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Kishore Rao
Director, World Heritage Centre
UNESCO
7 Place de Fontenoy
75352
Paris 07 SP
France

30 January 2013

Dear Kishore

CORNWALL AND WEST DEVON MINING LANDSCAPE (UNITED KINGDOM) (C1215)

In accordance with Decision 36 COM 7B.94 of the 36th session of the World Heritage Committee, I am pleased to send you a State of Conservation Report for Cornwall and West Devon Mining Landscape for consideration by the Committee at its 37th Session in June this year.

This report is structured according to the format provided by the World Heritage Centre The clauses of the World Heritage Committee decision are given in bold and indented. The response of the state party is not indented and does not use bold type. I have attached a map to the report to locate the principal features mentioned in it.

1. Response from the State Party to the World Heritage Committee's Decision, paragraph by paragraph

The World Heritage Committee,

1. Having examined Document WHC-12/36.COM/7B.Add,

2. Recalling Decision 30 COM 8B.50, adopted at its 30th session (Vilnius, 2006),

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3. Expresses its utmost concern that full details of the resumption of mining at South Crofty were submitted to the World Heritage Centre after planning consent had been issued, contrary to the request of the World Heritage Committee at the time of inscription, and considers that these projects should be halted until an assessment has been made of their impacts;

The World Heritage Centre was notified of the intention to resume mining in our letter of 28th May, 2008. While this was a preliminary notification in advance of the actual planning application, it contained sufficient information to make clear the location, size and scale of the new mining buildings and stated very clearly that the new structure would be just within the boundaries of the World Heritage property. In our view, this should have been sufficient to initiate the debate and scrutiny of specific proposals for mining resumption requested by the World Heritage Committee at the time of the inscription of the property.

The letter said:

"We have been advised that Western United Mines, a mining company, intend to submit a planning application to relocate mining operations from outside the World Heritage Site to the Tuckingmill Decline area which is within the World Heritage Site boundary. A new mill building is proposed.

The proposed new mill building, approx. 18m high x 150m long x 70m wide, would be a single structure incorporating, internally, a new mine entrance with associated surrounding settlement tanks, aggregate bins, offices, car park and access roads. It would be located within the World Heritage Site, adjacent to and north of the Penzance-London mainline railway and between the Decline Entrance and the listed engine houses at Chappel's Shafts."

To the best of our knowledge, that letter did not receive any substantive reply, or even acknowledgement, from the World Heritage Centre. This is unfortunate since a response at that stage would have made it possible to address much sooner the issues raised in the State of Conservation report submitted to the 36th Session of the Committee and in the Committee's decision.

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4. Takes note that mining within World Heritage properties violates the standards recognized by the World Heritage Committee and the International Council on Mining and Metals and recommends that the State Party considers proposing a significant modification of the boundaries of the property to assure the removal of areas that are proposed for the resumption of commercial mining from the property, prior to any resumption of mining;

The United Kingdom shares the concern of the World Heritage Committee about inappropriate mining activity in World Heritage properties, and accepts that for the vast bulk of these sites, the ICMM position statement on mining and protected areas is entirely appropriate, and should be fully supported, while noting that the actual text of the statement considers mainly concerns affecting natural properties. We note too that ICMM Commitment 2 recognises that existing mining operations within World Heritage properties can continue provided that they 'are not incompatible with the outstanding universal value for which these properties are listed and do not put the integrity of these properties at risk'.

We do not think that the Committee decision has paid sufficient attention to the facts that the Outstanding Universal Value (OUV) of the Cornwall and West Devon Mining Landscape is about mining metals and that continued or renewed mining activity can contribute to understanding of that OUV. This point was made in the nomination and was noted at the time of the inscription of the property in 2006. The World Heritage Management Plan, which was endorsed at the time of inscription, recognises the possibility of resumption of mining in policy 7d which says 'proposals for the resumption of mining will be supported where they do not adversely affect the Outstanding Universal Value of the Site'. This is in line with Commitment 2 of the ICCM Statement about continuing existing mining activity within World Heritage properties.

While the South Crofty mine ceased extracting metals in 1998 it remained classified as an 'active' site under the Review of Old Mineral Permissions (known as the ROMPs legislation) under the Environment Act 1995 and consequently benefitted from its original planning consent which was valid until 2042. In the intervening period, the mine has been maintained below

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ground so that resumption of mining activity could take place at some future date.

Despite what was said in the State of Conservation (SOC) report submitted to the 36th Session of the Committee, a full environmental impact assessment of the proposed resumption of mining was carried out, including a full assessment of impact on the OUV of the property. Following extensive discussions and considerable redesign of the new mine building, both English Heritage and Cornwall Council are satisfied that the proposals do not have an adverse impact on the Outstanding Universal Value of the property and will provide funding for conservation work on two historic engine houses and a chimney, at Chappel's Shaft, which are attributes of OUV.

In relation to the specific points raised by ICOMOS and the Centre in the SOC report, there will be no new waste tips above ground. Rock waste will be used as secondary aggregate or stored in mine voids underground. Fine tailings will be dewatered and the resulting sand or slurry will be transported or pumped back underground into mine voids. The attached map, which has been previously sent to you, shows the existing and extended underground mining permission area.

The Committee's decision requests the United Kingdom to consider submitting a significant boundary modification which would place areas proposed for the resumption of commercial mining outside the World Heritage property. This would amount to a re-nomination and re-evaluation of the property, at very considerable expense, without any justification on the grounds of protecting Outstanding Universal Value, which has been clearly and thoroughly assessed as not being under threat from this application. A boundary modification would also not alter the visual or other impacts of the proposals on the World Heritage property, which in any case we believe to be acceptable as this is a thoughtfully designed mine building in a mining landscape. At a time when resources are limited and declining both in the UK and within UNESCO and the Advisory Bodies, we do not intend to develop unnecessary proposals for a significant boundary modification that would not contribute in any way to the achievement of the World Heritage Convention objectives.

The United Kingdom government believes that it is appropriate to permit

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mining resumption in a World Heritage property that's OUV is based on mining activity, provided that there is no adverse impact on that OUV. In this particular proposal, our advisors have affirmed that there is no adverse impact on OUV and we therefore believe that resumption of mining in this case is both compatible with the ICMM principles, and with UNESCO's own Operational Guidance paragraph 182, c i), which advises that development should:

"...be appraised according to the normal evolution of the social and economic framework in which the property is situated;"

5. Requests the State Party to halt the development of Hayle Harbour in the light of its potential impact on the Outstanding Universal Value of the property to allow for smaller-scale heritage-led regeneration;

In the light of English Heritage's concerns, the Secretary of State for Communities and Local Government has considered whether to call in the planning application for Hayle Harbour for decision at the national level following a public inquiry. The Department's decision letter of 14th March, 2012 said that:

"The Secretary of State has carefully considered the impact of the proposal, and the key issues of its potential impact on the Outstanding Universal Value of the World Heritage Site and the vitality and viability of Hayle town centre. In his opinion, the proposals do not give rise to sufficient conflict with national policies on important matters as to justify calling in the application for his own decision. Nor does he consider that they would have significant effects beyond their immediate locality; give rise to substantial regional or national controversy; raise significant architectural and urban design issues; or involve the interests of national security or of Foreign Governments. Therefore, as he does not consider that there is any other sufficient reason to call the application in for his own determination, he has decided that the application should be determined at local level, and has not called it in.

The decision as to whether to grant planning permission will therefore remain with Cornwall Council."

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Consent for the proposal has therefore been granted by the Cornwall Council.

While English Heritage maintains its objection to the scale and appearance of the supermarket proposal, Cornwall Council considers that this is the only viable solution for continued sustainable use of South Quay at Hayle Harbour. In order to maintain the harbour as a working facility, considerable expenditure is needed to dredge the harbour regularly. Because the harbour has not been maintained on a regular basis for the last 40 years, it is likely to continue to silt up and be inaccessible to anything other than small craft within the next five years. Such work cannot be supported from harbour dues alone and needs to be supported by other income from the use of the harbour area. This will be provided by the supermarket scheme. The Council believes that this scheme is the only viable one which will provide funding both for the repair and maintenance of the historic harbour walls, a key attribute of its contribution to the Outstanding Universal Value of the Cornwall and West Devon Mining Landscape, and also allow the reintroduction of sluicing to prevent silting and closure of the harbour.

Further, the Environment Agency's Shore Line Management Plan shows that Hayle is at risk from significant flooding. Prevention of this flooding involves raising threatened areas by between 1.00 and 1.7m. The cheapest solution to this would be to build a sea wall, varying from 1.0 to 1.7m in height between the harbour and the town which would have a significant adverse impact on the OUV of the World Heritage property and the ability to appreciate the role of the Harbour in the Cornish mining industry since it would create a substantial visual barrier between the town and its harbour. This would effectively abandon the harbour area to future flooding and further deterioration.

The Council believes that the most sustainable way forward would be to maintain the working harbour and so protect the town from flooding. This would involve spending around £4 million pounds on works to the sluices and historic harbour walls to restore them to working order and adapt them to cope with climate change and sea-level rise predictions. It would also involve raising the surface level of areas of South Quay which are to be developed in order to protect them from flooding. The Council believes

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that this kind of protection, following existing features, would have a lesser impact on Outstanding Universal Value than a massive sea wall dividing the harbour from the town.

Following their Viability Assessment of Development Options for South Quay (attached), which has not yet been the subject of independent evaluation, the Council believes that this work can only be funded from successful and sustainable commercial development of the quay and that the only viable scheme available is the consented supermarket scheme. The Council notes that this is the only viable scheme to emerge for the South Quay in the last 40 years of repeated attempts to find new uses for this part of the harbour.

The Cornish Mining World Heritage Site Partnership have noted that the current extent of the open character of the South Quay, deprived of built structures, was not the case during the period of interest for OUV, and was created by demolition during the latter 20th century. By 1880 buildings occupied around 21% of the total quay surface. The proposed development will occupy around 24%. Whilst the distribution of new structures will not directly mimic the historic layout, it will preserve the sight lines between Harvey's Foundry and its related quays which existed during their operational period.

The government considers that the situation at Hayle is a good example of the kind of dilemma which is likely to become increasingly common in the future. In order to preserve a property as a whole, it may be necessary in such cases to accept a degree of adverse impact which is less than that which will occur if nothing is done. In this case, the position is aggravated by the likely impacts of sea level rising. The government believes that the impact of the supermarket scheme is acceptable and that the scheme will make it possible to preserve the harbour as a working feature of the World Heritage property, as well as avoiding the construction of a sea wall dividing the harbour from the town.

6. Also requests the State Party to inform the World Heritage Centre in due time about any major development project planned within the property or in its vicinity, including about the planned waste management facility at the Gwennap Mining

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District, in accordance with Paragraph 172 of the Operational Guidelines;

The UK government notes this request and wishes to point out that it endeavours to notify UNESCO of proposed developments having a potential adverse impact on the Outstanding Universal Value of World Heritage properties, despite the problems of timing and workload raised in our written contribution to the States Party Meeting of 3rd October, 2012, on the Advancing of the Convention. As we noted in that submission, it is necessary to be proportionate in making Paragraph 172 notifications. Every year there are many hundreds, if not thousands, of planning applications affecting World Heritage properties or their settings. To submit all these applications would be impossible and so our policy is only to notify those which in the view of our advisors have the potential to have a significant adverse impact on the Outstanding Universal Value of the property concerned, or are likely to be contentious in other ways.

The planned waste management facility in the Gwennap area was notified to you by concerned local residents who have a number of concerns relating to the proposal which do not necessarily relate to the Outstanding Universal Value of the World Heritage property. The application does not affect the property directly though it is within its setting. Despite the SOC report provided for the Committee, World Heritage was considered as a potential constraint on the scheme. The Environment Statement submitted with the application assessed impact on the World Heritage property. English Heritage, our statutory advisors, raised no objections and we do not consider that it has an adverse impact on the property.

7. Further requests the State Party to submit to the World Heritage Centre, by 1 February 2013, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 37th session in 2013.

This letter constitutes the report requested

2. <u>Other current conservation issues identified by the State Party</u>

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Since World Heritage Site inscription in 2006, Cornwall Council and the Cornwall and West Devon Mining Landscape World Heritage Site have been closely involved in a number of regeneration and conservation initiatives directly benefitting the World Heritage property, including that at the Robinson's Shaft site in Pool, and at the former Consolidated Mines near Crofthandy.

The Robinson's Shaft site is an historic complex of shaft-head mine buildings constructed in the early 1900s which retains the last Cornish beam engine ever to work on a mine in Cornwall, which ceased operating in 1955 when superseded by electric pumps. Following the final decommissioning of the Robinson's site in 1995, the engine and associated buildings had an uncertain future until the Heartlands regeneration project was conceived to establish a community heritage park.

A successful bid secured a £22.3m (c. €27m) grant from the Big Lottery Fund in 2007 which, with support from EU Convergence and the Homes and Communities Agency (HCA), enabled the delivery of a £35m (c. €42m) project to regenerate Robinson's and the centre of Pool. A Key Centre for World Heritage Site interpretation has also been established on site, and since opening in March 2012 Heartlands has attracted some 250,000 visitors.

More recently the Cornwall and West Devon Mining Landscape World Heritage Site has gained funding from Natural England to undertake conservation works at Consolidated Mines within the Wheal Maid Valley. This will enable the preservation of some of the earliest Cornish type engine houses within the World Heritage Site. £270,000 (c. €322,000) has been secured to undertake essential stabilisation work through Natural England's Higher Level Stewardship scheme. Work on site is due to commence at the end of January 2013.

3. **In conformity with paragraph 172 of the *Operational Guidelines*, please describe any potential major restorations, alterations and/or new construction(s) within the protected area (core zone and buffer zone and/or corridors) that might be envisaged.**

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The Cornish Mining World Heritage Site Partnership advises that they are aware of proposals for exploratory drilling at Redmoor Mine in the Tamar Valley Area. It is not yet known whether this will progress to an application to resume mining on this site.

West Devon Borough Council have recently received a request for a Scoping opinion (ref ENQ/07278/2012 – Land Adjacent To Callington Road, Tavistock, Devon) for the development on land South West of Tavistock,. This covers a mixed use development including approximately 750 dwellings, approximately 13 hectares of employment land, open space, education facilities, enhancement of health and social care services, the reinstatement of the railway line to Bere Alston and associated infrastructure (inclusive of station and car park) and off site provision or contributions to infrastructure. This will fall largely outside the boundary of the World Heritage property at Tavistock, but may have implications for its setting.

We will provide further information on both of these matters as it becomes available.

You may wish to note that Cornwall Council and the Cornwall and West Devon Mining Partnership have seen and commented on this report.

Yours sincerely

Francesca Conlon

Francesca Conlon
Head of World Heritage

Enclosures:

1 Map of revised mining consent area at South Crofty

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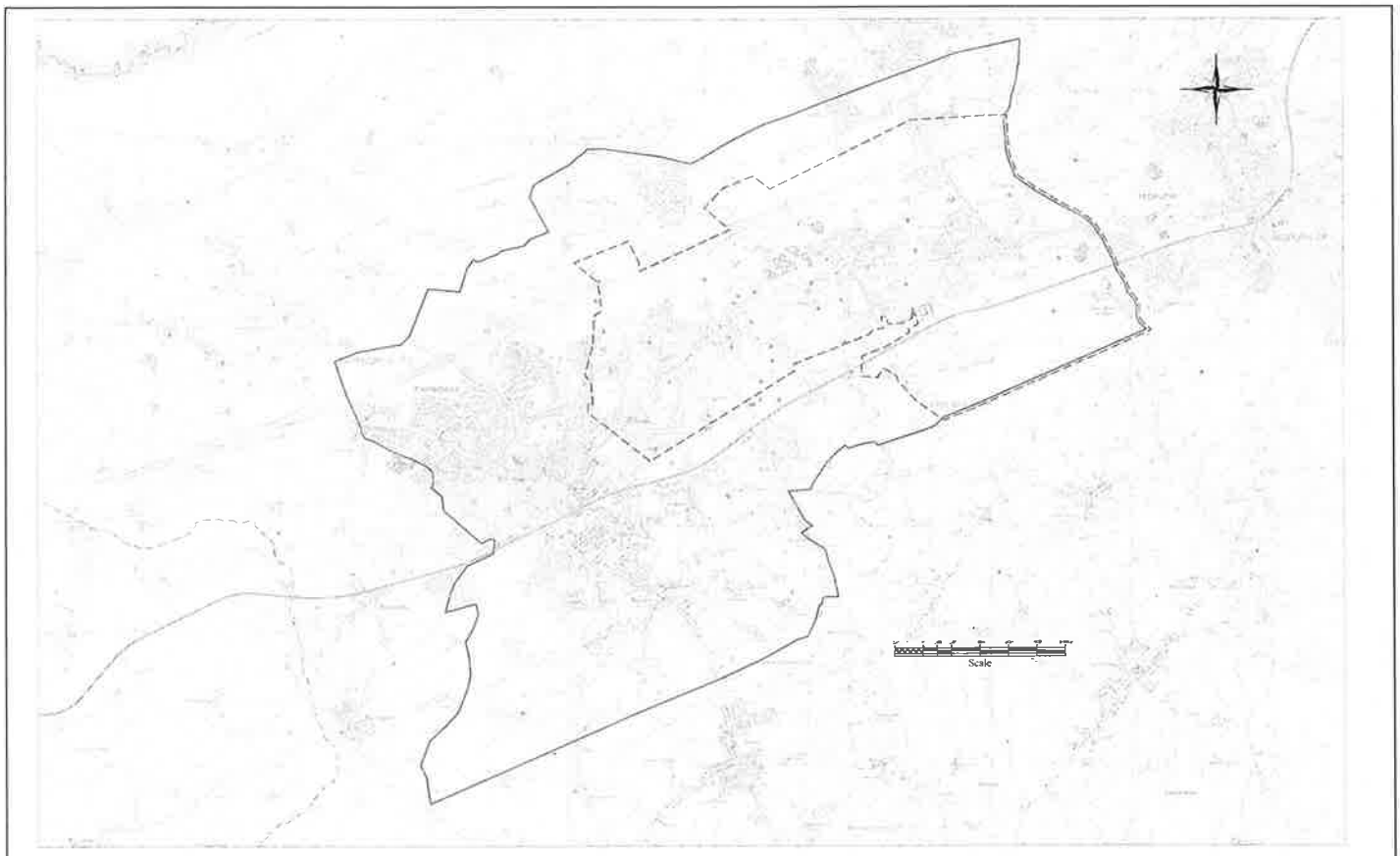
2 Viability Assessment of Development Options for South Quay (Cornwall Council, January 2013)

Cc Patricia Alberth, World Heritage Centre
H.E. Mr. Matthew Sudders, the Permanent Delegate of the United Kingdom to UNESCO
UK National Commission for UNESCO
Christopher Young, English Heritage



Proposed underground mining permission area (1495ha)

Exisiting underground mining permission area

Notes & Revisions

Scale 1:25,000 @ A3
1:12,500 @ A1

DRAWN BY KDR

Western United Mines Ltd
South Crofty Mine, Dudnance Lane, Pool, Redruth TR15 3QT

SOUTH CROFTY MINE
SITE PLAN
PROPOSED UNDERGROUND MINING PERMISSION AREA

SCWMPA-COMB/A3

Viability Assessment of Development Options for South Quay, Hayle Harbour

Cornwall Council

January 2013

Contents

This report has been prepared by officers from Cornwall Council's Planning Service, Historic Environment Service, and Cornwall Development Company.

1. Context and background to this report

In July 2012, at its annual conference, the UNESCO World Heritage Committee received and considered a State of Conservation Report on the Cornwall and West Devon Mining Landscape World Heritage Site, which included the supermarket-led development scheme on South Quay at Hayle Harbour.

Prior to the conference, Cornwall Council had reported that the Report contained serious errors and inconsistencies. However, the Committee passed the Report without debate and requested the UK Government to *"halt the development of Hayle Harbour [South Quay] in the light of its potential impact on the Outstanding Universal Value of the [World Heritage Site] to allow for smaller-scale heritage-led regeneration."*

The UK Government is required to submit a new State of Conservation Report updating the Committee on progress at its conference in July 2013 (deadline for papers February 2013). Cornwall Council is working closely with English Heritage to assist the UK government to prepare this Report.

A key part of this Report is to increase awareness to the economic and environmental conditions in Hayle, which may not have been brought to the attention of the WH Committee and other consultees during the planning decision process. This will illustrate that the consented supermarket-led development at South Quay is the most appropriate and sustainable way to conserve the OUV of the Cornwall and West Devon Mining Landscape World Heritage Site, and how smaller-scale regeneration will not achieve this.

2. History of the port

1800-1900 expansion

Carnsew Dock was constructed in the early 18th century for merchant trading prior to Harvey's Foundry being developed.

South Quay was built between 1817 and 1819 in order for the more practical and efficient loading and unloading of ships exporting foundry products and importing other mine merchant materials needed to service the mining industry.

In 1834 the construction of Carnsew Pool was completed with sluice gates, penstocks and training wall, designed to scour out the harbour channel adjacent to the dock at each tide to allow vessels to enter the harbour unimpeded. Lock gates allowed ships to enter the Pool for additional quayside berths.

Between 1828 and 1840 the South Quay was extended and a number of buildings relating to the Foundry were clustered at the southern end of the quay.

In 1837 the Hayle Railway was nearly completed, with a series of branches developed to serve South Quay and the other wharves.

Around 1879-1890 the quay edge was changed and a new slipway constructed closer to the boiler works and ship yard to enable the construction of large ships. A number of larger buildings were constructed at the southern end of the quay associated with shipbuilding.

1900 – 1950 diversification

Shipbuilding ceased in 1893 and heavy foundry manufacturing and engineering ended in 1903. Harvey's were uniquely placed to construct iron ships due to their engineering expertise but were hampered by the limitations of the channel and quays with 4000 tons being the largest ship built. Merchant trading activities continued to expand into a major builders merchants' trade site.

Shortly after the Great War, through the 1920s to 1950s the quay was used for ship breaking.

The harbour survived the fluctuations and changes, specifically the decline of the mining industry, due to the ability of its owner, the Harvey Company, to transform the principal function of the site according to economic conditions. The merchant trading and importation of goods continued to expand throughout the 19th century and early 20th century and, as the export of ores declined, ship building increased, and once the limitations of the site hampered this the quays were used for ship breaking.

1950-2004 decay

Harvey & Co was sold to United Builders Merchants in 1969 who subsequently closed the port to commercial traffic in 1977, axed the harbour railway and mothballed the power station. The harbour was then sold in ten lots in 1983 to Tekoa who cleared the site of its last remaining historic structures. Whilst Tekoa had great aspirations for the harbour, their proposals were never agreed and came to nothing.

The site was then sold to Peter DeSavary's development company, Aldersgate in 1994, who again presented plans for the site but these never came forward. The site was sold on again in 1998 to Rosshill and Carruthers who promoted plans which once again failed to materialise. They did submit a planning application in 1998 for redevelopment for retail, leisure, industrial, residential and business use but after negotiation this was withdrawn. A subsequent application in 2000 for a similar mixed use scheme was never determined.

Following the collapse of Rosshill and Carruthers, ING purchased the harbour in 2004. In 2009 ING submitted an Outline Application ("The Masterplan") for mixed use redevelopment, comprising residential, retail, office, industrial, leisure and hotel uses, together with infrastructure and car parking. Planning permission was granted in 2010. It was intended to implement the scheme over a period of nine years with South Quay being the last phase.

For a period of thirty five years from 1969 to 2004, the harbour passed through successive owners and developers who sought opportunities for redevelopment but ultimately failed. During this time they did little to

invest in the physical site. Finally in 2010 a planning permission was granted.

There is no data available on the reasons for the failure of the owners and developers during this period. However, one can speculate that a number of factors played a part. The first is lack of agreement, particularly with the local community, about how the site should be developed. The second is lack of commercial viability, and the third is the inability to attract investors.

Under the Masterplan, South Quay would include 260 residential units, and a range of retail, leisure and other commercial uses. It also included public realm improvements and a pedestrian promenade around the perimeter of South Quay. A 5000sqm multi-purpose building was proposed for Foundry Yard.

As a consequence of the global economic downturn, parts of the Masterplan were deemed unviable, and ING concluded that South Quay could be developed far sooner than nine years if the interest shown by supermarket companies was captured. As a result ING submitted a new application but this was withdrawn in 2010 following concern over the quality and impact of the supermarket proposals.

Following a comprehensive re-assessment of the design and layout, a new hybrid application was submitted in 2011 for supermarket, cinema, retail, restaurants and the associated infrastructure and public realm works, together with outline application for residential development on the northern end of the quay. This was granted consent in 2012.

3. Option I- Do nothing– allow town and harbour to inundate

Harbour Infrastructure

Hayle Harbour is set back from the coastline lying within an estuary formed by the conjunction of three water courses Hayle River, Mellanear Stream and Angarrack Stream. The estuary mouth has a natural sand bar that restricts the size of vessels that could enter the estuary and in order to support the development of the foundries within Hayle the natural harbour environment in Hayle has been significantly altered over time as the size and nature of shipping vessels changed.

At the height of the Harbour's prosperity this had evolved to include a system where: vessels exiting the harbour at high tide would drag chains behind them to stir up the sand; a twin sluicing system would then discharge large volumes of water, stored in large reservoirs (Carnsew and Copperhouse Pools) just after high tide to propel the suspended material along the estuary channel and out into St Ives' bay. This system had the added benefit of cutting through the sand bar and maintaining a relatively straight navigable channel that large vessels could then use to access the harbour.

Reflecting the decline of the harbours main industries, sluicing operations became spasmodic from the 1950s and ceased in 1976. The sluicing infrastructure for Copperhouse Pool has now been removed and replaced with a flood defence gate, operated and maintained by the Environment Agency. At

Carnsew Pool one sluice has now completely silted up and the other has had its control mechanisms removed.

The harbour has long been identified as a key site for regeneration proposals which could bring jobs, housing and increased prosperity to the area. However, despite the previous attempts at regeneration described above, Hayle harbour, its infrastructure and its environs continued to suffer from continuing decline and dereliction until recently.

Regeneration has started to commence within the town. Projects completed include the refurbishment of historic buildings at Harvey's Foundry, the Hayle Townscape Initiative, streetscaping at Copperhouse and the new Hayle Skate Bowl.

In 2010 the harbour area was granted outline planning permission for a comprehensive scheme of redevelopment encompassing South Quay, North Quay, parts of East Quay and parts of the Towans. South Quay has the benefit of that consent to construct a high-density mixed use leisure and residential scheme that covered the entire site area in a series of parallel blocks running east-west up to 3-4 storeys in height. In May 2012 planning consent was granted for an alternative smaller scale development on South Quay that incorporated a supermarket.

Currently thanks to an infrastructure project funded by European, UK Government and Cornwall Council, North Quay is undergoing restoration and improvement that is resulting in: the repair of the historic Harbour walls on North and East Quays; the creation of a new bridge and road along North Quay to the re-use of the site; and the uplift of land and new flood defences necessary to protect both the site and town from future rises in sea level.

In contrast South Quay remains in private ownership, does not benefit from public access and the Harbour walls are in a degraded state of repair.

Risks of flooding

South Quay is not at risk from fluvial flooding but is significantly at risk from tidal flooding. In 2007 the 1 in 200 year still water level (the level used by the Environment Agency to establish where developments would be at risk from high seas) was set at a level of 4.548m OD (Ordnance Datum). Much of the quayside in Hayle lies between 4.2m and 5.5m OD meaning that a significant part of the quayside – some of North Quay and most of South Quay as well Foundry Square would be under water. During a high tide in 2006 the sea level did start to over top the quayside.

In developing the planning application for the 2010 Masterplan and subsequently the 2011 South Quay application the Environment Agency required the developers to take into account the predicted increase in sea levels for the next 100 years, establish the still water level and plan their proposals to take this increased level into account.

This exercise established that by 2111 there would be an increase in the 1 in 200 year still water level by 1.1m to a new level of 5.57m OD a further 600mm was then added to this figure to allow for uncertainties in the prediction

methodology and the limited wave action within the sheltered harbour to give a required flood defence level of 6.17mOD.

Figures 1 and *2* below show the extent of future coastal flooding that would occur without any improvements in the existing coastal defences.

On North Quay to provide a longer term sustainable approach the new flood walls, upper promenade and development platforms have been set to a minimum level of 6.41mOD. The minor flood wall that runs adjacent to the new road from the promenade to the new access to the Harbour Masters officer is set to a minimum level of 5.85mOD.

To fully protect the historic centres of Hayle and Copperhouse from the risk of coastal flooding this flood defence feature needs to be extended as a continuous feature from the end of the new flood wall adjacent to the harbourmasters office across or around East Quay and South Quay to Carnsew Road where the existing ground level is high enough to create a natural barrier.

The nature of the defence solution required will to some extent vary dependant on the development that occurs on South Quay. This is explored in more detail below.

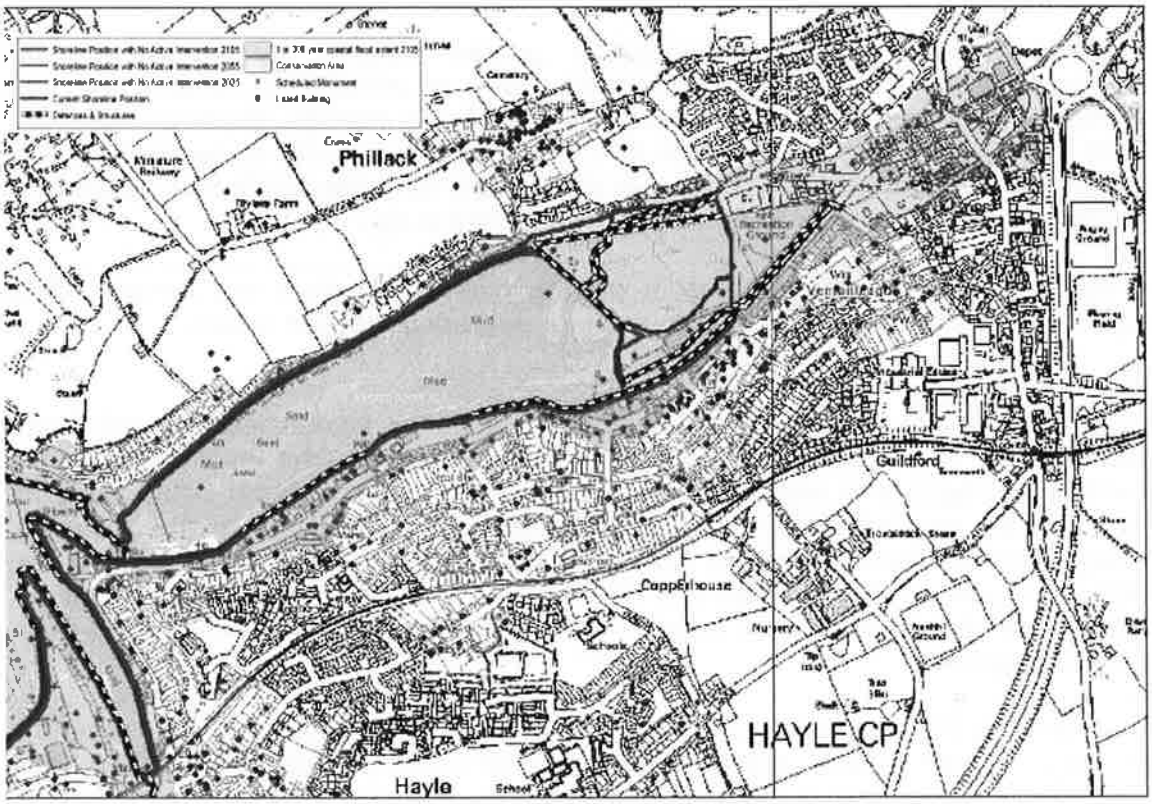


Figure 1: 1 in 200 flooding Hayle and Copperhouse

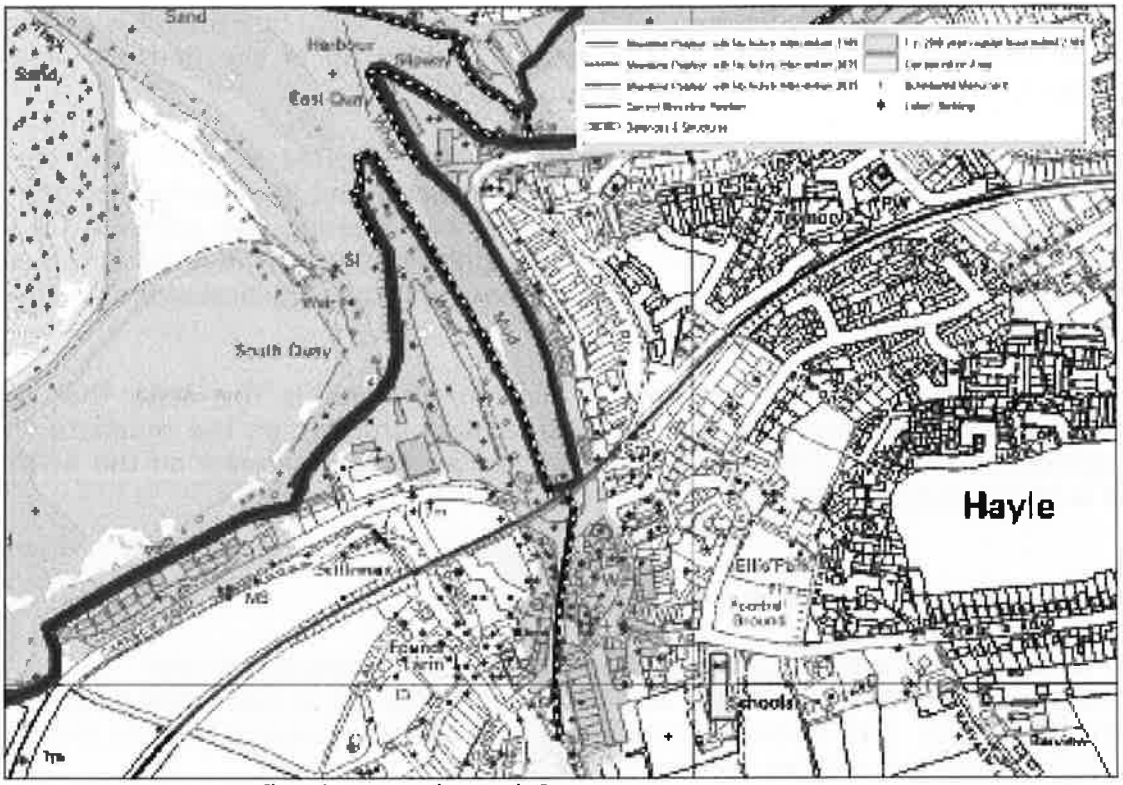


Figure 2: 1 in 200 flooding Hayle and Carnsew

Effects on navigability

Since sluicing stopped in 1976 the harbour authority has sought to maintain a navigable channel by periodic dredging. However as costs soared the only viable option was to sell the sand dredged to finance the operations. This loss of material started to impact on the sand available to recharge the existing beaches leading to outcry from local conservation groups and the subsequent cessation of operations

Since the suspension of dredging in April 2010 there are indications that the entrance channel has migrated to the east and the channel has become curved and less well defined in addition the sand bar that occurs at the entrance to the harbour has built up which can generate large seas and swells. Two vessels have grounded in the last year on this higher bar. The Harbour Master for health and safety reasons has removed the normal navigation buoys and replaced them with a North Cardinal Buoy. The Harbour Master has also issued a notice advising all mariners and in particular those of visiting vessels that if they do not have local knowledge to not attempt to enter the harbour without first consulting the Harbour Master. Since this notice has been issued the Harbour Master reports that no visiting vessels have entered the harbour.

With no navigational maintenance dredging being undertaken, natural processes has led to the steady infilling of the inner harbour and Lelant Saltings (SSSI) with sediment and sand. Currently the sediment is trapped as the ebb flow speed from the tidal flats, which would normally carry sediment in suspension out into the bay, is inadequate.

Significantly more sand is transported landward on the flood tide than it is out to bay on the ebb tide resulting in the steady choking up of the harbour as it steadily in-fills.

The Harbour Master estimates that since dredging stopped in April 2010 the bottom of the navigable channel has risen by a metre and is advising that only vessels with a draft of less than 2.5 metres try entering the harbour. The Harbour Master predicts that within 5 years the estuary will have taken on a delta form and with no distinguishable channel will only be accessible to the shallowest draft vessels, e.g. small dinghies.

Another adverse affect of the halt in sluicing/dredging is the sand that is infiltrating and covering over the rich bird feeding grounds on the mudflats of Copperhouse Pool and Lelant saltings. This has an adverse impact on the SSSI and is of concern to the RSPB.

The economic effects of the do nothing option

The Hayle Estuary provides a base where commercial, recreational and conservation activity co-exist and all of these activities are at risk under a 'do-nothing' scenario. This section examines the short-term economic impacts that would be realised if such an approach were adopted.

Loss of a Functioning Harbour.

Hayle ranks as the fourth most important fishing harbour on the North Cornish coast, in terms of the number of boats.[1]

If the harbour channel is not maintained, the Harbour Master predicts that, within a five year timeframe, the extra sedimentation will mean that the channel is non-navigable to all but the smallest vessels.

Of the 200 vessels currently based in the harbour (28 of which are commercial vessels), 50% would fall into the category that would no longer be able to navigate the channel, forcing them to cease business in the harbour.

The Harbour Master states that the majority of the 28 commercial vessels, currently based in the harbour, are manned by crews of one or two and therefore the loss of employment, associated with a 50% reduction in vessels within five years, can be assumed to be between 14 and 28 jobs.

The Harbour Master believes that, were these vessels no longer able to navigate the channel, there would not be an aggregate loss of employment in the wider economy, as many of the fishermen would relocate and continue to fish from alternative harbours. However, this displacement would reduce employment in the immediate area.

In addition to the direct jobs 'the Hayle fleet is estimated to support 1 FTE in upstream[2] activities and 8 FTE's in downstream[3] activities (EKOS & Nautilus

[1] ECOTEC, 2009, Strategic Infrastructure Investment Hayle Harbour: Economic Impact Assessment. A final report to CPR Regeneration, p.78.

2003)."[4] It must be borne in mind that these figures are almost ten years old, but, without access to more recent data, this is a reasonable estimate of indirect jobs that would be put at risk by the reduction of the Hayle fleet.

As the ECOTEC report highlights, it is difficult to quantify the value of the Hayle's fishing industry, as figures relating to the value of landings vary so greatly.[5] However, the Harbour Master reports that Hayle's commercial fishing fleet earns a total income of approximately £1 million per annum. The reduction, by half, of the 28-strong commercial fishing fleet would have a proportional impact on this income figure. If these vessels relocate to alternative harbours, this would create a significant leakage of income to other South West regions. If infrastructure improvements were made and the channel was maintained, this leakage could be minimised or prevented, enabling the Hayle area to retain the economic benefits associated with its fishing fleet.

The ECOTEC report also highlights other indirect jobs and services associated with the Hayle fishing fleet; 'One merchant is based at Hayle but at least four others do business with those engaged in fishing from Hayle harbour. There are also less tangible tourism and amenity values resulting from fishing activity, including benefits to shops, pubs and restaurants."[6]

An example of the impact of a non-navigable channel on visitor numbers is the effect that it would have on the dive day-trip boats that are based in the harbour. The boats provide a tourist attraction and thus, if they are forced to cease business in the harbour, it could negatively impact on visitor numbers and the associated revenue would be lost. This would be of particular significance in the busy summer season. These boats employ a more substantial crew than the commercial vessels and thus there would also be an associated loss/leakage of employment.

With regards to the Harbour Commission; it currently has an income of approximately £40,000 per annum, set against outgoings of £150,000. Harbour dues account for around 75% of the income. With an expected reduction of both leisure and commercial vessels by 50%, within five years, the Harbour Master expects that the Commission would be subject to a proportional loss of income, thus exacerbating the existing deficit. If the channel were maintained the existing incomes could be retained and opportunities for new revenue streams explored.

An example of potential future income is highlighted in the ECOTEC report, as it is stated that, if accessibility and infrastructure were improved, Hayle Harbour would have the potential to draw in new vessels. 'As a result of improved accessibility and landside support infrastructure it is probable that more of the

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[2] Boat Service & Repairs, Chandlery and the Harbour Authority.
[3] Processing, merchants, retail & catering.
[4] ECOTEC, 2009, Strategic Infrastructure Investment Hayle Harbour: Economic Impact Assessment. A final report to CPR Regeneration, p.81.
[5] ECOTEC, 2009, Strategic Infrastructure Investment Hayle Harbour: Economic Impact Assessment. A final report to CPR Regeneration, p.115.
[6] ECOTEC, 2009, Strategic Infrastructure Investment Hayle Harbour: Economic Impact Assessment. A final report to CPR Regeneration, p.113.

day boats from St Ives would consider using Hayle as their landing port of preference."[7]

Reduction in visiting vessels

As highlighted above, for health and safety reasons, the normal navigational buoys, marking the harbour's entrance channel, have been removed and replaced with a North Cardinal Buoy. The Harbour Master has also issued a notice, advising all mariners, and in particular those on visiting vessels, that if they do not have local knowledge they should not attempt to enter the harbour without first consulting the Harbour Master. This has had a significant impact on the number of visiting vessels, with none entering the harbour since these warnings were placed. In 2012, the income generated by the Harbour Commission from visiting vessels was £2000, with approximately 75% of this coming from visiting commercial boats and 25% from visiting leisure boats. This revenue is expected to be lost in 2013 as visitors continue to avoid the harbour based on the risks associated with navigating the entry channel.

Again, with the loss of approximately 50 visiting leisure vessels, this would impact on the town's visitor numbers and spend.

Reduction in visiting conservationists

Within the Hayle Estuary, the RSPB owns two reserves; Carnsew and Copperhouse Pools. Carnsew Pool is a bunded tidal reservoir with intertidal mudflats grading into deeper, open water, which is retained at low tide. Copperhouse Pool is a shallow tidal reservoir with intertidal mudflats.[8]

'Hayle Estuary supports a number of habitats and species of local and national importance. In particular it is renowned for its bird populations with more than 18,000 birds recorded in cold winters. Because of this, much of the estuary is notified as a Site of Special Scientific Interest (SSSI). A significant area was bought by the RSPB in 1992 and is now an important bird reserve."[9]

Natural England highlight that "The open water in Carnsew Pool attracts both wildfowl and diving bird species. The dune and dune grassland on the central triangular spit provide important roosting areas for many of the birds that visit the estuary. The saltmarshes and reedbed of Copperhouse Pool and Lelant provide important roosting and feeding habitats, and also exhibit an interesting zonation and structure of vegetation. Few estuaries in Britain contain such a diversity of bird species within such a small area; a total of 274 species have been recorded at Hayle."[10]

These important RSPB reserves are also at risk under a 'do-nothing' scenario, as extra sedimentation threatens to envelop the mudflats.

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[7] ECOTEC, 2009, Strategic Infrastructure Investment Hayle Harbour: Economic Impact Assessment. A final report to CPR Regeneration, p.83.
[8] Brock-Morgan, Hayle Estuary Management Plan 2010–15, p.15.
[9] Brock-Morgan, Hayle Estuary Management Plan 2010–15, p.13.
[10] Brock-Morgan, Hayle Estuary Management Plan 2010–15, p.13.

If these sites no longer provide the right habitat for the wide range of bird species that currently inhabit them, they would lose their value as an RSPB conservation site and it is assumed that this would also have a negative impact on associated visitor numbers and visitor spend. RSPB were not able to provide figures relating to visitor numbers at these reserves.

Reduction in visitors to Hayle

Through a combination of factors highlighted earlier in this report, such as the potential loss of the dive trip boats, the current inaccessibility of the harbour to visiting vessels and the potential degradation of key conservation areas, it is expected that, under a 'do-nothing' scenario, there would be a reduction in the number of visitors to Hayle.

Whilst we do not have the figures to quantify this predicted reduction in visitor numbers, VisitCornwall data provides an overview of the value of the existing tourism trade in the Penwith area.

This data highlights that the Penwith area received 618,000 overnight visitors from within the UK and 70,000 overnight visitors from overseas in 2011. Additionally, there have been 1,408,000 day visits.

The spend associated with these various visitor numbers is £178,225,000 from UK Overnight Visitors, £27,552,667 from Overseas Overnight Visitors and £51,296,000 from Day Visits.

The average UK Overnight Visitor spends £59.61 per night, Overseas Overnight Visitors spend £69.01 per night and Day Visitors spend £36.43 per trip.

With further study into the numbers of visitors associated with the above activities, if data could be acquired specific to the area, the impact on visitor spend could be quantified.

Potential loss of future income and investment

Aside from the above losses associated with the degradation of the channel, there is also the loss of potential future revenue streams to account for. Potential economic benefits associated with marine-related developments, such as the Wave Hub and the Marine Renewables Business Park are of particular significance.

If the channel is maintained and the risks associated with entering the harbour are minimised, there is huge potential for new revenue streams to be generated by the Harbour Commission. The harbour would have the opportunity to attract Wave Hub support vessels, of the appropriate size, into the harbour. If the channel is allowed to degrade into a non-navigable state then this would prevent access for servicing of the Wave Hub from Hayle.

There is also an opportunity to capitalise on the Marine Renewables Business Park, which aims to provide quay-side facilities to support the marine renewables sector.

Threat to the retail core of the town.

Hayle is unique when compared to the other commercial centres in Cornwall, in that it has two defined town centres: Copperhouse and Foundry.

The 2010 Retail Study highlights that 'both centres are relatively small and are considered to be reasonably healthy, comprising a large number of local, independent operators'.[11]

Under a 'do-nothing' approach, both town centres are threatened. Based on the Shoreline Management Plan, both town centres are within the 1 in 200 year flood extent.[12]

There are 345[13] businesses in Hayle town (this figure covers the Middle Super Output Area for Hayle itself and the adjacent rural area).

The following table[14] shows the retail composition of Foundry (Hayle) town centre:

Sector	2010		Selected Cornwall Average %	UK Average (2008) %
	No	%		
Convenience	6	18.2	10.10	9.53
Comparison	13	39.4	48.57	43.23
Service	12	36.4	31.59	33.97
Vacant	2	6.1	10.14	12.03
Miscellaneous	0	0.0	0.68	1.24
Total	33	100	100	100

Source: GVA Grimley. Figures may not add due to rounding

The following table[15] shows the retail composition of Copperhouse town centre:

11 Cornwall Council, Cornwall Retail Study, November 2010, p.299.

12 Royal Haskoning, 2010, Cornwall and the Isles of Scilly Shoreline Management Plan Review, p.18.

13 Cornwall Council Economic Intelligence, 2012.

14 Cornwall Council, Cornwall Retail Study, November 2010, p.143.

15 Cornwall Council, Cornwall Retail Study, November 2010, p.142.

Sector	2010		Selected Cornwall Average %	UK Average (2008) %
	No	%		
Convenience	5	13.2	10.10	9.53
Comparison	12	31.6	48.57	43.23
Service	19	50.0	31.59	33.97
Vacant	2	5.3	10.14	12.03
Miscellaneous	0	0.0	0.68	1.24
Total	38	100	100	100

Source: GVA Grimley. Figures may not add due to rounding

Based on these figures, the loss of the town centres would encompass over 71 business units. Assuming an average turnover of £75k per outlet this would equate to a loss of £5.32m turnover to the Hayle local economy.

The 2007 Penwith Retail Study amalgamates flows of expenditure for individual types of comparison goods, to provide a study area derived comparison goods expenditure for each town in Penwith, including town centre and out-of-town splits. The study concludes that Hayle town centre has a turnover of around £4.4 million.[16]

Only 31% of Hayle residents consider Hayle to be their main shopping area, whilst 39% consider it to be Penzance[17]. The 2010 Retail Study also refers to significant leakages from Hayle to nearby retail areas and highlights that 'in particular, there is a quantitative need for both convenience and comparison retail floor space in order to retain more trips within the town. For convenience retailing, the need is centred upon the provision of a main/bulk food shopping destination which is able to stop leakage to Camborne-Pool-Redruth and Penzance. For comparison retailing within Hayle, there is also potential to increase the town's market share through opportunities to improve the range, choice and quality of provision.'[18]

Impact on the heritage of the site of a non-working harbour

The consequences of allowing the harbour to become non-operational would include:

- Lack of investment and maintenance in the physical harbour structures. The historic structures would slowly decline, become overgrown and less distinguishable, and eventually collapse. This is supported by INGs condition surveys of the walls in 2004 and 2009. Where parts of the site are Listed Buildings, the local authority has the powers to enforce

16 Penwith District Council, Penwith Retail Study, December 2007, p.142.

17 Cornwall Council, 2012, Planning Future Cornwall, Growth Factors: Hayle and St Ives Community Network Paper.

18 Cornwall Council, Cornwall Retail Study, November 2010, p.300.

maintenance. However, in reality this is unlikely to occur in a climate of reduced resource and with 12,000 Listed Buildings to monitor in Cornwall.

- Once the quays have become too dangerous they will cease to be used by anyone and will become a health and safety concern.

- Hayle Conservation Area contains a wealth of historic buildings and structures, and the continual deterioration and abandonment of the quay would leave an eyesore which blighted the town, damaging the quality of the Conservation Area.

- Increasing flood inundation of the quay making it inaccessible.

- Continued private ownership and lack of public access to the quay.

- Lack of heritage interpretation materials explaining the history and function of the quay.

- Decreased investment in the town causing deterioration to historic properties in the Conservation Area. A downward trend of condition, loss of details and reduction in property values causing cheaper repairs and materials.

- A non-working harbour would conflict with policies in the WHS Management Plan:

  Policy 7c There should be a presumption in favour of retaining and re-using historic buildings which are important components of the Site.
  By sterilising the harbour, the quays could not be used for maritime vessels and would cease to function for the purpose of landing boats.
  Policy 8a The conservation and continuing maintenance of the historic fabric of the Site should be undertaken to the highest standards to ensure authenticity and integrity.
  Without development there is no capital or revenue funding to maintain the harbour and any repairs are likely to be temporary and sub-standard.
  Policy 8b The historic character and distinctiveness of the [Site] should be maintained.
  The distinctive features of Hayle are the massive landforms and infrastructure of the port, and allowing this to cease to function would adversely affect the distinctiveness of the Site.
  Policy 10 The Partnership should promote access to the Site that is sustainable to the environment and consistent with the values of the Site.
  By allowing continued deterioration and increasing flood inundation of South Quay in private ownership, this part of the Site will continue to be beyond public access.

4. Option 2 – Protect the town – allow inundation of South Quay

In order to complete the flood defences to protect Hayle and Copperhouse town centres there will be a need to continue the flood wall on North Quay from where it ends next to the vehicular entrance to the harbour master's office up to Hayle

terrace and from there run adjacent to the existing road along the full length of Penpol Terrace to the railway viaduct. It would then either pass across the northern side of the viaduct to Carnsew Road before reaching Carnsew Road. It would then need to extend along Carnsew road until it matched the level of the existing road. However, it would also be essential to reinforce the road and footpath foundations on seaward side to ensure they were not undermined by coastal erosion. The length of flood wall required would be approximately 730m in length.

Any openings within the flood wall to allow access to the harbour Master, East Quay or South Quay would need to be fitted with watertight gates, the existing flood defence gate at the entrance to Copperhouse pool increased in height and a regime put in place to ensure these barriers were closed when storm surges were predicted.

The existing road level along Penpol Terrace varies between 4.5mOD as it approaches Foundry Square and 5.2mOD nearer to Philps bakery. In order to meet the required flood level of 6.17m OD the flood wall along this stretch would need to be between 1m and 1.7m high. If it proved necessary to match the levels adopted at North Quay of 6.4m OD this would increase the height range to approx 1.2 - 1.9m.

The current cost of this floodwall based on the works at North Quay has been estimated to be around £2.1million.

The Environment Agency has confirmed that they have looked at various solutions for the flood wall including filling in the gaps beneath the viaduct. However, despite the impact on properties within Hayle and Copperhouse they would not be in a position to justify any Government expenditure on these works without significant investment from other parties.

Impact on heritage from flood defences
The need to construct flood defences between North Quay and the higher ground near Foundry Yard will introduce new modern and brutal architectural structures into the Conservation Area. Typically flood defence features can be hard concrete walls which sever people and property from the water. A flood defence wall of the height required between 1m and 1.7m high along Penpol Terrace would sever the visual link between the water and the town, and greatly diminish the understanding of Hayle's history and development.

This is likely to have an adverse impact on the OUV of the WHS, and meet with concern and objection from within the local community and wider national and international heritage organisations.

5. Option 3 - Protect the town and maintain a functioning port

Why a functioning port is important to the heritage and OUV
It has always been a key tenet of the 2010 Masterplan and 2011 Supermarket scheme that the harbour be kept functioning and operational. This has been deemed essential to the character of the Hayle Conservation Area, and to the livelihoods of the fishermen and associated industries that use the Quays.

The Outstanding Universal Value of Hayle is inextricably linked to a functioning port. Fundamentally, Hayle is included in the WHS as the principal mining port. It includes massive landform and maritime structures, quays and sluicing ponds, which dominate the landscape at the mouth of the estuary. Hayle contained the most important import/export port in Cornwall during the industrial period and its harbour features are currently well preserved.

Maintaining a functioning port is key to the ongoing understanding and appreciation of the site. A silted up harbour, without boats (or with very few small vessels), will detract from the understanding of the historical importance of the harbour and how it functioned. Other key sites in the town including Harvey's Foundry, will loose their connection with the sea, and the whole appreciation of how and why the town developed so fast along the Hayle Estuary during the industrial revolution will be diminished.

Keeping the port functioning will allow for investment in the physical historic structures. The reintroduction of sluicing will re-introduce the authentic means of keeping the channel clear and help to explain how and why the sluicing pond exists.

Description of the works required to keep a functioning port

In order to maintain a functioning port it is essential to reintroduce a management regime for the channel and harbour that can be negotiated not only by the existing fleet but one that can also accommodate vessels of a deeper draught in order to support the Wave Hub and related Marine Renewable Business Park.

This can only be achieved by one of two methods; dredging or sluicing. On the basis of the last dredge the Harbour Master would expect to have to pay £1500 per day for a dredger to be based in the harbour all year round. This would be a direct cost to the Harbour Authority and the current harbour income from dues of only £40,000pa makes this option financially unsustainable. Selling on the won sand to finance the dredging would meet strong resistance from the Environment Agency and local interest groups who have previously opposed the practice.

The more sustainable option, in principle supported by the Environment Agency and local interest groups, would be to reintroduce the historic practice of plough dredging and sluicing via Carnsew Sluices. This would require a significant capital cost to repair the sluicing infrastructure (estimated at £610,000) and repair the harbour walls around South Quay and Carnsew Pool in order to withstand the forces involved with sluicing (estimated at between £3.1 -3.2 million) however, the operational costs would be significantly less. Operatives would only be needed to open the sluices (each spring tide 13 times per year) and the chains for plough dredging fixed to the larger vessels in the existing fleet at minimal cost.

Maintaining the infrastructure of the harbour

Currently the harbour without dredging or sluicing is costing about £150,000 per annum to maintain in its current state but only benefits for an annual income (from Harbour dues) of £40,000 per annum. The Harbour Authority has estimated that a fully repaired and functioning harbour would have either comparable or even reduced costs of about £120,000 per annum.

As part of the Planning Obligation associated with the supermarket application the owners of Hayle Harbour are contracted to introduce an annual levy on all developments on land within its ownership. This levy will be secured by a positive covenant to prevent future landowners defaulting on payment and will be index linked. The Harbour Authority will be the sole benefactor of this levy which can only be used to operate and maintain the harbour and its infrastructure.

On the basis of the supermarket-led development consented on South Quay and the wider master plan area within the current landowner's control, this levy would result in an additional annual income of approximately £152,000. This combined with existing harbour dues of £40,000 would enable the Harbour Authority to meet its future projected maintenance and operating costs and potentially has funds to invest in enhancing other facilities for users.

Flood proofing - impact of flood proofing on developments on South Quay

Any development on South Quay, with the exception of marine related uses, will need to be built on raised ground levels to achieve a minimum finished floor level of 6.17m OD. Any car parking, open spaces of service roads can be at the lower level of 5.57mOD but will need to be protected by a perimeter wall that is set at 6.17mOD.

NB: It should be noted that any development on South Quay is only expected to fund the flood defences on the site and not the entire length of flood defence required between the site and the Harbour Masters office on North Quay, which is necessary to fully protect the town. The Council is working with the Environment Agency and others on a study brief to establish the nature of works, when they will be required and how they may be funded. Development with flood protection on South Quay provides opportunity to use a flood gate at the end of the Quay to protect Penpol Terrace, rather than a flood wall along its length, and this is perceived as a significant visual and practical advantage.

6. Delivering Option 3 – meeting the costs through small-scale development

Smaller Scale Options

To assess an appropriate scale of development the WHS team have measured the physical footprint of buildings on South Quay in 1880 when it was operating at its height, and within the period of interest for Outstanding Universal Value rather than its present day state. This measurement has taken into account the shape of South Quay at that time and has established that 21% of the quay was occupied by buildings.

This figure of 21% has been used to assess alternative small-scale options.

In assessing the economic potential of the options below it has been assumed that each alternative should also deliver the same benefits for the harbour that have already been secured for the consented supermarket development. The value of these works has been established as approximately £610,000 for sluice repairs and £3.2 million for harbour wall repairs.

Marine based
Matching the historic development footprint would enable the construction of some 6722sqm of new marine based employment. This development could be split into a number of buildings and workshops but this would vary dependant on who may want to occupy the buildings. For example if it were for fish processing and storage etc it might take the form of a number of single to two storey blocks used by different companies, however if it where for a modern shipwright then it would probably have to take the form of the single tall large footprint building found in Falmouth Docks.

Because marine based uses are usually classed as waterside uses it would be possible for this development to be undertaken without raising the existing quay levels. However, in order to address future sea level increases and protect the town it would effectively commit the town to establishing the flood barrier along the length of Penpol Terrace and across the viaduct, visually and physically isolating the Quay from the town and foundry complex as discussed above in Option 2.

In addition to its own development costs of circa £9.6m, and repairing the harbour and sluicing structure at a cost of £3.8m, the development would also have to fund the provision of flood defences along its boundary with Carnsew Road and across the site to the quayside edge of Penpol Creek. It would also have to provide for a watertight gate across the site entrance through the flood wall. This flood defence feature would be about 100m in length costing £300,000.

This gives a total development cost of approx £13.7m, however the gross development value (i.e. how much the development would be worth on the open market) is estimated to be just over £2m. With a net loss of over £11m this option is considered non-viable.

Housing based
It has been calculated that to match the historic development footprint would enable the construction of some 90 residential units on the site. These would be a mixture of 60 number 3-4 bed houses and 30 number 2-3 bed apartments. This housing development along with any associated parking, access road and garden space would have to be built on a raised platform and protected by a perimeter flood defence wall.

In order to retain as much of the existing quayside levels as possible it has been assumed that the development would look to be kept at the southern end of the quay, closest to the town.

For long term sea defence purposes this option in providing only a reduced length of raised platform and floodwall along South Quay, and therefore effectively commits the town to establishing the flood barrier along the length of Penpol Terrace and across the viaduct, visually and physically isolating the Quay from the town. However, it may be possible to provide pedestrian connections to the site from the foundry complex and Foundry Square via its access road off Carnsew Creek.

In addition to its own development costs estimated at £19.5m, and repairing the harbour and sluicing structures at a cost of £3.8m, the development would also be expected to match the 17% affordable housing contribution that has been secured for the consented supermarket and wider master plan development.

This gives a total development cost of approx £23.3m, however the gross development value after taking into account the affordable housing deduction of about £3.8m is only £18.5 m. With a net loss of over £4.8m this option is not considered viable.

The Sweett report undertaken for the supermarket option below also indicates that there isn't a strong market for housing in Hayle at present with prices depressed. This is compounded by the lack of local employment opportunities in Hayle. With the national and indeed European medium term economic outlook gloomy it is very unlikely that an investor in this project will be forthcoming for the foreseeable future.

Assuming that 53 gross direct fte jobs are created for every 100 homes created [Scottish Govt Social Research, 2010] then the 90 units planned would generate 48 gross direct jobs plus 28 indirect (0.58 multiplier) = a total of 76 permanent jobs during occupation of the homes, i.e. after the temporary employment generated by construction. Net jobs created = 76 x 0.1 x 0.5 x 1.21 = 4.6 jobs. Assuming £35,450 net GDP created per net job then £163,070 GDP is created by this option.

The economic return on each of these small-scale options is insufficient to justify any public investment in the development models. The return on investment does not work for any option on this scale as the investment required in harbour structures and sluicing even for the basic option is far in excess of the benefits accruing from the development option.

7. Preferred Option – supermarket-led

Full planning consent has been granted for a mixed use development consisting of a 2,500sqm (Net trading area) supermarket and associated parking, 3 non-food retail units on foundry yard , 1 additional small retail unit on South Quay. Outline planning consent has been granted for a footbridge linking South Quay to Penpol Terrace, redevelopment of public realm in Isis Gardens, 30 residential units and a restaurant on the end of South Quay.

The development form has looked to position the buildings and landraise on the western side of the quay so that as much of the existing quayside can be

maintained at its current level as possible. This form also reflects the historic arrangement of buildings on the quayside that resulted in the large open areas facing Penpol Terrace. The width of the original open quay levels will vary from a minimum of 6m to a maximum of 24m with an average of 12m. A minimum width of 4-5m is also proposed on the new wall alongside Carnsew Channel and dock to enable the public for the first time ever to have full and open access around the quayside.

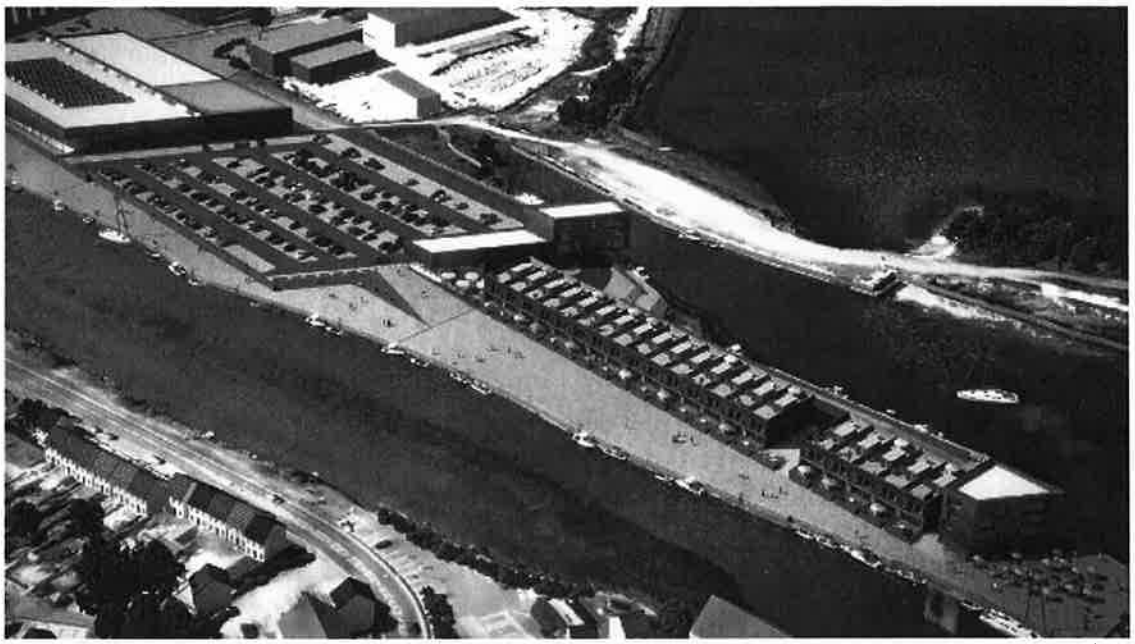

Figure 3: Aerial view of development showing extent of existing open quayside retained.

The end of the quay will be left free from development creating a public open space of about 550sqm. In total the new buildings occupy 24% of the historic quay area, which is 3% more than the baseline taken in 1880.

The developer has researched the height of historic buildings on South Quay and has found photographic evidence of the roofs of these buildings extending beyond the height of the railway viaduct deck level and obscuring long distance views of its extent. The development proposals have established a roof height for the superstore so that it remains below the level of the viaduct's deck.

Figure 4: View of development from Penpol Terrace

Whilst the form of the supermarket has been consented the materials used on the development have been conditioned retaining the opportunity to establish the most appropriate pallet of materials to be used.

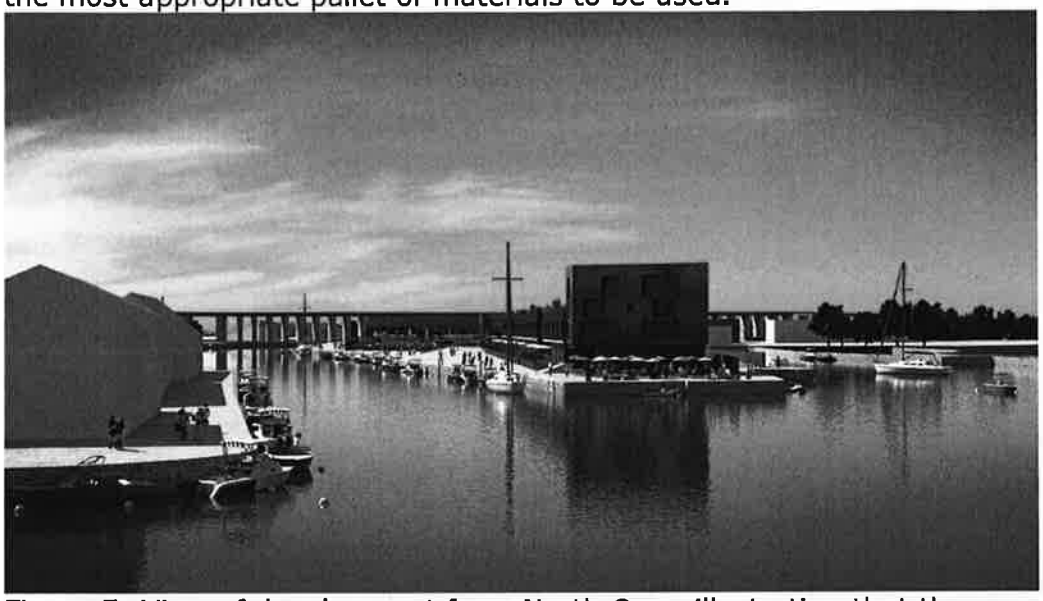

Figure 5: View of development from North Quay illustrating that the supermarket is below the height of the viaduct.

The restaurant and housing at the end of the quay only benefits from an outline planning consent which enables future discussions on the most appropriate building typology and form for the development in this location.

The building platform and flood walls for the entire site do benefit from full consent (materials have been conditioned) and it is expected that these will be fully developed at the same time as the supermarket. The height of the perimeter floor wall around the raised levels, as with other development options, needs to be 6.17mOD.

Given the variance in existing levels across the site, the wall height and the intention to retain the existing quay walls at their current levels, the height of the flood wall will fluctuate but on average it will be about 1.5m high. The visual appearance of this wall could be reduced if the proposed cross fall, necessary for drainage, from harbour edge to flood wall is increased.

Whilst this development as per the other options considered will not fund the completion of the entire length of flood wall required to protect the town, it does offer a unique opportunity. With the extension of the floodwall along South Quay it would be possible to bridge the gap between the flood defences proposed on South Quay and those required on East Quay by means of a rising barrier ("Fish tail" gate). This option is being explored as part of the footbridge options currently being considered and has been estimated at a cost of £1.5M which would include a footbridge between South Quay and East Quay.

This option would leave approximately 200m of flood wall to be provided between East Quay and North Quay at an estimated cost of £570,000.

Consequently the total cost to be found at £2.07million is comparable to the flood wall only solution of £2.1million.

If developed this option would negate the need for approx 500m of flood wall along Penpol Terrace and across the railway viaduct and enable the removal of the current perimeter wall around Isis Gardens to enable a better public realm to be created that visually and physically links South Quay with Foundry Square.

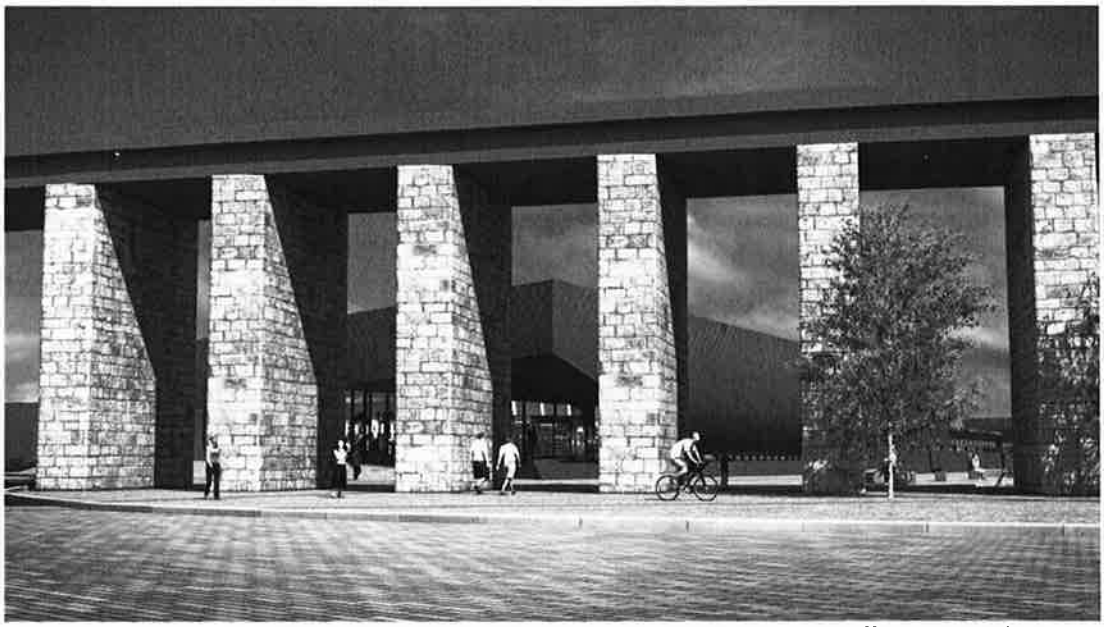

Figure 6: View of development from Foundry Square with wall removed.

The Environment Agency have also indicated that if this option were pursued then they may be able utilise their match funding potential to help fund the completion of the defences.

Cornwall Council undertook an independent appraisal of this option as part of its planning considerations. This exercise established that the development costs of the proposals, including repairing the sluices, and harbour structures would total between £26.4m and 27.8m (the former being ING's figures the later the independent assessors). There was agreement that the gross development value would be some £28.3m. This would give the developer a net profit of between £0.5 to £1.9m. Although these margins are tight the developer has shown willingness and intent to progress the development

The supermarket platform offers benefits that no other option does through the opportunity to significantly reduce the length of flood wall required by installing a flood gate in Penpol Creek. This means the defences could link from East Quay to the tip of South Quay removing the need to create a visual and physical barrier between South Quay & Penpol Creek and the rest of the town.

8. Conclusions

A minimum of circa £4,000,000 must be spent just to make the harbour function effectively, and prevent it from silting up within the next five years.

Sluice repair	£609,700
Listed wall repairs	£3,106,483 - £3,200,000
TOTAL to maintain harbour	**£3,809,700**
Typical flood defence on South Quay	£797,008 - £896,634
Site Preparation	£1,710,951 - £2,566,247
TOTAL for flood defence	**£3,462,881**

One of the reasons why there has not been significant public investment in South Quay to date is because the scale of economic output has not justified the high level of investment. The case for investment in North Quay was assessed as worthy of EU ERDF Convergence investment as the focus was on employment use and therefore there was a quantifiable return in terms of jobs created and GVA generated. This justified an intervention of £16m in North Quay. At that time any small scale employment use or housing based model applied to South Quay would not work in terms of outputs generated in return for public funding intervention. The supermarket element in the preferred option provides the scale of economic output required to justify an investment in South Quay.

OPTION:	**Est. Total construction cost**	**Net Jobs created**	**Net GDP created**
OPTION 1			
Do Nothing Scenario	**£3.8m**	**-5***	**0**
OPTION 2			
Protect Town, allow inundation of S. Quay	**£4.2m**	**-5***	**0**
OPTION 3			
Marine Dev.	**£13.4m**	**2.5**	**£90k**
Housing Dev.	**£20m**	**4.6**	**£163k**
Supermarket-led (preferred option)	**£28.3m**	**14**	**£491k**

*estimated loss of dive boat jobs

Developing the marine sector would cost an additional £8.4m; the return on this investment will be negative as the additional employment created is minimal (estimated at 2.5 net direct jobs). The GDP generated is estimated to be only £90,078. Developing the preferred option creates 14 net jobs (methodology at Annex 2). This exceeds the employment outputs of any other option. Net additional GDP of this preferred option is calculated at £491k.

This report illustrates that doing nothing to Hayle harbour has significant economic and environmental impacts for the town of Hayle and for its historic assets. Crucially, it leads in the short term within five years to the silting up of the harbour, a substantial loss of marine activity and the threat of becoming a derelict port. This would have a substantial impact on the OUV of the WHS.

The do nothing option also leaves the town vulnerable to flooding and requires an unaffordable flood defence wall to be created at a cost of circa £2.1m. This would have a substantial impact on the OUV of the WHS and the character of the Conservation Area.

Developing South Quay provides a way forward to carry out the repairs needed to maintain a functioning port with busy marine activity. It also provides a way of delivering part of the flood defence that the town needs. However, this has a cost of approaching £4 million, and small-scale development which occupies no more than 21% of the Quay surface, makes a financial loss and is therefore unviable.

Hayle has suffered from 40 years of failed efforts to redevelop the South Quay, with previous schemes failing to be profitable enough to attract investment through many booms and recessions in the market. The consented supermarket-led scheme is a fraction above the historic 21% surface coverage of South Quay, yet it delivers the requirements of the port, the town and the fabric of South Quay itself. Crucially, it enables the OUV of the WHS to be conserved into the long term future by reinstating sluicing and repairs to the walls which keep the harbour open, and providing some of the flood defence needed for the town.

The term *heritage-led regeneration* is often used and widely defined. Regeneration that respects heritage, and secures the reuse and long term future for heritage, seems appropriate; the supermarket scheme fulfils this definition.

Annex 1
Outputs and Impacts of Option 3

Annex 2
Cost value summary for small-scale options

Annex 1					
Conversion of Gross Internal Area to Net Internal Area	**Gross Internal Area (m2)**	**20% benchmark conversion**	**Net Internal Area (m2)**		
Retail Units A, B & C (Incl. Mezzanine Floor)	1990	398	1592		
Single Retail Unit (incl. Mezzanine Floor)	407	81	326		
Restaurant (incl. Mezzanine Floor)	276	55	221		
Food Retail (incl. Mezzanine Floor)	5230	1046	4184		
Employment Outputs					
Retail Units A, B & C	84	OffPAT guidance indicates general employment densities for A1 retail are 1 per 19m². Assuming an average density of 1 employee per 20m², this indicates that three units could employ 84.			
Single Retail Unit	19	OffPAT guidance indicates general employment densities for A1 retail are 1 per 19m². Assuming an average density of 1 employee per 20m², this indicates that three units could employ 19.			
Restraunt	12	OffPAT guidance indicates general employment densities for A3 restruants are 1 per 18m². Assuming an average density of 1 employee per 18m², this indicates that three units could employ 12.			
Food Retail	232	OffPAT guidance indicates general employment densities for A1 food superstore are 1 per 17m². Assuming an average density of 1 employee per 17m², this indicates that three units could employ 232.			
Total Jobs	**348**				
50 % Optimisum Bias for four smaller units					
Retail Units A, B & C	42	Given the location of the new retail units, and the displacement incurred from the West Cornwall Retail Park an optimisum bias of 50% has been applied.			
Single Retail Unit	10	Given the location of the new retail units, and the displacement incurred from the West Cornwall Retail Park an optimisum bias of 50% has been applied.			
Revised Employment Outputs , including optimisum bias					
Retail Units A, B and C	42				
Single Retail Unit	19				
Restaurant	12				
Food Retail	232				
Total Jobs	**306**				
Of the 306 job it is anticipated 25% will be safeguarded, therefore providing the following breakdown					
Gross Direct Jobs Safeguarded	77				
Gross Direct Jobs Created	229				
Gross Sales Safeguarded	£3,850,000	Assumes that for every 1 FTE £50,000 of sales is safeguarded (Objective One Programme Compliment, June 2005 and SPD Guidance).			
Gross Sales created	£11,450,000	Assumes that for every 1 FTE £50,000 of sales is created (Objective One Programme Compliment, June 2005 and SPD Guidance)			
Net Additional Jobs Safeguarded	4.65	Based on Displacement from EP Additionality Guide (2004) assumes leakage 0.1, displacement of 0.5 and a multiplier of 1.21. Therefore 77 jobs safeguarded x 0.1 x 0.5 x 1.21 = 4.65			
Net Additional Jobs Created	13.85	Based on Displacement from EP Additionality Guide (2004) assumes leakage 0.1, displacement of 0.5 and a multiplier of 1.21. Therefore 229 jobs created x 0.1 x 0.5 x 1.21 = 13.85			
Net Additional GDP Safeguarded	£164,842	Assumes for one net job safeguarded adds £35,450 to GDP. Therefore 4.65 x £35,450 = £164,842, additional GDP is safeguarded.			
Net Additional GDP created	£490,982	Assumes for one net job created adds £35,450 to GDP. Therefore 13.85 x £ = £490,982 additional GDP is created			

Annex 2 Cost value summary for small scale options						
Site Area in ha	Site Area in m sq	21% of site area (m sq)				
3.2	32013	6722.73				
Option	**Avg Cost per m sq GEA**		**Unit cost exc fees, VAT etc**	**Totals**	**Notes**	**Outputs**
Marine related workspace, accomodation & facilities	Assume building footprint is 21% in GEA built on exising quay/levels	6722	1250	£8,402,500	Comp - Hayle MRBP £4.3m 2,500 m sq (£1720/m sq) BREEAM Exc	assume 40m sq/FTE with NIA of 5378 m sq 134 FTE
External works		6722	40.5	£272,241		
				£8,674,741		
Fees				£867,474		
Marketing				£84,025		
Sec 106 contribution to match Supermarket	Sluice Repair			£610,000		
	Listed Wall Repairs			£3,200,000		
				£13,436,240	Total Costs	
Values & assumptions						
Rental	5378	45	£242,010			
		Rate	12	£2,016,750	GDV	
				£11,419,490	Profit/Loss	
Residential Development	Assume 60 houses of 3 to 4 bedroom & 30 apartments over 3 floors (based on 3 times the residential of ING option 2 ie 20 houses 10 flats)	3	4810000	£14,430,000	(note - apartments not selling well)	
Additional allowances	External works inc car park, highways, public realm services etc based on pro-rata costs	6722	40.5	£272,241		
Retaining Wall	Assume development platform of 13,710 m sq with retaining wall 461m plus access ramp etc	461	750	£345,750		
Edge detail	Handrail to top of retaining wall on 2 North and East sides	242	175	£42,350		
Development Platform/Raise Level	Create plateau @ finished level 6.10 using pro rata site prep inc imported fill etc	6722	69.7	£468,523		
				£15,558,864		
Fees				£1,555,886		
Marketing				£432,900		
Land Value				£1,979,500		
			Total	£19,527,151		
Sec 106 contribution to match Supermarket	Sluice Repair			£610,000		
	Listed Wall Repairs			£3,200,000		
				£23,337,151	Total Costs	

Resi Values and assumptions	60 No 3/4 bed houses (avg135 m sq) & 30 No apartments (avg 75 m sq) over 3 storey	10350	2153	£22,283,550		
			Less affordable ded	£3,788,204		
				£18,495,347	GDV	
				-£4,841,804	Profit/Loss	