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## ELC\_27: Whitekirk

### Site information

#### Location and summary description:

The site comprises an area of streamlined bedrock characteristic of the ice-moulded lowlands of East Lothian.

#### National Grid reference:

Mid-point: [NT 58181 81015]

West-end: [NT 57286 80808]

East-end: [NT 59095 81580]

**Site type:** Natural landform; Natural view

**Site ownership:** Local land owners

**Current use:** Agricultural land

**Field surveyors:** John Gordon

**Current geological designations:** None

**Date visited:** 26 September 2014

**Other designations:** None known

### Site map

(Figure 32) Whitekirk Location Map. The site boundary is drawn to include a representative area of ice-moulded bedrock.

### Site description

#### Background

The site (approximately 1.5 km long) is located west of the village of Whitekirk, c. 3 km to the north of East Linton.

#### Quaternary deposits and landforms

Glacial erosion has produced extensive moulding and streamlining of the basaltic bedrock (belonging to the Garleton Hills Volcanic Formation) at the site. This erosion has formed low, elongated rock ridges (tens to hundreds of metres long, and a few metres to tens of metres high) separated by bedrock grooves (ELC\_27\_P1) and (ELC\_27\_P2). These are particularly well developed between Stonelaws and Merrylaws, where some of the ridges appear as uncultivated areas in the fields (ELC\_27\_P3). The ridges are broadly parallel and aligned between ENE–WSW. Similar features are well developed on Whitekirk Hill where the alignment of the fairways on the golf course follows the grooving of the bedrock between the ridges. A good example of glacially abraded basalt with striated rock surfaces occurs near the old quarry at Merrylaws (Hall, 2012).

#### Stratigraphy and rock types

**Age:** Carboniferous

**Formation:** Garleton Hills Volcanic Formation

**Rock type:** Mugearite, basalt.

### **Assessment of site: access and safety**

**Road access and parking** Whitekirk is accessible from the A198 south from North Berwick or via the A1/A199 from Edinburgh. The landforms can be easily viewed from the minor roads and footpaths that cross the area.

**Safety of access** Care is required parking on roadside verges. Safety of exposure Not applicable.

**Access** Access is via agricultural land. The site can be viewed from the minor roads and footpaths that cross the area.

**Current condition** The principal requirement is to maintain the overall visibility of the landforms. The current condition of the features is generally good.

**Current conflicting activities** The area is used for agriculture which is generally compatible with maintaining the visibility of the landforms.

**Restricting conditions** Some of the rock outcrops are obscured by vegetation growth, notably the ice-abraded surfaces at Merrylaws.

**Nature of exposure** Landscape feature, glacial landforms.

### **Assessment of site: culture, heritage & economic value**

**Historic, archaeological & literary associations** No known association

**Aesthetic landscape** Limited value

**History of earth sciences** The John Muir Way passes through part of the site.

**Economic geology** Former quarry to the south-east of Merrylaws — use unknown.

### **Assessment of site: geoscientific merit**

	<b>Rarity</b>	<b>Quality</b>	<b>Literature/collections</b>	<b>Primary interest</b>
<b>Lithostratigraphy</b>				
<b>Sedimentology</b>				
<b>Igneous/mineral/metamorphic geology</b>				
<b>Structural geology</b>				
<b>Palaeontology</b>				
<b>Geomorphology</b>	Regional	Good	Kendall & Bailey, 1908; Jackes, 1973; Sissons, X 1975; Hall, 2012.	

### **Site geoscientific value**

The Whitekirk site is a good representative area of ice-moulded bedrock characteristic of lowland East Lothian. East Lothian is a particularly good example of an ice-moulded lowland.

The Whitekirk site is a good example of lowland glacial erosion producing streamlined bedrock ridges and is of regional significance.

### **Assessment of site: current site usage**

**Community** Likely limited value — possible daily usage along John Muir Way during peak season.

**Education** Currently probably little used, but has some potential for education and public interpretation e.g. the John Muir Way crosses the site.

### **Assessment of site: fragility and potential use of the site**

**Fragility** Waste tipping, the likelihood of development and extensive tree planting would affect the quality and visibility of landforms at the site.

**Potential use** School education, interpretation linking geology and landscape. Educational visits could be combined with visits to the Garleton Hills and North Berwick Law.

### **Geodiversity summary**

The Whitekirk site is a good representative example of an ice-moulded lowland area, demonstrating streamlined bedrock formed by glacial erosion. It is relatively accessible and there is potential for developing the value of the site through promoting existing available information and engagement with schools.

### **Site photos**

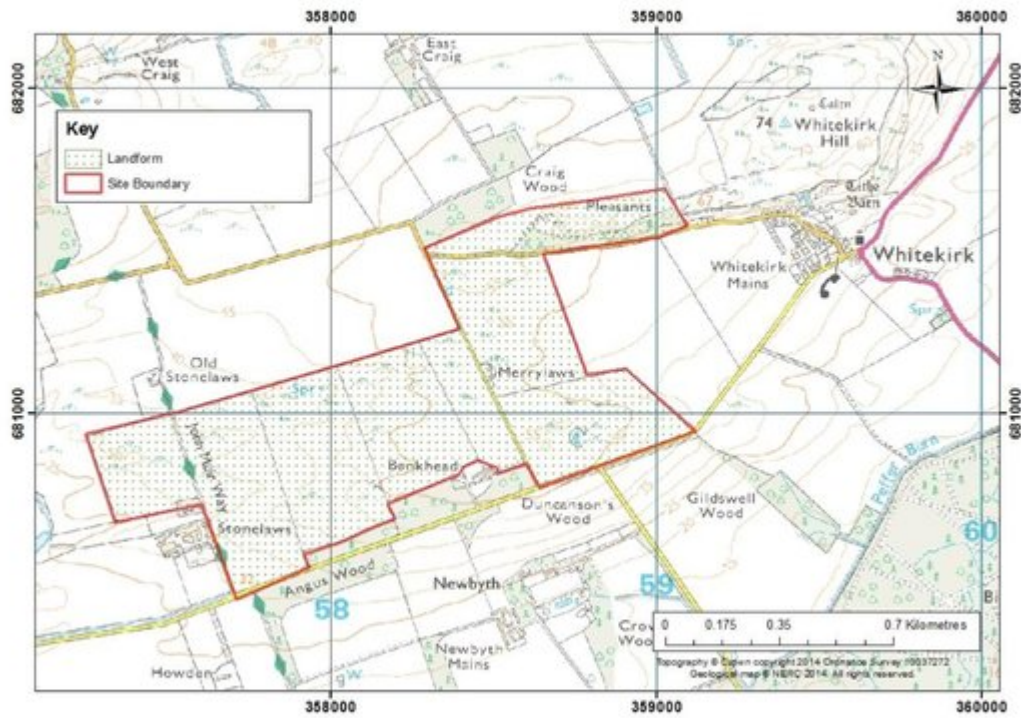
(ELC\_27\_P1) Streamlined ridge at Pleasants west of Whitekirk. View to the south. © John Gordon.

(ELC\_27\_P2) Streamlined ridge east of Merrylaws. View to the south. © John Gordon.

(ELC\_27\_P3) Ice-moulded bedrock near Stonelaws (right), view to the south © John Gordon.

### **[References](#)**

## Site Map



**Figure 32: Whitekirk Location Map.** The site boundary is drawn to include a representative area of ice-moulded bedrock.

(Figure 32) Whitekirk Location Map. The site boundary is drawn to include a representative area of ice-moulded bedrock.



(ELC\_27\_P1) Streamlined ridge at Pleasants west of Whitekirk. View to the south. © John Gordon.



(ELC\_27\_P2) Streamlined ridge east of Merrylaws. View to the south. © John Gordon.



(ELC\_27\_P3) Ice-moulded bedrock near Stonelaws (right), view to the south © John Gordon.