Appendix C

Technical Note on Contaminated Land Assessment

Review of potential land contamination risks to coastal waters resulting from Shoreline Management Plan No Action Intervention policies

Cell 1 WFD Studies – Review of potential land contamination risks to coastal waters resulting from Shoreline Management Plan No Action Intervention policies

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Introduction and Background

The purpose of this this Technical Memorandum is to identify areas of land contamination that may present a risk to coastal waters as a result of erosion, either currently or in the future within the Coastal Sediment Cell 1 (i.e. Cell 1), which is the coast from the Scottish Border to Flamborough Head. The need for this study was identified in the Strategic Appraisal of the combined environmental effects of implementing the Action Plans in both the Northumberland and North Tyneside Shoreline Management Plan (SMP) SMP2 and the River Tyne to Flamborough Head SMP2 over the whole of Cell 1. The Cell 1 study area and the location of the two SMPs is shown on Figure 1.1, Annex 1.

Land contamination, resulting from either current or historical land use, may present a risk to coastal waters in the following ways:

- Leaching of contaminants from the site to the coastal waters; and/or
- Erosion of the site, releasing debris and contamination directly into the coastal water.

Clearly the coastal management options for each Management Area may have a direct effect upon a potentially[1] contaminated site, for example, in an area "no active intervention" (see methodology for definitions), erosion may be such that in time, a potentially contaminated site is eroded and contaminants released into the coastal waters.

To provide clarity on these potential risks, this study was commissioned as an additional package of work supporting the Cell 1 Strategic Appraisal.

SMP Management Areas and Policies

In developing policy in the SMPs, the coast was divided (at the highest level) into "Policy Development Zones" (PDZ). The Northumberland to North Tyneside SMP is divided into six PDZs, and the River Tyne to Flamborough Head SMP is divided into 12 PDZs. Figure 1.2 shows a schematic of the coastal sub-divisions used in the two SMPs. Within each of these PDZs, the principal management issues needing to be addressed were identified.

[1] The term "potentially contaminated land/site" is used as, whilst desk study sources (old maps, environmental agency records etc) may indicate that there is potential for contamination to be present, in most cases the actual presence of contamination has not been proved.

Within each PDZ, different SMP policies (see below) were considered, always starting with the "No Active Intervention" (NAI) policy as a baseline. A preferred defence management policy (referred to as the preferred policy) was subsequently identified for smaller sections of the coast - Policy Units (PU). This policy defines how that section of coast should be managed over the 100-year[2] life time of the SMP. Due to some inter-dependencies between Policy Units (for example, to justify a policy of allowing retreat to occur in one area may be on the assumption that an adjacent section of coast is held in its existing position), policy units were grouped. Such groups of policy units are defined as "Management Areas" (MA), and are shown on Figure 1.2. The definition of the MA was confirmed at the end of the policy development process. The SMPs include statements providing the understanding of why specific areas of the coast are to be managed in this way and how individual policies work to deliver that intent.

The generic shoreline management policies considered in the SMPs are those defined by Defra (2006), and are represented by the statements:

- No active intervention (NAI): where there is no investment in coastal defences or operations;
- Hold the line (HTL): maintain or change the standard of protection provided by defences. This would include work or operations carried out in front of the existing defences or where, while maintaining existing defences, policies involve operations to the back of defences (such as secondary flood defences) as an essential part of maintaining the current defence system;
- Advance the line (ATL): build new defences on the seaward side of the original defences; and
- Managed realignment (MR): allow the shoreline to move backwards or forwards, with management to control or limit movement.

The focus of this study is to identify potentially contaminated sites within MAs where NAI policies are proposed within the SMP2s and which have the potential to cause harm to coastal waters.

Limitations

The key limitation of this stage of the study is that the assessment was limited to only those areas of the Cell 1 where NAI policies are proposed.

Another limitation is that this exercise is based upon desk study data only. It is considered that some of the sites may have ground investigation available; at this stage, such information has not been collated or considered.

Methodology

The study area is very large; approximately 300km of coastline, encompassing nine local authorities. Clearly there is potential for a large number of potentially contaminated sites to be present within the influencing distance of potential erosion within the lifetime considered by the study. Therefore, it was considered that a method for identifying the relative hazards of these sites and the application of a simple risk assessment model to indicate the key sites most likely to be causing harm was required.

A methodology was developed with reference to the guidance in CIRIA 718, "Guidance on the management of landfill sites and land contamination on eroding or low-lying coastlines" although our study is at a strategic level and therefore a lot of the detail in CIRIA 718 is not directly applicable at this stage. The methodology also follows the UK approach to assessing the risk of land contamination, as detailed in the "Model Procedures for the Management of Land Contamination" (CLR11) (Environment Agency, 2004).

[2] Subdivided into short term (0 to 20 years), medium term (20 to 50 years) and long term (50 to 100 years)

It was also known that a great deal of relevant information already existed, mainly collected by Local Authorities as part of their duties under Part IIA of the Environment Protection Act 1990[3], and also as part of the data used to produce the SMPs. To reduce repetition of previous work, the methodology was developed to utilise as much of this existing information as possible.

The size of the study area, combined with the multiple data sets, required that GIS be used to manage and analyse the information. The GIS datasets used are given in Table 1.

Table 1 – GIS data-sets

Data set	Sources	Description
Natural England Designated Sites	Natural England	Includes Special Protection Areas (SPA), RAMSAR sites, and Special Areas of Conservation (SAC)
WFD	Environment Agency	Details coastal, transitional (and other) waterbodies
Clifftop Regression lines	NECMP (North East Coastal Monitoring) report. on Analysis of 1940s and 2015 Aerial Photography	Maps predicted regressions lines for 2025, 2055 and 2105. Also maps areas where recession detected/no regression or no data
Policy and Management Units	SMP	Northumberland and North Tyneside Shoreline Management Plan (SMP) SMP2 and the River Tyne to Flamborough Head SMP2
Alum Quarry Locations	Historic England	Maps the location of Alum Quarries and works.
Historic Landfills	Environment Agency	This shows the locations of most (not all) historic and current landfills
Northumberland contaminated land	Northumberland Council	Shows areas of potentially contaminated land based largely on historical mapping gathered as part of the councils duties under Part IIA of the Environmental Protection Act 1990 (see footnote 3)
Sunderland contaminated land	Sunderland Council	
North Tyneside contaminated land	North Tyneside Council	
County Durham contaminated land	County Durham Council	
Redcar and Cleveland contaminated land	Redcar and Cleveland Council	
Scarborough contaminated land	Scarborough Council	
Hartlepool contaminated land	Hartlepool Council	
South Tyneside contaminated land	South Tyneside Council	

[3] Part IIA required local authorities to inspect their land for contamination and, if required, pursue remediation. To do this potential land had to be identified and then prioritised. This involved the collection of a large amount of data (mainly historical mapping), from which sites which may be contaminated were identified. Most Local Authorities used a GIS to manage this process, and a data layer was produced showing sites that may be potentially contaminated. Local authorities then prioritised the most urgent sites and undertook further investigations. It is important to note that whilst these sites have the potential to be contaminated their inclusion within the local authorities GIS does not mean that they are actually contaminated (further investigation is required to inform this). To avoid unnecessary property blight this GIS information is not publically available.

To assess the high number of likely sites, an initial risk ranking approach was taken, focusing on:

- Contamination Potential
- Erosion Risk
- Receptor Sensitivity

As many sites were expected to be generated this study only considers those sites located in management areas where NAI policies are recommended in the SMP2s.

Contamination Potential

The following datasets were used to assess sites with contamination potential within the Cell 1 study area:

- Local Authority Part IIA (see footnote 3) investigations
- Environment Agency Current and Historic Landfills
- Locations of Alum Quarries

In most cases the Local Authority Part IIA dataset included GIS shapefiles of potential land contamination sites (identified mainly from historical mapping as part of their Part IIA investigations) which included a basic description of the site, for example quarry, railway land, landfill etc.

Based on these data sets a rank was assigned to each identified site based on Table 2 below.

Table 2 – Contamination potential ranking

Rank	Score	hazard	example	example sites
Rank 1	1	very low	non-hazardous pollutants/small amounts of contamination	General industrial land, Made Ground of unknown origin
Rank 2	2	low	non-hazardous pollutants/medium amounts of contamination	Engineering works, railway land
Rank 3	3	medium	hazardous substances/low amounts of contamination, non-hazardous pollutants/high amounts of contamination	Chemical works, some areas of fill/landfill, fuel storage (new)
Rank 4	4	high	hazardous substances/medium amounts of contamination	Fuel storage facilities (old), inert landfill
Rank 5	5	very high	hazardous substances/high amounts of contamination	Landfill, gasworks

Erosion Risk

Just because NAI policies exist for a Management Area, this does not imply that the whole coastline will be eroded, just that there will be no intervention. If an area of potential contaminated land is identified within an NAI Management Area, the location of the potentially contaminated land was considered relative to likely erosion. To inform this, erosion risk to the identified sites with contamination potential was mainly taken from the predicted cliff top recession lines dataset. Some judgement was required, for example where a site was located within the tidal zone it was considered that erosion was likely to be happening. Also for areas where there is no data, a judgement was made as to whether erosion was likely in the near future or unlikely; this was simply based on location and current defences. Table 3 details how erosion potential was ranked.

Table 3 – Erosion potential ranking

Rank	score	erosion risk	example
Rank 1	1	none	no risk of erosion/erosion considered unlikely given location but no data
Rank 2	2	low	erosion by 2105
Rank 3	3	medium	erosion by 2055
Rank 4	4	high	erosion by 2025/no data
Rank 5	5	very high	currently eroding

Receptor Sensitivity

Whilst the receptor is the same for all sites, i.e. coastal waters (all controlled waters) the sensitivity of the receptor was based upon the proximity of the site to international nature conservation designations. Whilst it is an offence to pollute any controlled waters, as we were only considering sites close to the coastal zone, all of the sites identified are considered to have the potential to cause pollution of controlled waters. To further refine the assumed sensitivity of the coastal waters near to the identified potentially contaminated sites, the following datasets were used:

- RAMSAR sites
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)

No distinction was made between the sites, so, for example a RAMSAR site was not considered more sensitive than an SPA; rather the distance from a designated site was ranked as described in Table 4. In addition the proximity of Blue Flag beaches were noted in the assessment (but not taken into account within the risk classification).

Table 4 –Site sensitivity ranking

Rank	Score	Site sensitivity	example
Rank 1	1	very low	greater than 1km from designated site
Rank 2	2	low	within 1km of designated site
Rank 3	3	medium	within 250m of designated site
Rank 4	4	high	boundary of designated site (say within 50m)
Rank 5	5	very high	within designated site

Risk Calculation

The risk calculation for each site was simply contamination potential (**source**) x erosion potential (**pathway**) x site sensitivity (**receptor**) divided by 1.25 (to give score between 1 and 100).

Key Findings and Discussion

The initial risk ranking output is shown on Table 5 (note that the reference number locates the site within the GIS) and in accompanying Figures 2.1 to 2.3. This clearly identifies the sites which, based on the information analysed, are likely to be presenting the highest risk.

Some 96 sites were identified. The highest ranking sites (presenting the highest risk) tend to be old landfills, usually located with a SAC, and within the tidal zone. For example the highest ranking site, Blackhall Colliery, is located within Durham Coast SAC and appears to be partly within tidal zone.

Some of the other high ranking sites, for example those located in the Holy Island sands, appear likely to be smaller, possibly older areas of infilled land, and may present less of a risk than their ranking indicates. All of these sites require further investigation (see further investigations of top 5 ranked sites) to provide further clarification on the actual risks presented.

There are several known eroding areas of land contamination in areas where different shoreline management policies apply, for example, South Tyneside sites at Trow Quarry (Managed Realignment/hold the line) and the eroding landfill near the south of Sunderland City Council's area (Hold the Line), all of which are in areas where the NAI policy does not apply.

Trow Quarry has had remediation works undertaken and is used as a case study in CIRIA 718. At Trow Quarry the landfill material was being eroded and being deposited on nearby beaches. Both the debris and contamination were considered hazardous to health. Remedial works included construction of rock revetment and regrading of the sea facing slope to make it more stable.

The GIS created for this study is a powerful tool for quickly assessing areas of coast where there is a risk of erosion. In the present study, it has been applied to areas with NAI policies, but it could in future be used to also consider locations where managed realignment is planned. All areas at risk of coastal erosion/realignment are planned should be examined and areas of potential contamination assessed using this methodology. This will allow management options to be modified, if required, to ensure areas of potential contamination do not present a long term risk to coastal waters.

Further investigations on Top 5 ranked sites

For the next stage of the work it was planned to select the top five ranked sites and do some further investigation to determine: have they been investigated, has a risk assessment been undertaken, have any mitigation measures been completed (e.g. repairs to defences etc.)? Enquiries were made to the relevant Local Authority contacts to obtain further information and this is incorporated below.

Three of the top ten sites are within the dune system of Holy Island, therefore it is recommended that only one of these sites be investigated further. The top five sites recommended for further investigation are:

- Blackhall Colliery (historic Landfill) – reference HR46 RTFH PDZ4 MA10
- Old Harbour Quarry - reference HR21 RTFH PDZ2 MA5
- The Dune Tip (historic Landfill) – reference HR7 NNT PDZ2 MA6
- Area G East of Horden (historic landfill) – reference HR42 RTFH PDZ4 MA10
- Nessend (infilled pit, unknown fill) – reference HR60 NNT PDZ1 MA5.

Subject to the findings of the further investigations mentioned above, further investigations may be proposed that are beyond the scope of the current study. For example, the next stage could involve a full desk study report, to include Envirocheck report, discussions with the Environment Agency and relevant Local Authority and more detailed consideration of erosion risks. This will require that a site visit be undertaken. The aim of this stage would be to provide further detail on the actual potential for contamination, along with the actual likelihood of erosion taking place that could lead to a contamination event occurring. Based on the findings of this stage it may be that further assessment of the remaining identified and ranked sites are recommended.

Blackhall Colliery (historic Landfill) – reference HR46 RTFH PDZ4 MA10

This landfill is in an area which has been largely cleaned up following the closure of Blackhall Colliery. Just to the south was to the location of an elevator system which was used to dispose of colliery spoil directly into the sea (note that this area is site Blackhall Colliery 2 - HR47 RTFH PDZ4 MA10). Site HR46 is recorded as a historic landfill on the EA "what's in your backyard" website.

The Blackhall Beach area was used in several films (Get Carter, Alien 3) due to its polluted/industrial nature, but since the closure of the colliery it has largely been remediated as part of the "Tuning the Tides" project. This is explained in the following article form the Daily Mail, http://www.dailymail.co.uk/news/article-2051481/Get-Carters-polluted-Black-Beaches-Durham-win-award-outstanding-beauty.html

The colliery spoil was clearly deposited into the sea directly, so waste deposits were within the tidal zone.

Recommendation

Due to the extensive clean up, it is suggested that the contamination potential for this site is overestimated, and should be reduced from 5 to 1, giving a Risk Ranking score of 20. It is likely that no further works will be required at this site other than ongoing maintenance.

Old Harbour Quarry - reference HR21 RTFH PDZ2 MA5

The Old Harbour Quarry, South Tyneside , has been previously identified in the South Tyneside Coastal Management Strategy 2007-2012, as a potentially contaminated site that is eroding. The Coastal Zone Management Strategy states, "Harbour Quarry, as it was known, was filled with quarry and mining material during the reclamation of Whitburn Colliery. The walls of the quarry have been breached in places and remedial action has been taken in the form of revetment at Potter's Hole and concrete filling of caves."

The South Tyneside ***"Flood and Coastal Risk Management Strategy (2017-2022)"*** identifies that the quarry forms part of Whitburn Coastal Park. It is understood that the National Trust is responsible for managing the land on behalf of the Council. The land has been reclaimed from the former Whitburn Colliery and Old Harbour Quarry. Exact details of the reclamation (by the former Tyne and Wear County Council) are unknown. Some coal was removed from the site but it can be reasonably expected that spoil was used to form the current landscape.

Cave development has been slowed to the south of Souter Lighthouse by using concrete defence structures. There is evidence of rock armour having been used at Potter's Hole and Byer's Hole to minimise wave impact on softer material. In several places the cliff slope has been altered and a geotextile used to encourage stability.

These defensive measures have been affected by erosion and their integrity has reduced. Wave action appears to be undercutting the concrete defences near Souter Lighthouse and the rock armour at Potter's Hole is no longer proving effective. In addition, crown holes have reached the surface from deepening caves near Byer's Hole. Cave development is a natural process but is approaching the point where work may be required, where it can be justified, to prevent further expansion into the landward fill materials. Processes here are occurring naturally and do not affect any major assets. Therefore, the only potential risk is via mine material, out-flowing into the sea, if the quarry wall is significantly breached. A site investigation in 2007 found the site not to be a contaminated land site as defined under part 2A of the Environmental Protection Act 1990. The current state of defences is assessed through coastal monitoring

The "***Cell 1 Regional Coastal Monitoring Programme: Walkover Visual Inspections of Assets"*** indicates that at Old Harbour Quarry the sink hole where a cave has breached the limestone cliff into the infilled former quarry has not changed significantly since 2010. Following investigations contamination risks relating to the sink hole were found to be low and a capital scheme was not

justified. The cliff edge warning signs and rails have been moved back to include the sink hole since the 2010 inspection. Other sink holes may occur in future and the frontage should be monitored and appropriate action to manage risks taken.

Recommendation

Downgrade contamination potential to 2 bringing the risk ranking down to 32. It is likely that no further works will be required at this site other than ongoing maintenance.

The Dune Tip (historic Landfill) – reference HR7 NNT PDZ2 MA6

No real info from EA website other than marked as a landfill. Shown as a refuse tip within dunes/tidal zone on old mapping. No information readily available.

Recommendation

A site visit is recommended to confirm the online findings.

Area G East of Horden (historic landfill) – reference HR42 RTFH PDZ4 MA10

Historic Landfill, inert and industrial waste 1972-1973 (EA website). Part of the Horden Colliery site, but no information found relating to this specific area. Historic maps show no obvious signs of filling.

Infilling appears to be over a stream.

Recommendation

A site visit is recommended to confirm the online findings.

Nessend (infilled pit, unknown fill) – reference HR60 NNT PDZ1 MA5.

Small quarry – looks to have been infilled by mid 1920's. Looks to have been a small limestone quarry to supply a lime kiln. From online photos there does not appear to be a significant amount of infill.

Recommendation

Given the age and likely small amount of infill the contamination potential can be reduced to 1, reducing the risk ranking to 20. A site visit is recommended to confirm the online findings.

Recommendations for further refinement of risk ranking

Based on the above investigations of the top 5 sites, it is recommended that all sites with a risk ranking score above 40 should have further investigations undertaken. At this stage this could consist of a short web-based search and an enquiry to the relevant Local Authority to ascertain whether the site has been investigated and/or remediated. It is considered that this could significantly lower the risk ranking of some sites to allow efforts to be focused on those likely to be a higher risk.

Recommendations for future use of the GIS

The GIS represents a valuable resource for considering the effect of shoreline management policies on potential land contamination. The initial risk ranking should be extended in future to include sites across all of Cell 1, not just areas of NAI. For areas where managed realignment or retreat is planned it will be useful to identify sites that may have the potential to cause contamination, and which in turn may need additional protection or a change in management action.

For areas where defences are planned, the GIS could also be used as part of early feasibility design to identify areas of potential contamination in the vicinity of the planned defences, and allow the costs of dealing with these sites to be built into the construction estimates.

Table 5 – Risk Ranking Results: risks to coastal waters from sites with contamination potential where No Action Intervention shoreline management policies apply within the Cell 1 study area.

Note – The top 5 have been edited and updated to include more detailed information. Where this reduces the ranking score this is recorded in green.

Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
Blackhall Colliery	Durham	Historic Landfill, within Durham Coast SAC, landfill appears to be partly within tidal zone	HR46 RTFH PDZ4 MA10	5 (1)	5	5	100 (20)	Further desk based investigation (urgent). Following further desk study it was found that the contamination potential has been significantly reduced by clean-up, reducing ranking score to 20
Holy Island, Shell Road	Northumberland	Historic Landfill no info, within RAMSAR, SAC.	HR6 NNT PDZ1 MA5	5	4	5	80	Further desk Study would likely reduce contamination potential
Old Harbour Quarry	South Tyneside	Landfill/colliery spoil tip	HR21 RTFH PDZ2 MA5	5 (2)	5	4	80 (32)	Remediation works previous undertaken – investigate to check what was done. Following further desk study as part of this study it was found that investigations following breach of the site by a sink hole had identified that contamination risk was low and not sufficient to justify a capital scheme for remediation. As a result the risk score has been reduced to 32.
Holy Island Sands	Northumberland	Historic Landfill no info, within RAMSAR, SAC.	HR6 NNT PDZ1 MA4	5	4	5	80	Further desk Study would likely reduce contamination potential.
The Dune Tip	Northumberland	Historic Landfill no info, within RAMSAR, SAC.	HR7 NNT PDZ2 MA6	5	4	5	80	Further desk study did not identify further information. Site visit recommended.
Links Quarry	Northumberland	Historic Landfill complete from 1986, boundary of SPA and Ramsar	HR16 NNT PDZ5 MA20	5	5	4	80	Further investigation required.

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Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
Area G East of Horden	Durham	Historic landfill, within Durham Coast SAC, landfill appears to be over a stream	HR42 RTFH PDZ4 MA10	5	4	5	80	Further investigation required. Check proximity of stream to landfill. Further study identified this as a Historic Landfill, inert and industrial waste 1972-1973 (EA website). Part of the Horden Colliery site, but no information found relating to this specific area. Historic maps show no obvious signs of filling. A site visit is recommended to confirm the online findings
Nessend	Northumberland	Infilled pit, unknown fill, within dune system of Holy Island,	HR60 NNT PDZ1 MA5	4	5	5	80 (20)	Further desk Study would likely reduce contamination potential. Further study identified this as to be the site of a small limestone quarry to supply a lime kiln, infilled by mid 1920's. From online photos there does not appear to be a significant amount of infill. Given the age and likely small amount of infill the contamination potential can be reduced to 1, reducing the risk ranking to 20. A site visit is recommended to confirm the online findings.
Bowl Hole	Northumberland, no erosion data but on edge of dunes	Cemetery/infilled pit	HR62 NNT PDZ2 MA6	4	5	5	80	Further investigation to check source of fill erosion potential
near Lynemouth	Northumberland	Infilled land/pond unknown fill	HR78 NNT PDZ4 MA19	4	5	5	80	Further desk Study would likely reduce contamination potential
near Spital Point	Northumberland	Area of infilled quarries (unknown fill)	HR80 NNT PDZ5 MA21	4	5	5	80	Further desk Study would likely reduce contamination potential
Land Adjacent To Redcar Blast Furnace	Redcar and Cleveland	Mixed area of landfill (historic), infilled ponds, tip (marked on modern map as disused), factories, alongside Teeside Works, Redcar (Steelworks). Alongside	HR83 RTFH PDZ5 MA13	5	5	4	80	Further investigation recommended

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Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
		SPA/RAMSAR. No erosion data						
Marshall Meadows	Northumberland	Historic Landfill inert from 1988	HR1 NNT PDZ1 MA1	5	4	4	64	Further detail of erosion potential may lower the ranking score
Cocklawburn	Northumberland	Historic Landfill comp 1976 (ind waste), landside of dunes (SPA, RAMSAR, SAC)	HR4 NNT PDZ1 MA3	5	4	4	64	Further investigation recommended
Scremerston	Northumberland	Historic Landfill complete 1981, landside of dunes (SPA, RAMSAR, SAC)	HR5 NNT PDZ1 MA3	5	4	4	64	Further investigation recommended
Lynemouth/Blindburn	Northumberland	Historic Landfill? (coalboard?), boundary of SPA	HR13 NNT PDZ4 MA19	5	4	4	64	Further Desk Study would likely reduce contamination potential
Newbiggin Golf Course	Northumberland	Historic Landfill no info, within 50m from boundary of SPA	HR15 NNT PDZ5 MA20	5	4	4	64	Further Desk Study would likely reduce contamination potential
near Buston Links	Northumberland	infilled pit, unknown fill, no erosion data, but on coastline,	HR71 NNT PDZ3 MA13	4	4	5	64	further assessment of erosion potential could lower ranking
Buzzer House	County Durham	Area of infilled ponds/military land, no erosion data but in dune system,	HR82 RTFH PDZ5 MA13	4	4	5	64	further assessment of erosion potential could lower ranking
infilled marsh/pond	Hartlepool	Infilled marsh/pond 1898	HR51 RTFH PDZ5 MA13	4	4	4	51.2	Further Desk Study may reduce contamination potential
Horden Colliery	County Durham	Coal mine/lignite	HR41 RTFH PDZ4 MA10	2	5	5	40	Further Desk Study may reduce contamination potential, in particular extent of infill – it may not extend to coastal areas of the site.
Sand pit	County Durham	Sand pit - infilled?	HR43 RTFH PDZ4 MA10	2	5	5	40	Further Desk Study may reduce contamination potential

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Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
Blackhall Colliery 2	County Durham	Mining of coal and lignite	HR47 RTFH PDZ4 MA10	2	5	5	40	Further Desk Study may reduce contamination potential
Near Magdalene Fields	Northumberland	Military Land, within coastal zone	HR54 NNT PDZ1 MA1	2	5	5	40	Further Desk Study may reduce contamination potential
Redshin Cove	Northumberland	Mining/Quarrying land (no evidence of landfill), within coastal zone, seaside of erosion lines	HR56 NNT PDZ1 MA3	2	5	5	40	Further Desk Study may reduce contamination potential
Saltpan Rocks	Northumberland	Mining/Quarrying land (no evidence of landfill) within coastal zone, seaside of erosion lines	HR57 NNT PDZ1 MA3	2	5	5	40	Further Desk Study may reduce contamination potential
Cocklawburn 2	Northumberland	Mining/Quarrying land (no evidence of landfill) within coastal zone.	HR58 NNT PDZ1 MA3	2	5	5	40	Further Desk Study may reduce contamination potential
Holy Island	Northumberland	Area of several small areas of metal/quarry works	HR61 NNT PDZ1 MA5	2	5	5	40	Further Desk Study may reduce contamination potential
Boghall Quarry	Northumberland	Mining/Quarrying land (no evidence of landfill)	HR77 NNT PDZ4 MA18	2	5	5	40	Further Desk Study may reduce contamination potential
near Beacon Point	Northumberland	Mining/Quarrying land (no evidence of landfill). Within coastal zone	HR79 NNT PDZ5 MA20	2	5	5	40	Further Desk Study may reduce contamination potential. Given location (rocks near to the sea), there is a good chance this site has not been landfilled.
Peak	Scarborough	Alum works	HR99 RTFH PDZ9 MA25	2	5	5	40	Further Desk Study may reduce contamination potential
near waterside house	Northumberland	Timber yard/works, no erosion data, but on coastline	HR70 NNT PDZ3 MA13	3	4	4	38.4	Further Desk Study may reduce contamination potential
near Birling Links	Northumberland	Military Land	HR73 NNT PDZ3 MA13	3	4	4	38.4	Further Desk Study may reduce contamination potential

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Saltpanhow	Northumberland	Historic Landfill complete 1993, just inland of 2105 erosion line	HR3 NNT PDZ1 MA3	5	2	4	32	Further Desk Study may reduce contamination potential
Snook Point	Northumberland	Mixed uses, sewage works, infilled pits, mining. no erosion data, possibility of erosion as on edge of high water	HR63 NNT PDZ2 MA6	2	4	5	32	Further assessment of erosion potential may reduce risk ranking score
near High Hauxley	Northumberland	Military land (rifle range)	HR76 NNT PDZ3 MA16	2	4	5	32	Further assessment of erosion potential may reduce risk ranking score
Stoupe Brow	Scarborough	Alum works	HR98 RTFH PDZ9 MA25	2	5	4	32	Further assessment of erosion potential may reduce risk ranking score
The Stray, Redcar, Cleveland	Redcar and Cleveland	Historic Landfill, marked as coastal defence - landfill could just be placed fill?	HR84 RTFH PDZ6 MA16	5	5	1	20	Further Desk Study may reduce contamination potential
Whitburn Firing Ranges Whitburn	South Tyneside	Firing ranges, approx. 1km from Seaburn Blue Flag Beach)	HR23 RTFH PDZ2 MA5	2	3	4	19.2	Further assessment of erosion potential may reduce risk ranking score
Seaham Chemical Works(Disused)	County Durham	Chemical works	HR25 RTFH PDZ3 MA9	3	4	2	19.2	
Railway PU9.7	County Durham	Old railway land, poss infilling	HR32 RTFH PDZ3 MA9	2	4	3	19.2	
Railway PU10.1 - section1	County Durham	Old railway land, poss infilling	HR33 RTFH PDZ4 MA10	2	4	3	19.2	
Railway PU10.1 - section2	County Durham	Old railway land, poss infilling	HR33 RTFH PDZ4 MA10	2	4	3	19.2	
Railway PU10.1 - section3	County Durham	Old railway land, poss infilling	HR33 RTFH PDZ4 MA10	2	4	3	19.2	
Railway PU10.1 - section4	County Durham	Old railway land, poss infilling	HR33 RTFH PDZ4 MA10	2	4	3	19.2	
near Amble	Northumberland	Isolation hospital	HR74 NNT PDZ3 MA16	2	4	3	19.2	

Table 5 – Risk Ranking Results: risks to coastal waters from sites with contamination potential where No Action Intervention shoreline management policies apply within the Cell 1 study area.

Note – The top 5 have been edited and updated to include more detailed information. Where this reduces the ranking score this is recorded in green.

Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
near Beacon Hill	Northumberland	Mining/Quarrying land (no evidence of landfill)	HR75 NNT PDZ3 MA16	2	4	3	19.2	
Folly Farm No.1	Northumberland	Historic Landfill complete 1970	HR2 NNT PDZ1 MA1	5	1	4	16	Further Desk Study may reduce contamination potential
Marsden Quarry Landfill	South Tyneside	Historic Landfill from 1982, inc mineral railway, boundary of SAC, but no likely erosion	HR20 RTFH PDZ2 MA4	5	1	4	16	Further Desk Study may reduce contamination potential
near Buston Links 2	Northumberland	Military land, prob gun emplacement	HR72 NNT PDZ3 MA13	1	4	5	16	
Rock Cliff	Redcar and Cleveland	Mining/Quarrying land (limited infilling), some areas of filled ground	HR92 RTFH PDZ6 MA18	4	5	1	16	Further Desk Study may reduce contamination potential
olds butts	North Tyneside	Shooting butts	HR17 NNT PDZ6 MA24	1	4	4	12.8	
olds butts	North Tyneside	Shooting butts	HR18 NNT PDZ6 MA24	1	4	4	12.8	
olds butts	North Tyneside	Shooting butts	HR19 NNT PDZ6 MA24	1	4	4	12.8	
Railway land	County Durham	Railway/infilled cuttings	HR36 RTFH PDZ4 MA10	4	1	4	12.8	Further Desk Study may reduce contamination potential
Boulmer Airfield	Northumberland	Military land, overall site considered low risk, and only very south on edge of area of possible erosion. Landfills within site identified and have separate HR score.	HR68 NNT PDZ2 MA11	2	2	4	12.8	
Ryhope Dene	Sunderland	Landfill complete by 1991	HR24 RTFH PDZ3 MA9	5	1	3	12	Further Desk Study may reduce contamination potential
Area Q East of Easington Col	County Durham	Historic landfill (small)	HR35 RTFH PDZ4 MA10	5	1	3	12	Further Desk Study may reduce contamination potential
Old Quarry	County Durham	Old Quarry, possible infilling	HR34 RTFH PDZ4 MA10	4	1	3	9.6	Further Desk Study may reduce contamination potential

Table 5 – Risk Ranking Results: risks to coastal waters from sites with contamination potential where No Action Intervention shoreline management policies apply within the Cell 1 study area.

Note – The top 5 have been edited and updated to include more detailed information. Where this reduces the ranking score this is recorded in green.

Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
Quarry House	Northumberland	Infilled pit, unknown fill	HR65 NNT PDZ2 MA9	4	1	3	9.6	Further Desk Study may reduce contamination potential
The Due	Northumberland	Area of several small infilled quarries	HR66 NNT PDZ2 MA9	4	1	3	9.6	Further Desk Study may reduce contamination potential
near the Due	Northumberland	Small infilled quarry	HR66 NNT PDZ2 MA10	4	1	3	9.6	Further Desk Study may reduce contamination potential
Skinningrove	Redcar and Cleveland	Metal works inc landfill area	HR89 RTFH PDZ6 MA17	3	4	1	9.6	
Sunderland Point	Northumberland	Historic Landfill no info, >250m from SAC	HR8 NNT PDZ2 MA7	5	1	2	8	Further Desk Study may reduce contamination potential
Coastguard Watch	Northumberland	Historic Landfill no info, >250m from SAC, Ramsar, SPA,	HR9 NNT PDZ2 MA9	5	1	2	8	Further Desk Study may reduce contamination potential
Disused Quarry East of Embleton	Northumberland	Historic Landfill comp 1982 (ind waste), >850m from SAC, Ramsar, SPA,	HR10 NNT PDZ2 MA9	5	1	2	8	Further Desk Study may reduce contamination potential
Boulmer Hall Farm	Northumberland	Historic Landfill complete 1990, 400m from SAC, Ramsar, SPA,	HR11 NNT PDZ2 MA11	5	1	2	8	Further Desk Study may reduce contamination potential
Boulmer Airfield	Northumberland	Historic Landfill complete from 1990, 800m from SAC, Ramsar, SPA,	HR12 NNT PDZ2 MA11	5	1	2	8	Further Desk Study may reduce contamination potential
Alcan UK Limited No.3	Northumberland	Historic Landfill complete 1993 (Alcan ltd), 400m from boundary of SPA.	HR14 NNT PDZ5 MA20	5	1	2	8	Further Desk Study may reduce contamination potential
Former Dawdon Hill Farm	County Durham	Area of waste/landfilling	HR27 RTFH PDZ3 MA9	5	1	2	8	Further Desk Study may reduce contamination potential
Former Dawdon Colliery /Foxcover Ind Estate	County Durham	Colliery works/poss landfilling	HR28 RTFH PDZ3 MA9	5	1	2	8	Further Desk Study may reduce contamination potential

Table 5 – Risk Ranking Results: risks to coastal waters from sites with contamination potential where No Action Intervention shoreline management policies apply within the Cell 1 study area.

Note – The top 5 have been edited and updated to include more detailed information. Where this reduces the ranking score this is recorded in green.

Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
Sheepwash	County Durham	Sheepwash	HR39 RTFH PDZ4 MA10	2	1	5	8	
near Cheswick Black Rocks	Northumberland	Mining/Quarrying land (no evidence of landfill)	HR59 NNT PDZ1 MA3	2	1	5	8	
Hummersea Scar	Redcar and Cleveland	Mining/Quarrying land (limited infilling), mostly quarry area with some small ponds marked as infilled	HR90 RTFH PDZ6 MA17	2	5	1	8	
White Stones	Redcar and Cleveland	Mining/Quarrying land (no evidence of landfill)	HR91 RTFH PDZ6 MA18	2	5	1	8	
Railway land	County Durham	Old railway land, poss infilling	HR44 RTFH PDZ4 MA10	2	1	4	6.4	
near Hipsburn	Northumberland	Small infilled quarry	HR69 NNT PDZ3 MA13	4	1	2	6.4	
Kettleness	Scarborough	Alum works	HR94 RTFH PDZ7 MA21	2	4	1	6.4	
Sandsend Ness	Scarborough	Alum works (close, within 1Km to Whitley Bay Blue Flag Beach, - note extent of Blue Flag beach not clear so exact proximity not clear)	HR95 RTFH PDZ8 MA22	2	4	1	6.4	
Saltwick Nab	Scarborough	Alum Quarry	HR97 RTFH PDZ9 MA24	2	4	1	6.4	
Whitburn Colliery	South Tyneside	Colliery works, mainly works, some spoil	HR22 RTFH PDZ2 MA5	2	1	3	4.8	
Small iron and steel works	County Durham	Small iron and steel works	HR29 RTFH PDZ3 MA9	2	1	3	4.8	
Hawthorn Quarry	County Durham	Quarry	HR31 RTFH PDZ3 MA9	2	1	3	4.8	
Infilled Quarry	County Durham	Old Quarry, possible infilling	HR37 RTFH PDZ4 MA10	3	1	2	4.8	
Sheepwash	South Tyneside	Sheepwash	HR38 RTFH PDZ4 MA10	2	1	3	4.8	
Old clay pit	County Durham	Old clay pit	HR45 RTFH PDZ4 MA10	2	1	3	4.8	
Railway Land	County Durham	Old railway land, poss infilling	HR48 RTFH PDZ4 MA10	2	1	3	4.8	

Table 5 – Risk Ranking Results: risks to coastal waters from sites with contamination potential where No Action Intervention shoreline management policies apply within the Cell 1 study area.

Note – The top 5 have been edited and updated to include more detailed information. Where this reduces the ranking score this is recorded in green.

Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
Garage/Petrol Station	County Durham	Garage/Petrol Station	HR50 RTFH PDZ5 MA12	2	1	3	4.8	
Magdalene Fields	Northumberland	Military Land	HR53 NNT PDZ1 MA1	2	1	3	4.8	
Near Spades Mire	Northumberland	Mining/Quarrying land (no evidence of landfill)	HR55 NNT PDZ1 MA1	2	1	3	4.8	
Limekiln	Redcar and Cleveland	Limekiln	HR82 RTFH PDZ4 MA10	1	1	5	4	
Limekiln	County Durham	Limekiln	HR40 RTFH PDZ4 MA10	1	1	5	4	
Brough House Farm, Brotton	Redcar and Cleveland	Historic Landfill	HR85 RTFH PDZ6 MA16	5	1	1	4	
Brough House Farm, Brotton 2	Redcar and Cleveland	Historic Landfill	HR86 RTFH PDZ6 MA16	5	1	1	4	
near Boulby	Redcar and Cleveland	Small mine and quarry	HR93 RTFH PDZ6 MA18	1	5	1	4	
Parish Wood	Scarborough	Historic Landfill	HR100 RTFH PDZ11 MA30	5	1	1	4	
Newton-by-the-Sea	Northumberland	Mining/Quarrying land (no evidence of landfill)	HR64 NNT PDZ2 MA9	2	1	2	3.2	
near Dunstan Square	Northumberland	Mining/Quarrying land (no evidence of landfill)	HR67 NNT PDZ2 MA10	2	1	2	3.2	
Warsett Hill 1	Redcar and Cleveland	Infilled land	HR87 RTFH PDZ6 MA16	4	1	1	3.2	
Industrial Land	Northumberland	North Road Industrial Estate	HR52 NNT PDZ1 MA1	1	1	3	2.4	
Former Dawdon Hill Farm	County Durham	Smithy	HR26 RTFH PDZ3 MA9	1	1	2	1.6	
Coal depot	County Durham	Coal depot	HR49 RTFH PDZ4 MA11	1	1	2	1.6	
Warsett Hill 2	Redcar and Cleveland	Plastics factory/works	HR88 RTFH PDZ6 MA16	2	1	1	1.6	

Table 5 – Risk Ranking Results: risks to coastal waters from sites with contamination potential where No Action Intervention shoreline management policies apply within the Cell 1 study area.

Note – The top 5 have been edited and updated to include more detailed information. Where this reduces the ranking score this is recorded in green.

Site Name	Local Authority Area	Description/Notes	Reference	Contamination potential	Erosion risk	Receptor sensitivity	Ranking score	Recommendations
Sandsend	Scarborough	Alum works (close, within 1Km to Whitley Bay Blue Flag Beach, - note extent of Blue Flag beach not clear so exact proximity not clear)	HR96 RTFH PDZ8 MA22	2	1	1	1.6	
	Risk Ranking score 80-100							
	Risk Ranking score 60-80							
	Risk Ranking score 40-60							
	Risk Ranking score 20-40							
	Risk Ranking score 0-20							

Annex 1: Figures

Figure 1.1 Cell 1 Study area

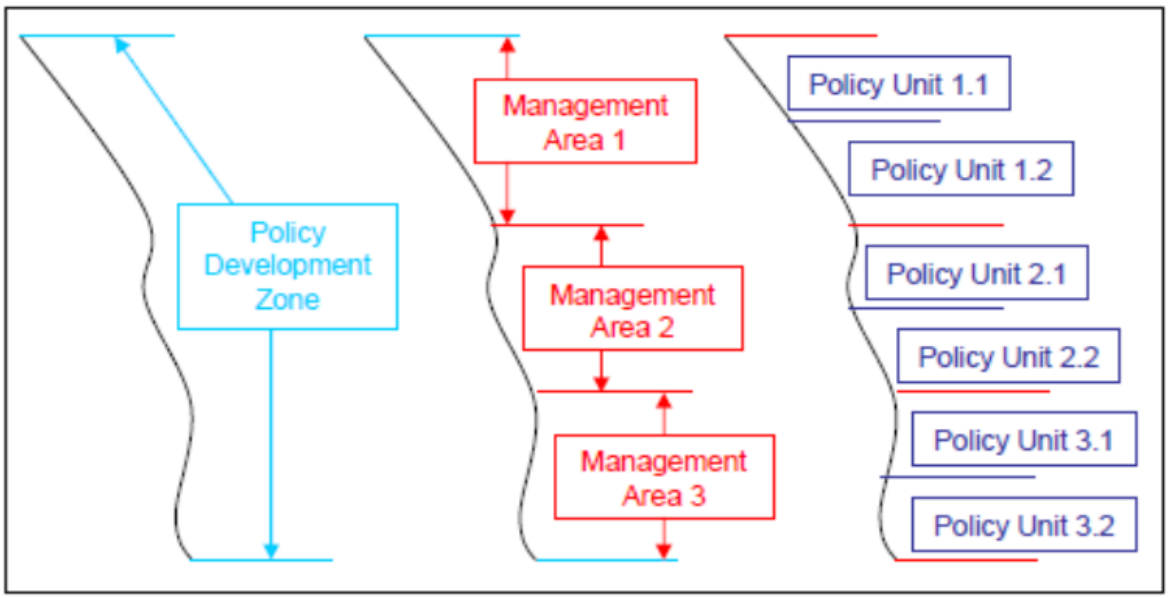

Figure 1.2 Schematic Representation of the SMP Frontage Subdivisions (taken from Figure 3.1 in the Northumberland SMP2, 2009)

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Ref: HR1 NNT PDZ1 MA1
HR1 NNT PDZ1 MA1
Ranking score: 64

Ref: HR2 NNT PDZ1 MA1
Ranking score: 16

Ref: HR52 NNT PDZ1 MA1
Ranking score: 2.4

Ref: HR53 NNT PDZ1 MA1
Ranking score: 4.8

Ref: HR55 NNT PDZ1 MA1
Ranking score: 4.8

Ref: HR56 NNT PDZ1 MA3
Ranking score: 40

Ref: HR54 NNT PDZ1 MA1
Ranking score: 40

Ref: HR57 NNT PDZ1 MA3
Ranking score: 40

Ref: HR3 NNT PDZ1 MA3
Ranking score: 32

Ref: HR58 NNT PDZ1 MA3
Ranking score: 40

Ref: HR4 NNT PDZ1 MA3
Ranking score: 64

Ref: HR5 NNT PDZ1 MA3
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Ref: HR59 NNT PDZ1 MA3
Ranking score: 8

Ref: HR6 NNT PDZ1 MA5
Ranking score: 80

Ref: HR60 NNT PDZ1 MA5
Ranking score: 40

Ref: HR6 NNT PDZ1 MA4
Ranking score: 80

Ref: HR60 NNT PDZ1 MA5
Ranking score: 80

Ref: HR7 NNT PDZ2 MA6
Ranking score: 80

Ref: HR62 NNT PDZ2 MA6
Ranking score: 80

Ref: HR63 NNT PDZ2 MA6
Ranking score: 32

Ref: HR8 NNT PDZ2 MA7
Ranking score: 8

Ref: HR64 NNT PDZ2 MA9
Ranking score: 3.2

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HR9 NNT PDZ2 MA9
Ranking score: 8

Ref: HR65 NNT PDZ2 MA9
Ranking score: 9.6

Ref: HR66 NNT PDZ2 MA10
Ranking score: 9.6

Ref: HR10 NNT PDZ2 MA9
Ranking score: 8

Ref: HR66 NNT PDZ2 MA9
Ranking score: 9.6

Ref: HR67 NNT PDZ2 MA10
Ranking score: 3.2

Ref: HR11 NNT PDZ2 MA10
Ranking score: 8

Ref: HR68 NNT PDZ2 MA11
Ranking score: 12.8

Ref: HR12 NNT PDZ2 MA10
Ranking score: 8

Ref: HR69 NNT PDZ3 MA13
Ranking score: 6.4

Ref: HR71 NNT PDZ3 MA13
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Ref: HR70 NNT PDZ3 MA13
Ranking score: 38.4

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Ranking score: 16

Ref: HR73 NNT PDZ3 MA13
Ranking score: 38.4

Ref: HR74 NNT PDZ3 MA16
Ranking score: 19.2

Ref: HR76 NNT PDZ3 MA16
Ranking score: 32

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Ranking score: 19.2

Ref: HR77 NNT PDZ4 MA18
Ranking score: 40

Ref: HR78 NNT PDZ4 MA19
Ranking score: 80

Ref: HR13 NNT PDZ4 MA19
Ranking score: 64

Ref: HR14 NNT PDZ5 MA20
Ranking score: 8

Ref: HR15 NNT PDZ5 MA20
Ranking score: 64

Ref: HR79 NNT PDZ5 MA20
Ranking score: 40

Ref: HR80 NNT PDZ5 MA21
Ranking score: 80

Ref: HR16 NNT PDZ5 MA20
Ranking score: 80

MA 1
MA 2
MA 3
MA 4
MA 4
MA 6
MA 7
MA 8
MA 9
MA 10
MA 11
MA 12
MA 13
MA 14
MA 15
MA 16
MA 17
MA 18
MA 19
MA 20

PDZ 1
PDZ 2
PDZ 3
PDZ 4

Northumberland to North Tyneside SMP2

Hadston Links and Cresswell Ponds

N O R T H

Legend

Ranking score

- 0-20
- >20-40
- >40-60
- >60-80
- >80-100

- Management Area (MA) Boundary
- Policy Development Zone (PDZ) Boundary
- Shoreline Management Plan (SMP) Boundary

N

0 10 20 Km

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Risk Ranking Results

Drawn By :	Alex Bellis	Date: 21/02/2017
Checked By :	Robin Lancefield	Date: 21/02/2017
Approved By :	Andy Parsons	Date: 21/02/2017

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Northumberland to North Tyneside SMP2

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Ref: HR17 NNT PDZ6 MA24
Ranking score: 12.8

Ref: HR19 NNT PDZ6 MA24
Ranking score: 12.8

Ref: HR18 NNT PDZ6 MA24
Ranking score: 12.8

Ref: HR20 RTFH PDZ2 MA4
Ranking score: 16

Ref: HR21 RTFH PDZ2 MA5
Ranking score: 80

Ref: HR22 RTFH PDZ2 MA5
Ranking score: 4.8

Ref: HR23 RTFH PDZ2 MA5
Ranking score: 19.2

Ref: HR24 RTFH PDZ3 MA9
Ranking score: 12

Ref: HR25 RTFH PDZ3 MA9
Ranking score: 19.2

Ref: HR29 RTFH PDZ3 MA9
Ranking score: 4.8

Ref: HR27 RTFH PDZ3 MA9
Ranking score: 8

Ref: HR28 RTFH PDZ3 MA9
Ranking score: 8

Ref: HR30 RTFH PDZ3 MA9
Ranking score: 38.4

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Ranking score: 19.2

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Ranking score: 19.2

Ref: HR35 RTFH PDZ4 MA10
Ranking score: 12

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Ref: HR33 RTFH PDZ4 MA10
Ranking score: 19.2

Ref: HR37 RTFH PDZ4 MA10
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Ranking score: 19.2

Ref: HR41 RTFH PDZ4 MA10
Ranking score: 40

Ref: HR42 RTFH PDZ4 MA10
Ranking score: 80

Ref: HR43 RTFH PDZ4 MA10
Ranking score: 40

Ref: HR46 RTFH PDZ4 MA10
Ranking score: 100

Ref: HR47 RTFH PDZ4 MA10
Ranking score: 40

Ref: HR48 RTFH PDZ4 MA10
Ranking score: 4.8

Ref: HR51 RTFH PDZ5 MA13
Ranking score: 51.2

Ref: HR82 RTFH PDZ5 MA13
Ranking score: 64

Ref: HR83 RTFH PDZ5 MA13
Ranking score: 80

Ref: HR26 RTFH PDZ3 MA9
Ranking score: 1.6

Ref: HR84 RTFH PDZ6 MA16
Ranking score: 20

Ref: HR85 RTFH PDZ6 MA16
Ranking score: 4

Ref: HR88 RTFH PDZ6 MA16
Ranking score: 1.6

Ref: HR89 RTFH PDZ6 MA17
Ranking score: 9.6

Ref: HR90 RTFH PDZ6 MA17
Ranking score: 8

Ref: HR91 RTFH PDZ6 MA18
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Ref: HR31 RTFH PDZ3 MA9
Ranking score: 4.8

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Ranking score: 19.2

Ref: HR34 RTFH PDZ4 MA10
Ranking score: 9.6

Ref: HR40 RTFH PDZ4 MA10
Ranking score: 4

Ref: HR82 RTFH PDZ4 MA10
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Ref: HR39 RTFH PDZ4 MA10
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Ref: HR44 RTFH PDZ4 MA10
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Ranking score: 4.8

Ref: HR49 RTFH PDZ4 MA11
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Ref: HR50 RTFH PDZ5 MA12
Ranking score: 4.8

Ref: HR86 RTFH PDZ6 MA16
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Ref: HR87 RTFH PDZ6 MA16
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Ref: HR92 RTFH PDZ6 MA18
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Ref: HR93 RTFH PDZ6 MA18
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Ranking score: 6.4

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Ranking score: 1.6

Ref: HR97 RTFH PDZ9 MA24
Ranking score: 6.4

PDZ 5 PDZ 6 PDZ 1 PDZ 2 PDZ 3 PDZ 4 PDZ 5 PDZ 6 PDZ 7

MA 21 MA 22 MA 23 MA 24 MA 25 MA 26 MA 27 MA 4 MA 5 MA 6 MA 7 MA 8 MA 9 MA 10 MA 11 MA 12 MA 13 MA 14 MA 15 MA 17 MA 18 MA 19 MA 20 MA 21 MA 22

NEWCASTLE UPON TYNE to Amsterdam 19 hrs

River Tyne to Flamborough Head SMP2

Legend

Ranking score

- 0-20
- >20-40
- >40-60
- >60-80
- >80-100

Management Area (MA) Boundary
Policy Development Zone (PDZ) Boundary
Shoreline Management Plan (SMP) Boundary

N

0 10 20 Km

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River Tyne to Flamborough Head SMP2

PDZ 5
PDZ 6
PDZ 7
PDZ 8
PDZ 9
PDZ 10
PDZ 11
PDZ 12

MA 14
MA 15
MA 17
MA 18
MA 19
MA 20
MA 21
MA 22
MA 23
MA 24
MA 25
MA 26
MA 27
MA 28
MA 29
MA 30
MA 31
MA 32
MA 33

Ref: HR84 RTFH PDZ6 MA16
Ranking score: 20

Ref: HR85 RTFH PDZ6 MA16
Ranking score: 4

Ref: HR94 RTFH PDZ7 MA21
Ranking score: 6.4

Ref: HR93 RTFH PDZ6 MA18
Ranking score: 4

Ref: HR95 RTFH PDZ8 MA22
Ranking score: 6.4

Ref: HR96 RTFH PDZ8 MA22
Ranking score: 1.6

Ref: HR97 RTFH PDZ9 MA24
Ranking score: 6.4

Ref: HR98 RTFH PDZ9 MA25
Ranking score: 32

Ref: HR99 RTFH PDZ9 MA25
Ranking score: 40

Ref: HR100 RTFH PDZ11 MA30
Ranking score: 4

Ref: HR86 RTFH PDZ6 MA16
Ranking score: 4

Ref: HR87 RTFH PDZ6 MA16
Ranking score: 3.2

Ref: HR88 RTFH PDZ6 MA16
Ranking score: 1.6

Ref: HR89 RTFH PDZ6 MA17
Ranking score: 9.6

Ref: HR90 RTFH PDZ6 MA17
Ranking score: 8

Ref: HR91 RTFH PDZ6 MA18
Ranking score: 8

Ref: HR92 RTFH PDZ6 MA18
Ranking score: 16

Legend

Ranking score

- 0-20
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- >40-60
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Cell 1 WFD and SEA

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Approved By :	Andy Parsons	Date: 22/02/2017

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