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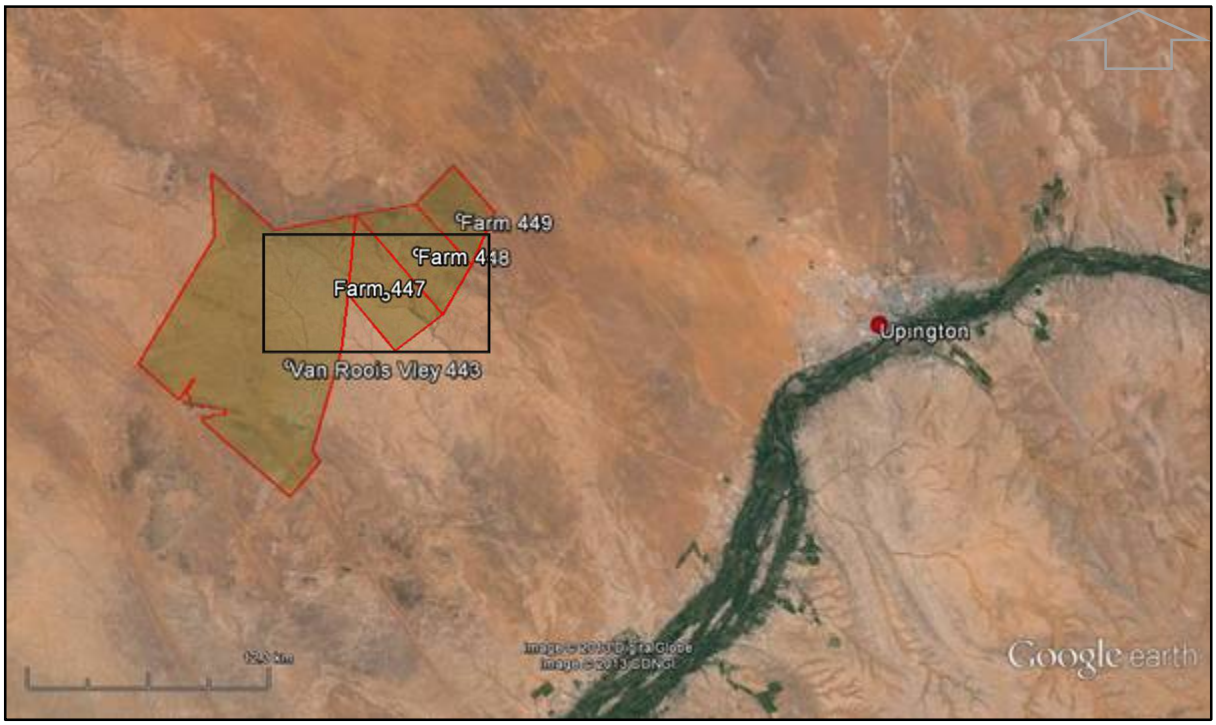
PHASE 2 ARCHAEOLOGICAL MITIGATION: LITHIC ANALYSIS – THE PROPOSED SASOL CSP AND CPV PROJECT, VAN ROOIS VLEY, NEAR UINGTON, NORTHERN CAPE

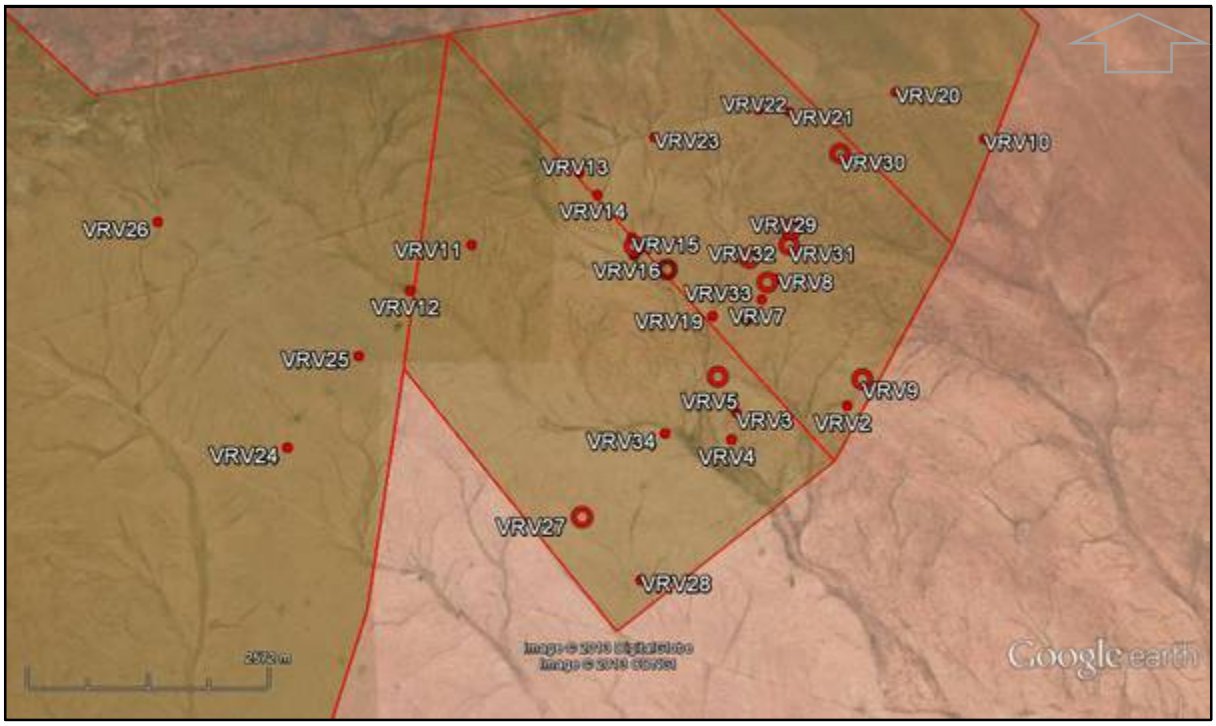
o INTRODUCTION

Van Vollenhoven (2012) identified, amongst other cultural heritage sites / resources, thirty three (33) Stone Age occurrences, labelled Sites 2-34, during his Phase 1 Archaeological Impact Assessment (AIA) for the proposed Sasol CSP and CPV project on the farm Van Roois Vley, near Upington, Northern Cape. Stone Age occurrences were in general described as of a SAHRA (2007) *Medium Significance and Grade IIIB Field Rating.* The Sites 2-34 occurrences were ascribed to the Middle (MSA) and Later Stone Ages (LSA), while mention was made of the fact that no Earlier Stone Age (ESA) artefacts were identified during the Phase 1 AIA. Van Vollenhoven (2012) remarked on the fact that many a recorded occurrence may be representative of a single depositional layer, member or site, while the lack of vast amounts or high densities of artefacts hampered identification of site or occurrence boundaries and associated period assignation.



Map 1: General locality of the proposed Van Roois Vley Sasol CSP and CPV project (including the properties Van Roois Vley 443, Farm 449, Farm 448 and Farm 447) in relation to Upington, Northern Cape

Of the identified 33 Stone Age occurrences 10 were mitigated by means of surface collection, including: VRV-5 [S28°26.600'; E21°00.065'], VRV-9 [S28°26.617'; E21°01.023'], VRV-16 [S28°25.777'; E20°59.495'], VRV-18 [S28°25.926'; E20°59.722'], VRV-27 [S28°27.444'; E20°59.129'], VRV-29 [S28°25.666'; E21°00.607'], VRV30 [S28°25.171'; E21°00.976'], VRV-31 [S28°25.770'; E21°00.588'], VRV-32 [S28°25.853'; E21°00.304'] and VRV33 [S28°26.009'; E21°00.427']. All sites selected for mitigation were in fair or close proximity to shallow, dry riverbeds – post depositional water impact is inferred to have been the primary disturbing impact on the now essentially secondary contexts of the deposits. With river beds being notably shallow no section deposits, indicative of probable sub-surface deposits or related stratigraphy, were present (Van Vollenhoven: Pers. Comm). Selected surface collections are all random collections: A blind test systematic 1x1m surface collection at Site VRV-15 yielded an average artefact ratio (artefacts: m²) of 3:1 (Van Vollenhoven: Pers. Comm).



Map 2: Spatial distribution of identified sites (Van Vollenhoven 2012 – red bullets), indicating sites selected for Phase 2 collections (red circles)

o PHASE 2 ARCHAEOLOGICAL MITIGATION: LITHIC ANALYSIS & INTERPRETATION

Lithic analysis of the Phase 2 archaeological mitigation sites (VRV-5, VRV-9, VRV-16, VRV-18, VRV-27, VRV-29, VRV-30, VRV-31, VRV-32 and VRV-33), with all collections comprising of random surface collections, were done with the aim to identify and further describe the recorded lithic occurrences with a focus on basic typology and technology according to the following categories:

1. **Artefact Code** – Site name & number [VRV-(#)] followed by the sequential number of the collected artefact from the site;
2. **Preliminary period assignation** – ESA, MSA or LSA;
3. **Basic artefact type** – Core (C), HS (Hammer Stone), Handaxe (H), Fauresmith handaxe (FH), Flake (F), Scraper (S), Convergent Flake (CF), Blade (B), Flake-Blade (FB), Scraper (S), Waste Flake (WF), Broken flake (BF), Cortical Flake (CxF), Chunk (Ch), Chip (Ci);
4. **Artefact size** – Length (L), Width (W) and Thickness (T)] were measured in millimetres (mm);
5. **Secondary Retouch** – Recorded as Proximal (P), Lateral (L) or Distal (D) (1st digital) and situated Dorsally (D) or Ventrally (V) on the artefact (2nd digital);
6. **Use-wear** – Recorded as Proximal (P), Lateral (L) and Distal (D), indicating the number of occurrences and including basic use-west types; Notches (N), Adzes (A), Serrated edges (Se), Shaved edges (Sh), Scraped edges (Sc), Grinded surfaces (G), Cutmarks (CM) and Pecked impact (P);

7. **Breaks** – Indicating the presence and locality of breaks as Proximal (P), Lateral (L) or Distal (D);
8. **Cortex** – Indicating the presence of cortex on the artefact (without recording approximate size and locality);
9. **Flake-scars** – Number of dorsal flake scares (for flakes / artefacts) or total number of flake-scares (for cores);
10. **Prepared platform** – Presence of prepared platforms (2+flake scars) indicating the size of the platform as a ratio between length (L) and width (W) recorded in millimetres (mm) followed by the number of prepared platform flake-scars;
11. **Raw material** – Identification of raw material.

Phase 2 archaeological mitigation or surface collection indicated that an ESA is present at the study site. At Site VRV-16 van Vollenhoven collected 3 ESA handaxes, one being a typical core produced handaxe while 2 samples are indicative of a Fauresmith technology. The Fauresmith is generally interpreted to be representative of the 1st Stone Age transition (ESA to MSA transition). Significant Fauresmith components are however often found together with Volman (1984) MSA2b type assemblages, leading some scientists to consider the Fauresmith as a return to earlier technology rooted firmly in the MSA. Site VRV-27 remains the only site where only MSA types were collected. All other sites, including ESA Site VRV-16, yielded an LSA admixture to the collection. At Site VRV-27 and all 'mixed' sites MSA types dominate the collections by far. Based on basic artefact size the Van Roois Vley collection can be assigned to a Volman (1984) MSA2b and MSA3, where the general flake component of the collection (98/132 or 72.24% of the artefacts) discloses an average artefact size ratio (artefact length-width-thickness) of 51-41-16mm. But any further Industry level assignation is not possible, not to the collection as a whole or to any individual occurrence. MSA Levallois technology is displayed at Sites VRV-5 (VRV-5-86) and VRV-33 (VRV-33-58), but remain a low level element to the characteristics of the assemblage(s). The LSA component to the collections comprise primarily of macrolithic LSA samples, indicative of an evolving technology, practiced on similar raw material types with little exploration of new raw materials that allowed a more refined technology and by implication significant change in typology. Low sample LSA representation does not allow for a more in depth interpretation.

In general, from a technological point of view, artefacts remain crude with many a sample more indicative of amorphous, informal types resulting in analysis results that may appear to be representative of assemblages comprising the expected collection components, when in fact it doesn't: At the Van Roois Vley collections sub-standard technology seems to have inevitably resulted in poor typology. From a basic '*chaine operatoire*' (or reduction sequence) point of view this statement is further supported by the high degree of artefacts still displaying surface cortex (90/132 or 68.18%). If cores are excluded from the assemblage (comprising 34/132 or 25.76% thereof), then the collection shows an average of 4.28 flake scars per artefact; indicative of a fairly developed '*chaine operatoire*', despite seemingly poor technology and typology. In addition, of the said collection component (total number of artefacts excluding cores and handaxes), 45/98 or 45.91% of the artefacts have prepared platforms, an important MSA technological indicator. Of the 45 artefacts with prepared platforms, if only length of the platforms are considered, 20/45 (or 44.44%) fall within the category of 20-30mm; 12/45 (or 26.67%) in the category 30-40mm, 8/45 (or 17.78%) in the category 10-20mm and 5/45 (or 11.11%) in the category 40-50mm, with the preference for a 20-30mm (and 30-40mm) in length prepared platform in fair accord with basic MSA collections of a notably more advanced technological and typological standard. Prepared platforms have an average of 2.73 flake scars per prepared platform; definitely within the lower echelons of platform preparation, but this needs to be considered against the number of MSA collections that often does not have a significant prepared platform component, despite in cases better technological and typological standards. Despite the aforementioned Van Roois Vley collection's technological indicators, the total absence of secondary retouch needs to be noted.

Collection composition, technological indicators and raw material needs to be briefly considered further:

- Cores comprise 25.76% of the general collection and the flake component 72.24% thereof (excluding ESA handaxes) – a notably high core component to any basic MSA collection.
- Important MSA technological indicators including evident Levallois technology, '*chaine operatoire*' reduction sequence levels and evidence for a reasonable MSA prepared platform technology are not in accord with the visibly sub-standard general technological and typological appearance of the Van Roois Vley collection.
- Identified MSA technological indicators may well be at least a secondary result of the raw material used (quartzite and quartzitic types), which, based on the flaking qualities thereof require more preparation than for example baked shale, granite and siliceous material to knap a more ideal flake form. However this said, the question remains, why if the primary raw material used required a more advanced technology is this not displayed in the final collection composition, not only with reference to the low number of typical MSA '*fossiles directeurs*', specifically blades and convergent flakes, but also the total absence of secondary retouch?

The above indicating that the Van Roois Vlei collection essentially represents macro knapping by-products or '*debitage*', while the intentionally knapped artefacts, the primary products of the knapping activities are largely absent from the collection. Provenance and context may well explain the absence of the then expected micro '*debitage*' components from the deposits. Van Vollenhoven (Pers. Comm.) commented on the fact that all collection localities are situated in shallow, dry riverbeds – with deposits having been exposed to water disturbance for millennia, it can reasonably be inferred that the micro '*debitage*' have simply been washed away. The secondary context of the collections needs further consideration. At Site VRV-15 van Vollenhoven (Pers. Comm) recorded an average artefact ratio (artefacts: m^2) of 3:1, according to him fairly representative of artefact densities across the various recorded locales. Low artefact density coined with secondary contexts poses further questions pertaining to the origin of the deposits: On one hand it can be inferred that the deposits represent the disturbed remainders of assemblages originally deposited at the locales. However, the possibility that these low density deposits are, at least in part, the result of water transport cannot be excluded. To date no site indicators pointing towards possible *in-situ* sub-surface deposits, that will definitely further the current interpretation of the Van Roois Vley assemblages, have been identified.

With reference to use-wear, all 3 handaxes displayed clear evidence of use-wear, of the MSA component of the Van Roois Vley collection, excluding cores, 85/98 or 86.73% of the artefacts displayed use-wear, primarily on the lateral edges, more than often on both lateral sides, followed by distal wear patterns with a few artefacts having been used at the proximal ends. Notches are the primary additional wear mark on the artefacts. 14/98 or 14.29% of the artefacts were broken, with none of the identified breaks being green or fresh breaks and all thus inferred to be suitable for purposes this interpretation. Of the 14 artefacts 12/14 or 85.71% are distal breaks, a breakage pattern consistent with artefact use functions while 2/14 or 14.29% are lateral breaks, more consistent with breakage patterns associated with knapping.

LITHIC ANALYSIS – VAN ROOIS VLEY, NEAR UPINGTON, NORTHERN CAPE													
Code	**Period**	**Type**	**Artefact size**			**Sec. retouch**	**Use-wear**	**Breaks**	**Cortex**	**Flake scars**	**Prepared platform**		**Raw material**
			L	**W**	**T**						**Size (rL-W)**	**# FS**	
Site VRV-5													
VRV-5-73	MSA	S (Scraper)	51	45	16	0	2xL / 1xD	0	0	5	r36-14	4	Quartzite
VRV-5-74	LSA	FB (Flake-blade)	27	15	6	0	2xL	0	0	4	0	0	Silicious
VRV-5-75	MSA	CF (Convergent flake)	35	24	12	0	2xL	D	Y	3	r20-11	5	Silicious
VRV-5-76	MSA	F (Flake)	30	28	11	0	2xL / N	D	0	3	r33-9	4	Quartzite
VRV-5-77	MSA	S (Scraper)	33	40	11	0	2xL / 1xD	0	0	4	r17-6	2	Quartzite
VRV-5-78	MSA	C (Core)	73	50	32	0	N/A	0	0	10	0	0	Quartzite?
VRV-5-79	MSA	FB (Flake-blade)	53	32	15	0	2xL	D	Y	3	r25-13	2	Quartzite?
VRV-5-80	MSA	CxF (Cortical Flake)	58	67	23	0	1xD	0	Y	0	0	0	Quartzite
VRV-5-81	MSA / LSA	S (Scraper)	35	36	12	0	1xL / 1xD	0	Y	5	0	0	Quartzite
VRV-5-82	MSA	FB (Flake-blade)	67	37	18	0	2xL / 1xD	0	0	6	r29-12	4	Quartzite
VRV-5-83	MSA	CF (Convergent flake)	62	50	16	0	2xL	0	0	6	r41-12	5	Quartzite
VRV-5-84	MSA / LSA	WF (Waste flake)	31	32	16	0	0	0	Y	3	0	0	Quartzite
VRV-5-85	MSA	C (Core)	63	45	38	0	N/A	0	Y	11	0	0	Quartzite
VRV-5-86	MSA	CF (Convergent flake) (Levallois)	58	46	20	0	2xL	0	0	10	r16-3	2	Quartzite
VRV-5-87	MSA	C (Core)	95	80	57	0	N/A	0	Y	14	0	0	Quartzite
VRV-5-88	MSA	C (Core)	106	74	42	0	N/A	0	Y	12	0	0	Quartzite
VRV-5-89	MSA	CF (Convergent flake)	75	60	27	0	2xL	0	Y	2	r48-24	2	Quartzite
VRV-5-90	MSA	S (Scraper)	46	40	14	0	1xL / 1xD	0	Y	2	r27-11	2	Quartzite
VRV-5-91	MSA	CF (Convergent flake)	85	60	17	0	2xL	0	0	7	r23-12	2	Quartzite
VRV-5-92	MSA	S (Scraper)	59	58	22	0	2xL / 1xD	0	Y	2	0	0	Quartzite
VRV-5-93	MSA	FB (Flake-blade)	57	39	20	0	2xL / N	0	Y	3	r27-10	2	Quartzite
21 Artefacts													
Site VRV-9													
VRV-9-61	LSA	C (Core)	56	50	28	0	N/A	0	Y	12	0	0	Quartzite
VRV-9-62	LSA	S (Scraper)	27	27	11	0	2xL / 1xD	0	0	2	r19-10	3	Quartzite
VRV-9-63	MSA	FB (Flake-blade)	54	35	14	0	2xL / 1xD	0	Y	2	r23-8	2	Quartzite
VRV-9-64	MSA	WF (Waste-flake)	38	43	15	0	2xL / 1xD / N	0	0	2	0	0	Quartzite
VRV-9-65	MSA	FB (Flake-blade)	65	52	19	0	2xL / 1xD / N	0	0	5	r24-9	2	Quartzite
VRV-9-66	MSA	FB (Flake-blade)	53	53	20	0	2xL / 1xD	0	Y	5	0	0	Quartzite
VRV-9-67	MSA	CxF (Cortical Flake)	66	55	15	0	0	0	Y	0	0	0	Quartzite
VRV-9-68	MSA	C (Core)	63	52	23	0	N/A	0	Y	11	0	0	Quartzite
VRV-9-69	MSA	S (Scraper)	44	65	20	0	1xD	0	Y	4	0	0	Quartzite
VRV-9-70	MSA / LSA	C (Core)	53	49	28	0	N/A	0	Y	14	0	0	Quartzite
VRV-9-71	MSA	C (Core)	72	82	36	0	N/A	0	Y	15	0	0	Quartzite
VRV-9-72	LSA	FB (Flake-blade)	34	20	8	0	2xL / 1xD	0	0	4	0	0	Quartzite
12 Artefacts													
Site VRV-16													
VRV-16-105	MSA	C (Core)	58	63	21	0	N/A	0	Y	7	0	0	Quartzite

VRV-16-106	MSA	F (Flake)	62	57	27	0	2xL / N	0	Y	2	r45-27	2	Quartzite
VRV-16-107	MSA / LSA	C (Core)	77	56	30	0	N/A	0	Y	5	0	0	Fine grained granite
VRV-16-108	MSA	C (Core)	70	43	18	0	N/A	0	Y	6	0	0	Quartzite
VRV-16-109	MSA	F (Flake)	80	72	36	0	0	0	Y	5	0	0	Quartzite
VRV-16-110	MSA / LSA	C (Core)	68	45	34	0	N/A	0	Y	13	0	0	Quartzite
VRV-16-111	ESA	H (Handaxe) (Fauresmith)	119	64	43	0	2xL	0	Y	24	0	0	Quartzite
VRV-16-112	ESA	H (Handaxe) (Fauresmith)	95	48	32	0	2xL	0	0	27	0	0	Quartzite
VRV-16-113	MSA	S (Scraper)	63	42	22	0	2xL / 1xD	0	Y	6	0	0	Quartzite
VRV-16-114	ESA	H (Handaxe)	147	91	58	0	2xL	0	Y	28	0	0	Quartzite
VRV-16-115	MSA	FB (Flake-blade)	65	43	17	0	2xL	D	Y	10	r28-12	4	Quartzite
VRV-16-116	MSA	C (Core)	76	75	52	0	N/A	0	Y	20	0	0	Quartzite
12 Artefacts													
Site VRV-18													
VRV-18-94	MSA	C (Core)	107	84	52	0	N/A	0	Y	7	0	0	Fine grained granite
VRV-18-95	MSA	F (Flake)	81	73	22	0	1xL / 1xD / 1xP	0	Y	5	r38-25	2	Quartzite
VRV-18-96	MSA	F (Flake)	54	47	27	0	2xL	0	0	8	0	0	Quartzite
VRV-18-97	MSA / LSA	C (Core)	44	44	19	0	N/A	0	Y	13	0	0	Quartzite
VRV-18-98	MSA	C (Core)	97	76	53	0	N/A	0	Y	11	0	0	Quartzite
VRV-18-99	MSA	FB (Flake-blade)	46	28	9	0	2xL / N	D	0	2	0	0	Quartzite
VRV-18-100	MSA	C (Core)	62	59	53	0	N/A	0	Y	11	0	0	Quartzite
VRV-18-101	MSA	C (Core)	89	81	27	0	N/A	0	Y	8	0	0	Quartzite
VRV-18-102	MSA	F (Flake)	43	27	8	0	0	0	0	4	0	0	Quartzite
VRV-18-103	MSA / LSA	C (Core)	49	46	35	0	N/A	0	Y	13	0	0	Quartzite
VRV-18-104	MSA	B (Blade)	48	45	16	0	2xL / 1xP	D	0	3	r31-16	4	Quartzite
11 Artefacts													
Site VRV-27													
VRV-27-117	MSA	F (Flake)	67	53	20	0	1xL / N	D	Y	3	0	0	Fine grained granite
VRV-27-118	MSA	F (Flake)	69	59	21	0	1xL / N	0	Y	4	0	0	Quartzite
VRV-27-119	MSA	C (Core)	61	54	26	0	N/A	0	Y	10	0	0	Quartzite
VRV-27-120	MSA	F (Flake)	44	49	16	0	1xL / 1xD	0	Y	1	0	0	Quartzite
VRV-27-121	MSA	F (Flake)	62	50	17	0	1xD	0	Y	6	0	0	Quartzite
VRV-27-122	MSA	C (Core)	89	71	49	0	N/A	0	Y	11	0	0	Quartzite
VRV-27-123	MSA	C (Core)	81	55	25	0	N/A	0	0	15	r32-15	5	Quartzite
VRV-27-124	MSA	C (Core)	80	78	32	0	N/A	0	Y	7	0	0	Quartzite
VRV-27-125	MSA	CxF (Cortical flake)	75	59	28	0	1xL	0	Y	2	0	0	Quartzite
VRV-27-126	MSA	F (Flake)	42	31	12	0	2xL / N	0	Y	1	0	0	Quartzite
VRV-27-127	MSA	C (Core) (Levallois)	68	53	34	0	N/A	0	Y	5	0	0	Fine grained granite
VRV-27-128	MSA	C (Core)	67	58	34	0	N/A	0	Y	11	0	0	Fine grained granite
VRV-27-129	MSA	S (Scraper)	36	40	12	0	2xL / 1xD	0	0	3	r32-13	6	Fine grained granite

VRV-27-130	MSA	C (Core)	73	73	46	0	N/A	0	Y	12	0	0	Quartzite
VRV-27-131	MSA	F (Flake)	50	25	11	0	2xL / 1xD	0	Y	5	0	0	Quartzite
VRV-27-132	MSA	F (Flake)	69	72	21	0	1xD	0	Y	3	r30-12	2	Quartzite
16 Artefacts													
Site VRV-29													
VRV-29-11	MSA	CF (Convergent flake)	45	35	13	0	2xL / 1xD	0	Y	2	r34-14	3	Quartzite
VRV-29-12	MSA	CxF (Cortical flake)	47	54	16	0	2xL / 1xD	0	Y	2	0	0	Quartzite
VRV-29-13	MSA	CF (Convergent flake)	84	49	16	0	2xL	0	0	7	0	0	Quartzite
VRV-29-14	MSA	CxF (Cortical flake)	100	48	20	0	1xL	0	Y	1	r44-15	3	Quartzite
VRV-29-15	LSA	FB (Flake-blade)	21	16	6	0	2xL / 1xD	0	0	3	0	0	Quartzite
VRV-29-16	MSA	F (Flake)	50	40	17	0	1xL	0	Y	2	r32-16	2	Quartzite?
VRV-29-17	LSA	F (Flake)	25	25	9	0	2xL / N	D	0	2	r20-7	2	Quartzite
VRV-29-18	MSA / LSA	HS (Hammerstone)?	78	63	30	0	N/A	0	Y	7	0	0	Quartzite
VRV-29-19	MSA	B (Blade)	35	35	13	0	2xL / N	D	0	2	r29-13	2	Quartzite
VRV-29-20	MSA	F (Flake)	40	62	22	0	1xD	0	0	12	r43-21	2	Quartzite
10 Artefacts													
Site VRV-30													
VRV-30-1	MSA	C (Core)	72	71	30	0	N/A	0	Y	13	0	0	Quartzite
VRV-30-2	MSA	WF (Waste flake)	34	53	17	0	1xL / 1xD / 1xP	0	Y	3	0	0	Fine grained granite
VRV-30-3	MSA	F (Flake)	43	43	12	0	1xL / 1xD	0	Y	3	0	0	Quartzite
VRV-30-4	MSA	WF (Waste flake)	40	48	9	0	1xL / 1xD	0	0	3	r30-9	2	Unidentified
VRV-30-5	MSA	S (Scraper)	57	43	16	0	2xL / 1xD	0	Y	2	0	0	Quartzite
VRV-30-6	MSA	CxF (Cortical flake)	26	42	13	0	1xL / 1xD	L	Y	0	r27-8	2	Siliceous
VRV-30-7	MSA	F (Flake)	43	47	19	0	1xL / 1xD	0	Y	5	0	0	Quartzite
VRV-30-8	MSA / LSA	Ch (Chunk)	32	25	10	0	0	0	0	3	0	0	Fine grained granite
VRV-30-9	MSA	F (Flake)	43	33	11	0	2xL / 1xD / N	0	0	5	r19-5	2	Quartzite
VRV-30-10	MSA	C (Core)	65	53	27	0	N/A	0	Y	20	0	0	Quartzite
10 Artefacts													
Site VRV-31													
VRV-31-21	LSA	S (Scraper)	25	24	15	0	2xL / 1xD / A	0	Y	4	r19-10	2	Siliceous
VRV-31-22	MSA	S (Scraper)	41	47	16	0	2xL / 1xD / 1xP	0	0	3	r27-15	2	Quartzite
VRV-31-23	MSA / LSA	C (Core)	69	67	25	0	N/A	0	Y	6	0	0	Quartzite
VRV-31-24	LSA	FB (Flake-blade)	33	27	9	0	0	0	Y	1	r15-9	2	Quartzite
VRV-31-25	MSA	FB (Flake-blade)	40	27	14	0	1xL	D	0	3	r25-11	2	Quartzite
VRV-31-26	MSA	F (Flake)	34	27	9	0	1xL / 1xD	0	0	5	0	0	Quartzite
VRV-31-27	MSA	F (Flake)	37	27	8	0	1xL / 1xD / N	0	Y	2	0	0	Quartzite
VRV-31-28	MSA	FB (Flake-blade)	78	45	19	0	1xL / 1xD	0	Y	5	0	0	Quartzite
VRV-31-29	MSA	C (Core)	71	69	28	0	N/A	0	Y	17	0	0	Quartzite
VRV-31-30	MSA	Ch (Chunk)	35	35	20	0	1xL / 1xD	0	Y	6	0	0	Quartzite
VRV-31-31	MSA	S (Scraper)	40	36	11	0	2xL / 1xD / N	0	Y	4	0	0	Unidentified
VRV-31-32	MSA	FB (Flake-blade)	57	46	12	0	2xL	0	Y	3	r35-16	2	Quartzite
VRV-31-33	MSA	F (Flake)	60	43	14	0	0	0	Y	1	r25-7	3	Quartzite

VRV-31-34	MSA	WF (Waste flake)	52	44	24	0	1xL / 1xD	0	Y	5	0	0	Quartzite
VRV-31-35	MSA	FB (Flake-blade)	74	53	17	0	2xL	0	0	3	0	0	Quartzite
VRV-31-36	MSA	F (Flake)	56	39	16	0	2xL	0	Y	1	0	0	Quartzite
16 Artefacts													
Site VRV-32													
VRV-32-37	LSA	F (Flake)	16	29	9	0	2xL / 1xD / 1xP	0	0	4	0	0	Quartzite
VRV-32-38	MSA	F (Flake)	40	33	9	0	2xL	D	0	6	0	0	Siliceous
VRV-32-39	MSA	F (Flake)	41	39	9	0	2xL	D	0	4	r22-10	3	Quartzite
VRV-32-40	MSA / LSA	Ch (Chunk)	27	23	12	0	1xD	0	Y	3	0	0	Quartzite
VRV-32-41	MSA	C (Core)	73	51	28	0	N/A	0	Y	17	0	0	Quartzite
VRV-32-42	MSA	FB (Flake-blade)	63	40	15	0	1xL / N	0	Y	4	0	0	Quartzite
VRV-32-43	MSA	CxF (Cortical flake)	59	41	14	0	2xL / 1xD	0	Y	1	r33-17	4	Quartzite
VRV-32-44	MSA	CF (Convergent flake)	50	28	15	0	2xL	0	Y	4	0	0	Quartzite
VRV-32-45	MSA	C (Core)	51	49	29	0	N/A	0	Y	14	0	0	Quartzite
VRV-32-46	MSA	F (Flake)	54	52	23	0	0	0	Y	8	0	0	Quartzite
VRV-32-47	MSA	F (Flake)	94	60	23	0	2xL	0	Y	1	r29-13	2	Quartzite
VRV-32-48	MSA	F (Flake)	39	31	11	0	1xL / 1xD	L	0	2	r18-12	3	Quartzite
12 Artefacts													
Site VRV-33													
VRV-33-49	MSA?	C (Core)	82	54	36	0	N/A	0	Y	3	0	0	Quartzite
VRV-33-50	MSA	FB (Flake-blade)	79	47	22	0	2xL / 1xD	0	Y	5	r23-16	3	Quartzite
VRV-33-51	MSA	F (Flake)	41	35	9	0	2xL / 1xD / N	0	0	4	r20-7	3	Quartzite?
VRV-33-52	MSA	F (Flake)	38	23	9	0	1xL	0	0	4	0	0	Quartzite?
VRV-33-53	MSA / LSA	Ci (Chip)	13	9	3	0	0	0	0	3	0	0	Quartzite
VRV-33-54	MSA	F (Flake)	72	53	17	0	2xL / N	0	Y	2	0	0	Quartzite
VRV-33-55	MSA	F (Flake)	69	55	22	0	1xL	0	Y	0	0	0	Quartzite
VRV-33-56	MSA / LSA	Ci (Chip)	17	20	6	0	0	0	0	2	r17-7	2	Quartzite
VRV-33-57	MSA / LSA	Ci (Chip)	19	19	6	0	N	0	0	2	0	0	Quartzite
VRV-33-58	MSA	C (Core) (Levallois)	75	67	45	0	N/A	0	Y	13	0	0	Unidentified
VRV-33-59	MSA / LSA	F (Flake)	29	24	8	0	2xL / 1xD / N	0	Y	3	0	0	Quartzite
VRV-33-60	MSA	FB (Flake-blade)	51	35	11	0	2xL / 1xD / N	0	0	3	r25-10	2	Quartzite
12 Artefacts													

Table 1: Lithic analysis – Van Roois Vley surface collections

Plate 1: Site VRV-5: Artefacts

Plate 2: Site VRV-9: Artefacts

Plate 3: Site VRV-16: Artefacts

Plate 4: Site VRV-18: Artefacts

Plate 5: Site VRV-27: Artefacts

Plate 6: Site VRV-29: Artefacts

Plate 7: Site VRV-30: Artefacts

Plate 8: Site VRV-31: Artefacts

Plate 9: Site VRV-32: Artefacts

Plate 10: Site VRV-33: Artefacts

o RECOMMENDATIONS

Based on the results of the basic technological and typological lithic analysis of the Van Roois Vley collections, but with cognisance also to low artefact ratios and the secondary context of the deposits it is recommended that the collections, originally ascribed a SAHRA *Medium Significance and Grade IIIB Field Rating,* based on the initial Phase 1 archaeological investigation (Van Vollenhoven 2012), be reassigned a SAHRA *Low Significance* and *Grade IIIC Field Rating*. Deposits have little to no potential for further research and interpretation and it is recommended that they be destroyed *in lieu* of the development.

Should the developer encounter any *in-situ* sub-surface archaeological member during the course of construction Archaetnos should be alerted to conduct a site inspection and record stratigraphic depth and site / occurrence extend. If and when necessary sampling either through collection or test pitting should be done.

o REFERENCES

South African Heritage Resources Agency (SAHRA). 2007. *Minimum Standards for the Archaeological and Heritage Components of Impact Assessments*. (Unpublished guidelines.)

Van Vollenhoven, A.C. (Archaetnos). 2012. *A report on a Heritage Impact Assessment for the Proposed Sasol CSP and CPV Project near Upington in the Northern Cape*.

Volman, T.P. 1984. *Early Prehistory of Southern Africa*. In Klein, R.G. (ed). Southern African Prehsitory and Palaeoenvironments. Rotterdam: A.A. Balkema