity to the Parrett downstream of Bridgwater, without affecting settlements, property and roads.</p> <p><i>[links to 5, 6 and 8].</i></p>	<p>This would involve increasing the width and storage capacity of the Sowey (for a 10% increase in flow) and perhaps creating a new drain from Curry Moor through North Moor as a standalone option. <a href="#">The creation of narrow "floodway" washlands of around 10m wide could provide additional storage in extreme flood events that should also be beneficial for biodiversity</a>, thus there would be no real disbenefits and the environment, people and infrastructure (e.g. roads ) would all benefit.</p> <p><a href="#">This component has been costed by the EA using existing, approved methodologies that don't completely address sustainable development. As a result, this component is currently not worth pursuing as a candidate under the flood risk management funding structure because it does not score sufficiently highly to attract national funding.</a> As a result the EA are considering an alternative approach with their own funds and remit to carry out local flood defence works that also enable SSSI favourable condition status to be attained.</p>
<p><b>11 Restricting new development on the floodplain <i>and guiding/ influencing the location and design of new development across the catchment</i></b></p>	<p>The new Regional Spatial Plan under development by the SWRA should set the long term strategic framework for spatial planning across the catchment. In addition, the outcome of the Government's 2004 consultation "Making space for Water" should also influence how new floodplain and coastal development is guided and planned for. <a href="#">The PCP is well-placed to help co-ordinate the translation of all of this broader, strategic planning guidance into catchment sensitive local policies for development in Local Area Agreements and Development Frameworks under the revised national planning system</a>. Perhaps members of the PCP Lobby Group, SUDs group and Modelling group could review how current policies and forecast future needs could best be guided by the translation of strategic local planning policies down to catchment level? LSP and elected members</p>

PCP strategy component and objective(s)	Opportunities for increasing the PCP's sustainability impact
<p><b>11</b> <i>continued</i></p>	<p>of these PCP working groups would be able to contribute additional insights and advice.</p> <p>Given the recent changes to the planning system it may be worth holding a second PCP planning seminar for local planners, elected members and LSP members to help tailor existing policies or develop new catchment specific policies to ensure read across between each Local Authority District, the County Planning documents, the new sustainable community strategies and the ICMP. One option could be to decide whether the ICMP could in future substitute for any aspects of the current Structure Plan, i.e. could the ICMP be the place for bringing together specific policies relating to new development on the floodplain, or in the upper parts of the catchment and likely to influence flood risk management in the floodplain.</p> <p>Other local authorities have used landscape character assessment information to draw up design guides for developers and others so that the location, design and construction of new development can be more readily tailored to local circumstances and needs. This approach could be of real benefit to long-term integrated catchment management, by incorporating flood risk mapping with related design advice to developers. These design guides could perhaps include advice about appropriate sustainable water supply and sewerage measures. The guides could also be used to further spread awareness amongst local planners, local estate agents and householders about sustainable construction and catchment function. The guidance could be periodically reviewed to take account of climate change impacts. This review could include the involvement of an appropriate PCP working group.</p> <p>Perhaps the PCP partnership could encourage local planners to develop a Somerset County or Parrett "catchment kitemark" for good design and development practice in the catchment.</p>
<p><b>12 Woodland development:</b> more woodland should help water retention, providing better protection to vulnerable soils on sloping ground than arable cropping.</p> <p><i>This could be a sub-component of, (or if kept as a free-standing strategy component it needs to be directly cross-referenced to) landscape guidelines developed under 1.</i></p>	<p>The Project Forestry Group's 2003 report identified areas of the catchment where existing and new woodland planting could be expected to aid flood risk management. Some 33% of the wider catchment has areas suitable for planting. The low-lying nature of the floodplain is such that new woodland here may not be that effective because it would not be feasible to plant across the width of the valley, not least because there are extensive SSSI grassland sites where it would not be appropriate to plant new woodland. However, in comparison some 87% of the upper and middle catchment's the riparian zone is suitable for new woodland, which would also benefit biodiversity and water quality. Although the case for strategic flood risk management is not proven, this type of woodland should have real value in helping to alleviate local flooding.</p> <p>Further work to map the most suitable site locations and design of new woodland planting was identified as a need by the woodland group. This</p>



PCP strategy component and objective(s)	Opportunities for increasing the PCP's sustainability impact
	could be an early application of the new catchment map or spatial plan suggested for component 1 above. This would also be a good way of helping to combine the land and water policy and practical management agendas at the local level.
<p><b>13 Connecting farmers and townspeople/householders, or re-connecting town and country: an awareness-raising communications plan implemented by the SCC project team so that townspeople understand why land management is an essential element of flood risk management.</b></p>	<p>The PCP's growing and effective communications work to raise awareness of all issues affecting catchment function may benefit from being a discrete component of the strategy in its own right. This could do two things. Firstly, it could help to ensure that project communications are adequately resourced and valued and linked directly to each working group and their activities to fully co-ordinate communications. This may also help to identify further opportunities for promoting the project, its messages and successes by using partners' and other organisation's events and media to promote the PCP's approach. Secondly, by focusing on the issues affecting everyone in the catchment, it may be possible to bridge/close the apparent gaps in understanding between townspeople and the farming community by showing how they depend on each other.</p>

### 5.3 Resolving the external barriers to further project success

Perhaps not surprisingly, the biggest barriers to fully achieving the PCP's current strategy and Action Plan remain financial ones, i.e. where capital works for strategy components are paid for using national flood defence budgets, the Parrett catchment does not score highly enough to merit being a priority for funding. Until there are changes to the way the cost benefit analysis for funding is carried out (i.e. using a more sustainable accounting process) this will continue to be the case. Using locally raised funds together with local allocations of public agency budgets is the next best option but currently these monies are insufficient for the work required. Another option, using agri-environment grants to fund more minor capital works like the creation of on-farm water storage ponds is a priority for the PCP. However, it remains to be seen whether the various national and EU habitat and species designations in the catchment are, collectively, a sufficiently 'powerful' lever for HLS funding, which is currently limited.

Secondly, the blunt application of the Reservoirs Act and water abstraction licences (as a one size for all approach) seems to have hampered the further development of a network of water storage features, i.e. there is uncertainty as to whether farmers would have to pay to use the water stored in the farm pond for irrigating his or her own crops, and many are concerned about whether they may have to pay a hefty annual licence fee. A similar situation also appears to be hampering the development of micro-hydro facilities in the catchment. There is some potential to develop a local biofuel industry for on-farm and possibly limited local consumption but, similarly regulations currently hamper the development of low carbon farming, e.g. farmers still need to pay the duty on biofuels used in farm vehicles and machinery before claiming it back; an unnecessary administrative burden on everyone involved. Plus, any farmer aiming to supply local customers still needs



to pay the same annual cost for a licence (£4K) as for a much larger producer; there needs to be a sliding scale of charges.

There are obviously no short cuts to resolving these issues but the PCP is in an ideal position to advocate change and help clarify areas of uncertainty by continuing to lead by example and, through its various members, actively promote the PCP as a national partnership and delivery model for implementing:

- a** The Water Framework Directive;
- b** The new Rural Development Regulation (2007-2013) which is meant to promote sustainable rural development by strengthening multi-functionality in rural areas to provide “public goods”; which is exactly what the PCP is achieving.
- c** New approaches to land use planning and the implementation of SuDS under the revised planning system and
- d** The delivery of sustainable farming and food, which could include changes to achieve a low carbon system of farming as a further adaptation to climate change in addition to those measures that the PCP is already successfully encouraging.

## 6 References

- Boon PJ, Davies BR, Petts GE, "Global perspectives on river conservation" (2002) Wiley
- Environment Agency, "The Parrett Catchment: Water Management Strategy Action Plan" (2002)
- Forestry Commission, National Inventory of Woodlands (1999), supplemented by annual WGS information for the catchment
- Godwin, D, (Report on soils and soil condition in the Parrett Catchment) (2003) NSRI/University of Cranfield?
- Hawkins, Desmond, "Avalon and Sedgemoor" (1989) – Padstow: Tabb House, Originally published: Newton Abbot: David & Charles, 1973, ISBN: 0907018726
- Land Use Consultants, "A future when it rains: The Parrett Catchment Project – An Action Strategy for integrated catchment management" (2001)
- MAFF, Somerset Levels ESA Landscape Assessment (1987?)
- Nisbet, TR, Broadmeadow, S, "Opportunity mapping for trees and floods": draft report to PCP Forestry Group" (2003) Forest Research, Alice Holt, Surrey
- Park JS, Hydrological model of the Parrett Catchment (2004) – presentation material, Bristol University
- Romy & Robin Williams, "The Somerset Levels"(2003 new edition) Ex Libris Press
- Somerset County Council, unpublished Landscape Assessment (1991)

### Web site material

[www.Countryside-Quality-Counts.org.uk](http://www.Countryside-Quality-Counts.org.uk) for sub-regional information and evidence on landscape change

[www.english-nature.org.uk/science/natural/NA\\_results.asp?R=7](http://www.english-nature.org.uk/science/natural/NA_results.asp?R=7) for Natural Area information

[www.magic.gov.uk/](http://www.magic.gov.uk/) for mapped information on schemes, designated sites and areas

[www.oursouthwest.com/climate/2\\_Our\\_Changing\\_Climate.pdf](http://www.oursouthwest.com/climate/2_Our_Changing_Climate.pdf)

[www.somerset.gov.uk/somerset/environment.cfm](http://www.somerset.gov.uk/somerset/environment.cfm) = various county environmental plans, strategies and PCP web pages [www.somerset.gov.uk/somerset/council/communitystrategy/](http://www.somerset.gov.uk/somerset/council/communitystrategy/) = community strategy

## Annex A Membership of the PCP's Management and Stakeholder Groups

### Management Group

Anthony Gibson (*Chair*) National Farmers Union  
Anne Fraser Sedgemoor District Council  
Humphrey Temperley Chair of Wessex Flood Defence Committee and  
Chair of PCP Stakeholders Group  
Doug Campbell South Somerset District Council  
Richard Symonds Environment Agency  
Patrick Palmer South Somerset District Council  
Mervyn Winslade South Somerset Drainage Consortium  
Ben Thorne Farming and Wildlife Advisory Group  
Sarah Diacono Parrett Catchment Project/JAF team, Somerset CC  
David House Taunton Deane Borough Council  
Andy King English Nature

### Stakeholder Group

British Waterways [www.britishwaterways.co.uk](http://www.britishwaterways.co.uk)  
Council for the Protection of Rural England [www.cpre.org.uk](http://www.cpre.org.uk)  
Country Land & Business Association [www.cla.org.uk](http://www.cla.org.uk)  
Countryside Agency [www.countryside.gov.uk](http://www.countryside.gov.uk)  
Defra [www.defra.gov.uk](http://www.defra.gov.uk)  
English Nature [www.english-nature.org.uk](http://www.english-nature.org.uk)  
Environment Agency [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)  
Farming & Wildlife Advisory Group [www.fwag.org.uk](http://www.fwag.org.uk)  
Five Parishes Consortium  
Forestry Commission [www.forestry.gov.uk](http://www.forestry.gov.uk)  
Forum for the Future [www.forumforthefuture.org.uk](http://www.forumforthefuture.org.uk)  
Kings Sedgemoor & Cary Vale Drainage Board  
Levels & Moors Partnership [www.somersetlevels.org.uk](http://www.somersetlevels.org.uk)  
National Farmers' Union [www.nfu.org.uk](http://www.nfu.org.uk)  
North Curry Flood Group  
Royal Society for the Protection of Birds [www.rspb.org.uk](http://www.rspb.org.uk)  
Royal Bath & West of England Society  
Sedgemoor District Council [www.sedgemoor.gov.uk](http://www.sedgemoor.gov.uk)  
Somerset Agricultural Advisory Service  
Somerset County Council [www.somerset.gov.uk](http://www.somerset.gov.uk)  
Somerset Drainage Boards Consortium  
Somerset Wildlife Trust [www.somersetwildlife.org](http://www.somersetwildlife.org)  
South Somerset District Council [www.southsomerset.gov.uk](http://www.southsomerset.gov.uk)  
South Somerset Hydropower Group  
South West Association of Drainage Authorities  
SW Regional Development Agency [www.southwestrda.org.uk](http://www.southwestrda.org.uk)  
Taunton Deane Borough Council [www.tauntondeane.gov.uk](http://www.tauntondeane.gov.uk)  
Wessex Regional Flood Defence Committee  
Wessex Water Services Ltd [www.wessexwater.co.uk](http://www.wessexwater.co.uk)

## Annex B The appraisal tool

Asset base	State and trends	Issues	Partnership or project impact	Measures of success	Future success
<b>Natural</b> e.g. biodiversity soils, climate, water					
<b>Human</b> e.g. health and well being					
<b>Social</b> e.g. stakeholder processes local governance and leadership					
<b>Manufactured</b> e.g. transport, energy and waste					
<b>Financial</b> (Public investment in the catchment)					

## Annex C Parrett Catchment sustainability issues table

Sustainability Issues	Natural Capital	Social Capital	Human Capital	M'factured Capital	Financial Capital	Measure(s) of success or outcome indicators (numbered M1 to M34)
Rapid run-off and local flooding caused by CAP-driven intensive crop rotations and stocking levels		Y		Y	Y	(1) Reduction in frequency and severity of flooding per annum and (4) repeat soil compaction surveys – performance against baseline – will show the catchment's improving ability to cope with changing rainfall patterns.
Sediment/mud on roads		Y		Y	Y	(2) Falling annual cost of highways clean-up (reductions for local ratepayers?)
Diffuse pollution	Y			Y	Y	(5) Falling incidence and levels of specific agricultural pollutants at agreed points in the catchment's water courses due to improved whole farm management (optimising inputs and reducing run-off).
Soil loss from farmland	Y			Y	Y	(1) and (2) above and (3) farms implementing good soil management measures (especially after receiving FWAG advice)
Degradation of silt and coarse sandy soils in the upper catchment, esp on slopes	Y			Y	Y	(1), (2) and (3) above
Peat shrinkage affects wildlife, archaeology and infrastructure	Y	Y	Y	Y	Y	(3) farms implementing good soil management measures (especially after receiving FWAG advice) and (6) rising nos of sub-catchment Water Level Management Plans actively implemented so that, (7) increasing area or % of peat soils free from shrinkage/water loss.
Habitat fragmentation and loss, e.g ancient and wet woodlands	Y	Y	Y			(8) Stable and increasing areas of key habitat (this could be a location specific indicator)
SSSIs in unfavourable condition	Y	Y	Y			(9) Priority SSSIs upgrading to stable, favourable condition
Sub-optimal populations of breeding waders and over-wintering wildfowl	Y	Y	Y			(8) above or (10) Targets met for area/extent of salt marsh, reedbeds and active washland and (6) above.
Lack of predator (e.g. mink) control threatens already stressed wildfowl populations	Y				Y?	(11) Area specific control measures in place and (12) annually rising and stable wildfowl population nos, i.e. trend to target
Deer population rising	Y		Y		Y	(13) Deer management measures in place across catchment and (14) stable or falling deer nos.
Reduced species diversity in rhyes and verges/banks	Y					(15) Rising diversity in waterside habitats and (5) and (6) above.
Dry summers and low water levels exacerbate diffuse pollution	Y	Y	Y	Y	Y	(16) Sufficient water storage features to cope with most summer droughts. (17) Falling need to transport water to cope with shortages.
More storm surges likely with climate change	Y	Y	Y	Y	Y	(18) Minimal annual damage to land, wildlife, property and people in relation to size and incidence of storm surges (due to strategy components in place).
Sewer overflows due to increasing annual rainfall and rapid run-off			Y	Y	Y	(19) Falling incidence of overflows as run-off reduced and (20) sewerage system replacements carried out as scheduled. Also see (1) and (3)
Climate change not adequately addressed in local planning policy measures	Y	Y	Y	Y	Y	(21) Catchment specific policies put in place at County, District and Borough level, with appropriate development control measures.

Sustainability Issues	Natural Capital	Social Capital	Human Capital	M'factured Capital	Financial Capital	Measure(s) of success or outcome indicators (numbered M1 to M34)
Tensions between intensive grazing practices and raised water-levels, i.e. what is currently economically viable for farmers is not best for nature conservation	Y		Y		Y	(22) HLS funds sufficient to meet need and (6) rising nos of sub-catchment Water Level Management Plans actively implemented.
Farm profitability declining	?		Y		Y	(22) above and (23) % of catchment's farmers receiving optimal grant support and business advice via FWAG.
Livestock management skills being lost	Y			Y	Y	(24) Local training scheme(s) and events set up per annum and (25) total Nos of trained/accredited workers in employment per annum.
Lack of local affordable, flood resilient housing for agricultural workers and other locals on low incomes.			Y	Y	Y	(21) Catchment specific policies put in place at County, District and Borough level, with appropriate development control measures. (26) Low cost housing schemes (inc energy efficiency measures) in place and meeting needs.
Lack of local awareness about links between flooding and land management		Y		Y	Y	(27) All Local Authority members and LSP members have demonstrably good access to briefing material. (28) PCP stakeholder comms plan actively implemented and reviewed.
Lack of revenue spend/maintenance on roadside ditches, bridges, etc by Highways Authority		Y		Y	Y	(29) Annual maintenance schedule annually reviewed/agreed with PCP Management Group and stakeholders
Funding and planning regimes too short-term to achieve more sustainable, long term outcomes	Y	Y	Y	Y	Y	(30) Existing planning horizons regularly reviewed to align with the PCP's 50 yr vision and (21) above.
Agri-environment monies, especially HLS funding in short supply	Y		Y		Y	See (22) and (23) above.
Lack of leadership for catchment-scale spatial planning	Y	Y	Y	Y	Y	(21), (27) and (30) above.
Regulatory framework not joined-up	Y		Y	Y	Y	As above plus (31) identified 'breaks' or barriers to joined up regulations affecting the catchment and its farmers and land managers per year?
Overlap between organisational efforts		Y	Y		Y?	(32) Overlaps identified per annum (on a declining basis)
LBAPs not statutory and thus lack resources, slow to achieve local targets	Y				Y	LBAP targets integrated into PCP Action Plan
Changes in staff/organisational change results in inertia, poor continuity	Y	Y	Y		Y?	(33) PCP organisational members signed up to key actions per annum – ability to deliver monitored.
Rural roads inadequately maintained, mud/sediment is hazardous to drivers		Y	Y	Y	Y	See (29) above
Busier roads around Bridgwater and Taunton		Y		Y	Y?	See (29) above
New development and landfill sites are not adequately flood-risk or climate change "proofed".	Y	Y	Y	Y	Y	See (21), (27) and (30) above
Too much regulation dampens innovation and change, e.g. micro-hydro and biofuel developments.	Y		Y	Y	Y	See (31) above and (34)Nos of new facilities/developments per annum?
Current cost-benefit analysis methods do not factor in 'externalities'/sustainable development principles.	Y	Y	Y	Y	Y	PCP successfully lobbies for new approach?