

## MAP 2: PHOPACHY TO EASTER LOVAT

**Hinterland Geology and Coastal Geomorphology:** Middle Old Red Sandstone continues to form the dominant basal geology with quartz and feldspars attributed to the Moine Series occurring in the vicinity of Kirkhill. Within the area Quaternary age drift deposits derived exclusively from boulder clay have been sculptured by a series of raised shoreline terraces. Towards Easter Lovat marine carse clay development becomes extensive at the head of the firth. This low lying flood plain was reclaimed in the historic period to create field systems which are now defended by flood banks. Saltmarsh development is extensive alongside the outer tidal reach of the River Beulay.

**Erosion class:** Erosion is minimal with accretion the dominant class in this area. This unit of coastline benefits from shelter afforded by the narrow isthmus at Kessock which absorbs the effect of storm waves and swell. This has a tendency to promote increased sedimentation and accretion on the shallow foreshore. Fine suspended silts carried down the River Beulay are circulated at the head of the Firth and deposited along the main river channel. Channel migration leads to sediment movement and accretion where the currents are slacker. In front of flood banks saltmarsh vegetation is well established, some of which is eroding at Inchberry Croit. Intertidal mudflats are extensive and exposed to at least over 1km between the HWM and LWM.

**Built Heritage and Archaeology:** Two distinct intertidal archaeological monuments found in this area are the remnants of fish traps or 'yairs'. These complex wooden and stone structures were designed to trap fish on both the ebb and flow tides. Their exact period of inception is unknown but they were recorded in use as late as the 1830s. Extensive 19<sup>th</sup> century land reclamation included the building of embankments to increase fertile farming land on the Lovat estate. The reclamations also included the construction of a major network of drainage channels and canals, one of which is within the survey area at Balintore. At the eastern margin of this area the Phopachy intertidal crannog is located. Sub-surface timber remains from structural features have been dated to the 1<sup>st</sup> century BC. The condition of the site appears to be relatively poor.

## Map 2: Hinterland Geology and Coastal Geomorphology

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1 East of PHOPACHY FARM to LENTRAN POINT

NH 595 460

km 1.7km

Mainly estuarine mud

Low edge (<10m)

*Marine deposits overlain by carse clays*

This unit comprises the commencement of carse deposition over marine derived sand and gravel.

The low edge is fairly regular. Intertidal mud flats and shingle present at MHWMS.

2 LENTRAN POINT to north of BALCARSE

NH 575 475

1.8km

Low edge (<10m)

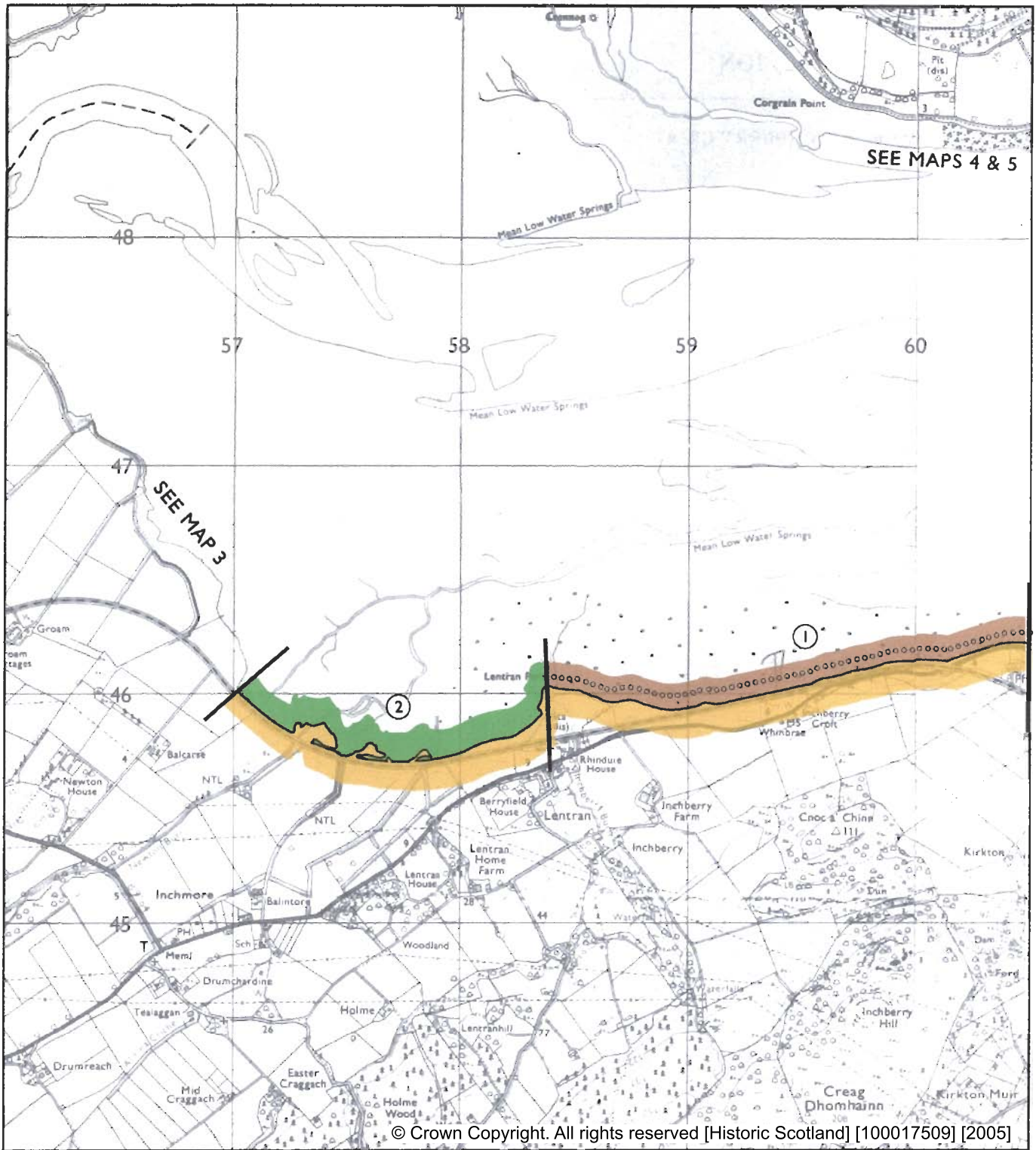
Mainly mud

*Carse clay over marine derived sand and gravel*

This unit consists of a large alluvial fan developed over carse clays, which in turn mantle marine sand and gravel. The intertidal area is estuarine mud and shingle incised by drainage channels.

Saltmarsh has developed along at the shoreline.

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## MAP 2: PHOPACHY TO BALCARSE

MORAY FIRTH SURVEY Grid ref: NH 56-60/44-49

1:25 000

Basemap: O.S. Pathfinder Series Sheet 176

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## HINTERLAND GEOLOGY AND FORESHORE GEOMORPHOLOGY

Assessment date: 08 September 1998

### Hinterland:

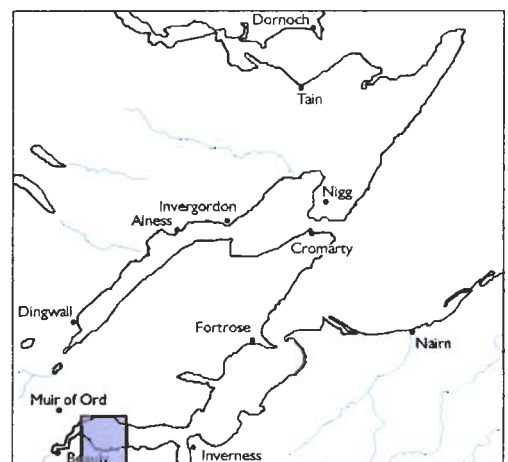
- Drift, boulder clay
- Drift, boulder clay over visible rock
- Raised beach and marine deposits
- Blown sand
- Glacial sand and gravel
- Alluvium

### 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 2: EROSION

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**1. East of INCHBERRY CROIT**

NH 599 462

0.2km

Definitely Eroding

Low-lying coastal edge with eroding saltmarsh defended by rubble sea defence.

**2. INCHBERRY CROIT**

NH 585 459

1.6km

Both Accreting and Eroding

Exposed section of coastline with eroding saltmarsh. The foreshore sediments consist of mud and shingle which shows evidence of accretion.

**3. North of INCHBERRY FARM WEST to east of BALCARSE**

NH 585 459

1.6km

Both Accreting and Eroding

This section of coastline is undergoing erosion due to the loss of the saltmarsh buffer at the MHWM. The foreshore consists of mud and shingle, which is accreting in parts

**4. East of BALCARSE to north of BALCARSE FARM**

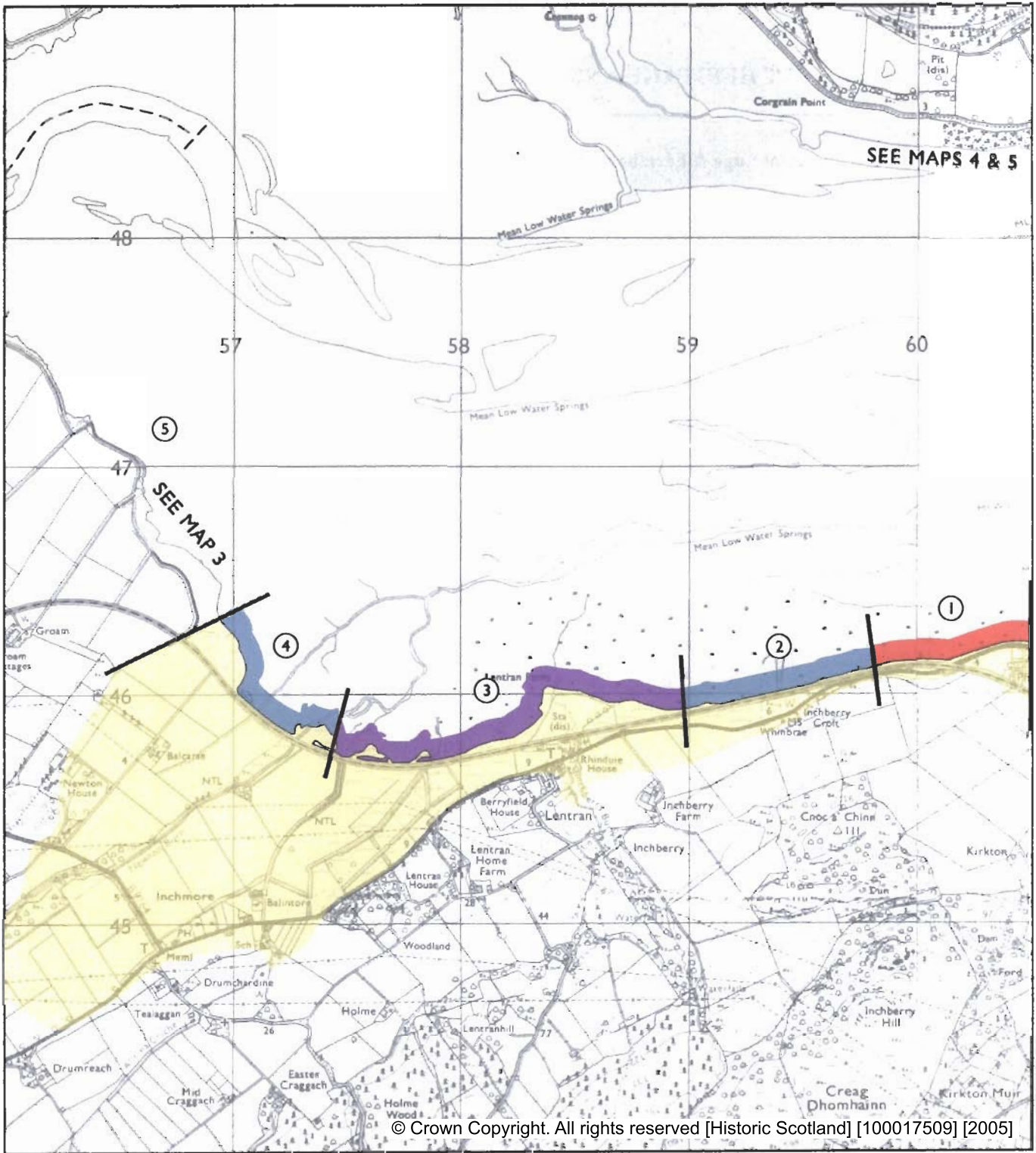
NH 572 460

0.9km

Accreting

Sediment is accreting on the backshore owing to the presence of reed beds. Mud and shingle is also accreting on the wide foreshore

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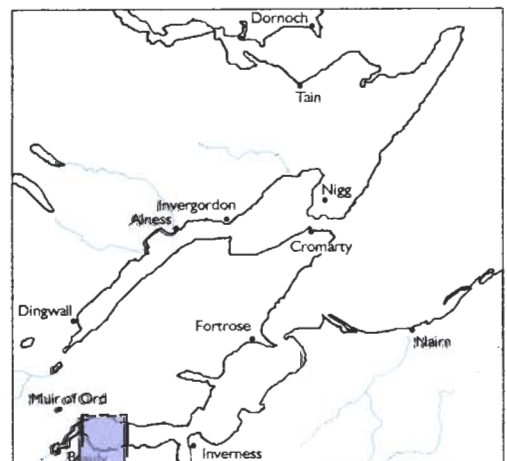
**EROSION CLASS**

Assessment date: 08 September 1998

**Key:**

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

*N.B. The O.S. base map uses an imperial contour interval. Therefore on this sheet, the position of the land below 10m is an estimate.*



## MAP 2: BUILT HERITAGE AND ARCHAEOLOGY

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### Sites on the Coastal Edge & Foreshore

**NH64NW 40**  
NH 6025 4670  
PHOPACHY  
Marine crannog  
1<sup>st</sup> century BC  
Poor  
Nil

**NH54NE 30**  
NH 5939 4620  
WHINBRAE  
Double tidal fish trap  
Uncertain  
Poor  
Survey

**NH54NE 29**  
NH 5841 4622  
LETRAN POINT  
Tidal fish trap  
Uncertain  
Poor  
Survey

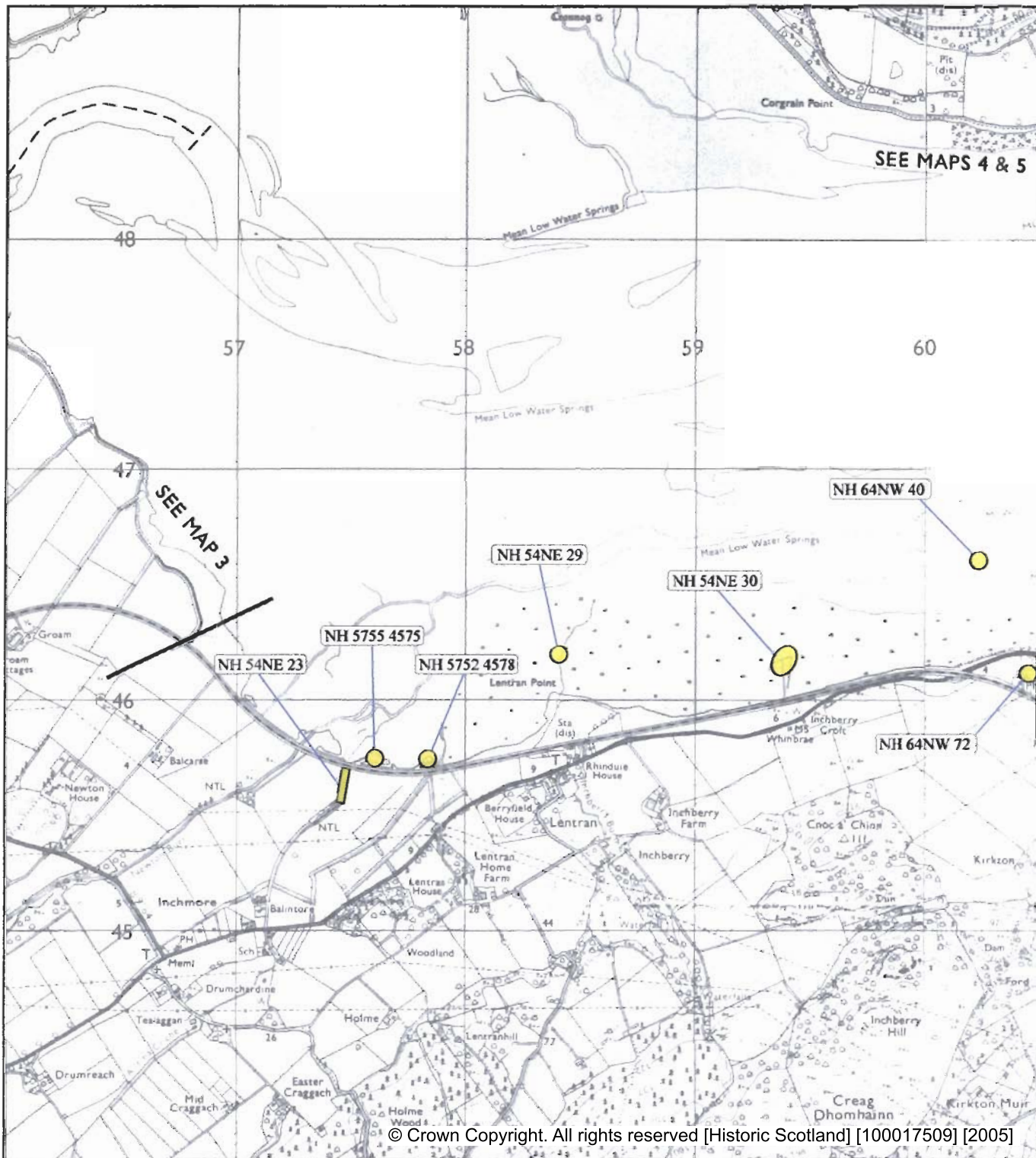
NH 5752 4578  
LETRAN POINT  
Embankment  
Unknown  
Poor  
Nil

NH 5755 4575  
LETRAN POINT  
Railway embankment  
19<sup>th</sup>/20<sup>th</sup> century AD  
Good  
Nil

**NH54NE 23**  
NH 5744 4564  
BALINTORE. Allt na Criche  
Canal; sea wall  
19<sup>th</sup> century AD  
Fair  
Nil

### Sites in the Hinterland

**NH64NW 72**  
NH 6044 4612  
PHOPACHY  
Residential country house  
18<sup>th</sup>/19<sup>th</sup> century AD  
Good



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### BUILT HERITAGE AND ARCHAEOLOGY

Assessment period: September 1998

#### Key:

Protected Ancient Monument,  
 or area of designated wreck

Listed Historic Building

Monument formally proposed by  
 Historic Scotland for scheduling,  
or wreck for designation

Other known Ancient Monuments,  
or Undesignated wreck

Designated Landscape

Insufficient information;  
more work needed

Probably archaeologically sterile

1:25 000

Basemap: O.S. Pathfinder Series  
Sheet 176

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