SAMUEL'S PORT

A SPECIAL PLACE...

Basaltic Dyke

SITES OF BIOLOGICAL AND EARTH SCIENCE IMPORTANCE HAVE BEEN SURVEYED BY NORTHERN IRELAND ENVIRONMENT AGENCY TO ASSESS THEIR SCIENTIFIC INTEREST. THE BEST SITES ARE NOW BEING DECLARED AS AREAS OF SPECIAL SCIENTIFIC INTEREST (ASSIs). IN DOING SO WE AIM TO SAFEGUARD THESE IMPORTANT SITES FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS.

Samuel's Port is a special place because of its earth science interest and the species biodiversity of the intertidal rock communities.

This site is important because it is the best occurrence of a Tertiary age, igneous dyke with variable magma composition in the Mourne area. The rocks at Samuel's Port were emplaced within the Earth's crust approximately 60 million years ago during the Palaeogene period; a time when Northern Ireland experienced major periods of igneous activity. The County Down area shows evidence of major granite intrusions in the form of the Mourne Mountains, while vertical sheets of formerly molten rock were also intruded into the older rocks along the coast, these are referred to as dykes. The dyke at Samuel's Port shows evidence of four phases of magma intrusion into this small section of the Earth's crust. The dyke material ranges from dark basalts to a course grained granite. This variation indicates different sources of magma and also of magma mixing. One of the fine grained dark basaltic dykes also contains pieces of gabbro, a coarse grained basaltic rock. This material provides clues of where the magma has come from and what rocks it passed through on its ascent through the crust.

The gabbro inclusions at Samuel's Port are the only known occurrence of its kind within the Mourne area.

Samuel's Port ASSI is a moderately exposed boulder and bedrock shore typical of the south Down coast. The northern part around Wreck Port and Russell's Point has important intertidal rock communities.

The complexity of the shore provides habitats for many intertidal species and communities. At the top of the shore there is a wide area of coarse sand, pebbles and gravel with patches of seaweed. Below this, the upper shore is a boulder shore with wide areas of flat bedrock outcrops and rock ridges interspersed with many rock pools, with a narrow sandy/shingle bay in the middle. Further down towards the sea, the shore has stones, cobbles and large boulders on coarse sand.

The middle to lower shore is particularly rich in species and supports a wide range of animals such as Bryozoans, Crustaceans, Echinoderms, Anemones, Molluscs, Ribbon Worms, Sponges, and true Worms and has a good diversity of lichens and red, brown and green algae. Acorn Barnacles and Common Limpets grow on the boulders at all levels of the shore. Juvenile Mussels and *Osmundea* (a red seaweed) are found in crevices of the rocks from the upper to lower shore.

Gabbro inclusion within a basaltic dyke

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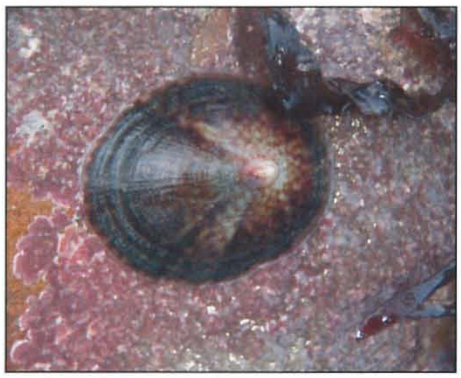
View of the boulder and bedrock shore at Samuel's Port ASSI

Shallow pools between boulders

Common Periwinkles are abundant on the upper shore. The Thick Top Shell grows on the upper shore ridges. The Grey Top Shell and Dog Whelks are found on the middle and lower shore. Bladder Wrack grows on the middle shore.

Unusual features found at this site are the rock pools in the upper and middle shore, some of which go deep into the bedrock ridges, while others are formed as relatively shallow pools of water held between the cobbles and boulders. Coral weed, Carrageen, Spiral Wrack, Sea Lettuce and other green seaweeds, Beadlet Anemones, Snakelocks Anemones, Small Brittle Stars, Common Starfish, juvenile Mussels, Amphipods, Annelid worms, Flat Top Shells and Sea Hares all occur in and around these pools, as well as on the lower shore where they would more typically be found. The Pallid Chink Shell, the Banded Chink Shell, the Blue-rayed Limpet and the micro-molluscs *Rissoa interrupta* and *Rissoa parva* are also found on the shore.



Common tortoiseshell limpet

The lowest part of the shore and the sublittoral fringe is characterised by the pink encrusting seaweed *Lithothamnion*, Dulse and Sugar Kelp, growing on large boulders embedded in the sand. Lugworms also live in the occasional bare patches of sand between those boulders.

Sea Hare

Other characteristic species in this zone are Oarweed, Cuvie, Red rags, the red seaweeds *Rhodothamniella floridula* and *Phycodrys rubens*, Common Starfish, sea mats, bryozoans, hydroids, tubeworms and sponges such as the breadcrumb sponge.

The area designated as Samuel's Port ASSI supports important communities of plants and animals and unique geological features. It is vitally important that the best remaining areas are protected from adverse activities. Continued sensitive management will help to ensure the survival of the site's important geology and biodiversity. Northern Ireland Environment Agency is keen to work closely with landowners to maintain and enhance Samuel's Port ASSI.

Large boulders in the lower shore and sublittoral fringe

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DEPARTMENT OF THE ENVIRONMENT

DECLARATION OF ARE A OF SPECIAL SCI ENTIFIC I NTEREST AT SAMUEL'S PORT, COUNTY DOWN. ARTICLE 28 OF THE ENVIRONM ENT (NORTHERN IRELAND) ORDER 2002.

The Department of the Environment (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area described and delineated on the attached map (the area) is of special scientific interest by reason of its geological features and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'Samuel's Port Area of Special Scientific Interest.'

The area is of special scientific interest because of its geology and intertidal habitats. Samuel's Port is of significant geological importance. A dyke records multiple intrusions of magma with each intrusion of a different composition. The wide inner portion of the dyke is of acidic composition and it shows basification against the earlier marginal basalt intrusion. There is also a later tholeiitic member of the dyke that carries xenoliths of gabbro and granite. This dyke is a fine example of the intrusion of both acid and basic magma and the variable composition of the dyke provides information on the formation of the Mourne Mountains.

The main dyke, classed as dyke No.124 in an earlier survey of the Mourne Coast dyke swarm, is well exposed across the beach and is approximately 14m wide. From northeast to southwest the dyke is composed of approximately 30cm basalt, 3m acid-feldspar porphyry, 30cm basalt, 1.5m tholeiite, and 1.5m olivine dolerite. The order of emplacement has been determined as (oldest to youngest) olivine dolerite, basalt, an intrusion of the feldspar-porphyry into the basalt with slight marginal assimilation, and finally a tholeiite intrusion between the basalt and olivine-dolerite dykes with a well marked chilled margin against both.

The basalt and olivine dolerite are both dark grey, however the dolerite contains phenocrysts of olivine. The porphyry is reddish in colour and characterised by phenocrysts of anorthoclase and other alkali feldspars; occasional small phenocrysts of hornblende occur but quartz is conspicuous by its absence. The tholeitte is dark grey, fine grained and contains sparse xenoliths of granite and gabbro. The gabbro xenoliths are unique with coarse-grained fragments up to 13 cm in size.

Just north of this composite/multiple dyke occurs a felsite dyke, classed as dyke No.120, with an anomalous northerly trend and well developed flow banded margins.

The composite dyke indicates the intrusion of two contrasting magma compositions; acid and basic, and their mixing to produce rock of intermediate composition. In this respect it mirrors the magmatic activity which took place during the emplacement of the cone-sheet found elsewhere on the Mournes Coast. The tholeiite member within the composite dyke is the only recorded dyke in the whole Mourne dyke swarm to bring up from depth fragments of gabbro. The presence of these inclusions supports the proposition that a major mafic igneous body is present under the granites of the

The northern part of Samuel's Port ASSI, around Wreck Port and Russell's Point, has important intertidal rock communities. It is a good representative example of both a moderately exposed shore and a boulder and bedrock shore on the South Down Coast. In the middle shore, the boulder, cobble and stone shore holds rockpools with a high diversity of species more often found in the lower shore and sublittoral.

At Wreck Port there is a wide area of coarse sand, pebbles, gravel and patches of seaweed at the top of the shore, above a boulder shore with wide areas of flat bedrock outcrops and ridges, interspersed with frequent rockpools. Large numbers of Sea Hares Aplysia punctata were noted, mostly in areas of seawater runoff between boulders. The beach is backed by artificial boulder sea defences with a slip running to the shore. A small amount of annual vegetation associated with driftlines is found here.

The upper shore has a main area of bedrock with a boulder area to the south-west. There is a narrow sandy/shingle bay in the middle of the rock ridges. The fringe of creviced bedrock on the upper shore contains many rockpools. On the ridges, Common Limpet Patella vulgata, Flat Top Shell Gibbula umbilicalis and Acorn Barnacles Semibalanus balanoides are abundant on areas of bare rock, with abundant Osmundea (a red seaweed) in crevices. The Thick Top Shell Osilinus lineatus is abundant, Common Periwinkle Littorina littorea is abundant in patches and juvenile Mussels Mytilus edulis are found in crevices. The Periwinkle Littorina fabalis is also found here.

In the upper shore rock pools, there is abundant Coral Weed Corallina officinalis and green seaweeds such as Cladophora rupestris and species of Ulva are common.
Spiral Wrack Fucus spiralis was recorded as frequent in patches. The Beadlet Anemone Actinia equina, Carrageen Chondrus crispus and Sea Lettuce Ulva lactuca were recorded as occasional. Aplysia punctata (a Sea Hare) was recorded in this area as well as on the lower shore. Common Starfish Asterias rubens, juvenile Mussels Mytilus edulis and Annelid worms are abundant. The Flat Top Shell Gibbula umbilicalis is common.

The extensive boulder middle shore has stones, cobbles and big boulders on sand. The boulders are very thickly covered with Acorn Barnacles Semibalanus balanoides, with abundant Common Limpet Patella vulgata and Dog Whelk Nucella lapillus. There are small stands of Bladder Wrack Fucus vesiculosus and occasional Toothed Wrack Fucus serratus between boulders. The Snakelocks Anemone Anemonia viridis, Beadlet Anemone Actinia equina, Coral weed Corallina officinalis and some Amphipods were recorded here as frequent, while the Small Brittle Star Amphipholis squamata, Carrageen Chondrus crispus, Bladder Wrack Fucus vesiculosus, Grey Top Shell Gibbula cineraria and the Common Periwinkle Littorina littorea are occasional. The Lugworm Arenicola marina is found in the sand between boulders.

There are some rockpools in the ridges deep enough to sustain Oarweed Laminaria digitata, Dabberlocks Alaria esculenta and Toothed Wrack Fucus serratus.

On the lower shore, the substrate consists of large boulders in sand. This area is dominated by Toothed Wrack Fucus serratus. Juvenile Mussels Mytilus edulis, Acorn Barnacles Semibalanus balanoides are abundant and the Common Limpet Patella vulgata is common. Lithothamnion (a type of Maerl) and False Irish Moss Mastocarpus

stellatus are frequent. Coral weed Corallina officinalis, the red seaweed Osmundea, Dulse Palmaria palmata, Sugar Kelp Saccharina latissima, Sea lettuce Ulva lactuca, other Ulva species, a hydroid Dynamena pumila, the Grey Top Shell Gibbula cineraria and a sponge Halichondria panacea were all recorded as occasional. Dabberlocks Alaria esculenta, Oarweed Laminaria digitata, a red seaweed Lomentaria articulata, the Sea Hare Aplysia punctata, Lugworm Arenicola marina, Common Starfish Asterias rubens, a periwinkle Littorina fabalis, Common periwinkle Littorina littorea and the Dog Whelk Nucella lapillus were also found on the low shore. This area is very similar to that of the Sublittoral fringe, but there are more barnacles on the rocks and there is no Laminaria and little Mastocarpus.

The sublittoral fringe consists of large boulders embedded in the sand, with occasional bare patches of sand in between. Sand scour was noted at the base of large boulders. On the boulders, Common Limpet Patella vulgata and Acorn barnacles Semibalanus balanoides are recorded as frequent. Around the boulders, False Irish Moss Mastocarpus stellatus and the Maerl Lithothamnion are abundant and Toothed Wrack Fucus serratus and Oarweed Laminaria digitata are common. Sugar Kelp Saccharina latissima, Common Starfish Asterias rubens, a hydroid Dynamena pumila and a sea mat Electra pilosa are frequent. Carrageen Chondrus crispus, Coral weed Corallina officinalis, Laminaria hyperborean (Cuvie/Tangle), Dulse Palmaria palmata, two red seaweeds Rhodothamniella floridula and Phycodrys rubens, a sponge Halichondria panacea, a tubeworm Pomatoceros triqueter and Alcyonidium (a bryozoan) are recorded as occasional. Red rags Dilsea carnosa and Hymeniacidon perleve, a sponge, were also found in this zone.

The Pallid Chink Shell Lacuna pallidula, Banded Chink Shell Lacuna vincta, Blue rayed limpet Helcion pellucidum and the micromolluscs Rissoa interrupta and Rissoa parva were also found on the shore.

At Russell's Point the intertidal zone is also a bedrock shore dominated by Patellobarnacle rock ridges. There are many rock pools dominated by ephemeral algae on top of the rock ridges. Good diversity of red algae was noted here, as well as a range of Bryozoans, Crustaceans, Echinoderms, Insects, Jellyfish, Anemones, Molluscs, Ribbon Worms, Sponges, True Worms, Brown Algae, Green Algae and Lichens.

SCHEDULE

The following operations and activities appear to the Department to be likely to damage the flora, fauna or geological interests of the area:

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land including reclamation and extraction of minerals, including rock and gravel.

2. The storage or dumping, spreading or discharge of any material.

3. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.

4. Alteration of natural or man-made features, the clearance or disturbance of boulders or stones and grading of rock faces.

5. The destruction, displacement, removal or cutting of any plant, seed or plant remains, other than for plants listed as noxious in the Noxious Weeds (Northern Ireland) Order 1977.

6. The release into the area of any animal (other than in connection with normal grazing practice) or plant. 'Animal' includes birds, mammals, fish, reptiles, amphibians and invertebrates; 'Plant' includes seed, fruit or spore.

7. Operations or activities, which would affect wetlands (include marsh, fen, bog, rivers, streams and open water), e.g.

    (i) change in the methods or frequency of routine drainage maintenance;

    (ii) modification of the structure of any watercourse;

    (iii) lowering of the water table, permanently or temporarily;

8. The following activities undertaken in a manner likely to damage the interest of the area:

    (i) educational activities;

    (ii) research activities;

    (iii) recreational activities.

9. Sampling of rocks, minerals, fossils or any other material forming a part of the site, undertaken in a manner likely to damage the scientific interest.

10. Use of vehicles or craft likely to damage the interest of the area.

11. Changes in game, waterfowl, shellfish or fisheries management or fishing or hunting practices.

FOOTNOTES

(a) Please note that consent by the Department to any of the operations or activities listed in the Schedule does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (Northern

Ireland) Order 1991. Operations or activities cove red by planning permission are not normally covered in the list of Notifiable Operations.

(b) Also note that many of the operations and activities listed in the Schedule are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is "large" and what is "small", the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for con cern and if this was the cas e the Department would n ormally g ive consent, particularly if there is a long history of the operation being undertaken in that precise location.

SAMUEL'S PORT ASSI

Views About Management
The Environment (Northern Ireland) Order 2002 Article 28(2)

A statement of the Department's views about the management of Samuel's Port Area of Special Scientific Interest ("the ASSI")

This statement represents the views of the Department about the management of the ASSI for nature conservation. This statement sets out, in principle, our views on how the area's special conservation interest can be conserved and enhanced. The Department has a duty to notify the owners and occupiers of the ASSI of its views about the management of the land.

Not all of the management principles will be equally appropriate to all parts of the ASSI and there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest. It is also very important to recognise that management may need to change with time.

The management views set out below do not constitute consent for any operation or activity. The written consent of the Department is still required before carrying out any operation or activity likely to damage the features of special interest (see the Schedule on pages 4 & 5 for a list of these operations and activities). The Department welcomes consultation with owners, occupiers and users of the ASSI to ensure that the management of this area maintains and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

MANAGEMENT PRINCIPLES

The earth science interest at Samuel's Port occurs as rock exposures on the inter-tidal area of the site. The Department would encourage the maintenance of the ASSI and its earth science interest.

The geological series

Provided no damaging activities, as set out in the Schedule, are undertaken without consent, the needs of owners, occupiers and the Department can be met. Earth science features such as those at Samuel's Port may require occasional management intervention in order to maintain access to, and exposure of, the geology. This could include selective removal of vegetation or any major build up of loose rock.

Specific objectives include:

Maintain the geological series in an undamaged state.
Maintain access to the geological series.

Intertidal Rock

Rocky shores are an important habitat for wildlife. The littoral zone is composed of a variety of different habitats and communities, including rock pools, bedrock ledges and platforms, gullies, crevices and boulder fields. A diverse range of seaweeds and marine animals are associated with these habitats and most are specially adapted to periods of emersion. The Department would encourage the maintenance and enhancement of intertidal rock, through the conservation of its associated native plants and animals.

Active management of rocky shores is usually minimal as these are naturally occurring habitats dominated by tidal processes and wave exposure. It is important that good water and sediment quality are maintained. The Department would seek to maintain the coastline in as natural a state as possible.

Direct damage to rocky habitats can be caused by activities such as dredging and construction. In addition, man-made structures may have an impact by altering the wave regime and may also restrict the sediment budget within the coastal system.

Specific objectives include:

Encourage sympathetic use to ensure that disturbance and physical damage to the intertidal habitats and communities are minimised.

Encourage the maintenance of good water quality through the control of pollution, as this may affect reef communities, particularly due to increased turbidity (which may reduce algal communities) or siltation (which may smother animal communities).

Encourage management which favours the natural processes of sediment movement.

Minimise the removal of species through unregulated bait digging, shellfish gathering and seaweed harvesting, which can lead to damage to, or a loss of, intertidal habitats.

Management principles applicable to all habitats throughout the site:

Ensure that disturbance to the site and its wildlife is minimised.

Discourage non-native species, especially those that tend to spread at the expense of native wildlife, such as Wireweed *Sargassum muticum*, Common Cord-grass *Spartina anglica* and Sea Buckthorn *Hippophae rhamnoides*.

Maintain the diversity and quality of associated habitats, through sensitive management. These adjoining habitats can often be very important for wildlife, including rare and specialised species.

The Official Seal of the
Department of the Environment
hereunto affixed is authenticated
by

[Signed by]

_____

HELEN ANDERSON
Senior Officer of the
Department of the Environment

Dated the 29 of March 2013

SAMUEL'S PORT ASSI

SAMUEL'S PORT
AREA OF SPECIAL SCIENTIFIC INTEREST

Map referred to in the Confirmation dated: 28th October 2013

SITE BOUNDARY: The Area of Special Scientific Interest (ASSI) includes all the lands highlighted within the solid coloured lines.

AREA OF SITE: 13.65 hectares

OS MAPS 1:50,000: Sheet No. 29
1:10,000: Sheet No. 279

IRISH GRID REFERENCE: IJ 367184

COUNCIL AREA: NEWRY & MOURNE DISTRICT COUNCIL

COUNTY: DOWN

E. Diane Stevenson

E. DIANE STEVENSON
SENIOR OFFICER OF THE
DEPARTMENT OF THE ENVIRONMENT

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