Table 1. MVPP study areas (Kent and Essex)

County	*Study area #*	*Study area name*	*Details*	*Resource/Palaeolithic Potential*
Kent	KT 1	Maidstone	Maidstone area and northwest of Maidstone, south of the North Downs escarpment	● Extensive mapped fluvial terrace deposits and aggregate extraction ● Substantial recovered archaeological evidence
	KT 2	Medway Gap	Where the Medway crosses the North Downs	● Aggregate deposits present and extracted, but as yet unmapped and uninvestigated ● Sparse archaeological evidence to-date, but includes key site of Cuxton
	KT 3	Rochester	Between Medway Gap and mouth of Medway	● Group of mapped aggregate deposits in terrace sequence, some affected by extraction ● Key sites of Frindsbury and the Upnor elephant
	KT 4	Hoo Peninsula	Eastern half of Hoo Peninsula and the Isle of Grain	● Extensive and well-mapped terrace suite of fluvial aggregate deposits ● Some archaeological recovery, despite limited investigations
Essex	EX 1	Rochford/Southend	South of the Crouch down to Thames Estuary and Canvey Island	● Substantial areas of aggregate deposit and extraction ● Numerous isolated Palaeolithic finds, although no major sites to-date
	EX 2	Dengie Peninsula	Dengie Peninsula, between Rivers Blackwater and Crouch	● Substantial areas of aggregate deposit, some extraction to-date ● Occasional Palaeolithic finds during v. limited investigation suggests potentially rich
	EX 3	Mersea Island	Block of ground west of mouth of River Colne	● Substantial aggregate deposits, unextracted to-date ● Occasional finds, key faunal and palaeo-environmental site at Cudmore Grove, East Mersea
	EX 4	Clacton/Holland	Block of ground east of mouth of River Colne, and south of Weeley Heath	● Substantial aggregate deposits, partly extracted ● Key area for Palaeolithic archaeology, type-site of Clactonian and abundant finds including wooden spear and faunal/palaeo-environmental remains

Table 2. Quaternary epochs and the Marine Isotope Stage framework

Epoch	*Age kBP*	*MI Stage*	*Traditional stage (Britain)*	*Climate*
Holocene	Present–10,000	1	Flandrian	Warm — full interglacial
Late Pleistocene	25,000	2	Devensian	Mainly cold; coldest in MI Stage 2 when Britain depopulated and maximum advance of Devensian ice sheets; occasional short-lived periods of relative warmth ("interstadials"), and more prolonged warmth in MI Stage 3.
	50,000	3		
	70,000	4		
	110,000	5a–d		
	125,000	5e	Ipswichian	Warm — full interglacial
Middle Pleistocene	190,000	6	Wolstonian complex	Alternating periods of cold and warmth; recently recognised that this period includes more than one glacial–interglacial cycle; changes in faunal evolution and assemblage associations through the period help distinguish its different stages.
	240,000	7		
	300,000	8		
	340,000	9		
	380,000	10		
	425,000	11	Hoxnian	Warm — full interglacial
	480,000	12	Anglian	Cold — maximum extent southward of glacial ice in Britain; may incorporate interstadials that have been confused with Cromerian complex interglacials
	620,000	13–16	Cromerian complex and Beestonian glaciation	Cycles of cold and warmth; still poorly understood due to obliteration of sediments by subsequent events
	780,000	17–19		
Early Pleistocene	1,800,000	20–64		Cycles of cool and warn, but generally not sufficiently cold for glaciation in Britain

Table 3. Palaeolithic period in Britain

Archaeological period	*Human species*	*Lithic artefacts and other material culture*	*MI Stage*	*Date (BP)*	*Geological period*
Upper Palaeolithic	Anatomically modern *Homo sapiens sapiens*	Dominance of blade technology and standardised tools made on blade blanks Development of personal adornment, cave art, bone/antler points and needles	2–3	10,000–35,000	Late Pleistocene
Middle Palaeolithic	Early pre-Neanderthals initially, evolving into *Homo neanderthalensis* after OI stage 5e	Continuation of handaxes, but growth of more standardised flake and blade production techniques (Levalloisian and Mousterian) Development of a wider range of more standardised flake-tools, and towards the end, the development of *bout coupé* handaxes	3–5e	35,000–125,000	
			5e–8	125,000–250,000	Middle Pleistocene (later part of)
Lower Palaeolithic	Archaic Homo — *Homo* cf *heidelbergensis* initially, evolving towards *Homo neanderthalensis*	Handaxe dominated, unstandardised flake core production techniques and simple unstandardised flake-tools Occasional industries without handaxes, based on large flake blanks made by unstandardised core-reduction techniques	8–13	250,000–500,000	
	?? *Homo erectus/ergaster*	Very simple core and flake industries — one site on Norfolk coast at Pakefield	14–19	500,000–780,000	Middle Pleistocene (early part of)

Table 4. Palaeolithic sites in the MVPP study region (Essex)

Study area	*Survey*	*Region*	*Area*	*Map*	*No. sites*	*Key sites, notes*
EX 1	ERPP 1 [+]	7. Thames Valley	Lower Thames Valley	LTV 5	6	● Cluster of handaxes in Terrace 4 gravels at Southend
				LTV 6	11	● Cluster of handaxes from Rochford, Terrace gravels 1–3 ● Rich site at Baldwins Farm Gravel Pit, large numbers of handaxes recovered *in situ* from Terrace 1 gravels from limited investigations
EX 2	ERPP 3 [>]	8. East Anglian Rivers	River Crouch	CROUCH 1	4	● All handaxe find-spots from extensive terrace gravel deposits, includes *in situ* handaxe from gravel pit section at Goldsands Road
EX 3	"	"	Rivers Blackwater & Chelmer	B & C 4	3	● Couple of stray handaxe finds of uncertain provenance, and channel site of Cudmore Grove, which has biological evidence and flakes
EX 4	"	"	"	B & C 5	6	● Very numerous Clactonian finds from several locations — foreshore, Golf course, Jaywick Sands ● Wooden spear point
Total sites					**65**	

[+] *English Rivers Palaeolithic Project: Report 1* (Wessex Archaeology 1996)
[>] *English Rivers Palaeolithic Project: Report 3* (Wessex Archaeology 1997)

Table 5. Core national research themes

Aim	Details
N 1	Documentation of regional sequences of material cultural change
N 2	Dating of artefact-bearing deposits within regional, national and international Quaternary frameworks
N 3	Developing understanding and dating of regional Pleistocene environmental, climatic and litho-stratigraphic frameworks
N 4	Explanation of diachronic and synchronic patterns of material cultural variability
N 5	Behaviour of Archaic (pre-anatomically modern) hominids (a) at specific sites, (b) across the wider landscape
N 6	Behaviour of anatomically modern hominids (a) at specific sites, (b) across the wider landscape
N 7	Extent of contrasts in Archaic and anatomically modern human behaviour and adaptations, and in fundamental cognitive capacities
N 8	Patterns of colonisation, settlement and abandonment through the Pleistocene
N 9	The climatic and environmental context of Archaic settlement, and the relationship between climate/environment and colonisation
N 10	The history of isolation/connection between Britain and the continental mainland, and the relationship/implications for Palaeolithic settlement and cultural development/expression
N 11	Improved documentation and understanding of hominid physiological evolution
N 12	Investigation of the relationship between evolutionary, behavioural and material cultural change
N 13	Social organisation, behaviour and belief systems
N 14	Models for cultural transmission and learning
N 15	Improving models of Palaeolithic site formation and post-depositional modification

Table 6. MVPP objectives cross-referenced with national (N) and regional (R) research priorities

Objective	*National*	*Regional*
1 — Palaeolithic resource characterisation	N 1 N 4 N 8	R 3
2 — Palaeolithic resource distribution and framework	N 1 N 2 N 3 N 4 N 8	R 1 R 2 R 3
3 — Hominid settlement history and cultural development	N 1 N 4 N 8 N 10	-
4 — Key sites initiative	N 1 N 2 N 3 N 4 N 5 N 7 N 8 N 9	R 1 R 2 R 3
5 — Predictive Palaeolithic modeling	-	R 3
6 — Palaeolithic resource curation	N 1 N 4 N 8 N 10	R 1 R 2
7 — SMR/HER enhancement	-	R 3
8 — Education and community appreciation	-	-

Table 7. Project method elements

Element	*Focus*		*Details*
1	Data design and documentation		Development, in conjunction with county curators, of relational structure for lithic and site data recording, so as to be easily integrated into SMR and HER records
2	Collections study		Visiting museums to study existing collections
3	Geological data collection and modelling		Initial identification of terrace distribution and fieldwork sites
4	Dissemination and community engagement		Talks and demonstrations; school visits; web resource and leaflet
5	Fieldwork	(ph. 1)	A systematic test pit investigation of key terrace deposits
		(ph. 2)	Investigation targeted at a number of key sites
		(ph. 3)	An intense investigation of one site
6	Specialist work and analyses		After initial assessment, specialist work took place in the following areas: - OSL dating - Molluscan analysis - Amino Acid dating - Lithic analysis - Clast lithology - GIS development

Table 8. Artefacts studied from museum collections (Essex)

County	*Region*	*Site*	*No. artefacts*	*Total*
Essex	EX 1	Prittlewell Chase, Southend	1	
		Hill View Road, Rayleigh	1	
		Baldwin's Farm Pit, Barling Magna	15	
		Martin's Pit, Stambridge	1	
		Pavilion Drive, Southend	1	
		Roots Hall Pit, Southend	4	
		Shoeburyness	2	
		Star Lane Brickfield	1	26
	EX 2	Burnham-on-Crouch	2	2
	EX 4	Jaywick Sands, Clacton	230	230

Table 9. Stratigraphical data recorded in Rockworks database

TQ47NE198			
Grid ref.			
545490	179650		
Elevation	1.45		
Total depth	28		
Depth top	**Depth base**	**Description**	**keyword**
0	1.05	made ground	Concrete
1.05	1.5	made ground	coal
1.5	3.1	silty clay	occ organics
3.1	5.4	peat	much plant material
5.4	6.2	peat	spongy amorphous
6.2	7.2	silty clay	soft
7.2	12.4	sandy gravel	very soft
12.4	13.2	sandy gravel	silty gravel
13.2	27.1	sandy silt	
27.1	28	sandy silt	occ flint gravel and chalk
28	30.5	Chalk	chalk
Depth top	**Depth base**	**Stratigraphy**	
0	1.5	Made ground	
1.5	7.2	Alluvium	
7.2	13.2	Gravel	
13.2	30.5	Bedrock	

Table 10. MVPP fieldwork, lithic analysis summary

Site	*Site code*	*Sub-division*	*Lithic artefact details*
Westcliff High School for Girls	WHSG 05	TP1	One very small and well-rolled flake
Saltings	SALT 05	TP2	Small, fresh condition globular flake core with knob of cortex remaining on one side
Barling Gravel Pit	BLNG 05	S1	Broken tip half of pointed handaxe, slightly rolled condition; appears to have broken in course of manufacture, while trying to tidy/thin tip
Burnham Wick Farm	BURN 05	TP1	Rolled flake; heavily abraded around all edges; regularity of secondary flaking along one side looks deliberate, possibly to form straight scraping edge or backing opposite a sharp edge that is now abraded away

Table 11. OSL dating results from Essex sites

Field code	**Laboratory code**	**OSL age estimate** (ka)
BLNG 05-01	X2447	147.07 ± 9.40
BLNG 05-03	X2449	133.66 ± 15.85
BLNG 05-05	X2451	121.52 ± 9.29
BURN 05-01	X2455	124.79 ± 15.46
BURN 05-03	X2457	164.61 ± 16.76
CG 05-01	X2459	242.82 ± 15.10
CG 05-02	X2460	245.64 ± 37.80
CG 05-03	X2461	208.36 ± 20.73
CG 05-05	X2463	202.96 ± 19.64
DOGF 05-02	X2466	253.66 ± 41.82
DOGF 05-03	X2467	265.00 ± 22.15

Table 12. Amino Acid dating results summary

Site	*MVPP Site code*	*Context /depth (deposit)*	*Deposit*	*Sample*	*Material submitted**	*NEaar code/s*	*Dating result*
Apton Hall Farm (borehole)	APHF 05	5.0-5.5 m	Rochford Channel	<3A>	5	3737-3739 3826-3827	MIS 9, early part
Barling Gravel Pit (section)	BLNG 05	18	Barling Gravel	<5>	5	3740-3742 3828-1829	MIS 9 (but dated material interpreted as derived)
					4 *	3743-3745 3830	
Bradwell Hall (test pit)	BRADH 05	72	Tillingham Channel	13	5	3731-3733 3822-2823	MIS 11, later part
East Mersea Restaurant Site (test pit)	S1	-	Un-named	3	5	3728-3730 3820-3821	MIS 5e
Shoeburyness (borehole)	S1	13.9 m 14.42-14.44 m	Shoeburyness Channel	-	4	3746-3748 3831	MIS 9, early part
					1	3132	
East Hyde (borehole)	EH1	7.55 m 9.2 m	Tillingham Channel	-	3	3101-3103	MIS 11, later part
					5	3734-3736 3824-2835	

* All material submitted and analysed was *Bithynia* opercula, **except** for 4 *Bithynia troschelii* opercula that were also analysed individually from the Barling Gravel, 05 <5> (18)

Table 13. Digital resources for the GIS *Palaeolithic Resource Predictive Model* (PRPM) for direct delivery to ECC

File type/group	*Files*	*Worksheets*	*Details*
Excel spreadsheet	GIS (EX-extra).xls	EX events	Attributes #1-43 for each field event, as described Table 23
		EX zones	Attributes #1-18 for each Palaeolithic zone, as described Table 24
		EX Jaywick sands	Separate lithic data for different Jaywick sands trenches
		Sources (full ref)	Full references for sources given in EX events field # 15
GIS project files	MVPP_essex_events.dbf MVPP_essex_events.shx MVPP_essex_events.prj.txt MVPP_essex_events.shp MVPP_Essex_Events_8dot3.lyr MVPP_EX_Zones.dbf MVPP_EX_Zones.prj.txt MVPP_EX_Zones.sbn MVPP_EX_Zones.sbx MVPP_EX_Zones.shp MVPP_EX_Zones.shx MVPP_EX_Zones_8DOT3.lyr		
Miscellaneous supporting	Shapes.zip		

Table 14. Paper archive from fieldwork

Category of material	*Kent*	*Essex*	*Intensive survey*
Site index	4	4	1
Site layout/location maps	33	21	6
Site investigation summary sheets	22	24	-
Test pit logs, section drawings	60	36	43
Borehole logs	3	18	-
Sediment sample record sheets	10	21	-
OSL sample record sheets	12	13	-
Finds record sheets	10	6	1
Digital photo record sheets	17	13	2
Survey sheets	13	-	5
Notes (by site)	106	4	18
Notes (non-site specific)	25	26	10
Total	**315**	**186**	**86**

Table 15. Previous stratigraphic nomenclature and suggested correlations of the low-level (i.e. post-diversion) eastern Essex gravels. Youngest deposits are at the top of each list.

Reference:	EX1 - Southend / Foulness Peninsula	EX2 - Dengie Peninsula	EX3 - Mersea Island	EX4 - Clacton
Bridgland (1983)	Submerged terraces x 3 Barling Gravel Rochford Gravel Southchurch Gravel	Submerged terraces x 3 Dammer Wick Gravel Marsh Road Gravel Asheldham Gravel		
Bridgland (1988)	Submerged terraces x 3 Barling Gravel Rochford Gravel Southchurch Gravel	Submerged terraces x 3 Dammer Wick Gravel Asheldham Gravel	Mersea Island Gravel	Wigborough Gravel Wigborough Gravel
Roe (1994); Bridgland *et al*. (1993)	Submerged terraces x 3 Barling Gravel Southchurch Gravel[1]			
Gibbard (1999)[2]	Shepperton Member (offshore) Barling Member Asheldham Member (Gibbard *et al.*, 1996 – fluvial, deltaic, lacustrine facies; Bridgland, 1994, 1995 – fluvial facies)		Shepperton Member (offshore) Barling Member Mersea Island Member Holland Member	
Bridgland (2003)	Submerged terraces equivalent to Lower Thames Shepperton, East Tilbury Marshes and Mucking Gravels Barling Gravel Southchurch Gravel	Not listed or mapped separately	Not listed or mapped separately	Wigborough Gravel Holland Gravel

[1]Gravel previously mapped as Rochford Gravel reassigned to a dissected Southchurch Gravel spread.

[2]Scheme does not appear to designate all the submerged gravel deposits recognised by Bridgland *et al.* (1993).

Table 16. Detail of low-level fine-grained channel deposits recognised in the eastern Essex region.

Channel feature (after Bridgland *et al.*, 2001)	**Site and reference**	**Gravel beneath fine-grained deposits?**	**Height of base of fine-grained deposits**	**Published amino-acid ratios**
Southend	Not yet investigated. Mapped in Bridgland et al. (2001)	?	'High-level'	N/A
Shoeburyness	Shoeburyness (Roe, 1994; 1999)	Y	c. –7.66 m O.D. 'Low-level'	None
Rochford	Canewdon (Roe, 1994; 1999)	Y	c. 3 m O.D. 'Intermediate'	None
Barling	Barling (Bridgland *et al.*, 2001)	N	- 1.7 m O.D. 'Low-level'	0.27-0.29 (*Corbicula*) 0.18 $\pm$ 0.04 (*Valvata*)
Burnham	North Wick (Roe, 1994; 1999)	Y	c. –10.5 m O.D. 'Low-level'	None
Asheldham (Tillingham Channel of Roe, 1999)	East Hyde / Tillingham (Roe, 1994; 1999, 2001)	Y	5.10 m O.D. 'High-level'	None
Cudmore Grove	Cudmore Grove (Roe, 1994; 1995; 1999)	Y	c. –8 m O.D. 'Low-level'	None published
Clacton	Clacton – Warren's (1955) channel ii, probably equivalent to the West Cliff deposits (channel i) (Bridgland *et al.*, 1999)	Y	c. –3 m O.D. 'High-level'	0.305 $\pm$ 0.001 (*Pisidium*) 0.299 $\pm$ 0.002 (*Valvata*) (Bowen *et al.*, 1989)

Table 17. Relationship of *individual* eastern Essex fine-grained channels to *local* gravel bodies (after Roe, 1994; Bridgland *et al.*, 1999; 2001); *Bodies are not necessarily time equivalent*.

Shoeburyness	**Rochford**	**Burnham**	**Tillingham**	**Mersea Island**	**Barling**	**Clacton**
Barling Gravel	Barling Gravel Rochford Gravel (thin)	Dammer Wick Gravel	Fine-grained reworked facies of Asheldham Gravel[1]	Mersea Island Gravel[2]	Barling Gravel	Wigborough Gravel
Shoeburyness Clay	Rochford Clay	Burnham Clay	Tillingham Clay	Cudmore Grove Clay	Barling Interglacial deposits	Clacton Channel Deposits
Shoeburyness Channel Gravel	Rochford Channel Gravel	Burnham Channel Gravel	Tillingham Channel Gravel	Cudmore Grove Channel Gravel	London Clay	Clacton Channel Gravel
Incision	*Incision*	*Incision*	*Incision*	*Incision*		*Incision*
Southchurch Gravel	Southchurch Gravel	Asheldham Gravel	Asheldham Gravel	Mersea Island Gravel[2]		St Osyth / Holland Gravel (Lower and Upper)

[1]See Gibbard *et al.* (1996), but note that Bridgland (1988) believes the Asheldham Gravel to both under- and overlie the Tillingham Channel deposits.

[2]Bridgland (1983, 1988) mapped two levels of gravel on Mersea Island as a single Mersea Island Gravel, suggested by Gibbard *et al.* (1996) to represent two aggradations.

Table 18. EX 1 stratigraphy, showing stratigraphic order of mapped sediment bodies in the EX1 study region with youngest deposits at the top. MVPP Field Interventions, OSL dates and suggested MIS attributions are also shown. Stratigraphic nomenclature after Bridgland (1988) and Roe (1994). MIS boundaries are taken from Shackleton et al. (1990) and Bassinot et al. (1994).

Sediment body	**OSL- or AAR-dated MVPP Field Interventions**	**Suggested MIS attribution**
Holocene marine sands and silts on Foulness peninsula	-	1
Brickearth (N.B. might also predate Foulness Gravel)	-	?2
Foulness Gravel	-	5d - 2
Barling Gravel	BLNG05-01 (X2447) – 147 ± 9 ka BLNG05-03 (X2449) – 134 ± 16 ka BLNG05-05 (X2451) – 122 ± 9 ka	6 – 5d
Rochford Gravel	DOGF05-02 (X2466) – 254 ± 42 ka DOGF05-03 (X2467) – 265 ± 22 ka	8 – 7c
Rochford Channel	5 *Bithynia tentaculata* opercula from APHF 05 <3A> (NEaar 3737-3739, 3826-3827)	9
Shoeburyness Channel	4 *Bithynia tentaculata* opercula from Borehole S1, 13.9 m (NEaar 3746-3748, 3831) 1 operculum from S1, 14.42-14.44 m (NEaar 3132)	
(Barling Channel – Bridgland *et al*., 2001)	(several *Bithynia tentaculata* opercula – Penkman, *pers. comm*.)	
Rochford Channel Gravel	-	10-9
Shoeburyness Channel Gravel		
Southchurch Gravel	-	12

Table 19. EX2 stratigraphy, showing stratigraphic order of mapped sediment bodies in the EX1 study region with youngest deposits at the top. MVPP Field Interventions, OSL dates and suggested MIS attributions are also shown. Stratigraphic nomenclature after Bridgland (1988) and Roe (1994). MIS boundaries are taken from Shackleton et al. (1990) and Bassinot et al. (1994).

Sediment body	**OSL- or AAR-dated MVPP Field Interventions**	**Suggested MIS attribution**
Burnham Channel	-	5e
Burnham Channel Gravel	-	6 – 5e
Dammer Wick Gravel	BURN05-01 (X2455) – 125 ± 15 ka BURN05-03 (X2457) – 165± 17 ka	6 – 5d
'Fine-grained gravel'	-	10 - 8
Tillingham Channel	3 *Bithynia tentaculata* opercula from Borehole EH1, 7.55 m (NEaar 3101-3103) 5 from EH1, 9.2 m (NEaar 3734-3736, 3824-2835)	11
	5 *Bithynia tentaculata* opercula from Bradwell Hall <bulk 13> (NEaar 3731-3733, 3822-2823);	Late 11
Tillingham Channel Gravel	-	12 – 11
Asheldham Gravel (undifferentiated in this study)	-	12

Table 20. EX 3 stratigraphy, showing stratigraphic order of mapped sediment bodies in the EX1 study region with youngest deposits at the top. MVPP Field Interventions, OSL dates and suggested MIS attributions are also shown. Stratigraphic nomenclature after Bridgland (1988) and Roe (1994). MIS boundaries are taken from Shackleton et al. (1990) and Bassinot et al. (1994).

Sediment body	**OSL- or AAR-dated MVPP Field Interventions**	**Suggested MIS attribution**
(East Mersea Restaurant Site)	5 *Bithynia tentaculata* opercula from East Mersea Restaurant Site, Sample 3 (NEaar 3728-3730, 3820-3821)	5e
Mersea Island Gravel (lower)	CG05-01 (X2459) – 243 ± 15 ka CG05-02 (X2460) – 246 ± 38 ka CG05-03 (X2461) – 208 ± 21 ka CG05-05 (X2463) – 203 ± 20 ka	8 - 6
Cudmore Grove Channel	(several *Bithynia tentaculata* opercula – Penkman, *pers. comm*.)	9
Cudmore Grove Channel Gravel	-	10 – 9
Mersea Island Gravel (upper)	-	12 or 10

Table 21. EX4 stratigraphy, showing stratigraphic order of mapped sediment bodies in the EX1 study region with youngest deposits at the top. MVPP Field Interventions, OSL dates and suggested MIS attributions are also shown. Stratigraphic nomenclature after Bridgland (1988) and Roe (1994). MIS boundaries are taken from Shackleton et al. (1990) and Bassinot et al. (1994).

Sediment body	**OSL- or AAR-dated MVPP Field Interventions**	**Suggested MIS attribution**
Wigborough Gravel	-	10
(Clacton Channel – Warren's (1955) channel ii, probably equivalent to the West Cliff deposits (channel i) (Bridgland *et al.*, 1999))	-	11
Holland Gravel	-	12

Table 22. Final suggested correlations and age attributions for Quaternary deposits in eastern Essex from the Medway project. Italic sediment bodies have associated OSL dating and bold ones AAR age attributions, details of which can be found in Tables 4 to 7. Stratigraphic nomenclature is after Bridgland (1988) and Roe (1994).

Suggested MIS attribution	**EX1 Sediment body**			**EX2 Sediment body**	**EX3 Sediment body**	**EX4 Sediment body**
1	Marine sands and silts					
2	Brickearth					
5d - 2	Foulness Gravel					
5e				Burnham Channel	**East Mersea Restaurant Site**	
8-5d	*Barling Gravel*			Burnham Channel Gravel *Dammer Wick Gravel*	*Mersea Island Gravel (lower)*	
	Rochford Gravel			‘Fine-grained gravel’ after Gibbard *et al.* (1996)		
9	**Barling Channel**	**Shoeburyness Channel**	**Rochford Channel**		**Cudmore Grove Channel**	
10 - 9	Shoeburyness Channel Gravel		Rochford Channel Gravel		Cudmore Grove Channel Gravel	
10					Mersea Island Gravel (upper)	Wigborough Gravel
11				Tillingham Channel Tillingham Channel Gravel		**Clacton Channel**
12	Southchurch Gravel			Asheldham Gravel		Holland Gravel

Table 23. Data recorded for Palaeolithic sites in MVPP GIS *Palaeolithic Resource Predictive Model*

#	*Field*	*Field entry*	*Notes*
1	F_EVENT	Unique code for fieldwork event	Different codes for different events at same site
2	OLD_EVENT	Previous event codes within MVPP museum collection recording	
3	EV_SUB_DIV	Different test pits, contexts or site areas within same main event	
4	KT [or EX]_REG MVPP sub-region	1, 2, 3 or 4	One of MVPP sub-regions 1–4 in Kent (KT) or Essex (EX)
5	ORIGIN	ERPP SMR MVPP Lit (from published source or grey report) Mus (from museum collection)	Just one of these options
6	SITE_NAME	Text with name of site	
7	VOL	Southern or English rivers Project volume	
8	MAP	Map number from Southern or English rivers Project volume	Eg. B&C 5 [Blackwater & Chelmer 5]; where MVPP fieldwork has taken place at an SRPP site (eg. Cuxton) still put in SRPP info
9	F_SPOT	Find-spot ID within SRPP/ERPP map	Eg. 11 [Clacton, Holland-on-Sea]
10	SMR_NO	KCC/ECC Sites and monuments record ID	
11	NGR_E	6-figure grid reference (easting)	
12	NGR_N	6-figure grid reference (northing)	
13	ACC	Accurate Estimated General	Just one of these options
14	EV_TYPE	Collection Controlled collection Excavation	Just one of these options
15	SOURCES	Author/date for relevant primary sources	Relational with separate table of sources
16	MVPP_EX	Whether extant lithic material located and examined for MVPP	Yes or no
17	ART_AB	0 — None 1 — Single 2 — Several (2–10) 3 — Abundant (>10)	Just one of these options

18	HA	Number of handaxes (including rough-outs)	Based on collections and sources, not all necessarily extant
19	HA(bc)	No. of *bout coupé* handaxes reported/seen	Based on collections and sources, not all necessarily extant
20	C	Number of cores (*except* Levallois)	Ditto
21	LEV	Number of Levallois (flakes and cores combined)	Ditto
22	FT	Number of flake-tools, retouched flakes (*except* Levallois)	Ditto
23	DEB	Number of debitage	Ditto
24	TRAD (Cultural/industrial tradition)	ACH — Acheulian CLAC — Clactonian LEV — Levalloisian BM — British Mousterian (ie. *bout coupé*) UP — Upper Pal LB — Long Blade UN — Unassigned	Normally would expect to have none or one of these, but can list more than one if needs be, divided by semicolon
25	P_PERIOD (Palaeolithic period)	L/M Pal Mousterian Upper Pal	750,000–125,000 BP 125,000–40,000 BP 40,000–10,000 BP As for above, normally would expect to have just one of these, but can list more than one if needs be, divided by semicolon
26	BIO_SUM (Zoological remains combined summary)	0–10	Score for presence/abundance/diversity of remains, based on sum of each of five individual zoological remains fields 26–30
27	L_MAMM (Large mammals)	0 — None 1 — Scarce/poor condition 2 — Common/well-preserved	
28	SV (Small vertebrates)	Ditto	
29	MOLL (Molluscs)	Ditto	
30	OCF (Ostracods/ foraminifera)	Ditto	
31	PD (Pollen/diatoms)	Ditto	

32	CONTEXT (context/provenance of find/bio remains)	Text name or bed number of stratigraphic context	
33	GEO_ATTRIB (Geological attribution, class of deposit)	Fluvial complex Colluvial/solifluction Residual/Clay-with-flints Residual/derived Aeolian Lacustrine Raised beach complex Intertidal/estuarine Glacigenic Fluvio-glacial	Normally would expect to have just one of these, but can list more than one if needs be, divided by semicolon
34	GEO_PERIOD (Geo period)	Pre-Anglian Anglian Hoxnian/Saalian Last interglacial Devensian Holocene Unknown	Normally would expect to have just one of these, but can list more than one if needs be, divided by semicolon
35	DIST (Depositional disturbance/transport)	?? — Unknown Very — Highly disturbed Mod — Slightly disturbed Min — Essentially undisturbed	A site can have "Yes" for none, any or all of these, depending upon range of material and deposits present, divided by semicolon
36	INTEG (Stratigraphic integrity)	0 — Unknown 1 — Low 2 — Moderate 3 — High	Ditto
37	EH_RARE Rarity (after English Heritage MPP criteria)	1 — Commoner than average 2 — Average 3 — Rarer than average	Bearing in mind an amalgam of: period, typology/technology, region, class of deposit, spatial and stratigraphic integrity
38	EH_FRAG Fragility/vulnerability (after English Heritage MPP criteria)	1 — Less fragile/vulnerable than average 2 — Average 3 — More fragile/vulnerable than average	1 — Deposits abundant and unthreatened 2 — Deposits of average extent and stability 3 — Restricted deposits vulnerable to erosion or development
39	EH_DIV Diversity (after English Heritage MPP criteria)	1 — Less range of material than average 2 — Average 3 — Greater range of material than average	1 — Undiagnostic cores or waste debitage 2 — Recognisable tool types (eg. handaxes); more than one type of artefact within a category; more than one category of artefact 3 — Multiple examples of different types of artefact within more than one artefact category

40	EH_STRAT Stratigraphic depth (after English Heritage MPP criteria)	1 — Uncertain provenance of artefacts 2 — Artefacts/zoological remains reliably provenanced to a specific horizon 3 — Significant remains from more than one stratigraphically related horizon	
41	EH_DOC Documentation (after English Heritage MPP criteria)	1 — No records of investigation 2 — Average records 3 — Good records of provenance and investigation	
42	EH_GRP Group value (after English Heritage MPP criteria)	1 — No group value 2 — Average 3 — High group value	
43	ART_SUMM	Text summary of any lithic artefactual material	Based on either direct recent re-examination of material by MVPP, or published sources

Table 24. Attributes for Palaeolithic assessment zones

#	*Field*	*Field entry*	*Notes*
1	MVPP_ZONE	MVPP_[KT/EX]_ nn	Unique MVPP identifier
2	GEOMORPH_SIT	Short text	Description of geomorphological and topographic situation
3	GEO_SOLID (Bedrock)	Short text	Description of solid geology bedrock characteristics
4	GEO_DRIFT	Short text	Description of Pleistocene sediment characteristics
5	PAL_SUMM	Short text	Summary of Palaeolithic artefactual and zoological remains
6	GEO_PERIOD (Geo period/s for any Pleistocene deposits)	Pre-Anglian Anglian Hoxnian/Saalian Last interglacial Devensian Holocene	Normally would expect to have just one of these, but can list more than one if needs be
7	PAL_PERIOD (Pal period/s)	Lower/Mid Pal (750,000–125,000 BP) Brit Mousterian (125,000–40,000 BP) Upper Pal (40,000–10,000 BP)	Normally would expect to have just one of these, but can list more than one if needs be
8	F-SPOT_DENSITY (Density of sites)	nn	No. of sites per km^2 with one or more artefacts in zone (auto-calculated GIS)
9	F-SPOT_ABUND (Abundance of sites)	0 — None 1 — Less than average number of artefact find-spots 2 — More than average number of artefact find-spots	Auto-calculated GIS; NB – zones with no artefacts are ignored when calculating average
10	BIO_DENSITY	nn	No. of sites per km^2 with zoological remains in zone (auto-calculated GIS)
11	BIO_ABUND	0 — None 1 — Less than average number of zoological remains find-spots 2 — More than average number of zoological remains find-spots	Auto-calculated GIS; NB – zones with no zoological remains are ignored when calculating average
12	PAL_TRADS (L/M Pal cultural/industrial traditions)	ACH - Acheulian CLAC - Clactonian LEV - Levalloisian BM - British Mousterian (ie. *bout coupé*) UP - Upper Pal LB - Long Blade UN - Unassigned	Summary list of range of different Palaeolithic cultural traditions present in zone, divided by semicolon
13	PAL_DIVERSITY (L/M Palaeolithic cultural diversity)	0 – none 1 – just one of above 2 – any two of above 3 – any three of above *etc.*	Sum of range of different types of cultural/industrial tradition present in zone, including "UN" as a type

14	AUTO_IMP (Automatic GIS-generated assessment of importance)	3 – High	Both artefacts and zoological remains present in zone; or, (findspot abundance)*(Pal diversity) >= 3
		2 - Medium	Either artefacts or zoological remains present in zone
		1 - Low	Neither artefacts nor zoological remains present in zone
15	LIKELY_IMP (Likely importance/ potential)	3 - High 2 - Medium 1 – Very low ?? - Unknown 0 - None	Likelihood of finding important Palaeolithic/zoological remains — see below *
16	POSS_IMP (Possible importance)	Short text	Flags up unlikely but highly significant possibilities, such as pre-Anglian evidence in high-level gravels
17	RESEARCH OBJECTIVES (Key research Questions)	Short text, or: N 1–n R 1–n	Short text; or lists in relation to associated tables of national/regional Palaeolithic research questions
18	APPROACHES TO INVESTIGATION (Key approaches to investigation)	Text or list from: 1 — Stratigraphic recording 2 — Environmental sampling 3 — Sieve-sampling for artefacts 4 — Open-area excavation 5 — Watching brief for Pleistocene deposits and/or Palaeolithic remains 6 — boreholes ?? Others	List none, any or all of possible intervention approaches

*** Note on importance/potential**

This is a judgement based on a combination of two criteria: (a) the *likelihood* of finding Palaeolithic remains; and (b) the likely *importance* of any remains that are present. Note that the concept of zero potential or likelihood is omitted — it is the opinion of this writer that there is always a tiny possibility of finding important remains even in very unlikely situations. A crude tabular summary of how *likelihood* and *importance* are combined to reach potential is given below:

Potential	*Likelihood*	*Likely importance*
Very low	Very unlikely	Low, moderate or high
	Low	Low
Low	Moderate	Low
	Low	Moderate
Moderate	Low	High
	Moderate	Moderate
	High	Low
High	Moderate	High
	High	Moderate
Unknown	Unknown	Low, moderate or high
	Low, moderate or high	Unknown

Table 25. Palaeolithic remains and relevant information

Category	*Range*	*Eg., Comments*
Human activities/artefacts	Lithic artefacts	Flaked stone tools and debitage, percussors
	Wooden artefacts	Spears, tool-hafts
	Bone/antler artefacts	Percussors, handaxes (known from Italy from elephant bone)
	Cut-marked faunal remains	
	Decorated/carved objects	Generally Upper Palaeolithic, but not out of the question for Lower/Middle Palaeolithic
	Cave art	Upper Palaeolithic only
	Manuports	Unused raw material
	Features, structures	Hearths, stone pavements, pits
	Fire	Charcoal concentrations in association with hearths
Biological/palaeo-environmental	Large vertebrates	Mammals (rhino, elephant, lion, deer horse, carnivores, etc.) birds
	Small vertebrates	Mammals (bats, mice, voles, lemmings etc.), fish, reptiles, birds, amphibians
	Plant macro-fossils	
	Pollen and diatoms	
	Molluscs	
	Insects	
	Ostracods and foraminifera	
Intrinsic sedimentological	3D location	Geometry, morphology, landscape context
	Sediment description	
	Sedimentary structures	Bedding, faulting, post-depositional distortion
	Sand bodies	Potential for OSL dating
	Clast lithology	
	Heavy mineral content	

Table 26. English Heritage criteria for Palaeolithic importance

Criterion	*Notes*
● Any human bone is present	The only Lower/Middle Palaeolithic remains from Britain are: – one partial skull (occipital region) from Swanscombe – two incisors and a shin bone (two individuals) from Boxgrove – molar tooth from Pontnewydd (Wales)
● Palaeolithic remains in primary undisturbed context	There are about a dozen British sites with undisturbed Palaeolithic remains. Less than half have both faunal and lithic remains, and have had areas of more than a few square metres excavated (cf. Wenban-Smith 2004)
● Remains from a period or geographic area where evidence is rare or previously unknown	
● Organic artefacts	The only organic artefacts known from Britain from the L/M Palaeolithic are a wooden spear-point from Clacton and bone and antler percussors from Boxgrove
● Well-preserved associated biological/palaeo-environmental evidence	These are important on two counts: – May provide direct behavioural/dietary information – Provide environmental/climatic/biostratigraphic data
● Evidence of lifestyle	Can include cut-marked faunal remains, particular topographic situation, artefacts when interpreted in light of their context/distribution
● Remains from different stratigraphic horizons	
● Artistic evidence	Can include decorated/carved objects and rock-art. Not presently known before the Upper Palaeolithic, although should not be ruled out as a possibility for earlier periods
● Evidence of hearths or structures	No evidence in Britain before the Upper Palaeolithic, but might be expected for the Middle Palaeolithic
● Site can be related to exploitation of a particular resource	For instance raw material source, cave/rock-shelter, lake
● Artefacts are abundant	No absolute guidelines on how abundance should be assessed. Needs to be considered together with level of investigation. If limited investigation, even low numbers of artefacts may indicate abundance