Amulsar Gold Mine ESIA
Report on Focus Group Discussions
July 2014

Introduction

The Project Affected Area is rural and has been farmed for many centuries in a traditional way, apart from the period of Soviet rule when production intensified and became more mechanised. In this area there may be less individual decision-making and more group decision-making. The group might be the family or a social group based on gender, age, occupation or interest. As group decision-making is important in this area it is appropriate to use group-based (e.g. focus groups) rather than individual research methods.

In this area there is an ancient tradition of transhumance, with a complex system for allocating land for grazing.

Method

Four focus groups and six interviews were conducted 9-10 July 2014. Each focus group had 6-14 participants. In three out of four focus groups, Aram Paurnakyan, community liaison officer for Lydian, recruited participants to meetings that were held in local municipal buildings in Gndevaz, Saravan and Gorayk respectively. A fourth focus group consisted of men from the village of Khndzoresk who were resident in a seasonal herder camp. This meeting was held in a dwelling belonging to one of the participants. In addition to the focus groups, interviewers were conducted with an opportunity sample of six local residents in the town of Jermuk who were engaged in ecoservice occupations: herding, selling herbs and painting nature inspired landscapes.

The recruitment criteria for focus group participants included direct users of ecosystem services of various ages (to represent previous, current and future use of ecosystem services) and indirect users who are formally employed in the village (e.g. a teacher) and may mediate beliefs and attitudes towards use or values associated with ecosystem services.

Each focus group discussion and interview was conducted in Armenian and simultaneously translated by Lydian's Social/Development Programs Officer, Nara Gazaryan. The focus groups and interviews were designed and facilitated by Hannah Devine-Wright, Placewise Ltd. Jo Treweek, TEC and local Geoteam personnel provided additional assistance.

A focus group protocol (see ESIA FG protocol in Appendix A) was developed that included a multiple sorting task. The sorting task used 28 images of ecosystem services that had been identified as priority systems in previous studies e.g. vegetation cover and classification, surveys of biodiversity and ecosystems, ethnobotanical survey, agricultural survey, livelihoods review, Integrated Water

Studies, herder study (census of seasonal herders August and September 2012), rapid health impact assessment, interviews and stakeholder meetings held as part of the social impact assessment process. The protocol (without sorting task) was used to structure the interviews. Each interview and focus group started with an introduction to the aims of the research namely to identify priority ecosystem products and services that might be affected by the proposed Amulsar gold mine. This was followed by a round-table introduction of the study team and participants.

The ensuing focus group discussion was structured around the multiple sorting task. In the first instance participants discussed the selection of images and added products and/or services that they considered were missing. A total of eight additional services were added and included in subsequent sorts. In all, thirty-six cards were produced of which twenty-three depicted or described provisioning services, two regulating, five cultural and six supporting ecosystem services (see Appendix B).

The sorting task and prioritisation of ecosystem services was carried out as a group activity. Individuals were asked to provide information about their personal use and dependence on ecosystem services. At an appropriate point after prioritisation, a mapping task was undertaken using either Map I without mine infrastructure or in the case of Gndevaz, Map II (see Appendix C) that showed the proposed mine infrastructure. Focus group participants were asked to orientate themselves to the map and identify areas where they currently access priority ecosystem services. This resulted in the production of three annotated maps.

Each interview and focus group was concluded by asking participants if there was anything they would like to add and by thanking them for their participation. A token of thanks was provided for each participant in the form of small, individually wrapped chocolates.

Notes were taken during each interview and focus group and these were subsequently collated in table format. The annotated maps were combined to show which services were most likely to be affected by the proposed mine infrastructure.

Results

Focus group 1. Gorayk Village, population approx. 500. Focus group conducted 9 July, 2014.

Participants: A total of six people: three men and three women. Note that due to the late start of this focus group some potential participants had left and returned to work. Four participants were members of the Community Liaison Committee (CLC). One was a schoolteacher and another a librarian.

Identified **missing ecoservices** and produced corresponding cards for inclusion in the sorting task	Berries
	Birds (live here and eat small mammals. This is good as it keeps pests down)
	Fish (river trout in Red Book..endangered and hydro projects damage flows in river. Prohibited to fish)
	Cultivated potatoes
	Fox eats small mammals field mice and rats which keeps pests down. If these are scarce they come into the village and take chickens etc. Used to be much more abundant. Possibly because of rodent control, possibly because numbers of wolves have increased.
General discussion and clarification of type present in local area	E.g. out of the herbs, which ones are most important for here? Mint was mentioned specifically. Nara has made a list. Some herbs used for medicinal purposes, some for eating.
Which ones are **not relevant** to this area?	Bottled water Nuts Apricots Firewood Bezoar goat Cherries Codes: 1; 4; 14, 20, 22; 27
Priority services in this area	Codes **2; 5**; **6**; **7**; **8**; **9**; **11**; **13**; **16**; **19**; **21**; **23**; **24**; **29**; **30** Herding , Milk, Herbs, Hay, Snowmelt, Rock art/tombs, Irrigation, Water for drinking, meat for protein, cheese, wild mushrooms, Honey, Potatoes, Berries
Other services that **are relevant but not prioritised**	Codes 3, 10, 12, 15, 17, 18, 25, 26, 28, 31, 32 Recreational, apples, inspiration, wolves, festivals, bears, natural springs, hot springs, fish, fox, birds

Discussion of priority services in Gorayk

Milk	Code 6
Why is milk from grazing a priority ecosystem service?	Good for nutrition and health, source of income, good food component. Our main activity.
Milk production varies seasonally	Goes down from June after they start cutting the hay
How many litres of milk does a person consume per day? How many litres kept for domestic use?	3-5 litres..used for themselves each day to make cottage cheese, to drink etc
How many litres does a person sell?	65 litres per day (6 cows) Another gets this much from 8 cows
Typical price per litre	150 drams per litre less than half a dollar

How many families have cows?	95%
Does Gorayk have enough grazing land?	Yes, plenty… the milk is organic and high quality. In Soviet times "swiss" cheese was exported from this area.
Any pollution issues now?	No.. the environment is clean
Where are Gorayk cows grazing? Please show on map	Everything collected from same area.
Access?	Geoteam road or shortcuts?
Cheese	**Code 21**
How much cheese do you produce during the season?	Out of milk otherwise sold we keep some to make cheese.. one cow gives 13-1500 litres milk per year. 300 litres go to calf; 1200 left of which 250-300 kept for making cheese, yoghourt and cottage cheese
Is cheese sold?	In this village, milk collection station, therefore most milk sold. Only approximately 5% produce cheese to sell. About 100kilo cheese produced each season for consumption or to give away.
Hay	**Code 8**
Production per year?	2000 bales per family approx.
Bales per ha?	About 100 bales/ha 2 tonnes/ha (Approx 20k per bale)
How many people sell hay for income?	70% do both 30% don't have enough to send
Price	5-600 drams (300 to 1000) per bale
Cattle or sheep for meat	**Code 19**
Breed?	Mostly dairy cows but use them for meat
How animals slaughtered for meat per year?	7 or 8 sheep per year. To meet family need 1 cow but more if special occasions e.g. funerals. Can "can" meat for winter
Herding	**Codes 2, 5**
Archaeology and cultural heritage **Art or culture or religions associated with the land**	**Code 11**
	Tombs. Some associated with old settlements. Very old. Geoteam did surveys. (Note that tombs and sites were marked on the map by residents)
Interested to know more about history?	"sure"
	There is a place considered to be a sacred place or a "saint place". Other side of Vorotan. Inspirational place. People walk there from here. Another small protected area with tombs
Berries and herbs and mushrooms	**Codes 7, 30, 23**

Where do you get them?	Everywhere (no asparagus)
Who collects them?	Women, children, younger teenagers. Collect for own use and to give away. People share. Some for swapping like rosehip or certain herbs for cooking.
Are herbs sold for income?	Rarely. Main one Arveluk used for cooking.
Honey	**Code 24**
Where are your hives?	In the village, but people from Vayk put hives along road.
Who has hives?	10 or 12 households… winter is long, not favourable and need some technical knowledge.. people scared to be stung. Specialist production.
Note	Climate here a little cold for bees
Drinking Water	**Code 16**
Painful issue. Quality bad. Why?	Chemical testing… cannot answer technically. Not clean. Muddy. Chemical component
Where is it taken from?	Water springs for drinking water Springs everywhere for animals and snow melt also available till late fall.
Snowmelt	**Code 9**
	Important but not collected here
Irrigation	**Code 13**
Is there enough water for people and animals?	No irrigation water in village. Water is enough, but using drinking water for irrigation
Crops including potatoes	**Code 29**
Where do you grow?	In gardens mostly.. or if not enough space, in the field.. close to village as possible
Inspiration	**Code 12**
	Specific sites of 'inspiration' were marked on the map
Sense of Place issues	**Not coded**
Interconnectedness	If we live here and stay here for years, everything is part of our life and important to us: birds, stones… Ecology is very important to us as residents.
Place attachment	One of our poets has a popular saying Hamo Sahyan: "How can I leave this place and live?" People don't leave because they don't appreciate it but for economic reasons. Where would you rather walk in the evening? In a Yerevan street or here? This sense of place extends over quite a wide area.
Responsibility for future (and past) generations	If we care for it we can pass it to our children. Many people haven't even seen the things they care or know about and haven't explored them yet

Local distinctiveness	There may be a time when you can see Jermuk from here.

Other discussion points: Mayor had visited mines in US and seen good practice.

Mapping task: the people in this focus group did not identify any specific ecosystem services or products as being currently within the footprint of the Proposed Mining Site. They drew a very distinct line around the proposed site.

Mapping exercise: Gorayk village

Summary of main issues: Gorayk focus group

- This village has already been relocated to build a dam
- At an earlier stage villagers expected to be affected by the mine infrastructure and were enthusiastic about being relocated
- 'Everything is part of our life and important to us' – ecological perspective
- Sense of place extends over a wide area. They quote poet, Hamo Sahyan: "How can I leave this place and live?"
- Place identity: the mountains define boundaries between village of Gorayk and town of Jermuk
- Pest control is an important and as yet unrecorded ecosystem service in the local area. Species that are particularly important for pest control include: birds, foxes and wolves.
- Fish are a priority provisioning service. Some fish are endangered 'Red Book' species. Overall fish stocks are in decline.
- Cultivated crops, particularly potatoes, are an important part of the local dietary.

- Priority provisioning ecosystem services are: milk, cheese, wild mushrooms, honey, potatoes, berries, meat for protein, drinking water, wild herbs, hay and herding
- Milk is organic and high quality
- Herbs are collected by all generations and are widely shared fulfilling a social as well as dietary/medicinal role
- Drinking water and irrigation water are important issues in this village
- Priority regulating ecosystem services are: irrigation and snowmelt
- Priority cultural ecosystem services are: rock art/tombs or 'Saint' places that are visited on foot, meat for slaughter e.g. at funerals
- Priority supporting ecosystem services are: wild animals for pest control

2. Focus group Saravan village, 9 July 2014.

Participants: Group totaled 10 people: 8 women and 2 men. Of the ten people, three are CLC members and five work in the Geoteam nursery. Only two people were neither CLC members nor Geoteam employees.

Participants listed the ecosystem services that they engaged in e.g. collecting herbs and/or mushrooms for own use and/or sale. Harvesting fruit, nuts and/or berries. Keeping livestock or bees and processing related products e.g. milk and cheese.

Important	Codes: **2**, **10**, **5**, **23**, **24**, **7**, **19**, **15**, **9, 6**, **22**, **16**, **20**, **27**, **8**, **21**, **4**, **28**, **14**, **29**, **30** Herding, apples, mushrooms, honey, herbs, meat for protein, wolves, snowmelt, milk, nuts, water for drinking, apricots, rosehips, hay, milk products e.g. cheese, biomass, fish, Bezoar goat, potatoes, berries
Anything missing?	Wild pigs (there is a hunting season), rabbits. There are 2 hunters in the village (more for pleasure)
Not important	Codes: 31, 1, 12, 3, 18, 13, 17, 32, 26, 25, 11 Fox, bottled water, inspirational art, recreational use, 18, irrigation, festivals, birds, hot springs, natural springs, rock art
Most important?	Found it very hard to exclude any of the important services. Thought all important. Even wolves are most important because they "sanitise the area" and eat weak or sick animals. Ants are also important because they sanitise the area).
Discussion about areas of supply	Looked at important supply areas on the map and participants annotated the map using image codes – see map

Village Area	**Codes: 10, 24, 21, 22, 29**
	Apples, honey, cheese making, nuts, potato = "second bread" or "worker of the kitchen". Some fields close to village, never too far away. Crops grown in gardens mostly. If not enough space, in the field as close to the village as possible.
North of village	**Codes: 30, 20**
	Berries and apricots. Berries in many other places also.
Around village	**Codes: 2, 5, 8, 6**
	Identified key grazing and hay making areas
	Drinking water from certain springs
Many areas	**Codes: 23, 7**
	Mushrooms and herbs from all over the place. Herbs mainly but not solely collected by women. In some cases where women collect the herbs they are driven to the herb collecting areas by men.
Rivers	**Code: 28**
	Fish from river (black fish - declining) Fish stocks have gone down because of illegal fishing. Used to be more. A couple of years ago chemicals got into the river and there were toxicity issues. Trucks with chemicals from Iran occasional spillages (soaps or detergents)
Wider area	**Codes: 15, 27, 14, 18, 33, 34**
	Hunting is forbidden (so they said there was not much hunting) but there are 2 "hunters" in the village. Hunting is described as 'recreational' because it is illegal. In the largest area there are Bezoar goats, rabbits and wild pigs. Also bears.
No specific area on map	**Code: 19, 14**
	"kebabs" = food..energy and protein Potatoes are the second bread and the workers of the kitchen
Specific points	**Code: 9, 16, 4**
	Snowmelt is used to irrigate hay crops. Three key areas for both snowmelt and water for drinking (not the same areas). Snowmelt collects naturally and feeds into the ground. Snowmelt is good for hay. Two specific areas for wood collection.
Access: what roads do you use?	Not particularly concerned.
Place issues	"We have our borders, we have our space". Not an

Potential conflict over use?	issue

- 150 cows in the village
- About 4.5 to 5 tonnes milk for village.. 10 tonnes of milk a year if you include Ughedzor
- 2 or 3 cows per household
- A cow costs about US$600 (200 – 250 000AMD); approx. US$800 for a horse
- 3 ha per household
- Rotate husbandry to take animals to grazing each day

Milk	Code 6
Why is milk from grazing a priority ecosystem service?	Good for nutrition and health, source of income
Milk production varies seasonally	
How many litres of milk does a person consume per day? How many litres kept for domestic use?	5 litres. Milk is used for themselves each day to make cottage cheese, yoghurt, to drink etc.
Typical price per litre	200 (sold at gate) to 140 (collected) per litre
How many families have cows?	20/82 households don't have cows
Does Saravan have enough grazing land?	Yes
Any pollution issues now?	No. The environment is clean apart from pollution in the river.
Cheese	**Code 21**
How much cheese do you produce during the season?	Didn't say/know
Price of cheese sold?	1,500 AMD for litre of cream, same for a kilo of cheese
Hay	**Code 8**
Production per year?	2000 bales per family approx.
Bales per ha?	About 100 bales/ha 2 tonnes/ha (Approx 20k per bale)
How many people sell hay for income?	70% do both 30% don't have enough to sell
Price	5-600 drams (300 to 1000) per bale
Cattle or sheep for meat	**Codes 2, 5, 19**
Way of life in future	
Would you like this way of life to continue for your children?	Yes (some). No (some). Young people don't have much to do, its hard work. Later met farmer whose daughter just back from university for vacation, helping her mother to make cheese.

Note that for some ecosystem services e.g. wolves it was not possible for participants to specify where they were on the map because they are wide-ranging.

Outcome of mapping task in Saravan

Saravan village map

Participants identified a specific area for 'water for drinking' (16) very close to the proposed mine infrastructure. This was one of three natural springs indicated on the map. They also identified an area for collecting wood (4) for fuel close to the mine infrastructure. This was one of two areas indicated on the map. Of three areas considered important for snowmelt (9), one was close to the mine infrastructure. Rosehips (27), mushrooms (23) and wild berries (30) were located in the immediate vicinity of the mine infrastructure and herding of cattle (5) and sheep (2) and harvesting hay (8) occurred in a similar area. Wolves (15) were located in a wide area at the periphery of the settlement and within the proposed mine area. Although the location of other priority ecosystem services were marked on the map they were not in the immediate vicinity of the mine. However, it was not possible to establish to what extent, if at all, these services would be affected by the operation rather than the position of the mine e.g. air pollution, noise, lighting levels.

<u>**Summary of main issues: Saravan**</u>

- 8/10 participants were members of CLC and/or employed by Geoteam

- Hunting is technically illegal but wild pigs and rabbits were added as priority provisioning services
- Wolves and ants are important for 'sanitising' the local area
- Collecting herbs is a social as well as provisioning service
- Fish stock are in decline
- Physical and psychological boundaries: "We have our borders, we have our space"
- Daily herding is an important part of village life
- Priority provisioning ecosystem services are: herding, apples, mushrooms, honey, herbs, meat for protein, milk, nuts, water for drinking, apricots, rosehips, hay, milk products e.g. cheese, fish, biomass, Bezoar goat, potatoes and berries
- Priority regulating ecosystem services are: snowmelt
- Priority supporting ecosystem services are: wild animals for pest control

3. Focus Group Meeting with Herders, Herders' Camp Thursday 10th July

All participants are from Khndzoresk. Five people initially and then others returned, so 12 -16 people in total.

Khndzoresk is a village in the province (marz) of Syunik. The village is located at 1580m above sea level and occupies 6772,8ha. The National Statistical Service of the Republic of Armenia (ARMSTAT) reported its population as 2,260 in 2010 up from 1,992 in 2001. There are 516 households in total. There is a small milk processing enterprise, a number of administrative and public institutions including community council, secondary school, musical school, kindergarten, library, museum and culture club (according to Wikipedia.org).

Question	
Which are **not** important to you?	Codes: 20; 18; 14; 10; 4; 3; 17; 12; 25; 24; 22; 15, 31
	Apricots in Gndevaz, not here. They think there have been no bears since 2006. When roads were improved, the bears left. Bezoar goat. Apples, wood, recreational walking, Food festivals (celebratory eating), inspiration (sculpture), areas of water on rock. Bees don't do well here, too windy. Don't collect nuts or berries. They collect herbs but there is no asparagus here. Foxes, wolves, no hunting. They occur in a mountain 10 to 15 km away on "Sheep Mountain".
Which services are a **priority** for you?	Codes: 5, **6,** 16, 11, 26, 10, 28, 19, **21**, 23, 32
	Herding, milk, drinking water, tombs, use springs for bathing, rosehips, fish, meat (every day). They make cheese. Mushrooms. Aware of bird surveys going on. Collect herbs/vegetable for cooking.

	People from Jermuk collect this favourite herb from here.
How many people here in this camp?	15-16, but a guy died in their village, so fewer people in the camp than normal.
Herding	**Code 5**
How many cows?	5-600, but not all dairy. Mixed dairy and beef 50:50. 1500 to 2000 cattle from their village are grazing in this square km.
Does everybody have a mixture/both?	Yes, most people have both.
Natural breeding or AI	Both, vet does AI 5-6000 ARM per cow 2nd time free.
Milking time?	The guys get up at 3.30 to 4 to milk
Dependence on herding	Herding is biggest source of income for our village.. this is not America.. we don't get support from anyone.
Livelihood costs	We buy medicine to treat the cattle, not use herbs. [Is it expensive?] No choice. We have to buy it anyway if the animals are sick. Medicine is expensive.
Ownership and responsibility for cows	"[They are] our cows, that is why we are taking care of them". This area mostly keeping their own cows. In other areas some paid herders.
Cheese	**Code 21**
How much cheese do you make?	30-40 kilos made in the camp Used to be a milk factory that collected milk and made cheese 2-3 km away in the mountains. Not sure why it closed.
Why did factory close?	Poor infrastructure?
What do you produce cheese for.. own use or income?	Made for own use and for family consumption, not generally for sale.
Milk	**Code 6**
	6 trucks come from village and collect milk each day, morning and evening. 140 AMD per litre of milk They milk the cows. Jermuk Mineral water is more expensive than milk. There is lots of hard work to do with herding but the price for milk is very low.
Drinking Water	**Code 16**
	Take from Gndevaz channel. Put a valve in.
	Concerns about effects of mine on water quality.
	"Infrastructure is important if water is not affected".
Do you have any other concerns about the	Asked whether there was uranium present.
	Someone commented "no problem yet".

mine?	"We cannot tell for the future".
What effect has the mine had?	
Road	"Road is the main benefit from the mine so far". The roads are better.
	More people come and use the road and collect herbs and mushrooms.
What is potential effect of the mine?	"The mine might bring electricity. There is no power here".
Access	"It takes 3 days to bring animals here".
Sense of tradition and place attachment Responsibility and sense of obligation for supporting families	Herding here generation by generation. We have been coming here for years. We do this job because we have to. "Where shall we take our 5-600 cattle? If the mine takes this land from us, maybe we should take our cattle to Yerevan?" Family responsibility to take care of the cattle for their wellbeing or they will be hungry.
If you lose grazing because of the mine, what alternatives would you accept?	All would like to be based nearer home. Would like to use mountains nearer to their village, which are "idling". They would be glad to be reallocated grazing. If we have alternative land it will be fine. Lots of empty places between Gorys and here. But the Vorotan stays green longer (with implications for quality and availability of grazing). They are here usually late May until mid-late September depending when water freezes. Village used to have 1500 sheep. Much less now. Expensive to keep sheep.
	"We would be happy to work in the mine". If the mine pays well we would be interested in work.
	"We could provide milk to the mine".
Would you rather have land nearer home or work in the mine?	All said they would like grazing land nearer home. Doing the animals only takes part of the day, the rest of the day were are not busy. "We could do both. We could milk in the morning, we are only busy for 2 hours and then we could work in the mine."
Does everyone from the village want to leave (all 50 to 60 people)?	Yes, provided there is enough space. We need 1 to 1.5ha per cow. 15000ha for entire village. Animal husbandry is the main activity of our village. It depends on it.
Tradition of coming here?	This year they didn't pay any money for using the land. They are not sure why their village got this land,

	but it has been this way for a long time.
	50 to 60 people are here from their village [an all male community].
Relationship to the state Sense of isolation Politically marginalised	We don't have visitors coming here from the Ministry of Agriculture. We appreciate the fact that you come to us and ask our opinion. We don't feel heard by current Government. Nobody helps if the cattle get sick. We used to get support in Soviet times. "The President of Armenia, if he knew this was a good job, he would take it away".
Effect of socio-political change on perception of herders	In Soviet times, this man was a "hero of labour", but having to work hard at his age (70). Officials used to come and look in the fridges and see what people ate.
State financial support	Pension is not big. "Pension is no pension" but get it at 63. Pension depends on number of years worked. It is "ridiculously miserly".
Economic issues	Things are more expensive than they used to be… on 20 cows used to live well, with car, house, good living. Now it's not possible even you have 30 or 40 cows and herd for other people. [They get] 1700AMD per kilo for meat… in market [it sells for] 2500AMD or 3000AMD per kg.
Lack of infrastructure to support agriculture	There are no places where you can take old animals. Old animals .. nowhere to take them to give them away so they are slaughtered and meat sold cheap. No slaughter houses anymore like there were in Soviet times. Maybe only one.
Negative perception of farmers	People don't respect farmers.

Outcome of mapping exercise

The herders were not able to use the map to identify where they were based or where they accessed the priority services beyond saying that they were 'near the police post' and their cows grazed around the mine site area. They indicated that they accessed the grazing land by traversing Gorayk area. It is suggested that an alternative mapping exercise be conducted with this particular group in order to clearly identify which areas they use and traverse. No map is included for this group in this report.

Summary of main issues: Khndzoresk Herders.

- None of the participants were members of CLC or employed by Geoteam
- Herbs are collected for dietary use, not veterinary use.

- Fish are a priority service.
- Bears have been displaced since 2006 when work on the mine road began.
- Herding is most important for livelihood and wellbeing of members of Khndzoresk.
- Long established tradition of seasonal herding.
- Veterinary costs (AI and medicine) are 'expensive'.
- Priority provisioning ecosystem services are: herding, milk, drinking water, tombs, rosehips, fish, meat (eaten every day), cheese, wild mushrooms and herbs.
- Priority supporting ecosystem services are: springs for bathing.
- Priority cultural ecosystem services are: tombs, herding.
- Herding livelihood requires: markets, slaughter houses, milk collection and processing facilities, adequate access to grazing pastures.
- Perceived lack of governmental and popular respect and/or interest in farmers and their work.

4. Focus group meeting in Gndevaz Environmental Information Centre

A total of 10 people: 6 women and 4 men of whom 3 were CLC members and 2 were Geoteam employees. Participants described the number and type of animals/produce that they cultivated or collected e.g. cows, apricot trees, herbs. Two participants were salaried (teacher and electrical engineer) and did not keep livestock other than pets.

Which services are important for this community?	Codes: all except 17 (but this was added later)
	Wolf, nuts, bee hives, bears, wood for fuel, apricots, apples, take walks for pleasure, art inspired by nature (black stone that people make jewellery, obsidian), bezoar, birds, berries, potato, bathing pools, meat for protein, lot of foxes, fish, some people work in Jermuk bottled water factory, herding, herbs, hay, meltwater for irrigation, rosehips, different kinds of berries, archeology, drinking water, mushrooms, irrigation, cheese.
Any missing?	Snakes and lizards.. eat rodents etc
Any not relevant?	Only one not important. Festivals related to food/nature, but they attend in other villages (see later). Discussion about whether bears and wolves were less important. Opinions varied. They are (negative) importance because they damage livestock. The damage is not always big. Bears maybe turnover a few bee hives or take some apricots.

	They are (positive) importance because they are "sanitation in the forest".
How do you control wolves?	They use dogs to keep wolves away. They don't cause tangible damage in this particular village, maybe because there is enough food elsewhere.
Which are the most important?	Hard to say which is not important. Water for drinking and irrigation, herding, honey, milk and apricots 'natural gold'. Historic landmarks important too because church goes to 9th century
Even though you have said everything is important, can you prioritise?	"No. Why are you asking if everything is important, why do you keep asking?" "If biodiversity is rich, we have a healthy life. Everything is important for health and everything is important." All of them are important. We use all of them.
	Even when pushed, the group was reluctant to prioritise and the whole group agreed on this point. Nobody contested this position.
Showed map with infrastructure:	
Discussed key areas of supply or use	Map drawn on by the group.
Project footprint impacts upon:	Key services impacted by project: 8, 20, 5, 2, 3, 31, 24, 14, 18, 10, 30, 7, 28, 15, 27, 11, 36, 9, 6, 21 (all in herding area on map) Hay, apricots, herding, recreational use, fox, honey/bees, Bezoar goat, bears, apples, berries, herbs, fish, wolves, rosehips, rock art, snakes/lizards, snowmelt, milk, cheese
Herding/grazing How many families have cows?	**Codes: 2, 5, 8**
	97-98% have cows The current number of cattle is OK but the numbers in the 1990s was not sufficient so they do not want to reduce the number of cattle There are about 800 sheep and 500 cattle in the village.
	Remaining areas with footprint in place are too small for village. Areas used for summer herding… a bit far away . Project footprint cuts grazing areas in half. No alternatives. "Animal husbandry will go down dramatically".
	"Its not a matter of quantity of pasture, it's a question of quality and being able to rotate

	grazing in the **traditional way**."
	Animals taken up to pasture daily. Community members rotate. This is a rota system. No alternatives for daily herding are available.
Water issues	**Codes: 9, 13**
	Water reservoir collects water from snowmelt and used to irrigate crops. [ancient system]
Wild produce	**Codes: 7, 23**
	Don't want to collect mushrooms from slopes below mine
Apricots	**Code: 20**
	The best area to grow apricot orchards is under the heap leach. 110 families have orchards in that area. This village grows special apricots. Also this year the harvest is poor because many orchards elsewhere were damaged by frost. Theirs have been even more at a premium. Apricots also used as medicine. Our apricots are important to our health.. also everything else is there and we use it for our health. One woman has 50 trees out of 110 in the Project Area. How much income for 50 trees? 50kg fruit average but 2-300 kg from a productive tree like hers. Late Apricots 100 AMD for a kilo.
Are you proud of growing apricots?	YES (much nodding).. Gndevaz produces "premium" apricots, which are exported to other countries such as Russia.
Are there other areas you could grow apricots?	Only land at lower elevation similar to that in the Ararat area (700 to 1000m). If we grow apricots at the same elevation as in Ararat area, why is anyone going to buy our apricots?
Do you have concerns about the mining project?	Of course but "Hard to know, life will show".
	We will become a 'mining town'. How does that make you feel? "tense, under pressure". It is not a good idea to collect mushrooms near the project as it is perceived as 'not healthy'.
	Everything we need grows in that area including wheat and barley.

	"Here we yield everything from the land."
	Village land goes from 1000 to 3000 metres. Variety of land and biodiversity. We use all this variety.
	Depends how the mine will operate. How the environment will be looked after. Some said company doing its best to mitigate, but environmental management is something to be on top of all the time. Supervision should be there all the time. Geoteam people are environmentally aware. Hard to tell about others. People know their job.."so far so good".
Would you live anywhere else?	No… emphatic no, but some of younger generation would move. "This area has everything." Topography 1000-3000m has biodiversity. Maybe we can produce more honey or increase production from gardens. "I want my children to live better" "It is better where we are" "Some people don't want to move from their ancestors' tombs" Pleasure is 'build a house and live in it.'
Folk song, Festivals	**Code: 17**
	Famous song dating from 1800's: "We can live in peace and harmony… whatever I have cannot hurt you and vice versa. We can live side by side with the mine and make it work. If you hear this song you will have good bones. Many songs mention nature.. "maybe not more than songs about love, or mother or life.. but a lot."
	Armenians "look for opportunities to party".
	Show of fruit.. take best specimens to Mars Centre… kind of autumn festival based around

	fruit.

Festivals related to food in Gorayk, not Gndevaz. |
| **Can money compensate? What can be done?** | |
| **Will people want the same way of life?**

Some generational differences but not wholly consistent | "Maybe the younger generation want an easier life: to get a salary, go to work, come home and not go out collecting herbs. Life has gone on from generation to generation and it will be different. We were taught by our parents to take everything from nature but everything is not limitless".

Young lady to biology teacher: " your children will not do what you are doing now".

[Younger woman] Of course there is attachment, but life is different now.

Father had many cows, son wants a better and more comfortable life.

Some people, like my family, want to reduce numbers of animals so there is less work. Younger brother has fewer animals and more orchards.

I don't have cattle and sheep myself, but that doesn't mean I don't appreciate it. |
| **Will your daughter who lives in Yerevan come back if it is a mine town?** | Maybe. Of course she will come back for family. Many have children living in Yerevan who come back for the summer. |

Outcome of mapping exercise in Gndevaz village

Gndevaz village map

People in Gndevaz regularly use land that will become part of the mine infrastructure. The conveyor belt will effectively cut-off their spring/autumn and summer grazing areas. They are concerned about both access and the quantity/quality of pasture that will be available in the future. They consider areas close to the conveyor belt to be 'not healthy' for collecting herbs or mushrooms and will avoid these areas. This will effectively increase the area that is out-of-bounds and further reduce the land available to this community.

Summary of main issues: Gndevaz village.

- Some of the participants were members of CLC or employed by Geoteam
- All services were considered to be priority ecosystem services.
- When forced to choose, participants identified water for drinking and irrigation, herding, honey, milk, historical landmarks (e.g. churches) and apricots 'natural gold' as especially important.
- Hay, apricots, herding, recreational use, fox, honey/bees, Bezoar goat, bears, apples, berries, herbs, fish, wolves, rosehips, rock art, snakes/lizards, snowmelt, milk and cheese production all fell within the project footprint.
- Rotational grazing was considered an important traditional activity that required community involvement.
- Premium apricots are grown in the proposed mining area.
- Apricots are very important for livelihood and are considered essential for health.
- People are already avoiding the mine area when collecting mushrooms.
- There is strong attachment to the local area amongst people of all ages.
- Collecting herbs epitomized the type of activity engaged in by people in the local community.
- Place attachment is partly associated with a sense of responsibility for maintaining the tombs of ancestors.

- Some younger people believe that there are more opportunities elsewhere (in towns).
- A song from 1800s was used to illustrate that hope that people could live in harmony with nature and the mine: "We can live in peace and harmony… whatever I have cannot hurt you and vice versa. We can live side by side with the mine and make it work."

5. Informal interview with Herder near Saravan village 09 July 2014

Question	
Where do you normally reside and where do you bring your animals from?	From village not far away ("sharkie')
Is this on a daily basis?	Yes. He gets up early every day and brings the sheep to grazing.
At what time of year does he use this area for grazing?	He is in this area May to October until the snow is too deep.
What is the land tenure?	Land is leased from Gorayk.
How many animals?	Has about 600 sheep. 1 horse (mare) from which he breeds and sells foals. Foals are an important source of income for him. Horse worth about 200 – 250,000.00 AMD.
Do the sheep belong to him and/or other people?	Brings own sheep and also paid to herd other people's. These come from various villages, not just his own.
Does he have an income from the wool?	Hard to sell wool. People used to come to buy it from Goris. He used to produce 5-600 kilos of wool. Not sure why there is no market for wool now.
What other ecoservices does he use?	He collects mushrooms, thyme, mint and rosehips for family use. He doesn't collect herbs for veterinary purposes.
How important is herding for his household livelihood?	He is the main wage earner and gives money to wife "What would I spend money on out here?"
How many people in his household are dependent on his livelihood as a herder?	He has a wife and 4 children aged 13, 11, 8 and 1.
Does he want his children to become herders?	Doesn't want his children to be herders. His son wants a jeep and to be a policeman. Why doesn't he want his children to be herders? Long hours, bad weather often alone.
Was his father a herder?	His father managed a collective farm in the Soviet era.

Summary of main issues: herder interview.

- He and his family are dependent on income from daily herding.
- Breeding horses is a supplementary income.
- He collects mushrooms, thyme, mint and rosehips for family use.
- There is no longer a market for sheep wool in the local area.
- He does not want his children to become herders as it is hard work, in variable weather and a lonely occupation.

6. Interviews with Herb Collectors and Sellers in Jermuk

Interviews were conducted with four herb collectors and sellers, two male, two female. A further three women were approached but they did not want to take part in the discussion.

How long have you been collecting herbs?	3 years; 5 years; longer
What do you collect herbs for?	Medicine. We know what herb should be used to treat what ailment
Would you describe yourselves as 'doctors'?	"You could say that." We check the internet and keep it in memory and we have books on herbs and their uses.
	Man volunteered: "everyone collects herbs."
Is there a stable supply of herbs?	We know how to harvest so the plants can survive.
	There are large areas available, plenty of supply
Have any species declined?	Mostly where there is no management, land has fallen into dis-use.
Are there particular places where certain herbs grow?	Some herbs grow in particular places and we know where to find them. E.g. mint
Do all ages of people come to you?	Anyone of any age who has a health issue
Is this your only income?	One woman said it was her only source of income. I can't get other work at my age.
Is the income seasonal?	We try to collect as much as possible to make it last across the seasons but we are not earning well. Other family members may find other work e.g. in a hotel, "at my age they would not take me".
What does your job entail?	"I do everything: collecting, packing, labeling and selling"
Do you think the mine will increase mosquitoes or disease?	We are not bringing herbs from that area.
Do you know anyone who collects in that area (the area of the mine)	People would not collect from near the mine. "playing safe". Many people think the same and avoid the area.
How far do people keep away?	Man: 1km?

	Woman said even before mining activity started, she collected 8km away, not from the mine area anyway.
	If I live 10km away from the mine and collect herbs from there, that is no problem. "I heard the biggest tailings will be near Jermuk." JT said there would not be any tailings… woman responded that she didn't think you could mine without tailings. JT said there would still be a large dump of waste rock and other things, but not tailings. HDW said there would be a 1km buffer around the mine
Do you think you need more information about the mine?	Yes. (Nara fetched reports to give to them)
Do you think tourists to Jermuk will be affected?	We don't know, we do our job, but "people generally have concerns about safety".
Is there anything the Company could consider to improve the environment?	Nothing… except get rid of the mosquitoes!

Summary of main issues: Jermuk herb collectors.

- Everyone collects herbs but these people are considered specialists as they have gathered information about herbs from books and the internet.
- Herb collecting, processing and selling is particularly useful livelihood for people who may otherwise be considered 'too old'.
- Although they do not personally collect herbs from the mine site, it is already considered unsafe and is avoided.
- There is interest in where the mine will be sited and some confusion about whether there will be tailings or not.

7. **Interview with artist and his wife in Jermuk.**

   Samuel Yenokyan sells paintings in Jermuk, some of which depict scenes from nature including local mountain landscapes and flowers. His wife helps him to sell his paintings adjacent to the Jermuk springs.

The Company has asked us to assess possible impacts of the mine on ecosystem services.	Many people are voicing their concerns The internet has information and there are anti-mine sites where you can see everything but the mining is continuing
Will the mine change things?	We already see the impact. The mountain is bare now. I think there is uranium there.
	"If it is done well it is ok. This means if they don't damage the nature". "Mining is very good for the development of Armenia but it needs to be compatible with the

	environment. Specialists should decide. I don't know anything about mining."
	"If it affects future generations I am against it".
The view will change	What are the ecological effects? I am not so concerned about the view.
	"If it is good for the economy it is good. If it impacts on health, the environment or future generations I am against it"
	"I like nature and I use it for my livelihood"
	"We love nature"

Summary of main issues: Jermuk artist and his wife.

- They are aware of anti-mine discourse on the internet and the activities of NGOs in the area.
- There is a belief that uranium will be mined in addition to gold.
- There is a tension between economic and sustainable development.
- Longer-term health and environmental impacts are more important than short-term economic gain.

Appendix A: ESIA Focus Group Protocol July14

Date of interview: …………July 14Name of facilitator(s):   ……………………..
Location: …………………..   Village: ………..
No. of women: …………………..   No. of men: ……………………..

Introduction

Welcome and thank you for participating in this discussion group.
We would like to know about what activities you undertake in this area and how they might be affected by the proposed construction and operation of the Amulsar gold mine.

In order to make this work there are a few guidelines:

- It is voluntary for you to participate in this study. This means that you can decide to participate or not and you can leave at any time.
- We would like to record the discussion so that we don't miss any of your points. We need your permission to do this. If yes, use recorder, if no, take notes] Are you happy for us to take photographs? [as recorder]
- As we would like everyone to have the opportunity to speak we would like you to give your opinion and allow other people to give their opinions too.
- All your responses will be anonymous and treated as confidential.

Do you have any questions?

TURN ON RECORDER [with permission]
So we can help link your thoughts and views together, it would help us if you would introduce yourselves, just letting us know your name and anything else that you'd like us to know about you.

Name	Gender	Age	Occupation	Other (specify)

We are interested in finding out about ecosystem services. Ecosystem services describe the resources and processes that are supported by the local ecosystem. An ecosystem describes the relationship between living creatures (people, animals, birds, fish, plants, micro-organisms) and their habitat (water, air, soil).

In order to get the discussion started we are going to present you with a selection of cards that depict ecosystem products and services that could be found in this area.

[Place a set of laminated cards on the table.]

Each card has a picture of a local ecosystem product or service.
Please take a few minutes to look through the cards.

We are interested in which of these ecoservice products or services you consider **important for your livelihood or wellbeing.**

Concept	Questions/activity	Comments or observations
Additional Importance	**1. Please select the products or services you obtain from this land that you consider are important for your livelihood (source of income, exchange value, food) or wellbeing (physical, psychological, spiritual, cultural).**	
	2. What other products or services do you obtain from this land that are important for your livelihood/wellbeing that are not shown on a card? [Add name of product and/or services to blank card/s]	
Prioritisation	**3. Which are the most important products or services for your livelihood/wellbeing?** We would like you to create two piles of cards. One pile 'Important' and another 'Not Important.' [Record which cards are Important and Not Important]	
	4. Why are these the most important for your livelihood/wellbeing? Income Traditional Food & diet Health Educational Social Religious/spiritual Inspirational Recreational Tourism Aesthetic Please elaborate	
Quantity	**5. [For the most important] How many?** Animals and type Trees Hives Kg (of produce e.g. cheese) Litres (e.g. milk)	
Use value	**6. Are these products for sale, exchange and/or own consumption?** For sale Exchange Own consumption	
	7. What is the monetary and/or exchange value of these products? AMD	

Location	**8. Please indicate on the map provided where these products and services come from?**	27
Access	**9. How do you normally access these areas?** Road	
Dependence	**10. How feasible/easy is it for you to get similar type, quantity, quality and benefit of these products and services in another way?** Buy Exchange Alternatives If feasible/easy, what, where and how? If not feasible/easy, why not?	
Acceptability	**11. How acceptable would it be for you to access these products and services in another way?** Not at all acceptable Moderately acceptable Very acceptable Why? Why not?	
Additional comment	**12. Is there anything else you would like to add?**	
Finish	**<u>Finish</u>** Thank you. We have reached the end of the discussion. We hope that it has been interesting for you. If you would like any more information please visit or contact the information centre.	

Note that 28 images were produced on the basis of previous research that had identified priority ecosystem services in the area. A further 8 important ecoservices were identified by participants. The table below describes the village where they were first mentioned. A total of 36 laminated A5 cards were used of which 23 depicted or described provisioning services, 2 regulating, 5 cultural and 6 supporting ecosystem services.

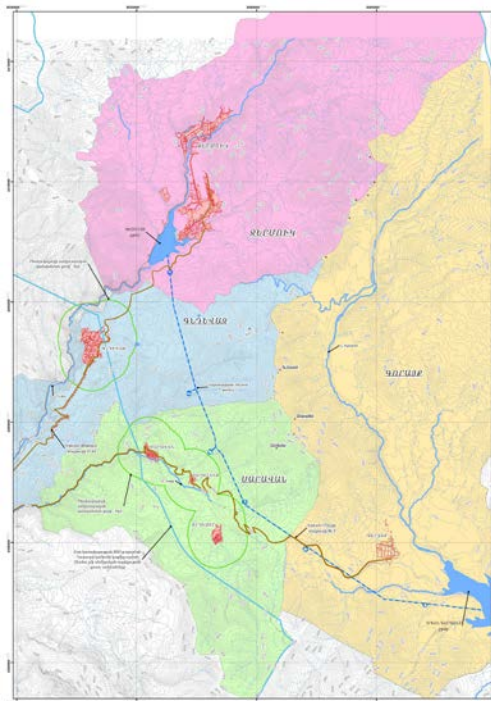| Sorting task card number	Ecoservice image	Service category (MA 2003)
1	Bottled (Jermuk) water	Provisioning
2	Herding sheep/goats	Provisioning
3	Recreational use e.g. walking	Cultural
4	Biomass e.g. wood	Provisioning
5	Herding cattle	Provisioning
6	Milk	Provisioning
7	Herbs (including asparagus) for eating/medicine	Provisioning
8	Hay	Provisioning
9	Mountain with snow/snowmelt	Regulating
10	Apples	Provisioning
11	Heritage e.g. rock art, tombs	Cultural
12	Inspiration e.g. paintings, sculpture	Cultural
13	Irrigation technology	Regulating
14	Bezoar goats	Provisioning
15	Wolf	Supporting
16	Water for drinking	Provisioning
17	Social events e.g. food festivals	Cultural
18	Bears	Provisioning
19	Meat for protein/entertainment	Provisioning
20	Apricots	Provisioning
21	Milk products e.g. cheese	Provisioning
22	Nuts	Provisioning
23	Wild mushrooms	Provisioning
24	Bee hives/honey	Provisioning
25	Natural springs/water	Supporting
26	Hot springs e.g. for bathing	Cultural
27	Cherries (or rosehips)	Provisioning
28	Fish (caught)	Provisioning
29 (Gorayk)	Potatoes/garden crops (no image)	Provisioning
30 (Gorayk)	Berries (no image)	Provisioning
31 (Gorayk)	Fox (no image)	Supporting
32 (Gorayk)	Birds (no image)	Supporting
33 (Serevan)	Wild pigs (no image)	Provisioning
34 (Serevan)	Rabbits (no image)	Provisioning
35 (Serevan)	Ants (no image)	Supporting
36 (Gndevaz)	Snakes and lizards (no image)	Supporting

Appendix C: Maps used in the focus groups

The map was provided by Lydian and showed four different 'mars' (regions) corresponding to Gorayk, Serevan, Gndevaz and Jermuk. All place names were in Armenian. Map I without mine infrastructure was used in Gorayk, Serevan and at the herder's camp. Following confirmation of permission to show mine infrastructure, Map II was presented to people in Gndevaz.

Notes on mapping exercise

Neither map was easy-to-read and/or use and this was particularly the case for the seasonal herders. Secondly, participants found it difficult to orientate themselves to either places or features on the map. The scale of the map may have exacerbated this. A larger scale map e.g. single mars (region) with adjoining mars, may aid orientation and annotation and could be used in future mapping exercises.

Participants were encouraged to identify where priority ecosystem services were located using the maps and a pencil. Annotation varied by focus group e.g. in one focus group, the participants chose to demarcate areas and the facilitator added descriptions of the services they were referring to, in another participants annotated the maps with numbers used to identity the images in the card sort. The third map contained a mixture of words and numbers.

Map I: Amulsar mountain without mine infrastructure (used with seasonal herders and in Gorayk and Saravan)

Map II: Amulsar mountain with proposed mine infrastructure (used in Gndevaz)