4.1 PDZ 1 River Tyne to Frenchman's Bay

4.1.1 Policy Development Analysis

DESCRIPTION

Physical

The zone covers a length of some 3km comprising three principal elements:

Littlehaven is within shelter of the main Tynemouth piers and comprises a section of sand beach between the South Groyne and the main South Pier. An old seawall acts to divide the beach, protruding out at an angle beyond the normal line of high water. Behind the beach is a narrow low lying area, occupied by the local coastal road, with the land rising quite steeply behind. The area between the defence and the road forms a promenade with car parks and recreational areas.

Herd Sand, locally known as Sandhaven beach, is a continuation of the relatively low lying coastal frontage, separated from Littlehaven by the South Pier. The frontage is a generally broad sweep of sand formed against the southern side of the main South Pier and curving around into the lee of Trow Point. Relatively high dunes have formed at the northern end with lower dunes formed just to the north of Trow Point. Over the central section of the frontage the beach narrows with some pressure against the light reveted coastal defences. The area behind the beach is relatively low lying occupied by generally recreational development and the main A183 coastal road. The land rises to the southern end and further back into the main urban area of South Tyneside. Examination of the historical records for the area show this section of the coast to have been reclaimed from the sea. The area was formally saltmarsh. Much of the promenade and the area of Gypsies Green are constructed on made ground.

The final southerly section is Trow Quarry. The main quarry, behind Trow Point, has been in filled as a level grassed area, with the quarried rock face set back some 250m, reducing to a mere 50m at the southern end, where the rock headland between Trow Lea and Frenchman's Bay has been maintained. The seaward face of the infilled area forms two small bays, divided by the eroding rock outcrop of Target Rock. Much of the foreshore is a rock platform, with a narrow sand beach only present immediately south of Trow Point.

Environment

The whole area provides a focus for recreational and tourism activities associated with the main urban area of South Tyneside. These activities include traditional family beach use, watersports, more formal facilities (such as the Sports Ground, formal park areas, and boating lake) with the southern area providing less formal open ground and general recreational area. These activities are supported by a promenade, water sports facilities (including a lifeguard station), amusement park, shops, restaurants and, at the northern end, an hotel and conference centre. There are several car parks along the frontage. Herd Sands is designated bathing waters. The area also acts as the start point to the Durham Coastal Path. There are plans for new development both behind Littlehaven and Herd Sands. These aim to develop the already important tourism potential for the area. Within this, therefore, the hotel to the northern end of Littlehaven and features such as the fairground, immediately south of South Pier, are important existing assets. Similarly, the car parks and maintaining a high quality promenade are considered to be vital for the future development of the area. The Gypsies Green Stadium is to be redeveloped, with subsequent redevelopment of areas between the stadium and South Pier.

The existing hard infrastructure includes a local coastal road to the rear of Littlehaven and the main coastal road behind Herd Sands. There are also local commercial areas to the root of the main South Pier. This area is immediately behind the fairground.

The area of Herd Sands and Trow Quarry are included within the Durham Coast SSSI, designated for its geology, geomorphology, vegetation (both dunes and paramaritime magnesian limestone), ornithology and invertebrates. The South Pier, including areas of the dunes, is part of the Northumbria Coast SPA/ Ramsar area, as is the area of Trow Quarry. Trow Quarry is also designated as SAC.

The northern section of the zone acts as an integral part of the Port of Tyne, with quays, a jetty and commercial areas immediately inside the mouth of the river. The South Groyne and South Pier are

important navigation structures providing shelter to the Port entrance, training the navigation channel and retaining an important spending beach at the mouth of the river, allowing waves within the harbour mouth to be dissipated.

There are discrete heritage structures including the gun platform on Trow Point. The South Pier Lighthouse is a listed structure with association with the development of the Port of Tyne.

Trow Quarry infill has been shown to contain pollutants, including asbestos and potentially hospital waste. While there is little evidence of significant pollution, continued erosion of the frontage exposes potentially harmful materials posing a threat to those using the coast.

KEY PRINCIPLES

- To contribute to sustainable development and support an integrated approach to land use planning.
- To avoid damage to and enhance the natural heritage.
- To support the cultural heritage.
- To minimise reliance on defence

KEY OBJECTIVES (a full list of objectives for this zone is presented in Appendix E)

- To maintain the existing values and opportunity for development of recreation and tourism.
- To prevent disruption to the nationally important Port of Tyne
- To minimise pollution.

PHYSICAL CHARACTERISTICS

Water levels

MLWS	MHWS	HAT	1:10yr	1:25yr	1:50yr	1:100yr	1:200yr
-2.15	2.15	2.85	3.04	3.17	3.23	3.34	3.41

Levels are to Ordnance Datum Newlyn. Chart Datum is approximately 2.85m below Ordnance Datum.

Source (tidal levels): Admiralty Tide Tables (2005) for main and secondary ports, with other values interpolated between.

Source (extreme water levels): Babtie, 1998. Shoreline Management Plan, River Tyne to Seaham Harbour. Sub cell 1b. NB. Values for 200 yr ARI are interpolated between 100 yr and 250 yr values.

Wave climate

Return Period (1:X years)	Wave Height Hs (m)
0.10	4.24
1	6.08
10	7.92
20	8.48
1000	11.61

Source: Babtie, 1998. Shoreline Management Plan, River Tyne to Seaham Harbour. Sub cell 1b. OUTRAY used to determine inshore wave data at 10 m contour.

Baseline Erosion Rates

Littlehaven	Local readjustment, with major erosion following loss of the South Groyne.
Herd Sands	0.2m/yr
Trow Point	0.2m/yr, but potentially less.
Trow Quarry	0.2m/yr, subject to control imposed by headlands.

All the above rates are based on existing evidence and are likely to increase with sea level rise. A factor of 2.5 has been used to allow for this over 100 years. Where defences exist it is generally assumed that if they fail erosion rates would initially be greater, subject to other control features in the area.

Evolutionary Trend

Existing Processes:

The main shape of the coast is held by and is dependent on the South Groyne, the main South Pier, Trow Point and, effectively as an extension of this, the southern rock headland at the start of Frenchman's Bay. Within this final section of Trow Quarry, the infilled areas are also held by Target Rock, which is visibly eroding. Sediment drift is limited, with each frontage in basic equilibrium, although over Herd Sands there is a tendency for material to be moved north over the northern section and south behind Trow Point causing a degree of divergence over the central section. This drift is, however, variable, with beach levels being restored to the centre on occasions.

Unconstrained:

In the absence of the main man made control features the coast would retreat rapidly, allowing the mouth of the Tyne to widen. Material from this erosion would tend to feed into the Tyne. Trow Point will continue to erode slowly but this will allow more rapid erosion to the softer frontages to north and south.

To the north of Trow Point this unconstrained area of erosion could be as much as 100m to 200m establishing a bay controlled by the higher ground behind the existing location of the main South Pier. To the south the width of erosion would be held by the more local hard features but would tend to remove material back to the line of the quarried face just north of the Frenchman's Bay headland. There is a possibility that Trow Point would be outflanked. This might result in increased general drift to the south with an increased loss of material at the southern end of Herd Sands.

MANAGEMENT

Present Management.

SMP1	Policy
The zone is covered in part by Management Unit B1 and extends into B2(Trow Quarry).	Hold the Line Do Nothing
Littlehaven to South Pier Coastal Management Study	
The strategy aims to re-establish the failing defence to the bay with a recommendation to rebuild the Harbour Drive wall.	Hold the line
Trow Quarry	
Initial investigations have been undertaken and an outline examination carried out into the feasibility of protecting this frontage. A detailed study of options is now underway.	Presently under review in more detailed assessments

Baseline scenarios for the zone.

No Active Intervention (Scenario 1):

Even without maintenance, the South Groyne is likely to remain an influence on the coast over the next fifty years, retaining the Littlehaven Beach. In the longer term, failure of this structure would result in erosion of this corner, with material being lost from the beach and erosion increasing pressure for retreat of the whole length of Littlehaven. The defence along Harbour Drive would have already failed and, while the remains of the wall and the fill contained by the wall would tend to be more resistant, this area would similarly erode back to the rising ground behind, with subsequent loss of much of the dune at the root of the main South Pier. There would be significant volumes of material deposited in the main Tyne channel. In addition the beach would stop acting as a spending beach, increasing wave action over the main entrance to the channel. The pattern of erosion would be limited by the presence of the main South Pier, which; while falling into disrepair, would remain over the next 100 years as a major control feature of the coast.

The presence of the South Pier would still provide shelter to the coast to the south, still resulting in material tending to be pushed in to its lee. Similarly Trow Point would still act as the southern control point to Herd Sands. Between these two points the beach would tend to roll back with increased pressure and (as the revetment to the centre of the bay fails) erosion of the centre of the bay. The infill area of Trow Quarry would continue to erode as in the unconstrained case. The rate of erosion would critically depend on the rates of erosion of Trow Point and Target Rock.

There is the potential for erosion to start outflanking Trow Point cutting into the infill of the Quarry, as this continues there would tend to be a loss of sand from the southern end of Herd sands, imposing greater pressure on the defence at this end.

MDSF Evaluation (Appendix H)	*Assets lost over the time period of the SMP.*	*PValue Damages*
Erosion	in excess of 22 residential and commercial properties (Recreational facilities not included.)	£361,000
Flooding	1 commercial property	£962,000
Other information	Loss of car parking and fairground. Disruption to transport. Management cost of potential contamination.	
Assessment of key objectives	• There would be loss of significant recreational facilities and opportunity. • Significant disruption to the operation of the Port of Tyne. • Loss of dunes to Littlehaven but potential improvement to the SSSI with the retreat and natural dune development to the south of Herd Sands. • Loss of some of the recreational area of the quarry but associated more natural development of the internationally designated areas. • Significant potential for pollution of the foreshore, possibly to Herd Sands and to the south.	

With Present Management (Scenario 2):

The South Groyne and main South Pier, together with the influence of Trow Point, would maintain the general shape of the coastline. Within this, defences would be maintained to Littlehaven and along the full length of Herd Sands. The present management policy for Trow Quarry was for no active intervention based on the SMP1, but this has been the subject of on-going investigation and development of an appropriate management approach aimed at managing the risk associated with exposed fill. The overriding aim, emerging from studies to present (2006) is that significant pollution of the foreshore and beaches would be unacceptable. The options for management are ultimately between removal of fill materials and providing protection to the eroding face of the in fill. There is still recognised to be uncertainty associated with erosion rates that cannot be fully resolved without longer term monitoring. However, it is also recognised that a policy of no active intervention in the short term will not address the immediate problems. In assessing this scenario it is assumed that the emerging approach from the detailed examination is for short term management of erosion through protection but still within a longer term approach for managed re-alignment.. Confirmation of this policy depends on full consideration of the economic, technical and environmental aspects of the management approach.

Within Littlehaven the overall configuration of the bay would be maintained although the hard defence to the centre would have an increasingly significant impact as the beaches to either side roll back. There would be increasing pressure on this central section with a long term need to increase the level of the defence in line with both its increased exposure and rising sea level. In effect the defence would split the bay in two, reducing access to the beaches and, in the centre creating a barrier between land use and that of the foreshore. The policy for the frontage is being reviewed in detail but it is the Council's current policy to consider managed realignment of the frontage.

Over the northern section of Herd Sands the current defence line is nominally the dunes but with a retired line of defence formed by a low promenade around the area of commercial development, including the amusement park. Between this retired defence and the face of the dunes is an area used for recreation. There would be some roll back of these northern dunes tending to cause steepening as their back face comes under increasing constraint due to the promenade and development behind. This would be more seriously constrained by attempting to retain area of formal recreational activity. This would make the dunes more vulnerable to breach and to the impact of humans. It is unlikely that the dunes condition would become critical over the 100 year period of the SMP if the full width up to the existing hard line of defence were available. Further constraining this width by hard defence of the recreation area could, however, damage their ecological integrity and their value as a natural defence. The foreshore and front face of the dunes is designated as an SSSI.

Further south on Herd Sands, there is some pressure on the defence in the area of the Lifeguard station. Over the next twenty years there will be increasing pressure and the length of defence under regular attack will increase. By 2050 it would be anticipated that the defences will have had to be substantially upgraded in terms of their strength, toe depth and crest level. Within the period of the SMP it would be expected that this point would form a major division of Herd Sands. With the diminishing influence of Trow Point it is possible that the length of strengthened defence would need to extend over some 700m of the frontage to protect the existing promenade.

Within the area of Trow Quarry, as stated above, present management is to locally identify and remove material as it becomes exposed on the front face of the eroding infill. This is seen as being only a very short term management approach. The existing policy is therefore for improved defence with a longer term policy of managed realignment.

MDSF Evaluation	*PValue Damages*
Erosion	*No erosion damages identified*
Flooding	*No flood damages identified.*
Other information	Management cost of potential contamination. Possible loss of Gun emplacement to Trow Point.
Assessment of Key objectives	• Maintains existing recreational and tourism facilities to the area but with a loss of beach area and potentially affecting water sports at southern end of the frontage. • Prevents significant disruption to operation of the Port of Tyne • Maintains overall structure of environmentally designated habitats but reduces specific ecological integrity, constraining future development of dunes and SSSI. • Maintains general cultural values of the area.

• reduces immediate risks of pollution. • Increases reliance on defences.

DISCUSSION AND DETAILED POLICY DEVELOPMENT

There are several issues developing from management of the frontage. What may be appreciated is that the main harbour structures do provide a beneficial influence on the frontage both in terms of meeting a key objective to prevent disruption to the operation of the Port of Tyne but also in providing a basic structure of control around which the ecological, economic and socio-economic interests may be developed. Realistically, these structures are considered of national importance in their navigational role and would remain. Within this constraint on the development of the area, therefore, it is the more local policy for defence where potential issues arise; in particular the frontage between the South Groyne and the main South Pier (Little Haven), Herd Sand and the Trow Quarry. These are discussed on the basis that the Groyne and the Pier are maintained.

Littlehaven

The recent strategy study considers the frontage over a period of 60 years, rather than the 100 years of the SMP. The main problems are the excessive overtopping which can cause damage to the car park and potentially result in risk to people using the frontage, coupled to the poor condition of the Harbour Drive wall, which is being undermined and is likely to fail over the next 5 to 10 years. The strategy concluded that the value of the car park justifies re-construction of the wall to a higher standard. The study indicates that if the wall were not in place the bay would retreat a further 90m in the centre. This would create a more sustainable beach without erosion threatening the main local road to the rear. This assumes that there would be a degree of roll back of the dunes to either side without increased threat to assets on the frontage.

From the longer perspective of the SMP there is concern that construction of a new defence on the existing line would be subject to increasing pressure over the 100 years. With a basic sea level rise (4mm/yr) this could result in a need to increase crest levels by some 0.8m to maintain the standard of defence proposed by the strategy. In addition, increased exposure of the wall could result in increased erosion and wave reflection as well as progressively increasing the shedding of wave action to either side tending to cause increased erosion to the beach on either side. This may cause a longer term loss of what is recognised to be relic beach (there is little evidence of supply to the bay). Over the longer period there may therefore be a need to further extend the protection or to add additional rock armour protection to the wall. Ultimately the policy to hold the specific line of the defence would impose a continuing and increasing dependence on defence, with loss to the general ecological integrity of the area. Under different more extreme UKCIP sea level scenarios such a policy would become increasingly unsustainable with a need for a more inflexible approach to risk management. The option presented in the strategy, while economically justified, fails to meet the minimum priority score to warrant coast protection grant under the existing government policy.

No active intervention is likely to result in a general deterioration of the area as the wall fails and rubble fill is exposed and, therefore, to maintain the principle for good ecological potential, works would probably have to be undertaken remove the existing sea wall debris and fill. Although this problem would be at a relatively local scale, it would be counter to the principles of the Water Framework Directive (WFD). At present

there is no guidance as to funding to comply with emerging legislation aimed at delivery of the WFD.

Specific defence policy for this frontage cannot be determined solely on the basis of risk to the existing assets. The frontage as a whole is an important component of the amenity and recreation of the zone and this has been confirmed in consultation with the planning authority. The essential elements for future development of the frontage have been identified as the need to maintain a high quality promenade with scope for minor recreational support facilities. In addition, the importance of car parking space along the whole zone has been identified.

In terms of sustainable defence, to allow the frontage to retreat to a more natural profile would be the preferred policy. This, however, ignores the potential for future enhancement. Recognising this, the intent of a preferred policy is to relax the line of defence to a more sustainable line consistent with an integrated development plan aimed at deriving a balanced enhancement of both the natural and human environment. The key principles for such a policy should be to retreat the line of the existing hard defence to comply more compatibly with the concave shape of the bay, retaining material on site to raise land levels behind above predicted flood levels. While it may be possible to maintain the wall over the next 20 years through significant works, it is important that planning of the area should accept a need for retreat beyond this period. The Council has declared its intentions to investigate realignment and this is now subject to a strategy study. The immediate policy is for managed realignment, with the longer term aim to hold the line on a more sustainable line.

Herd Sands

At present Herd Sands remains relatively stable. There is some variation in beach levels across the frontage, with occasional erosion both to the dunes and lowering of the beach adjacent to the lifeguard station. These areas can rebuild, although at the southerly point levels can lower to the point where they expose the vulnerability of the light revetment at this point. There are, on more severe storms, occasions when waves and sand are driven over the frontage causing local flooding to the sea front.

There is little indication of significant sediment supply to the frontage (what there may be, will come from the offshore area) and the bay to a degree may be seen as a closed system. Control of the beach is provided by the main South Pier and by Trow Point. With increases in sea level and to a lesser extent attrition of general beach material (due primarily to wind blown loss), the upper shoreline will tend to roll back.

To the northern end of the beach this will tend to move the dunes landward. Any resistance to this movement, or any lack of width within which the dunes may move, will tend to cause oversteepening and the potential both for blowouts and breaching. This will be made worse by continued trampling. In either case the dunes will no longer form a competent defence to the recreational and commercial area behind and there would be significant anticipated loss over the long term. While there may be scope for soft management; such as fencing and boardwalks, this would provide short to medium term amelioration. Physically holding the line through construction of hard defences would be expensive and would require increasing long term commitment to this form of defence. Given the anticipated long term nature of the problem the more sustainable and preferred policy for the frontage would be to maximise the area for future dune development. It is anticipated that there would be a need to retreat use of the area

immediately behind the dunes over the next fifty years. In effect, by taking this action the preferred policy allows use to be made of the natural defence system in holding the line initially with a longer term policy of retreat over the second part of the SMP century. This policy would impact on the use of the recreational area. The rate of change on this northern frontage is uncertain and monitoring would be required to inform planning decisions. The intent would be to enhance the integrity of the dunes, thus continuing to provide natural width to the retired defence at the back of the dune.

Further south the problem is more immediate. Over possibly the next twenty years there is likely to be a substantially increased pressure on the defence centred on the Lifeguard station. As discussed in the general assessment of the zone, to hold the line at this position will in effect be committing to a need for increasingly more substantial defence, over a longer length of the beach. This would have significant impact on beach use, water sports and the nature conservation, as well as being progressively more difficult to justify. Furthermore, to the southern end of the frontage the continued erosion of Trow Point creates the possibility of outflanking of the Point and potential exposure of the in fill to Trow Quarry, as well as potentially resulting in further loss of sediment to Herd Sands. Trow Point is eroding but relatively slowly; potentially in the order of 0.1m/yr (erosion rates used in examining potential retreat are based on a more general assessment of the rock frontage to the south).

There is, therefore, the potential for consolidating the control at this location while potentially avoid more major works to the north, in management of the southern end of Herd Sands. For this reason a preferred policy at Trow Point would be for no active intervention at present but with a longer term policy of reinforcing the point in the future as required by a detailed examination of management to the southern area of Herd Sands. Critical to this would be the need to monitor the actual erosion rates at Trow Point and along the Herd Sand frontage.

As the pressure increases on the light revetment and erosion continues to Trow point, there needs to be detailed consideration as how these two sections may be managed to alleviate the distinct problems. Typically this would be seen as the need to reinforce the northern side of the point, re-establishing the point as a control to the beach and considering managed realignment along the southern end of Herd Sands.

The policy may require relocation of the lifeguard station and possible loss of car parking as well as the potential loss of one commercial building. Any realignment is most unlikely to affect the Gypsies Green Stadium and could, as part of an overall realignment, involve moving the line of defence forward locally to better manage beach movement. This would need to be integrated with future re-generation of the area. The overall intent of the SMP policy would be to maintain defence of the overall area, to sustain the small dune area to the south of the sands, but to do so in a manner more sympathetic to coastal processes than would be achieved through increasing reinforcement of the existing linear defences.

It is not believed that at present, or over the next twenty years, work will necessarily be required to maintain the influence of Trow Point. However, depending on the timescale for redevelopment in the area there may be a need to examine the management approach in detail before the end of the residual life of the existing revetment. The policies for these to areas need to reflect this.

At present there is little if any economic justification for maintaining the defence of this southern frontage. The intent of the managed realignment would be principally in terms of the development in the area. This needs to be recognised in terms of funding. It is unlikely that funding would be supported by grant under the Coast Protection Act. The development of the area behind needs to be assured of defence against erosion and flood risk, without imposing an expectation of a continuing and increasing investment in maintaining defences. For this reason, the detailed approach to defence need to be developed alongside future development plans.

Trow Point is also a significant feature in management of the Trow Quarry. This is discussed below.

Trow Quarry

With the presence of Trow Point to the north and the headland left in place by quarrying to the south (Frenchman's Bay headland), Trow Quarry is seen as a relatively discrete section of the coast in terms of general drift of natural material. Eroded pollution, from the infill area does, however, pose a degree of threat to the coast to the north and south as well as to users of the local foreshore. Current management of the frontage involves regular inspection and an on-going programme of dealing with hazardous material as it becomes exposed.

Under emerging regulation to meet the requirements of the Water Framework Directive it is uncertain whether the scale of impact on the coastal water body would be significant. Even so, regardless of whether the aim of the area is to meet good ecological status (GES) or good ecological potential (GEP) it would be anticipated that, given the designations associated with the frontage (SSSI, SPA, SAC, Ramsar); quite apart from the potential threat to the public, current measures, in effect limited management of the problem is only appropriate over the very short term.

South Tyneside Council have commissioned a detailed study and appraisal of the issue. Therefore, the role of the SMP2, at this time, must be to provide high level guidance within which this detailed study takes place. As results emerge from this more detailed work, the implementation of the recommended SMP2 policy will need to be reviewed.

Before discussing possible longer term management scenarios, the critical uncertainties in assessing the way the frontage behaves need to be considered.

The frontage is controlled by the relatively hard points at either end, with a further control feature, Target Rock, between. Target Rock divides the frontage creating two bays, Graham's Sand; immediately south of Trow Point, and Target bay; between Target Rock and Frenchman's Headland. The character of the two bays is substantially different.

The Graham's Sands bay is set back some 80m to 90m in the lee of Trow Point and while still eroding, the in-fill is at a relatively mild slope with a degree of natural protection provided by rock and debris from the in-fill. There is a relatively wide intertidal foreshore comprising rock platform and areas of sand, with larger sediments such as cobbles and boulders close to the base of the coastal slope. During more major storms the face of the in-fill will continue to erode. This rate of erosion and the degree to which the face of the bay will erode back is limited primarily by Trow Point with initially Target Rock, and in the absence of Target Rock the shoulder of the quarry face behind Target

Rock providing an anchor point to the bay. Depending on the erosion rate of Trow Point (and the possible outflanking of Trow Point) the erosion within the bay is limited.

Target bay is set much further forward, with a narrower intertidal width. The degree of control imposed by Target Rock on the bay shape is, therefore, at present much less. The infill is being eroded more severely and even if there were no further erosion to Target Rock, it seems probable that without substantial protection the in-fill would erode back to the old quarry face.

The level (robustness) of protection required to resist erosion at present in Graham's Sand Bay is seen as being significantly less than that required at present in Target Bay. Although this would need to be confirmed through more detailed study.

Critical to the behaviour of both bays is the future erosion of the headlands. Detailed information on this, available to the SMP2 is quite limited. In terms of overall assessment, the SMP2 has taken a rate of 0.2m/yr based on a typical rate for the general nature of material along this section of the coast. From more detailed inspection of the area it is assessed that this rate is possibly high with respect to Trow Point, but may even be low with respect to sections of Target Rock. It would appear that the Frenchman's Headland may be more akin to Trow Point than to Target Rock.

Scenarios may now be built up based on the uncertainty associated with these erosion rates and from this the possible areas of critical choice that then need to be made in respect of potential management policy.

Scenario (a)

Description: That Trow Point and Frenchman's Headland erode slowly but that Target Rock continues to erode at a more rapid rate.

Rationale: Graham's Sands would remain relatively unaffected by significant erosion over the next 20 years, with slightly increased erosion pressure as sea level rises. Trow Point would maintain a significant degree of control within this bay. There would be increased pressure on the southern length of the bay as Target Rock cuts back, eventually over the 100 year period control at the southern end of Graham's Sand bay would transfer to the shoulder of the quarry, limiting further erosion of the bay. As Target Rock cuts back, this would increase the rate of erosion of Target Bay, with this frontage eroding back to the quarry face behind.

Implications: If a policy of no active intervention was adopted then there would be a precautionary need to excavate in-fill over some 250m of Graham's Sand Bay to a width varying from some 15m at the northern end to a width of 60m (back to the shoulder of the quarry face). Within Target Bay material would need to be excavated back over the full width of infill over again a length of some 250m. This would involve significant excavation with the associated high levels of cost and risk to the environment.

In terms of protection, with Trow Point maintaining its control, it is probable that protection to the northern bay would constitute merely an improvement to the natural protection already in place. Some more robust work might be required in the area of Target Rock. If this were designed such that it could be tied into the shoulder of the quarry, the overall stability of this northern frontage could be maintained even over the longer term, avoiding the need for excavation of in-fill in the future, and irrespective of management of Target Bay. This level of management could be reviewed over the next 20 to 50 years.

Within Target Bay, protection would have to be significantly more robust, providing for the eventual loss of Target Rock and the additional pressure on the then exposed corner at the north of this Bay. In effect this section of the overall frontage would require a major prominent rock revetment, rather than a back defence to a naturally shaped bay. Works undertaken in the near future would dictate the management of this section over the next 100 years. It is unrealistic to expect subsequent review to reverse this approach to management over the next 50 years, given the level of expenditure that would have been put in place.

Critical choice: Working within the conditions stated for this scenario, a protection approach for the northern bay would allow adaptation in a review in 20 to 50 years. In the case of the southern bay there would need to be a commitment to either excavation now or a policy for protection. This latter choice would depend on a more detailed comparison of cost and potential environmental damage as a result of excavation and the alternative significant cost of providing protection.

Scenario (b)

Description: That headlands erode at some 0.2m/yr initially increasing with sea level rise (i.e the general premise of SMP2).

Rationale: Graham's Sand would still remain relatively unaffected by significant erosion over the next 20 years, but would come under considerably greater pressure from then on, due to the combined impact of sea level rise and the more extensive erosion of Trow Point, with increased erosion pressure as sea level rises. Erosion could be of the order of 50m over the whole frontage with also the threat of Trow Point being outflanked. As Target Rock cuts back, this would increase the rate of erosion of Target Bay, with this frontage eroding back to the quarry face behind. Erosion of Frenchman's Headland would place further pressure on this southern bay with exposure of the in-fill from the south.

Implications: If a policy of no active intervention was adopted then there would be a precautionary need to excavate in-fill over some 250m of Graham's Sand Bay to a width of some 50m to 60m. Within Target Bay material would need to be excavated back over the full width of infill over again a length of some 250m. This would involve significant excavation with the associated high levels of cost and risk to the environment.

In terms of protection, Trow Point would continue to provide a controlling influence over the next 20 years. It, therefore, remains probable that protection to the northern bay would constitute merely an improvement to the natural protection already in place over that period of time. Beyond 20 years more robust defence would need to be put in place. The initial level of management would need to be reviewed over the next 20 years.

Protection to the southern bay would be as described in scenario (a).

Critical choice: Working within the conditions stated for this scenario, a protection approach for the northern bay would still allow adaptation in a review in 20 years. In the case of the southern bay there would still need to be a commitment to either excavation now or a policy for protection. This latter choice would depend on a more detailed comparison of cost and potential environmental damage as a result of excavation and the alternative significant cost of providing protection.

It is recognised that further detailed examination is required and is being undertaken; specifically in terms of the potential environmental damage associated with either form of management, the level of defence that would actually be required, and the associated cost of this, the costs of excavation of material and aspects such as the nature of material behind Target Rock.

One factor that might influence this examination is the fact that it would be extremely improbable that the rear area to the main extent of Trow Quarry will be affected by erosion over the foreseeable future. Given that this is infill, potentially of the same nature as that to the front of the area, this area might be considered as an appropriate area for further infill, reducing the need for extensive removal of material from the general site. This view is expressed solely with respect to risk from erosion and it is recognised that there are significant other issues which would then need to be addressed.

What becomes evident from the consideration of the scenarios is the critical rates of erosion of Trow Point, most specifically in relation to the northern bay. This is one aspect that more detailed examination of the problem cannot resolve at this time; the information is not available at present and can only be obtained through appropriate monitoring. In scenario (a) it is estimated that the Trow Point will continue to provide substantial control to the northern bay over the next 20 to 50 years, in scenario (b) this is reduced to 20 years. From this it is considered that the policy for this section should be to initially hold the line (subject to the detailed studies confirmation of the level of protection that would be required). Monitoring of the erosion rates at Trow Point would be an essential element of this policy, such that the approach could be reviewed in 20 years; this period of time being necessary to allow monitoring data to be collected. This short term policy, and potentially a policy that could be sustained over the next 100 years depending on erosion rates, would avoid unnecessary excavation of material.

In terms of the southern bay, this similarly depends on further information as to the condition and rate of erosion of Target Rock. The long term decision is ultimately the balance between the need to excavate material or to defend against erosion. Both present issues related to funding and potential impact. This balance has to consider what is warranted based on an assessment of risk and the proportionality of action necessary to reduce the risk. This will need to be examined both in relation to the funding implications and potential impacts, based on further information not available at present. As such this long term policy cannot be fully resolved at this stage.

There are immediate risks of pollution in the short term due to the increasing difficulty and risk associated with local management inspections. Following discussion, on-going through the more detailed strategy study, the policy in the short term is to manage this immediate risk by Hold the Line. The intent of this hold the line approach would be to provide adequate protection such that the risk is managed in the short term; while further information is obtained through monitoring. The implementation of this hold the line policy should be appropriate to the immediate risk, limiting the scale of intervention such that it would minimise constraint on the future assessment of options. The preferred policy for the frontage in the medium to long term would be for continued management, with an aspiration for managed realignment, to allow semi-natural behaviour of the coast to continue. This future policy will be informed by the detailed study taking place now and through the detailed monitoring required over the coming years.

MANAGEMENT AREAS

The policy development zone naturally splits into three management areas; those of:

- Littlehaven
- Herd Sands
- Trow Quarry

The division between Littlehaven and Herd Sands is created by the presence of South Pier; a structure essential for the continued use of the Port of Tyne and which, in any regard, would remain as a control feature to both areas over the period of the SMP2.

The division between Herd Sands and Trow Quarry is provided by Trow Point. This is a major control point both to the north and south and the management or erosion of this feature is critical to both. To the north it is assumed that, regardless of the rate of erosion of the natural headland, the sustainable management of Herd Sands would depend on maintaining the control of processes at this point (i.e. if the point erodes quite rapidly, there would be a need to reinforce the north face of this natural feature). To the south the erosion rate of the headland is critical in determining the long term policy for Trow Quarry.

Policy statements or summaries are therefore presented by management areas in the following sheets.

4.1.2 MANAGEMENT AREA POLICY STATEMENTS (MA01- 03)

Location reference:	Littlehaven
Management Area reference:	MA01
Policy Development Zone:	1

SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

PLAN: The intent of the plan is to maintain the control imposed by South Groyne and South Pier, thereby maintaining operation of the Port of Tyne. This allows imposes distinct control of the area between this structures allowing local management. The intent within this area is to encourage a more natural development of the bay reducing the reliance on defences. However, within this the intent of the emerging land use plan has to be recognised in maintaining a high quality promenade between South Pier and the hotel at the northern end, maintaining areas for car parking and maintaining access to the beach and the use of the beach. The detailed plan for managing defences needs to be determined in an integrated land use plan for the area.

PREFERRED POLICY TO IMPLEMENT PLAN:

From present day:	Maintain the south groyne and south pier Investigate an appropriate realigned position for defence compatible with proposed land use.
Medium term	Maintain the south groyne and south pier Hold the realigned defence.
Long-term	Maintain the south groyne and south pier Hold the rear line of defence.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		**Policy Plan**			
		2025.	**2055**	**2105**	**Comment**
1.1	South Groyne	HTL	HTL	HTL	Key control structure
1.2	Littlehaven	MR	HR	HR*	Developed in conjunction with land use plan
1.3	South Pier	HTL	HTL	HTL	Key control structure

Key: HTL - Hold the line, A - Advance the line, R - Retreat, NAI – No active intervention
* HR – Hold the Line on a retreated alignment, MR – Managed realignment

CHANGES FROM PRESENT MANAGEMENT

The SMP2 identifies the increasing pressure on the existing central defence and the consequence of ever greater reliance on this defence in its current position. This will work to the detriment of the area. The defence policy for this frontage has been changed to one of managed realignment but with the intent of holding the line further to the rear.

IMPLICATION WITH RESPECT OF BUILT ENVIRONMENT

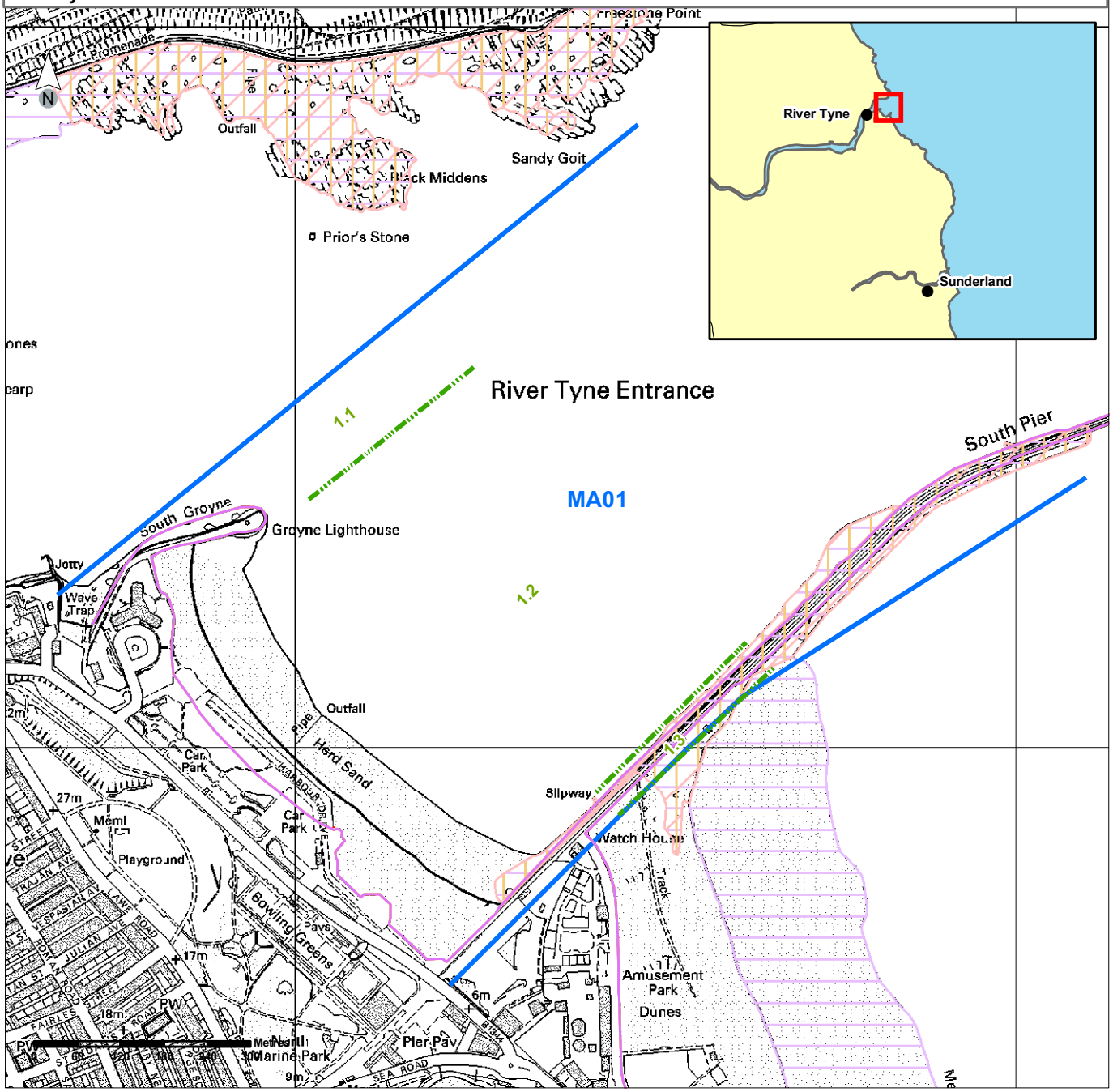
Economics		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages/ Cost £k PV	1093	422	434	1949
	Preferred Plan Damages £k PV	400	0	0	400
	Benefits £k PV	693	422	434	1549
	Costs of Implementing plan £k PV	487	5	34	526
Costs estimated for retreat of existing line. Description of damage and benefits under preferred plan: • Loss of some car parking area by 2025. • Protects car parking, with reduced overtopping risk. • Protects hotel and properties within the river. • Maintains the road link. Further examination of costs, undertaken concurrent with the development of the SMP2, indicates a possible value of £2,100k. The value would include amenity enhancement.					
Heritage	No loss of heritage structures.				
Amenity	Improved access and amenity of area.				

POTENTIAL WATER FRAMEWORK DIRECTIVE ISSUES (see Appendix F for details)

Impact on water quality	No
Impact of geomorphology and hydrodynamics	Yes at a local scale

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan reference should be made to the baseline data.

River Tyne to Flamborough Head Shoreline Management Plan
Management Area MA01
Policy Units 1.1-1.3



POLICY (FOR FULL DETAILS SEE RELEVANT POLICY STATEMENT)		
From Present Day:	Medium - Term:	Long - Term:
Maintain the south groyne and south pier. Investigate an appropriate realigned position for defence compatible with proposed land use.	Maintain the south groyne and south pier. Hold the realigned defence.	Maintain the south groyne and south pier. Hold the rear line of defence.

Key:

Predicted Shoreline Mapping*
Preferred Plan
20 Years
50 Years
100 Years

Management Areas
Policy Units
NNR
SSSI
EA Flood Zone - Sept 05

SPA
RAMSAR
SAC
Scheduled Ancient Monuments

ROYAL HASKONING

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ENVIRONMENTAL ASSESSMENT - PREFERRED PLAN

Summary of Alone Appropriate Assessment for Natura 2000 sites (Further details provided in Appendix K)

SPA and Ramsar Site Feature	Annex 1 bird species and regularly occurring migratory birds not listed on Annex 1 (little tern, ruddy turnstone, purple sandpiper)	
Sub Feature(s) Boundary and linear features and littoral rock associated with South Pier	**Sensitivity** Habitat loss associated with holding the line of the pier (i.e. sea level rise as a result of climate change)	**Conservation Target** To maintain the site fabric to support purple sandpiper (i.e. roosting habitat associated with the pier structure)
Potential effect of policy	The policy suite supports the natural development of the bay, however, holding the line of the pier (Policy 1.3) does not necessarily ensure that specific habitat utilised by roosting birds (particularly purple sandpiper) will be retained following sea level rise.	
Preventative Measures Ensure that appropriate roosting habitat is incorporated into any future requirement to raise the level of the pier (i.e. boulder habitat)	**Mitigation** None	**Implications for the integrity of the site** Provided that the described preventative measures are incorporated into the future management of the pier, it can be concluded that the proposed policy suite will result in no adverse effects on the integrity of the European site.

ASSESSMENT OF OTHER DESIGNATIONS

MANAGEMENT AREA: MA01

	Description of Designation	Effect of Preferred Plan	Measures to offset effects /impacts Compensation/Mitigation/Alternative Solution
National	The north of the Tyne Estuary is part of the Northumberland Shore SSSI. South Pier is part of Durham Coast SSSI, designated for Magnesian Limestone and associated vegetation, species rich dune system, invertebrates, nationally important numbers of wintering shore birds and breeding little terns.	No perceived effect. Encourages more natural development of the bay	None proposed
Local	none	N/A	None proposed

ACTION PLAN MANAGEMENT AREA 01

Action	By when	Responsibility	Cost £k
Revise strategy for Littlehaven, with intention to realign defence. *Deteriorating defence and overtopping. Ensure integration with redevelopment. Maintain navigation and water sports*	2007	South Tyneside Council	30
Schemes: • Develop new promenade on realignment	2009	South Tyneside Council	2100

Section 7 provides a summary of actions grouped by operating authority areas. Monitoring is discussed in section 7 and includes both that associated with the specific actions identified above, together with that recommended for overall management of the area.

Location reference:	Herd Sands
Management Area reference:	MA02
Policy Development Zone:	1

SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

PLAN: The intent of the plan is to maintain the primary recreational and tourism function of the area, including maintenance of recreational facilities, car parking and water and beach use; recognising the important ecological integrity of the dune systems and the long term natural retreat of the coast line. Key pressures will be for the retreat of the dunes to north and south and the increasing pressure on defence at the southern section of the bay. The plan therefore highlights the need for planning constraint in the area behind the northern dunes and the need to relocate the hard recreational area. Similarly the plan identifies the need to develop defence of the southern frontage in conjunction with the development of the Gypsies Green Stadium. The plan recommends holding the line of the main promenade but with the need to defend the southern end of this in manner compatible with an overall managed realignment of the defence over the south of Herd Sands. The importance of Trow point is highlighted in this and, subject to monitoring erosion of this control, the need to reinforce control at this point.

PREFERRED POLICY TO IMPLEMENT PLAN:

From present day:	Maintain the south pier as management area 1. Manage access to dunes. Maintain defences along the frontage.
Medium term	Maintain the south pier as management area 1. management of dunes to north Realign the existing hard defence in front of Gypsies Green and re-establish defence in a more sustainable manner. Maintain control at Trow Point
Long-term	Maintain the south pier as management area 1. management of dunes to north Hold the realigned line of defence. Maintain control at Trow Point

SUMMARY OF SPECIFIC POLICIES

Policy Unit		**Policy Plan**			
		2025.	**2055**	**2105**	**Comment**
2.1	Herd Sands North	HTL	HTL	R	Maintain the integrity of the dune defence
2.2	Herd Sands South	HTL	MR	HR	Retreat to maintain the value of the beach
2.3	Trow Point (north)	R	MR	HR*	Maintain longer term control function

Key: HTL - Hold the line, A - Advance the line, R - Retreat, NAI – No active intervention
* HR – Hold the Line on a retreated alignment, MR – Managed Realignment

CHANGES FROM PRESENT MANAGEMENT

The SMP2 identifies the increasing pressure on the dunes to the north and the existing defence to the south. Defence of either of these could result in loss of beaches. This will work to the detriment of the area. The defence policy for this frontage has been changed to one of management and managed realignment but with the intent of maintaining the defence to the principal assets.

IMPLICATION WITH RESPECT OF BUILT ENVIRONMENT

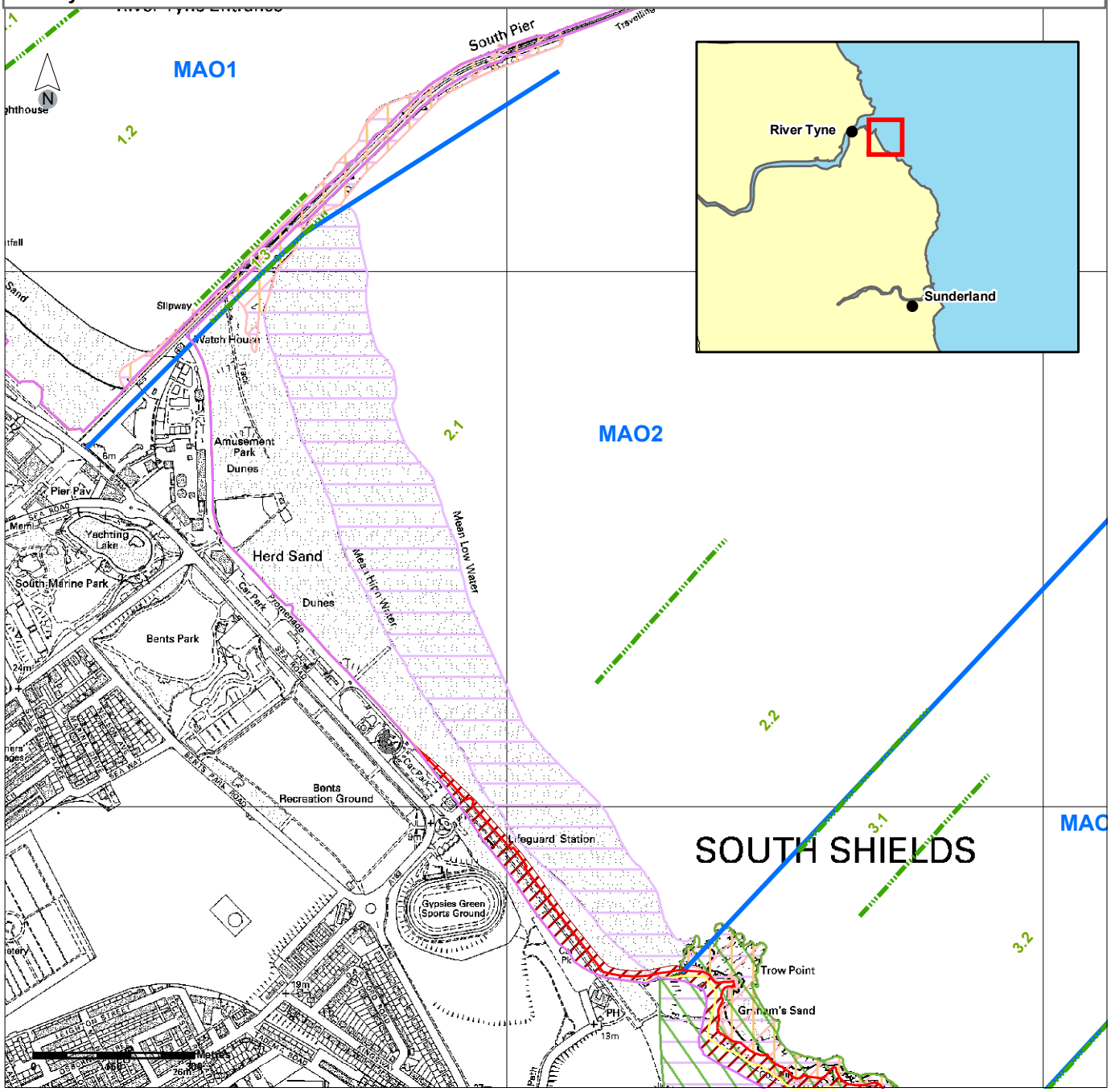
Economics		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages/ Cost £k PV	0	0	9	9
	Preferred Plan Damages £k PV	0	0	4	4
	Benefits £k PV	0	0	5	5
	Costs of Implementing plan £k PV	10	350	4	364
Costs estimated for retreating the line. Description of damage and benefits under preferred plan: • Relocation of recreational area between 2055 and 2105. • Possible loss of some car parking to southern end but retention of main car parks. • Possible loss of lifeguard station by 2055 • Possible loss of public house at southern end of Bents Recreation Ground by 2055 • Main promenade and assets retained. • Public house to southern end of frontage protected. • Commercial area to south of South Pier retained.					
Heritage	No loss of heritage structures.				
Amenity	• Maintained use of water sports and beach use over the whole frontage. • Recreational and tourism facilities retained.				

POTENTIAL WATER FRAMEWORK DIRECTIVE ISSUES (see Appendix F for details)

Impact on water quality	No
Impact of geomorphology and hydrodynamics	No

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan reference should be made to the baseline data.

River Tyne to Flamborough Head Shoreline Management Plan
Management Area MA02
Policy Units 2.1-2.2



POLICY (FOR FULL DETAILS SEE RELEVANT POLICY STATEMENT)

From Present Day:	Medium - Term:	Long - Term:
Maintain the south pier as management area 1. Manage access to dunes. Maintain defences along the frontage.	Maintain the south pier as management area 1. Management of dunes to north. Realign the existing hard defence in front of Gypsies Green and re-establish defence in a more suitable manner. Maintain at Trow Point.	Maintain the south pier as managment area 1. Management of dunes to north. Hold the realigned line of defence. Maintain control at Trow Point.

Key:
Predicted Shoreline Mapping*
Preferred Plan
20 Years
50 Years
100 Years
Management Zones
Management Areas
Policy Units
NNR
SSSI
EA Flood Zone - Sept 05
SPA
RAMSAR
SAC
Scheduled Ancient Monuments

ROYAL HASKONING

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ENVIRONMENTAL ASSESSMENT – PREFERRED PLAN

Summary of Alone Appropriate Assessment for Natura 2000 sites (Further details provided in Appendix K)

SPA and Ramsar Site Feature	Annex 1 bird species and regularly occurring migratory birds not listed on Annex 1 (little tern, ruddy turnstone, purple sandpiper)	
Sub Feature(s) Boundary and linear features and littoral rock associated with the Northumbria Coast SPA and Ramsar (i.e. South Pier)	**Sensitivity** This Management Area sits adjacent to an area of the Northumbria Coast SPA and Ramsar site (i.e. the South Pier structure), however, policies for the retention of the South Pier structure (and the conservation features of interest therein) fall within MA01 and as such the policy suite within MA02 already presumes the retention of this structure.	**Conservation Target** To maintain the site fabric to support purple sandpiper (i.e. roosting habitat associated with the pier structure)
Potential effect of policy	This policy suite assumes that the features of conservation interest will be retained as a result of policies described within MA01. As such policies within MA02 are not expected to have any further impact upon the Northumbria Coast SPA and Ramsar.	
Preventative Measures Described within MA01	**Mitigation** None	**Implications for the integrity of the site** No adverse effects are anticipated on the integrity of the European site.

SAC Site Feature	Annex 1 habitat: vegetated sea cliffs of the Atlantic and Baltic coasts	
Sub Feature(s) Neutral lowland grassland	**Sensitivity** Loss of vegetated sea cliff habitat as a result of dune roll back to the north of the site.	**Conservation Target** The overall length and / or area of the cliff habitat of the site is maintained taking into account natural variation.
Potential effect of policy	This policy suite supports the long-term natural development of the dunes. The southern end of this dune habitat borders the vegetated sea cliff interest of Trow Point (Durham Coast SAC) and would be expected to result in the natural loss of a proportion of this habitat.	
Preventative Measures None	**Mitigation** None	**Implications for the integrity of the site** Natural development of coastline, therefore, no adverse effects are anticipated on the integrity of the European site.

ASSESSMENT OF OTHER DESIGNATIONS

MANAGEMENT AREA: MA02

	Description of Designation	Effect of Preferred Plan	Measures to offset effects /impacts Compensation/Mitigation/Alternative Solution
National	Herd Sands is part of the Durham Coast SSSI, containing sand dunes	2.2 potential pollution of foreshore due to landfill of unknown nature if eroded. The managed realignment of defences will be with the intent of provide space for dunes to expand to. Holding the line in the long term will result in squeeze once again.	As the medium term is likely to see increase in space available for dunes no mitigation is proposed. However, the long term view will require consideration of environmental interests within managed realignment.
Local	none	N/A	None proposed

ACTION PLAN MANAGEMENT AREA MA02

Action	By when	Responsibility	Cost £k
Establish plan for dune management, including long term plan for recreation area. *Maintain integrity of dunes. Long term roll back. Integration of recreational use*	2007	South Tyneside Council	10
Outline strategy for Herd Sands developed in conjunction with land use plan. *Ensure integration with redevelopment. Maintain function of dunes and use of beach and water sports. Sustainable defence line.*	2012	South Tyneside Council	25
Schemes:			
• Dune management	2008	South Tyneside Council	200
• Initial scheme implementation to the south of Herd Sands	2011	South Tyneside Council	200

Section 7 provides a summary of actions grouped by operating authority areas. Monitoring is discussed in section 7 and includes both that associated with the specific actions identified above, together with that recommended for overall management of the area.

Location reference:	Trow
Management Area reference:	MA03
Policy Development Zone:	1

SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

PLAN: The intent of the plan is to manage the potential pollution problem posed by erosion of in fill to Trow Quarry. This is subject of a more detailed on going appraisal study. Findings of the SMP2 indicate that protection of the frontage is likely to be necessary in the short term but in the longer term management implementation will depend on the actual erosion rates of Trow Point in particular. This policy, in this area would allow information to be obtained on these erosion rates over a manageable time period. The aspiration is that in the medium to long term there would be a policy of managed realignement but this approach to management would need to be confirmed by the detailed study.

PREFERRED POLICY TO IMPLEMENT PLAN:

From present day:	Maintain and upgrade the natural protection to the frontage.
Medium term	Review management with a presumption of active realignment.
Long-term	Managed realignment of the whole frontage.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			
		2025.	**2055**	**2105**	**Comment**
3.1	Trow Point (south)	R	MR	HR*	As required for management area MA2
3.2	Trow Quarry	HLT	MR	MR	Subject to detailed appraisal.

Key: HTL - Hold the line, A - Advance the line, R - Retreat, NAI – No active intervention
* HR – Hold the Line on a retreated alignment, MR – Managed Realignment

CHANGES FROM PRESENT MANAGEMENT

The policy changes from that in SMP1 to Managed realignment. Initially, allowing time for further monitoring of erosion rates and development the long term approach, the policy of Hold the line is recommended; in line with the emerging strategy. This recognises the increasing difficulty of management of the inspection and removal approach currently being undertaken. This short term policy for Hold the Line is within the longer term context for managed realignment of the frontage.

IMPLICATION WITH RESPECT OF BUILT ENVIRONMENT

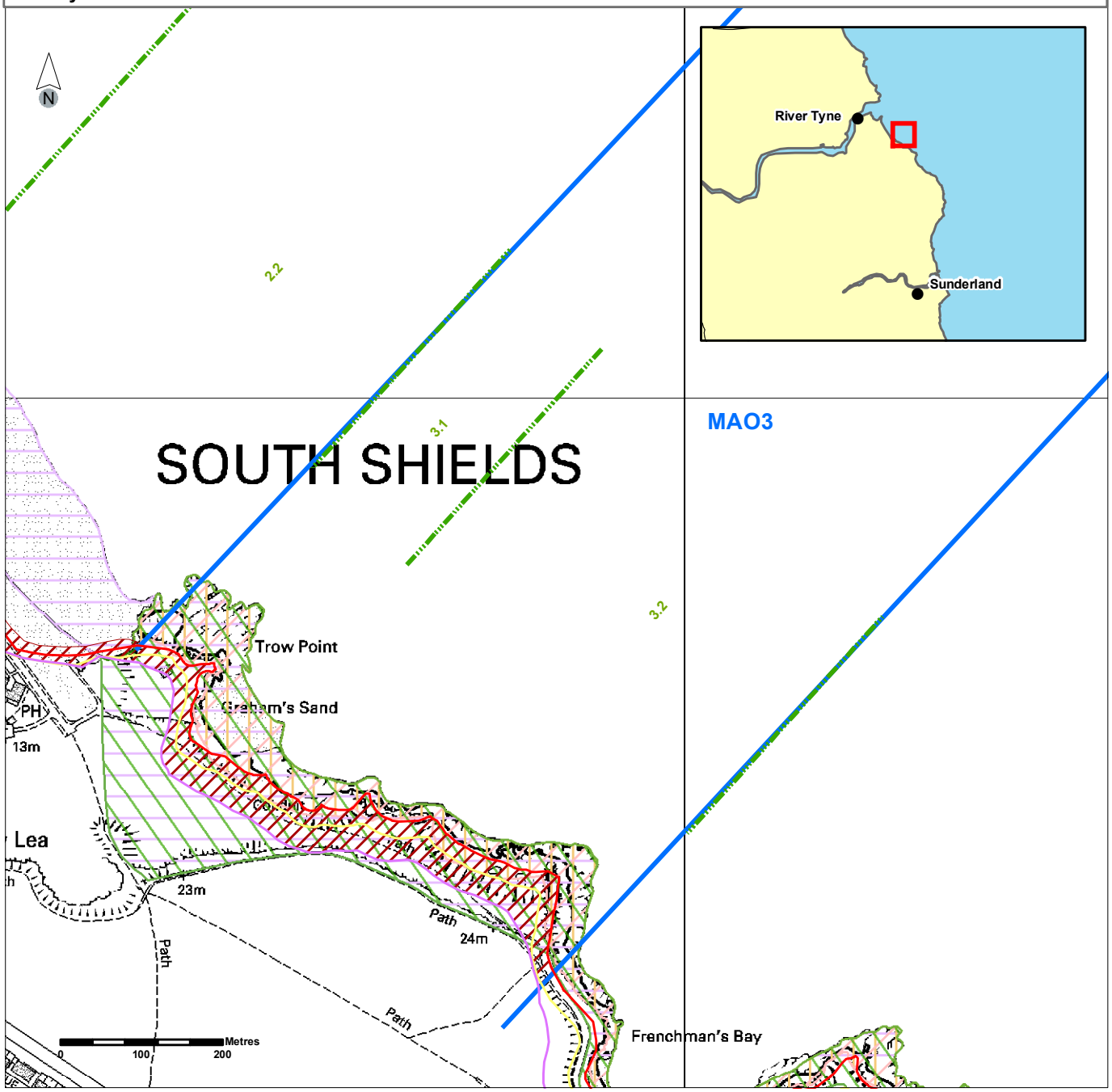
Economics		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages/ Cost £k PV	Deferred pending the outcome of the detailed appraisal.			
	Preferred Plan Damages £k PV				
	Benefits £k PV				
	Costs of Implementing plan £k PV				
Description of damage and benefits under preferred plan: • Cost and potential impact of excavation.					
Heritage	• Potential loss of gun emplacement.				
Amenity	• Reduction of amenity area				

POTENTIAL WATER FRAMEWORK DIRECTIVE ISSUES (see Appendix F for details)

Impact on water quality	Yes, potentially at a local scale
Impact of geomorphology and hydrodynamics	Yes, potentially at a local scale.

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan reference should be made to the baseline data.

River Tyne to Flamborough Head Shoreline Management Plan
Management Area MA03
Policy Units 3.1-3.2



POLICY (FOR FULL DETAILS SEE RELEVANT POLICY STATEMENT)

From Present Day:	Medium - Term:	Long - Term:
Maintain and upgrade the natural protection to the frontage.	Review management with a presumption of active realignment.	Managed retreat of the whole frontage.

Key:
Predicted Shoreline Mapping*
Preferred Plan
20 Years
50 Years
100 Years
Mangement Zones
Management Areas
Policy Units
NNR
SSSI
EA Flood Zone - Sept 05
SPA
RAMSAR
SAC
Scheduled Ancient Monuments

ROYAL HASKONING

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ENVIRONMENTAL ASSESSMENT – PREFERRED PLAN

Summary of Alone Appropriate Assessment for Natura 2000 sites (Further details provided in Appendix K)

SPA and Ramsar Site Feature	Annex 1 bird species and regularly occurring migratory birds not listed on Annex 1 (little tern, ruddy turnstone, purple sandpiper)	
Sub Feature(s) Littoral rock (exposed cobble and boulder habitat between Trow Point and Frenchman's Bay)	**Sensitivity** Loss of habitat, particularly roosting habitat for purple sandpiper, i.e cobble and boulder beaches	**Conservation Target** Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of regularly occurring migratory bird species. Including rocky shores with associated boulder and cobble beaches.
Potential effect of policy	This policy suite supports the long-term natural retreat of the frontage and also the natural roll back of the cobble beaches. The policy does however advocate a short term hold the line policy, the impacts of which will need to be fully considered at the strategy stage.	
Preventative Measures To provide a assessment of the HTL policy at the strategy stage within this area.	**Mitigation** None	**Implications for the integrity of the site** Natural development of coastline, therefore, no adverse effects are anticipated on the integrity of the European site.

SAC Site Feature	Annex 1 habitat: vegetated sea cliffs of the Atlantic and Baltic coasts	
Sub Feature(s) Neutral lowland grassland (between Trow Point and Frenchman's Bay)	**Sensitivity** Loss of vegetated sea cliff habitat as a result of natural erosion	**Conservation Target** The overall length and / or area of the cliff habitat of the site is maintained taking into account natural variation.
Potential effect of policy	This policy suite supports the long-term natural retreat of the cliffs.	
Preventative Measures None	**Mitigation** None	**Implications for the integrity of the site** Natural development of coastline, therefore, no adverse effects are anticipated on the integrity of the European site.

ASSESSMENT OF OTHER DESIGNATIONS

MANAGEMENT AREA: MA03

	Description of Designation	Effect of Preferred Plan	Measures to offset Effects /impacts Compensation/Mitigation/Alternative Solution
National	Trow is part of the Durham Coast SSSI, geological importance.	3.2 Potential pollution of foreshore due to landfill. In the medium term the implementation of HTL on a localised basis to avoid contamination of the foreshore could impact features of the SAC and SSSI.	The long term option of managed realignment should be pursued as the preferred option. This will be examined in more detail in the dedicated coastal strategy investigation.
Local	none	N/A	None proposed

ACTION PLAN MANAGEMENT AREA MA03

Action	By when	Responsibility	Cost £k
Design development. Establish specific design criteria and undertake design. *Develop an appropriate immediate action to address potential contamination. Development of long term realignment*	on-going	South Tyneside Council	150
Schemes: • Short term defence	2008	South Tyneside Council	1600

Section 7 provides a summary of actions grouped by operating authority areas. Monitoring is discussed in section 7 and includes both that associated with the specific actions identified above, together with that recommended for overall management of the area.