

**Built heritage and archaeology** - The coast edge as far as Balmerino is thickly wooded making identification of archaeological sites fairly difficult. The foreshore is characterised by thick mud overlying a shingle beach. Although this mud should provide a favourable burial environment for archaeological remains, few foreshore sites were located. The exception to the rule was the intact wreck of a salvage barge which is visible at LW but submerged at HW (NO37782577). The majority of monuments relate to the Tay Salmon fishing industry (site description 6). Contrary to the rest of the Tay coastline, related monuments in the vicinity of Balmerino appear to have been fairly well recorded and several salmon fishing bothies have been listed as Historic Buildings (NO35782479; NO35772479). These particular examples have been restored as houses and are therefore in good condition. With the exception of Balmerino Mill (NO32SE30) which is dilapidated although not because of coast erosion, the Balmerino monuments all appear to be in fair condition. Balmerino Abbey (NO35832467) is worthy of note due to its importance as a 13th Century Cistercian Abbey. However, set back approximately 100 metres from the coast edge, this monument is under no threat from coastal processes. Although clearly of importance to the Balmerino salmon industry, the decaying pier (NO35602482) and the associated iron salmon coble (NO35662481) at the western end of the village have not been adequately recorded.

**Hinterland geology and coastal geomorphology; Erosion class**-East of Balmerino the coastline is stable. The cliffed edge is composed of resistant Lower Devonian igneous rocks. Where the coast edge lowers at Balmerino raised deposits overlying the hard rock are more susceptible to erosion at the coast edge (Erosion Unit 2,4). A stone wall protects the coast edge in front of the Balmerino Mill. West of Balmerino, Upper Devonian sandstones with Lower Devonian basaltic and andesitic rocks outcrop along a cliffed edge. The overlying raised beach deposits with drift experience slip which causes the trees to topple. Slip is the result of surface processes as opposed to coastal erosion. The foreshore consists of alluvial muds with steep fringing shingle beaches, which often create ridges at the coast edge. To the west, shingle bars perpendicular to the shore extend into the low water muds, they form as a result of wave and tidal interaction. Cobbles at the mid shore line have a veneer of mud and seaweed, highlighting the limited movement of the coarse deposits.

## MAP 11 KILBURNS TO LOW WOOD

### EROSION UNITS

---

1

NO36992552

2 km

Stable

*Basaltic and andesitic cliffs create a resistant coast edge. The foreshore is composed of thick muds which are encroaching over stable shingle on the upper foreshore.*

2

NO35962541

0.25 km

Eroding or stable

*The low edge in front of the houses is protected with concrete and stone walls. There is localised undercutting by scour erosion during high wave activity.*

3

NO35782505

0.6 km

Stable

*In the vicinity of the mill resistant platform protects the foreshore and stone walls are situated along the coast edge. West of the mill, there is a stable shingle beach. The sandy raised beach deposits of the edge are susceptible to erosion only at the highest waters.*

4

NO35572475

0.3 km

Eroding or stable

*At Balmerino bank the low edge is composed of raised beach deposits, the vertical undercut face shows signs of erosion. Human disturbance with the placement of boulders provides some protection to the edge.*

5

NO34652399

2 km

Stable

*The foreshore has stable thick muds, which have encroached over the static shingle and cobbles on the upper foreshore. The low edge composed of raised beach deposits is protected by vegetation. Toppled trees are the result of surface processes which cause slip in the drift cover. Elsewhere, the cliffs at the coast edge are composed of resistant sandstones with igneous rocks in the west.*

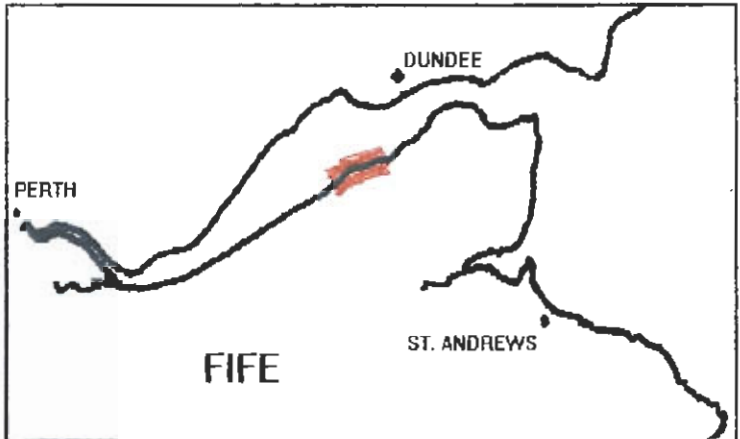
MAP CLASS: **EROSION**  
 (Assessment date: 15. 16 October 1996 )  
 NO 22/22. Scale 1:25,000

**KILBURNS TO LOW WOOD**



**KEY**

Erosion class	Staedtler colour	Colour
Definitely Accreting	ultramarine blue	
Accreting or stable	light blue	
Stable	light green	
Eroding or stable	orange	
Definitely Eroding	scarlet	
Both accreting and eroding	purple	
No access	blank	
Land below 10m	canary yellow	



**MAP 11 KILBURN TO LOW WOOD**

**GEOLOGY UNITS**

**1**  
NO37502549  
1 km  
Alluvial/marine muds  
High cliff (>5metres)  
Drift, boulder clay over visible rock  
*West of Jocks Hole the coastline is curved with a wide lower foreshore composed of flat wet silty muds and a fringing steep shingle beach on the upper foreshore. At the mid tide level, attached seaweed and mud cover the shingle. The coast edge consists of high cliffs composed of basaltic and andesitic rocks. The overlying drift is composed of red sandy boulder clay.*

**2**  
NO36492549  
1.2 km  
Alluvial/marine muds  
High cliff (>5 metres)  
Raised beach and marine deposits with drift, boulder clay over visible rock  
*Muds compose the foreshore with fringing shingle deposits on the upper foreshore. To the west, the shingle beach on the upper foreshore is narrow and it is composed of coarse cobbles and angular basaltic boulders. The cliffs at the coast edge are composed of resistant Devonian rocks.*

**3**  
NO35912539  
0.4 km  
Mainly alluvial/marine muds  
Low edge (<5 metres)  
Raised beach and marine deposits  
*At Nether Kirkton stonewalls are positioned along the frontage of the housing. Resistant basaltic and andesitic rocks outcrop along the remaining coast edge. On the upper foreshore there is platform with intervening shingle. Muds compose the lower foreshore.*

**4**  
NO35782525  
Alluvial /marine muds

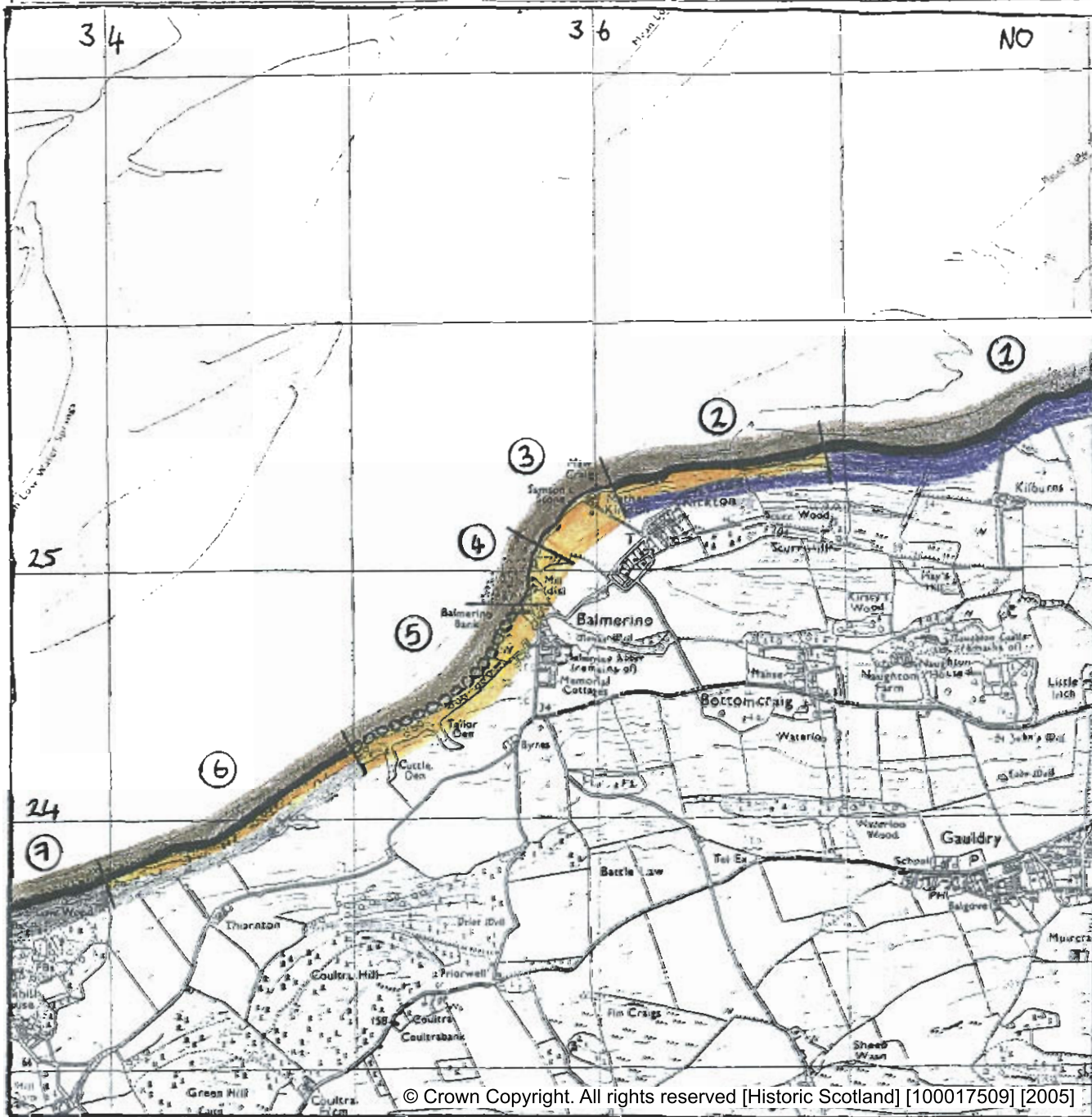
Low edge (<5 metres)  
Raised beach and marine deposits  
*West of the mill, the low edge is composed of sandy raised beach deposits. On the foreshore there is a wide beach composed of coarse deposits. Silty muds with shingle compose the lower foreshore with sand and shingle on the upper foreshore.*

**5**  
NO35452450  
0.8 km  
Alluvial /marine muds  
Shingle  
Raised beach and marine deposits  
*Muds compose the lower foreshore with a steep upper foreshore of shingle. A shingle ridge is situated at the coast edge. The low undercut coast edge is composed of sandy raised beach deposits. Human disturbance protects vulnerable places along the edge with boulders. In the hinterland the low undulating fields are composed of raised beach deposits.*

**6**  
NO34792403  
1 km  
Alluvial/marine muds  
High cliff (>5 metres)  
Raised beach deposits with drift, bolder clay  
*The upper foreshore consists of shingle and cobbles with a low shingle bank at the coast edge in the east. To the west, the shingle deposits narrow and the cliff edge rises. Resistant Devonian basaltic and andesitic rocks compose the cliffs which are overlain by raised beach deposits, with drift to the south.*

**7**  
NO33772372  
0.7 km  
Alluvial /marine muds  
High cliffs(> 5 metres)  
Drift, boulder clay  
*Shingle bars perpendicular to the shoreline extend into the lower foreshore muds. The shingle bars develop as a result of wave and tidal*

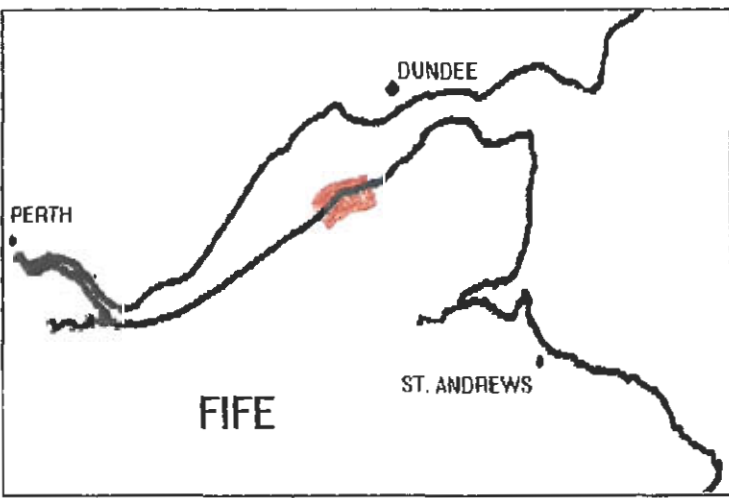
*interaction which concentrate the shingle deposits into a bar with finer sediments on either side. The high coast edge has drift deposits of boulder clay overlying the hard rock which is composed of basalt.*



© Crown Copyright. All rights reserved [Historic Scotland] [100017509] [2005]

Hinterland Geology	Shoreline colour	
Drift, boulder clay	light grey	
Drift, boulder clay over visible rock	Caran D'ache violet	
raised beach and marine deposits	golden brown	
Blown sand	peach	
Glacial sand and gravel	magenta	
Alluvium	grass green	
Coast edge		
Low edge (< 5m)	dun black line	
CHFT (> 5m)	solid black line	
Man made barrier	black line with aquinas	
Single beach	small circles	
Human disturbance	black onus	
Coastal Geomorphology		
Mainly rock platform	vermillion	
Mainly sand	indigo	
Mainly alluvial/marine mud	sienna brown	
Marsh	true green	

KEY



**MAP 11 - KILBURNS TO LOW WOOD**

**BUILT HERITAGE AND ARCHAEOLOGY UNITS**

*Sites behind the coast edge*

**NO32SE30.1**  
BALMERINO MILL, MILLER'S HOUSE  
HOUSE  
Uncertain  
Fair  
*Nil*

**NO32SE30**  
BALMERINO MILL  
MILL  
LISTED BUILDING  
18th Century  
Poor  
*Nil*

**NO32SE2**  
BALMERINO ABBEY  
PROTECTED ANCIENT MONUMENT  
13th Century  
Fair  
*Nil*

**NO32SE53**  
BYRES LINEAR CROPMARK  
Uncertain  
Not seen  
*Nil*

**NO33602337**  
Birkhill House  
18th and 19th Centuries  
Not seen  
*Nil*

**NO35782482**  
BRIDGEND HOUSE & COMMALON HOUSE  
LISTED BUILDING  
18th Century  
Fair  
*Nil*

**NO35782479**  
THE NEUK, BRIDGEND COTTAGE  
LISTED BUILDING

19th Century  
Fair  
*Nil*  
**\*See site description 6**

**NO35772479**  
TAY COTTAGE, BALMERINO COTTAGE  
LISTED BUILDING  
19th Century  
Fair  
*Nil*  
**\*See site description 6**

*Sites on the coast edge and foreshore*

**NO32NE8164**  
MARITIME AREA; CRAFT  
Intact wreck of salvage barge submerged at HW  
20th Century  
Fair  
*Survey (visit again at LW springs.)*

**NO32NE9**  
KIRKTON ENCLOSURES (POSSIBLE)  
ENCLOSURES  
Uncertain  
Not seen  
*Nil*

**NO35972533**  
Nether Kirkton slipway and converted salmon fishing station  
Uncertain  
Good  
*Nil*  
**\*See site description 6**

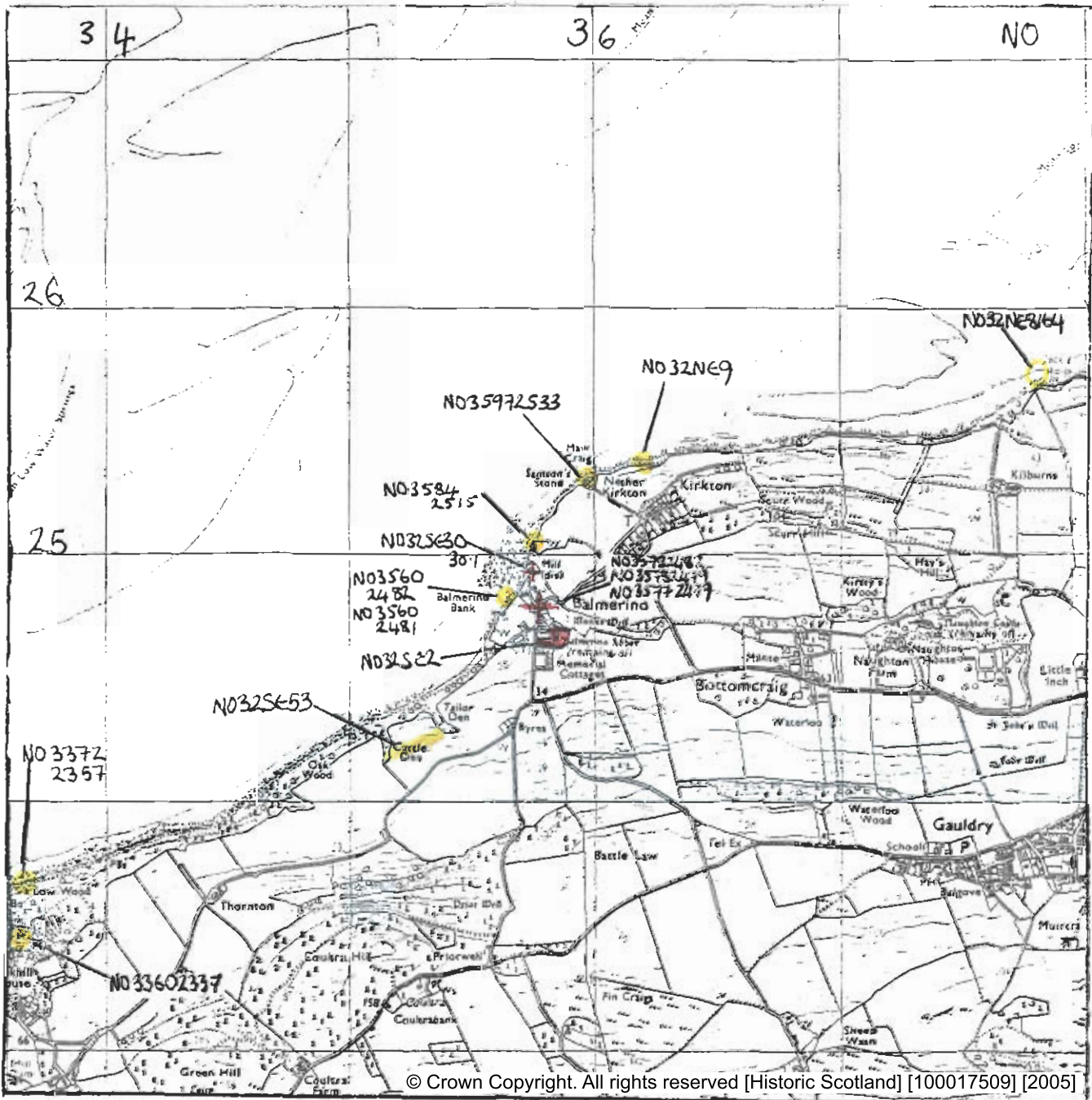
**NO35842515**  
Single storey cottages at coast edge  
Uncertain  
Poor  
*Survey*  
**\*See site description 6**

**NO35602482**  
Balmerino harbour consisting of natural rock spur and stone quay  
Uncertain  
Poor  
*Survey*  
**\*See site description 6**

**NO35662481**

Iron coble-like working boat  
20th Century  
Poor  
*Survey*  
**\*See site description 6**

**NO33722357**  
Concrete platform and metal railings situated at HW mark  
Uncertain  
Poor  
*Nil*



KEY

Site location	Symbol	Standard colour	Significance
NGR e.g. NO12345678	solid roundel	carmine	Protected Ancient Monument
	cross	carmine	Listed Historic Building
	open roundel	carmine	Monument formally proposed by Historic Scotland for designation
NMRS e.g. NO28NW35	solid roundel	yellow ochre	Other known monument
	dash/d outline	yellow ochre	Designated landscape
	open roundel	yellow ochre	Undesignated wreck
	area	green	Insufficient information, more work needed (no access, or not walked)
	area	blue	Probably archaeologically sterile

