

**East Park, Drumoak, AB31 5AX**

## **Data Structure Report for Community Archaeology Test Pitting**



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Cover: top TPs 9, 8, 6, 13 with Park Bridge; facing NE. Bottom Tim Kinnaird in TP29 recording OSL samples

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## **SUMMARY**

The test pitting took place on 2-4 November 2018. 37 test pits were excavated and 305 flints recovered by 27 adult and 6 children as well as two local primary school classes of 34 children, teachers and adult helpers.

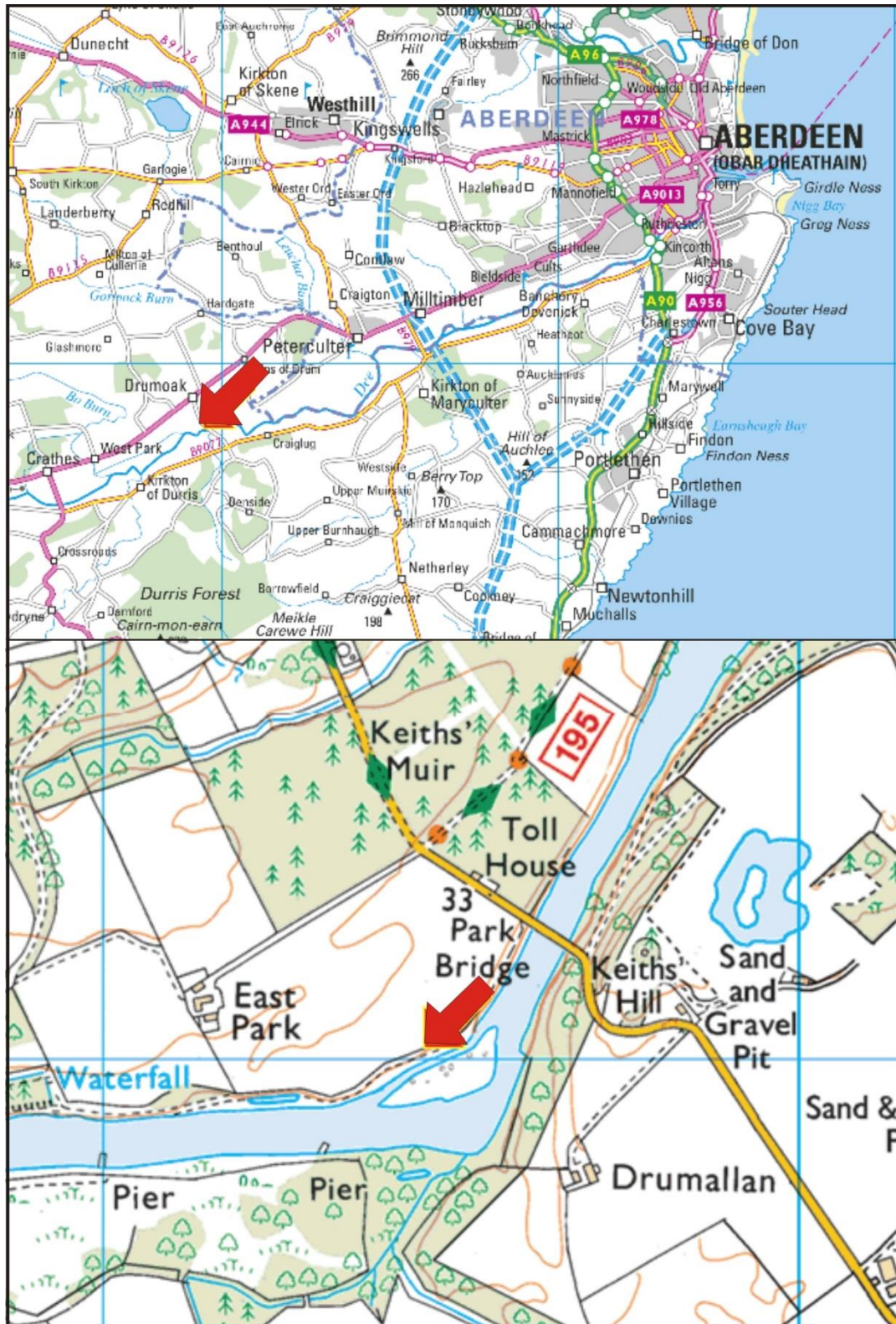
37 test pits were excavated on what may be resolved by surveying as three river terraces in the field. The highest terrace, higher than 34m asl, covers the northern part of the field and is a broad glaciofluvial terrace of Upper Palaeolithic age. Grieve's collection came from this terrace surface, in the north-east of the field. Test-pits 28, 31, 34-37 were dug on this terrace surface. Most had thin topsoils on to gravel. However, TP 37 was positioned in a shallow river channel where nearly 60cm of 'clean' sand underlay the topsoil. pIRSL/OSL values showed that much 'clean' sand, above 80cm, preserved a strong stratigraphic signal, as did TP 21 just downslope in the same sand. There is a high likelihood that Mesolithic artefacts or features may be preserved in areas of thick sand accumulation. The density of finds in Grieve's collection might also suggest this.

Terrace 2 is poorly preserved: it has not been related to sea level. Lithics recovered in 2017 were common on this terrace surface. Test-pits 23, 25, 29 and 30 were dug in this terrace. 'Clean' sand was encountered in TPs 29 and 30. Interpretation of pIRSL/OSL values is that this sand is not, however, of Holocene age, a result which is difficult to interpret. It is not known whether the lithics are in situ. Terrace 3 is around 30m asl. This terrace surface had high numbers of lithics in 2017. The age of this terrace is not known but is thought, this close to the river, to be post-Mesolithic in age, so that the lithics may have been washed onto this surface from above, from the 34+m asl surface.

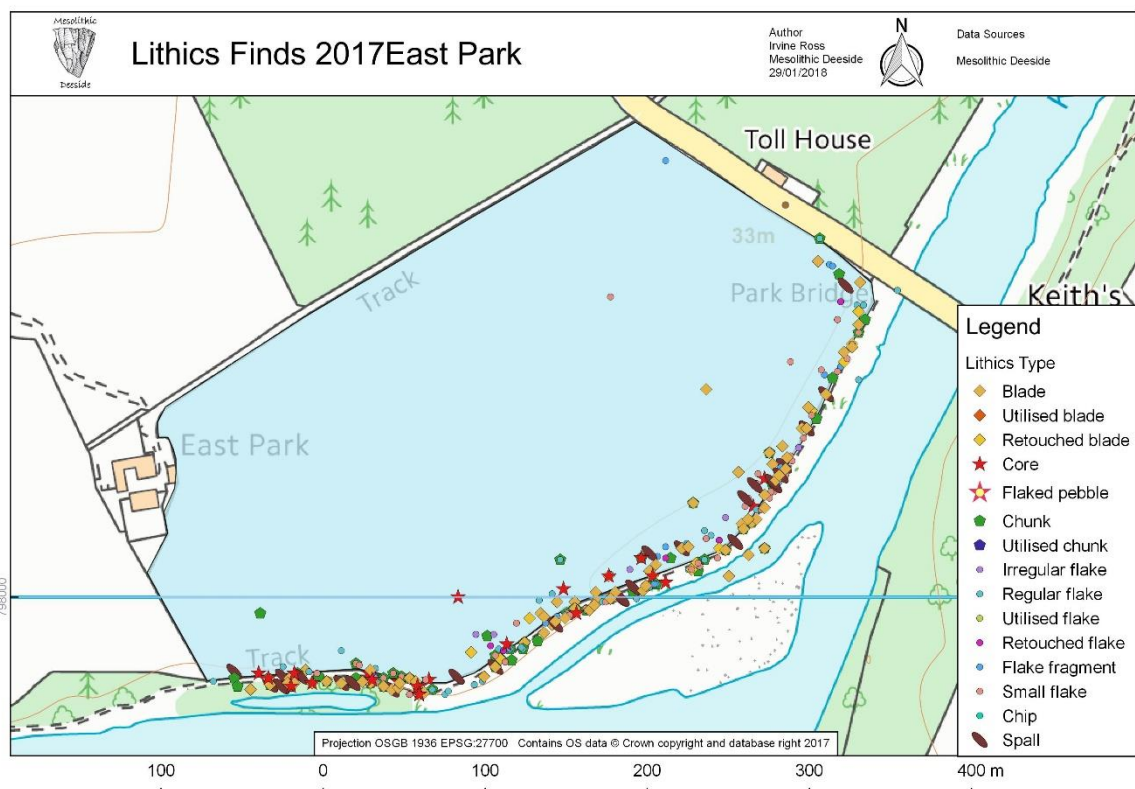
The lithics from the TPs comprised mainly flakes and blades as well as a number of small flakes and spalls (from burning or frost damage). Just seven cores were found, from five TPs in the SE corner of the field. The cores are varied in form with three single platform blade cores, one opposed platform blade core, one with blade and flake removals from two platforms made at a right angle, and there are two core fragments. The blade technology demonstrated on the cores is reflected in the types of blank produced with a high proportion of blades (41%) to flakes (59%) from the test pits. Several retouched tools were also recovered. These were concentrated in the SE corner with five from TP1 including a narrow blade microlith, an oblique truncation, a knife form, and two edge retouched blades. A notched blade came from TP15. Most of these are likely to date to the Mesolithic but the knife form made on a broad blade and with blunting edge retouch down one side may date to the Neolithic.

## 1 BACKGROUND

- 1.1 The site (Illus 1) is located in the field to the W of Park Bridge, Drumoak. It is centred on NGR NO 79460 98016, at 30-35m OD in the parish of Drumoak.
- 1.2 The site was first identified by Dr Grieve, fieldwalked by volunteers of Mesolithic Deeside in 2016 and 2017 and lithic scatters plotted (Illus 2). A grant was obtained from Kincardine and Mearns Area Committee for project management by Cameron Archaeology, lithics analysis by Ann Clarke and the hire of a portaloo.



Illus 1 Location plan (Contains Ordnance Survey data © Crown copyright and database right 2019)



Illus 2 Site plan showing lithics scatter

## 2 ARCHAEOLOGICAL BACKGROUND

A Mesolithic flint scatter was fieldwalked in 2017 by Mesolithic Deeside volunteers (Aberdeenshire SMR NO79NE0023) (HES NO79NE 25).

## 3 THE TEST PITTING

The test pitting took place on 2-4 November 2018. 37 test pits were excavated and 305 flints recovered by 27 adult and 6 children as well as two local primary school classes of 34 children, teachers and adult helpers. The test pits were located on the S side of the field on two river terraces. Richard Tipping, University of Stirling and Tim Kinnaird, University of St Andrews attended on 4 November; Richard cored the sand and Tim took OSL samples from five TPs.

All test pits were 50% sieved with some being 100% sieved (TPs1-3). Appendix 2 summarises the soil depth and lithics recovered. TPs 1, 2 and 3 were dug near the E field boundary and was mainly excavated by the schoolchildren. The majority of the flints were found within these test pits, partly because they were being excavated by hand and sieved. These TPs as well as TP15, 21 and 32 were dug on the upper terrace within the field and is the 14-15,000 year old terrace (R Tipping and T Kinnaird pers comm). The soil was shallow in these TPs and plough marks were seen in the bases of the TPs. It is likely that this is the terrace where the Mesolithic flints were originally located and they have migrated down (SE) across the field forming a deep (up to 1m deep) plough soil at the SE edge of the field.



Illus 3 Plan of test pits. The 35.0m OD contour is in the centre of the field, the 30.0m OD contour close to the river. (Contains Ordnance Survey data © Crown copyright and database right 2019)



Illus 4 TP3 sand natural with families excavation TP2



Illus 5 TP32 on the upper (14-15,000 year old) terrace showing gravel at the base and shallow topsoil



Illus 6 TP35 sand natural

Under this plough soil is a sand seen in TPs 5, 6, 8, 9, 12, 18, 22 which is a possible Neolithic terrace (R Tipping and T Kinnaird pers comm). T Kinnaird sampled sand from TPs 6, 10, 21, 29 and 37. During the excavation of the sand in preparation for sampling a small number of lithics was found in the sand in TP37.



Illus 7 TP29 OSL sample locations; facing N



Illus 8 Tim climbing under tarpaulin covering TP



Illus 9 Volunteer Heather recording the OSL samples for Tim



Illus 10 Volunteers assisting Tim with recording OSL samples



Illus 11 Volunteer Robert processing OSL samples

## 4 THE LITHICS ANN CLARKE

A total of 305 lithics were collected from 33 Test Pits (TP) (Table 1). All the TPs were 50% sieved and some were fully sieved. In addition a further 26 lithics were collected from the area of Test Pitting but haven't been mapped.

Also recorded were 260 lithics recovered in a field walking exercise by students at University of Aberdeen on 24/10/2018 (Table 1). Unfortunately the GPS data could not be opened for this report and the results will be incorporated with all the field walking collections for East Park when the 2019 programme is complete.

### 4.1 Lithics from Test Pits

The lithics from the TPs comprised mainly flakes and blades as well as a number of small flakes and spalls (from burning or frost damage) (Table 1, Illus 12). Just seven cores were found, from five TPs in the SE corner of the field. The cores are varied in form with three single platform blade cores, one opposed platform blade core, one with blade and flake removals from two platforms made at a right angle, and there are two core fragments.

The blade technology demonstrated on the cores is reflected in the types of blank produced with a high proportion of blades (41%) to flakes (59%) from the test pits. Several retouched tools were also recovered. These were concentrated in the SE corner with five from TP1 including a narrow blade microlith, an oblique truncation, a knife form, and two edge retouched blades. A notched blade came from TP15. Most of these are likely to date to the Mesolithic but the knife form made on a broad blade and with blunting edge retouch down one side may date to the Neolithic.

## 4.2 Distribution

The test pits were located throughout the spread of lithics previously recorded by field walking along the southern edge of the field (Illus 1, DSR). There is a greater density of TPs around the SE corner and the distribution becomes more scattered towards the SW corner of the field.

Lithics were found in 33 of the 37 test pits ranging in total from 1 – 54 per TP and the majority of the TPs contained 5 or less lithics (N=14) or 6 – 10 lithics (N=10). The two TPs with the most lithics were TP1 and TP2 and these together with TP3 (all on the 'Mesolithic' terrace) were sieved. This recovery method might explain the concentration of lithics found here which include many small flakes and spalls (Table 1). However, two of the seven cores and five of the six retouched tools were found in TP1 which could represent a discrete spread of Mesolithic activity.

Support for this possible location of Mesolithic activity comes from the other Test Pits located on the 'Mesolithic' terrace (15, 21, and 32) which contained two cores and a retouched blade (Table 1) whilst the remaining three cores also come from TPs within the SE corner of the field (Table 1).

The distribution of the lithics from Test Pits is different to that mapped from field walking in the same area. Most obvious is the greater concentration of field walked finds in the SW corner and the concentration of cores here too (Ill 2 DSR). This contrasts with the dominance of cores and lithics in the SE corner of the TPs. The distribution of retouched tools is not clear on the map and this will be interrogated for the final piece of work. There is a higher proportion of cores, retouched tools and chunks from the field walked collection whilst blades are more common from test pits (Illus 12).

The contrasts in finds distribution between field walking and test pitting suggests that the explanation of hillwash accounting for the distribution of finds in the ploughsoil is too simple and that there are more complex actions involved. A track is marked on the map which follows the edge of the field and also follows the distribution of lithics in the ploughsoil.

Could the track be responsible for the greater exposure of the lithics? Perhaps the lithics were in gravels brought in to stabilise the track at some point; or perhaps the track churned up the ploughsoil and lower layers (particularly by the gate) to expose more finds. Could the concentration of finds and cores from the SW corner mean that many of the lithics here were collected during field walking leaving fewer to be found in test pitting over the same area?

More lithics were found on the 'Mesolithic' terrace through Test Pitting than field walking which could indicate these finds were from a more stable environment which, given the numbers of retouched tools in particular, may be an occupation area.

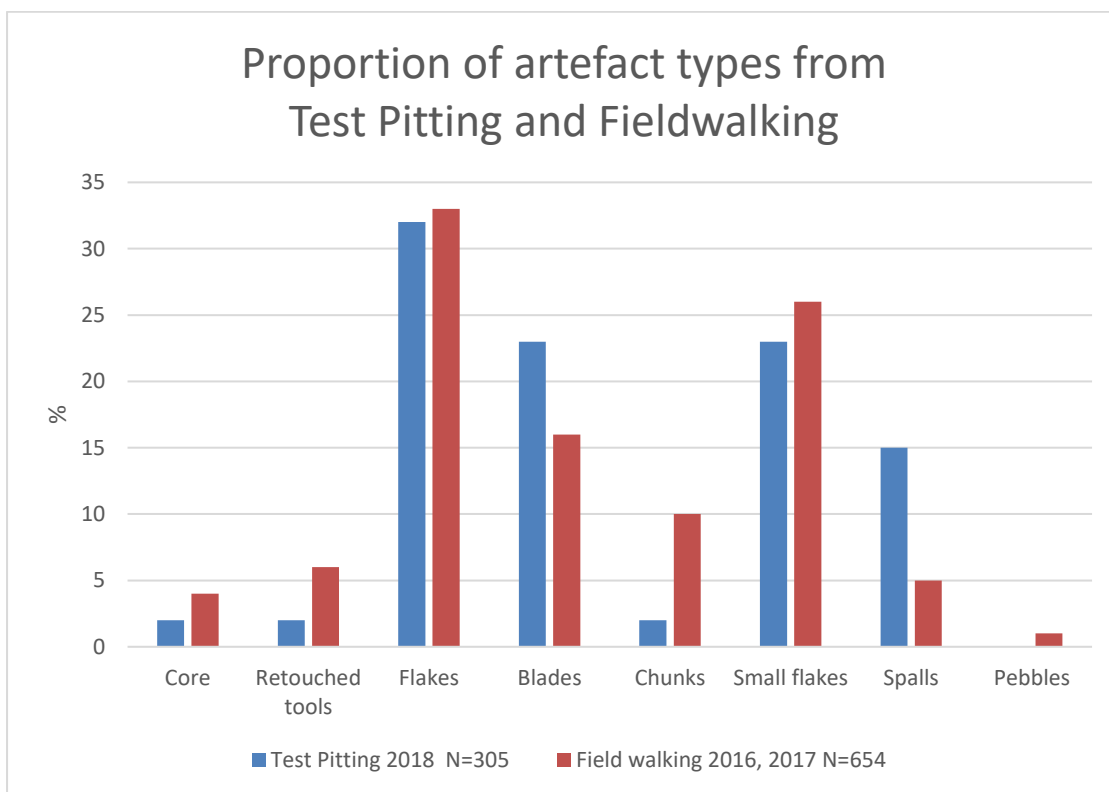
Completion of field walking over the rest of the field will help to determine the densities of lithic distribution in the ploughsoil. Subsequent random test pitting of the wider area of the field would then aid in assessing where the prehistoric activities may have originated and how the soils have developed over the millennia.

Test Pit	Blades	Flakes	Cores	Small Flakes	Retouched	Spall	Chunks	Total
1	7	11	2	10	5	19	0	54
2	6	6	0	19	0	15	0	46
3	2	4	0	1	0	0	1	8
4	0	0	0	1	0	0	0	1
5	1	0	0	0	0	0	0	1
6	2	2	0	3	0	0	0	7
7	4	8	2	1	0	0	3	18
8	1	2	0	0	0	0	0	3
9	2	4	0	0	0	0	0	6
10	0	0	0	0	0	0	0	0
11	3	5	0	5	0	3	0	16
12	0	3	0	0	0	0	0	3
13	2	1	0	1	0	0	0	4
14	0	0	0	2	0	0	0	2
15	2	4	0	0	1	2	0	9
16	2	1	1	0	0	0	0	4
17	4	2	0	2	0	0	1	9
18	4	3	0	0	0	1	0	8
19	0	0	0	0	0	0	0	0
20	1	0	0	1	0	0	0	2
21	8	7	1	8	0	0	0	24
22	1	3	0	1	0	0	0	5
23	0	1	0	3	0	0	0	4
24	0	2	0	0	0	0	0	2
25	4	4	0	6	0	0	0	14
26	1	2	0	3	0	2	0	8
27	3	4	0	1	0	0	0	8
28	0	0	0	0	0	0	0	0
29	3	1	0	0	0	0	0	4
30	1	3	0	0	0	5	0	9
31	0	0	0	0	0	0	0	0
32	0	5	1	0	0	0	0	6
33	2	2	0	3	0	0	0	7
34	1	6	0	0	0	0	0	7
35	1	2	0	0	0	0	1	4
36	1	0	0	0	0	0	0	1
37	0	1	0	0	0	0	0	1
	<b>69</b>	<b>99</b>	<b>7</b>	<b>71</b>	<b>6</b>	<b>47</b>	<b>6</b>	<b>305</b>
Other CA412	8	9	0	4	1	2	2	26
<b>FW 24/10/18</b>	<b>59</b>	<b>97</b>	<b>8</b>	<b>39</b>	<b>11</b>	<b>29</b>	<b>17</b>	<b>260</b>

Table 1 Test Pits and other finds. Shaded rows indicate Test Pits located on Mesolithic terrace. Bottom row records lithics from Field walking by University of Aberdeen students 24/10/2018.

	Test Pitting 2018	Field walking 2016, 2017
Core	7	26
Retouched tools	6	37
Flakes	99	217
Blades	69	103
Chunks	6	66
Small flakes	71	169
Spalls	47	30
Pebbles	0	6
Total	305	654

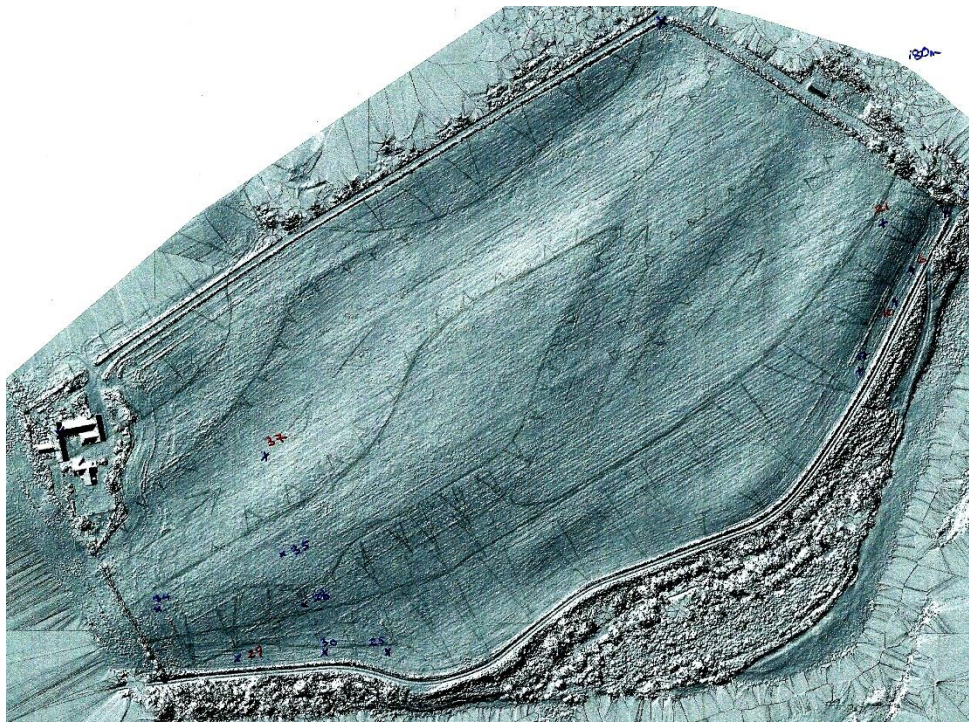
Table 2 Finds from Test Pits and from two episodes of field walking in same location along southern edge of field.



Illus 12 Proportion of artefact types from Test Pitting and Field Walking

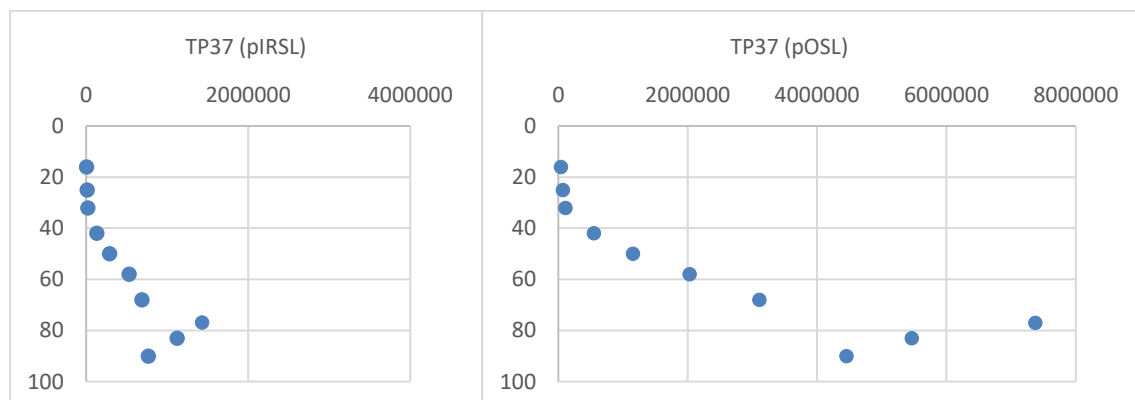
## 5 EAST PARK: GEOMORPHOLOGY AND PIRSL/POSL ANALYSES RICHARD TIPPING AND TIM KINNAIRD

The field east and south east of East Park Farm was mapped in September 2018 and the mapping revised from LiDAR and drone data: geomorphological features have not been surveyed to OD. The field lies largely on one river terrace surface, above c. 34m OD (Illus 3, 13). This surface has two subdued lozenge-shaped flat-topped ridges that were shaped by shallow river channels. Test pits showed these features comprise coarse gravel beneath a shallow 'ploughsoil'.



Illus 13 Geomorphology at East Park. Hachures indicate slopes.

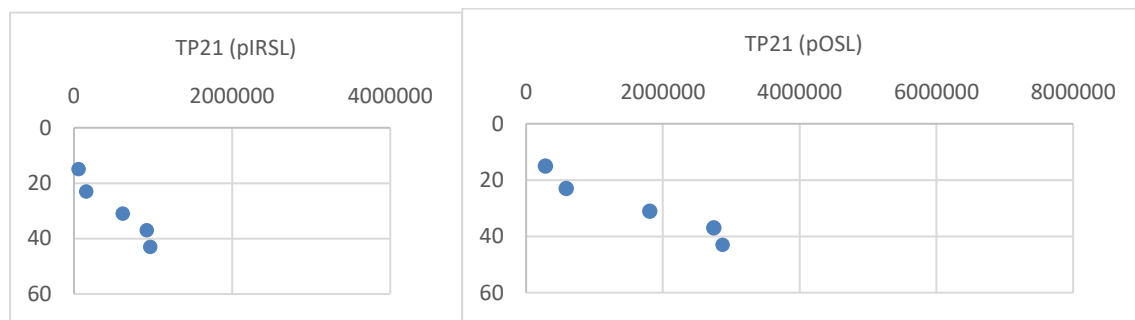
TP37 was dug in the centre of the c. 80m wide northern river channel where 44cm of organic-rich stoneless silty sand 'ploughsoil' was underlain by 56cm of clean orange-yellow stoneless silty sand, passing to grey-yellow stoneless silty sand and underlain by coarse gravel. The metre of fine sediment relates to the channel that cut into the gravel terrace surface. Luminescence intensities, here quantified as background-corrected pIRSL and pOSL photon counts, are plotted against depth (cm) and correlated with sediments in the test-pits to provide insights on depositional processes and relative age. If mineralogy, particle size or diagenesis varies down-profile in a test-pit, and between pits, the intensities will also reflect those changes. Intensities are plotted below on the same horizontal scales. pOSL values are discussed.



Illus 14 pIRSL and pOSL counts with depth at TP37

There are three trends. Counts increase from 90 to 77cm, a trend that may reflect very rapid deposition of sand that was exposed to light for too short a time to be completely bleached (zeroed). The reversal of this trend above 77cm indicates a hiatus in sand deposition. Between 77 and 32cm sand accumulated uniformly, without apparent hiatuses in a pattern suggesting comparatively slow, conformable deposition of fully bleached sand, the increase in stored energy down-unit coming from post-depositional in situ growth of luminescence through exposure to background radiation. Sediment above 32cm shows the effect of

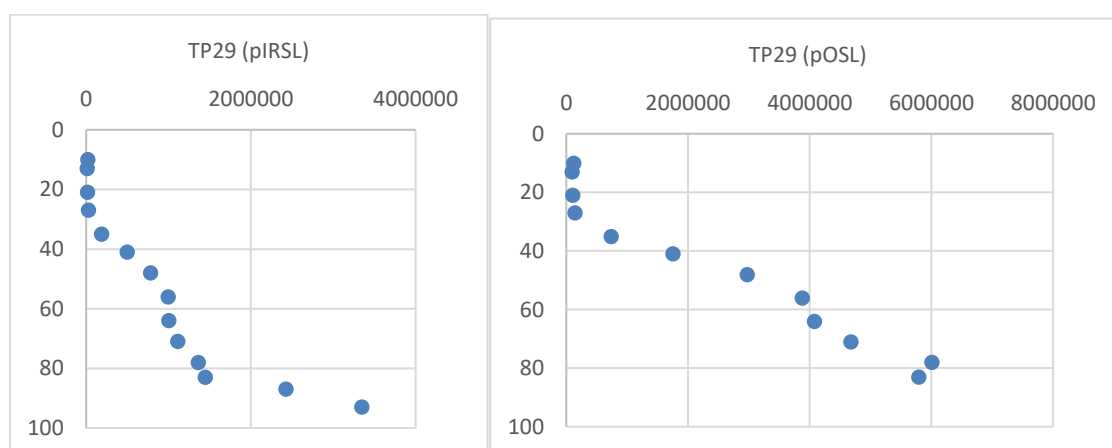
disturbance (cultivation) in destroying pre-existing trends. The base of the conformably deposited sand has pOSL stored energies of  $3,109,940 \pm 1770$  counts.



Illus 15 pIRSL and pOSL counts with depth at TP21

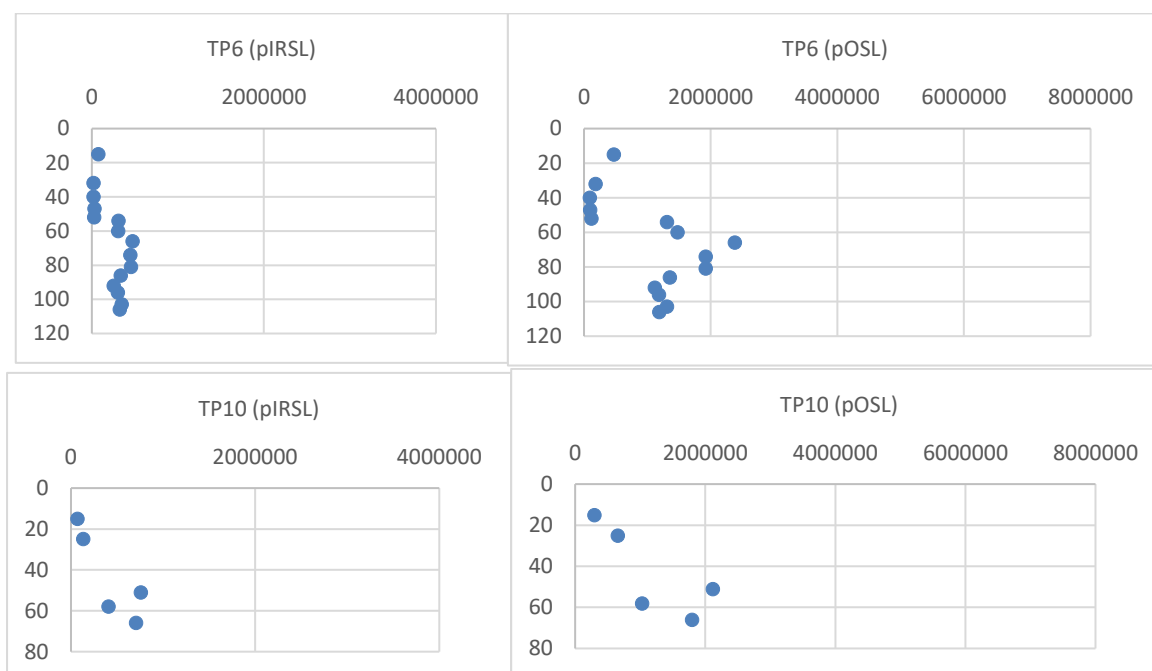
TP21 probably lies just downslope of the surface of the 34m+ OD gravel terrace at the east end of the field (Illus 3, 13), possibly in a third shallow channel that crossed its surface. Five pIRSL/pOSL samples in c. 20cm of 'ploughsoil' and c. 25cm of underlying orange-yellow stoneless silty sand above gravel shows a single trend (Illus 15), suggesting conformable accumulation, but the order-of-magnitude jump between 23 and 31cm suggests at least one hiatus. Samples are either too few, or the 'ploughsoil' too thin, or truncated by erosion to show the zeroing effects of cultivation. The basal sample has pOSL stored energies of  $2,876,370 \pm 1700$  counts.

Test-pits 25, 30 and 29 at the west end of the field (Illus 3) were seen in the field to lie on a single, lower and so younger river terrace between 34 and 30m OD, and this is likely also from drone-derived elevation data, but the terrace surface has not been surveyed to OD. All three test-pits contain c. 50cm of orange-yellow stoneless silty sand beneath c. 45cm of 'ploughsoil' in the same sediment, and above coarse gravel, much the same sediment stratigraphy as at TP37. That in TP29 was characterised by pIRSL/pOSL (Illus 16). The pOSL stored energy of the basal two sample (93cm, 87cm) are not plotted because at  $14,927,850 \pm 3880$  and  $9,747,890 \pm 3130$  counts they greatly exceed all other samples. There are probable hiatuses below 83cm but a conformable trend in accumulation until 'ploughsoil' above 30cm. The base of the conformable trend at 83cm has pOSL stored energies of  $5,791,000 \pm 2420$  counts.



Illus 16 pIRSL and pOSL counts with depth at TP29

Test-pits 6 and 10 at the eastern end of the field lie on a probable river terrace at c. 30m OD. Both lie at the base of a steep slope from the 34m+ OD terrace surface (Illus 13). TP6 is much deeper



Illus 17 pIRSL and pOSL counts with depth at TP6 and TP10

because the pit was deeper. The 'ploughsoil' at both sites was thick at around 50cm. Both pits show scatters of data-points below c. 50cm of 'ploughsoil' (Illus 17) which are interpreted as the deposition, at least between 54 and 86cm, not of fluvial sediment, but in part of colluvial sediment derived by erosion from older sediment on the slope formed in and the surface of the 34m+ OD terrace, so rapid that it was not fully bleached upon deposition. The trend in TP6 to increasing stored energies up-profile may reflect the erosion of progressively deeper sediments on the slope above. There may also be trends in the accumulation of 'ploughsoil' above 54cm. The largest pOSL stored energies in TP10 (51cm:  $2,115,590 \pm 1460$  counts) are comparable to peak pOSL stored energies in TP6 (66cm:  $2,382,490 \pm 1550$  counts), suggesting that both profiles derived from similar sources, but if some sand was only partially bleached there are other ways to explain this.

### 5.1 The sequence of sediment-stratigraphic 'events'

Measurements of pIRSL and pOSL counts made by the portable reader are not measures of age, either absolute or relative, because they are from mixtures of grains of different minerals and different particle sizes and may have been exposed to different background radiation exposures, although the mixing of fluvial sediment has probably reduced these biases. Given that all the sediment analysed at East Park, a small area, was fluvial, or in TPs 6 and 10, derived from fluvial sediment, the mineralogy of the sand might be assumed well-mixed and uniform and background radiation doses probably also uniform. So here we play with the sizes of stored energies to gain some sense of the order of deposition of sediments. Table 3 shows the pOSL stored energies of all samples from 'clean' sand, beneath 'ploughsoils', in ascending order. In addition, the three basal samples in TP37 are omitted because they may be only partially bleached, as will all samples to a degree. Illus 18 attempts to make the processes more readily interpretable by assuming that each sample represents a discrete event. The positions of test-pits on different terrace surfaces determines their relative age: TP37 and 21 should be, roughly, the same age; TP29 formed next and TP6 and 10 formed most recently.

Event	Test-pit	Depth cm	pOSL
30	TP37	42	550880
29	TP21	23	589530
28	TP29	35	738040
27	TP10	58	1027960
26	TP6	92	1118230
25	TP37	50	1156200
24	TP6	96	1186320
23	TP6	106	1191270
22	TP6	103	1311000
21	TP6	86	1355470
20	TP6	60	1478730
19	TP29	41	1751270
18	TP10	66	1798470
17	TP21	31	1809980
16	TP6	81	1923030
15	TP6	74	1924330
14	TP37	58	2029160
13	TP10	51	2115590
12	TP6	66	2382490
11	TP21	37	2748290
10	TP21	43	2876370
9	TP29	48	2975840
8	TP37	68	3109940
7	TP29	56	3880040
6	TP29	64	4078610
5	TP29	71	4679490
4	TP29	83	5791000
3	TP29	78	6006820
2	TP29	87	9747890
1	TP29	93	14927850

Table 3 pOSL stored energies of samples from 'clean' sands

Event	TP 6	TP10	TP29	TP21	TP37
30					4
29				4	
28			5		
27		7			
26	7				
25					8
24	8				
23	8				
22	9				
21	9				
20	10				
19			12		
18		12			
17				13	
16	13				

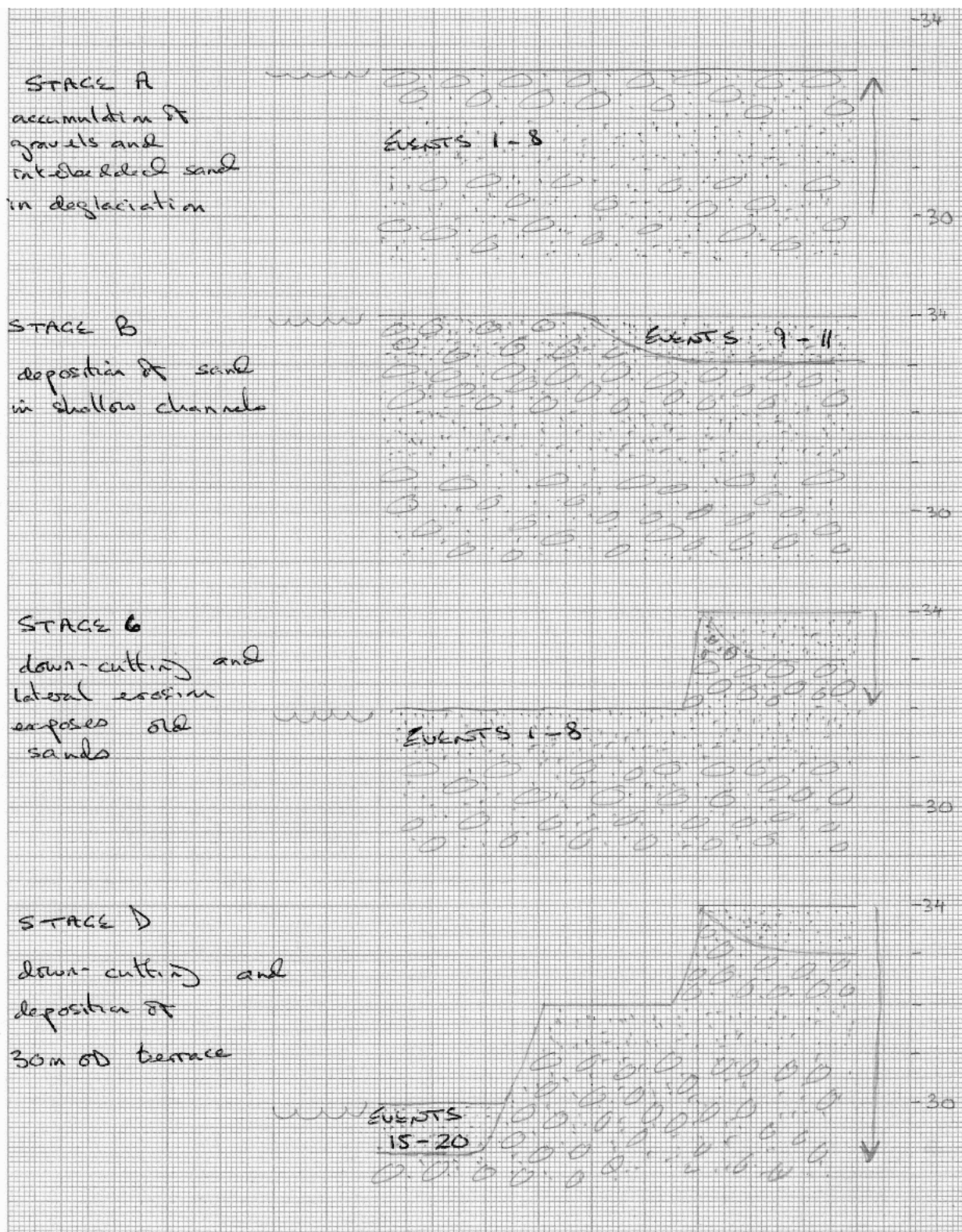
15	13				
14					14
13		14			
12	16				
11				18	
10				19	
9			20		
8					21
7			26		
6			27		
5			31		
4			39		
3			40		
2			65		
1			100		

Illus 18 An event stratigraphy of the pOSL measurements of samples from 'clean' sands, with the percentage of their 'signal intensities' relative to event 1 (100%)

Table 3 and Illus 18 show that the test-pits with the 'oldest' samples are TP29, 37 and 21, as implied by the terrace stratigraphy. The 'oldest' analysed sediment, however, is below 56cm in TP29 (events 1-7: Illus 18) and pOSL measurements are very largely conformable. Yet this terrace formed after the 34m+ OD terrace characterised by TP37. One interpretation of this paradox is that sediment deeper than 56cm in TP29 is part of the accumulating fill of the earlier-formed 34m+ OD terrace or was derived from its erosion. The sands at the base of TP29 may have formed over a long period, from 100% to 26%. The 'oldest' conformable sand in TP37 (event 8: 68cm) has an 'age' relative to event 1 of 21%. Sediment at the base of TP21 (events 10 and 11) formed very soon after.

Sediment between 106 and 54cm in TP6 on the 30m OD terrace (events 15, 16, 20-24) has stored energies (mean of c. 2,400,000 counts) comparable to those towards the base of TP21 on the 34m+ OD terrace, and 'younger' than most sediment on the intermediate 34-30m OD terrace (TP29), suggesting that the higher terrace was the source of sediment deposited by colluvial processes on to the 30m OD terrace, which in turn might suggest that the 34-30m OD terrace had been completely eroded at this location before colluvial processes commenced, but the likelihood of partial bleaching in the colluvial sediment, perhaps indicated by the closeness of relative ages of events (Illus 17), makes finer interpretation unrealistic. Colluvial activity was one of the most recent events.

Events 27-30 (Illus 17) are very 'young'. They seem to imply that the 'youngest' sediment was deposited on every terrace surface but it is more likely that these samples have been affected by post-depositional disturbance such as cultivation to deeper levels than suggested merely by organic content.



Illus 19 Cartoon of possible landscape evolution at East Park

Illus 19 is a cartoon of four stages in landscape evolution as envisaged from geomorphological and pOSL analyses. Stage A is the formation of gravels and interbedded sands during deglaciation: the sand that later formed the 30-34m OD terrace was formed then. In Stage B the surface of the 34m OD terrace is cut into by shallow channels and these are filled with sand. Downcutting by the Dee, probably in the early Holocene, was accompanied by lateral erosion and truncation to expose old sand and form the 30-34m OD terrace but the river did not deposit sediment: this is special pleading. Stage 4 is the construction of the 30m OD terrace by the deposition of sand.

## 5.2 Relation of sediments at East Park to the lithic assemblage

Not all the field was walked, and the locations of test-pits was at the concentration of lithics at the southern edge of Illus 2. The drone-derived elevation data and Illus 13 indicate that most test-pits, and so most of the lithic assemblage, are on slopes between terrace surfaces and probably not *in situ*. Their concentration at the foot of the slope must be a result of slippage together with colluvial sediment. Without field-walking of the 34m+ OD terrace, or comparison of lithic densities from test-pitting, or particle size analysis, it is uncertain whether the lithic assemblage at the foot of the slope are concentrated by, for example, the winnowing and loss of sediment finer than the lithics. Field-walking of the 34m+ OD terrace surface would be useful because John Grieve's site B (M6 of Kenney 1993, II, 234) is securely on this surface at NO 7995 9818 and yielded a small, well-defined spread of Mesolithic artefacts.

## 6 CONCLUSIONS AND RECOMMENDATIONS

The test pitting took place on 2-4 November 2018. 37 test pits were excavated and 305 flints recovered by 27 adult and 6 children as well as two local primary school classes of 34 children, teachers and adult helpers.

37 test pits were excavated on what may be resolved by surveying as three river terraces in the field. The highest terrace, higher than 34m asl, covers the northern part of the field and is a broad glaciofluvial terrace of Upper Palaeolithic age. Grieve's collection came from this terrace surface, in the north-east of the field (Tipping pers comm). Test-pits 28, 31, 34-37 were dug on this terrace surface. Most had thin topsoils on to gravel. However, TP 37 was positioned in a shallow river channel where nearly 60cm of 'clean' sand underlay the topsoil. pIRSL/OSL values showed that much 'clean' sand, above 80cm, preserved a strong stratigraphic signal, as did TP 21 just downslope in the same sand. There is a high likelihood that Mesolithic artefacts or features may be preserved in areas of thick sand accumulation. The density of finds in Grieve's collection might also suggest this. Terrace 2 is poorly preserved: it has not been related to sea level. Lithics recovered in 2017 were common on this terrace surface. Test-pits 23, 25, 29 and 30 were dug in this terrace. 'Clean' sand was encountered in TPs 29 and 30. Interpretation of pIRSL/OSL values is that this sand is not, however, of Holocene age, a result which is difficult to interpret. It is not known whether the lithics are *in situ*. Terrace 3 is around 30m asl. This terrace surface had high numbers of lithics in 2017. The age of this terrace is not known but is thought, this close to the river, to be post-Mesolithic in age, so that the lithics may have been washed onto this surface from above, from the 34+m asl surface.

The lithics from the TPs comprised mainly flakes and blades as well as a number of small flakes and spalls (from burning or frost damage). Just seven cores were found, from five TPs in the SE corner of the field. The cores are varied in form with three single platform blade cores, one opposed platform blade core, one with blade and flake removals from two platforms made at a right angle, and there are two core fragments. The blade technology demonstrated on the cores is reflected in the types of blank produced with a high proportion of blades (41%) to flakes (59%) from the test pits. Several retouched tools were also recovered. These were concentrated in the SE corner with five from TP1 including a narrow blade microlith, an oblique truncation, a knife form, and two edge retouched blades. A notched blade came from TP15. Most of these are likely to date to the Mesolithic but the knife form made on a broad blade and with blunting edge retouch down one side may date to the Neolithic.

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## APPENDIX 1 CONTEXTS

TP no	Topsoil depth	Subsoil	X	Y	Find no
1	26cm	Loose sand and stones	379581	798197	50
2	26cm	Loose sand and stones	379585	798193	51
3	23cm	Clean rusty brown sand	379588	798194	8
4	21cm	Gravel and medium stones	379593	798182	1
5	40cm	Sand and large stones	379600	798177	1
6	50cm	Grey silt (40cm) on sand	379594	798153	7
7	85cm	Fine grained gravel and stones	379589	798155	21
8	26cm	Clean sand and stones	379583	798152	3
9	80cm	Sand and large earthfast	379583	798141	6
10	42cm	Large stones and gravel	379579	798145	0
11	40cm	Sand	379550	798078	17
12	32cm	Sand	379566	798110	3
13	17cm	Compact gravel, no stone	379582	798158	5
14	30cm	Sand and stones	379573	798128	3
15	21cm	Clean sand with NW-SE plough marks	379574	798160	10
16	16cm	Hard compact gravel	379566	798120	4
17	25cm	Hard compact gravel	379564	798097	9
18	26cm	Clean sand with NW-SE plough marks	379535	798067	8
19	25cm	Sand and large stones	379551	798095	1
20	23cm	Sand and large stones and possible ard mark NNE-SSW	379439	797997	2
21	22cm	Compact find gravel	379572	798177	25
22	34cm	Sand	379536	798052	5
23	22cm	Gravel and stones	379360	797950	4
24	27cm	Gravel and stones	379395	798000	2

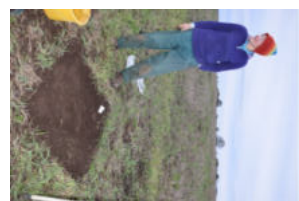
25	27cm	Sand and stones	379317	797945	19
26	23cm	Clean sand	379510	798041	8
27	25cm	Gravel and stones	379489	798021	8
28	30cm	Gravel	379275	797984	0
29	40cm	Sand	379238	797948	1
30	37cm	Sand	379280	797949	9
31	21cm	Sand	379217	797958	0
32	20cm	Medium rounded stones and gravel	379561	798179	6
33	19cm	Sand and large stones	379525	798056	7
34	33cm	Stoney sand	379184	797973	8
35	27cm	Sand and stone	379266	798016	4
36	25cm	Gravel	379233	797974	1
37	60cm	Sand	379256	798067	1

## APPENDIX 2 PHOTOGRAPHS

Photo no	Description	Facing
DSC_2063	TP9 large stone near base	NW
DSC_2065-6	TP6 dug down through silts to sand	NW
DSC_2069-71	TP8	SE
DSC_2072-3	TP8	NW
DSC_2074-75	TP9 large stone in base	SE
DSC_2076-7	TP9 large stone in base	NW
DSC_2079	TP5 sand and large stones	NW
DSC_2080	TP5 sand and large stones	SE
DSC_2083-4	TP4	N
DSC_2086-8	TP7	N
DSC_2090	TP8	N
DSC_2092	TP6 dug down through silts to sand	NW
DSC_2093	TP6, 5, 4	E
DSC_2095	TP10 dug through gravels	NW
DSC_2096	Rosemary with her TP	
DSC_2099-100	TP4	NW
DSC_2102-3	TP4 with other TPs	W
DSC_2104	TP6, 13, 15	NW
DSC_2105-06	TP15 Moyra	SE
DSC_2107	TP15 Moyra	E
DSC_2109-10	TP12	NW
DSC_2112-13	TP15	NW
DSC_2117	TP18	NW
DSC_2119-20	TP11	SE
DSC_2122	TP3	WNW
DSC_2123	TP3	NW
DSC_2124	TP3	SE
DSC_2126-7	TP21	SE
DSC_2128	TP21	NE

DSC_2130	TP16	SE
DSC_2131	TP16	S
DSC_2132	TP16	E
DSC_2134	TP19	NW
DSC_2135-36	TP19 Jacob M and Stewart Mac	SE
DSC_2138-39	TP22	NW
DSC_2140	TP22	SE
DSC_2141-2	TP27 Nadine	NW
DSC_2145-6	TP17	NW
DSC_2148-9	TP2	SE
DSC_2150	TP2	ESE
DSC_2151-53	TPs with Park Bridge	E
DSC_2155	TP16	NW
DSC_2157-8	TP16	SW
DSC_2161-65	TP22	NE
DSC_2167	TP26	NW
DSC_2169	TP27	NW
DSC_2171	TP20	NW
DSC_2173	TP24	NW
DSC_2175	TP23	NW
DSC_2177	TP25	NW
DSC_2178-8	TP25	WNW
DSC_2181	TP30	NW
DSC_2183-5	TP29	NW
DSC_2187	TP31	NW
DSC_2188-9	TP31	WNW
DSC_2191-2	TP34	SW
DSC_2193	TP34	NW
DSC_2194-5	from TP34	NE
DSC_2197-98	TP36	NW
DSC_2200-1	TP36	NE
DSC_2203	TP28	NW
DSC_2205	TP35	NW
DSC_2206-7	TP35	SE
DSC_2209	TP37	NW
DSC_2215-223	TP21 OSL sample locations	SE
DSC_2225-32	TP6 OSL sample locations	NW
DSC_2233-36	TP10 OSL sample locations	W
DSC_2237-40	TP29 OSL sample locations	SW
DSC_2242	TP32	SE
DSC_2243	TP32	NE
DSC_2244-47	TP37 OSL sample locations	NW
DSC_2248	TP37 backfilling Richard Tipping and Callan Ackerman	
IMG_0168-171	TP1-2 drone	
IMG_0172-243	working shots	





DSC\_2096



DSC\_2097



DSC\_2098



DSC\_2099



DSC\_2100



DSC\_2101



DSC\_2102



DSC\_2103



DSC\_2104



DSC\_2105



DSC\_2106



DSC\_2107



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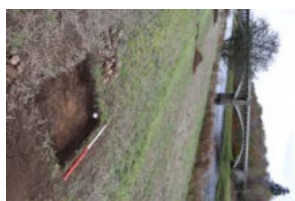
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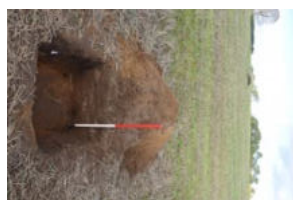
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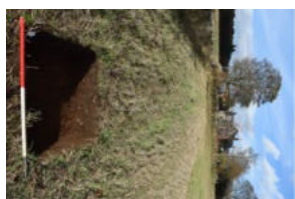
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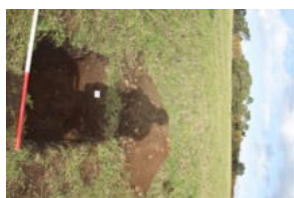
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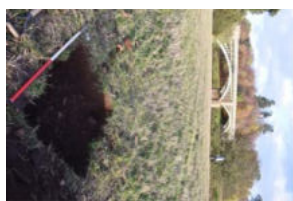
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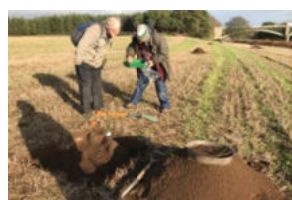
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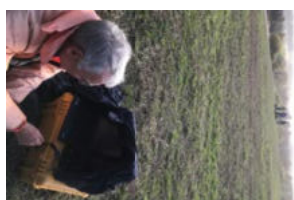
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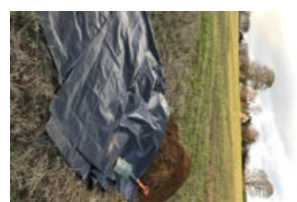
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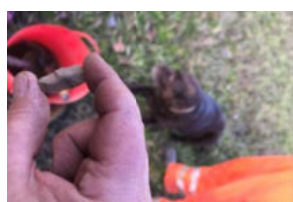
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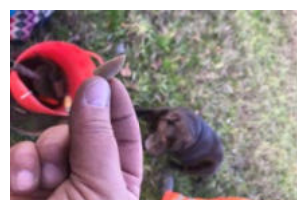
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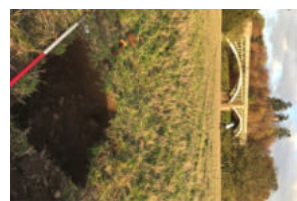
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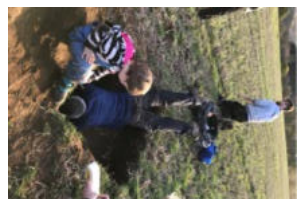
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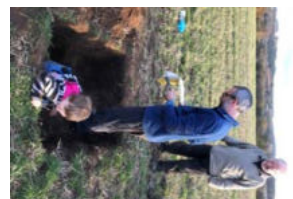
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