

Map 11: EATHIE FISHING STATION TO CROMARTY

Hinterland Geology and Coastal Geomorphology: This unit of coastlines forms the southern peninsula called the South Sutor. Precipitous cliffs, abrasion platform, cave and stacks typify the ruggedness of this section of coastline that is exposed to the full fetch of storm waves from the north east quadrant. The basement geology is Middle Old Red Sandstone. North of Eathie Fishing Station a series of folds and intrusive epidiorite dykes outcrop against the cliff. The eastern side of the South Sutor is overlain by schist deposits and various igneous intrusions. Drift lithologies include boulder clay and morainic drift. A narrow discontinuous platform of raised Post-glacial raised beach forms a lower cliff terrace. The former fishing village of Cromarty lies on the western flank of a cusped foreland built out during the late and post-glacial period. The lowest raised beach is backed by a major degraded cliff line which extends to Jemmimaville as far as the cliff coast east of Cromarty. The beach consists of fine gravel.

Erosion class: At McFarquar's Cave to Rednose (NH 804 657) the cliff line is very precipitous and overlooks numerous abrasion platforms and gullies. Dowgate Cave area could not be surveyed due to lack of access to the cliff base. It remains a matter of conjecture at what rate these cliffs are eroding. Away from the South Sutor towards the inner entrance of the Cromarty Firth lends shelter to the Cromarty shoreline. Here conditions are considered to be stable and accreting.

Built Heritage and Archaeology: The hinterland archaeology consists of the Castledownie promontory fort which is currently under plough and the ramparts on the upper cliff edge appear to be under threat from erosion. The military complex on the South Sutor consists of an extensive camp on the top of the cliff and also a series of look out posts on the shoreline below the cliffs. The Cromarty Firth was an important naval base during both World Wars and the military presence is visible around various parts of the coastal zone. The built heritage on the east shore of Cromarty village includes numerous fishermen's cottages, arranged in streets locally known as 'vennels' and attesting to the importance of Cromarty as a fishing port.

Map 11: Hinterland Geology and Coastal Geomorphology

1. North of ETHIE FISHING STATION to Mc FARQUHARS BED
NH720 647

1.7km

Exposed rock platform/sand and shingle

High cliff (50m)

Raised beach and marine deposits/glacial drift

Exposed coastline with rock platform and locally occurring boulder and shingle. The exposed cliff is steep with terrace formation. Glacial drift overlies relict raised beach deposits.

2. Mc FARQHAR'S BED to DOWGATE CAVE
NH 860 660

2.4 km

Sea stacks/sea caves/shelving rock platform

Cliff (50m)

Raised beach and marine deposits

Irregular coastal edge incised by exposure to easterly gales. Rock stacks arches and caves are present. Raised beach deposits extant at start of the unit giving way to high cliff composed of glacial deposits.

3. DOWGATE CAVE to east of LITTLE ROCK
NH 860 674

1.4km

Rock platform/boulder beds/shingle

High cliff (>75m)

Relict raised beach and marine deposits/glacial drift

Southern Sutors headland with deeply incised and irregular shoreline comprised of exposed rock platform and boulders. The cliff is steep and precipitous in parts comprised of glacial deposits.

4. East of LITTLE ROCK to CROMARTY HARBOUR.

NH 794 673

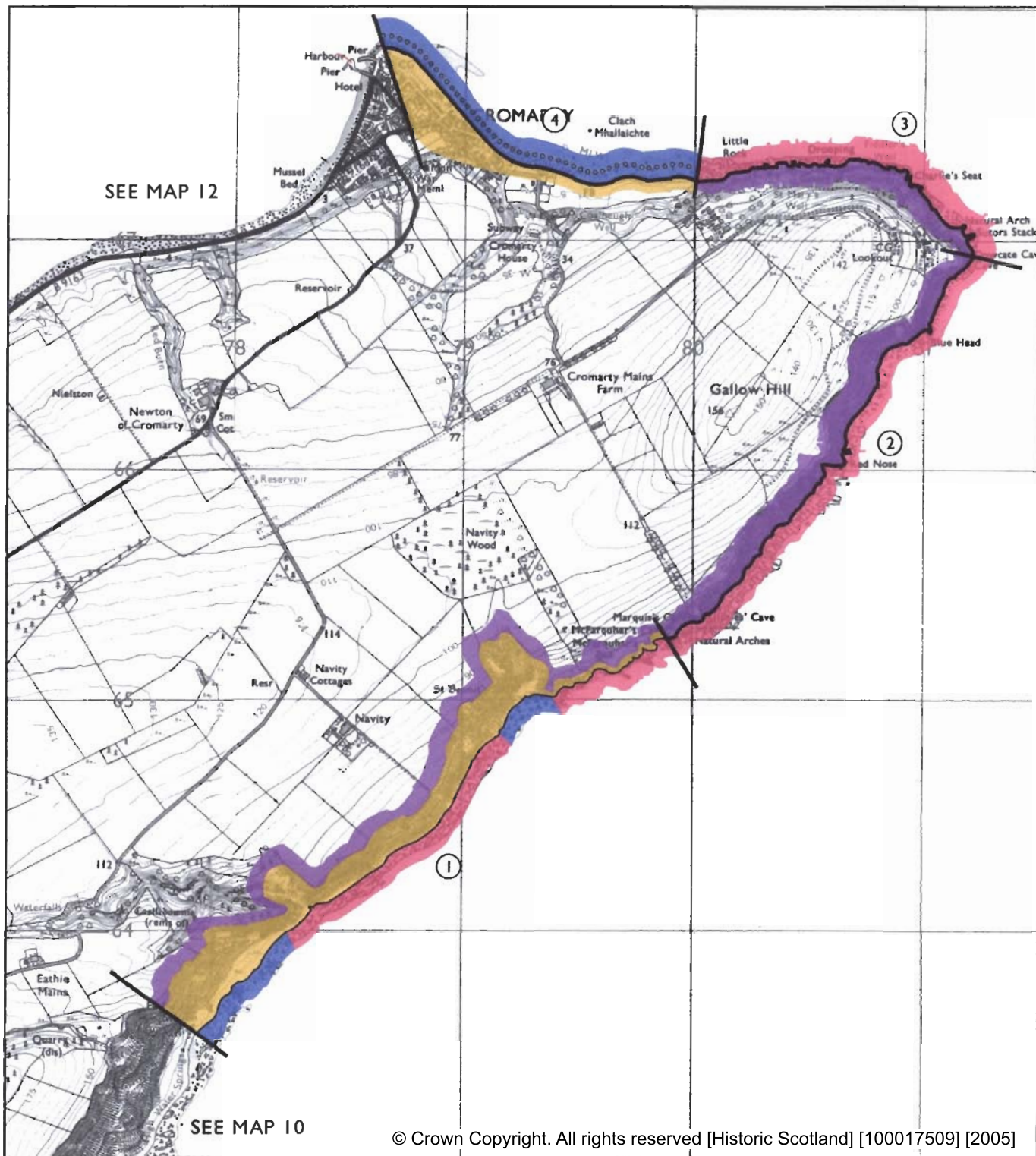
1.4km

Sand and shingle

Low edge (10m)

Raised beach and marine deposits

The Cromarty beach is ridged sand and shingle and no dunes are present. Sea defences protect Cromarty, which lies on a cusped foreland overlooking the entrance to Cromarty Firth. Raised beach deposits falling below 10m OD dominate hinterland geomorphology.



MAP 11: EATHIE FISHING STATION TO CROMARTY 1:25 000

MORAY FIRTH SURVEY Grid ref: NH 77-81/63-68

Basemap: O.S. Pathfinder Series
Sheets 134 & 144

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HINTERLAND GEOLOGY AND FORESHORE GEOMORPHOLOGY

Assessment date: 10 September 1998

Hinterland:

- Drift, boulder clay
- Drift, boulder clay over visible rock
- Raised beach and marine deposits
- Blown sand
- Glacial sand and gravel
- Alluvium

Coast edge:

- Low edge (< 5m tall)
- Cliff over 5m tall
- Man made barrier
- Shingle/storm bank
- Human disturbance

Foreshore:

- Mainly rock platform
- Mainly sand
- Mainly alluvial/marine mud
- Marsh



MAP 11: EROSION

1. EATHIE FISHING STATION to ST BENNET'S WELL

NH 787 644

2.6km

Eroding or stable

Highly irregular and incised cliff edge with gullies and exposed rock platforms. Attrition of the foreshore is likely to be slow owing to the resilient nature of the local sandstone.

2. ST BENNETS WELL to McFARQUAR'S CAVE

NH 796 652

0.5km

NOT SURVEYED

Owing to the precipitous nature of this cliff and restricted access to the beach this unit could not be investigated on the grounds of health and safety.

3. McFARQUAR'S CAVE to RED NOSE

NH 804 657

1km

Stable or Eroding

Highly exposed precipitous cliff incised with gullies and rocky platforms. The base of cliff and outcropping platforms are prone to scouring by wave action and are undergoing erosion albeit at a slow rate.

4. RED NOSE to DOWGATE CAVE

NH 807 665

1km

NOT SURVEYED

Owing to the precipitous nature of this cliff and restricted access to the beach this unit could not be investigated on the grounds of health and safety.

5. DOWGATE CAVE to east of LITTLE ROCK

NH 808 674

1.5km

Definitely Eroding

Exposed headland of the South Sutor. Erosion is active with constant attrition of the cliff base by wave action that has led to the formation of sea caves and isolated sea stacks.

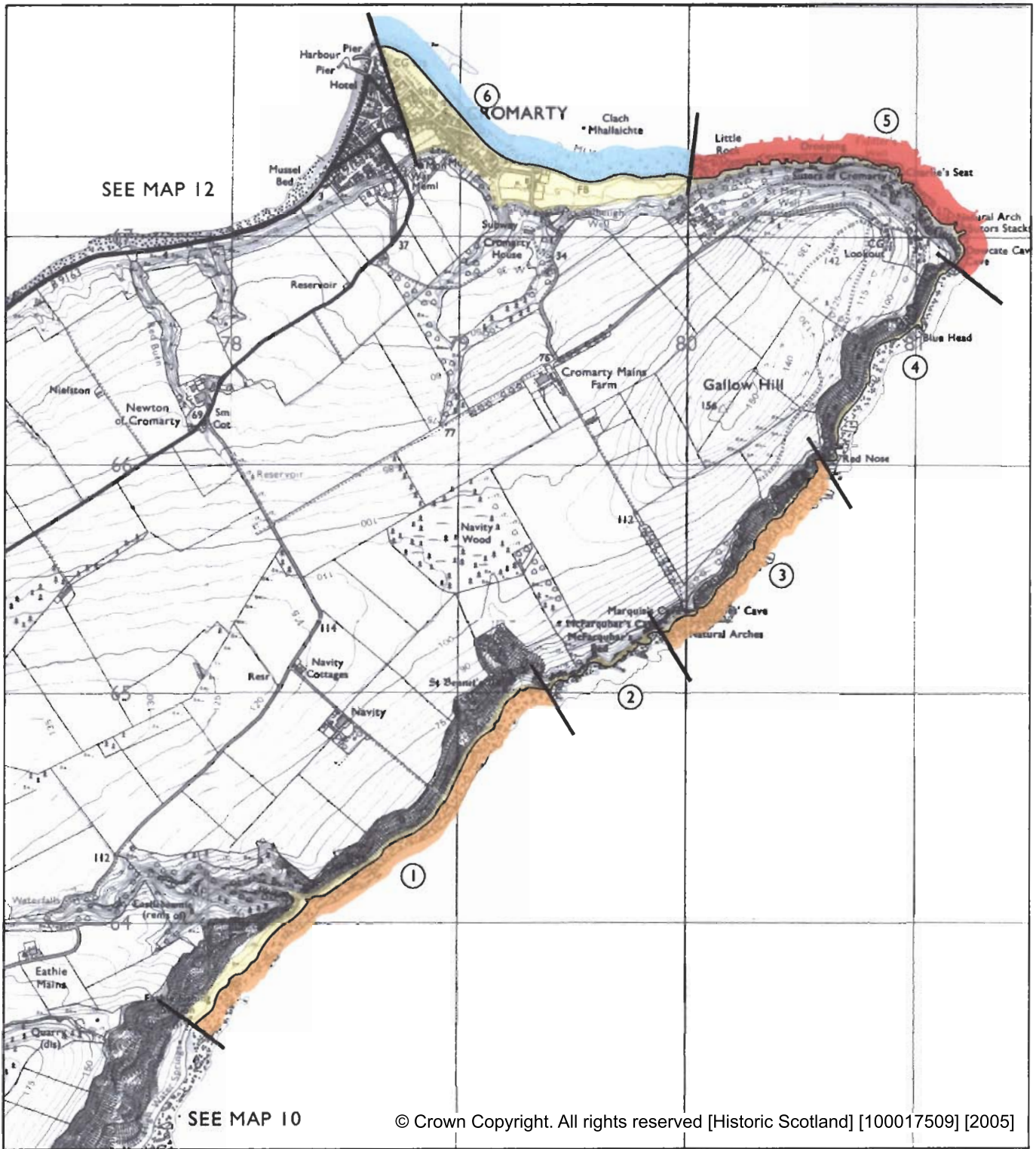
6. East of LITTLE ROCK to CROMARTY HARBOUR

NH 795 675

1.6km

Stable or eroding

Defended by concrete sea defences this unit appears to be fairly stable with sand and shingle banked up at the MHW. Sediment supply appears to be ongoing caused by longshore drift from within the Cromarty Firth.



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EROSION CLASS

Assessment date: 10 September 1998

Key:

- Definitely accreting
- Accreting or stable
- Stable
- Eroding or stable
- Definitely eroding
- Both accreting and eroding
- No access
- Land below 10m



MAP 11: BUILT HERITAGE AND ARCHAEOLOGY

Sites on the Coastal Edge & Foreshore

NH 7785 6350
EATHIE
Sand slipways
Uncertain
Good
Nil

NH 7915 6497
NAVITY
Trackway
Uncertain
Fair
Nil

NH 7928 6497
NAVITY
Boat house and slipway
19th/20th century AD
Poor/ fair (respectively)
Nil

NH 8094 6734
SOUTH SUTOR
Military pillboxes
20th century AD; WWI&II
Fair
Survey and monitor

NH 7863 6772
CROMARTY
Rails for boat launch slipway
20th century AD
Fair
Nil

NH 7867 6783
CROMARTY
Concrete slipway
20th century AD
Good
Nil

Sites in the Hinterland

NH76NE 43
NH 7864 6775
CROMARTY
Girnal
17th/18th century AD
Poor
Nil

NH76NE 38.00 - Listed A
NH 7867 6773
CROMARTY
Lighthouse
19th-20th century AD
Good
Nil

NH76SE 4
NH 7788 6400
CASTLEDOWNIE
Promontory fort
Uncertain
Poor
Monitor

NH76NE 1
NH 7913 6508 & 7923 6502
NAVITY
St Bennet's Chapel (site of) and well
16th/17th century AD
Fair
Nil

NH 7995 6535
McFARQUHAR'S BED
Boathouse
Uncertain
Fair
Nil

NH86NW 11
NH 8103 6695
SOUTH SUTOR
Military coastal battery; bunkers
20th century AD; WWI&II
Fair
Survey and monitor

Sites in the Hinterland

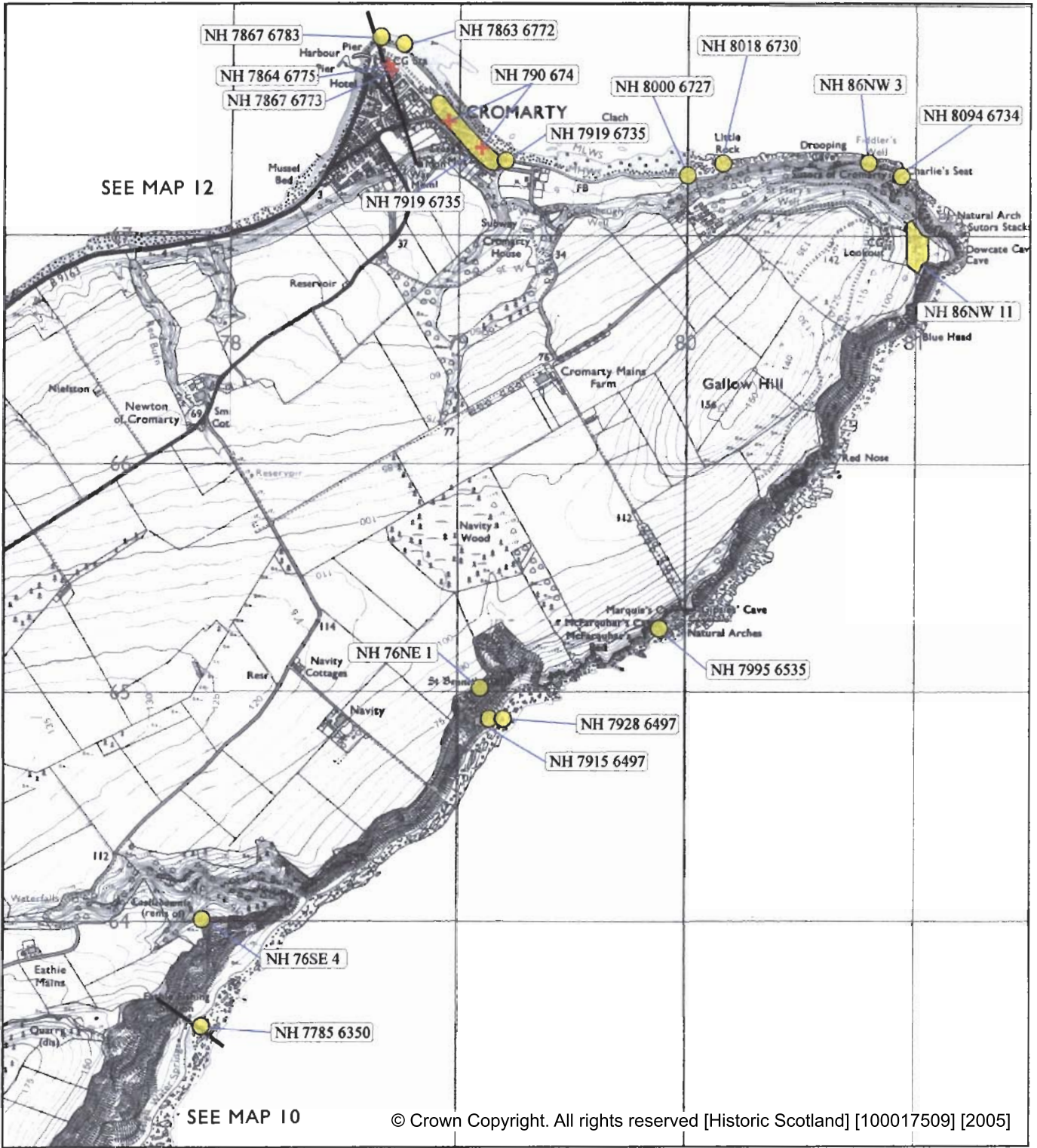
NH86NW 3
NH 8075 6733
SUTORS OF CROMARTY
Fiddler's Well; healing well
Uncertain
Good
Nil

NH 8018 6730
LITTLE ROCK
Target butt and target frame
20th century AD; WW I & II
Fair
Monitor

NH 8000 6727
LITTLE ROCK
Footbridge made of metal target
20th century AD; WW I & II
Fair
Nil

NH 7919 6735
CROMARTY
Canalised stream
19th century AD
Good
Nil

NH76NE 20-4, 31-3, 35-6, 39, 48, 58 - Various Listed B
NH 790 674 area
CROMARTY (East shore)
Residential & industrial properties
17th/18th/19th century AD
Good
Nil



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**BUILT HERITAGE AND
 ARCHAEOLOGY**

Assessment period: September 1998

Key:

- | | | | |
|--|--|--|---|
| | Protected Ancient Monument,
or area of designated wreck | | Other known Ancient Monuments,
or Undesignated wreck |
| | Listed Historic Building | | Designated Landscape |
| | Monument formally proposed by
Historic Scotland for scheduling,
or wreck for designation | | Insufficient information;
more work needed |
| | | | Probably archaeologically sterile |



