

**NHANDA VILLAGES
OF THE VICTORIA DISTRICT,
WESTERN AUSTRALIA**



Rupert Gerritsen

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National Library of Australia
Cataloguing-in-Publication Entry

Gerritsen, Rupert, 1953-
Nhanda villages of the Victoria district, Western Australia.

Bibliography.
ISBN 0 9581045 0 6.

1. Aborigines, Australian – Western Australia - Antiquities.
2. Historic sites – Western Australia. 3. Nhanda people – Western Australia – History. I. Title

DEWEY No. 994.12

NOTE: Pagination differs by one page in part of this e-publication from the original.

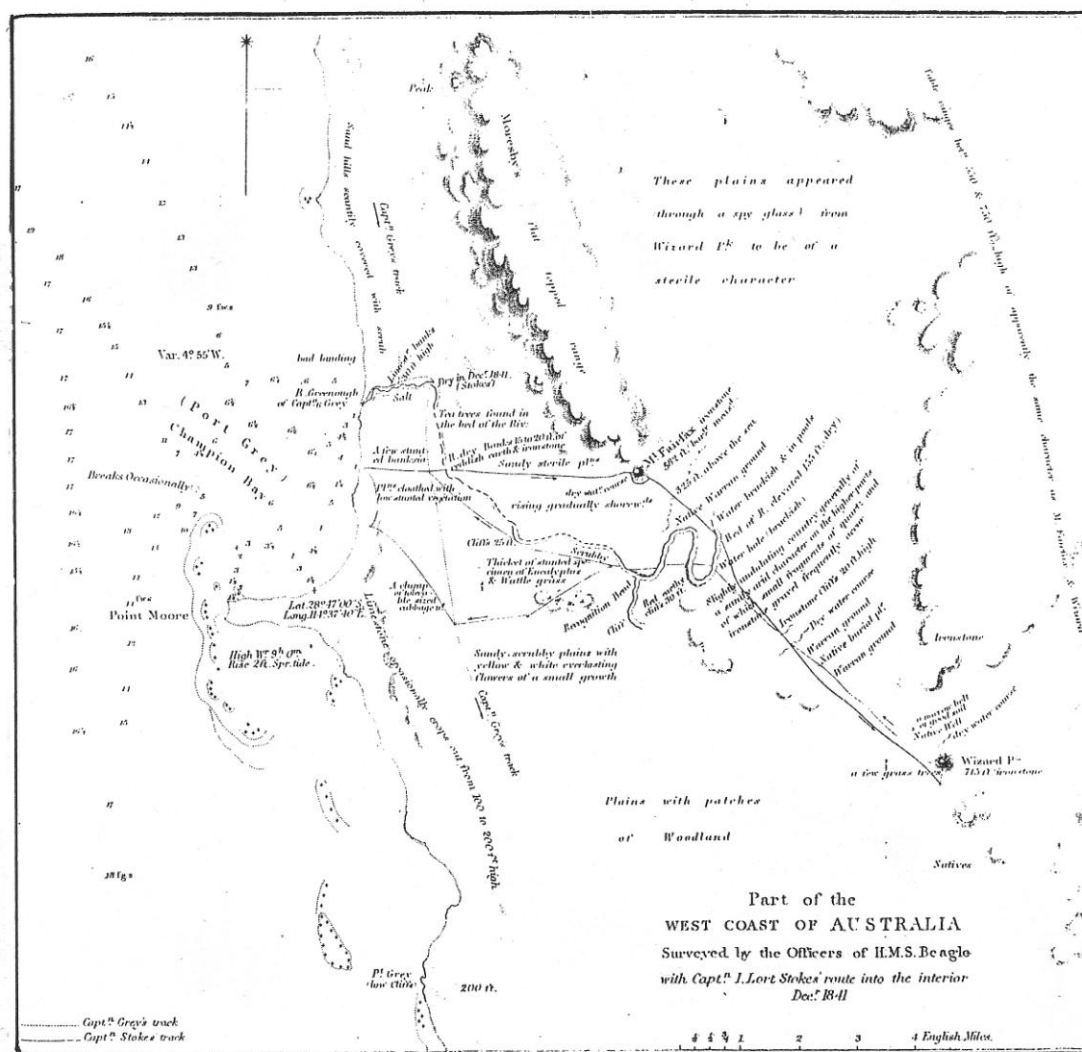
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Map 1

Part of the West Coast of Australia Surveyed by the Officers of H.M.S. Beagle with
Captn. J. Lort Stokes route into the interior Decr. 1841
(Stokes 1846:2:opp.528)



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INTRODUCTION

In April 1839 explorer Lt. George Grey, and his party, encountered a number of what he described as "villages" in the Victoria District of Western Australia, a province on the central west coast of Western Australia, lying between the Hutt River southward to the Irwin River, and centred on the town of Geraldton. Grey at that time observed at least three such settlements as he traversed the Victoria District, inhabited by the *Nhanda/Nanda* and *Amangu* people, the traditional owners of that region.¹ While parts of Grey's account have frequently been referred to over the years very little research, apart from recent work by myself, has closely considered or examined the nature of those settlements and the local subsistence base that supported them.² Furthermore the sites of those villages have never been specifically identified or investigated. In fact, apart from one minor study carried out in 1914, no published archaeological investigations have ever been carried out in the Victoria District proper, necessitating a reliance on historical ethnographic sources.³ One can only speculate as to why this may be the case, but in Australian terms such developments have, by and large, either been ignored or treated as anomalies, curious exceptions to the stereotypical characterisation of traditional Aboriginal societies as mobile hunter-gatherers. In fact, seemingly permanent village-like settlements have been reported in a number of places in Australia including south west Victoria, the upper central Darling River, north west New South Wales, north east South Australia and south west Queensland.⁴ If such settlements do reflect developments outside of the mobile hunter-gatherer paradigm their presence needs to be explained and placed within an appropriate theoretical context. By identifying these types of sites employing a "purposive survey technique"⁵ further investigation would become possible, more information could be gathered and any proposed hypotheses tested. Consequently this paper endeavours to identify the sites of the villages of the Victoria District as described by Lt. Grey and place them within a legitimate theoretical framework.

My research into the location of village sites in the Victoria District villages has proceeded over a period exceeding three years. Where villages, or any other previously unrecorded sites of significance, have been specifically identified, the Western Australian Department of Indigenous Affairs has been promptly informed. Before describing this research, however, the historical background and the original reports of these villages, as well as other aspects of the traditional *Nhanda* lifeway, need to be considered.

HISTORICAL BACKGROUND

In 1829 the Swan River Colony was established on the site of the present-day state capital, Perth. For a decade the colony was largely restricted to a region with a radius of about 80 kilometres around Perth, during which time the indigenous landholders such as the *Whadjuk*, *Balardong* and *Binjarub* were pushed aside and then "pacified"

when they began to resist. Limited and tentative explorations beyond this area took place during this period but it was not until 1839 that an ambitious expedition was planned to examine the coastal lands between Perth and Shark Bay, 880 kilometres to the north. Led by Lt. George Grey (later Sir George Grey) the expedition soon foundered when, at Shark Bay, they were caught in a terrible cyclone - the "eye" passing directly over them. Having lost most of their stores and equipment Grey decided to return immediately to Perth in the two remaining boats. Continuing south for some 300 kilometres Grey attempted to put in at a place known as Gantheaume Bay, the embouchure of the Murchison River and Wittecarra Creek. Unfortunately a large and unexpected surf close to shore swamped the two boats there, leaving Grey and his party 500 kilometres from "civilization" with little food and no water. The party resolved at that point to walk overland back to Perth, experiencing great hardship, but accomplished this remarkable feat with the loss of only one life. In the course of his travails Grey kept a diary, later published as part of *A Journal of Two Expeditions In North-West and Western Australia, 1837-39*, in which he recorded at length the events that took place and his observations along the way. Several days after their mishap at Gantheaume Bay, as the ragged band of explorers approached the Hutt River, Grey began to make some interesting observations. About 18 kilometres from the Hutt River valley, in a valley leading into it, Grey recorded in his journal:

*"April 4 1839 : we soon fell in with the native path we quitted yesterday; but now became quite wide, well beaten and differing altogether by its permanent character, from any I had seen in the southern portion of this continent ... And as we wound along the native path my wonder augmented; the path increased in breadth and its beaten appearance, whilst along the side of it we found frequent wells, some of which were ten and twelve feet [3-4m] deep, and were altogether executed in a superior manner. We now crossed the dry bed of a stream, and from that emerged upon a tract of light fertile soil quite overrun with warran [original emphasis] plants [a species of yam plant - *Dioscorea hastifolia*], the root of which is a favourite article of food with the natives. This was the first time we had seen this plant on our journey, and now for three and a half consecutive miles [5.6 kms] traversed a piece of land, literally perforated with holes the natives made to dig this root; indeed we could with difficulty walk across it on that account whilst the tract extended east and west as far as we could see. It is now evident that we had entered the most thickly-populated district of Australia that I had yet observed, and ... more had been done to secure a provision from the ground by hard manual labour than I could believe it in the power of uncivilised man to accomplish. After crossing a low limestone range we came upon another equally fertile warran [original emphasis] ground*

*April 5 1839 : The estuary [actually a salt marsh, Hutt Lagoon] became narrower here, and shortly after seeing these natives, we came upon a river running into it from the eastward [Hutt River]; its mouth was about forty yards [36m] wide, the stream strong but the water brackish, and it flowed through a very deep ravine, having steep limestone hills on each side ... Being unable to ford the river here, we followed it in a SE direction for two miles [3.2 kms], and in this distance passed two native villages, or, as the men termed them, towns, - the huts of which they were composed differed from those in the southern districts, in being built, and very nicely plastered over the outside with clay, and clods of turf, so that although now uninhabited they were evidently intended for fixed places of residence."*⁶

Over the next 130 kilometres, as Grey and his party traversed the Victoria District, they encountered a series of small fertile river valleys (the Bowes, Chapman, Greenough, Irwin and Arrowsmith Rivers) each conforming to the pattern observed at Hutt River in terms of the intensive utilization of the *warran* plant, known locally as *ijjecka* or *adjukoh*. Two further villages-like settlements were sighted, at the Bowes and Greenough Rivers.

Over the following 12 years, as exploration continued and the British settlers began to expropriate the Victoria District, all the elements of Grey's observations were borne out by a variety of explorers, government officials and "pioneers" including Lt. Helpman (Explorer), A.C. and F.T. Gregory (Surveyors, Explorers), James Drummond (Government Botanist, Pioneer), Mrs Brown (Pioneer), Phillip Chauncy (Surveyor), John Septimus Roe (Surveyor-General), William Burges (Government Resident), Edward Cornally (Shepherd/Stationhand) and Dr Robert J. Foley (Pioneer). Approaching the Irwin River in 1846 Lt Helpman, for example, provided a detailed description of the type of huts referred to by Grey:

*"We here met with the first native hut; it was well plastered outside and the timber which formed it was about 6in. [15cm] thickness, about 6ft. [1.8m] high inside and capable of holding ten persons easily."*⁷

Captain Stokes of the famous "Beagle" (Darwin was not on this voyage) even slept in one during a land reconnaissance in the area in December 1841:

*"We noticed their winter habitations substantially constructed and neatly plastered over with red clay ... Some neighbouring wigwams of superior structure gave us snug quarters for the night."*⁸

Perhaps of greater significance were other comments regarding usage of *Dioscorea hastifolia* made by some of the vanguard of the colonial invasion. William Burges, the first Government Resident in the district, reported in 1851 that:

*"They seem very little addicted to hunting and very few of them are even expert at tracking a Kangaroo. This may result from the great variety of edible roots, particularly the A-jack-o or warang which grows here in great abundance."*⁹

a view echoed by Helpman:

*"They are a fine race of men but seem to depend entirely [my emphasis] upon warran and gum, of which they have great abundance. Very few, even of the women, had kangaroo skins."*¹⁰

Finally A.C. Gregory, a noted Australian explorer, provided a most telling observation regarding the *Nhanda* people of the Victoria District:

*"Agricultural science seemed to have made some progress, as they never dug a yam without planting the crown in the same hole so that no diminution of food supply should result."*¹¹

This conclusion was supported in 1889 by J. H. Maiden in *Useful Native Plants of Australia*:

"[*Dioscorea hastifolia*] ... is the only plant on which they [Aboriginal people] bestow any kind of cultivation, crude as it is."¹²

The import of these passages lie in the references to the *warran*, the yam plants growing "as far as we could see", or, "tracts of land several square miles in extent",¹³ calculated to cover an area of 15-16 sq. kms,¹⁴ evidence of their propagation, the paths, the wells, the huts and the villages - all bespeak an agricultural society exhibiting a high degree of sedentism. Gregory's information is unequivocal and clearly indicates propagation was in evidence, while Grey observed elsewhere that "these circumstances all combined to give the country an appearance of cultivation, and of being densely inhabited, such as I had never before seen".¹⁵ Other comments, particularly Helpman's and Burges' regarding the degree of dependence on the yams, if read in conjunction with Grey and others on the extent of the yam grounds, as well as the villages, strongly suggests that this propagation was carried out on a systematic basis, to an extent where it provided a major proportion of local subsistence. Dr Foley, in 1851, referring to the Chapman River valley, noted "You can see for miles, and it being dug for *warrang* or *agacs*, as they call it here, you can see the nature of the soil."¹⁶ In fact three "warran grounds" had been previously recorded in this vicinity by the land party from the "Beagle" in their traverse across the Chapman River valley from Mt. Fairfax to Wizard Peak [Map 1] in 1841.¹⁷ At Wizard Peak, Bynoe, the surgeon from the "Beagle", reported, "the native yam seemed to grow in great abundance."¹⁸ Similarly Grey, in describing the Arrowsmith River valley, observed that, "the whole of this valley is an extensive warran ground".¹⁹ Grey's remark, that the ground at Hutt River was "literally perforated with holes the natives made to dig this root", was often repeated by other observers, pointing to intensive harvesting.²⁰ A formal analysis, testing the evidence against definitional parameters of agriculture, has recently been undertaken, clearly indicating that an agricultural economy was indeed present in the Victoria District at this time.²¹ Furthermore, I have also argued elsewhere that it could be inferred that at Hutt River the plants may have been watered from the "frequent wells, some of which were ten and twelve feet [3-4 m] deep" adjacent to the yam fields. Normally such wells were only found singly in the most arid regions of Australia.²²

SITE IDENTIFICATION

As Grey was the only individual to report specific village sites identification must necessarily rely upon the information provided by him. This information consists principally of his account in *The Journal of Two Expeditions*, an accompanying map, "The Country from Gantheaume Bay to the River Arrowsmith on the Scale of the Original Survey of Capt. Grey", in that publication, and an abbreviated account based on his daily notes, published in *The New Settlement of Australind* in 1841.²³ Ideally, an accurate reconstruction of Grey's journey would allow easy identification of the sites, and this has been attempted previously by Leaver.²⁴ However, because Grey omits some of the distances travelled, appears to overestimate distances travelled, was sometimes incorrect in compass directions and did not always clearly identify which particular geographical feature, such as some of the smaller rivers and creeks, he was referring to, an exact reconstruction is not viable, despite Leaver's

attempt.²⁵ Nevertheless key landmarks are identifiable at many points allowing specific reconstruction of segments of his journey, along with a more general reconstruction employing the *Journal* and the accompanying map. The relevant portion of the map is reproduced in Map 2 below.



Map 2: The Country from Gantheaume Bay to the River Arrowsmith
(Grey 1841a:1:opp.328)

In proceeding to attempt to identify the location of the villages in question they will be considered in the order in which Grey encountered them, from the north to the south. The locale of the first village mentioned by Grey is readily identifiable. His account states:

*"The estuary became narrower here, and shortly after seeing these natives, we came upon a river running into it from the eastward; its mouth was about forty yards [36 m] wide, the stream strong but the water brackish, and it flowed through a very deep ravine, having steep limestone hills on each side ... Being unable to ford the river here, we followed it in a SE direction for two miles [3.2 kms] and in this distance passed two native villages, or, as the men termed them, towns, - the huts of which they were composed differed from those in the southern districts, in being built, and very nicely plastered over the outside with clay, and clods of turf, so that although now uninhabited they were evidently intended for fixed places of residence."*²⁶

As can be seen from the map and the account, Grey reached the southern end of Hutt Lagoon, which he thought was an estuary, and struck the Hutt River, still flowing strongly at the time as a result of rains in the catchment area following the passage of the cyclone that had wrecked the expedition. Being unable to ford the river Grey and his party kept to the northern side. They consequently passed through the deep ravine which is a distinctive gap between the southern edge of the Murchison plateau and the northern heights of the Menai Hills, just east of the ruins of the Lynton Convict Station. It was in the course of the next two miles, as the would-be explorers proceeded along the northern side of Hutt River from the deep ravine, that the first two villages were noted. Just to the east of this "ravine" the road from Northampton descends into the north side of the river valley close to a swampy area formed by the Hutt River. Adjacent to this is a flat elevated terrace that does not appear to be a natural formation, being raised from 2 to 3 metres above the river's flood level. This terraced area is oriented in a south easterly direction parallel to the course of the river and can be seen in the middle distance of the Photograph 1.



Photograph 1: View of Approach to Terraced Area Adjacent to the Hutt River

The surface has been severely disturbed by ploughing and stock but I observed scattered lithic materials, particularly at the western end of the terrace, covering an area 134 metres wide and 296 metres long.²⁷ Some of the lithic materials appeared to be scrapers, and an upper millstone was also noted.²⁸ Furthermore, the soil in this area is darker than in adjacent parts, possibly indicating a higher organic content. A photograph of this site appears below.



Photograph 2: Terraced Area Adjacent to the Hutt River

I believe that this location is the site of the first village encountered by Grey. It has now been registered with the Department of Indigenous Affairs as Site No. 17634.

The terraced area continues for three kilometres along the north side of Hutt River but narrows considerably, except at two locations where it projects out into the floodplain. These locations were considered as potential sites of the second village reported by Grey. Again these areas have suffered considerable disturbance, part of the second platform having been mechanically excavated to a depth of about one metre, possibly to extract the rich loam. In both cases there were no clear, readily identifiable surface indications that either may have been a habitation site. Consequently I have been unable at this point to identify with any certainty the location of the second village.

Regarding the third village at the Bowes River, on his approach Grey recounted:

" ... we fortunately came to a very deep valley, having steep limestone cliffs on each side, that it assumed the character of a ravine : it was about a mile [1.6 kms] wide, and in it was a water-course, winding through deep flats. We, however, only found water in pools ; the course of the stream was very tortuous, and its mouth was almost blocked up by sand-hills. The valley itself was both picturesque, and the appearance

*of the country to the east and north-east was highly promising. - The stream I called the Bowes. This spot was a favourite halting-place of the natives; and from the number of huts, and other indications which we saw, the district must be very densely populated. The huts were of the same superior construction as those we had seen near the Hutt, and the traces were very recent, but the natives themselves were either at a distance, or kept carefully out of our way."*²⁹

In his other account Grey is a little more specific, stating:

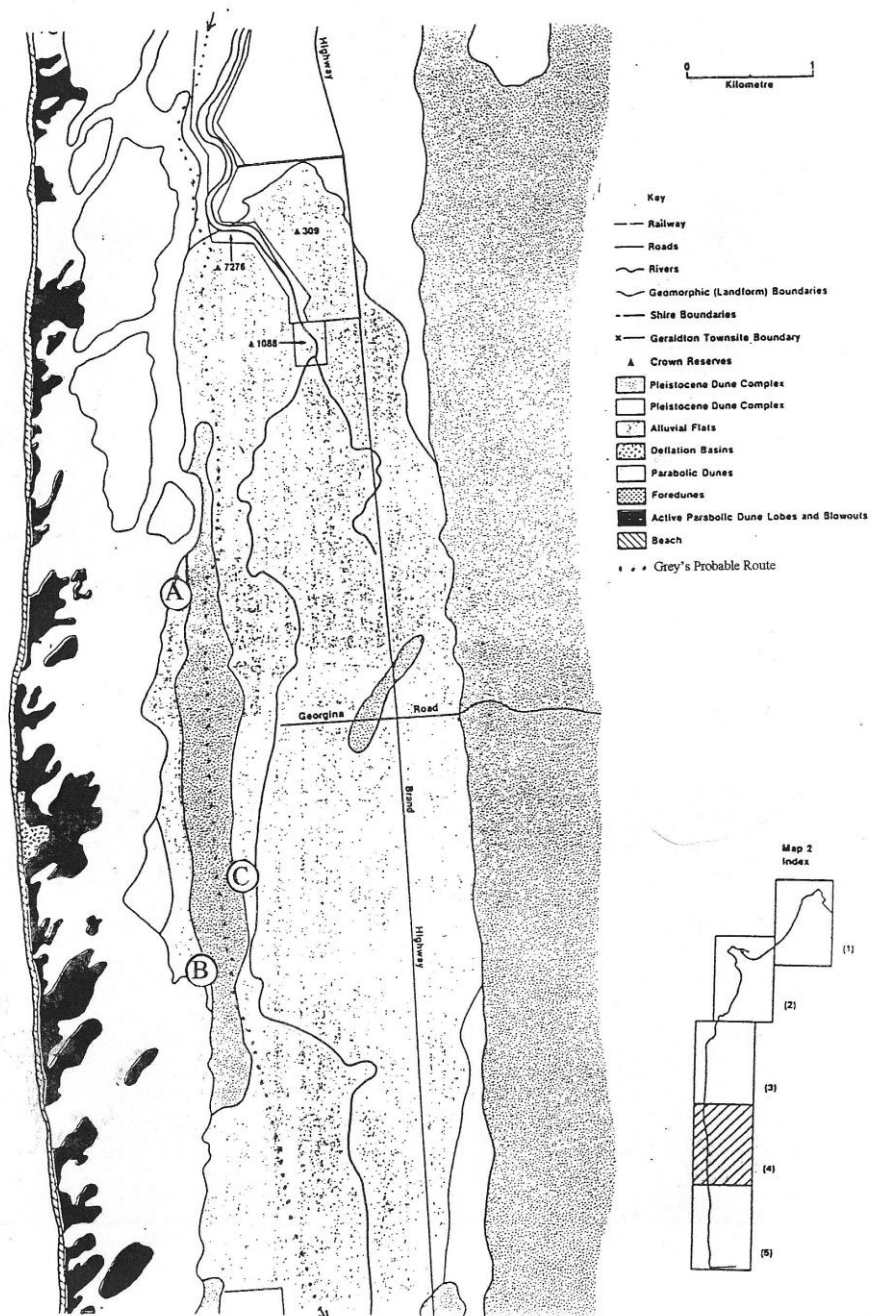
*"... we followed the bed of the stream [from the mouth] for nearly two miles [3.2 kms] in a north-easterly direction ... the flats at the bottom of the ravine were rich ... for the winter huts of the natives, plastered over with clay on the outside, were situated upon these flats."*³⁰

This location is readily identifiable, both from his map and his accounts. All the west coast rivers north of the Swan River become blocked by sandbars or low sand dunes when not flowing. The lower reaches of Bowes are characterised by alluvial flats before the river wends its way from the north east over the last 1.5 kilometres through a narrow gorge containing a wetland, with the mouth usually blocked when the flow ceases. The alluvial flats are a distinctive feature of this part of the river, being bounded by steep limestone hills, forming a wide, flat-bottomed gorge. There is a section overlooking the flats where there is an overhanging ironstone conglomerate rockface up to 8 metres high extending for approximately 300 metres.³¹ Sections of this overhang and the small caves running into the rock face form the renowned Willigulli art site, which may have been what Grey meant by "other indications". A photograph of part of the Bowes River flats at Willigulli appears below.



Photograph 3: Partial View of Bowes River Flats

The site of the fourth village reported by Grey, in the Greenough River area, is not so readily identifiable. The level of detail recorded by Grey regarding the *Nhanda* and his route had begun to diminish by this stage in his travels as he became more concerned



Map 3
 Geomorphology of part of the lower Greenough River
 (adapted from Veth and Quartermaine 1984: Map of Sites of Pipeline Route)

with the group's efforts to survive. However the relevant passage in his journal continues:

*"... I contrived to get them [the men of his party] to proceed seven miles [11.2 kms] more before night-fall, the way being over sandy open plains very favourable for walking. We passed a large assemblage of native huts, of the same permanent character as those before I have mentioned: there were two groups of those houses close together in a sequestered nook in a wood, which, taken collectively, would have contained at least a hundred and fifty natives. We halted for the night in the dry bed of a water-course, abounding in grass ..."*³²

A reconstruction of this leg of the journey seems to indicate that they initially struck a watercourse now known as Rudd's Gully, which Grey named the Greenough River.³³ Rudd's Gully is an intermittent stream that flows into the present day Greenough River about 4 kilometres from the mouth of the Greenough, at a location called Devlin's Pool. Grey speaks of the river waters here being "quite salt", which is often the case in the lower reaches when the mouth is barred. They crossed to the western side of the Greenough hereabouts, probably a little upstream from Devlin's Pool, because the dense wattle thickets there give way to more open woodland along the bank of the river.³⁴ From there the party struggled on for "three miles" [4.8 kms] where they rested and water was found, reviving them to some extent. Although the distances involved do not match I would identify this as a feature similar to a billabong, formed where the last of the permanent water is found in the bed of the lower reaches of the Greenough River. This site is situated where the arrow indicates the southern end of Crown Reserve 7276 on Map 3, and lies at the north end of the northern extension of Company Rd. From there Grey describes walking "seven miles" [11.2 kms] over "sandy open plains," observing the village along the way, before camping for the night "in the dry bed of a water-course abounding in grass". Elsewhere Grey states that the water-course where they camped for the night "ran from the eastward."³⁵ From these two accounts it would appear that they camped in the bed of the Greenough River where the Brand Highway currently crosses the Greenough River. The river comes in from the east here before turning northward and the banks of the river at this point are also thickly covered in long dry grass, the only place on the lower reaches of the Greenough where this is the case.³⁶ Consequently the "sandy open plains" must lie between the billabong and the camp site in the bed of the river. Alluvial flats of clayey soils dominate the Greenough River valley in this section, as can be seen from Map 3. Lying between the alluvial flats and the sea are continuous parabolic dunes which are steep, rising to a height in excess of 60 metres, mostly covered in thick coastal heath and scrub, and quite difficult to negotiate on foot.³⁷ Alternatively, running along the western edge of the alluvial flats for a distance of 5.5 kilometres and abutting the dunal system is an area of Pleistocene Dune Complex [Long speckled area on western side of Map 3], varying in width from 250 to 500 metres. This feature consists of a shallow sandy valley formed by a low ridge at the edge of the alluvial flats and the Parabolic Dunes. It is, I believe, the "sandy open plains" referred to by Grey and it would appear that the village was situated in this section. However, the exact identification of this particular village site, remains problematic. Grey's description of it being "in a sequestered nook in a wood" is quite ambiguous and lacking in detail. Sequestered means hidden away, secluded, so that a "sequestered nook in a wood" implies an out-of-the-way location situated in a wooded area but exactly what constitutes a "sequestered nook" is open to interpretation. Not surprisingly most of the

original native vegetation has been cleared on the "open plains" section, which is now farmland, adding to the difficulty of identifying a probable location. Nevertheless, following an extensive survey of the whole length of this shallow sandy valley, three locations have been identified that may qualify as potential sites for the Greenough village. The first lies at the northern end of the Pleistocene Dune Complex ["A" on Map 3]. As Grey and his accomplices approached this feature they would either have had to walk through a shallow defile in the low ridge abutting the alluvial river flats or over the low ridge itself, as this lay directly in their path. To the right, if traversing southward, is a shallow depression and on the northern side of that depression is a grove of large tea-trees, about 7-8 metres high with trunks about 30 centimetres diameter. Behind this grove, on the northern side, is a steep dune that projects out eastward from the main dunal system. This projecting dune blocks the movement southward necessitating a slight detour around it before entering the sandy plain as described. It also blocks any view of the shallow depression and the tea-tree grove until one walks onto the ridge or through the shallow defile to get on to the shallow sandy valley and may correspond to "a sequestered nook in a wood". Closer scrutiny of this location did not, however, reveal any surface indications of Aboriginal occupation.³⁸

The second potential site, lying at the southern end of the shallow valley, is similar to the first in that a shallow defile leads from the shallow valley on to the alluvial plain of the Greenough River ["C" on Map 3]. Leading off this defile is a clear area cutting into the wattle thickets crowning the low ridge. This too may constitute a sequestered nook but again there are no indications of traditional occupation at this site.³⁹ With respect to the third possible site, this also lies at the southern end of the shallow valley ["B" on Map 3]. Near the end of the valley, as the Pleistocene dunal area terminates, the shallow valley rises and reaches a low crest, as can be seen in Photograph 4.



Photograph 4: The Approach to the Crest Near the End of the Shallow Pleistocene Dunal Valley

Over the crest is a shallow bowl shaped area of about 150 metres diameter bounded by the crest, the low ridge abutting the alluvial plain, the more recent Parabolic dunal system and a small hill marking the termination of this section of the Pleistocene dunal area.⁴⁰ This feature is shown in Photograph 5.



Photograph 5: Bowl Area At End of Shallow Pleistocene Dunal Valley

It is surmised that if Grey and his companions had followed the shallow valley for its whole length they would have walked directly into this section. It is in effect hidden until the crest is reached, though apart from some wattle thicket atop the low ridge abutting the flood plain, and scrub and coastal health on the Parabolic Dunes, there is no vegetation here that could be construed as a "wood". Consequently the identification of this site with Grey's village also lacks certainty. Information received that a local landholder had removed 1-2 metres of topsoil from the centre of the "bowl" for sale for "horticultural purposes" is an additional complication in attempts to ascertain if this was the location referred to by Grey.⁴¹ Evidence of mechanical excavation is clearly evident at this site as the soil removal was down to the level of a clay substratum, with only small clumps of soil and lithic debris remaining. Of the three potential sites identified in this area this one is favoured over the others for two reasons. Firstly, amongst the lithic debris present at this site, predominantly limestone or calcrete with occasional greenstone inclusions, a single scraper was found which appears to be of an exotic ironstone or similar material.⁴² A scraper of identical composition and morphology to this was seen at the Hutt River village site.⁴³ Secondly, the removal of the topsoil for sale to a horticultural enterprise indicates the soil was probably relatively rich and may possibly have had a higher organic content arising from extended human occupation. Certainly where remnant soil was evident it appeared darker, as if it had a high carbon content.⁴⁴ While far from conclusive the evidence suggests that this site warrants closer investigation.

SIZE OF SETTLEMENTS

Having described progress up to this point in identifying the sites of the villages located in the Victoria District a number of other questions regarding them require consideration. These questions include the size of the villages, the form and degree of permanence of the dwellings, the degree of sedentism and the nature of the settlement pattern. Dealing firstly with the size of the villages, the only specific information available was provided by Grey, who estimated the population of the Greenough Village to have been 150 people. Possible corroboration of this figure comes from accounts by A.C. Gregory and Lt. Helpman, leading the two advance parties in the initial colonial occupation of the Victoria District late in 1849. Gregory, as the head of an overland party from Perth to Champion Bay, reported on 20 November 1849 that, upon reaching the Greenough River, "we fell in with a large party The next morning about 70 men and several women came to our encampment."⁴⁵ Helpman, who had already arrived at Champion Bay by sea, appears to confirm Gregory's statement, reporting that the land party "had come upon a very hostile tribe of about 70."⁴⁶ Analysis of Aboriginal population structures, based on data collected principally by Chief Protector George Augustus Robinson in Victoria in the early 1840s, provides a ratio of adult men to total population. Depending on the sample this ratio varies from 3.29 to 4.20.⁴⁷ If applied to the number of men encountered at Greenough the lowest ratio translates as a population figure of 230 individuals, close to the figure of 150 Grey gave as the population of the village. It could be argued that a force of this size may have consisted of all the warriors from the Victoria District attempting to confront the invaders. However, in October the following year a group of colonists arriving overland from Toodyay with the intent of settling in the Victoria District were challenged by an armed body of "over 200 native men" in almost exactly the same location.⁴⁸ This encounter is more indicative of an assembled war party than the first encounter, suggesting that the first group were local. Consequently, the figure of at least 150 for the size of the Greenough Village should be seen as having some credence.

Determining the size of the other settlements encountered by Grey is not as straightforward as he did not provide specific figures in those instances. The only indication we have relates to the first villages he and his party passed, which were described as "villages, or, as the men termed them, towns." All this would appear to indicate is that they were settlements of substantial size. The site of the first village having been identified and measured, was found to cover an area of at least 3.97 hectares. This also indicates that the settlement was of significant size. In fact, by applying a formula developed by Hassan, the population of a site can be determined from the area, where Population (P) equals 146 times the Square Root of the Site Area (A) in hectares, i.e. $P = 146 \sqrt{A}$.⁴⁹ Accordingly it can be deduced that the first villages had a population of at least 290. If both the villages here were of similar size, as Grey's comments suggest, then it would seem the second village may have been of a commensurate size in population terms. By way of comparison Pre-Pottery Neolithic B (PPNB) villages in the Levant covered areas ranging from 0.5 to 12 hectares.⁵⁰ What have been described as "large villages", such as PPNB Jericho, were 2.5 hectares in area,⁵¹ equating to a population of 230. Similarly, in the Mesoamerican equivalent of the Neolithic, the Formative, when farming and sizeable settlements first appeared in the Valleys of Mexico and Oaxaca, village populations have been estimated to be in the order of 30 to 285.⁵²

DWELLING MORPHOLOGY

The form and structure of the dwellings that formed these villages is an important consideration in determining the permanence of these settlements and the degree of sedentism of the *Nhanda* and others of the Victoria District. As with other facets concerning these villages information is quite limited. Grey spoke of the huts "being built, and very nicely plastered over the outside with clay, and clods of turf." Elsewhere he used almost identical terminology, "superior construction," and, "plastered over with clay on the outside." Stokes also employed very similar phrasing, describing these habitations as "substantially constructed and neatly plastered over with red clay." More explicit detail was provided by Helpman who depicted the abodes he encountered as being "well plastered outside and the timber which formed it was about 6in. [15cm] thickness, about 6ft. [1.8m] high inside and capable of holding ten persons easily." A land party from the Vlamingh Expedition reportedly saw 5 huts close together at Wittecarra Creek on 25 January 1697.⁵³ One of these huts was described as being "made of clay with a roof sloping down on two sides."⁵⁴ Survey-General Roe alluded to huts in the Bowes and Hutt River area in June 1847 as being "well constructed and plastered over with tenacious red soil."⁵⁵ Shortly after geologist von Sommer mentioned passing huts in the Irwin River valley "constructed of branches and clay."⁵⁶ Apart from this the only other information on the Victoria District huts was provided by Edward Cornally. As one of Daisy Bates' informants he recounted that as a youngster he had seen "the skeletons of much larger huts capable of holding ten or twelve natives," probably the result of their deliberate destruction, a common practice early in the Contact Period according to Oldfield, a pastoralist who had himself occupied lands of the *Nhanda-Watjandi* along the lower Murchison River in the 1850s.⁵⁷ Overall it can be concluded that the dwellings were about 1.8 metres in height, were formed from timbers 15 centimetres thick, and were coated with a layer of clay and turf. They were probably 3 to 4 metres or more across in order to house at least 10 individuals. Such a structure would have required far more labour to construct than the largely temporary shelters typical in many other parts of Western Australia. But the only direct clue to the actual form of the huts emanates from the Vlamingh Expedition where some type of shelter with "a roof sloping down on two sides" was reported. This is not very informative, however, and other lines of evidence will be considered in an endeavour to resolve this issue.

Two other examples of what appear to have been more substantial dwellings have been reported on the central west coast of Western Australia. The first was again described by Grey, in the early stages of his expedition, on the northern edge of the floodplain at the mouth of the Gascoyne River. Here he saw:

*"seven native huts, built of large-sized logs, much higher, and altogether of a superior description to those made by the natives on the south-western coast."*⁵⁸

While this account would not at first glance appear to be connected with the residences found in the Victoria District the second example indicates that a pattern of more substantial dwellings may have been evident on the central west coast. In March 1803 the French Baudin Expedition arrived at Shark Bay and on the 18th a settlement was observed on the tip of Peron Peninsula. Three members of the Expedition mention

this assemblage of huts, Baudin, Peron and Freycinet, and the ship's artist Petit was ordered to make a drawing.⁵⁹ According to Baudin:

*"Twelve or fifteen huts, much better made, than those we have found hitherto, composed the village where this small tribe lived ... ones that belong to the heads of families ... were much bigger and were built with considerably more symmetry."*⁶⁰

Peron stated that:

*"these huts of the Land of Eendracht [central west coast] ... are in the form of a hemisphere slightly depressed at the top Their height is from 12 to 16 decimetres [4 to 5 feet], by a diameter of 20 to 25 decimetres [6 to 8 feet]. They are composed of small trees implanted in the soil On the outside are attached layers of foliage and clumps of grass covered by a large quantity of soil."*⁶¹

The drawing, which first appeared in 1807 in Peron, Lesueur and Petit's *Atlas*, is reproduced as Figure 1 below.⁶²



Figure 1: "Cabanes des Naturels de la Presqu'île Peron"
(Peron 1807 Plate XXIV)

The presence of such a settlement in this location could be considered as rather surprising. There are indications, however, that there may have been a sizeable local population at the time. A party sent to examine nearby Faure Island became engaged in a confrontation as "a band of natives, which the men numbered at more than a hundred, had opposed their landing."⁶³ Baudin later sardonically added that accounts varied, with "some putting it as high as two hundred and those less frightened putting it at thirty or forty."⁶⁴ If the population ratios discussed earlier are applied in this instance then it can be concluded that a minimum population of 99 was represented, though if the higher numbers reported are considered or higher ratios used it could

have been well in excess of 300. Although there is no certain evidence of the degree of permanence of this encampment its presence is consistent with a recent suggestion that there may have been "a more complex, intensified maritime economy in the Shark Bay/Gascoyne region."⁶⁵ But the existence of a tract of *Dioscorea hastifolia* of about 4.5 sq. km on Salutation Island, 110 kilometres to the south in Henri Freycinet Harbour in the southern portion of Shark Bay, which may have been another important element in the local economy, quite possibly indicates a linkage between the people of Shark Bay and the *Nhanda* to the south.⁶⁶ Initially Helpman reported "numerous natives had frequently been seen there" on Salutation Island and, according to Oldfield, the yams in this locality grew to the thickness "of a man's thigh" and were so intensively exploited that no firewood remained, supplies having to be brought there for cooking.⁶⁷ One of the Champion Bay *Nhanda-Amangu* apparently described to botanist John Drummond in unmistakable terms a visit to this island to obtain yams.⁶⁸ Oldfield, drawing on his experiences of the *Nhanda-Watjandi* along the lower Murchison River in the 1850s, seems to have derived his information about the yam usage in Shark Bay from visitors from Shark Bay.⁶⁹ He also describes trading and other contacts between *Nhanda-Watjandi* and people from Shark Bay.⁷⁰ Authorities differ in regard to what tribal group the people of Shark Bay belonged to, according to Tindale this actually was *Nhanda* territory but Horton designates it as *Malkana*.⁷¹ Whatever the case, clearly there is substantive evidence of communication between the inhabitants of Peron Peninsula and those of the Victoria District. Furthermore, a common factor in all the examples describing huts in the central west coast region was the employment of substantial timbers to form the framework. Given this and the evidence of interaction it could be surmised that the huts of the Victoria District had the same cupola form as those seen on Peron Peninsula. The main difference would appear to be that the Victoria District dwellings were larger, plastered with clay and probably more neatly finished. Supporting this contention is the observation that most of the permanent habitations making up the villages in south west Victoria and north east South Australia/north west New South Wales were of this form.⁷²

PERMANENCY OF SETTLEMENTS AND DEGREE OF SEDENTISM

The next question to be considered relates to the degree of permanence of the dwellings and the settlements they constituted, as well as the degree of sedentism. Dwelling permanency and the amount of labour invested in their construction are interrelated factors in terms of determining the degree of sedentism. As Rafferty put it, the "expectation that sedentary people would build more substantial houses than people who are non-sedentary seems to be more or less correct both archaeologically and ethnographically,"⁷³ and Kelly, "Cross-cultural studies demonstrated that investing labour in houses is related to low (or no) residential mobility."⁷⁴ While there is no measure of what constitutes "more substantial," or, what is sufficient labour investment to constitute a sedentary habitation, clearly there is some sort of correlation. Earlier it was determined that the dwellings of the Victoria District were about 1.8 metres in height, formed from timbers 15 centimetres thick, coated or daubed with a layer of clay and turf, were probably at least 3 to 4 metres across, and capable of housing at least 10 individuals. Although there is no account of their construction which might provide some indication of the actual labour time involved, they would seem to have been more than just temporary dwellings, which Grey intuitively recognised as "fixed places of residence."

Before considering the question as to the degree of sedentism it is necessary to consider the application of this concept. The most commonly employed framework classifying forms of mobility and sedentism was developed approximately 30 years ago by Murdoch and his collaborators, positing five categories : fully nomadic, semi-nomadic, semi-sedentary, sedentary but impermanent, and sedentary and permanent.⁷⁵ Elsewhere I have argued that schema is completely inadequate in describing situations where sedentism is evolving and where there are subtle but important distinctions in the degree of sedentism.⁷⁶ Instead I have proposed the concepts of seasonal, multi-seasonal, seasonally mobile, sequential and partial sedentism as the alternative to Murdoch et al's "semi-nomadic" and "semi-sedentary" categories. Seasonal sedentism, as the name implies, involves populations remaining in the same location for a single season or substantial part of a single season. It is a common adaption, often found in otherwise quite mobile hunter-gatherer groups who live in climatic zones where there is one harsh season each year. In Australia this type of sedentism is seen on the west coast of Tasmania, noted for its cold, wild winter weather, where the *Needwonne* lived in winter camps composed of "commodious ... weather-proof", "semi-circular dome" shaped dwellings "from 10 to 12 feet [3.0-3.6m] in diameter and eight feet [2.4m] in height."⁷⁷ At the other end of the climatic scale the *Kukadja* of the Great Sandy Desert in north western Australia retreated to a waterhole or reliable water source for a period in the latter part of the dry season, food resources having been conserved in that area, to await the rains.⁷⁸ Multi-seasonal sedentism can be seen as an obvious extension of seasonal sedentism except that the sedentary period extends over successive seasons and seemingly arises not because of climatic exigencies but because the relevant groups either have rich, often multiple, food resources and/or possess a capability that enables higher production and extractive efficiency of existing natural resources. Late Natufian and early Neolithic settlements in south west Asia are believed to have exhibited this form of sedentism, implying that multi-season sedentism may be an indicator of the commencement of conscious food production strategies.⁷⁹ The "seasonally mobile" category describes groups who are almost fully sedentary but may become mobile for a particular season or limited period of time. Sequential sedentism is a concept that applies where groups may move a few times each year to locations where they remain sedentary. This form of sedentism is most apparent where territories are highly circumscribed but the inhabitants follow an "embedded" round, repeatedly moving at particular times each year to fixed settlement sites.⁸⁰ In respect of the last type listed, "partial sedentism", in some instances it would appear some, but not all members of a particular group may be sedentary, the others still engaging in some form of mobile subsistence activity. For example women, children and the old may be permanently based at a village-like settlements while the men go away for a time on hunting expeditions or suchlike. This can sometimes be found in groups who undertake what has been called "logistic foraging".⁸¹

Having proposed the preceding typology, the problem of determining the mode of sedentism, and the complementary mobility pattern, evident among the populations of the Victoria District at the time of British colonisation, nevertheless remains. Extensive research employing cross-cultural studies, as well as archaeological evidence, has been undertaken over time in order to establish that particular groups exhibited a high degree, if not full, sedentism. Correlates or indicators of sedentism that have been propounded, though many are still debated, as a result of these studies have included the presence at one site of the remains of flora and fauna that occurs at different seasons of the year, the presence of commensals (species such as mice or

house wrens normally found in permanent, sedentary habitations), settlement size, a long and intensive occupation history, permanency of dwellings, significant amounts of labour invested in the construction of dwellings, the morphology of dwellings, the presence of partitioning or multiple rooms in the dwellings, separation distance between dwellings being of smaller dimensions than the dwellings themselves, artefact density, debris distribution, specialised lithic assemblages, increasing numbers of milling devices, expedient core technology, thick cultural deposits, higher anthropogenic sedimentation rates, pottery, heavy artefacts, storage facilities, communal structures (such as kivas and mounds), special purpose communal extractive facilities (such as fish traps) and cemeteries.⁸²

Not all of these factors are applicable to the Victoria District, principally because the evidence is so limited. For example, the seasonal occurrence of floral and faunal remains at putative village sites cannot be used as a test of the degree of sedentism because the necessary archaeological investigations have simply never been carried out. This also applies to the issue of the presence of commensals. However it is still possible to determine the seasonal frequency of occupation by exploiting other types of evidence. One such approach is to consider the times of the year at which residents are reported to be in occupation. Stokes it will be recalled, in his sojourn in the vicinity of Champion Bay, referred to "their winter habitations substantially constructed and neatly plastered over with red clay." How Stokes came to this conclusion, that these dwellings were only inhabited in winter, is a moot point as he was only in the area for about one and a half days during the summer.⁸³ Furthermore winters here are quite mild compared to the south west of Western Australia and many other parts of southern Australia where far less substantial or protective shelters were constructed.⁸⁴ Stokes probably just assumed this was the case because of their substantial construction, a conclusion other explorers and early writers on Aboriginal culture have jumped to in other parts of Australia when confronted by examples of more substantial dwellings.⁸⁵ Nevertheless the *Nhanda-Watjandi* of the lower Murchison, who had "better built ... perfectly water-tight and very warm" habitations according to Oldfield, did indeed only "pass the winter" in them, thus being seasonally sedentary. But it would appear the yams did not "abound" there like they did in the Victoria District and at Shark Bay as there were few patches of fertile soil in their core territory where yams could grow.⁸⁶ Around Hutt Lagoon, as we know, there were extensive yam fields and it was here that Grey initially encountered the villages he reported in the middle of autumn. At that time no-one was actually present but this is not surprising because it appears to have been a common initial response by local Aboriginal populations, when encountering interlopers like Grey, to either run away, hide and observe them from concealment, attempting to ascertain the strangers' intentions, or try to drive them away.⁸⁷ In Grey's case a confrontation with a "large party" of *Nhanda* took place about 4 kilometres north north west of the first village on the Hutt River on 5 April 1839. Similarly Gregory received a hostile reception upon approaching the Greenough River en route to Champion Bay on 20 November 1849, only 7 kilometres from the favoured village site. And Logue also met resistance here on 18 October, 1850. Dr Foley, in another instance, visited the *Nhanda* resident in their huts along the Chapman River on a rainy day in March 1850.⁸⁸ It is clear from the accounts of the Baudin expedition that the inhabitants of the settlement on Peron Peninsula had been in residence at the time his men visited it, 18 March 1803. Although deserted when approached by Baudin's men, their "fires were still burning."⁸⁹ Within the limitations of this type of evidence it can be tentatively

concluded the *Nhanda* occupying villages were probably sedentary on a multi-seasonal basis at least, being in residence, it would seem, in winter, spring and autumn. Other lines of evidence would appear to provide some support for this proposition.

The size of the settlements in the Victoria District, as pointed out earlier, were commensurate with those of the early Neolithic of south west Asia. It is thought that these south west Asian villages were also inhabited at least on a multi-seasonal basis, or "most of the year."⁹⁰ In the Mesoamerican Formative permanent settlements only began appearing after 3000 BC or later, with farming villages in the Valleys of Mexico and Oaxaca, established after 1300 BC, having populations ranging from 30 to 285.⁹¹ In this context the villages of the Victoria District, being of comparable size, should be considered in the same light, as permanent settlements exhibiting a high degree of sedentism. This view is supported by the apparent permanence of the dwellings constituting such settlements, described as "fixed places of residence" by Grey. Although there are no accounts of the process of their construction it can be inferred from the description of them that a comparatively significant amount of labour was involved, with commonly used terms such as "substantially constructed", "superior structure", "superior construction" providing some support for this conjecture.

A further indicator of the degree of sedentism may be discernible through consideration of two other correlates, thick cultural deposits and higher anthropogenic sedimentation rates.⁹² As stated previously, the site identified as corresponding to the first village encountered by Grey at Hutt River was situated on a terraced area that did not appear to be a natural formation. If this is the case, and it is actually the product of an extended occupational history at this site, then it could be deemed to be a thick cultural deposit. The height of this terrace varied from 2 - 3 metres, which could be taken as an average of 2.5 metres. Assuming that settlement here commenced as a result of a dynamic initiated by the marooning of two Dutch mutineers in this area in 1629, as I have argued elsewhere,⁹³ then it took 230 years (1629-1859) for this terrace to accumulate before occupation ceased. These assumptions, of course, may not be correct. For example, this may have been a pre-existing camping site and the occupational history a lot longer than conjectured, or the height of the terrace may have been affected by erosional or depositional processes since 1859. But, if they are correct, then this represents an accretion rate of 10.90 millimetres per annum. By way of comparison the early Neolithic village at Tell Aswad in Syria, comprising, it is thought, wattle and clay daubed huts, resulted in a deposit 4.50 metres thick during its history, from 8000 to 6500 BC.⁹⁴ In this instance the cultural deposit was accumulating at the rate of 3.00 millimetres per annum. It is evident from these calculations that the first village at Hutt River was a settlement more intensively occupied than a comparable early Neolithic village of south west Asia and all that implies.

Special purpose communal extractive facilities are another indicator of sedentism relevant to developments in the Victoria District. In this instance it applies to the wells reported by Grey and others. As noted earlier, Grey reported "frequent wells, some of which were ten and twelve feet deep," which "were altogether executed in a superior manner." In the Irwin River valley Helpman similarly came across "several wells of considerable size dug about 8 feet [2.4 m] deep."⁹⁵ These were not the only occasions

where wells were sighted. Helpman encountered four other examples in the vicinity of the Irwin and Greenough Rivers, Mrs Brown another near Mt. Hill and Stokes one near Wizard Peak.⁹⁶ All of these appear to have been in close proximity to yam grounds and, if Grey's description is correct, these types of wells would have required a significant amount of labour investment by the community to construct.

Cemeteries and burial grounds may be one further indicator of sedentism applicable to the Victoria District. In carrying out an analysis of burial grounds in south east Australia Colin Pardoe asserted that they have four defining characteristics. These are, that there are multiple burials, that the burials are close together ("contiguity"), that there is some means applied to delineate the burial area ("boundedness") and that the burials have not arisen from temporary but repeated camping in the vicinity ("exclusivity").⁹⁷ Certainly a grouped series of burials has been recorded in the Victoria District. An "ancient burial ground" consisting of "at least ten bodies" in "a sitting position" in an area "thirty square yards" was unearthed at Yarra Creek at Oakabella in February 1957.⁹⁸ From the report it is possible to deduce that these were multiple traditional burials.⁹⁹ It is not possible, however, to ascertain if this burial ground was delineated, though the compactness of the burials would seem to indicate this, or whether it met the "exclusivity" criteria. But, on the basis of the available information, this grouped burial is consistent with the type of burial grounds found to be associated with a higher degree of sedentism or circumscription.¹⁰⁰

The final factor to come under consideration regarding the level of sedentism in the Victoria District are the "wide, well beaten and permanent" paths mentioned by Grey. Such features do not appear to have been systematically studied in any archaeological or cross-cultural studies to determine any potential correlation with sedentism, as far as I am aware. Nevertheless, they appear to be an unusual or atypical feature of the district which a number of observers thought it necessary to draw attention to. Surveyor-General J. S. Roe, in his report of his visit to Champion Bay in June 1847, commented particularly that "pathways abounded" and that "paths and huts were very numerous" in the vicinity of the Hutt and Bowes Rivers.¹⁰¹ Stokes too, when near Wizard Peak in December 1841, noted that "native paths encircle this spot."¹⁰² The only comparable evidence in this regard comes from north east South Australia, south west Queensland and north west New South Wales. There comments provided by explorers, for example, of "well trodden roads", "as broad as a footpath in England", "roads appeared in all directions", "well-beaten native path",¹⁰³ were consistently associated with areas where large, seemingly permanent, settlements were being encountered.¹⁰⁴ While not in any sense conclusive it would appear from this that numerous, permanent or heavily utilised paths are frequently associated with higher population densities and more sedentary populations in particular areas. In this case the evidence from this Victoria District is quite consistent with such a correlation.

SETTLEMENT TYPOLOGY

In order to fully understand the nature of the habitations and settlements that have been discussed so far, and to place them within a broader theoretical context, an analytical framework is required. To this end I propose to employ a modified form of Grossman's classification of the "lower limb" of the rural settlement hierarchy, applying it to the assemblages of structures identified previously.¹⁰⁵ This classification, which has been applied to comparable circumstances in south west

Victoria,¹⁰⁶ provides a "best fit" where there is evidence of a more complex and sedentary settlement pattern, is as follows:

Homesteads: Single structures occupied by twenty persons or less at least one kilometre from any other structure

Lodges: Single structures occupied by twenty to forty persons at least one kilometre from any other structure

Dispersed Settlements: Non-contiguous structures, or contiguous clusters of structures occupied by less than forty persons, placed at least 150 metres apart but closer than one kilometre

Hamlets: Contiguous structures accommodating forty to one hundred persons

Villages: Contiguous structures accommodating more than one hundred persons

A number of these settlement types appear to have been described in the Victoria District and associated regions. Helpman, as noted earlier, related how, in 1846, his party "met with the first native hut capable of holding ten persons easily." Contextually he appears to be describing a single, stand-alone structure which could be classified as a "homestead". In describing the settlement at Willigulli on the Bowes River Grey reported that "this spot was a favourite halting-place of the natives," a conclusion he reached principally "from the number of huts" there. But he did not in this instance describe it in terms of discrete, concentrated settlement as he had done with the earlier examples. Consequently he may well have been referring to a "dispersed settlement", one that was strung out along the flats, a conjecture supported by a comment in his other account that these huts were "situated upon these flats".

In regard to discrete, concentrated settlements, populations have been deduced in three instances. A figure of at least 99, based on population ratios, was arrived at for the habitation site on the tip of Peron Peninsula. Moreover, Baudin stated that there were 10 to 12 huts at this location, although they were of smaller dimensions than the huts encountered by Helpman on the Irwin River, which were capable of "holding ten persons easily". If the Peron Peninsula dwellings, because of their smaller size, only housed 6 to 7 individuals then it can be concluded from this that the settlement had a population of between 72 and 105, comparable to the figure of 99 arrived at by other means. On this basis the Peron Peninsula assemblage can be treated typologically as a "Hamlet". Finally, with specific population figures of at least 150 for the settlement on the Greenough River and 290 for the first village on the Hutt River, these can justifiably be ascribed "Village" status.

OTHER SETTLEMENT AND HABITATION SITES

Consideration of the location, nature and type of habitations and settlement in the Victoria District and associated areas has, as pointed out earlier, relied largely upon limited observational material from the nineteenth century. It is quite feasible that there may have been other substantial settlement sites in the region of which we have no specific knowledge at this point in time. For example Stokes referred to "huts", with associated yam grounds, in two separate locations during his traverse around

Champion Bay, the ones they slept in approximately 1.6 kilometres north west of Wizard Peak, and the other 2.0 kilometres south of where the Moonyoonooka Store is currently situated.¹⁰⁷ Stokes did not provide any additional information, however, except that the latter dwellings had been deliberately destroyed. Another possible settlement site may have existed in the vicinity of Bootenal, 17 kilometres south east of Geraldton. On the map drawn up as result of Stokes' exploration [Map 1] is the word "Natives" situated approximately 3.0 kilometres south of Wizard Peak, between Button Hill and the Bootenal swamp.¹⁰⁸ Stokes provided no explanation of this insertion in his account from this period. However there may well have been an "encampment" of some description in this vicinity, the swamp and wattle thickets at Bootenal, as guerilla raids were also launched from there by the *Nhanda* between April and June 1854.¹⁰⁹ Yet another possible settlement may have existed at Wondadoo Springs, 2.3 kilometres north west of Mt. Hill, where Leaver found "grind stones" in 1981, claiming that this was the site of a "known native village."¹¹⁰ While such reports are useful indicators of possible settlement sites there may well have been others of which we are unaware at the present time. Whatever the case, only purposive and systematic "on the ground" investigations will verify whether there were permanent settlements at these sites and possibly reveal others.

RESULTS AND CONCLUSIONS

It is possible to arrive at a number of conclusions as a result of the investigations and analysis that have been carried out previously, along with those reported here. These are :

1. That the *Nhanda* people of the Victoria District were engaged in agriculture.
2. That there were at least five substantial settlements inhabited by the *Nhanda* and associated groups in the Victoria District and Shark Bay.
3. That the populations of these settlements, where these could be determined, ranged from an estimated 99 to 290.
4. That the sites of two of these settlements have been identified, the possible location of the third determined and the general location of the remaining two ascertained.
5. That the dwellings of the Victoria District were typically dome-shaped structures up to 1.8 metres high, that they were built with large timbers and coated with clay, and capable of accommodating up to ten people.
6. That these settlements were probably permanent and that their residents exhibited a high degree of sedentism, to the extent of being at least multi-seasonally sedentary.
7. That a range of settlement types were in evidence including "homesteads", "dispersed settlements", "hamlets" and "villages".
8. That there were other habitation and settlement sites in the region, with Bootenal, the lower Irwin River and the lower Chapman Valley being likely locations.

ACKNOWLEDGEMENTS

I would like to gratefully acknowledge the assistance of Bill and William Mallard, Dr Rolf Gerritsen, Ron Gerritsen, the late Bill Gerritsen, the staff of the Petherick Room and Map Collection of the National Library of Australia, and finally the staff of the W.A. Department of Indigenous Affairs Library.

NOTES

- ¹ Tindale 1974 Maps:SW Sheet; Horton 1994:2:803 (Northwest Region), 2:1101 (Southwest Region). While *Nhanda* or *Nhanta* has become the conventional name in the literature I note that the people themselves prefer *Nanda* (Pers. Comm. Bill Mallard, 22 May 2001). I personally consider the *Amangu* to have simply been another group of *Nhanda* clans. Although there were strong linguistic differences between these groups (see Gerritsen 1994:103-116) there also seemed to have been a close relationship in terms of strong and distinctive economic, social and cultural commonalities throughout most of the Victoria District (see Gerritsen 1994:139-148). A suggestion that another group, the *Nhaaguja*, occupied the area between Port Gregory and Northampton, north to the lower Murchison River (Blevins 2001:146,154), is not borne out by the evidence (Gerritsen Forthcoming).
- ² Gerritsen 1994:64-6,82-92; Gerritsen 2001a; Gerritsen In Prep. Hallam (1986) is one of the few researchers to have also considered the nature of the subsistence economy and settlements in the Victoria District in any depth.
- ³ The only published study I have been able to locate involved the excavation the floor of a small rockshelter in the Greenough area (Campbell 1914). Two unpublished archaeological surveys, Pearce 1982, and Veth and Quartermaine 1984, have been identified but, despite intensive efforts the Pearce survey report could not be located.
- ⁴ Williams 1987,1988; Gerritsen 2000 (South West Victoria); Sturt 1833:1:89; Mitchell 1839:1:282 (Darling); Gow 1861:69, Brock 1975:71,100-1 (North West NSW); Sturt 1849:1:254; Lewis 1875a:3 (North East SA); Lewis 1875b: 20,23 (South West Queensland); Gerritsen In Prep. (Darling, North East SA, South West Queensland)
- ⁵ Schiffer et al 1978:5.
- ⁶ Grey 1841a:2:12,19.
- ⁷ Helpman 1846:9.
- ⁸ Stokes 1841:2-3. Curiously the first part of this statement referring to substantial winter habitations is omitted from the "official" account of his voyages published in 1846. Compare this account with p.395 in Stokes 1846:2:385-95.
- ⁹ Burges 1851:6.
- ¹⁰ Helpman 1849b:3. Rev. Wollaston (1/3/1853), a friend of James Drummond, made similar comments based on what Drummond and his son told him. He wrote :
"they are less wandering in their movements ... the 'Warrang' ... greatly abounds ... The abundance of the 'Warrang' and paucity of animals, may in some measure account for the greater concentration of these tribes." [Burton and Henn 1954:144]
- ¹¹ A.C. Gregory 1886:23. Gregory originally made the claim in 1882 (though not published until 1887), specifically stating :
"The natives on the West Coast of Australia are in the habit amongst other things of digging up yams as a portion of their means of subsistence; the yams are called 'ajuca' in the north and 'wirang' in the south. In digging up these yams they invariably re-insert the head of the yams so as to be sure of a future crop, but beyond this they do absolutely nothing which may be regarded as tentative in the direction of cultivating plants for their use." (Gregory 1887:131)

12 Maiden 1889:22.
 13 Grey 1841a:2:292.
 14 See Gerritsen 1994:298n19.
 15 Grey 1841b:44.
 16 Foley 1851.
 17 Stokes 1846:2:opp528 Map: "Part of the West Coast of Australia
 Surveyed by the Officers of H.M.S. Beagle with Captn. J. Lort
 Stokes' route into the interior Decr. 1841".
 18 Bynoe in Stokes 1846:2:389.
 19 Grey 1841a:2:54.
 20 e.g. Helpman 1846:9-10; Roe 1847:26.
 21 Gerritsen 2001a:1-8.
 22 Gerritsen 2001a:5-6.
 Similar wells appear to have been employed for irrigation of
 maize in Early Formative villages in Mesoamerica (Flannery
 1972:27).
 23 Grey 1841a:2:1-57; Grey 1841a:1:opp.328; Grey 1841b:41-54.
 24 Leaver, H 1981.
 25 An example is an incident that occurred near Mt. Fairfax. Grey
 (1841a:2:32) refers to Mt. Fairfax being due north at that point
 when his description of the location he was in (cliffs along the
 lower Chapman River) clearly indicates Mt Fairfax was almost due
 east. Originally I placed some credence in Leaver's
 reconstruction but now realise, because of the difficulties
 outlined above, that it is seriously flawed. This is in part
 because Stokes (1846:2:391-4), in attempting to correct Grey,
 compounded the situation, finally concluding that the Chapman
 River was the Greenough River and the Irwin River was the
 Arrowsmith River.
 26 Grey 1841a:2:19.
 27 Personal Observation 29 April 1998; 21 May 1999.
 28 Personal Observation 29 April 1998; 23 December 2000.
 29 Grey 1841a:2:26.
 30 Grey 1841b:47.
 31 Personal Observation 23 December 2000; 22 May 2001.
 32 Grey 1841a:2:37-8.
 33 Grey's other account (1841b:49) is more specific here, saying
 that they struck "a small stream, with plenty of water standing
 in pools" which "came from E. by S". Rudd's Gully fits this
 closely whereas the Greenough, even at its lowest, still
 forms a continuous sheet of water in this part (Personal
 Observations).
 34 Personal Observation 22 December 2000.
 35 Grey 1841b:50.
 36 Personal Observation 9 January 2000; 22 December 2000.
 37 Personal Observation 9 January 2000; 27 June 2000; 22 December
 2000; Australian Topographic Map 1840: Geraldton.
 38 Personal Observation 22 December 2000; 21 May 2001.
 39 Personal Observation 21 May 2001.
 40 Personal Observation 9 January 2000; 27 June 2000; 22 December
 2000; 21 May 2001.
 41 Information supplied by an unidentified female informant
 encountered in the vicinity, 27 June 2000.
 42 Personal Observation 22 December 2000.
 43 Personal Observation 28 April 1998.
 44 Personal Observation 27 June 2000.
 45 Gregory 1849:4:237.
 46 Helpman 1849a:4:241.
 47 Gerritsen 2000:19.
 48 Logue 18 October 1850.

49 Hassan 1981:67.
 50 Bar-Yosef and Meadows 1995:76; Bar-Yosef 1998:168.
 51 Bar-Yosef and Belfer-Cohen 1992:34; Bar-Yosef and Meadows
 1995:76; Bar-Yosef 1998:168,170.
 52 Hassan 1981:52,93; Sherratt 1997:275; Benz and Long 2000:464.
 53 Helpman 1846:4:9; Vlamingh 1697/1985:131.
 54 Witsen n.d./1985:218.
 55 Roe 1847:4:26.
 56 Sommer 1847:4:47.
 57 Bates n.d.:6; Oldfield 1865:289.
 Other instances of deliberate destruction of camps and villages
 can be found in other parts of Australia. See Gerritsen 2000:20-
 1 for examples from south west Victoria.
 58 Grey 1841a:1:362.
 Tindale (1974:145) asserts that the people here, the *Mandi*, were
 sedentary but provides no indication of how he reached this
 conclusion.
 59 Baudin 1974:506-10; Peron 1807:2:203,208; Freycinet 1815:203-4.
 60 Baudin 1974:507.
 61 Peron 1807:2:208 (Trans. W.C. Gerritsen).
 62 Peron, Lesueur and Petit 1807:PlateXXIV. The drawing is
 sometimes ascribed to the engraver Pillement or the more senior
 artist Lesueur but appears to have in fact been done by Petit.
 See Baudin 1974:507-10.
 63 Baudin 1974:506.
 64 Baudin 1974:506.
 65 Gerritsen 2001b:25.
 66 Helpman 1851:2.
 67 Helpman 1851:2; Oldfield 1865:277.
 Salutation Island was originally known as Leschenault Is.
 Oldfield (1865:277) reports an abundance of yams in "particular
 localities" around Shark Bay, nominating "Freycinet's peninsula"
 as an example. As no part of Shark Bay has ever been given this
 name, as far as I have been able to determine, it is uncertain
 exactly what part of Shark Bay he is referring to.
 68 Helpman 1851:2.
 69 Oldfield 1865:277.
 70 Oldfield 1865:266-7,269,273-4.
 71 Tindale 1974:249-50,Aust. SW Sheet; Horton 1994:803,Northwest
 Region.
 72 Gerritsen 2000:22-5; Sturt 1849:1:254 "Native Village in the
 Northern Interior".
 73 Rafferty 1985:129.
 There are, of course, exceptions to this. See Edwards 1989:19-
 20; Lieberman 1998:76-7.
 74 Kelly 1992:57.
 75 Murdoch 1967:51; Murdoch and Wilson 1972; Murdoch and Provost
 1973.
 76 Gerritsen 2000:37; Gerritsen In Prep.
 77 Robinson 5 April 1830 [Plomley 1971:144].
 78 Cane 1984:62; Veth 1987:104-5.
 79 Noy et al 1980:69,82; Bar-Yosef et al 1991:423; Lieberman
 1993:600,607,609; Habu 1996:38; Lieberman 1998:77
 80 Kelly 1992:75.
 81 Binford 1980:10,17.
 82 Clemens 1979:72-3; Andresen et al 1981:33-4; Stark 1981:357;
 Rafferty 1985:115, 129-31,135-6; Parry and Kelly 1987: 285,297,
 300-2; Pardoe 1988:1-2; Edwards 1989; Henry 1989:38-9; Kent
 1989:2; Bar-Yosef et al 1991:423; Tchernov 1991:315; Kelly
 1992:56-7; Sassaman 1992:250,256; Habu 1996; Haaland 1997:376;

Bar-Yosef 1998:168; Lieberman 1998:77; Rocek and Bar-Yosef 1998; Gerritsen 2000:32-4.

83 Stokes 1846:2:385-93.

84 Minimums never fall below zero at Geraldton, there are on average 365 frost-free days p.a. and the average daily maximum in winter is 19.7⁰ C. Bureau of Meteorology 1959:28-9,33.

85 See for example Stuart 1864:82,144; Howitt 1878:2:302; Roth 1897:106.

86 Oldfield 1865:277; Personal Observation 1959-1999.

87 e.g. Pelsaert 1629/1982:130 (16 June 1629); Stuart 1864:16,82, 219,227-8,232; Grey 1841a:2:19; Gerritsen 2000:21,36.

88 Foley 1851.

89 Baudin 1974:507.

90 Noy et al 1980:69,82; Bar-Yosef et al 1991:423; Lieberman 1993:600,607,609; Habu 1996:38.

91 Hassan 1981:93; Sherratt 1997:275; Benz and Long 2000:464.

92 See Edwards 1989:36; Gerritsen 2000:32-4 for a fuller exposition of this methodology.

93 Gerritsen 1994.

94 Contenson 1983:58.

95 Helpman 1846:13-4.

96 Helpman 1846:10-12; Brown 1851:10/9/1851 p.3; Stokes 1846:2:390.

97 Pardoe 1988:1-2.

98 *Geraldton Guardian* 21 February 1957 p.7

How these were originally discovered, what became of the remains and what measures were taken to provide for proper respect and protection of them is unknown to me.

99 See Gerritsen 1994:198-9 regarding the argument that this was the traditional form of burial in the area.

100 There may, of course be other reasons for these multiple burials in close proximity. An event such as a natural disaster, epidemic or massacre may also result in a number of simultaneous deaths in one location which, if the victims were all buried at the same time in the same location, would give the appearance of a cemetery.

There are reported to be other traditional burial grounds in the region, in the vicinity of Ellendale, Tamala, Winogra, Murchison House, Chillmony House, Williams Farm near Northampton (Pers. Comm. Bill and William Mallard, 11 December 2001, 7 May 2002) and Karkura (Playford 1996:214).

101 Roe 1847:23,26.

102 Stokes 1846:2:390.

103 Sturt 1833:2:61; Mitchell 1839:1:240; Sturt 1849:2:65; Kennedy 1852:267.

104 Gerritsen In Prep.

105 Grossman 1992:1-2. See also Flannery 1972:38; Kuijt and Mahasneh 1998:160.

106 Gerritsen 2000:28-9.

107 Stokes 1846:2:387,389,390-1,opp.528 Map: "Part of the West Coast of Australia Surveyed by Officers of H.M.S. Beagle with Captn. J. Lort Stokes' Route Into the Interior Decr. 1841".

Mooyoonooka is 15 kilometres east of Geraldton.

108 Stokes 1846:2:opp.528 Map: "Part of the West Coast of Australia Surveyed by Officers of H.M.S. Beagle with Captn. J. Lort Stokes' Route Into the Interior Decr. 1841".

109 Burges 1854a,b; *Inquirer* 21 June 1854 p.2.

110 Leaver 1981:11.

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