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4.1 Introduction

4.1.1 Geography

The Republic of Armenia (RA) is located in the South Caucasus region of Eurasia. It is a high-altitude, plateau-mountainous landlocked country and is the smallest of the three South Caucasus states in both land area and population. The regional and geographical context of the Project study area are shown in Figure 4.1.1 and Figure 4.1.2. Figure 4.1.3 illustrates the landscape which is typical of the study area within which the Project is located.

4.1.2 Social Context

The RA is a sovereign democratic social state governed by civil law. Situated along the Silk Road, it has experienced a number of cultural influences and empires. It is one of the earliest Christian civilisations, being the first country to adopt Christianity as the state religion with the first churches being constructed in the fourth century.

Armenia is a small country (29,800 km^2), with a population of 3.1 million, making it one of the most densely populated countries of the Former Soviet Union (FSU). Eastern Armenian territories became part of the Russian Empire in the early 19th Century. Following a short independence period from 1918 to 1920, Armenia became part of the Soviet Union. Armenia gained independence in 1991 after the collapse of the Soviet Union.

Armenia has good relations with Russia, Georgia and Iran. Relations between Armenia and Turkey remain strained following the massacre of over 1.5 million ethnic Armenians in the period 1915-1917, known as the Armenian Genocide[1].

With a per capita GDP of US$ 3,870 (GNI, 2013) Armenia is a classified as a lower middle income country[2]. The Armenian economy has undergone a major transformation since independence, achieving growth of over 13% prior to the financial crisis of 2008/9. The currency is the Armenia Dram (or AMD) and it is subdivided into 100 lumas. The May 2016 exchange rate was 1 US$ = 479 AMD or 1 € = 546 AMD.

[1] Armenian Genocide http://www.armenian-genocide.org/genocidefaq.html (accessed 14 May 2014)
[2] World Bank, (2012), Armenia Overview, accessible at: www.worldbank.org/en/country/armenia/overview (accessed 14 May 2014)

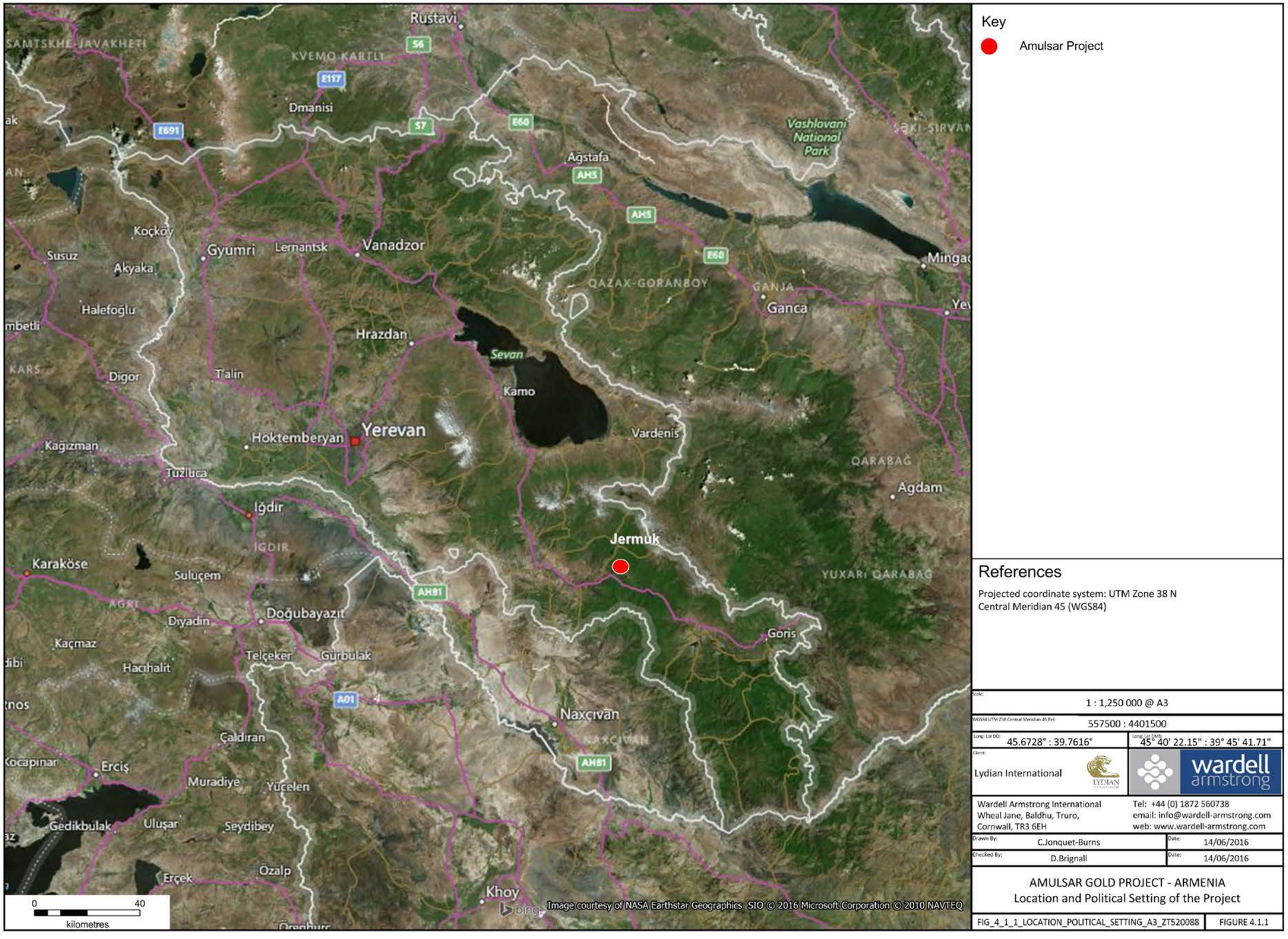

Figure 4.1.1: Location and Political Setting of the Project

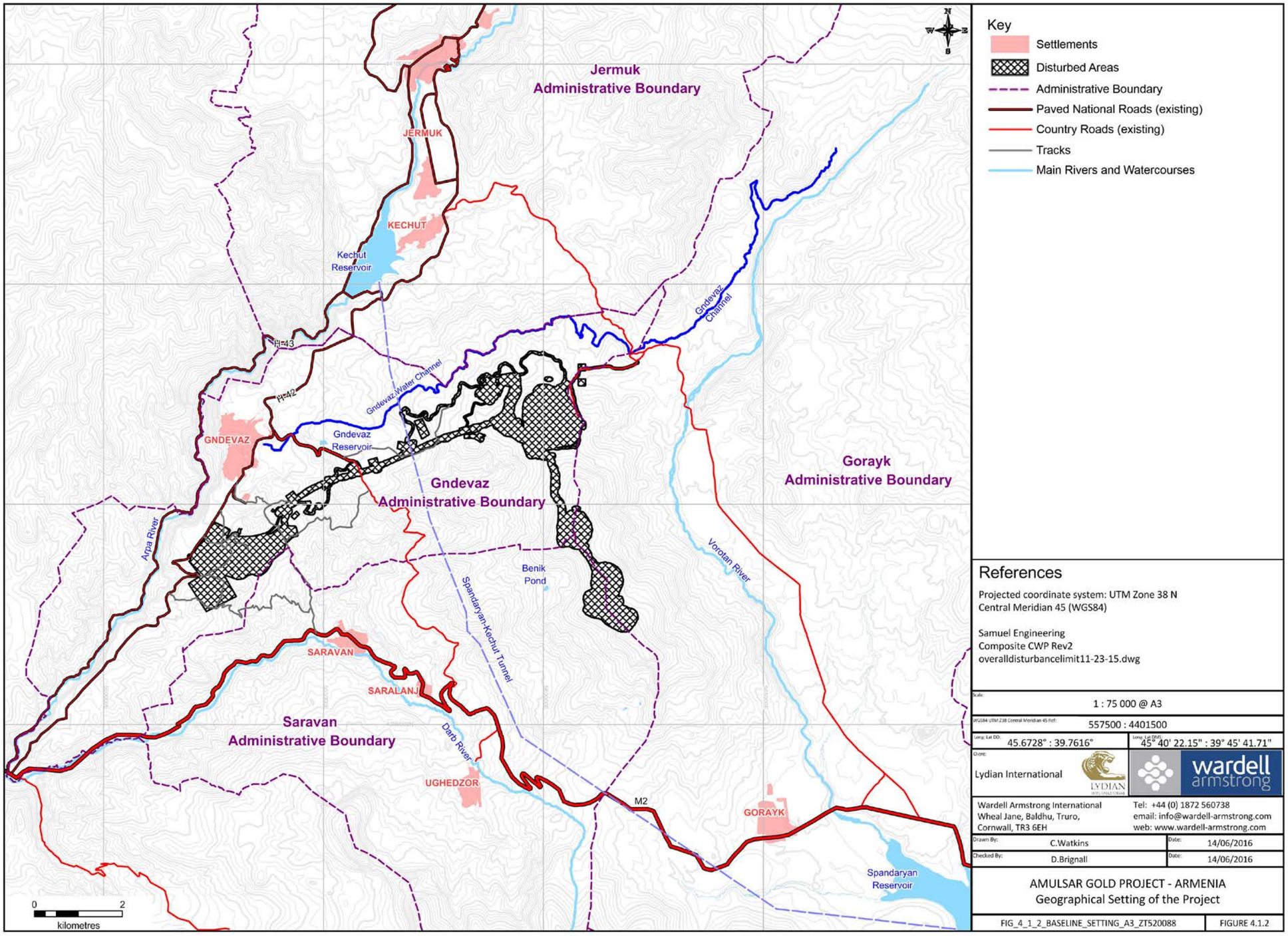

Figure 4.1.2: Geographical Setting of the Project

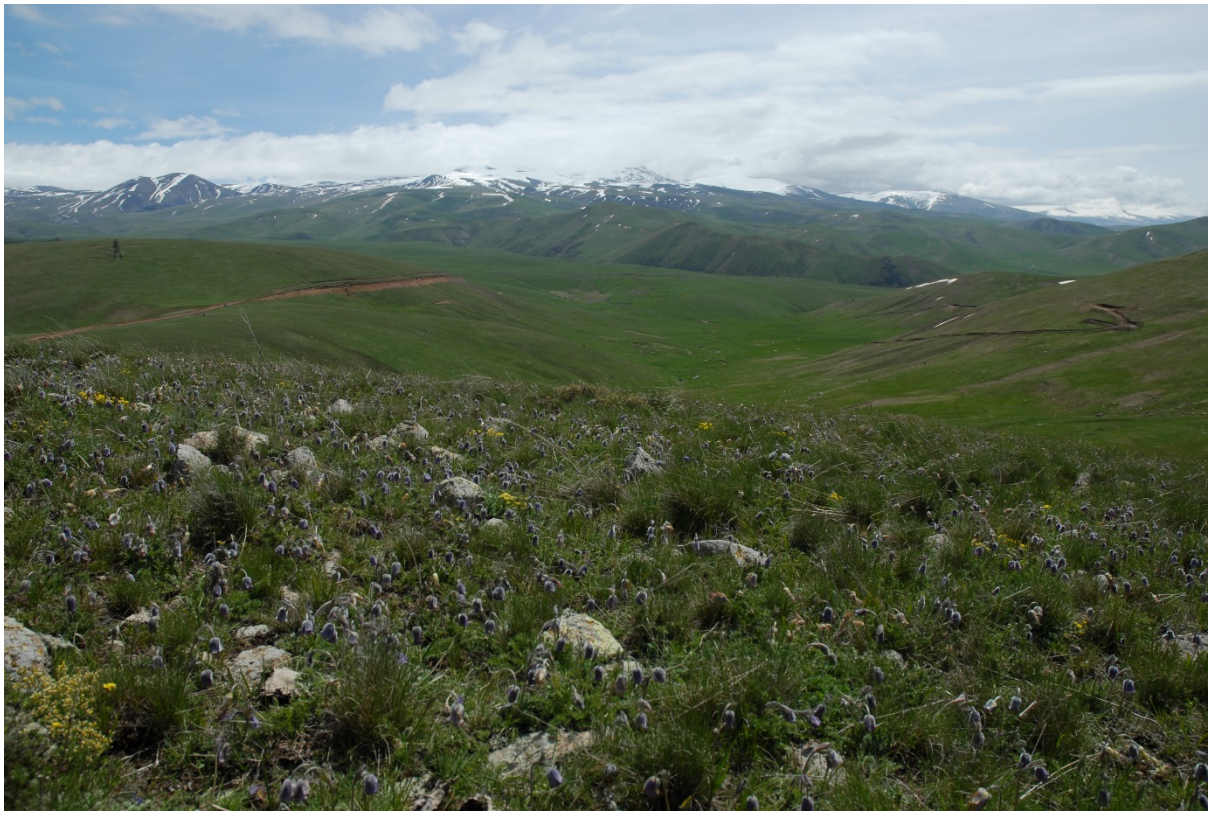

Figure 4.1.3: View from the Amulsar Mountain looking north east from near the Exploration Camp

4.1.3 Format of the ESIA Baseline

For the purpose of the ESIA and the collection and consideration of baseline data, two geographical study areas were defined relative to the Project. The environmental baseline study area (EBSA) is shown in Figure 4.1.4 and the corresponding figure for the socio-economic baseline study area (SBSA) is shown in Figure 4.1.5.

The baseline study stage provides an analysis of the appropriate environmental and social baseline data to enable the detailed characterisation of existing conditions that may be affected through Project development including construction, operation, closure and post-closure. Baseline analysis has been designed to provide a basis for assessing the magnitude of predicted impacts and the development of appropriate mitigation measures. The baseline information and data on the present status and condition of the environment and socio-economic setting were obtained from a range of sources, including:

- Primary field data collected by Geoteam and Armenian and international specialists, (specialists involved are listed in Appendix 1.1);

- Secondary archive data obtained from published sources, local statistical records and other available governmental data;
- Mapping, remote sensing and satellite imagery data and analysis, providing spatial land-based data; and
- Qualitative data and relevant information provided by Geoteam and Armenian experts, based on experience and local knowledge.

4.1.4 Environmental Baseline

Baseline study areas should generally be more extensive than the zones in which Project impacts occur. Therefore, the baseline study areas identified within Chapter 4 do not necessarily represent the zones where impacts will occur. They have been defined to provide appropriate context to the environmental and social setting for the Project. Figure 4.1.4 shows the extent of the study area within which the environmental baseline studies have been focused. However, the exact areas of study did vary between the different environmental aspects, and these variations are identified within the appropriate sections of this Chapter and summarised in Table 4.1.1.

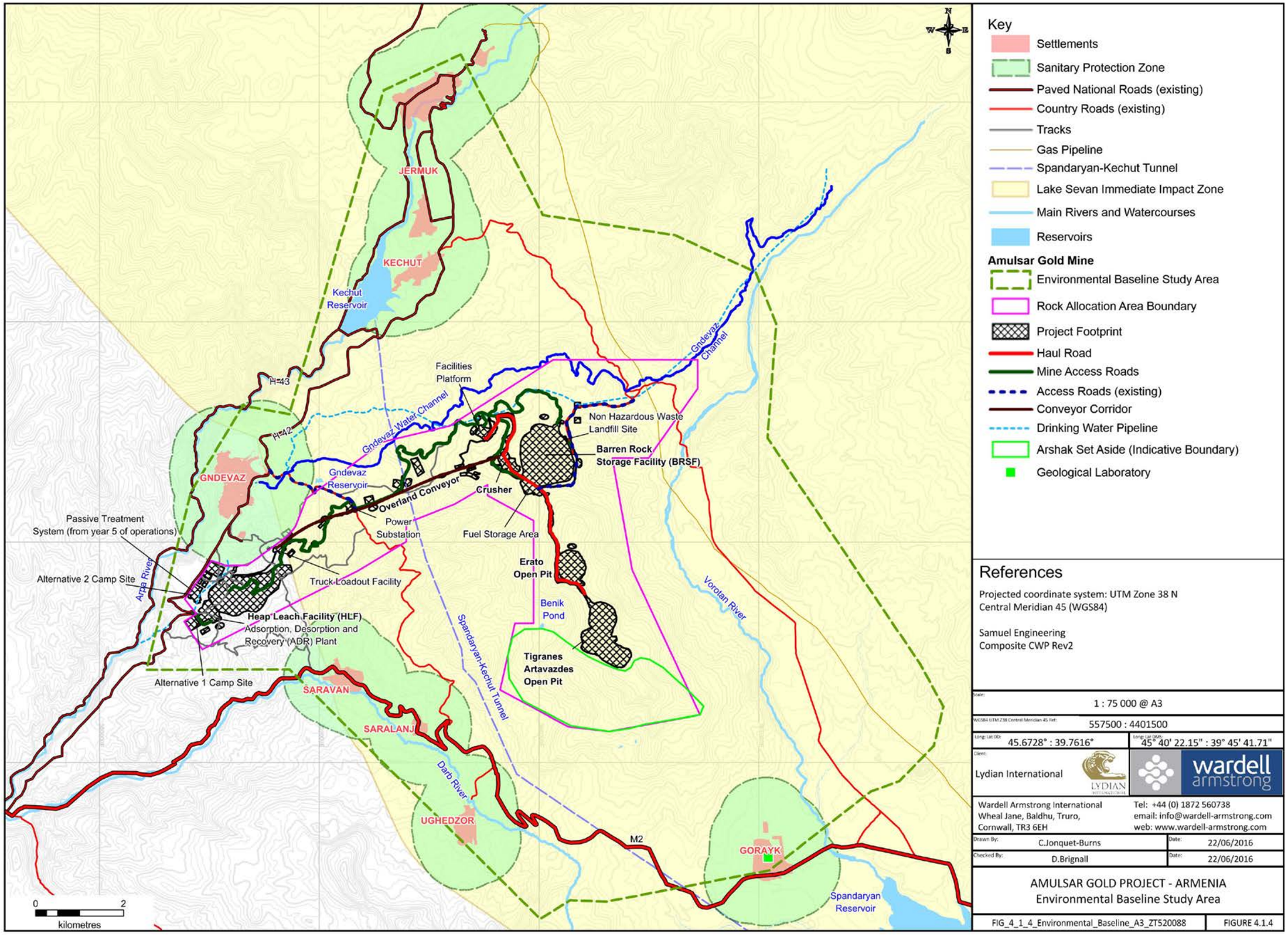

Figure 4.1.4: Environmental Baseline Study Area

4.1.5 Social Baseline

The Project is located in central Armenia straddling the boundary of two Marzes (Vayots Dzor to the west and Syunik to the east).

Social baseline data has been collected over different areas depending on the nature of the baseline data. The collection of primary baseline data focussed on the closest communities to the Project. For this study the term Local Communities refers to a number of settlements as indicated in Figure 4.1.5. Jermuk is approximately 10 km to the north of Amulsar Mountain and Gndevaz is the closest community, located approximately 1.2 km from the nearest part of the Project infrastructure (the Heap Leach Facility, HLF). Saralanj is approximately 3.9 km away from the open pit of Tigranes/Artavazdes. There are four rural villages: Kechut (which is classed as part of Jermuk), Saravan (including Saralanj and Ughedzor) and Gndevaz in Vayots Dzor Marz; and Gorayk in Syunik Marz. Table 3.1 identifies the distance from the individual elements of the Project infrastructure to the nearest boundary of each of the communities.

In contrast, much of the secondary data used to inform the socio-economic baseline has focussed on Marz and national level assessments. The study area for the social baseline and the geographic relationship of the main settlements to the Project considered in the ESIA are shown in Figure 4.1.5.

Further information on the detail of the study area defined for the social aspects is provided in the relevant sections of Chapter 4 and summarised in Table 4.1.1.

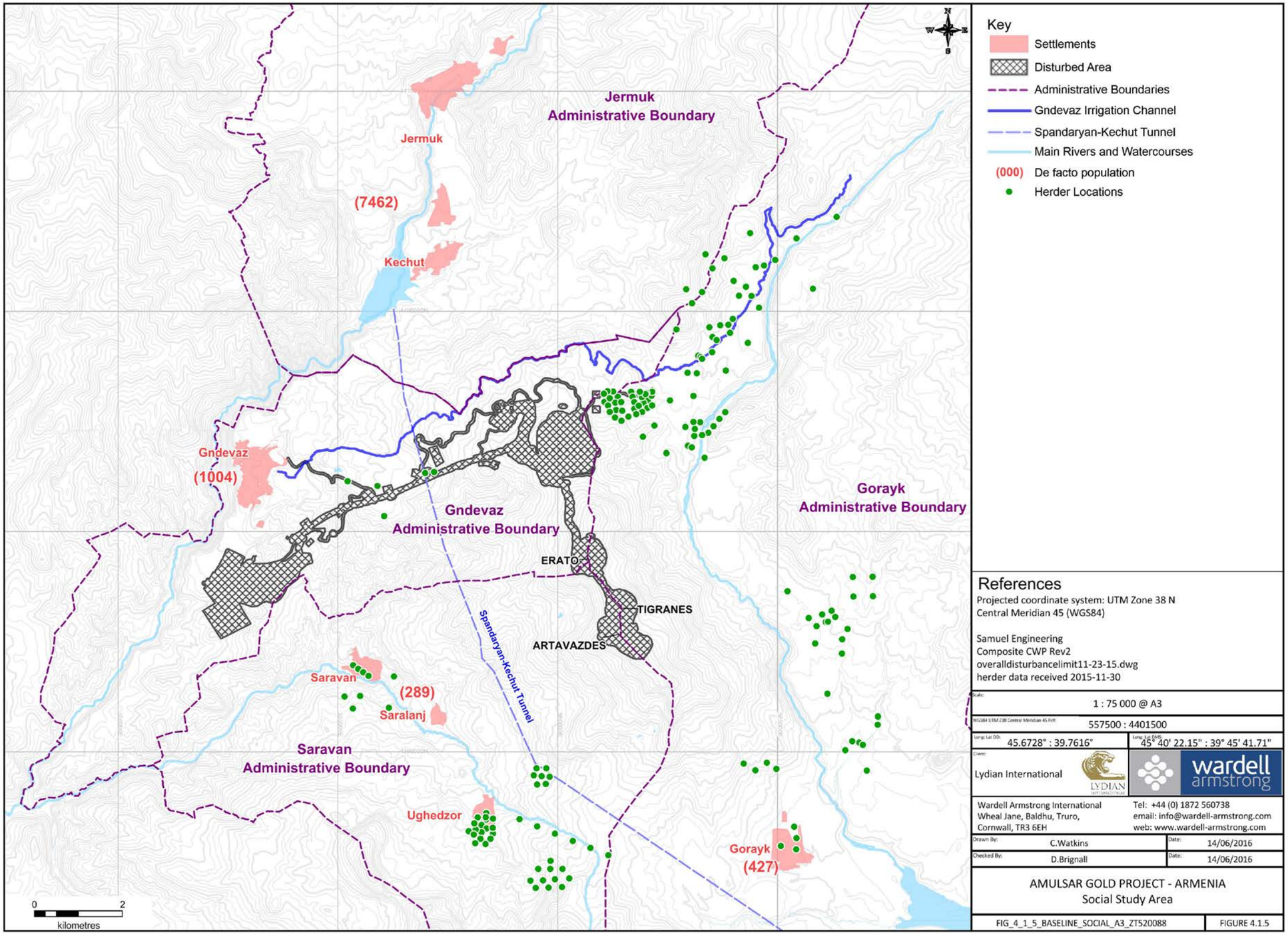

Figure 4.1.5: Social Study Area

Table 4.1.1: Summary of the study areas developed for each environmental and social aspect considered in the baseline (Chapter 4) and impact assessment (Chapter 6)		
Aspect	**Extent of the study area**	**Outline description – key components of the study area**
Climate (& GHG emissions)	National, Regional and Local	National data is based on published sources. The local setting has been based on a comparison between data from two state meteorological stations. From this comparison the climatic data for the Project has been based on Vorotan Pass Meteorological Station. GHG emissions relate to Project specific activities and transport to and from the Project.
Landscape	Regional and Local	The study area has been defined according to UK guidelines for landscape and visual impact assessment, which is a minimum radius of 15km from the outer edge of the Project footprint. The local setting has been defined as the area within which landscape character is potentially affected and defined viewpoints from which the Project is visible.
Air Quality, Noise and Vibration	Local	The local study area is defined as the settlements in closest proximity to the Project footprint, and includes the three closest rural settlements (Gorayk, Gndevaz and Saravan (including Saralanj and Ughedzor)) and Jermuk (including Kechut). Non-residential receptors, including herders, mammals and plant communities are included in the assessment and within the study area delineated by baseline monitoring identified above.
Geology	Regional and Local	The regional geology has been described from published sources, with more detailed characterization of the geological region within which Mount Amulsar is located. Project specific geology has been informed by primary data obtained through site investigation that includes the footprint of the Project and areas adjacent.
Soils & land cover	Local	Primary data has been collected from within the Project footprint. Additional information has been obtained from land adjacent to the Project footprint and has been referred to where this data also informs the assessment.
Groundwater	Regional and Local	The local setting has been defined by the hydraulic boundaries formed by the Arpa, Darb and Vorotan Rivers and the watershed boundaries of their catchments at the northern and southern extents. This area extends from the confluence of the Darb River and Arpa River in the south-west, and the Spandaryan Reservoir in the south-east extending north to approximately UTM Northing 4407500. The Jermuk geothermal park lies outside this hydraulically defined study area, as it is to the north of the Arpa River. However, it has been included in the study area due to the importance of the springs to local and national stakeholders.
Surface water	National, Regional and Local	National data is based on published sources, with primary data collection extending to monitoring points upstream and downstream of the Project footprint.
Biodiversity	International, Regional and Local	International and National data has been based on published sources. Primary data obtained over the period 2008 to 2014 has informed the locally based studies within the Project-affected area, which includes the project footprint and adjacent areas defined by the biology of individual taxa and species studied.

Table 4.1.1: Summary of the study areas developed for each environmental and social aspect considered in the baseline (Chapter 4) and impact assessment (Chapter 6)		
Aspect	**Extent of the study area**	**Outline description – key components of the study area**
Social, political, Demographics and Economics	National, Regional and Local	National data is based on published sources. The regional setting includes the two Marzes (provinces) straddled by the mine layout and footprint, Vayots Dzor and Syunik, and has been derived from published sources. The local study is defined as the settlements in closest proximity to the Project footprint, and includes the three closest rural settlements (Gorayk, Gndevaz and Saravan (including Saralanj and Ughedzor)) and Jermuk (including Kechut).
Education	Local	The study area is defined as the settlements in closest proximity to the Amulsar Project, and includes the three closest rural settlements (Gorayk, Gndevaz and Saravan (including Saralanj and Ughedzor)) and Jermuk (including Kechut).
Community health	Local	National data is based on published sources. The regional setting includes the two Marzes (provinces) straddled by the mine layout and footprint, Vayots Dzor and Syunik, and has been derived from published sources. The local study area is defined as the settlements in closest proximity to the Project footprint, and includes the three closest rural settlements (Gorayk, Gndevaz and Saravan (including Saralanj and Ughedzor)) and Jermuk (including Kechut).
Land use and tenure	Local	The local study area is defined as the settlements in closest proximity to the Project footprint, and includes the three closest rural settlements (Gorayk, Gndevaz and Saravan (including Saralanj and Ughedzor)) and Jermuk (including Kechut).
Livelihoods	National, Regional and Local	National data is based on published sources. The regional setting includes the two Marzes (provinces) straddled by the mine layout and footprint, Vayots Dzor and Syunik, and has been derived from published sources. The local study area is defined as the settlements in closest proximity to the Project footprint, and includes the three closest rural settlements (Gorayk, Gndevaz and Saravan (including Saralanj and Ughedzor)) and Jermuk (including Kechut).
Transport	International, National, Regional and Local	International and National data is based on published sources. The regional setting is defined by the network of national and state roads, namely the M-2 and H-42. The local setting includes the junction from the highway network to the Project and the three closest rural settlements (Gorayk, Gndevaz and Saravan (including Saralanj and Ughedzor)) and Jermuk (including Kechut.
Cultural heritage	Local	The local setting includes land within the Project footprint, together with additional information obtained from land adjacent to the Project footprint that has been referred to where this data also informs the assessment.
Note: See also: Figure 4.1.4 and Figure 4.1.5		

4.1.6 Project footprint, disturbed and restricted areas

Table 4.1-2 defines the likely extent of land that would be affected by the Project (see also Figure 4.1.6).

Table 4.1-2 Land take and description

Land take	Area (ha)	Description
Project footprint	609	The area of land that will be occupied by the mine and related infrastructure (including temporary infrastructure during the construction phase), as defined in Figure 3.1 (the general arrangement of the Project)
Disturbed area	930	The area of land that comprises the Project footprint plus the immediately adjacent land that is considered likely to be affected during both construction (disturbance of topsoil) and operations (as a consequence of dust deposition on vegetation, thereby reducing the value of the land for agricultural use). The project disturbed area includes buffer zones that comprise: • 100m adjacent to the open pits; • 50m adjacent to the BRSF, conveyor and haul roads; • 30m adjacent to the HLP; and • 15m adjacent to mine access roads.
Project ecologically disturbed area	362	Additional buffer of 1km from haul roads and 500m from the mine access roads, within which emissions such as NOx, SOx and particulates generated by mine vehicles, could potentially influence the ecology of the vegetation.
Project restricted area (through operations)	323	A buffer zone that has been defined adjacent to the limits of each of the open pit (Tigranes, Artavazdes and Erato) within which access will be restricted during blasting within the pits for safety reasons, and is also likely to be affected by deposition of dust on vegetation.
Areas restricted by Project fenceline	60	Additional areas of land which will not be occupied by Project infrastructure but will be restricted due to perimeter fencing.
Areas restricted for wildlife	94	Areas of land within which it is predicted that use by fauna may be inhibited due to the barrier effects of the presence of mine infrastructure (including access roads and the conveyor).
Total	1769	Note: the project footprint has not been summed in the total, as it is included within the disturbed area.

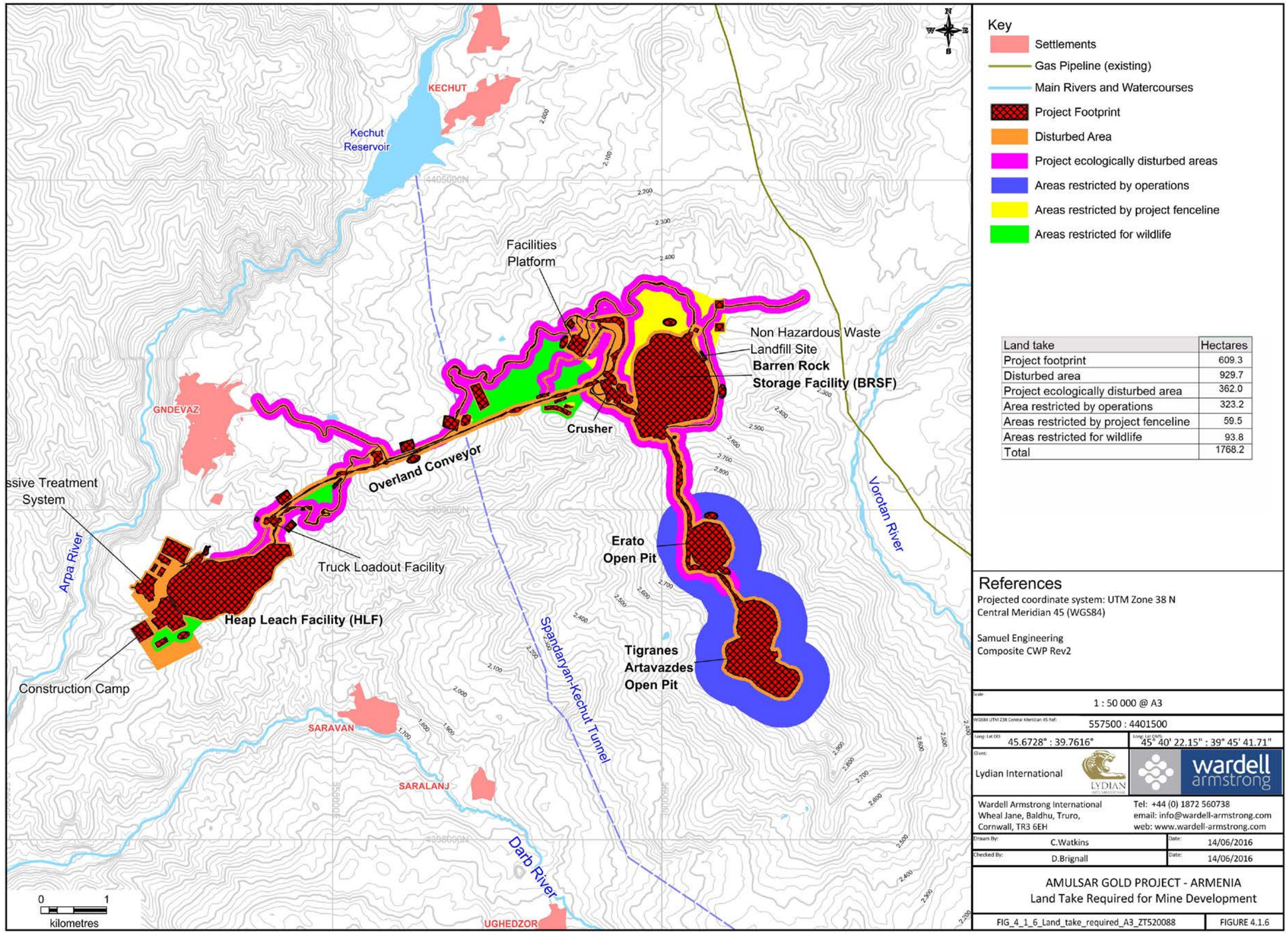

Figure 4.1.6: Land Take Required for Mine Development