

Soil Survey

- 3.16 The soil profiles recorded at each auger-bore location are given in **Appendix KCC1**. A detailed description of Soil Pit 1 near auger bore 2 is given in **Appendix KCC2**, as shown in **Plan KCC3823/01**. The soil survey determined brown (Munsell colour 10YR5/3), very slightly stony heavy clay loam topsoil over yellowish brown (10YR5/6), slightly stony heavy clay loam upper subsoil, and pale brown (2.5Y7/3), gravelly, heavy clay loam lower subsoil. The subsoil does not constitute a slowly permeable layer (SPL) in ALC terms, but where the soil profiles contain ochreous mottles (5YR5/6) and gleying between 40cm and 70cm, they are placed in Wetness Class II as per Table 13 in the ALC Guidelines.
- 3.17 **Topsoil Particle Size Analysis.** To substantiate topsoil texture determined during the ALC survey by hand-texturing, one topsoil sample was collected at the Site, i.e., from auger bore location 2 (Pit 1), see **Plan KCC3823/01**. The topsoil samples were sent to an accredited laboratory for analysis of particle size distribution (PSD), based on the British Standard Institution particle size grades. The certificate of analysis is provided as **Appendix KCC3**. The findings of the PSD analysis are shown in Table 2 below.

Table 2. Topsoil Particle Size Analysis

Topsoil Sample Location (See KCC3823/01)	% sand 0.063-2.0 mm	% silt 0.002- 0.063 mm	% clay <0.002 mm	ALC Soil Texture Class
2 (Pit 1)	30	39	31	Heavy Clay Loam

Interactive Limitations

- 3.18 From the information above, together with the findings of the detailed soil survey (see Soil Profile Log given in **Appendix KCC1**), it has been determined that the quality of agricultural land at the Site is limited by soil wetness, as described below.
- 3.19 **Soil Wetness.** From the ALC Guidelines, a soil wetness limitation exists where *'the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock'*. Agricultural land quality at the Site is limited by soil wetness as per Table 3 below (based on Table 6 'Grade According to Soil Wetness – Mineral Soils' in the ALC Guidelines).

Table 3. ALC Grade According to Soil Wetness

Wetness Class	Texture of the Top 25 cm	>225 Field Capacity Days
I	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam* Heavy Silty Clay Loam/ Heavy Clay Loam** Sandy Clay/Silty Clay/Clay	2 3a 3b 3b
II	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam* Heavy Silty Clay Loam/ Heavy Clay Loam** Sandy Clay/Silty Clay/Clay	3a 3b 3b 3b
III	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam* Heavy Silty Clay Loam/Heavy Clay Loam** Sandy Clay/Silty Clay/Clay	3b 3b 4 4
IV	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam* Heavy Silty Clay Loam/Heavy Clay Loam** Sandy Clay/Silty Clay/Clay	3b 3b 4 5
Key: * 18% to <27% clay; and ** 27% to 35% clay		

- 3.20 In a climate area with 249 FCD, soil profiles that are well-drained (Wetness Class I) or slightly seasonally waterlogged (Wetness Class II) are limited by soil wetness to Subgrade 3b where the topsoil is heavy clay loam.

4 AGRICULTURAL LAND CLASSIFICATION

- 4.1 It has been determined that the quality of agricultural land in the Site is limited by soil wetness to Subgrade 3b (i.e., 249 FCD/heavy clay loam topsoil/Wetness Classes I-II). The area and proportion of agricultural land in each ALC grade have been measured from an ALC map given in **Plan KCC3823/02**. The findings are reported in Table 4 below.

Table 4. Agricultural Land Classification – Letterston, Pembrokeshire

ALC Grade	Area (Ha)	Area (%)
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	0	0
Subgrade 3a (Good)	0	0
Subgrade 3b (Moderate)	2.6	100
Grade 4 (Poor)	0	0
Grade 5 (Very Poor)	0	0
Non-agricultural / Other land	<0.01	0
Total	2.6	100

Appendix KCC1
Soil Profile Log

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2			Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC				
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size					Shape	MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	SM 93500 29900	193500	229900	100	≤7	Level	PGR	0	26	26	10YR 5/3					No	HCL - Clay loam (heavy)	2			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Not Applicable	NON - Non-calcareous (<0.5% CaCO3)	No		73	61	1	WC II	3b	Wetness				3b
								26	50	24	10YR 5/6	CF - Common Faint	5YR 5/6			Yes	HCL - Clay loam (heavy)	6			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	No											
								50	70	20	10YR 6/6	CD - Common Distinct	5YR 5/6			Yes	HCL - Clay loam (heavy)	12			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	Yes											
								70	120	50	2.5Y 7/3	CD - Common Distinct	5YR 5/6			Yes	HCL - Clay loam (heavy)	20			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	Yes											
2	SM 93600 29900	193600	229900	103	≤7	Level	PGR	0	24	24	10YR 5/3					No	HCL - Clay loam (heavy)	2			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Not Applicable	NON - Non-calcareous (<0.5% CaCO3)	No		72	58	1	WC II	3b	Wetness				3b
								24	44	20	10YR 5/6	CF - Common Faint	5YR 5/6			Yes	HCL - Clay loam (heavy)	6			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	Yes											
								44	60	16	10YR 6/6	CD - Common Distinct	5YR 5/6			Yes	HCL - Clay loam (heavy)	12			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	Yes											
								60	120	60	2.5Y 7/3	CD - Common Distinct	5YR 5/6			Yes	HCL - Clay loam (heavy)	20			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	Yes											
3	SM 93680 29850	193680	229850	102	≤7	Level	PGR	0	24	24	10YR 5/3					No	HCL - Clay loam (heavy)	2			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Not Applicable	NON - Non-calcareous (<0.5% CaCO3)	No		72	59	1	WC I	3b	Wetness				3b
								24	44	20	10YR 5/4					No	HCL - Clay loam (heavy)	5			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	No											
								44	60	16	10YR 6/6					No	HCL - Clay loam (heavy)	10			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	No											
								60	120	60	2.5Y 7/3	CD - Common Distinct	5YR 5/6			Yes	HCL - Clay loam (heavy)	20			HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)							Moderate	NON - Non-calcareous (<0.5% CaCO3)	Yes											
END																																									

Appendix KCC2
Soil Pit Description

Soil Survey				Surveyor	RTL
Easting (X)	193600	Northing (Y)	229900	Alt (m)	103
Land Use	PGR	Reference	2 (Pit 1)	Slope °	≤7
Bedrock	Penmaen Dewi Shale Formation	Superficial	None recorded	Aspect	Level
				Grid Reference	SM 93600 29900
				Date	11/11/2024

Layer		Topsoil	2	3	4	5	6	7
Lower Depth (cm)		24	44	60	120			
Texture		HCL - Clay loam	HCL - Clay loam (heavy)	HCL - Clay loam	HCL - Clay loam (heavy)			
Matrix Colour		10YR 5/3	10YR 5/6	10YR 6/6	2.5Y 7/3			
Gley (Y/N)		No	Yes	Yes	Yes			
Ochreous Mottles	Form		CF - Common Faint	CD - Common Di	CD - Common Distinct			
	Munsell Colour		5YR 5/6	5YR 5/6	5YR 5/6			
Grey Mottles	Form							
	Munsell Colour							
Manganese (Y/N)		No	Yes	Yes	Yes			
% Stones (type 1)		2	6	12	20			
Stones > 2cm								
Stones > 6cm								
Stone Type		HR - All hard rock	HR - All hard rocks or stones	HR - All hard rock	HR - All hard rocks or stones (i.e. those which cannot be scratch			
% Stones (type 2)								
Stones > 2cm								
Stones > 6cm								
Stone Type								
CaCO3		NON - Non-calca	NON - Non-calcareous (<0	NON - Non-calca	NON - Non-calcareous (<0.5% CaCO3)			
Shape of Peds.		SAB - Subangular	AB - Angular Blocky	AB - Angular Blo	AB - Angular Blocky			
Size of Peds.		M - Medium	M - Medium	C - Coarse	C - Coarse			
Subsoil Structure		Not Applicable	Moderate	Moderate	Moderate			
Soil or Ped. Strength		Firm	Firm	Firm	Firm			
Degree of Ped. Development		M - Moderate	M - Moderate	M - Moderate	M - Moderate			
Slowly Permeable Layer (Y/N)		No	No	No	No			

MDw	MDp	FCD
67	50	249

Wetness	Class (WC)	WC II
	Grade (WE)	3b

Notes	No SPL. Gleyed 40-70cm = WCII. Moisture Balance (MB): Wheat = 72mm; Potatoes = 58mm (Grade 1 according to droughtiness)
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Appendix KCC3
Laboratory Analysis



ANALYTICAL REPORT											
Report Number	65316-24		P248	SARAH KERNON				Client LETTERSTON			
Date Received	15-NOV-2024			KERNON COUNTRYSIDE				PEMBROKESHIRE			
Date Reported	02-DEC-2024			CONSULTANTS LTD							
Project	KCC3823			GREENACRES BARN							
Reference	LETTERSTON			PURTON STOKE							
Order Number	KCC3823			WILTSHIRE SN5 4LL							
Laboratory Reference			SOIL723741								
Sample Reference			AB2								
Determinand	Unit	SOIL									
Sand 2.00-0.063mm	% w/w	30									
Silt 0.063-0.002mm	% w/w	39									
Clay <0.002mm	% w/w	31									
Textural Class **		HCL									
Notes											
Analysis Notes		<p>The sample submitted was of adequate size to complete all analysis requested.</p> <p>The results as reported relate only to the item(s) submitted for testing.</p> <p>The results are presented on a dry matter basis unless otherwise stipulated.</p>									
Document Control		<p>This test report shall not be reproduced, except in full, without the written approval of the laboratory.</p>									
Reported by		<p>Gabrielle Parkes</p> <p>Natural Resource Management, a trading division of Cawood Scientific Ltd.</p> <p>Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS</p> <p>Tel: 01344 886338</p> <p>Fax: 01344 890972</p> <p>email: enquiries@nrm.uk.com</p>									

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

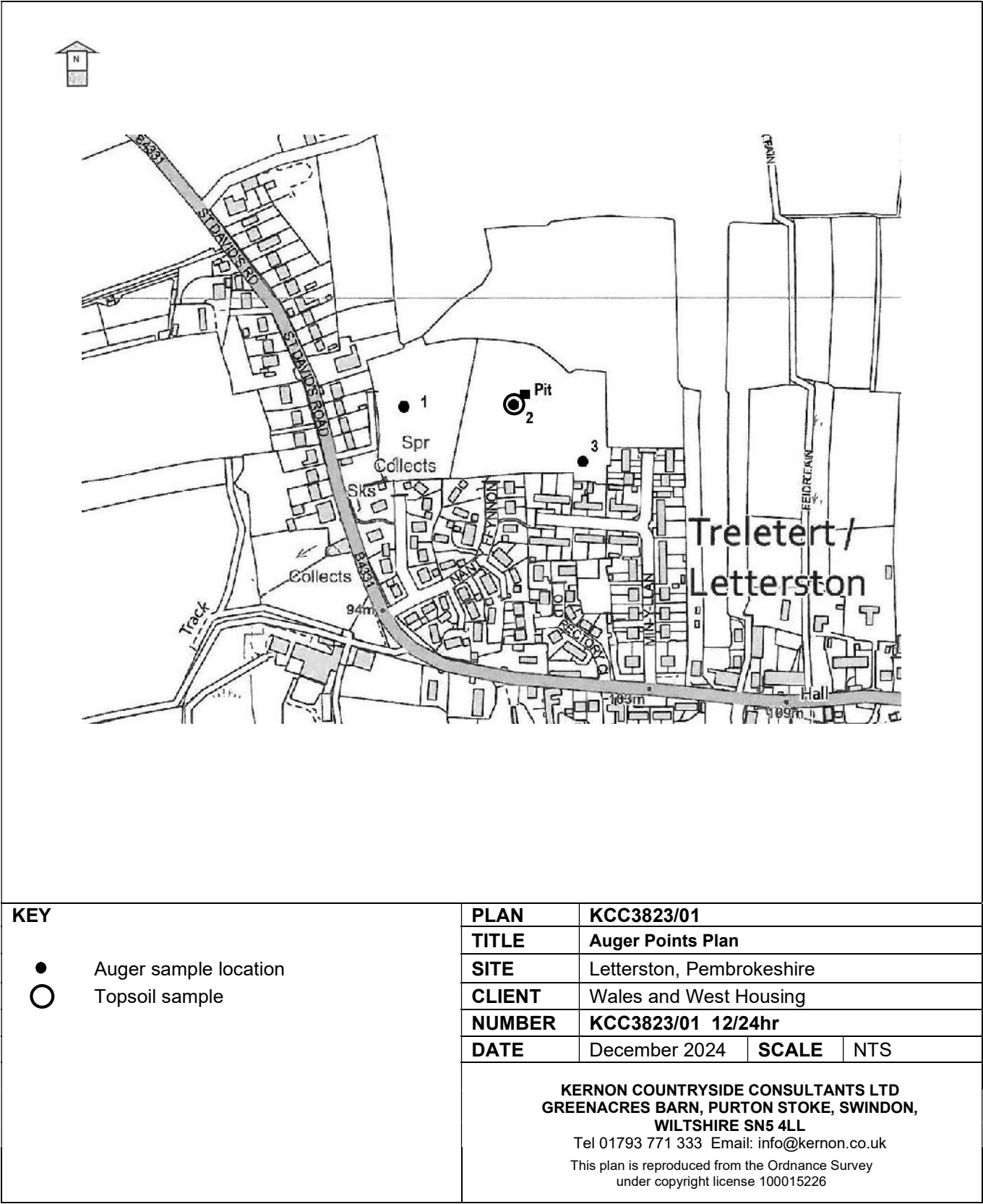
The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

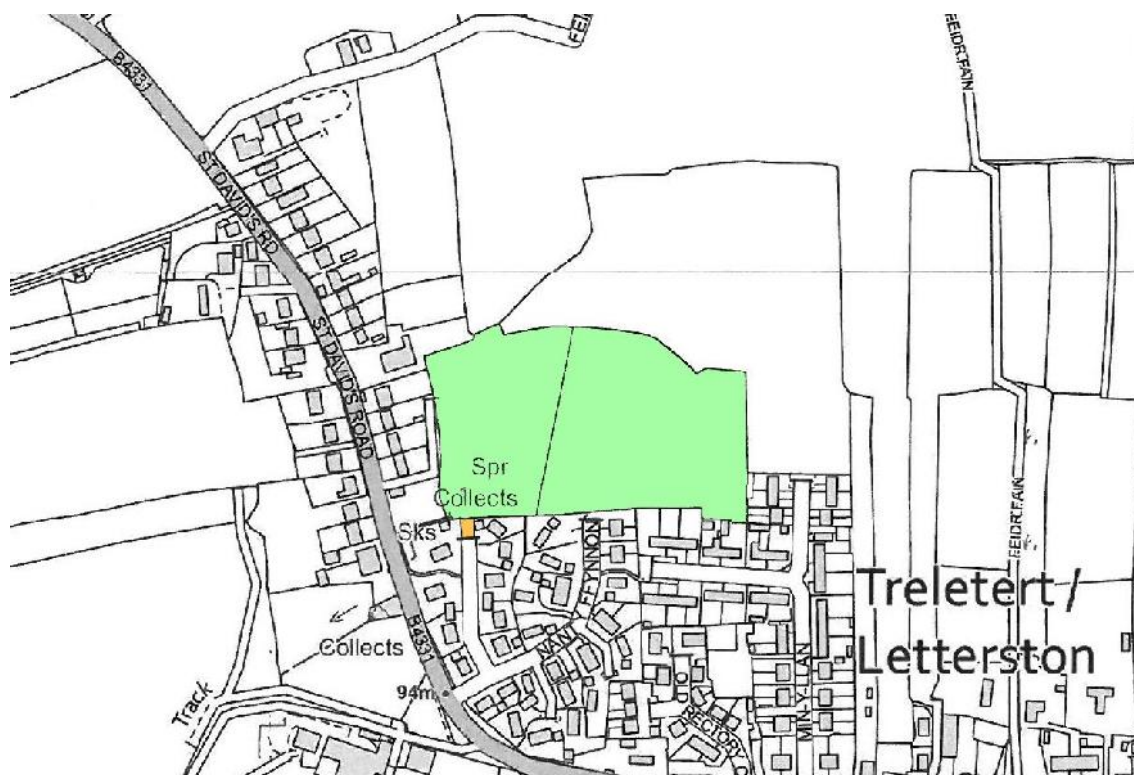
Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

Plan KCC3823/01
Auger Point Plan



Plan KCC3823/02
Agricultural Land Classification Plan



Treletert/
Letterston

KEY		Ha	%	PLAN	KCC3823/02		
	Grade 1			TITLE	Agricultural Land Classification		
	Grade 2			SITE	Letterston, Pembrokeshire		
	Grade 3a			CLIENT	Wales and West Housing		
	Grade 3b	2.6	100	NUMBER	KCC3823/02 12/24hr		
	Grade 4			DATE	December 2024	SCALE	NTS
	Grade 5			KERNON COUNTRYSIDE CONSULTANTS LTD GREENACRES BARN, PURTON STOKE, SWINDON, WILTSHIRE, SN5 4LL Tel 01793 771 333 Email: info@kernon.co.uk This plan is reproduced from the Ordnance Survey under copyright license 100015226			
	Non-agricultural	<0.01	0				
	Urban						
	Not surveyed						



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