The Federal Democratic Republic of Ethiopia

(FDRE)

Melka Kunture and Bachilt Archaeological and Paleontological Site

Management Plan (2022-2027)

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By
Authority for Research and Conservation of Cultural Heritage (ARCCH)
The Federal Democratic Republic of Ethiopia
Ministry of Tourism
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Melka Kunture and Bachilt Archaeological and Paleontological Site

ETHIOPIA

Management Plan

2022-2027

Prepared by the Authority for Research and Conservation of Cultural Heritage (ARCCH)

Addis Ababa, ETHIOPIA

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Table of Contents Page

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We also acknowledge government institutions and their representatives of involved at the consultative workshops including; Land Administration and Environmental Protection Bureau, Mineral and Energy, Zonal Administrations, Police, School Directors, *Woreda* Culture and Tourism Bureau.

Abbreviations

AAU	Addis Ababa University
AMTA	Awash Melka Town Municipality
ARCCH	Authority for Research and Conservation of Cultural Heritages
ERA	Ethiopian Road Authority
ESA	Early Stone Age
ESTDP	Ethiopia Sustainable Tourism Development Project
ETOA	Ethiopian Tour Operators Association
EU	European Union
EWCA	Ethiopian Wildlife Conservation Authority
GPS	Global Positioning System
HEI	Higher Education Institutions
IAM	Italian Archaeological Mission
KMWA	Karsa Malima *Woreda* Administration
KMWCTO	Karsa Malima *Woreda* Culture and Tourism Office
KMWHO	Karsa Malima *Woreda* Health Office
km^2	Square Kilo Meter
MKSMC	Melka Kunture Site Management Committee
MKSMO	Melka Kunture Site Management Office
masl	meters above sea level
MoT	Ministry of Tourism
NGOs	Non-Governmental Organizations
OAB	Oromia Agricultural Bureau
OCSB	Oromia Civil Service Bureau
OCTB	Oromia Culture and Tourism Bureau
OEFCCA	Oromia Environment, Forest and Climate Change Authority
OFB	Oromia Finance Bureau
OFWE	Oromia Forest and Wild life Enterprise
OHB	Oromia Health Bureau
OIDPA	Oromia Industry Development and Promotion Agency
OMPI	Oromia Master Plan Institute
OMSEDA	Oromia Micro and Small Enterprise Development Agency
ONRS	Oromia National Regional State
ORA	Oromia Road Authority
ORLAUB	Oromia Rural Land Administration and Use Bureau
OSZSF	Oromia Special Zone Surrounding Finfinne
OTC	Oromia Tourism Commission
OWMEB	Oromia Water, Mines and Energy Bureau
OUDHB	Oromia Urban Development & Housing Bureau
OUPI	Oromia Urban planning Institute
SHWA	Sebeta Hawas Woreda Administration
SHWCTO	Sebeta Hawas Woreda Culture and Tourism Office
SWSZA	South West Shewa Zone Administration
SWSZCTO	South West Shewa Zone Culture and Tourism Office
UNESCO	United Nations Education, Science and Culture Organization

List of Tables

List of Figures

1. Executive Summary

This management Plan serves for the next five years (2022-2027) focusing on four major areas; conservation, development and demographic pressure, Tourism management and community empowerment.

The primary objective of this plan is to clearly define the nominated property and its buffer zones of the site of Melka Kunture to ensure the authenticity and integrity of the Outstanding Universal Values (OUV) of the site that are described below.

1. The exhibition of a" unique or at least an exceptional testimony to a cultural tradition or to a civilization which is still living or disappeared".
2. It's "outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage (s) in human history".
3. It's an "outstanding example of a traditional human settlement, land use or sea use which is a representative of a culture (or cultures) or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change".
4. It's an "outstanding examples representing major stages of earth's history, including the records of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features".

The management Plan identifies the conservations problems of the site such as lack of conservation policy and strategy, absence of delineation of the property and buffer zones, lack of maintenance of the site and limited local institutional capacity, and limited budget and staff among other factors. On the other hand, the plan has identified the positive measures taken by the government so far such as the establishment of regional office for the administration and preservation of the site, the issuance of regulations, assignment of staff for the protection and maintenance of the site, establishment of museum and repository rooms, extensive documentation of the site and the scientific monitoring of erosion both by distance-imaging detection and in situ.

1.1 Procedures undertaken to prepare the Management Plan

This management plan for the Archaeological and Paleontological site of Melka Kunture and Balchit is prepared employing number of methodological approaches and procedures. The first task undertaken was the formation of Management Plan Task Force that consists of experts of different specialties from Addis Ababa University (AAU), Authority for Research and Conservation of Cultural Heritage (ARCCH) and Oromia Culture and Tourism Bureau. Secondary Sources on site history, archaeology, paleontology and geology was intensively reviewed. UNESCO and ARCCH manuals on site protection and conservation were consulted. The team of experts has undertaken four rounds of site visits on different times to document various features. Oral information on various themes were documented. On the course of the field work, coordinates of the nominated property and buffer zones were taken and a 1:50,000 maps were produced. In addition, digital images of the nominated property sites were taken. Four stakeholders' consultative meetings were undertaken at the Melka Kunture and Balchit Archaeological and Paleontological Site in the presence of representatives of various institutions, associations and local elders. Government institutions and representative who attended the consultative workshops include; the *Woredas* (Districts) Land Administration and Environmental Protection Offices, Mineral and Energy Offices, Zonal Administrations, Local Police, School Directors, Melka Kunture Site Manager, Kersa Malema *Woreda* Culture and Tourism office, Sebeta Hawas Woreda Culture and Tourism Office, Awash Melka Town Municipality Office, Oromia Culture and Tourism Bureau and ARCCH. At the different stages of the preparation of this management plan, the inputs that were gathered from the consultative meetings were incorporated.

2. Description of the Site

2.1. Location

Melka Kunture is a Paleolithic locality situated in the Oromia National Regional State of central Ethiopia. It is part of the Upper Awash Valley at the outskirts of the town of Awash Melka. The site complex is 50 km south of the capital city, Addis Ababa and covers an area of 10km$^{2.}$ The sediments with archaeological sites, including Balchit, cover approximately 80km^{2}. The nominated property of the site is found at 0456184 northing and 0962294 easting within the 37 UTM zone and at an elevation of 2002 m.a.s.l.

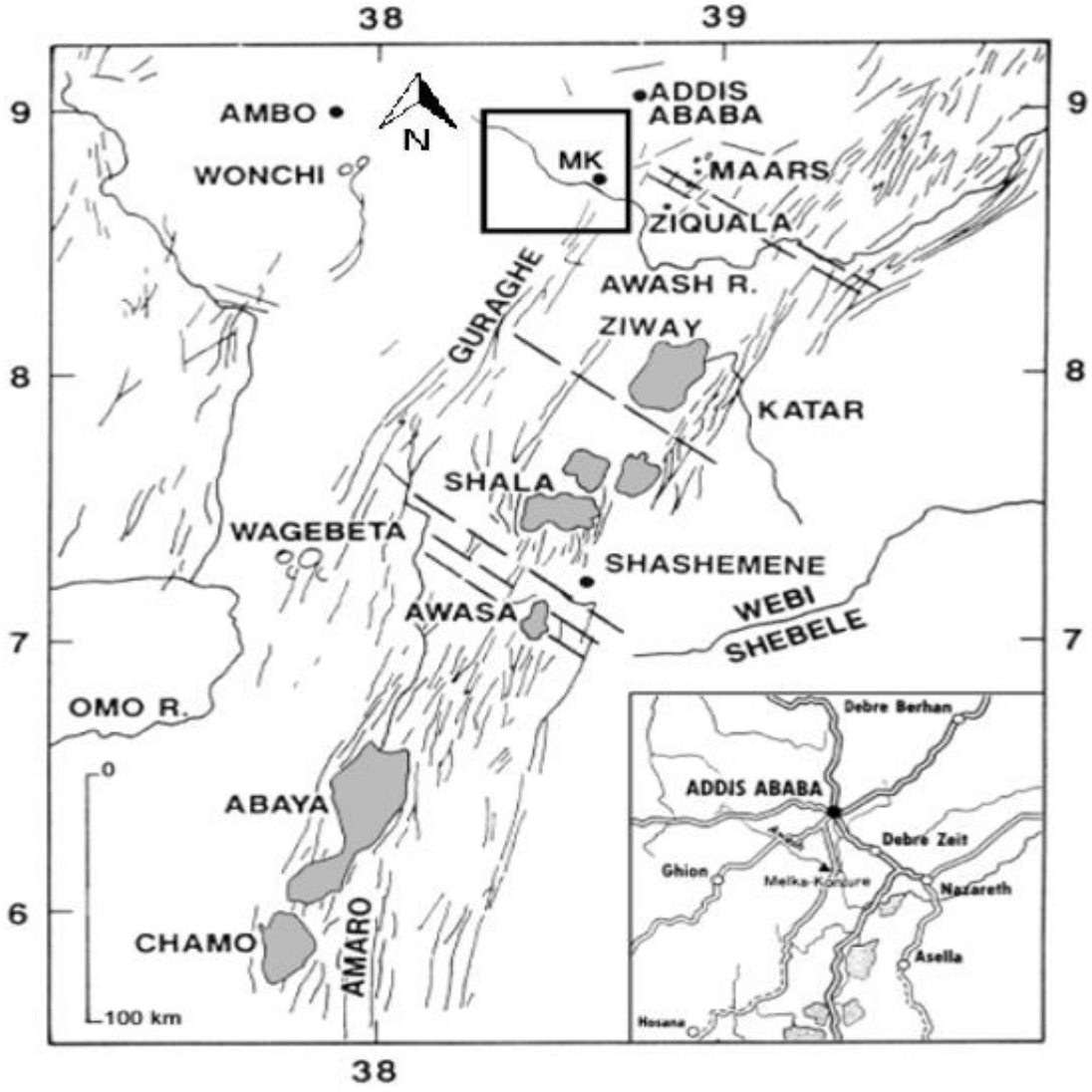


Figure 1: Location of Melka Kunture (after Gidey Woldegabriel *et al.*, 1990).

2.2. The Nominated Property

The Nominated property of Melka Kunture consists of 7 main localities: Gombore, Garba, Simbiro, Kella, Balchit, Wofi and Atebella archaeological sites. Besides localities like Simbiro, Gombore and Garba have different sub localities such as Simbiro III, Gombore I, Gombore Iγ, Gombore II, Gombore II-2 (Butchery site), Garba IV, Garba XII, Garba XIII, Garba I, and Garba III.

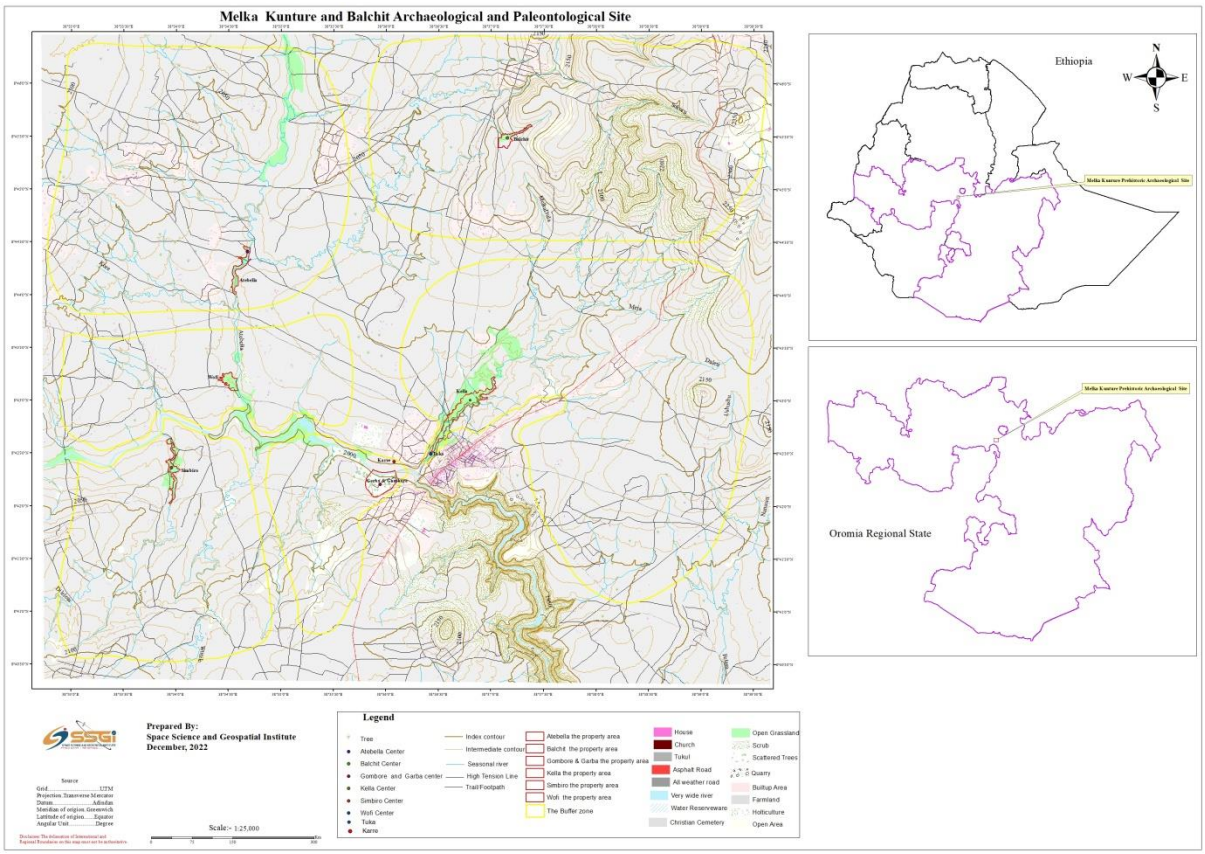


Figure 2: Map of the site of Melka Kunture

2.3.Buffer Zone

A buffer zone has been demarcated encircling all sites which are designated nominated property (see the list above under the nominated property). Four coordinate points were taken outside of the nominated property to the northeast, northwest, southeast and southwest. To the northeast of the nominated property, the buffer zone is demarcated with the coordinates of 0461557 North and 0966279 East with an elevation of 2153m.a.s.l at Sokorao. The benchmark here is a bridge near a settlement area at the foothills of uplifted deposits. The southeastern demarcation of the buffer zone is at Angafa with GPS points of 0461244 north,

0961634 east and at an elevation of 2078 m.a.s.l. The benchmark of Angafa is established near a power distribution station adjacent to a small bridge. There is a settlement area to the right of the small bridge facing the power distribution station. The buffer zone to the northwest is located at a place called Finchaa, 0451333 North and 0967718 East at an elevation of 2083 m.a.s.l. It is set near the Finchaa River at a galley behind Burro Michael Church. To the southwest, the buffer zone was established at Dilelessa, at 0452286 North, 0961869 East, at an elevation of 2031 m.a.s.l. The benchmark for this point is taken at the top of cultivated land near a River valley. The four points of the buffer zone are indicated by a yellow line on the map of Melka Kunture and Balchit.

2.4. Geological history

The Melka Kunture basin covers an area of 3000 km^2 and its altitude varies from 2000 to 2050 meters. Melka Kunture sites are situated in paleo-channels within deposits which include pebbles and clay. The sediments of the paleo-channels have experienced erosion and re-working due to repeated climatic oscillations and to tectonic activity. Various geological layers demonstrating different depositional histories are visible at Melka Kunture. Layers may have been completely lost as a result of erosion. In association with the deposits, one important advantage of this site is the presence of volcanic tuffs which can be used for radiometric dating. The geological deposits also yielded biological remains belonging to hominins and other animal fossils and one of the oldest known Acheulean sites. In terms of cultural evolution the Melka Kunture deposits have provided data ranging from the Early Stone Age (ESA) to the Later Stone Age (LSA). The geological history of Melka Kunture and the biological and cultural evolution of the hominins species at the locality can be summarized into the following six periods, defined by erosional and depositional events.

The first period of erosion-sedimentation has to do with the lowest layers of the site, the top of which is characterized by the Oldowan sites of Gombore 1 D-B and Garba IV F-E. The sites are dated to 1.7-1.6 million years ago. In terms of human biological evolution, the period is represented by the evolution of *Homo erectus*.

The second stage is characterized by the erosion of the previous sediments. This erosional phase is observable at the site of Gombore. This phase is followed by the deposition of clayey layers creating large accumulations of fossilized remains.

The third period is one that follows the erosion phase. This phase is characterized by fluvio-lacustrine sediments as observed at the site of Garba IV D-C. At the top of this phase, there is a volcanic tuff layer which is dates to between 1.3-1.1 million years ago. This phase is associated with Acheulean cultural remains from Garba XII J.

The fourth period is characterized by erosion and sedimentation. This phase typifies the erosion of various layers and the aggradations of sediments of diverse origins. The phase dates between 0.9 and 0.4 million years ago. During this time, sites such as Simbiro III, Garba XII H-D and Gombore II yielded cranial remains of *Homo erectus* during the Middle Acheulean phases. At the lowest layer of Garba I, an Upper Acheulean phase is represented.

At stage five, widespread erosion occurred. This erosional phase is succeeded by deposition of sands, gravels, and ferruginous layers. Period five is dated to 150-200,000 years ago. It is represented by Early MSA industry associated to skull fragments belonging to archaic Homo *sapiens.*

The last phase, the sixth cycle, is a result of new tectonic activities acting on the ancient faults. This is followed by an aggravation of deposits and deposition of sand and clay soils. This deposit has preserved remains which are dated to the Middle Stone Age (MSA). During the Later Stone Age, most of the strata at Melka Kunture were covered by brownish and black alluvial clay soil. This stage washed out 20 m or more of the pre-existing sediments. The erosion has also exposed earlier period layers resulting in the creation of the present-day landscape.

2.5. Fauna and Flora

The faunal remains recovered from Melka Kunture significantly contribute to the reconstruction and understanding of the paleo-environment of the area. In terms of number of fossils, the richest sites are Gombore I and Garba IV, but in all localities hippopotamus and bovids are the dominant mammals, equids and suids being much less common, while other large mammals like giraffes, elephants, and rhinos are quite rare. The dominant rodent genus is *Tachyoryctes*. With the exception of hominids, the only primate fossils identified from Melka Kunture are of *Theropithecus*, the gelada baboon. Carnivores are uncommon, as in most other fossil localities, but include a rare extinct civet, *Pseudocivetta* (Chavaillon and Piperno 2004).

Elephants are represented by a single tooth and bone fragments. Equids are predominantly zebras of the genus *Equus*, but the three-toed hipparion survives until Gombore II. Most recovered hippo remains are comparable to the modern *Hippopotamus amphibius*, the only exception being a dwarf hippo from Gombore Iγ. The Suidae that much contribute to the dating of African sites are represented by perhaps as many as five species, but their remains consist mostly of isolated teeth. A large giraffe was present in several sites, while an extinct member of the same family but with much stouter body built, *Sivatherium*, has also been identified (Chavaillon and Berthelet 2004).

Among the Bovidae, both in terms of number of individuals and abundance of species, the dominant forms are the Alcelaphini, the emblematic grazing antelopes of African savannahs. The blue wildebeest *Connochaetes taurinus* was recovered from Gombore II and Simbiro III, but an earlier form, with more slender horns, similar to the *C. gentryi* of Olduvai Gorge and Koobi Fora, is known from Gombore I and Garba IV. In this latter site, alcelaphin horns are remarkably numerous, in spite of their relative fragility. The less common *Damaliscus strepsiceras*, with twisted horns, identified at Gombore I and Garba IV, is also reminiscent of an Olduvai form, while another species is more akin to modern topi. It may be that another, extinct genus, *Parmularius*, was also present. The buffaloes (Bovini) are represented by two species of the genus *Pelorovis*. The first is *P. oldowayensis* with very long and forwardly curved horns (spanning at least 2 m), recorded from Simbiro III. The second species, with shorter horns, *P. turkanensis*, has been identified from Garba IV and Simbiro III.

Another tribe attesting to relatively open, dry conditions, the *Antilopini*, is also common. It is mostly represented by *Gazella*, but horns belonging to *Antidorcas*, an extinct form of the South African springbok frequently encountered in East Africa, have been collected as surface finds at Melka Kunture. The kobs and waterbucks, of the tribe Reduncini, which live mostly in open, wet grasslands, are rare, as is the Oryx which prefers semi-deserted conditions. Thus, on the whole, the bulk of the fauna points to a relatively open environment, although the floral record shows that shrubs and mountain forest were also variably present.
The same environmental conditions were also indicated in the pollen record, where the Gramineae are sometimes very common. However, during, the entire period of the Pleistocene, Melka Kunture was not an open forested environment. Pollen analysis was conducted on samples collected from Layer C of the Gombore I site. The results indicated that the largest proportion of pollen belongs to the Gramineae family (61% of the total). The

next dominant category was arboreal pollen (29%). The arboreal pollen can be classified into two categories of highland trees: *Podocarpus* and *Juniperus*. The pollen data from layer B of the same site indicates 27% consisted of *Juniperus*, *Podocarpus*, *Olea*, *Polyscias*, *Hypericum* and *Myrica*. From Garba IV, the pollen record indicates 86% grassland pollen with a high diversity of *Plant ago* and Asteraceae.

In 2011, 139 plant species were collected and documented as herbarium specimens at Melka Kunture. These specimens were classified into 114 genera and 45 families. Out of the 139 specimens, 24 species (14.27%) belonged to the family Poaceae and the remaining 23 (16.55%) to Fabaceae, 16 (11.51%) to Asteraceae, 9 (6.47%) to Lamiaceae, 5 (3.6%) to Rubiaceae, and 4 (2.88%) to Acanthaceae. In summary, 93 (66.43%) were herbs, 18 (12.86%) shrubs, 11 (7.86%) climbers, 10 (7.14%) shrubs/trees, 7 (5%) trees and 1 (0.71%) liana. The current day vegetation of Melka Kunture is dominantly composed of *Juniperus* and *Podocarpus* trees. The riverside plains are covered by acacia trees and grasslands. Melka Kunture can be characterized as open environment. Reforestation activities in Melka Kunture have covered most parts of the territory and made the area very rich and lush. Melka Kunture receives tropical type of rainfall.

2.6. Site Archaeology and History

The first mention of Melka Kunture in written records is in 1931 by Father F.B. Azaïs as part of a report during his survey between Addis Ababa and Butajira, a town in the southwestern part of the country. The first discovery of Acheulean artifacts at Kella, one of the archaeological localities at Melka Kunture, was in 1963 by Gerard Dekker, a hydrologist from the Netherlands. He had a passion for prehistory and was a close friend of the renowned paleontologist, Louis Leakey, and he resided in Addis Ababa during this time. Attracted by the site, the first objective of Gerard Dekker was its protection. He, therefore, notified officials at the Institute of Ethiopian Archaeology in Addis Ababa about the site of Melka Kunture. The Institute of Ethiopian Archaeology at the time was benefiting from the permanent company of the French archaeologist Francis Anfray, who excavated famous sites such as Aksum, Yeha and Matara in northern Ethiopia and the megalithic steles at Ghurage and Sidama in the southern part of the country. With officials from the Institute of Ethiopian Archaeology, Gerard Dekker, F. Anfray, and the French archaeologist, Gerard Bailloud visited the locality. During this visit, they were able to observe the rich Stone Age cultural

remains at the site. Gerard Bailloud conducted the first survey at the Melka Kunture locality and collected diagnostic stone tools and faunal remains (Gallotti and Piperno, 2001).

A joint French and Ethiopian Mission under the direction of Jean Chavaillon started systematic investigation of Melka Kunture in 1965. The mission undertook excavations of some visible cultural layers, surveyed the site and demarcated the chronology of the Middle and Lower Pleistocene stratigraphy.

The second stage of the study of the Melka Kunture locality was undertaken in the years 1985, 1986, 1987 and 1992, when a group of researchers, Arlette Berthelet, Jean Chavaillon and Marcello Piperno analyzed and catalogued collected materials and stored them in the Institute. The store had been built in 1975 to house the stone artifacts and the faunal remains collected from the site. In 1993, excavation of some Middle Stone Age Acheulian sites was resumed under the direction of Jean Chavaillon (Gallotti and Piperno, 2001).

The third phase of study at Melka Kunture was conducted by Arlette Berthelet, Jean-Luc Boisaubert, Jean Chavaillon and Marcello Piperno. During this phase studies focused on Gombore II and the restoration of the archaeological campsite. Since January 1999 an Italian Archaeological Mission funded by the Italian Ministry of Foreign Affairs, the University of Naples “Federico II”, the ISIAO and finally the University of Rome “La Sapienza” launched a project with the objective to publish previous research results from the site and arrange the building of an open air museum under the leadership of Marcello (Piperno 1999).

The Italian and French joint research team published a guide book which demonstrates the prehistory of Ethiopia in general and that of Melka Kunture in particular. The new open air museum at Melka Kunture was opened to the public in 2006. As of 2006, survey and excavations have been conducted annually by the joint Italian and French archaeological mission. Since 2011 the archaeological mission (Italian Archaeological Mission at Melka Kunture and Balchit) is directed by the Italian Professor Margherita Mussi from the University of Rome “La Sapienza”. The objective of the new mission is to outline a general chronostratigraphy of the locality. The same mission conducted research at Atebella II, middle Acheulean site, Garba III and Gombore II-2, a site dated back to 700,000 years old.

2.7. Demography

According to the 2015 census, population of the town of Awash Melka is 10,618 inhabiting an estimated area of 1,200 hectare. The density of the population is, thus, about 88 persons

per km^2 area. The surrounding localities of Awash Melka town are composed of seven peasant associations. These are Godetti, Koye, Balchi Jimjima, Robenjirecha, Simbiro-Mogoro and Baja Mariam. The table below summarizes the number of households per each *Kebele* Peasant Association (Source: Awash Melka Municipality);

Table 1.

No.	Kebele Peasant Associations	Number of households	Remarks
1	Godetti	1500	
2	Koye	3000	Upper Koye and Lower Koye, two Kebele Peasant Associations
3	Balchi-jimjima	280	
4	Robenjirecha	500	
5	Simbiro-Mogoro	600	
6	Baja Mariam	450	

2.8. Settlement and Land Tenure System

The town of Awash Melka and its surroundings is situated adjacent to the main road that runs from Addis Ababa to Butajira town. The settlement pattern of Awash Melka is characterized by homesteads and dispersed *tukuls*. The settlement is organized in parishes. Closely related family members inhabit a given area within a *kebele* (low level of the local administration).

Understanding the settlement pattern and land tenure system of the area is important since it has a direct impact on the conservation of the site. In recent years, population increase has created a threat of encroachment to the protected area. However, due to commitment in awareness creation tasks from both the regional and federal governments, the threat is declining step by step.

2.9.Economy

The economy of the inhabitants at the environs of Melka Kunture and the nearby major town of Awash Melka is mainly based on agriculture. In almost every household crop cultivation goes side by side with the rearing of cattle, sheep and goat. The local farmers cultivate cereals like tef (*Eragrostis tef*), finger millet (*Eleusine coracana*), sorghum (*Sorghum bicolor*), maize (*Zea mays*), wheat (*Triticum dicoccum*) and barley (*Hordeum vulgare*). Vegetables

like potato (*Solanum tuberosum*), tomato (*Solanum lycopersicum*), carrot (*Daucus carota*) and onions (*Allium cepa*) are among the cultivated items. Onions and tomatoes are widely cultivated by most farmers for market purposes. Currently flower farms owned by foreign companies, like Sheba flowers (an Israeli company) are expanding at Awash Melka.

2.10. Description of Localities of Melka Kunture and Balchit Site

In the legislation of the Oromia National Regional State, 65 archaeological and paleontological sites were identified. Out of these, however, 7 sites are selected and described to be included in the world heritage list. The 7 sites were identified because of the wealth of heritages they provide. The following description of the archaeological sites of Melka Kunture focuses on their cultural and biological remains and on the distinctive nature of the gullies in which the sites are situated. A long sequence of archeological sites, spanning 1 million years or more, is found in each gully.

1. Gombore and Garba Gullies

1.1.Gombore Gully

Gombore one of sites of Melka Kunture Archaeological and Paleontological serial property is found in South West Shewa Zone, Kersa Malima *Woreda* at a village called Goditi. It is far about 2 kms north-west of Awash Melka town. Gombore is bordered on the north by Awash Melka town and river, on the east and south by Godit and on the west by Awash River. Geographically, it is located at 8.703464 north latitude and 38. 59907 East of longitude and at an altitude of 2010 meter above sea level.

The gully that is designated as Gombore can be sub-divided into Gombore I, Gombore Iγ, Gombore II (Gombore II-1, Gombore II-3, Gombore II-4, Gombore II-5 and Gombore OAM) and Gombore II-2 close to the top. These archaeological sites are spread over a distance of a few hundred meters and contain materials dating over a 1 million year period, from c. 1.7 to 0.7 million years ago.

1.1.1. Gombore I

The Gombore I site was discovered in 1965 on the right bank of the Awash, and soon afterward in 1966, a test excavation was completed. Then from 1967 to 1982 (with some interruptions in 1975, and 1977-1979) excavations were carried out over c. 230m^2 area. The result of the excavations has provided important palaeoclimatic information. The lowermost

part of the archaeological sequence is flooded, except in dry years when the river is at its lowest, and because of this layers C and D were only reached by test excavations. The main layer, Layer B, was divided into three sub-layers, with Oldowan at the base, mirroring the sequence at Garba IV (see 4.1). The main sub-layer, B2 is separated from underlying layer B3 by a tuff unit almost identical to the tuff discovered at Garba IV at the bottom of the series between layers D and E. Although the dating attempt using argon ($^{40}Ar/^{39}Ar$) provided results with a high statistical margin of uncertainty, the tuff is definitely much older than 1 million years, in accordance with the reversed polarity of this part of the stratigraphy, corresponding in turn to part of the Matuyama Chron between c. 1.78-1 million years.

The Oldowan assemblage of Layer B3 was published together with the assemblage of B2. Of the more than 20,000 archaeological items which were excavated, half are lithic artifacts. Obsidian represents a major component of the assemblages (31.5% in Layer B2). The faunal remains are very fragmented. Several faunal specimens, despite their fragmented nature, were identified to family or species level, including hippopotamus (*Hippopotamus amphibius*) and suids (*Metridiochoerus* and *Kolpochoerus*). There are also some remains of giraffe. Elephants (*Elephas recki*) and crocodiles are very rare. Bovids are abundant (*Connochaetes* cf. *gentryi* and *Damaliscus*) and equids are represented by *Hipparion.* A left distal humerus of *Homo erectus s.l.* was discovered in 1976 in Layer B2.

Based on palynological analysis performed on several samples, including a sample from Layer C, the grasses (61%) are dominant in the herbaceous component, but there is also a high proportion of arboreal pollen (29%) shared between the two most common trees from highlands forests, *Podocarpus* and *Juniperus.* As evidenced in the composite pollen spectrum from Layer B where the percentage of arboreal pollen reaches 27% including abundant *Juniperus* pollen associated with *Podocarpus, Olea, Polyscias, Hypericum* and *Myrica,* the vegetation of the time was grassland, with a forested environment close by.

Such an association between bushland and forest can be found in a dry conifer forest at higher elevation, an environment which is not far from the site. The proximity of one to another was confirmed by the recovery in Layer B2 of a liana fragment identified as Caesalpinioxylon. The forest had a similar composition to that of the modern Managasha forest at 2500-3000 m asl on the northern slopes of Wechacha mountain. Thus, a *Juniper*

forest of the “Dry evergreen Afro-mountain forest and grassland complex” was at that time nearer to the site and more extensive than today.

1.1.2. Gombore Iγ

The site of Gombore Iγ was discovered in 1973. It is located higher up in the stratigraphy and is included within the same depositional sequence as Gombore IB. In all, there were three excavation seasons completed in 1974, 1976, and 1978 and 22 sq. m were investigated. These excavations exposed a single archaeological layer. Above Gombore Iγ, a tuff has been dated to 1.2 million years. An age in excess of 1 million years is confirmed by a magneto stratigraphic study which identifies the Jaramillo geomagnetic reversal, dating back to c. 1 million years, in the upper part of the section.

Of the objects retrieved, the most important ones were 2000 lithic and bone finds. The lithic assemblage includes a large number of hammer stones and broken pebbles. They were all made from volcanic rock, and obsidian tools dominate the stone tool assemblage. There is a predominance of bifacial choppers, while in limited numbers polyhedrons and heavy end-scrapers are present. There is a significant quantity of cores and débitage material with a wide variety of core types and numerous flakes. An abundance of well-preserved faunal remains including Artiodactyl fragments were recovered. Similar to most sites in Melka Kunture, there is a high percentage of hippopotamus bones e.g., .*Hippopotamus amphibious*. Other faunal remains include *Metridiochoerus*, *Sivatherium* (*Libytherium*) *maurusium*, and a type of large giraffe, *Redunca*, Hippotragini and *Gazella*. Alcelaphini are rare,compared to the relative abundance of Equidae.

1.1.3. Gombore II

Gombore II is part of the cluster of sites that make up the archaeological area of Melka Kunture, which is located in a semi-graben depression of the Upper Awash Valley, on the western border of the Main Ethiopian Rift (Chavaillon and Berthelet, 2004). Volcanoes rising at a distance of 30 km or more were active from the Pliocene on (Mohr, 1999). The volcanic deposits made it possible to establish a detailed chronology of the complex archaeological record through radiometric dating (Morgan et al., 2012). The Pleistocene landscape here consisted mostly of meanders, small tributaries and still bodies of water (Kieffer et al., 2004;

Morgan et al., 2012; Raynal et al., 2004). Ash-flow emplacement clogged up the streams, thus contributing to the development of shallow ponds and pools.

Gombore II is named after the Gombore gully, on the right of the Awash River, and includes several sub-sites: Gombore II-1, Gombore II- 3, Gombore II-4, Gombore II-5, Gombore Open Air Museum (OAM) (Gallotti et al., 2010). The site of Gombore II, which includes two archaeological stratigraphic units, is also exposed within the Gombore gully. The lower unit was excavated during field seasons from 1966 to 1975, and from 1992 to 1995. These excavations were conducted at Gombore II-1, Gombore II-3, Gombore II-4 and Gombore II-5. The sites were all within a few meters of each other. In 2001, further excavations were undertaken with the aim of exposing an archaeological surface for permanent display to the general public, a so-called "open air museum" or Gombore Open Air Museum, at compounded excavated surface of c. 140 sq. m.

Except for the Gombore Open Air Museum, the recovered assemblages consist of 1,753 lithic artifacts dating to the Middle Acheulean. They are rich in bifaces and cleavers, made from various volcanic rocks. The faunal remains include bovids, giraffes, hippos, suids and equids. In contrast, at the Gombore Open Air Museum, archaeological materials totaling 1,148 lithic artefacts and 896 faunal remains were left *in situ* for display. Most of the bifaces were produced on microdoleritic basalts, whose primary sources are found at a distance of c.15-20 km. At this site, a unique aspect is the production of small bifaces, which without exception are in obsidian, with a single, continuous sinusoidal edge over the entire margin. The conceptual scheme is totally different from the usual bifaces, which as a rule have two lateral edges converging to an extremity. These so-called 'twisted' bifaces have never been discovered in stratigraphic context elsewhere in Africa, nor at other sites in Melka Kunture.

One of the factors that make the Gombore II fauna differ (biochronologically speaking) from those of earlier sites of Melka Kunture was in the replacement of a brachyodont hippo by a hypsodont form more similar to the modern species. The other is in the replacement of a slender-horned wildebeest by the modern *Connochaetes taurinus*. The persistence of the primitive equid *Hipparion*, of which Gombore II is one of the latest known occurrences, is a noticeable archaic feature of this fauna. Ecologically, the fauna is similar to those of the earlier sites of Melka Kunture, with the predominance of grazing hippos and of Alcelaphini (*Connochaetes*, *Damaliscus*) among bovids, indicating open environments. However, there

are also some remains of Reduncini (*Kobus*), which suggest the occurrence of wet grasslands. The presence of *Diceros* (black rhino) also speaks against a pure dry environment. The site has also yielded two human fossils, both of them attributed to *Homo erectus s.l.:* a fragment of the left parietal and a fragment of frontal bone.

1.1.4. Gombore II-2 "Butchery site"

The Gombore II-2 site, also known as the "Butchery site" is later in age and lies higher up in Gombore gully profile. It is also located 30m south of Gombore II Open Air Museum. The Gombore II-2 "butchery site'' was first tested in 1974, and later excavated in 1993 and 1995. The site was interpreted as a hippopotamus butchering site because of the fragmentary remains of two individuals, found associated with lithic artifacts. The tools which were used for butchering are acheulian bifaces with two cutting edges. The bifaces are dominantly made of obsidian.

Research was recommenced in 2011 and so far, some 50 sq m have been investigated. Some of the archaeological and paleontological remains were discovered within a volcanic tuff dated to 700,000 year ago by $^{40}Ar/^{39}Ar$. During the latest field season researchers discovered a virgin surface sealed by the tuff, with scores of animal footprints, belonging to variously sized herbivores and to pachyderms. This evidence suggests the presence of a much more varied fauna than evidenced by fossil bones alone which were comprised only of *Hippopotamus* and Equidae. As for the lithics, they belong to the Middle Acheulean period and include a few bifacial tools in volcanic rocks, together with hundreds of flakes, many of which are of obsidian.

1.2.Garba Gully

Garba one of sites of Melka Kunture Archaeological and Paleontological serial property is found in South West Shewa Zone, Kersa Malima *Woreda* at a village called Goditi. It is far about 2-3 kms north-west of Awash Melka town. Garba is bordered on the north by Awash Melka town and river, on the east and south by Godit and on the west by Awash River. Geographically, it is located at 8.703464 north latitude and 38. 59907 East of longitude and at an altitude of 2000 meter above sea level.

The Garba Gully branches into two sections. Hominine activities contained in different contexts cover a period of more from than 1.7 million years ago, to c. 200.000 years ago. The following sites are described in terms of their discovery from earliest to most recent.

1.2.1. Garba IV

On the right bank of the Awash River at the outlet of the Garba gully is situated Garba IV. The site was discovered in 1972 and excavations were conducted there from 1972 until 1982, and again from 2005 to 2009. The excavation area covered about 100 sq m. During those periods, several archaeological horizons of approximately 3m thickness were investigated: from top to bottom C, D, E, F and G. The stratigraphic sequence lies below a volcanic tuff recently re-dated by $^{40}Ar/^{39}Ar$ to 1.4 million years ago. Between archaeological units D and E, another tuff is designated as "Grazia tuff" and dated to 1.7 million years ago. The significance of the evidence from units D and E is that they records the critical transition from Oldowan to Early Acheulean. Obsidian is the major component in the lithic assemblage of the Oldowan archaeological stratigraphic Unit E. The fragmentary mandible of a 2/3 year old *Homo erectus s.l.* child was discovered in this layer. The child suffered from *Amelogenesis imperfecta*, a genetic disease also found in modern human population. This is very outstanding piece evidence indicates genetic continuity between *Homo erectus* and *Homo sapiens*.

Archaeological stratigraphic Unit D is the richest of Garba IV sequence: over 9,821 lithic artefacts and 2,580 faunal remains were uncovered. The faunal assemblage at Garba IV has the following characteristics: it is highly fragmented and characterized by a prevalence of hippopotamus remains, followed by bovids (*Pelorovis* sp., *Connochaetes gentryi*, *Damaliscus strepsiceras*, *Gazella* sp.), equids (including *Hipparion* sp.), and suids (*Kolpochoerus* and *Metridiochoerus*). Conversely carnivores, primates (*Theropithecus* sp.), elephants, giraffes (including *Sivatherium*), birds, and reptiles are rare.

Important evidence obtained from palynological investigation at Garba IV has increased our understanding of the nature of vegetation cover during the occupation of unit D. In this regard, the abundance of grass pollen (86%) indicates high-elevation grassland with a high diversity of Asteraceae and *Plantago*. In addition, isolated trees of *Podocarpus* occurred far away from the site.

1.2.2. Garba XII

The Garba XII site was discovered in the years between 1965 and 1966. It occurs at about 9 m above the present-day course of the Awash River. Excavations at Garba XII were conducted from 1977-79 over an area of 50 sq m, with a section as deep as 5.5m. Two meters of stratigraphy lie between two volcanic tuffs, designated as B and A (in reverse alphabetical order). Basically, 1.5 m of deposit lying between the two layers of tuff was excavated and analyzed. Five archaeological layers were identified and excavated named as D, E, H, I and J, from top to bottom. A possible *hiatus* in the sequence exists between layers H and I. Two further anthropogenic layers, apparently very poor but as yet not excavated, were identified, one at the base of the test pit (L) and one at the top (K) above the layer of Tuff A. Palaeomagnetic samples were taken to allow indirect dating. After the analysis, the excavated archaeological sequence, this falls into the Early to Middle Acheulian, post-dates 1.3 million years, and pre-dates 1 million years ago.

In the earliest excavated context namely Layer J, which is Acheulean, choppers and handaxes are frequent, while there are fewer cleavers than hand axes. Flake production is rather standardized and flake artifacts are relatively numerous, with an abundance of side scrapers. In Layer H, the lithic production became increasingly refined and flakes are thinner and flatter. A large basalt cleaver fully corresponds with the morphological and technical standards of the Middle Acheulean cleavers. Layer D has many basalt as well as obsidian flakes, often retouched. The absence of larger artifacts such as choppers, polyhedrons and large hand axes, could be explained to be the result of a natural phenomenon, such as erosion disturbing the surface.

Although the fauna is not abundant, the state of preservation is good. *Hippopotamus amphibius* remains dominate in Layer J, but they also have come to light throughout the stratigraphic sequence. In addition, suid remains are present in the faunal record represented by a fragment of jawbone recovered from Layer J and identified as *Theropithecus* (*Simopithecus*) sp., a primate whose biotope is close to that of the present day baboon. This suggests the existence of a rather open habitat.

1.2.3. Garba XIII

During geological field surveys in 2000/2001, two new archaeological stratigraphic units named Level B and level C were discovered along the Garba gully in the Melka Kunture Formation (MKF). These new units date to the Lower Pleistocene-early Middle Pleistocene. Level B, which is the main archaeological occurrence, was excavated in 2007 covering an area of 15 sq m, while Level C was sampled only over a smaller area.

Stratigraphically speaking Level B is situated below a tuff unit dated by $^{40}Ar/^{39}Ar$ to about 870,000 years ago, and immediately above a tuff unit similarly dated to about one million years ago. Thus, the date of Level B is pointing to an age of 900,000 years ago for this archaeological occurrence. With regard to assemblages, Level B has yielded 176 lithic artefacts of the Middle Acheulean and 25 faunal remains. Systematic raw material procurements that points to two types of volcanic rocks with different knapping properties i.e., aphyric rocks for small flakes, obsidian and porphyritic rocks for bifaces and cleavers. In the alluvial deposits there is an abundance of small cobbles and pebbles. However, there was a dearth of large blocks suitable to produce large flakes to be shaped in turn into bifaces and cleavers. Consequently, it is assumed that most of the large blanks were obtained elsewhere, at a distance from the site.

The faunal remains are fragmented; many of them are probably of hippos (the animals most frequently attested to among the few identifiable specimens). Equid, bovid and alcelaphin remains were also identified.

After several indicators, the hominids settled in the dry abandoned channel of a seasonal meandering braided fluvial system. The sedimentary facies and the position of the artefacts indicate semi-arid conditions, which is consistent with a mammalian fauna dominated by grazers. The hippos provide evidence that permanent humid areas were also preserved.

1.2.4. Garba I

Garba I was discovered in the mid-1960s, during the very first field surveys carried out at Melka Kunture, by G. Bailloud who named it “Godeti”. The site is situated on the bank of the so-called “gully A of Garba”, 18m above the present day level of the river. Excavations began in 1965, lasted up to 1971, and re-opened for a single field season in 1975. Eventually

the excavations were extended to an area of approximately 200 sq m. A few test pits excavated into the upper slopes provided evidence that the site continues in that direction.

The stratigraphy at Garba I can be summarized as follows: at the base, a sequence of volcanic layers is sealed by fluvial deposits; the overlapping laminated fluvial deposits of sand and gravels are in turn capped by a crust of sandy concretions; the upper part of the sandy crust is mixed with clay with unsorted volcanic ash inclusions; within the sandy crust, the lower archaeological level, Level C, is separated by some 20cm of sands and gravels from Layer B, the main and uppermost archaeological layer. The two layers are close in age to each other and the finds will be described simultaneously.

The site has not been dated in radiometric. The typological analysis allows assessing that it is a typical Upper Acheulean of the highlands of East Africa and the Rift Valley, an assemblage closely comparable to those Isenya and Olorgesailie in Kenya, with numerous handaxes and cleavers, technically refined to the point of being morphologically monotonous. Circumstantial evidence suggests and age between 600.000 and 400.000 years ago.

Some 10,000 implements and faunal remains have been inventoried, including a high proportion of hand axes and cleavers. The hand axes, 10 to 20 cm in length, are either flat or very flat and show accurate secondary working. The shape tends to be oval, but sometimes the outline rather is an elongated ellipse, or is cordiform or even rounded (discoid hand axes). Some miniature hand axes and small bifacial tools (4-6 cm) would fit into lithic assemblages of the Early Middle Stone Age.

The flake cleavers tend to be U-shaped and are minimally modified by retouch. Most of the hand axes and cleavers, as well as the bolas, which also characterize the assemblage, are in volcanic rock (basalt, trachyte and rhyolite), but obsidian hand axes also occur. Small flaking is usually done using obsidian cobbles of small to medium size, but other volcanic rocks were also knapped. There is a high percentage of notches and denticulates, together with scrapers. Some possible evidence of the use of fire is a burnt pebble which, after analysis, was exposed to a temperature of about 400°.

The recovered faunal bones and teeth remains are very fragmentary, with a high proportion of *Hippopotamus amphibius*, some suids and animals typical of dry and open environments, such as antelope (*Damaliscus* sp.) and bovids, including *Connochaetes taurinus*. Conversely,

equids and hares are rare and a few crocodile teeth were also recovered. Palynological analysis from the excavated layer showed evidence that an open grassland/bushland had developed. Grass pollen largely dominates the herbaceous component. The total proportion of tree pollen averages 10%, and is dominated by the wind-transported pollen of *Podocarpus*. The pollen of small trees or shrubs common in high elevation bushland such as *Dodonaea viscosa* is also abundant, associated with *Shrebera* and *Brucea*. *Acacia* was also frequent in the landscape. *Celtis*, associated with *Combretum*, possibly indicates warmer conditions. Among the herbs, there were a few Chenopodiaceae associated with "Barleria", a small spiny herb frequent in open environments, similarly pointing to warmer and drier climatic conditions than today.

1.2.5. Garba III

Garba III is part of Melka Kunture, a vast archaeological area discovered in 1963 in the Upper Awash valley of Ethiopia. The local sequence, starting at 1.8 Ma, is well known for the many Oldowan and Acheulean sites (Chavaillon and Piperno, 2004; Morgan et al., 2012). Middle Stone Age industries, however, were also recognized and collected during the first surveys by G. Bailloud (November 1963 and subsequent months) (Bailloud,1965). In his description, "Mousteroid" industries, sometimes including evidence of Levallois technique, were found eroding from the surface and from gully sections.

Bailloud, in his map, when reporting his first surveys at Melka Kunture in 1965 identified what came to be known as Garba III as "Point C" . Excavations that ultimately extended to about 30 sq m were undertaken from 1970 to 1978. Excavations were conducted in an area dissected by erosion where remnants of an Upper Pleistocene terrace were available for investigation. The layers were eventually labelled from 'A', at the top, to 'E' at the bottom. Acheulean assemblages were found up to and including layer 'C'. Layer B, and the uppermost part of the sequence, Layer A, yielded Early Middle Stone Age lithic assemblages. The area was re-investigated in 2011, with geological trenches allowing re-assessing the stratigraphic sequence, and the provenience of the Early Middle Stone Age implements.

The remains of the original deposit were available for excavation at some distance from each previously excavated unit. Therefore, the stratigraphic succession happens to be slightly different from one section to another. The compounded sequence is some 5 m deep. The

lowermost archaeological layer, Level 'E', yielded implements of the Middle/Upper Acheulean. It is capped by clays and a volcanic tuff, followed by a rather poorly defined Acheulean layer, Level E and, in turn, by Level D, where palaeontological remains only were discovered. Level C, a Late Acheulean layer is overlain by Level B and A, with abundant Early Middle Stone Age lithics. After the most recent study of the area, the last two levels are now described as Unit III, with former Level C at the base. After the lowermost part of Unit III (Sub-Unit IIIa) had been deposited, a ferruginous horizon developed, approaching an iron crust, the result of pedogenetic processes which are indicative of a warm and humid climate. After a phase of erosion, Sub-Unit IIIb in turn was deposited, and similarly underwent pedogenesis. This happened when the climate was seasonally warm, but the process was less intense than when the paleosol of Sub-Unit IIIa had developed. Chronological assessment has been from circumstantial evidence and typological analysis, and it points to an age not later than the Last Interglacial, i.e., not later than 130,000 years ago, for Sub-Unit IIIa and its lithic industry.

Over 2000 elements constitute the recovered stone tool inventory from Level B. Regarding to raw material choice; obsidian is by far the most frequently knapped raw material, with some evidence of the use of flint and of volcanic rocks. In terms of size, small obsidian pebbles were mostly flaked. The recurrent Levallo is flaking method, centripetal and unipolar, was well established. Most of the retouched tools are denticulate, but there are also some points, including Levallois points, which are a diagnostic marker of the Middle Stone Age. Miniature bifaces were also produced in small numbers, pointing specifically to an Early Middle Stone Age. There are several faunal remains, mostly undeterminable fragments which were eroded from upstream and eventually re-deposited at Garba III, becoming incorporated into the former Level B. Amongst these, teeth, and many fragments of hippo enamel, also occur. A large giraffe, at least five bovid species (a bovine, two alcelaphines, a reduncine, and an antilopine), were identified, as well as a few *Equus* remains. Three fragments of *Homo sapiens* skull were discovered in former Level B, namely at the base of the layer. Garba III is one of a very few sites, all of them in East Africa, where *Homo sapiens* remains pre-dating the Last Interglacial have been discovered, allowing to assess that the Early Middle Stone Age was produced by human groups of the same species as ourselves.

Within the Buffer zone, there are very important sites that can be considered as a real asset for archaeological site candidature. Sites like Wofi (Adjacent to Atebella) and the Kella gully are repositories of the stone ages cultures for the future generations and for future research.

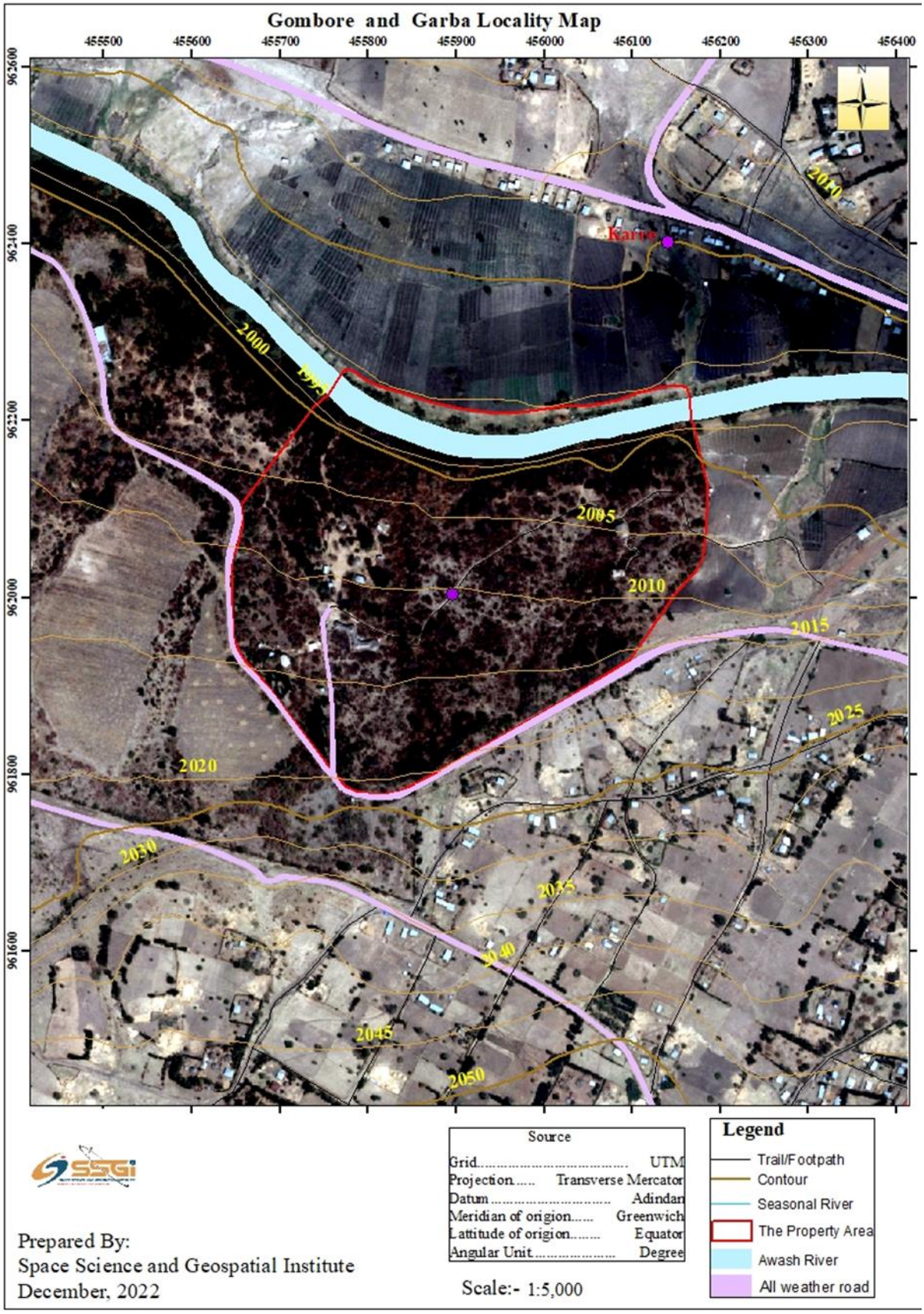


Figure 3: Gombore and Garba Localities

2. Simbiro

Simbiro is also one of the the archaeological and paleontological sites Meleka Kunture and Balchit. It is located in South West Shewa Zone, Kersa Malima Woreda at a village called Bulcho. It is bordered on the north and west by Simbiro village, on the south by Goditi and on the west by Awash River. Geographically, it is located at 8.706045 north latitude and 38. 565938 East of longitude and at an altitude of 2020 meter above sea level.It is far about 10 kms south west of the Awash town and river.

Simbiro is a locality on the right bank of the Awash River, which extends across a distance of 1.5 km. There are 15 natural sections that exhibit Acheulean lithic industry tools and fossil bones.

From the extended natural sections aforementioned, the site known as Simbiro III is the most impressive. It is capped by a volcanic tuff which was deposited more than 900,000 years ago. This is the only site that has been excavated in the gully, and was first tested in 1973. The test excavation was excavated because of the presence of an eroded and fragmented Pelorovis skull. This was an exceptional paleontological find representing an ungulate with a horn span estimated to 2m. The same layer, Level B, also yielded tools of the Acheulean industry. More excavations were undertaken during three seasons between 1974 and 1976, and again in 2005. However, to preserve the stability of the natural section which approaches 8m in height, the excavation unit was not extended. The two main archaeological levels are Level B and Level C. Level C partially merges with Level D close to the base of the sequence. Of these two levels Level B contains the richest archaeological record so far retrieved from Simbiro III. The recovered materials include 769 lithic artifacts and 54 faunal remains. In contrast, the remains at Level C were impressive due to the fact that the constituents were handaxes, cores and flakes almost exclusively made in obsidian and fully exposed in the natural section of the gully.

Overall, the assemblages at the site, including the various levels, consist of Acheulean stone implements such as bifaces, cleavers, unmodified as well as retouched tools, while the fauna includes Hippopotamus, Equidae, Bovidae and antelopes. The raw materials that were procured for tool making included obsidian and a variety of volcanic rocks.

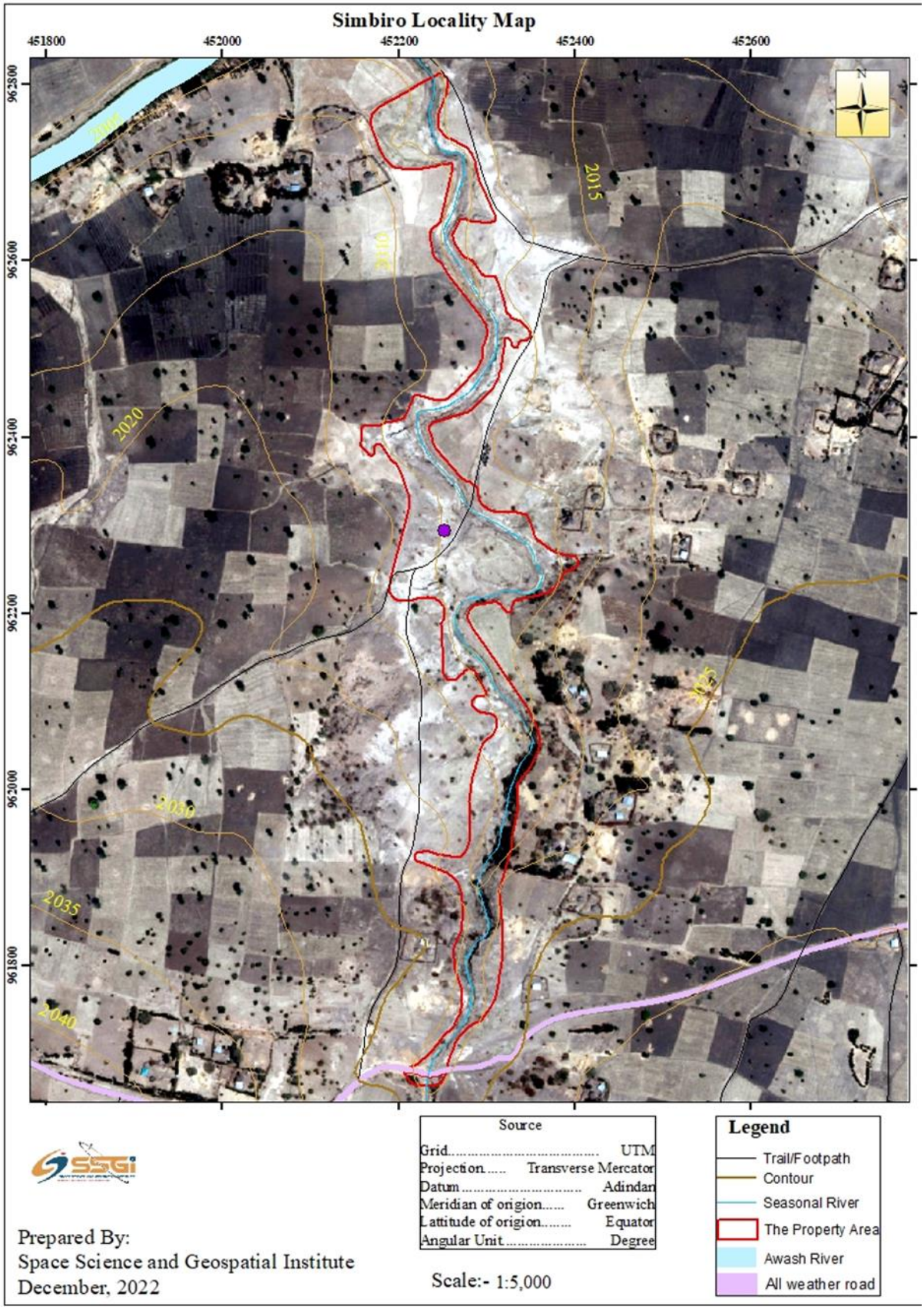


Figure 4: Map of Simbiro Locality

3. Kella I

The locality of Kella is found in the Oromia Special Zone of Surrounding Finfine, Sebeta Hawas *Woreda* at a village called Balchi Jimjima. The name Kella is derived from one of the left-hand tributaries of the Awash River. Kella is situated adjacent to a dry river channel. The central area of the site has an elevation of 2005 meters asl and with a GPS coordinate of 0457192 Northing and 0963232 Easting. It is bordered on the north by Rabato, on the east by Awash Melka Town, on the south and west by the village of Jimjima.

Volcanic ash sediment covers most part of this site. Currently, at Kella I, stone tools and pebbles are still observed scattered all over the site.

The site of Kella I was prospected and excavated on 1965 by Jean Chavaillon. A second excavation at the same site was carried out on 1970 by F. Hivernel. Kella is also the first site discovered by G. Dekker in 1963 and initially prospected by G. Bailloud. Kella I is located on the right bank of a tributary of the Awash whose seasonal waters join the Awash at the ford of Melka Kunture. A high number of hand-axes, cleavers and other Acheulian pebble and flake tools were recovered from this area. No Middle Stone Age tools were reported so far from Kella. Kella is an ancient Late Stone Age locality until now known at Melka Kunture (Chavaillon and Piperno, 2004). The lithic industry, here, is characterized by numerous blades and bladelets, different kinds of burins and backed knives of Upper Palaeolithic type, notched and denticulates, borers, side-scrapers and small choppers. The Later Stone Age technology of Kella is dated between 20,000 and 4,000 years B.P. (Makonnen, 1984).

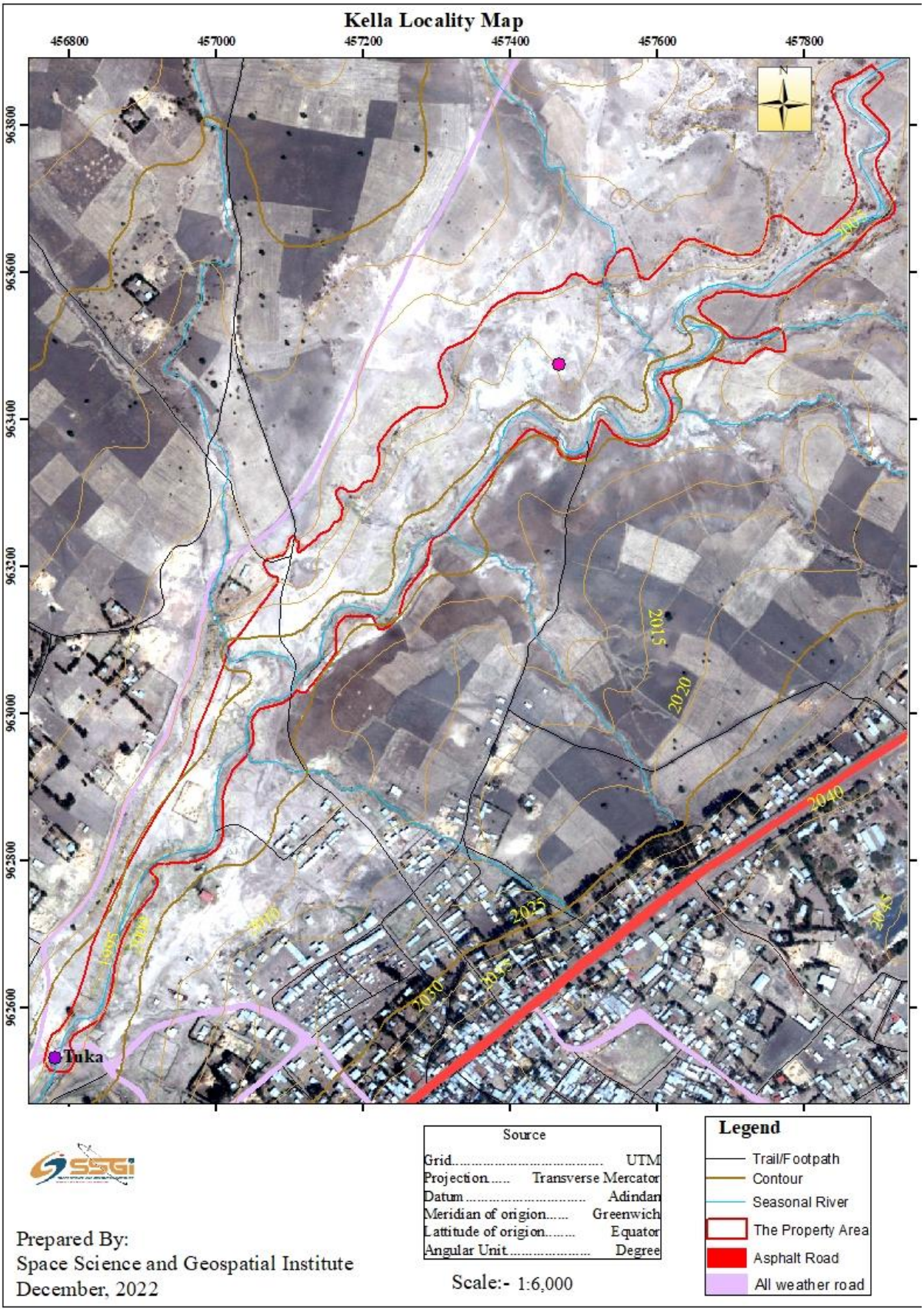


Figure 5: Map of Kella Locality

4. Balchit

Balchit is one of the serial site of Melka Kunture and Balchit Archaeological site. It is found in the Oromia Special Zone Surrounding Finfine, Sebeta Hawas Woreda at a village called Bachit. It is bordered on the north by Lemenfo Balchi, on the east by Temissie Kombolcha, on the south by Balchi Jimjima and on the west by Roben Jirenssa. Geographically, it is located at 8.758171 north latitude and 38.619222 East of longitude and at an altitude of 2130 meter above sea level. Balchit is located 7 km north of the modern course of the Awash River.

Balchit is a local term for the shiny and glassy volcanic rock otherwise known as obsidian. This locality is formed by a dome-flow of obsidian and the site covers the outcrops over an area of 4 km2. The K/Ar dates obtained on obsidian samples from the site produced a date of 4.37±0.07 million years, dating the eruption of the obsidian dome-flow. The primary obsidian source included within volcanic sediments is visible in several outcrops along minor river gullies. The high-quality Balchit obsidian has been extensively used for knapping since Oldowan stone tool industries were produced, 1.7 million years ago.

As far as obsidian raw material procurement is concerned, although the primary source was the Balchit dome-flow, other secondary accumulations of obsidian pebbles occur throughout the archaeological area, and were utilized during the Lower and Middle Pleistocene. Obsidian pebbles resulted from erosion and other processes which led to the widespread dispersal of the raw material far beyond the original outcrops.

One of the most important characteristics of the Balchit site is its enduring significance to local prehistoric populations and to later populations. Evidence demonstrates that the site was exploited and quarried as a primary source from prehistoric to historic periods. An outstanding characteristic of the site is that the landscape is covered by extensive flaking areas exhibiting cores, flakes, blades and debris, scattered over thousands of square meters.
There are three types of concentrations of obsidian debris and artifacts in the Balchit locality. The first concentration is up to 60 m long and 50 cm deep, the second up to 10m long and 1m deep; and the third more limited to modern pit-like depressions of anthropic origin, excavated to reach the ground water table and successively filled with obsidian waste. The accumulations of obsidian artifacts, debris and debitage at various levels of operational

sequences belonging to different periods (at least from the Late Stone Age to modern times) include large blades, flakes and pyramidal or prismatic cores.

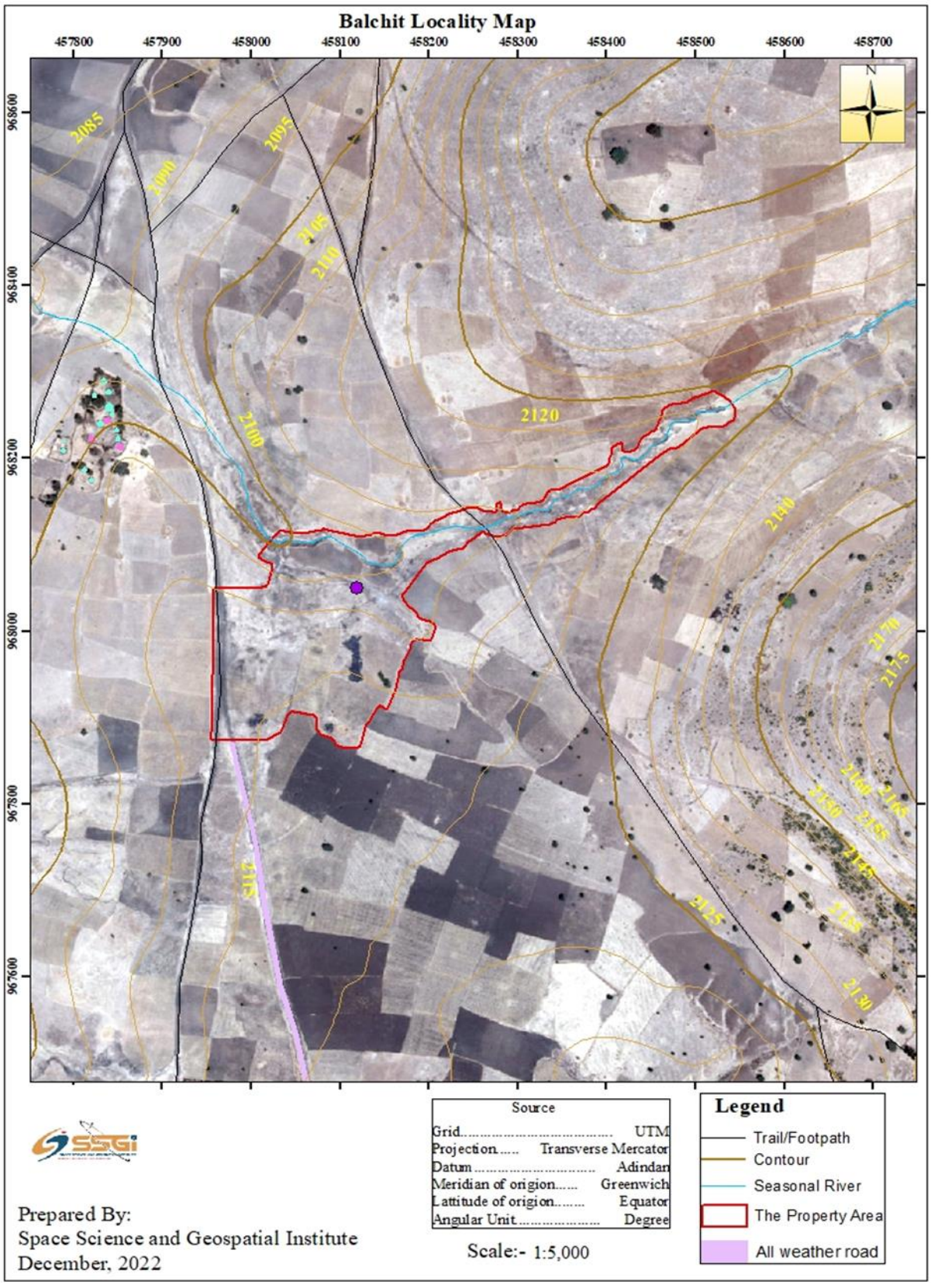


Figure 6: Map of Balchit Locality

Figure 7: Overview of Balchit quarry area

5. Wofi

One of the localities of Melka Kunture Archaeological and Paleontological Serial Property, Wofi, is located in the Oromia Special Zone of Surrounding Finfine, Sebeta Hawas *Woreda* at a village called Wofi. It is 5 kms far away from Awash Melka Town and the Awash river. Wofi is bordered on the north by Burro Fincha, on the east by Balchi Jimjima, on the south by Bulcho and on the west by Simbiro. Geographically, it is located at 8.72 north latitude and 38.575031 East of longitude and at an altitude of 2020 meter above sea level.

This Melka Kunture deposit lays some three kilometres upslope from the Gombore and Garba sites. It is located at the mouth of a small tributary that runs into the left bank of the Awash River. The Wofi sites were discovered during a survey supervised by J. Chavaillon. Research at the Wofi III site was handled by F. Hivernel. Wofi II was studied by Makonnen Abye (1983-1984). Wofi II and III are both geologically and typologically very similar. Archaeologically, they can be dated to the Late Stone Age. The predominant type of raw

material found on site is alkaline obsidian. This obsidian is rich in barium, but has a poor zirconium. The Wofi obsidian is similar to that of Balchit, and may well be the same as that from Kella and Gombore IA. This could be explained either as the result of erosion action of the tributary, or the intervention of people. So the 20th Century tanners that make their way to Balchit in the search of this raw material walk in the footsteps of prehistoric man. At the terminal spot of the Wofi gully, there is also the so-called "Lake of Lava", a major geologic feature which can be an attraction for professional tourist

The geological substrata are made up by brownish black clayey sediments, "Black Cotton Soil", which seal both the Awash flood deposits (Wofi I) and the ignimbrite terrain. Three sites have been identified:

- Wofi I: Stone Age site with some earlier levels.
- Wofi II: surface concentration of finds, including a majority of unpatinated tools, and a small selection of patinated tools.
- Wofi III: surface concentration of finds. The archaeological deposit lies *in situ* sealed within a brownish black clayey layer dating to the Holocene. The finds were recovered from these sedimentary deposits.
- Wofi IV: surface concentration of finds with few tools. However F. Hivernel found a geometric microlithic tool, the only example of a trapezoidal tool found thus far at Melka Kunture (Chavaillon 1978).

Lithic finds and several potsherds have been recovered from both sites. The former tend to be in obsidian. There are no faunal remains for either site.

The débitage includes as well flakes and simple blades as retouched flakes and blades. The débitage of the Wofi II and Wofi III industrial assemblages includes three archaic characteristics:

- a high proportion of flakes compared to blades and bladelets, 61% at Wofi II and 56% at Wofi III. The rarity of bladelets is distinctive (0.4-1.4%).
- an abundance of flat striking platforms: nearly 75% of the total per site.
- the angles of the butt/ventral face are worth noting. Numerous examples exceed 90°, and at times reach as much as 120°; 70% at Wofi II and 88% at Wofi III.

However, there are differences between the two sites. The finds from Wofi II were recovered from the surface during the survey, and as a result 63% of the finds are damaged. On the other hand, the industrial assemblage from Wofi III was recently recovered *in situ* from its sedimentary context and only 36% of the finds are damaged. The Wofi III industrial

assemblage is more homogenous than that of Wofi II and, unlike the latter, includes long blades (12 cm) and large flakes (10 cm).

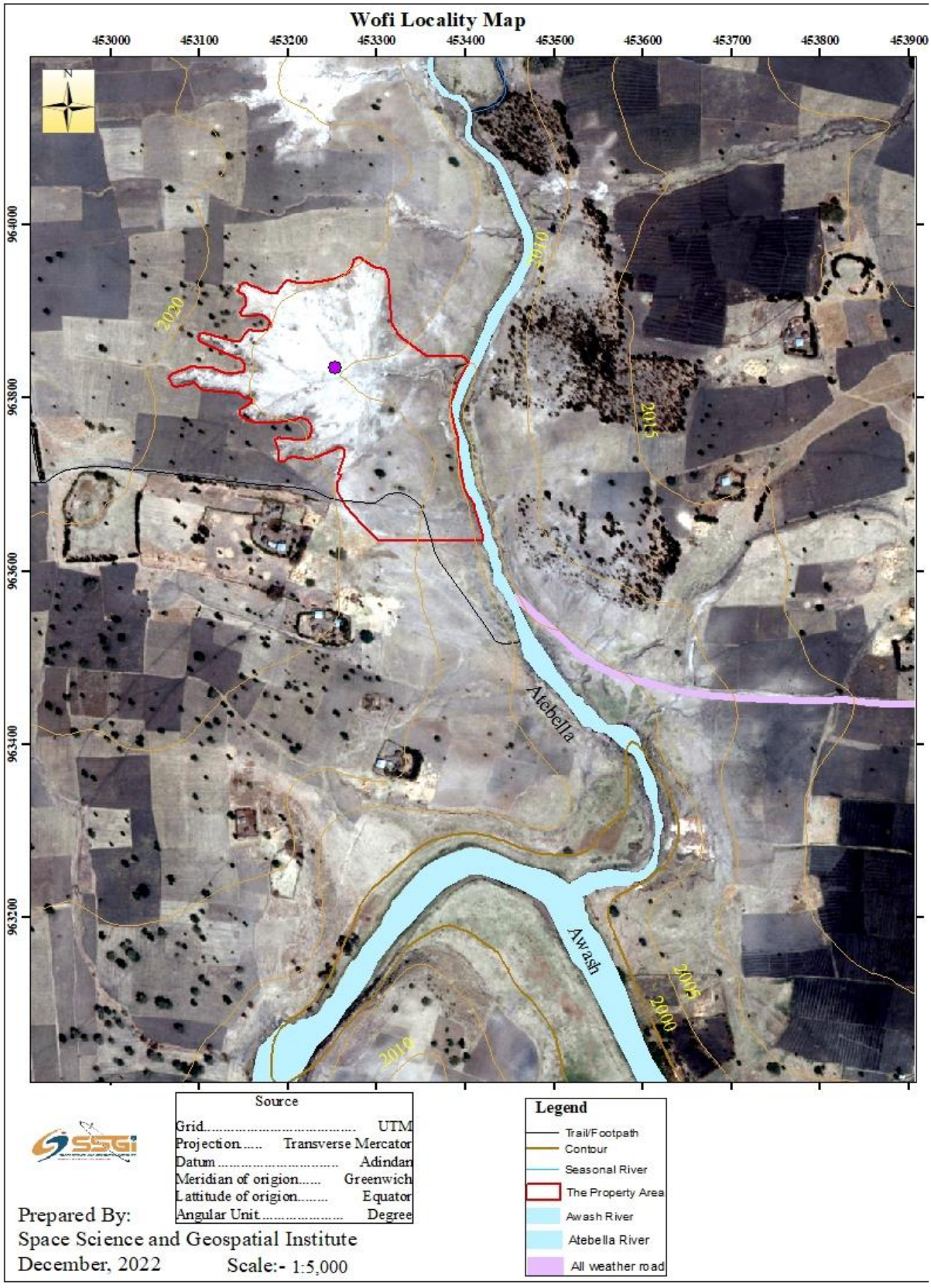


Figure 8: Map of Wofi Locality

6. Atebella

Atebella which is located in a village called Burro Fichia, is one of the localities of Melka Kunture and Balchit Archaeological and Paleontological Heritage Site. It is found in Oromia Special Zone of Surrounding Finfine, Sebata Hawas Woreda. It is bordered on the north by Roben Jirencha, on the east and south by Balchi Jimjima and on the west by Burro Fincha villages. It is far about 5 km north-west of the town of Awash Melka. The central area of the site has has an elevation of 2010 meters above the sea level.

The Atebella gully, part of the Melka Kunture prehistoric cluster, is one of the richest acheulean sites discovered in 1963 by J. Chavaillon.This prehistoric site is located at latitude of 38.57653N and a longitude of 737699E along the Atebella River. The site is located on the left bank of the Awash River, about 3 km upstream of the Wofi site. The research on the site began by in 1963 and archaeological data provide evidence a layer of echelon exposed to water erosion at the foot of the cliff by the Atebella River, dated to the Late Stone Age. The predominant type of raw material found on the site is alkaline obsidian. This obsidian is rich in barium, but has a poor zirconium. The Atebella obsidian is similar to that of Balchit, and may well be the same as that of Kella which are found at other localities. The geology and typology of artifacts are very similar in the locality of Wofi site which is located some 3 kilo meter away from it. However, professional archaeologists have yet to draw a clear link between the two situations.

The site embedded several prehistoric sites which have not so far been excavated. The test excavation at the site yielded a great deal of lithic assembling that preceded 1.2 million years. The age of a dated volcanic deposit higher up in the local stratigraphic sequence. During spring, which there is more flowing water, the river eroded along its backs the sediments which happen to battle the last resistance.

This early Acheulean prehistoric site of more than 1.2 million years is now integrated into the modern landscape, while belonging very different time period. It will be part of it as long as it resists the season flood that erodes the river. Its remains are just a spot surrounded by substantially late evidence.

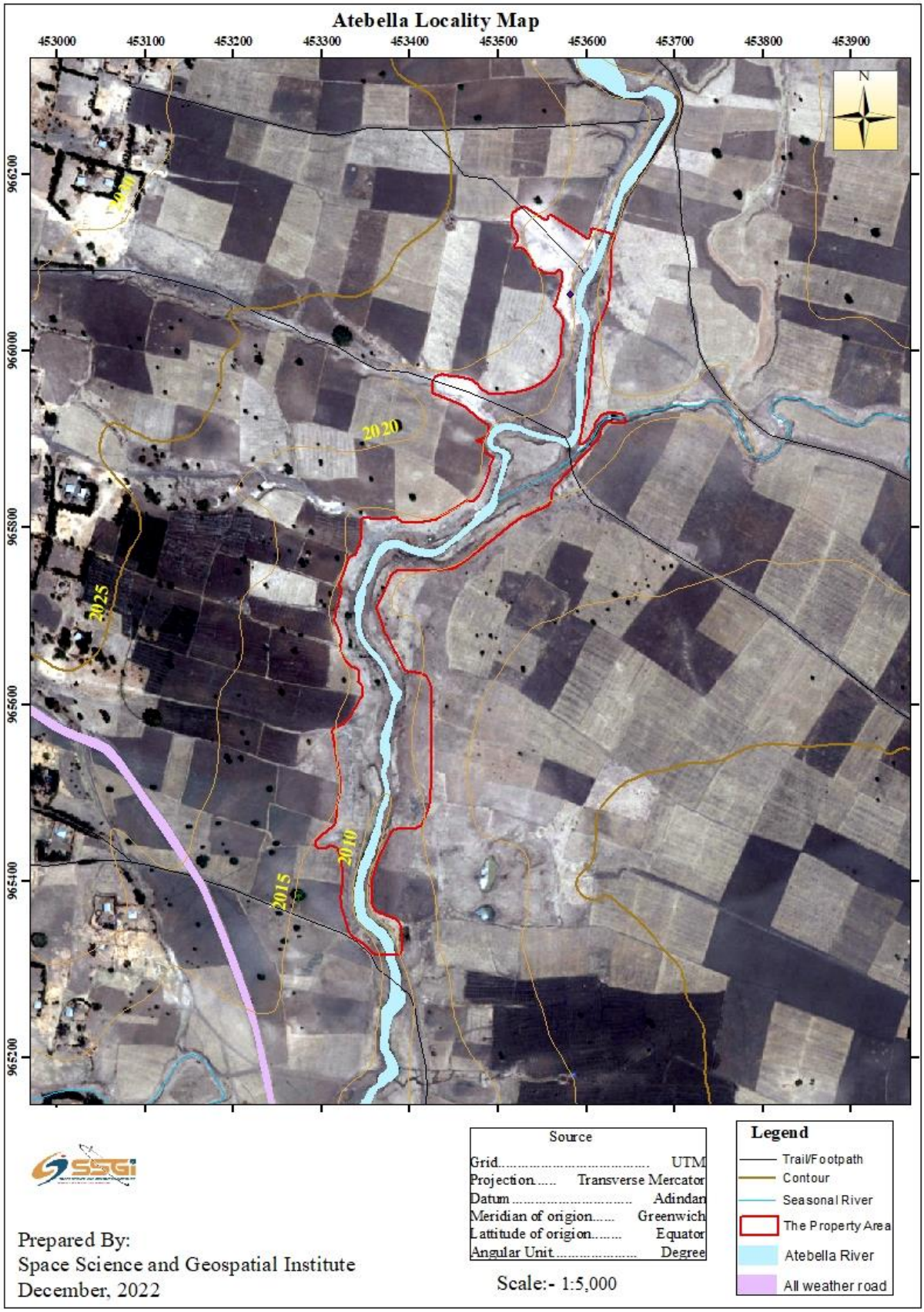


Figure 9: Map of Atebella Locality

3. The background of Melka Kunture and Balchit Archaeological Site along with Mission, Vision and Guiding Principles of the Management Plan

3.1. Overview of the Melka Kunture and Balchit Archaeological and Paleontological Site Management Plan

Ethiopia possesses many important sites that are keys for our understanding of the cultural and biological evolutions in this planet. It has much of the best evidence in the world for how hominids evolved and how human culture began and developed. The Melka Kunture and Balchit Archaeological and Paleontological Site is one of the sites in providing a testimony of such developments. The archaeological record of Melka Kunture spans over 1.8 million years, and ends in historic times.

MPA contains several features and sites of high values. The site comprises of natural and semi-natural habitats. The site also includes some geological formations which hold artifact and fossil deposits of major importance from the scientific point of view, and represents one of the most important sites in the world in terms of providing proof of shared human and cultural developments which bind all people within a common humanity. The cultural heritage of Melka Kunture is a remarkable one, with archaeological sites of primary importance. This is because some of the sites provide the only known example of a continuous substantial use of obsidian from the Oldowan to the Acheulean and to the subsequent periods. Furthermore, the long aged fossil records reveal the animal species reminding those of the present-day African savannahs and which are found only in Ethiopia, while the palynological record fully documents the emergence already in the Lower Pleistocene of the “Dry evergreen Afromontane forest and grassland complex”, i.e. of the mountain floristic domain which is nowadays distributed throughout the Ethiopian highlands between 1800 to 3000 m asl.

A main instrument to guide the long term management of the protected areas, applied to some protected sites of Ethiopia and also international best practice guide lines, is the preparation of a management plan. So far, no such a document had been prepared for MPA. This document is, therefore, the first management plan for the site. During the preparation of this document some preliminary results of the past study conducted on the site have also been taken in to account, as much as possible. (Pipperno M. 1999; Galltti R., Pipperno M. 2001; Nigus G. 2015)

3.2. Purpose of the Management Plan

The main purpose of the management plan is to establish and improve effective management system of Melka Kunture Melka Kunture and Balchit Archaeological and Paleontological Site in order to ensure conservation of its main cultural features and associated resources in accordance with the overall missions of the State as defined by the national legislation and associated instruments. This management plan aims at providing guidance on appropriate strategies and actions for future management, and is based upon the desire to ensure that Melka Kunture Balchit Archaeological and Paleontological Site is protected and remain in an essentially natural condition to benefit the Ethiopian people and of future generations in particular and the people of the world in general. This plan intends, therefore, to represent a tool to be used to guide the management of Melka Kunture Balchit Archaeological and Paleontological Site, providing clear directions for conservation, recreation and resource use based on specific management objectives and strategies.

3.3. Goals of the Management Plan

This management plan is designed to ensure the conservation and sustainable development of the archaeological, paleontological and natural resources of Melka Kunture Balchit Archaeological and Paleontological Site and make local and national benefits to the people of Ethiopia. The plan aims to protect habitats and archaeological sites, assist regional and national development programs and to establish appropriate management structure. This plan is, therefore, envisioned to provide a frame of reference for decision making to guide the development and management of the nominated area over the next 5 years.

In light of the aforementioned facts, the main management goals for set forth to:

1. Promote the sustainable use of the archaeological resources in nominated site
2. Prevent all actions that is likely to result in resource degradation and loss of the biodiversity.
3. Increase economic and social benefits of the local population in exploiting possible advantages of the heritage to the maximum extent.
4. Promote public awareness and understanding of the cultural heritage.
5. Enhance the nominated site as a center of tourism and increase economic activities in the region to contribute to regional and national development.

6. Ensure that the archaeological heritage is well managed, used for the benefits of all and that its values are protected for future generations so that they can attain international standards of the heritage management.
7. Conduct applied research to drive knowledge production and to inspire the world with their discoveries
8. Make the nominated site as a center of field school.
9. Provide recommendations to concerning bodies regarding the development of a Contingency Plan for the protection of archaeological resources in urgent situations.

3.4. Guiding Principles of the Site's Management Plan

In recognition of the national significance of the Melka Kunture archaeological and paleontological site, a holistic approach to the conservation of the Heritage is imperative. By conceptualizing an overall national vision, appropriate prominence can be given to the site. The following are guiding principles for developing a comprehensive and integrated Management Policy of the Site.

1. **Achieving Sustainability**
   - Preserve, enhance and protect the Melka Kunture's archaeological and paleontological resources, natural features and areas.
   - The achievement of long term economic security within an environment that offers a diverse range of employment opportunities for residents.
2. **Physical Cohesiveness:**
   - The nominated property should be cohesive and easily navigated providing heritage tourists with a holistic experience of the site with adequate parking and comfortable pedestrian access.
3. **Economic Development:**
   - The Melka Kunture's archaeological assets should increasingly support local economic development by becoming a premier national and international heritage tourism destination.
4. **Preserving and Creating a Livable Community**
   - Preserve, enhance, and protect the distinct character, cultural heritage, living environment of the site, and sense of responsible community to the conservation of the archaeological heritage.

5. **Authenticity and integrity of the site**

- Authenticity and integrity of the entire site along with its natural habitat be intact as far as possible.

6. **Stakeholders' involvement and cooperation**

- There must be a commitment include the stakeholders in the decision-making process.
- Creation of mechanisms to sustain the long-term co-operation of the multiple stakeholders as well as professional and technical expertise necessary for different aspects of the site.

7. **Human Resource Development**

- Human Resource Development will be a key component in the Site Management Plan in enhancing the range of skills both technical and managerial to achieve effective conservation of the Melka Kunture Site.

8. **Improve visitors services**

- Give quality services to the visitors
- Provide information about the site development using multiple media

9. **Effective Management**

- Develop and manage an integrated conservation and preservation program
- Examine all project proposals to ensure that the integrity and authenticity of the site is retained.
- Assess the employment potential, to include the local community in the protection of their heritage.

10. **Center of Excellence**

- Maximize the educational value of the site and realize the benefits of local and international interest in archaeology and paleontology
- .

3.5. Vision Statement

- To envisage the Pre-historic site of Melka Kunture to be a centre of excellence in research, training and the best tourist destination site in East Africa by 2025.

3.6. MISSION STATEMENT

- The mission of this management plan is to protect, conserve and promote an appreciation of Melka Kunture and Balchit Archaeological and

Paleontological Site by putting in a place management framework that will ensure the maintenance of the Outstanding Universal Value, integrity and authenticity of the property from present and future generation

3.7.The objectives of the Management Plan

The overarching objective of this management plan is to provide guiding framework and strategies to ensure that Melka Kunture Archaeological and Paleontological Site maintain its Outstanding Universal Value through a participatory approach.

General Objective

The main objective of this management plan is to assure valid heritage conservation, sustainable development and participatory approach to sustain the Outstanding Universal Value of the serial property of Melka Kunture and Balchit Archaeological and Paleontological Site.

The Long term objectives are:

1. To safeguard and enhance the OUV and integrity of the site by managing, conserving and protecting all the attributes of the property and its settings.
2. To enhance the values of the property through continues research and investigation by the national and international scientific community.
3. Reinforce sustainable conservation and the site development through education and income generation activities.
4. Conserve and enhance the Site and its setting for science, education and public enjoyment.
5. Promote awareness and understanding of the Site's Outstanding Universal Value social importance.
6. To enable visitors to the site and its setting enjoy a welcoming experience and high quality facilities.

4. The legal frameworks and Policies of Melka Kunture and Balchit Archaeological and Paleontological Site

4.1.National and International legal instruments

For effective protection, management and conservation of the heritage sites of a country, there shall be laws, policies or customary practices that are accepted and continuously practiced by a given society that are consistent with that nation's supreme laws. To achieve these goals , the responsible body should formulate, develop and apply as far as possible a policy or set of legal frameworks whose principal aim should be to co-ordinate and make use of all scientific, technical, cultural and other resources available to secure the effective protection and conservation of sites. Internationally, Ethiopia is a signatory to different conventions, such as Convention on the Protection of Cultural and Natural Heritage signed in 1972 and ratified by Ethiopia on 06/07/1977 and others in which the state has an obligation to implement it in accordance with the agreement. However, as a country rich in both cultural and natural resources, considerable support is required both nationally and internationally to fulfill these obligations provided under the laws or conventions.

Nationally, the first legislation for the protection of heritages goes back to the 1950s. However, despite the recently ratified legislation and policy to deal with the problem of heritage protection Ethiopia for long lacked comprehensive and up-to-date legal frameworks for the conservation and development of cultural heritage sites. Thus, conservation and management have been carried out following the national and/or local legislations and international and/or local conservation principles. Accordingly, the current national and international laws, policies, and, conventions shall be enforced for the protection and management of the sites of Melka Kunture include the following;

4.2.National Legislations and policies

4.2.1. The FDRE Constitution of 1995 (annexed)

The Constitution of the Federal Democratic Republic of Ethiopia, Proclamation No. 1/1995, in article 41(9) states that the state has the responsibility to protect and preserve historical and cultural legacies and to contribute to their promotion. In addition, Article 51 (3) demands that the Federal Government shall establish and implement national standards and basic policy criteria for the protection and preservation of cultural and historical legacies, among others. Likewise, Sub-Article 5, under the same article states that the Federal Government shall enact laws for the utilization and conservation of land and other natural resources, historical sites

and objects. Finally, Article 91 (1) explains that the Government shall have the duty to support, on the basis of equality, the growth and enrichment of cultures and traditions that are compatible with fundamental rights and human dignity, to mention a few. Furthermore, Sub-Article 2 of the same article stipulates that the Government and all Ethiopian citizens shall have the duty to protect the country's natural endowment, historical sites and objects. Therefore, the above declarations clearly show the commitment of the government to protect the cultures and cultural properties of the country.

4.2.2. The Cultural Policy (annexed)

Based on the Constitution of the Federal Democratic Republic of Ethiopia FDRE), a Cultural Policy was prepared by the Ministry of Information and Culture (this is latter re-organized and named as the Ministry of Culture and Tourism) and adopted by the House of Representatives (Parliament) of the FDRE in October 1997. This Cultural Policy has clearly outlined the direction that the country has to follow with regard to culture and cultural properties. In its contents and strategies for its implementation, it is stated that "Creating awareness that the conservation and preservation of cultural, historical and natural heritage are the duties and responsibilities of governmental and non-governmental organizations, religious institutions and all Ethiopian nationals" in addition to "Facilitating the necessary conditions to conserve and preserve the heritage of the country; to protect these from illicit trafficking and extortion…" (p.27)

The policy further underlines that "ensuring" the cultures of the country "receive equal recognition, respect and chance to development". And "favorable situation" will be created "…to carry out scientific research and inventory…" on the cultural heritages. Further again the Policy stipulates that, "An appropriate precondition shall be arranged to protect sites of heritage from damages caused by construction works and other development activities" (p.33). With regard to culture in Education, the Policy further states that "Cultural themes shall be included in to the educational curricula with the aim of integrating education with culture and thereby to shape the youth with a sense of cultural identity;"(p36).

4.2.3. The Proclamation issued to provide for Research and Conservation of Cultural Heritage (annexed)

Based on the Cultural policy, the Proclamation No. 209/2000 "To provide for Research and Conservation of cultural Heritage" was issued by the FDRE. In its definition, it's noted that, heritage properties that are protected by law are, "… anything tangible or intangible which is

the product of creativity and labor of man in the pre-history and history times, that describes and witnesses to the evolution of nature and which has a major value in its scientific, historical, cultural, artistic and handicraft content." (Part 1 Article 3 No. 4). This same proclamation in its Preamble acknowledges that cultural heritage "…plays a major role…and hence the protection and preservation of cultural heritage has been made the responsibility of each citizen, the society and the state".

4.2.4. The Oromia National Regional State Constitution

According to Proclamation No. 46/1994, Article 106 section 1-3 states that the Oromia National Regional Government has the duty for the growth, promotion and the protection of the cultural and natural heritages found within the National Regional State.

4.2.5. The Oromia National Regional State Regulation No. 159/2013 (Annexed)

This regulation was established for the administration and preservation of the pre historic sites of Melka Kunture and Balchit for the purpose of controlling and following-up the administration, preservation, and development of the sites. As per this regulation, the Oromia National Regional State is empowered to coordinate public participation and organize community awareness, undertake visit and study activities and to protect illegal activities in and around the heritage sites (Article 5 sub 1).

4.2.6. The 1997 Environmental Policy of Ethiopia

According to section 1.3 of the Environmental Policy of Ethiopia, Ethiopia's rich natural and cultural heritages permit every facet of daily life and provide a powerful and socially cohesive force in the national consciousness. Theses heritages can also provide a major attraction for tourists and are important elements in the development of a tourist industry. However, much of these heritages and cultures are under threat due to negligence, decay, removal or destruction as well as through less visible changing of socio-cultural values. In addition, section 3.10 of the policy is set to promote the perception of heritage conservation as part of, and integrated with Ethiopia's general social and economic development to:

- recognize that the country's heritage conservation should not be seen as the responsibility of the government alone
- encourage communities to play a leading role in assessing and nominating places or items of heritage significance and in conserving them;

- promote a sustainable heritage conservation and management program that seek to understand all the elements of the system, their interrelationships and the ways in which each contributes to social and economic development; and
- ensure that the environment of heritage sites is so managed to protect the landscape and its available artifacts or fossils.

4.2.7. The World Heritage Convention of 1972

According to article 9 (4) of the Federal Democratic Republic of Ethiopia Constitution, all international agreements ratified by Ethiopia are an integral part of the law of the land. Thus, based on these legal principles different conventions that the country ratified have been implemented in Ethiopia in accordance with the laws of the land which is of significant for the protection and management of heritages. Ethiopia became a signatory to the Convention of World Cultural and Natural Heritage in 1977. The World Heritage Convention is a unique legal instrument, based on the idea that some cultural and natural heritage sites are of universal and exceptional importance and need to be protected as part of the common heritage of humanity. As mentioned in Article 4, each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritages belongs primarily to the concerned State.

Furthermore, Article 5 ensures that effective and active measures shall be taken for the protection, conservation and presentation of the cultural and natural heritages situated in/on the territory of the state party. According to this convention, each State Party shall endeavor, in so far as possible, and as appropriate for each country; to adopt a general policy which aims to give the cultural and natural heritages a function in the life of the community and to integrate the protection of these heritages into comprehensive planning programs. Likewise, the "Operational Guidelines for the Implementation of the World Heritage Convention on paragraph 98 further affirms the roles of the legislative, regulatory and contractual measures for protections at the national and local levels that should assure the survival of the property and its protection against development and change that might negatively impact the Outstanding Universal Value, or the integrity.

4.2.8. Charter for the Protection and Management of the Archaeological Heritage (1990)

The archaeological heritage constitutes the basic record of past human activities. Its protection and proper management is, therefore, essential to enable archaeologists and other scholars to study and interpret it on behalf of and for the benefit of present and future generations. Based on Article 3 of this Charter, the protection of the archaeological heritage should be considered as a moral obligation upon all human beings and is also a collective public responsibility. This obligation must be acknowledged through relevant legislation and the provision of adequate funds for supporting programs necessary for effective heritage management. The archaeological heritage is common to all human society and should, therefore, be the duty of every country to ensure that adequate funds are available for its protection.

Thus, Legislation should afford protection to the archaeological heritage that is appropriate to the needs and history of each country. Thus, there is a need of providing what is required for in situ protection, research, and associated activities. For these and other related reasons, the protection of the archaeological heritage must be based upon effective collaboration between or among various concerned stakeholders.

5. Statements of Outstanding Universal Values (SOUV)

5.1.Methodology to Establish Outstanding Universal Values

The outstanding universal values of the pre-historic site of Melka-Kunture is established on the basis of field observations on the archaeological remains and associated bones (animals and hominids) and their context, integrity/ authenticity, and observations of the open air museums and the collections. Furthermore, the series of consecutive consultative meetings and interviews undertaken with the stakeholders in general and the local communities in particular are also tools to establish the outstanding universal values of the site. The nomination file of Melka-Kunture is also used as a main reference for establishing the outstanding universal values of the same. Furthermore, the Convention Concerning the Protection of Cultural and Natural Heritages and its Operational Guidelines, UNESCO manuals for preparation of Nomination files, Managing Cultural and Natural Heritages are used as a secondary source to establish the outstanding universal values of the pre-historic site of Melka-Kunture.

5.2.Criteria and Justification for the Outstanding Universal Values

The site of Melka-Kunture has outstanding universal values as it qualifies four criteria of the World Heritage Property, condition of integrity, authenticity and the requirements for protection and management as justified in the following series of paragraphs.

The site of Melka-Kunture fulfills criterion (iii) *"bearing a unique or at least an exceptional testimony to a cultural tradition or to a civilization which is still living or disappeared"*: It preserves evidence of long-lasting stone tool making traditions by early humans, such as *Homo erectus* and *Homo sapiens* that adapted themselves to then environment by employing various strategies of raw material procurements, selections and making tools of different sizes and shapes beginning from 1.8 million years up to historic times. It also exhibits an archaeological evidence how the early humans exploited obsidians and locally available volcanic rocks by knapping them to prepare implements and lithic tools.

The earliest stone working traditions which are known as in the archaeological literature as Early and Middle and Late Stone Age tools are well preserved in the stratified sediments of Melka-Kunture since the last 1.8 million years up to about the last 10,000 years.

The second criterion that the site of Melka-Kunture qualifies is criterion (iv) *"be an outstanding example of a type of building, architectural or technological ensemble or*

landscape which illustrates (a) significant stage (s) in human history": The same site is a repository and archive of well preserved fragments of landscapes of the Pleistocene epoch including archaeological remains, evidence of environmental history and the life style of the pre-historic groups. Moreover, evidence of the development of a unique landscape is preserved at the locality of the Balchit dating from pre-historic times up to the present. Such a landscape consists of an obsidian dome-flow stretching over thousands of square meters that was cut by erosion allowing hominins to knap the volcanic glass and produce tools from prehistoric times to the present and by accumulations of obsidian by-products over the landscape.

The same site also fulfils criterion (v) -*"to be an outstanding example of a traditional human settlement, land use or sea use which is a representative of a culture (or cultures) or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change"*: The same site is a repository for an evidence of the systematic use of land or exploitation of selected types of resources known as obsidian and volcanic rocks/lava by the early hominids represented by *Homo erectus* and *Homo sapiens* at least dating from about 1.8 million years ago. Melka-Kunture is probably the only known example in the world for preserving uninterrupted extensive use of obsidian as a raw material for the production of tools from the Oldowan to the Acheulean and for the later stone tool technologies of the subsequent periods. It also preserves an earliest evidence for the systematic utilization of volcanic glass dating to 1.8 million years ago.

The prehistoric site of Melka-Kunture also qualifies criterion (viii) *"be an outstanding examples representing a major stages of earth's history, including the records of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features"*: The landscape of the site of Melka-Kunture preserves of fossil evidence that shows an evolutionary history of fauna and flora of the Ethiopian highlands. The sedimentary deposits of the Pleistocene landscape of the site of Melka-Kunture preserve an evidence of surviving animals and extinct species including hominids and associated biological developments. Evidence of extinct animals, such as an equid of three–toed genus hipparion that existed in about 0.8 million years ago is preserved in the same site. It is, thus, one of the few sites in the world that preserves evidence of bio-geographic distinction. Furthermore, pollen fossil evidence that help us to reconstruct the vegetation types that existed at the highland of the region at about 1.8 million years ago is

also preserved in the same site. It also provides the earliest evidence for human occupation of the highland.

5.3. Environmental Values

The geology of Melka-Kunture preserves volcanic tuffs that have scientific values to determine the chronology of cultural horizons of Pleistocene age. The geology of the site preserves fragments of buried ancient landscapes that consist of stone tools, hominid, animal and plant fossil remains. Furthermore, the geology provides rich resources such as volcanic rocks and obsidian that were used by ancient hominins for the preparation of stone tools dating from at least 1.8 million years up to historic times. Thus, the geology of Melka-Kunture has a rich potential for future multidisciplinary research.

The Awash River which is used currently for drinking domestic animals regulates the temperature of the pre-historic site and keeps green the various trees including acacia trees (*Acacia abyssinica*) grown in the core zone of the site. The river is also very attractive for visitors, particularly the gorge to its southwest. It can also serve for ferry transportation and fishing provided that it is kept clean from industrial pollution coming from the town of Sebeta. The soil in the site is very fertile and is conducive for the growth of various crops including *teff* (*Eragrostis tef*), the staple crop in Ethiopia.

5.4. Economic Values

The local communities are getting economic benefits from international and local visitors who visit the different localities and the open air museum. Some are employed as daily laborers, guides, guards by researchers who carry out multidisciplinary researches at the different localities of the same site. Thus, the site has a huge potential to attract visitors who will bring additional benefit to the local communities. The town of Awash Melka is also beneficiary in the tourist flow of the site. There is also a great potential in attracting services.

5.5. Historical Values

The site of Melka-Kunture has an outstanding universal value from historical point of view as it has yielded evidence that shows the historical development of humankind from 1.8 million years ago up to modern times and has a big potential for future research to reveal additional information about human history

5.6. Archaeological Values

The outstanding universal values of Melka-Kunture can be understood from the archaeological point of view as it is the only site in the world for yielding archaeological evidence for the four successive phases of stone tool technological traditions known as the Odowan, Acheulean and the Middle Stone Age and Late Stone Age from at least 1.8.million years ago up to historic times. The site has also a big potential for future archaeological research as excavations in most of the localities have not been completed yet.

Furthermore, it is currently the only site available for research at more than 2000masl. This allows recording human evolution in an environment which is markedly different from the dry and hot savannas which all over the Pleistocene developed at lower elevation. The limits of hominin adaptability during Pleistocene times can only be evidenced at this site.

5.7. Place Value

The name Melka-Kunture itself has two significant values. The first one is historical one. The word Melka in the local language is a gate-way (it may also be understood as ford or pathway). It was a gate-way from north to the south or a bridge that connected the people from north of the Awash River (Oromos) with those of the south (the Gurage) as the water is too shallow in its upper course and easy to cross. The area connects the South Gurage land with central part of the country.

The second place value is related with thanks giving to God and a center of congregation during epiphany. In ancient times, people used to collect water through their hands from the river and sprinkle around to thank their God wishing His help when they crossed the same. Thanks giving ritual ceremonies are still taking place at Melka-Kunture every year during the month of June that indicates how important the place value of Melka-Kunture is by the local communities.

5.8. Social Value

The site became a centre of multidisciplinary research since its discovery in 1965 whereby different scholars from Europe have been carrying out researches in archaeology, geology and paleontology up to the present. The site has become one of the most favored or frequented training centre for Archaeology, Heritage Management and Tourism students of the Ethiopian universities and universities from abroad come to Melka Kunture. The local peoples have also developed sense of pride and identity since the discovery of the site and a

shared understanding that the cultural heritages at Melka-Kunture belong to their ancestors and believe that they have historical obligation to protect the same site.

5.9. Condition of Integrity

The integrity of the outstanding universal values of the prehistoric site of Melka-Kunture is maintained or is found in good condition with minimum cultural and natural threats. Almost all the localities at Melka-Kunture have an intact geological history and contextual integrity that guarantee the protection of the outstanding universal values of the same site. It preserves undisturbed stratified volcanic ashes that help scientists to determine the chronology of the different activities of prehistoric communities. It also has undisturbed prehistoric evidence that consists of buried multiple fragments of Pleistocene paleo-landscape and sedimentary deposits that consists of series of multiple cultural horizons that help us to understand the surviving and extinct wild animals, hominids as well as cultural and botanical evolution. Archaeological remains that help us to document the environment of pre-historic times and the life style of ancient hominins are found *in situ*. The archaeological materials documented from the same site were buried after they were left at the site by early humans enabling archaeologists to infer the behavior of ancient hominins.

5.10. Condition of Authenticity

Authenticity of the different prehistoric localities of Melka-Kunture are maintained due to minimum erosion as most of the archaeological sites are covered by trees and grasses and as a result of minimum human intervention within most of the nominated property of the same site. Furthermore, most of the nominated property of the prehistoric sites of the same site is fenced by barbed wires to protect human activities including farming, grazing, quarrying and cutting plants to keep the authenticity of the prehistoric evidence. The excavated and exposed areas at Gombore which covers about 24 square meters are protected with a traditional thatched roof structure to preserve and keep the authenticity of the exposed archaeological and paleontological remains that are exhibited in the same open air museum.

5.11. Requirements for Protection and Management Systems

The pre-historic site of Melka-Kunture is protected by the 1994 Constitution of the Federal Democratic Republic of Ethiopia that guarantee for the preservation of all Cultural Heritages of this country. It is also protected by the Ethiopian Cultural Policy of 1997 which declares that cultural heritages of the Nations, Nationalities and Peoples of Ethiopia shall be protected and transmitted to the coming generations by the government and the public. Furthermore,

the same site is protected by the Proclamation No.209/2000 entitled as Proclamation for Research and Conservation of Cultural Heritage that declares that archaeological and paleontological sites are owned, managed and are protected by the government and the public. It is also protected by Proclamation No.839/2014, Proclamation to provide for the Classification of Cultural Heritages into National and Regional Cultural Heritages that gives power and duties to the Federal government to manage Federal and World heritage Sites. The same site is protected by the Protection Law of the Oromia National Regional State of No. 159/2013 that established a Management Committee consisting of several stakeholders including local authorities and public representatives.

The Authority for Research and Conservation of Cultural Heritage and the Oromia Culture and Tourism Bureau at Federal and regional levels are legally authorized to manage the site. The Oromia Culture and Tourism Bureau hired a site manager who is currently working actively with the local communities and other stakeholders to protect and to manage the site. This Management Plan together with the aforementioned legislations and the directives of the Protection Law to be issued in the future is hoped to prolong the authenticity and integrity of the outstanding universal values of the pre-historic site of Melka-Kunture.

5.12. Long Term Expectation

The site of Melka-Kunture requires adequate budget to empower the local community, to hire trained professionals in Archaeology, Heritage Management, Tourism, and in Museum Studies. It also requires regulation and directive that prohibit and restrict human activities from the nominated property and its buffer zones to ensure the long term protection of the outstanding universal values of the site.

6. Site Assessment and Analysis of Key Issues

In order to protect the serial property of Melka Kunture and Balchit Archaeological and Paleontological Site and to ensure its effective management, initially it became necessary to identify the present situation together with related emerging problems in the site. It is also required to make new strategies and objectives, on the basis the findings to ensure the effective preservation of this globally important site.

The methodology adopted for this overview is the **SWOT** analysis (Strengths, Weaknesses, Opportunities and Threats). The analysis reviews and examines the main advantages and disadvantages of the state of the property based on four categories mentioned above and present the result divided into available major key issues. The Outcome of the **SWOT** analysis is included in the form of the table below.

With reference of the **SWOT** analysis below the "strength" highlights what the area has to offer and hence all those assets and elements constitutes to the tangible and intangible heritage of the area under examination. The "weaknesses" are based on what is lacking in the area under consideration. The "opportunities" are the possible future advantages that aim to protect, preserve, enhance and transit the values of the site to future generation. While the "threats" are those factors that may have adverse consequences on the overall strategy site management and protection.

Each aspect related to site management, Site Protection and Conservation, Development Pressures, Demographic Pressure, Tourism Management & Development and Community Empowerment and Benefit will be presented below with clarification of the existing Strengths, Weaknesses, Opportunities and Threats. These elements will provide the baseline reference for the identification and development of key issues, strategies, aims and actions at the end of the management plan document.

The objective of the **SWOT** analysis is to examine and summarize all the data analyses carried out so far and classify them into an indicative synopsis of the state of conservation of the property and to obtain a systematic instrument that provides a comprehensive picture of the current situation of the site which guides the overall strategies, aims and actions of the plan.

Table 2

Key management issues affecting the whole management process of the Heritage Site through Situational and SWOT Analyses

6. 1. Site Protection and Conservation

Issues	Strengths	Weakness	Opportunities	Threats
Management	• Establishment of the office for the administration and preservation of the site. • Assignment of staff for the protection and maintenance of the site	• Lack of clear delineation of the core and buffer zone • Limited budget and staff • Lack of monitoring and evaluation • Lack of clear division of tasks and formal coordination among various management players • Lack of signage of the site	• Development of the management plan • Rich archaeological potential for research • Government ownership of the heritage site (land)	• Developmental pressure • Economic pressure • Illicit trafficking of artifacts •
Conservation	• The issuance of Regulation No. 159/2013 • Support by the federal and regional state authorities of the importance of the cultural and scientific values of the site • The establishment of museum and repository rooms housing archaeological finds from the site	• Lack of maintenance of the site and limited local institutional capacity • Lack of coordination and cooperation among the different stakeholders in the conservation of the site • Lack of conservation policy and strategy • Lack of impact assessment	• The federal and regional government commitments for the conservation and development of the site for tourism • The existence of legal framework for the protection of the site • Extensive research and documentation of the site • The scientific monitoring of erosion both by distance-imaging detection and in situ. This scientific effort is unparalleled elsewhere in Africa.	• Population growth • waste disposal by the inhabitant and visitors • Urban encroachment and inappropriate development • Land degradation in Bachit Site • Unplanned development and related potential impact • Lack of interest among the law enforcement bodies

6.2. Development Pressures

Issues	Strength	Weakness	Opportunity	Threat
• **Developmental Pressures**	• The existence of open air archaeological site • Expansion of infrastructure and other development activities • Easing access and an end to the isolation of the site • Expansion of tourism related facilities • Development of facilities with modern amenities in the area • Increased exposure of the local people about the value of the site due to increased contact with researchers, scholars and officials	• Lack of coordination between different development plans • Lack of adequate staffs to monitor the effect of development on the site • Lack of trained personnel • Administration structure that does not allow independent decision making • Lack of clear marker identifying the archaeological sites outside the fenced area • Lack of modern facilities	• Unique position of the site in terms of closeness to Addis Ababa and potential accessibility for local and international tourism • Potential increase in attention given to site by federal and regional authorities	• Increase in developing activities putting strain on the site • Presence of horticulture plantations near to the core zone of Gombore Site • Presence of Quarry mining near to the core areas of Kella and Simbiro Sites • Presence of cereal crop production near the core areas of Kella, Balchit,Wofi,and Simbiro, sites

6.3**. Demographic Pressure**

Issues	Strengths	Weakness	Opportunities	Threats
• **Demographic Pressure on the Site**	• There is no visible strength in demographic pressure	• Population growth in the area resulting in encroachment of the site especially outside of the fenced area • Waste disposal	• Diversification and expansion of economic activities • Expansion of infrastructure and modern facilities • Increase capacity of the local administration to mobilize human and natural resources • Support of Federal and Regional governments to the site	• Increase human activities putting pressure on the site • Expansion of the urbanization • Presence of cemetery near the core zone of Kella Site

6.4. Tourism Management & Development

Issues	Strengths	Weakness	Opportunities	Threats
Site interpretation and presentation	• Strong interest of scholars in the archaeology of the site • Promotion of the site by national and international researchers	• Lack of standardized site interpretation based on facts and evidences • Poor presentation and interpretation of the site • Failure to update the interpretation panels, captions	• Availability of information from previous research works	• No threat in site interpretation and presentation
Visitors Management & Development	• The establishment of the regional office for the administration and preservation dedicated for the promotion and tourism development of the site • The employment of staff at the regional office for the administration and preservation • The Regulation No. 159/2013 gives legal ground for the office to promote the site as tourism destination • Support by the federal and regional state authorities of the importance of the site as tourist destination. • The establishment of visitor centers (ticket office, information center, video room) and museum • Afforestation of the fenced zone of the site with indigenous tree creating a sense of a park • Brochures of the site being prepared. • The establishment of museum and repository rooms housing archaeological finds from the site	• The guides at the site have no proper training and lack expertise and • language skill to give adequate interpretation to visitors • Lack of printed materials .	• Location of the site, on the main path of the Southern Ethiopia tourist circuit. • Its proximity to the capital, as market generator to the site • Offers itself for a possibility to be combined with nearby notable tourist attractions, like Tiya and Adadi Mariam • Interest of international scholars for the scientific value of the site • Strong interest of tour operators to promote the site • Peacefulness and good security	• Limited room of expansion for development of new tourism Product • Absence of standard hotels and other service provisions • Lack of water supply in general and pure water supply in particular

6.5 Community Empowerment and Benefit

Issues	Strengths	Weakness	Opportunities	Threats
Community Empowerment and Benefit	• Strong sense of community of the local inhabitants • Awareness of the value of the site among the local people. • Understanding among the regional and federal authorities and international donors of the value and benefit to the local community for the sustainable development of the site	• Lack of empowering locals communities benefiting from the site • Inability of the site to generate income to the community	• Importance of site in terms of cultural and scientific values • The positive attitude and support of the community for the site • The existence of donors with strong interest to support the site • The existence of partner willing to support and finance to promote and protect of the site • Strong governmental support both at federal and regional level for the development of the site	• Inadequate income of local community

7. Management Responsibilities and Structural Arrangements

7.1. Management responsibilities

According to the Oromia National Regional State Constitution No. 46/2001, the regional government is empowered with the overall responsibility and mandate for the management of the Melka Kunture and Balchit Archaeological and Paleontological Site) and its resources. This Constitution underlines the question of ownership and the need to conserve cultural and natural heritages found in its region. In view of this, Articles 39/1 and 71 of the same constitution declares that the National Regional State shall ensure the conservation of natural and cultural heritages of the same. Consequently, the OCTB based on the 2001 Constitution of the National Regional State is granted the right to safeguard conserve and promote the site of Melka-Kunture. Accordingly, the Oromia National Regional State has undertaken various managerial measures on the site in collaboration with the Federal Government (FDRE).

As the site is a potential candidate to be listed in the World Heritage list and for the sake of its effective and efficient management, there should be a new form of share of responsibility arrangement between ARCCH and the OCTB. This new arrangement shall involve a management collaboration and delegation between the two principal partners. Although, the OCTB shall be the principal organ to take care the management of the site, the question of ownership calls a collaborative and co-management strategy that enables both partners to be involved in the conserving and protecting the site with clearly defined role.

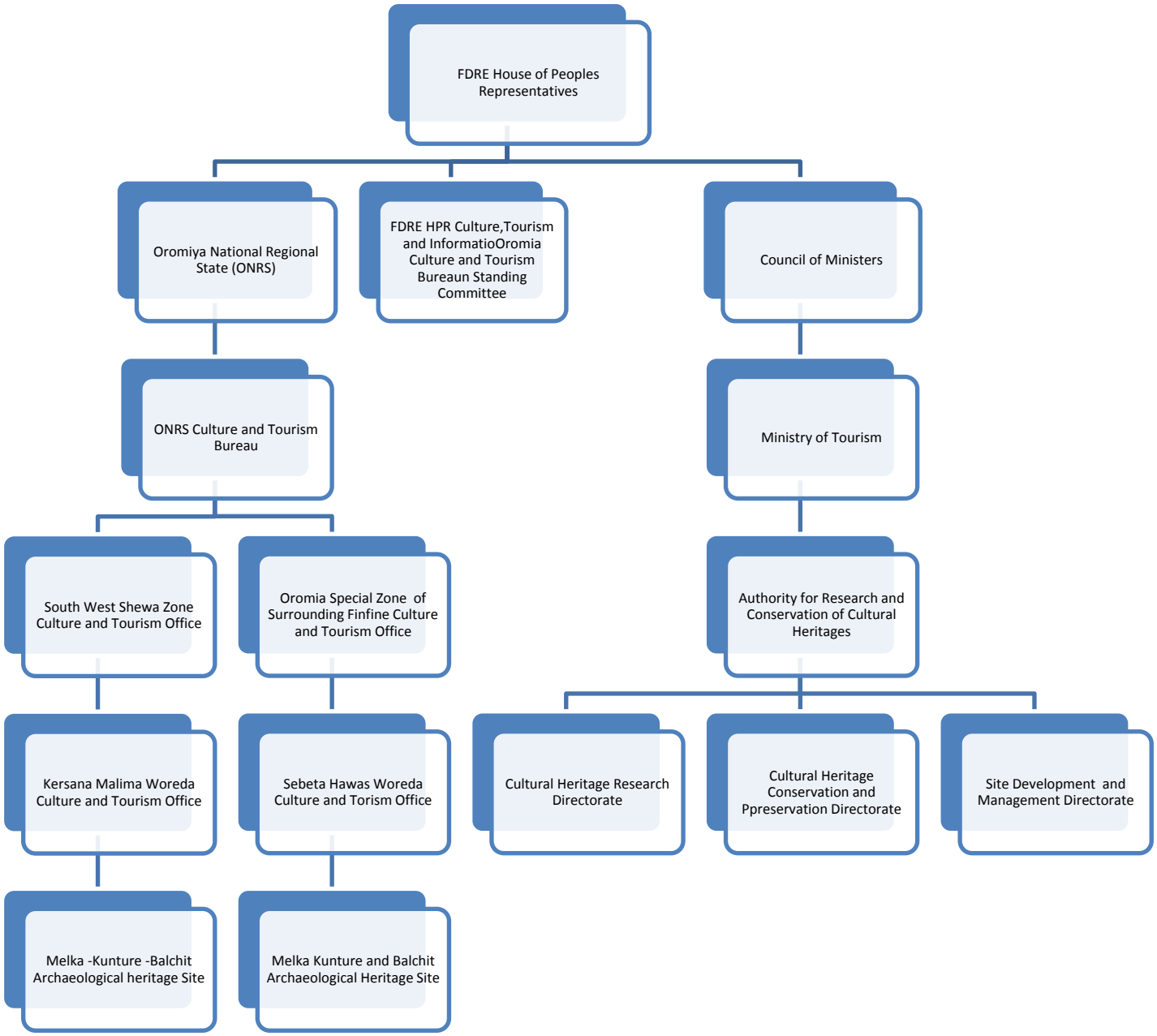
The local unit of the Oromia Cultural and Tourism Bureau, the office of the site manager is suggested to be in charge of the direct management and administration at the field level. The site manager will operate and direct the site under the direction and supervision of the OCTB. The site manager should normally report to the Awash- Melka *Woreda* Culture and Tourism Office which, in turn, is expected to report to the OCTB. The site manager has the overall responsibility for the day to day management of the MPA'S resources, for the implementation of management programs, plans and prescriptions. The site managers is also responsible for ensuring and regularly monitor, the application of existing regulations and laws, and should report any violations to police and judiciary authorities for appropriate actions.

The OCTB in general and the Awash- Melka *Woreda* Culture and Tourism Office in particular shall not be the only authorities with responsibilities over the area, as responsibility for specific issues, features and resources will continue to be vested in other authorities, according to the Constitution of the FDRE. For example, several factors originating outside of the MPA boundaries can potentially affect the site's resources. Strong coordination with, or/and direct involvement by the site manager, the other government agencies and local administrative authorities with responsibilities over the resources of the area will be therefore necessary for several management issues. In fact, the site manager shall make constant efforts to assume a coordinating role in this respect, while also ensuring that actions and policies adopted by any other agencies comply with the protected area regulations and existing legislations.

7.2. Administrative Structure

The site is managed by Oromia Culture and Tourism Bureau through its structure at site level in cooperation with the Heritage Management Committee (the Heritage Committee will consist of different stakeholders) and administrators of Sebet Hawas and Kersa Malima districts. Site administration office and the management committee are responsible to OCTB.

Heritage Management Structure



8. Implementation Modalities of the Plan

Melka Kunture and Balchit Archaeological and Paleontological Site, on top of its scientific values, is endowed with natural attractions and historical properties. With regard to natural attractions, the site is the home of endemic birds, small mammals and different types of plants and animals. In this regard, the fascinating gorges, beautiful banks of River Awash and associated caves are among the few natural resources, to mention a few.

The Melka Kunture and Balchit Archaeological and Paleontological Site has been transformed into natural and archeological park where archeological excavations go hand in hand with environmental protection and conservation.

Implementing the management plan of such a site with enormous values demand the involvement of different bodies at all levels i.e. from a local to an international, from an individual to a corporate. Various institutions working on culture and the tourism sectors are, above all, important stakeholders. Thus, the mechanism for the implementation of the plan is designed in a way that enables concerned bodies to play their expected roles.

8.1.The Role of Different Parties in Implementing the Management Plan

Major Stakeholders/Parties

Table 3

Name of stakeholders	Roles
Ministry of Tourism (MoCT)	- Deal with policy matters - Provide support - Undertake solicit support for major stakeholders at home and abroad - Promote the site - Build the capacity of human power in the site
Authority for Research and Conservation of Cultural Heritage (ARCCH)	- Provide support - Give training - Give research permit - Monitor the site and its development. - promote of the site
Oromia Culture and Tourism Bureau (OCTB)	- Follow up the activities of the site administration regarding the preservation, promotion and overall development of the heritage site. - Take actions against any illegal activities associated with the site. - Facilitate conditions for compensation in case settlers have to move out of heritage sites

	- Follow up and control development activities that may negatively affect the conservation and development of the site - Follow up movements of tourists - Allocate budget and human power - Prepare and implement development and conservation plans for the sustainable of the site. - Monitor, evaluate and report relevant activities that should enhance the site's overall development.
Oromia Tourism Commision (OTC)	- Promote the site - Provide support - Give constructive comments on the preservation, conservation and promotion of the site for the common good. - Monitor, evaluate and report relevant activities that should enhance the site's overall development.
Office of Site Administration (Melka Kunture-Balchet)	- Follow up and control the administration, conservation, development of the available heritage resources. - Coordinate public participation and facilitate conditions for the participation of local community in the protection and development of the site. - Give awareness and facilitate conditions to make the community beneficiary from the site - Collect and keep all relevant data pertinent to the site. - Collect income with legal receipts - Organize welcoming and reception procedures focusing on the interest of the customer/s. - Control illegal activities in the heritage site and its buffer Zone. - With the participation and approval of the community, prepare plans regarding conservation and management issues that should be approved by the OCTB.
The Heritage Management Committee	- Give feedback and recommendations regarding conservation and development works which can be undertaken in and around the site. - Work in collaboration with the concerned administration office/s. - Create and facilitate conditions for participation of the local community with a sense of ownership in the conservation and protection of the site. - Appraise execution and plan of the administration office/s, give feedback and recommendations and undertake amendment of the plan when it is deemed to be appropriate and follow up its implementation

Zone and District offices of Culture and Tourism	- Support the tasks of the site administration office in relation to the overall management development of the site. - Serve as a channel/bridge between the site administration and other government institutions from district to zonal levels.
Peasant Associations	- Participate in protection and conservation of the site. - Engage in the monitoring and development activities of the site.
Office of Rural Land Administration And Environmental Protection	- Protect the archeological landscape and natural properties within the buffer and core areas of the site. - Inspect and control pollution in and around the site. - Create community awareness on the protection of the plants and useful wild animals in and around the site through organizing and providing workshops and seminars.
Office of Water, Mining and Energy	- Prohibit illegal quarry and sand collection that have an adverse effect on the site. - Provide support to any activities against the pollution of the Awash River which can negatively affect the conservation and development of the site and its resources.
Office of Micro and Small Scale Enterprises	- Organize and train youths to be aware of the significance of the site and benefit them by engaging in traditional craft production that can be consumed by tourists, guiding services, food preparation, and some other activities that satisfy tourists.
Oromia Forest and Wildlife Protection	- Give advice on the management of birds, plants and wild animals that are found within the heritage site in particular and the surrounding environment in general.
Higher Education Institutions and Schools	- Use the site for field school, as educational and research center. - Give constructive and educative comments on the preservation, conservation and promotion of the site for the common good. - Promoting the site
Tour Operators and Guide	- Bring Tourists to the site - Promote the site for mutual benefit
Researchers	- Conduct research on the site and contribute to the development of the site. - Contribute for interpretation and presentation of the site - Provide technical and material support

8.2. Monitoring

A regular monitoring shall be done by different parties at different level annually, biannually, quarterly, monthly and on daily basis as needed.

The monitoring activities focus on:

- Natural impacts on the site, such as erosion
- Environmental pollution (Pollution on the River Awash and its tributaries)
- Encroachment on sand quarrying .
- The status of birds', wild animals' and plants' life in the quarrying area
- Visitors' pressure

Level of Monitoring

- Grassroots Level (Peasant Association)

Being aware of the importance of the site, there have been active participations of the local community. In most cases, it is possible to say that every active individual is a guardian of the site. However, illegal activities and encroachment on the site should be reported immediately by every individual to the chairman of Peasant Association who shall also be a member of the Heritage Management Committee. So far, there have been several reports to the police made by some individuals. There have been occasions where the peasant associations caught encroachers and present them to police. At this level, monitoring shall be conducted as needed even in daily basis and there shall be daily information exchange between the site administration office and the peasant association.

Site Administration and District Level Monitoring

The regular monitoring by the site administration at the district level shall be undertaken biannually or sometimes as needed. At this level, under the umbrella of the Heritage Management Committee, there shall be a multi sectorial involvement in the monitoring process i.e. Offices of Culture and Tourism, Environmental Protection, District administrator and etc. (See regulation No. 159/2013 issued to preserve (conserve) Melka-Balchit)

Monitoring at OCTB and ARCCH levels

Both institutions shall send their experts in quarterly basis or when it is deemed to be necessary for monitoring. On the other hand, there is regular annual monitoring by Italian Archaeological Mission on the major archeological sites. Specific site measurements and photographs are recommended to conduct a comparative analysis to see if there are any changes that negatively affect the site. The sites are measured, photographed, and compared to see if there are any changes. Then, the changes shall be reported to the OCTB for appropriate intervention to mitigate the problems (if there are any). In general, every structure that involves in the monitoring activities shall be reported to the respective higher authorities for appropriate measures.

8.3. Evaluation and Report

Evaluation on overall activities and status of the site shall be carried out periodically.

Evaluation and Reporting at site Level

The OCTB has already mandated the site administration office to follow up the overall management issues at site level. At the site level, there have been one site manager, three experts and five guardians. All of them are responsible to evaluate their performances weekly and monthly and report to the OCTB.

District and Zonal Level Monitoring

The OCTB offices at the district and zonal levels are recommended to evaluate the management performances of the site and report to the respective authorities quarterly.

Evaluation by the Heritage Management Committee

The committee shall consist of different stakeholders including civic organizations and be chaired by the concerned zone administrator. Undertaking timely evaluation at this level is highly recommended for the safeguarding and sustainable use of the site. To this end, the Management Committee shall have a biannual meeting to conduct appraisal of the activities performed by the different parties and be reported to the OCTB and the Zone Administration Office.

Monitoring at the OCTB level

A biannual evaluation meeting shall be organized by the OCTB. This meeting shall also be attended by representatives of all concerned stakeholders of different levels. In addition, the meeting is also recommended to come up with comments and new ideas for the protection and promotion of the site. The OCTB, in turn, should report to the Council of Oromia National Regional Government, and send copies of the report to the ARCCH and the Ministry of Culture and Tourism. There shall also be a periodic job appraisal meeting with the ARCCH and the Oromia Culture and Tourism Bureau regarding the status of the site.

Tripartite Evaluation (ARCCH, OCTB, Italian Archeological Mission at Melka and Balchit)

There has been an annual consultative and evaluative meeting on the conservation and protection of the site. This trend shall continue as per the interest of the state. Here the magnitude at which the implementation of the regulation issued to protect the site shall be the focus of the discussion.

8.4. Financial Sources

It has an annual operating budget for the implementation of the Action Plan, in the framework of a participatory management policy integrating the different partners, and a capital budget for the realization of major development projects and infrastructures.

The site has already had two types of funds, the Budget allocated by the government and the internal funds. The required fund shall be proposed by the site administrator and be submitted to OCTB annually for the assessment, approval and allocation of budget. The internal fund which is obtained from visitors and sales of hand books shall be reinvested for some essential activities pertinent to the development of the site. Since the budget allocated by the OCTB can often be inadequate to fulfill the needs and missions of the site, the Oromia National Regional Government and Federal Government are required to find more funds for the site.

In the coming five years the site's manager and the OCTB should also plan to get sustainable finical sources by collaborating with the prime tourist industry stakeholders, like accommodation and tour companies in order to achieve the sustainable development of the site by fulfilling the needed skilled human power.

8.5.Communications, Dissemination and Outreach Services

8.5.1. Communications:

The ARCCH and the OCTB should work to reach the stakeholders and partners by using all means of communication at hand i.e. public conferences, workshops, Electronic and some other media tools.

8.5.2. Dissemination:

The results of the past fifty years' research at Melka-Balchit have been disseminated to the scientific community following standard procedures through participation on international conferences. There have been about hundred scientific papers. In order to reach the scientific community in particular and the wider public in general the information deemed to be appropriate shall be disseminated through a website. At site level, as already started, guide books and brochures should continue to be prepared in English, French and Amharic and Oromo languages to easily communicate and satisfy the stakeholders.

8.5.3. Other facilities and services

There are four Tukuls /Museum for exhibition

- African pre history
- Geology and Volcanology
- Paleontology
- Prehistory of Melka Kunture-Balchit and there is also the open air museum at Gombore II

There are also a well protected and secured camping site, local style basic toilet, and Ticket and administration office.

So far, there have not been appropriate facilities for visitors, such us restaurants, lodges and etc. To overcome these problems, the OCTB shall consider the problems and include them in its five years tourism development plan 2022-2027. Thus, most of the important visitors' facilities will be fulfilled in the near future. Indeed, currently, there is an ongoing construction of standard museum and public center near the main camp. Other facilities shall also be fulfilled by identifying appropriate sites and through community partnership.

9. Key Issues and Action Plans

a. Strategies and Objectives

In this section of the management plan objectives and strategies are set to address the identified key management issues. For each identified key management issues, the way forward in the form of action plan is recommended along the required budget/resources for each activity (see the action plan).

Four major key issues were identified for the serial property of Melka Kunture and Balchit Archaeological and Paleontological Site:

1. Conservation
2. Development and Demographic Pressure
3. Tourism Management and
4. Community empowerment

The management plan will thus address the four major issues stated above

b. Management Issues

Primary Objective I: Site Protection and Conservation

The serial property of Melka Kunture and Balchit Archaeological site is a property protected by Regulation No. 159/2013. This regulation issued by Oromia Regional State aims at establishing an administrative and Preservation Office as well demarcate the boundaries of the site. While the regulation and preservation office ensures the protection and conservation of the site, there are limitations. The limitations are the lack of directive and capacity on the part of the office to undertake conservation work as well as to enforce the regulation especially in the core zones outside the main fenced site and the buffer zone.

Regulation No. 159/2013 aimed at ensuring the protection and preservation of Melka Kunture Archaeological site. For the Preservation Office to implement the Regulation there must be directive that clearly defines the conservation policy and strategy. At present, there is no directive governing the conservation of the site, no procedures and/or rule and regulation for the Preservation Office to put into practice the Regulation with regards site protection and conservation. Because of the absence of directive there is a lack of coordination and cooperation

among the different stakeholders for the conservation of the site. While the Regulation identify the stakeholders which assist the tasks of the Preservation Office which are organized under a committee, it has difficulty getting continuous cooperation and establish accountabilities as the duties and responsibilities of each members of the committees are not well defined by law.

When we come to the human resource of the preservation Office, currently it has only four staff members composed of guards, guide and administrator. In addition to paucity of their number, they are not trained in the skill required to properly maintain and conserve the site. The budget that is allocated for the upkeep of the Office is also insufficient. Thus, the overall capacity of the Office to carry out the tasks stipulated by Regulation No. 159/2013 is very limited.

On the other hand, the area of the heritage property of both the core zones and the buffer zone are quiet extensive. Core zones outside the fenced site such as Balchit, Kela, Simbira, and Qere, are not protected. In fact, there are no markers that identify and delineate the location of the properties. The buffer zone as stipulated in the regulation is very wide covering several kilometers. Due to its wide coverage, it is facing both manmade and natural hazards.

Manmade hazards include expansion of settlements due to population increases and the town expansions towards the site are creating encroachments, intrusions and pollutions. Natural hazard includes increase erosion of the area of the sites as result of land degradation. With increased population, the area is witnessing intensification of farming and other development related activities. This has led to deforestation and clearing of trees and shrubs resulting to increased erosion. This has exposed and put in danger sites such as Balchit, Kela, Simbira, Qere sites to the above mentioned hazards. As stated above, the Office has no skilled manpower and resources to adequately carry out monitoring and regular maintenance of the sites.

The conservation is better in the sites within the fenced area. The fact that the site is protected by a fence reduces intrusion from manmade hazards. In addition, much of the fenced area is covered by indigenous trees reducing natural hazards such as erosion and land degradation. Nevertheless, even in the fenced area, the maintenance of the sites is not adequate. There is still danger of floods and potential erosion of the two open archaeological sites of Gombore II and Gombore II-Butchery sites.

Primary Objective II: Control Development and Demography Pressures

Awash Melka Town has expanded and is now advancing to the direction of the site as small holders farms are turned into urban settlements. While the site within the fenced area is relatively safe from human encroachment, other sites outside the fence such as Kela are in danger from settlement expansion. Also with population growth, there is problem of increased pollution of the area as result of unorganized waste disposal by the inhabitants in the vicinity of the site. This is specially the case of the market area of the town. Horticulture plantation is also expanding towards the site. These plantations produce a lot of waste and can easily damage the environment of the Pre-historic site of Melka Kunture.

The area has also experienced increased pollution from various industrial activities especially from upstream regions. At one point, the Awash River which flows next to the site was polluted by the industrial waste originating from tannery plants in the town of Sebeta, changing the color of the water into black, thus dubbed "Coca Cola" by the locals.

Another development related problem that has potentially direct adverse effect on the sites is the mining of sand. The area is rich with sand used for construction. As result of easy access for transport because of Sebeta-Butajira highway and proximity to major market such as Addis Ababa, sand mining activities has become an important economic activity for the area. This has led to the mushrooming of illegal sand mining in the buffer zone resulting in the destruction of actual and potential archaeological sites. The Preservation Office with its small number of staffs and mobile limited abilities as it has no vehicle could not stop the mining activities. The Office could not also get adequate support from other stakeholders such as the local police due to corruption.

Primary Objective III: Conduct Tourism Management and Development

Melka Kunture and Balchit Archaeological site is one the few archaeological sites in Ethiopia that has being developed as visitor and research center. The regional administration has established by law (Regulation No. 159/2013) an administration office for the preservation and promotion of the site. The main core site has been fenced, visitor interpretation center and facilities has been built, and staffs have been assigned.

Despite of the above mentioned efforts, as well proximity to Addis Ababa (50 km) and the great interest from national and international scholars of the scientific of value of the site, as visitor destination it has not been very successful. One important reason is that the site is still unknown to the vast majority of visitors as the promotional activities are limited. While brochure and guide book has been prepared, in adequate quantity are available as printed materials are not easily available. No markers and bill boards identifying the sites have been posted with the exception of one identifying the fenced area.

No attempts were made to establish contact with tour operators to include the site in the tour itineraries. The guides at the site have no proper training and have no proper expertise and language skill to give adequate interpretation to visitors. The interpretation panels, captions at the museums have not been developed in a way that interest the majorities of the visitors as they are too scientific not easily understandable to the common people. In addition, there are very limited number of hotels, restaurants and other service giving facilities that have standardized amenities in Awash Melka Town. Finally, if the site is found near the main road that passes from Addis Ababa to Butajira and then Arba Minch, all the localities of the site have no a well built vehicles road networks except Gombore which has a gravel road that served in all weather conditions.

Primary Objective IV: Empower the Local Community

There is a general awareness on the part of the community of the cultural and touristic values of the Melka Kunture Site. The local communities have for decades witnessed national and international scholars conducting research in the area as well as the development of the site and establishment of interpretive center. As result local pride for the heritage has been developed.

Nevertheless, the local people have benefited little from the site. Until recently there was no mechanism to involve and benefit the local people for the development of tourism based on Melka Kunture Archaeological site. The primary focus of visiting scholars and researchers were to visit and study prehistoric past of humanity with little practical link and relevance to the community.

c. Action Plan

The action plans of the management plan are designated to provide further details of activities to be accomplished as part of the overall strategy of the management arrangement. The action plan should facilitate understanding and involvement of both site managers and other stakeholders. Each action plan also clearly lays the roles and responsibilities of each implementing body and potential partners involved in the process. An action plan for the implementation of the management and conservation tools are presented in the form of table below.

Table 4
Action Plans (2022-2027)

Objective I/ Carryout Site Management, Protection and Conservation

Objectives	Initiatives	Imp. Period	Lead Institution	Partners	Priority
1. Prepare directives for conservation	• Establish World Heritage office	2022	OCTB	ARCCH	High
	• Develop directive governing the conservation of the site	2022	OCTB	ARCCH	High
	• Prepare conservation ethical guidelines	2023	OCTB	ARCCH OCSB	High
2. Design organizational structure	• Identify needs in human resources	2022	OCTB	OCSB ARCCH	High
	• Establish job description	2022	OCTB OCSB	ARCCH MKBMO	High
3. Develop Human capital	• Recruit staffs as per the designed organizational structure	2022 -2023	OCTB	ARCCH OCSB	High
	• Assign the recruited personnel to their respective positions	2022-2023	OCTB	ARCCH OCSB	High
4. Create awareness to the public	• Inform the community about the values of the site	2022 -2023	OCTB	ARCCH SHWA KMWA	High
	• Form monitoring committee to create accountability	2022	OCTB	ARCCH SHWA KMWA	High
5. Develop conservation plan	• Develop conservation plan for artifacts on the site and museum	2024	OCTB	ARCCH OUDHB	Medium
	• Purchase toolkits and materials for conservation	2022-2026	OCTB OHB	ARCCH NGOs	High

	• Train staffs in techniques of conservation	2022-2023	ARCCH HEI	OCTB	High
6. Protect Site's Outstanding Universal Value and Setting	• Plant indigenous trees along the bank of Awash River	2022- 2026	Local Community OEFCCA OAB MKAMO AMTM SHWA KMWA	OCTB OAB EWCA	Medium
	• Develop and implement strategy to preserve the immediate environs of the site	2024-2025	Local Community MKAMO OEFCCA AMTM SHWA KMWA	OCTB OAB EWCA	Medium
7. Protect and conserve heritage value of the site	• Develop supervising mechanism for the implementation of the management plan	2022 -2026	MKSMO MKSMC OCTB	ARCCH	High
	• Develop monitoring and evaluation plan to confirm the success of conservation programs	2022 -2026	MKSMO MKSMC OCTB	ARCCH	High
	• Equip Site Office staffs with vehicle/motorbikes to increase their mobility for supervision	2022- 2026	OCTB OFB ONRS OSZSF	ARCCH NGOs	Low

Objective II/ Control Development and Demography Pressures

Objectives	Activities	Imp. Period	Lead Institution	Partners	Priority
1. Prepare directive to regulate population and developmental pressures	• Develop directive to stop intrusion and effect of residential expansion to the nominated property	2022 -2026	OCTB OUDHB	AMTM OAB OMPI	High
	• Develop legal framework to regulate population encroachments and horticulture expansion to the nominated property (e.g. Kela site)	2022 -2026	OCTB	AMTM OAB OMPI	High
2. Evaluate and monitor Development Projects	• Carry out archaeological and environmental impact assessments	2022 -2026	OCTB OEFCCA HEI OEFCCA	ARCCH AMTM ONRSAB	High
	• Evaluate development proposals to identify potential threats	2022 -2024	OCTB OUPI	AMTM OAB	High
3. Create awareness and public engagements	• Inform officials and community about impact of development and population encroachments	2022 -2026	OCTB	ARCCH OAB	High
4. Control waste disposal	• Develop proper waste disposal mechanisms inside the core area of the site and its environs	2022 - 2026	OCTB OUDHB OHB	AMTM KMWHO SHWHO	High
	• Put waste containers, trashcans and wastebaskets in key areas in the site so as to organize the collection and disposal of wastes	2022	OCTB AMTM KMWHO ETO MKSMO	ETOA EWCA	High

	• Create rules and regulations to inform community and visitors not to dispose waste product	2022	OCTB AMTM KMWHO MKSMO	OSZSF	High
5. Control pollution from Industrial Waste	• Assess the impact of industrial pollution of the environment and Awash River	2022 -2026	OEFCCA OCTB OUDHB OTIB OSZSF SHWA	KMWA AMTM STM KMWHO Local community	High
	• Inform stakeholders about the threat of industrial pollution on the site and the locality	2022 -2026	OCTB OIDPA OEFCCA OSZSF SHWA	KMWA AMTM STM KMWHO Investors local community	High
	• Create a committee of stakeholders to mobilize & coordinate effort to reduce industrial pollutions	2022-2026	OCTB OIDPA OEFCCA OSZSF SHWA	KMWA AMTM STM KMWHO investors local community	High
6. Control Quarry Production near the core areas of the localities of the heritage site	• Assess the impact of the Quarry mining activities on the antiquities of the site	2022	OCTB ARCCH MKSMO	KMWA OSZSF AMTM	High
	• Notify the miners about the destruction effect of quarry mining on the well being of the antiquities and the heritage site	2022	MKSMO OCTB	KMWA OSZSF AMTM	High

	• Create a committee of stakeholders and security apparatus to stop any quarry mining activities within the core areas of the heritage site	2022	MKSMO OCTB	KMWA OSZSF AMTM	High
	• Formulate rule and regulations that put off the sand miners not mining sand within the core areas of the heritage site	2022	ONRS OCTB	Police and Security Forces	High

Objective III/ Conducting Tourism Management and Development

Objectives	Activities	Imp. Period	Lead Institution	Partners	Priority
1. Prepare promotional materials	• Developing and printing brochures, and postcards	2023-2025	ETOA MoT OTC	OCTB ARCCH IAM	High
	• Developing and produce Guide books in both hard and soft copies on the site	2022-2025	OCTB MoT OTC	ARCCH ETOA AAU IAM	High
	• Distribute and promote promotional materials through the medias and tour operators to the public	2022 -2025	OCTB ETOA MoT OTC	ARCCH	High
	• Develop and update website	2022-2025	OCTB OTC MoT	ARCCH ETOA AAU	High
	• Erect promotional sign boards	2022-2024	OCTB ARCCH OTC	ETOA MoT	High
	• Create links with tour/ travel operators and guides	2022-2024	OCTB OTC ETOA	ARCCH MCT	High

2. Upgrade visitors facilities	• Upgrade the clean water supply, toilet and walkway	2022-2023	OWMEB AMTM KMWA SHWA OSZSF	ONRSCTB ARCCH OTC ETOA MoT	High
	• Establish visitors center, cafeteria and souvenir shops	2022-2024	OCTB ARCCH OTC Local Community	ETOA MoT	High
	• Build conference hall	2022-2025	OCTB ARCCH ONRS	OTC ETOA MoT NGOs	Medium
	• Maintain visitor facilities	2022-2025	OCTB ARCCH ETO	ETOA MoCT	High
3. Reorganize the museum	• Upgrade and refurbish the museum with new showcases and other display materials	2022-2025	OCTB ARCCH	OTC ETOA MoT	High
	• Expand and modernize exhibition space as well as storage facilities	2020 -2024	OCTB ARCCH IAM	OTC ETOA MoT	High
	• Developing natural history museum as part of expansion	2020 -2024	OCTB ARCCH EWCA IAM	ETO ETOA MoT Ethiopia Gene Bank	High

	• Open Ethnographic section	2020-2023	OCTB ARCCH MoT	OTC ETOA AAU Archaeology and Heritage Management Department	High
	• Constructing car park for museum visitors	2022 -2024	OCTB ARCCH OTC OFB	ETOA MoT Ethiopia Gene Bank	High
4. Establish Field School	• Set up field school for researchers and students	2022 -2026	ARCCH AAU's Archaeology and Heritage Management Department	OCTB MoT IAM	High
	• Facilitate research activities at the site	2022 -2025	OCTB ARCCH AAU's Archaeology and Heritage Management Department	ETO IAM MoCT	High
5. Construct Road	• Construct and maintain road network from Awash Melka to Balchit and others	2020 -2025	ETO Local Community -ORA -AMTM	ONRSCTB ARCCH ETOA MoT ERA	High
6. Improve Site Facilities	• Maintenance of the open air museum	2022-2024	OCTB ARCCH	OTC ETOA MoT	High

	• Construct shelter to Gambore III	2022-2024	OCTB ARCCH IAM	OTC ETOA MoT	Middle

Objective IV/ Empower the Local Community

Objectives	Activities	Imp. Period	Lead Institution	Partners	Priority
1. Create Employment opportunity to the local communities	• Organize small scale enterprise	2022 -2025	OCTB OMSEDA	OTC ONRS	High
	• Train the local community in tourism and related activities	2022-2024	OCTB OTC OMSEDA	MoT	High
	• Encourage investors to establish eco-lodge and restaurants • Establish souvenir shops	2022 -2024	OCTB OMSEDA	OTC ONRS	High
	• Train the community to produce souvenirs	2022 -2025	OMSEDPA OSZSF AMTM	OCTB OTC KMWCTO	High
2. Create Partnership and market links	• Establish heritage committee	2022	OCTB OTC	OMSEDA ARCCH	High
	• Establish trekking, horse riding and boating activities	2023-2026	OTC ETOA Investors Local community	OCTB OMSEDA	Middle
	• Establish lodge and camping sites	2022-2025	OTC ETOA Investors Local community	OCTB OMSEDA	Middle

REFERENCES

1. Published

Birgitta Ringbeck. 2008. Management Plans for World Heritage Sites, A practical guide German Commission for UNESCO , Bonn.

Chavaillon J. and Berthelet A. 2004. "The Archaeological Sites of Melka Kunture". In Chavaillon J. and Piperno M. (eds.) *Studies on the Early Paleolithic site of Melka Kunture*, Instituto Italiano di Preistorica e Protostoria, Florence, 25-80.

Chavaillon J. and Piperno M. 2004. "History of excavations at Melka Kunture". In Chavaillon J. and Piperno M. (eds.) *Studies on the Early Paleolithic site of Melka Kunture*, Instituto Italiano di Preistorica e Protostoria, Florence, 3-24.

Gallotti, R., Pipperno, M. 2001. Recent activities of the Italian Archaeological Mission at Melka Kunture (Ethiopia): the open air Museum project and the GIS application to the study of the oldowan sites. In: Jorge Martinez Moreno, Rafael Mora Torcal and Ignacio de la Tore Sainz (eds.), *Oldowan: Rather more than smashing stones*, First Hominid Technology Workshop, Bellaterra, 37-75.

Gidey W., Aronson J.L. & Walter R.C. 1990. "Geology, geochronology, and rift basin development in the central sector of the Main Ethiopia Rift." *Geological Society of America Bulletin*, 102: 439-458.

Lucky Belder 2013. The legal protection of cultural heritage in international law And its implementation in Dutch Law

Makonnen A. 1983-1984. "The site of Wofi II (Melka-Kunture)", *Abbay*, Paris, 12: 33-47.

UNESCO 1972. The Convention concerning the protection of the World Cultural and Natural Heritage, UNESCO, Paris

UNESCO 2013. The Operational Guidelines for the Implementation of the World Heritage Convention, UNESCO, Paris.

Piperno M. 1999. The open-air Museum of the Early Palaeolithic site of Melka Kunture. *Culture in Sustainable Development. An Italian Strategy,* 34-36.

Proclamation No. 159/2013, Regulation Issued to Establish Administration and Preservation Office of Pre Historic sites of Melka Kunture and Blachi Heritage , Oromiya National Regional State, Megeleta Oromiya, March 11/ 2013, Finfine.

Salvini, R., Riccucci, S. and Francioni M. 2012. Topographic and geological mapping in the Pre-historic area of Melka Kunture (Ethiopia). *Journal of maps*, 8 (2), 169-175.

The Constitution of the Federal Democratic Republic of Ethiopia (Federal Negarit Gazeta, 1stYear, Proclamation number, 1/1995), Addis Ababa , Ethiopia.

2. Unpublished sources

Nigus Gitaw 2015. Techno-typological analysis of 'Developed Oldowan'/Early Acheulian Assemblages from Garba IV C and D, Melka Kunture (Upper Awash), Ethiopia, un published M.A thesis, Department of Archaeology and Heritage Management, Addis Ababa University.

3. Internet sources

- http//www. Melka Kunture, Pre-historic Site. A web page developed by Italian Research Mission at Melka Kunture.
- http//www.wikepedia.com.

Figure 10: Consultative meeting at Melka Kunture

Figure 11: Natural Scenery at Upper Awash River

Figure 12: Museum displays at the Melka Kunture Museum

Figure 13: In situ animal remains (Melka Kunture)