EASTERN YAR RIVER AND COASTAL STRATEGY BASELINE REPORT

FOR ATKINS CONSULTANTS LTD

This report was produced in May 2006 and was correct at the time of writing.

New information collected since the date of issue may result in some of the information contained being out of date.

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1. INTRODUCTION

1.1 The Eastern Yar rises from springs in the Southern Downs Chalk at Niton and flows for most of its length across the Lower Greensand. It cuts through the Central Chalk at Brading before meeting the sea at Bembridge. The catchment covers nearly 90km2, almost a quarter of the whole Island.
Its main tributaries are the Arreton Stream, the Wroxall stream and Scotchell's Brook.

1.2 There are significant water demands from the public water supply surface source at Burnt House near Sandown and the sometimes-used groundwater source at Knighton. Augmentation schemes are used to maintain the Burnt House abstraction without breaching the flow condition of 1 Ml/d designed to maintain flows in the main river. These schemes use groundwater from boreholes within the catchment and surface and groundwater transfer from the neighbouring Medina catchment.

1.3 Much of the Eastern Yar is managed for agriculture and there is a consequent demand for spray irrigation. Horticulture is also significant, several hectares of glasshouses at Arreton are supplied by trickle irrigation, a form of abstraction which will become licensable in the future and is therefore the source of some anxiety amongst growers.

1.4 There are many sites of environmental importance in the catchment; the large new RSPB reserve at Brading Marshes includes SSSI, SPA, SAC and Ramsar designations and is perhaps its single most important environmental asset. There are also SSSIs at Alverstone Marshes, Arreton Down, Cliff Copse (Shanklin) and the gSSSI at Sandown Bay. There are more than 50 Sites of Importance for Nature Conservation (SINCs) scattered across the catchment, some very small but others extensive (eg C113, C116 in the mid-Yar).

1.5 There are uncertainties related to the assessment of overall water resource availability. It is however clear that the catchment is heavily abstracted. Even abstractions to support environmental enhancements must be very carefully considered. The Catchment Abstraction Management Strategy for the Island has determined that the Eastern Yar is 'over-abstracted'.

1.6 Fluvial flooding is nearly annual on farmland in the catchment but property is only occasionally affected; a handful of houses between Horringford and Morton. The river rises fast in a flood but the pulse takes only three days to pass from the top to the bottom of the river system. Serious problems arise therefore when heavy rain events are continuous or intermittent within periods of three days.

1.7 Coastal flooding is held back by Sandown Bay esplanade and Embankment Road in Bembridge incorporating the main river sluice. Coastal flooding events also exacerbate fluvial flooding as the system is tide-locked and can 'fill-up' as far as

Alverstone and Newchurch. Bembridge, Sandown (Culver Parade) and Yaverland are vulnerable to this combined risk.

2. ISSUES, CONSTRAINTS AND OPPORTUNITIES

2.1 It can be helpful to divide the Eastern Yar crudely into two sections – the upper catchment where water quality, diffuse pollution from agriculture and farm-scale land management are the main issues; the lower catchment where water resource, abstraction, designated conservation sites and wetland habitat management dominate. A convenient boundary marker to define the two is the A3020 between Rookley and Shanklin. In this way overall land management and resource protection issues can be considered in zonal format that can lend a sense of perspective and it may be that this approach can help in the development and dissemination of issues in the strategy.

2.2 There are a number of key constraints that influence, and would be affected by a total catchment management approach to the Eastern Yar. These constraints are largely those of settlement, infrastructure, industry and heritage:

1. Social-economic factors in the operation of Brading Haven and Bembridge Harbour, the impact of long-term sea-level rise and the place of these sites in the cost-benefit analysis of vulnerable coastal sites in the wider Solent.
2. Current UK and EU conservation designations for freshwater and brackish environments in the lower Yar versus anticipated shift to inter-tidal under sea-level rise; at the moment the matrix of designation is not designed to anticipate significant change and can do little else but resist managed retreat or realignment options.
3. Long-standing floodplain (coastal and fluvial) development at Yaverland, a significant legacy from past planning decisions that relies on maintained sea defences.
4. Existing development and new proposals for development along Culver Parade, Sandown; including the strategic planning for tourism in this area. There is already a significant cluster of tourism investment with more to come but this must be considered in the light of the long-term prospects for flooding and flood defence across the Sandown Levels.
5. Existing floodplain development at Morton, Sandown: a recent floodplain development within a few metres of the main river.
6. The operation and protection of Southern Water's multi-million pound investment at the 'Sea Clean' works, Sandown; bunkered to some extent but nonetheless vulnerable to fluvial and coastal flooding in the long term. It must be a fundamental question of the Coastal Fluvial Strategy as to whether the Sea Clean site can remain at its present location without the need for impossibly expensive protective works and the prospect of incrementally increasing risk of catastrophic failure over the lifetime of the plan. If there are fundamental questions as to the long-term viability of the Sea Clean site then there should also be the opportunity to discuss an ideal

location of the plant as a contributor of treated water back into a highly stressed river at a high enough point in the catchment to make a real contribution to resource management for potable supply, riparian biodiversity and the management of agricultural water demand. The Coastal and Fluvial Strategy can prompt discussion of these difficult and challenging long-term issues and is right to do so.

7. The operation and protection of Southern Water's drinking-water abstraction and treatment works at Burnt House and Longwood Lane, Sandown. By far the largest abstraction demand on the catchment and its water resource and the main source of Island drinking water. Threats from diffuse pollution and attached pesticides come from the farmed catchment above; threats from fluvial and coastal flooding come from the catchment below as the gradient from Bembridge and Sandown to this point is almost flat. Together the potable supply abstraction and the loss of water to the catchment from SeaClean are the dominant stressors in the Eastern Yar. There is a business case for both, as well as fundamental issues of community and social well-being, but any serious long-term diagnostic study of the Eastern Yar must consider the future of the catchment's most significant economic drivers.
8. Silt runoff from Knighton Sand-pit. This has been a long-standing historical problem for the lower catchment and for the designated conservations areas within the Alverstone Marshes SSSI. The active sand-pit itself is well managed and subject to run-off control measure required in its planning conditions. However, the restored surfaces of old workings are poorly consolidated and slope steeply down to the SSSI at Kern Farm. A part of the old quarry is also leased out as a motocross/scrambling track. Footpath 10 north of its junction with the Newport- Sandown cycleway shows deep silt deposits which bury the fence posts on the quarry side to a depth of a metre. There are obvious sediment pathways into the SSSI wetland and a great deal of silt and sediment under the willow scrub here. These run-off sediments are not stable and can, and do, move down further into the SSSI and towards the main river itself during periods of heavy rain. There is clearly an urgent need for English nature and the Environment Agency to work with the quarry manager, quarry land leaseholders and the owner of the adjacent SSSI land in order to repair old damage and protect the SSSI and the river for the future.
9. Flood events at Alverstone, Langbridge and Horringford with some recorded damage to property in the last 15 years.
10. New archaeological finds in and around the Alverstone Marshes SSSI. There are very few ancient monuments recorded within the floodplain of the Eastern Yar and wetland archaeology is in general considered rare and localised. But in August 2005, in the early stages of a pond creation project at Alverstone, part of the Environment Agency's Water Level Management Plan, Island 2000 Trust unearthed an extraordinary complex of Iron Age, Roman and Saxon structures . These together with assorted artefacts and a parallel programme of peat analysis and palaeoecology suggest that the Yar estuary came to somewhere near the current Alverstone Bridge and that there may well have been a major crossing of the river there as well military and trading significance for the Island over a long period of time. The finds are considered to be of international

importance; English Heritage, Environment Agency, Island 2000 and a team of archaeologists are now working to deliver a full post-excavation analysis over the next two years. The finds at Alverstone impact on the fluvial strategy in two ways: firstly, any works planned for or proposed which run near the site and which involve excavation must now be considered as having a likely archaeological impact and will therefore require careful discussion with the County Archaeologist and a provisional budget for conservation work. Secondly, the work at Alverstone reveals a picture of the Island at a time when the sea did indeed reach up in to the valley covering all of what is now the lower floodplain. The peat stratigraphy and pollen analysis produced by Dr. Rob Scaife are vital blue prints for the behaviour and nature of the Yar valley and estuary which can be compared with those for sea-level rise and managed retreat today. It would seem essential that partners in the fluvial strategy fully understand the pre-history of the Yar and how it might better inform decision making and planning in the catchment today.

11. Past sewage pollution events on the Arreton Stream. There is a history of problems associated with the lack of mains drainage and septic tank overflows from businesses and homes on the Arreton North Stream. The Environment Agency on the Island has worked hard to tackle the largest of these problems (eg Arreton School and local businesses) but there are still unlicensed septic tank overflows to be dealt with. The newest development in the village is served by a small water treatment works at the confluence of the stream and the Yar. This too is a potential source of pollution and should be considered in the course of the strategy. The Arreton South Stream suffers from a range of industrial and horticultural discharges. The Environment Agency is dealing with these as and when it can.
12. New minerals dig and landfill at Hale Manor,
13. Old landfill at Bleak Down. This site is owned by Bardon Vectis (Aggregate Industries) and managed by Wight Wildlife, the Island's wildlife trust. The intention is to create a Local Nature Reserve here and to continue to restore the lowland dry and wet heathland habitats. The landfill is still monitored by the Environment Agency and as yet is not 'signed off'. The site lies exactly on the watershed between the Yar and Medina and its safe and long-term management is therefore relevant to both. Bleakdown is one of a number of older landfills and tips in the catchment. It will be important for the strategy to map these sites and to understand better the risks to water quality (and the opportunities for land remediation) that they may represent.
14. Spring source management at Whitwell and Niton. The Yar rises ant Dean Farm in Whitwell and at Niton Manor Farm in Niton. The former is well managed and is currently under a Countryside Stewardship Scheme. The latter is in poor condition and is likely to require intervention to protect the source and its habitats from further degradation.
15. Road bridges at Bembridge Harbour, Yarbridge, Morton, Longwood Lane, Alverstone, Langbridge, Horringford, Beacon Alley, Roud, Southford Lane. The coming PFI for all Island highways will include a new contract of maintenance for the road infrastructure; this offers an important opportunity to the Coastal Fluvial Strategy to influence the management of

the bridges – very significant in terms of flood risk, flood protection, hydrodynamics and run-off.

16. The Island Line track bed at Sandown-Brading; along this stretch the line runs close to Sandown Levels and Morton reedbeds.
17. The pattern of surface water and groundwater abstractions throughout the catchment (particularly those in the 6-20Ml/d range).
18. The operation of Bembridge Airport and Sandown (Isle of Wight) Airport. Both of these are low-lying and within or directly adjacent to the floodplain.

2.3 There are also tremendous opportunities to conserve and enhance catchment habitats and landscapes in partnership with Island and mainland organisations:

1. Work with The National Trust on the management of the St. Helens Duver.
2. Work with the Bembridge Harbour Company on the management of the intertidal areas and lagoons in their ownership; look at the possibility of Trust ownership and management of the harbour in the long-term.
3. Work with RSPB on the management of the Harbour Farm/Brading Marshes bird reserve and its extension beyond the Old Sea Wall to Yaverland.
4. Work with Isle of Wight Council on the management of their land behind Dinosaur Isle, Sandown. The SINC here has tremendous potential as a public birdwatching/wildlife venue.
5. Work with Isle of Wight Council and developers on plans for the future of Culver Parade, its residential and tourism allocations.
6. Work with the Sandown Town Council and Sandown Partnership on relevant Market Towns projects.
7. Morton Reedbeds; a very significant block of privately owned riparian wetland in the catchment currently sub-optimal.
8. Work with Southern Water on the management of their land at Sandown Levels, the existing and future Stewardship plans.
9. Alverstone Marshes East SINC; the denotified SSSI still has a great deal of wildlife interest and lies along a well-defined hydrological unit: Longwood Lane sluice to Alverstone Weir.
10. Work with English Nature and Environment Agency on Water Level Management Plans and Wildlife Enhancement Schemes at Alverstone Marshes (west) SSSI; including the excavation and widening of the main river channel at Alverstone Bridge.
11. Work with Sandown and Shanklin Golf course on wetland and lowland heath management.
12. Work with Wight Nature Fund on the management of Alverstone Mead LNR.
13. The restoration of Scotchell's Brook; now a largely abandoned sub-catchment of the Yar, this little stream has tremendous potential for wetland management and river restoration.
14. River restoration between Langbridge and Horringford – perhaps the most canalised section of the Yar.
15. Work with landowners on the Parsonage farm Countryside Stewardship scheme. A collaboration between Environment Agency, English Nature and DEFRA (RDS) is working to restore the SSSI component of the land but there is much more to the riparian grassland and woodland features on this

landholding. There is an opportunity to look at the strategic migration of lower catchment freshwater wetland habitats into this area in the long-term.

16. Haseley Manor Ponds. Island 2000 created these in 2004 and they have been remarkably productive particularly for birds in the valley. There is much scope to extend the pond creation work across this section of floodplain (Haseley to Newchurch) and to include the restoration of old riparian features such as oxbows at the same time.
17. Work with landowners and an aggregates company on wetland creation and river restoration at Hale Manor and Redway farms. This a major initiative currently under discussion between the landowners the Isle of Wight Council planners, the Environment Agency, Atkins and Island 2000. The idea is to create a multi-functional wetland over 20ha of semi-improved floodplain pasture and ditch. This scheme offers a clear opportunity to design for the retreat of lower catchment freshwater habitats in the long term and for immediate conservation gains and some flood relief to vulnerable homes downstream in the short term.
18. Management and use of National Cycle-route 23. The Sandown-to-Newport cycleway runs in the floodplain of the Eastern Yar for most of its length. It helps to make the wildlife and landscape of the valley accessible for all. The Fluvial and Coastal Strategy should consider the use of the route, its stopping points and junctions to provide information, interpretation and communication with the wider public about its aims and intentions.
19. Moor Farm and Lessland farm wetlands. These long peat gulleys run along the mid-catchment tributaries of the Yar at Godshill. Unlike the similar sites at Budbridge and Munsley there is no active regime of management in place or planned for these sites. Both have great potential for wetland biodiversity gains. The floodplain and wetlands that lie between the two farms should be considered a discrete unit for concerted conservation effort.
20. Munsley Bog and Bohemia Bog SINCs. The former is a valley bog, the latter a transition mire, each is amongst the finest remaining examples of its type on the Island. However both are badly neglected and in urgent need of practical conservation work; there is now a programme of action in place for both funded by the Environment Agency. Both sites illustrate the difficulty in the management of very small, privately owned sites of high conservation value. The long-term value of these relict and fragmented sites as ‘seedcorns’ for the future plant communities of a Yar in more favourable overall condition cannot be overstated.
21. Kennerly SINC. Another discrete hydrological unit running from Bow Bridge to Bohemia Corner, this mix of tall fen, wet grassland and ponds is unmanaged but still of high conservation value. There is the need for a full biological survey and for a simple scheme of management to conserve and enhance the diversity of wetland features it supports.
22. Demonstration wetland potential at Bow Bridge, Godshill. There is an excellent opportunity to demonstrate wetland restoration, wetland creation and diffuse pollution and run-off control, all at Bow Bridge where the Godshill-to-Rookley road crosses the Yar. There is a small fen upstream of the bridge that still supports a high quality flora but is declining from neglect and eutrophication. On the downstream side there is a semi-improved, unfenced field with little or no agricultural value to the current owners cut off as it is from the rest of their ownership on the south side of the main road. This field

could be excavated and reshaped to create new wetland features. The large field running down to both of the above has a history of run-off problems and is still a pathway for silt, pesticide and fertiliser to both. The Island 2000/Environment Agency Landcare programme is currently working to design such a demonstration.

23. Upper catchment landcare programme from Godshill to Niton. The Island2000/Environment Agency Landcare work is contacting landowners across the upper catchment with a view to setting up Environmental Stewardship agreements in partnership with DEFRA (Natural England) and Wight Wildlife. In particular the catchment between Godshill, Wroxall and Roud is considered a priority.
24. Sustainable tourism at Ninham Farm (Scotchells Brook), and Middlebarn Farm (Wroxall stream). These sites are both good examples of tourism providers keen to make the most of their location ie near to wetlands and the river. They are both imaginative in their interpretation of their local environment and in the activities they arrange for their visitors. The Coastal and Fluvial Strategy will need to look on tourism providers such as these as advocates and supporters for sustainable catchment management in the eastern Yar. The incentives that prompt such businesses to adopt a creative and proactive approach to the use and management of their land are an important part of the long-term cost-benefit analysis of the economic life of the catchment.
25. Farm demonstration at Holliers farm (Wroxall Stream). The new owners of what was the teaching farm for the Isle of Wight College are keen to develop a range of environmental improvements across the farm. Island 2000 has worked with them to create new access, field buffers and new tree planting. Holliers is a strategically significant site: it is on the edge of the Sandown Bay conurbation and so is within reach of a large residential and an even larger visiting population; it is also at the downstream end of the Wroxall Stream and offers an opportunity to manage inputs from the sub-catchment into the Yar at Little Budbridge.
26. Work with existing Stewardship scheme holders and all new Environmental Stewardship entrants to design and implement catchment improvements. The Island 2000/Environment Agency Landcare programme is working closely with Wight Wildlife to promote the take up of diffuse pollution measures and options made available in the Entry Level and Higher Level schemes.
27. Work with DEFRA to ensure that cross-compliance for Single Farm Payment pays close attention to soil conservation in the catchment. All farms will have to have soil conservation plans in place in 2007 as a part of cross compliance with CAP reform and the Single Farm Payment. It will be important for the Coastal and Fluvial Strategy to work closely with DEFRA and Natural England to come to ensure that the monitoring of cross compliance becomes a tool for sustainable catchment management in the long term.

3. LINKING FLOOD AND LAND MANAGEMENT

3.1 It is worth expanding on this last opportunity (2.3.27 above). The Coastal and Fluvial Strategy will be looking to synchronise its aims and objectives where possible

with those of Environmental stewardship and SPS. The new Single Payment Scheme replaced most of the previous crop and livestock payments under CAP from January 1st 2005. In order to receive this Single Farm Payment landowners are now expected to demonstrate that they are keeping their land in 'Good Agricultural and Environmental Condition' (GAEC) and in addition to meet a set of minimum statutory conditions relating to environment, animal welfare etc – 'Statutory Management Requirements' (SMR). These requirements are termed 'Cross-compliance' and offer a number of benefits to integrated catchment management work. The key standards that might apply to the delivery of strategic catchment objectives are:

3.2 GAEC Standards

1. GAEC 1 – by September 1st 2006 all SFP recipients must have completed a simple risk-based Soil Protection Review for their farm and by January 1st 2007 these measures must be in place.
2. GAEC 2 – refers to the post-harvest management of combinable crops and requires measures be taken to reduce the risks of runoff.
3. GAEC 3 – limits mechanical operations in wet conditions.

Taken together these standards offer an excellent opportunity for the Environment Agency to work closely with DEFRA/RDS/Natural England and ensure that key landcare targets for the catchment are delivered.

4. GAEC 5 – this standard reinforces the Environmental Impact Assessment (Uncultivated Land and Semi-natural Areas) (England) Regulations 2001, which apply to projects for the use of uncultivated land or semi-natural areas for intensive agricultural purposes on the farm.
5. GAEC 6 – relating to the management of SSSIs
6. GAEC 9 – the prevention of overgrazing and unsuitable supplementary feeding on natural and semi-natural grassland.
7. GAEC 12 – relating to eligible land that is not in agricultural production, for example the management of set-aside.
8. GAEC 15 – the management of hedgerows and watercourses.

These standards allow for a basic level of environmental protection and could be applied to a catchment-scale strategy for the Eastern Yar.

3.3 SMRs

1. SMR 2 – the protection of groundwater.
2. SMR 4 – Nitrate Vulnerable Zones.
3. SMR 5 – Habitats.

These statutory standards can provide enhanced protection for vulnerable watercourses and catchment resources. It will be important to establish a clear working relationship with DEFRA/RDS/Natural England when it comes to the monitoring of SMRs. In the Eastern Yar these standards will be an essential tool in the development of sustainable land management practice over the short and medium terms. SMR 5 is though rather complicated by the fact that freshwater habitats identified now may become brackish, saline or even intertidal in the lifetime of the strategy.

One approach to a working agreement between the Environment Agency and DEFRA would be a Memorandum of Understanding, drafted and signed now and taken up in

due course by whatever organisations and organisational partnerships succeed current ones as the Haskins reforms take shape.

3.4 Environmental Stewardship

Over and above the obligations of cross-compliance sits the new, voluntary agri-environment scheme which aims to secure widespread environmental benefits via long-term agreements.
The scheme has two main elements:

1. Entry Level Stewardship (there is also an organic version), a 'whole farm scheme' open to all farmers and land owners. It aims to encourage as many farmers and land managers across England to deliver simple but effective environmental management that goes beyond the Single Payment Scheme and GAEC conditions. It is designed to improve water quality and reduce soil erosion; improve conditions for farmland wildlife, maintain and enhance landscape character and protect the historic environment. Applicants are able to choose from a wide range of options covering all farming types e.g hedgerow management, low-input grassland, buffer strips, management plans and further options to protect soils; each option earns points towards a minimum required tally

2. Higher Level Stewardship aims to deliver significant environmental benefits in high priority situations and areas. HLS is usually combined with ELS and provides for more complex environmental management where land managers need advice and support. A very wide range of management options are available to applicants and are targeted to support key characteristics of the different areas of the English countryside. Unlike ELS however, HLS is discretionary; applications go through an assessment process which takes into account how the application meets the environmental priorities identified in a local area. Agreements will last for ten years with payments being received every six months. A successful HLS application is dependent on a Farm Environment Plan. This appraises the environmental value of the land by identifying particular features and suggesting appropriate HLS management options for them. The FEP will also identify areas that may become important features with appropriate management.

Both ELS and HLS, but most importantly the combination of the two, provide an excellent opportunity to land managers, landcare projects and others involved in the development and delivery of the East Yar Strategy. They contain well-informed and detailed options for soil conservation, watercourse protection and wetland conservation and restoration. It will be important for Environment Agency staff and the consultancy team advising them on the Strategy to build and maintain good working links with DEFRA via the Rural Development Service staff who are routinely involved in the Stewardship programmes and to follow through these contacts into the new agency – Natural England – that will continue with this work.

4. CATCHMENT-SCALE INITIATIVES ELSEWHERE

4.1 Although the Coastal and Fluvial Strategy is in essence a flood management tool there are useful and relevant current research projects in the fields of Total Catchment Management and Integrated Catchment Management which might inform its wider field of reference, contribute to the strategic development of water policy on the Island. and in particular to the resource conservation issues demanded by landscape scale projects; a good example is the following award made recently by the National Environment Research Council:

4.2 "*National Infrastructure For Catchment Hydrology Experiments (NICHE): Lowland Catchment Research (LOCAR): Catchment Hydrology And Sustainable Management (CHASM)* This award will establish a national infrastructure for catchment hydrology experiments for the UK research community that includes for the first time a research-based monitoring programme at the scale required for integrated catchment management. The combined expertise of team behind this application means that an international level of excellence can be bought to all aspects of experimental design, across the fields of hydrology, hydrogeology, geomorphology and ecology. Three fully instrumented lowland catchments (LOCAR) and four upland catchments (CHASM) will be established. The framework will enable multidisciplinary research in several disciplines to be undertaken: - operation of mesoscale basins, effects of anthropogenic impacts on hydrological and ecological regimes, biogeochemical cycling, hydrological performance of basins under future changing climatic conditions. The results of this research will contribute to the formulation of sustainable catchment management plans."

4.3 The landscape-scale theme is developed in: 'Managing Catchment Coastal Floodplains: the need for a UK Water and Wetlands Policy' by Crooks, Turner, Pethick and Parry (CSERGE Working Paper PA 01-01):
"the adoption of the Water Framework Directive by Member States reflects a growing awareness of a need to conduct environmental management on an as holistic a basis as is practicable. Pressures of economic and climate change are acting to increase the rate and extent of environmental change, as well as putting severe pressure on a set of natural resource stocks and flows including water resources; ……. managing floodplain 'functionality', and component wetland systems, is central to the future sustainable management of the UK's water resources. There is also a consequent and pressing need to develop a more integrated water and wetlands policy to harness the benefits that wetlands provide. A redirection of research funding is further required to include assessment of wetlands functions and their place in the landscape and the development of economic instruments to encourage floodplain reactivation. In the international and global arena the goals encapsulated within a water and wetlands policy will support the UK in meeting the objectives of existing and forthcoming EU Environmental Directives, the transition towards sustainable development and protection of biodiversity."

4.4 As important as this ambitious strategic goal is it should not obscure the many successful and proven examples of land management and stakeholder cooperation that

exist, any one of which might offer ideas and guidance to the current Eastern Yar work. The Coastal and Fluvial Strategy will anticipate the Water Framework Directive and it is essential that it fully explores 'floodplain functionality' the catchment-scale management objectives and the suite of local projects and agreements that would be needed to properly implement long-term change. The WFD works on the basis of River Basin Districts for which River Basin Management Plans will have to be produced. It may be that the whole Island, rather than the individual river basins, is considered as an RBD; even so, the Eastern Yar Coastal Fluvial Strategy is an ideal opportunity to respond to the expectations of WFD within one small but complex river catchment. The examples summarized below might contribute ideas and contacts to the Island's work:

4.5 Cycleau

Cycleau is funded by the EU North West Europe INTERREG IIIB programme. This programme was set up by the European Union with a view to help bring together communities from different European regions facing similar challenges, in order to find solutions to their common problems. Cycleau is a trans-national project focussing on the rivers of SW England, Western France and Ireland that involves many partners and communities.

4.5.1 The scheme running on the **River Dart**, as an example, covers the following areas:

Aims and Objectives

- Providing advice and grants to farmers and land managers
- Developing the Dart as an educational resource
- Involving people in practical tasks to improve and monitor local habitats whilst also improving our understanding of how the catchment works as a whole
- Identifying and assessing the risks affecting the catchment as a whole, and shellfish in particular
- Producing a comprehensive bathymetric and hydrographic survey of the estuary from Totnes to the estuary mouth

Main Problems

- Varying water quality
- Population growth
- Climate change
- Loss of local tradition/knowledge
- Lack of long-term and co-ordinated planning
- Decline in habitats and wildlife
- Pollution from agriculture, boats and households
- Alien plant species
- Silting-up
- Low water levels
- Increasing tourism and recreational use
- Limited access to data
- A top-down approach to management
- Storm overflows and surges

4.5.2 The Cycleau project consists of eight major themes or actions common to all partners:

Initially a baseline needs to be defined, appropriate targets identified and risks to project management and the environment highlighted. This is achieved by the following actions:

- Catchment profiling
- Target setting
- Risk assessment

Once this information has been established, the Cycleau approach will be tested**,** demonstrated and trialled at sites across the study area (these are referred to as "investment activities"), based around the following actions:

- Physical processes
- Stakeholder participation
- Habitat recreation
- Diffuse pollution
- Acute pollution

‘Action Leaders’ are drawn from technical specialists within the partner organisations. The role of the Action Leaders is to:

- Lead on drawing together elements from participating local actions to develop the Cycleau methodology.
- Provide general guidance on the actions and produce a work plan.
- Provide the necessary information for the Action / Theme meetings (these meetings aim to conceptualise and analyse the action results, so that they contribute to developing the Cycleau methodology and Quality Brand). Each Action / Theme leader is required to liaise with the project management team to organise one meeting per year for their relevant action
- Provide regular updates on their actions to the Technical Resource Centre Coordinator (who will also upload information onto the relevant Cycleau Internet pages and ensure a link between the partners)

4.5.3 The overall structure and design of the Dart/Cycleau projects mirror that of the Eastern Yar Coastal and Fluvial Strategy as envisaged in the early planning stages, in that they begin with a strong focus on catchment audit and stakeholder communications. The role of Action Leaders in this role for Cycleau is instructive and might suggest a communication pathway that combines stakeholder representatives with the key agencies and organisations. For the Island strategy this would include Isle of Wight Council, Environment Agency, Natural England and Southern Water. This could create a project ‘workshop’ in which the range of issues from local site-based to catchment-scale long-term, can be examined without restriction in order to better inform the final scope and dimension of the Coastal and Fluvial Strategy.

4.5.4 Another very successful part of the Cycleau and wider Dart catchment work has been the annual Water Festival – a celebration of the river, its landscape and community. This approach might sit well with the Communication Strategy for the Eastern Yar work. There is potentially a great deal to be gained by bringing together the 13 Town and Parish Councils that make up the community/political analogue of the physical catchment in a way which encourages a ‘catchment mind’ between them.

4.5.5 The Cycleau Dart project continues until the end of 2006. It is likely to be useful to the development of the Eastern Yar strategy for project managers from the Island to visit and meet with the Devon project team during 2006.

4.6 UK ADAPT

4.6.1 UK ADAPT is an initiative of ADAS, UKWIR and Water UK, with the full support of Defra, the EA and Scottish Executive. There is currently considerable activity as the UK starts to implement the Water Framework Directive, including research projects, consultations and numerous other stakeholder initiatives, this scheme attempts to take stock of the lessons learnt so far about management of catchments to reduce rural aquatic pollution.

4.6.2 UK-ADAPT is a resource for researchers and funders to make everyone aware of projects that contribute to our understanding of managing catchments to decrease diffuse pollution from agriculture.

4.6.3 Examples of useful projects held on this database are:

Project Title	**SOWAP (Soil and Water Protection)**
River Catchment	Porlock Vale and Rutland UK, Leuven (Belgium) and Keszthley (Hungary)
County	West Somerset and Rutland
Project Website address	www.sowap.org
Partner Organisations	Allerton Trust RSPB National Trust Harper-Adams University NSRI, Cranfield University Syngneta Pond Conservation Trust Leuven University Hungarian Institute of Sciences Hydro-Agri Vaderstad Ltd Keszthley University WOCAT FWAG Agronomica NRM
Project Funders	EU-Life Environment, Syngenta, Leuven University, WOCAT, Hungarian Institute of Sciences
Abstract:	Agricultural production can have negative impacts on the environment, and there is considerable concern as to the sustainability of conventional land-use practices on arable land in Northern and Central Europe. Previous and current applied research studies have demonstrated the environmental damage that may result from unsustainable use of land resources, particularly in overcultivation of arable soils. Conventional land preparation and crop agronomy requires many field operations, especially for winter cereals in the UK and sugar beet in Belgium. Such conventional tillage is associated with aggregate breakdown, which significantly increases soil erosion susceptibility, and surface sealing and capping that encourages production of surface runoff. These two facts combine to give high soil losses, high sediment concentrations and high runoff volumes. The eroded sediment may carry chemical contaminants, which are then transported to water bodies in which quality is compromised by the turbidity caused by particulate matter. Chemicals in the run-off also pollute these water bodies. Many studies have shown the sensitivity of aquatic ecosystems (flora and fauna) to even low levels of water pollution by sediment and its associated contaminants. Much is known about the principles behind soil conservation practices. However, there is a considerable gap between what is known in principle and what is applied in practice. The SOWAP project is planned to address these issues in a holistic manner, to find and demonstrate better ways of land management. Due to the extensive expertise available to the project, we are able to assess the agronomic, economic, environmental and social impacts of a wide variety of land management practices
Project Title	**Tarland Catchment Initiative**
Partner Organisations	SEPA, MacRobert Trust, Scottish Water, RSPB
Abstract:	The Tarland catchment is the upper most tributary of the River Dee under intensive land management. Both land development issues, through increased local population and a legacy of maximising

agricultural output, has given rise to a deterioration in habitat as well as water quality:- Habitat through canalisation and use of streams as waterings for livestock; Water quality deterioration, from increased nutrients (nitrogen and phosphorus), suspended solids and bacterial coliform contamination. These changes to habitat and water quality are also linked to changes in aquatic ecology of invertebrates, fish and mammals. Within the catchment each of these components has been monitored and quantified prior to proposing and discussing options available to the stakeholders to initiate a programme of restoration. This will allow an assessment of the efficacy of different measures used to improve water quality, habitat and ecology at the catchment scale

4.6.4 These and other similar schemes in the UK share common features: a desire to find and implement ways of managing and improving the water environment; an open approach that shares knowledge and experience of water management; the involvement and participation of local communities in the management of the water resource.

4.6.5 The latter is particularly important as it requires that the provision of drinking water is not simply taken as a given ie that the socio-economics of commercial abstraction for potable supply are fully explored alongside other catchment issues. In some cases regional water companies are key funders and partners of the projects themselves. It would be complacent to accept that water supply for the future housing and industry demands in such a stressed catchment are not a problem or in some way guaranteed.

5.KEY CATCHMENT AREAS FOR TARGETTED LAND-MANAGEMENT INTERVENTION

5.1 The preliminary issues and examples discussed in this report point towards a number of sections of the Eastern Yar catchment as being well-suited to targeted land management improvements whether by means of ELS/HLS or by other forms of positive agreement with landowners prompted or assisted by the Coastal Fluvial Strategy:

1. Brading Marshes the work of the RSPB in managing this new reserve and in extending their land ownership up-stream provides a very important block of continuous floodplain where the Environment Agency can collaborate to gain maximum nature conservation and flood management benefits. However, it will be an urgent necessity that the mismatch between existing UK and EU designations for freshwater environments in this area and the medium-term forecasts for sea-level rise and consequent pressure for realignment and retreat options be discussed at an early stage. The project managers should meet at an early stage with RSPB representatives from the regional office and talk through long-term options for the reserve and the areas upstream it might yet absorb.
2. Sandown Levels the floodplain from Yaverland to Alverstone is predominantly in the hands of the Isle of Wight Council and Southern Water. This should make it relatively easy to progress discussions on existing management, options for better floodplain storage and better preparation for the migration of freshwater environments upstream from Bembridge. Project managers should discuss these possibilities with the Isle of Wight Council's Countryside Section and Land and Property Department as well as Southern Water's estates team.
3. Alverstone Marshes the 200ha of denotified and current SSSI are largely covered by Stewardship and Wildlife Enhancement Scheme agreements with landowners. Nevertheless there is much opportunity here for radical river-reengineering and new floodplain connectivity with the main river. The Environment Agency's Water Level Management Plan in this area is a useful vehicle for such initiatives. There is already much discussion between the agencies on this work as it includes a mix of Stewardship, Wildlife Enhancement Scheme (English Nature), EA-funded WLMP delivery and Island 2000 initiatives. The proposal in 4.5.3 above would create a similar grouping for all catchment and sub-catchment options.
4. Haseley Manor the main river from Horringford to Langbridge is badly canalized. There is great scope here to use the unused floodplain farmland on either side to restore a more natural river system with all the flood-relief and resource management advantages that that can bring to the Yar. The landowner at Haseley is very keen to see further wetland restoration and creation schemes on this stretch of floodplain following the very successful 2004 lagoon project. He is also in a position to assess impacts on biodiversity as he is an active bird-ringer.

5. Hale Manor and Redway Farm: the 50+ha of floodplain between Budbridge and Horringford represent perhaps the best opportunity in the whole catchment for significant and lasting combined resource/pollution/floodrisk benefits. There is work underway between landowners, Environment Agency, Atkins and Island 2000 Trust to explore this opportunity and to create a new floodplain wetland that can provide a strategic catchment role thanks to its critical location at the head of the main river channel below the upper catchment tributaries and above downsteam flood sites and designated habitats. The 'workshop' team recommended in 4.5.3 will make option assessment and project design consistent across the catchment and this will be vital in linking major , cross-cutting schemes such as Hale/Redway to the river above and below.
6. Godshill Bogs the peat gulleys at Munsley, Moor Farm, Lessland Farm and Kennerly could offer real gains for nature conservation, river silt management and flood-peak attenuation if managed as a whole. The project managers should meet with the landowners at Moor and Lessland farms.
7. Tributarues the primary tributaries of the Eastern Yar are the Wroxall Stream and Scotchell's Brook. These two sub-catchments take up most of the south-eastern section of the main catchment and so account for a significant amount of land. Ideally they should be looked at as 'mini strategies' in their own right. The working group for the Coastal and Fluvial Strategy might consider duplicating their methodology across the main catchment and the two sub-catchments as simultaneous research.

6.CONCLUSION

6.1 This report aims to outline key catchment issues relating to the proposed Eastern Yar Coastal and Fluvial Strategy; in addition it provides examples of similar work elsewhere and identifies specific areas and locations within the river valley where real gains may be made for integrated catchment management.

6.2 It is intended to inform and direct the research programme for the Yar currently the subject of widespread community and technical consultation.

6.3 It is the opinion of the author that the most essential challenge faced by the Coastal Fluvial Strategy is the vexed question of sustainable potable supply in over-abstracted catchment facing annual losses from waste water treatment with infrastructure inadequate to the capture and later use of flash floods and with its most significant economic assets (including all those relating to that same potable supply) within the coastal and fluvial floodplains.