



Michelle Leemkuil
2016

Wageningen University
MSc Thesis Landscape Architecture

CULTURE AS BASE FOR LANDSCAPE DESIGN

The case of an earthquake-safe community centre
for the Nepali mountain village Ashapuri

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Colophon

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In collaboration with and supported by:



STICHTING N.H.BOS
ter bevordering van de landschapsarchitectuur



people • earth • health

In fulfilment of the requirements for Master of Science degree in Landscape Architecture at the Wageningen University, Landscape Architecture Group.

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Preface

This thesis report is my final project of the MSc program of landscape architecture, Wageningen University. The research of this thesis is conducted in Nepal and the Netherlands, starting from November 2015. The project focuses on the role of cultural manifestations in daily life outdoor space, in order to develop design starting points to improve and rebuild the outdoor space in an earthquake-safe way in Nepali mountain villages.

Before I started my thesis, I was searching for something that fascinates me; a topic that I wanted to work on for more than half a year. Culture has always fascinated me and Buddhism inspired me because of its simplicity in way of thinking but at the same time complexity of images, colours and meanings. This is why I chose to work with Buddhism. The only thing I had to do was connecting it to landscape architecture. With the help of Pieter Germeraad, who knew Ben and Tanja Kruk, who knew Benjamin van Ooij, I came into contact with Herb Nepal. As Herb Nepal is located in Ashapuri with an ethnic group that has a Buddhist origin, I decided to take the design question of Herb Nepal about their community space as the case for my research.

The report can be split into four parts. Part I is the Introduction. Here the topic, problems and research intentions are introduced. Part II is the Research and Results in which the research about culture is explained and processed. Part III is the Application of the design, where the program of Herb Nepal is explained and the preconditions of the three concepts culture sensitivity, earthquake-safety and landscape systems are given. Furthermore the program and preconditions are combined to create design starting points that explain the design. Last, part IV is the Discussion and Conclusion of the whole research.

Finally, I would like to thank the people that guided me along the process. I would like to thank Pieter Germeraad for bringing me into contact with and making me enthusiastic about Nepal, and for the help with my design. I would like to thank Ben and Tanja Kruk for bringing me into contact with the organisation Herb Nepal. I would like to thank Benjamin van Ooij and Simone Alexander for the opportunity to come to Nepal and for their hospitality and support during my time in Nepal. I would like to thank Sraddha Basnyat for the translations and help during fieldwork, and I would like to thank the whole team of Herb Nepal for their interest and participation. I would like to thank Ingrid Duchhart from Wageningen University for her enthusiasm, her feedback and all her knowledge that she shared with me. I would like to thank Hanneke Andringa for checking my report and Thomas Roodsant for checking my report and supporting me during the whole process. Finally, I want to thank my mother and sister who visited me in Nepal during my fieldwork period and for showing me the beauty of Nepal.

Michelle Leemkuil
October 2016

Summary

Key words: culture, Nepal, landscape design, earthquakes, Tamang

The main focus of this research is the study on culture in Nepal to make a design for a community centre for Herb Nepal in Ashapuri, a village 30 km from Kathmandu. The Western organisation Herb Nepal has set up a farm with training centre to improve the lives of the farmers in Ashapuri. The community space around this farm should also serve as crisis centre when natural disasters happen, which is the design brief of this thesis.

To create a valuable space and a better environment for communities, culture needs to be incorporated. Using culture in place shaping ensures that people can identify with a place, trust a place, and will move on intuition when an emergency happens. In Ashapuri are mainly people living from the ethnic group Tamang with a mixed religion of Hinduism and Buddhism. By using culture in the design, the design will be more sustainable and therefore it fits in the Buddhist and Hindu view of the Tamang.

To gather knowledge in order to design places that people can identify with and that are safe and earthquake-proof would be an improvement. This research is an attempt to bridge the knowledge gap of culture in safe outdoor space in earthquake-prone areas, with a combination of the concepts landscape systems, earthquake-safety and culture sensitivity. Therefore the research objective is to explore and understand the role of cultural manifestations in daily life outdoor space, in order to develop design starting points to improve and rebuild the outdoor space in an earthquake-safe way in mountain villages in Central Nepal, applied at the case of Herb Nepal.

To fulfil the research objective, different methods are used and executed partly in The Netherlands and partly in Nepal. Interviews, workshops and surveys are used to acquire local knowledge from the people in Ashapuri. In addition, systematic photographs are made in the village and hills around Ashapuri for the visual content analysis in the Netherlands of the cultural manifestations in Ashapuri. The local knowledge and visual content analysis are the basis of the coding clusters about culture.

As part of landscape architecture the research does only focus on the rich outside culture. The cultural manifestations that can be considered as an expression of culture in Ashapuri can be divided into

three categories: 'spatial organisation', 'worship', and 'living space' in the coding clusters. These categories are formed into preconditions about orientation, connectivity, sacred sites, entrances, places of worship, development in agriculture, climate protection, living space and community space.

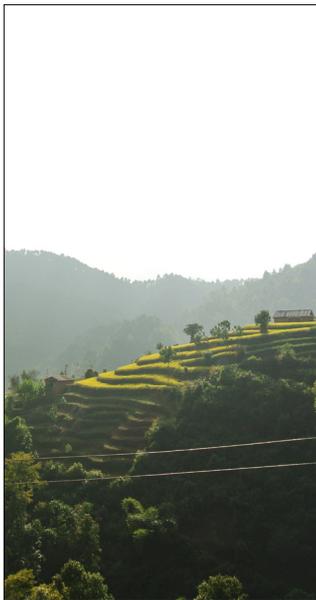
Preconditions of an outdoor space that is earthquake-safe are having an open and flat surface, being away from edges, taking evacuation routes into account, providing shelter of the climate, having available drinking water and proper sanitary facilities, having drainage facilities, having renewable energy and local elements by rebuilding. The landscape system in and around Ashapuri can be divided into the three elements of occupation, abiotic and biotic. To improve the landscape there should be protection from landslides, river overflow and wind. Fertile river clay should be used for agriculture, a water system and protection should take care of the monsoon rain, only seasonal buildings should be built next to the river, trees need protection and waste pollution should be stopped.

In the design the preconditions of culture sensitivity, landscape systems, earthquake-safety and program of Herb Nepal are combined for a community centre that fits the local community. All preconditions and program elements are combined into design starting points that sometimes overlap each other. There can be designed with culture on landscape scale, such as the orientation of buildings and places, in connection with places and on elements in the landscape. But overall culture takes place on a very detailed scale. It is visible in the facades of houses, in the form of matras, sutras and the details in pillars. These details are not in the field of landscape architecture, and only culturally authorised people can design this. So it is important to be careful when designing with culture. Only the material(s) and the shape(s) can be designed, not the symbolism.

As this research is only about the village Ashapuri, further research in the field of landscape architecture, the directions can be tested in other Tamang mountain villages and can be expanded, together with the coding tables, for other ethnic groups and in bigger cities, to get a total overview of the whole of Nepal with all ethnic groups.

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Part I Introduction



1. Introduction

This chapter is to introduce the research. It starts with the reason of the study, then some general information about Nepal, and it ends with the case explaining about the ethnic groups and religions that have influence on the case.

1.1 Reason of the study

This report as part of the Master thesis Landscape architecture is a study about culture. Culture has my fascination because I see culture as a natural way of connecting people because of manifestations, traditions and rituals that people believe, trust and feel connected with, built on the past. My special interest goes to Buddhist culture because of its simplicity in way of thinking but at the same time complexity of images, colours and meanings. Because of an opportunity at the Western organisation Herb Nepal, a for-profit organisation that wants to improve the lives of local farmers, I came into contact with Nepal. As Herb Nepal is located in Ashapuri with an ethnic group that has a Buddhist origin, I decided to take the design question of Herb Nepal about their community space as the case for my research.

1.2 Nepal under pressure

1.2.1 Geography

Nepal is a small country in South Asia (figure 1.1). With roughly 800 km in length and 170 km in width, it is four times as large as the Netherlands. Geographically speaking, Nepal can be divided into three main regions: the Himalaya in the North, the hills in the middle and the Terai plain in the South (figure 1.2) (Chaulagain et al. 2015, Wolfgang, 1976). Nepal is caught between the two giants China and India. With Buddhist Tibet as part of China and India with a Hindu religion, Nepal is a meeting place of different cultures.

1.2.2 Society

Nepal knows an inherent form of traditionalism with moral and spiritual values (Banerjee, 1980). Indo-Aryan races are dominant in the south, Tibetan speaking groups control the north, and a combination of Tibeto-Burman and Indo-Aryan groups can be found in the midlands. Indo-Aryans have moved to the mountains in the 12th century because of the predomination of Muslims in the north of India (Wolfgang, 1976). Although Nepal is the birthplace of Buddha, Buddhism has declined, and different religions that lived decades next to each other have intertwined (Wolfgang, 1976). Because of these different influences, there is no clear overall Nepali style or architecture assignable (Wolfgang, 1976).



Figure 1.1: Location Nepal on a world map (based on: Geology.com, 2005-2016)



Figure 1.2: Geographically Nepal. Blue: Himalaya, Green: Hills, Yellow: Terai plain (based on: Shrestha, 2005)

The main casts or ethnic groups are the Chhetri (17%) the Brahmins (12%), the Magar (7%), the Tharu (7%), the Tamang (6%) and the Newar (5%) (District Profile Census 2011, 2011). 81.3% of the people follows Hinduism, however it is not the state religion. With 9% of the population, Buddhism is also an important religion (District Profile Census 2011, 2011). The tribe and caste regime is still the strongest, where certain caste groups have more rights than others (Wolfgang, 1976). It has never been attempted to create a single population group by brutal force or religious power. However, in the past certain Hindu caste groups dominated the indigenous Buddhist population, therefore the Buddhist population fled into the Kathmandu Valley (Wolfgang, 1976).

1.2.3 Economics & Politics

According to the World bank (1991) 40% of the population of Nepal lives in absolute poverty. The semi-urban and rural communities have poor or no infrastructure, social services, medical care, clean drinking water and proper sanitation. 80% of the population works in agriculture. During the second half of the nineteenth century, there was much timber extraction, which resulted in deforestation, soil erosion, loss of farmlands and flooding of the lowlands (Thomas-Slayer & Bhatt, 1994).

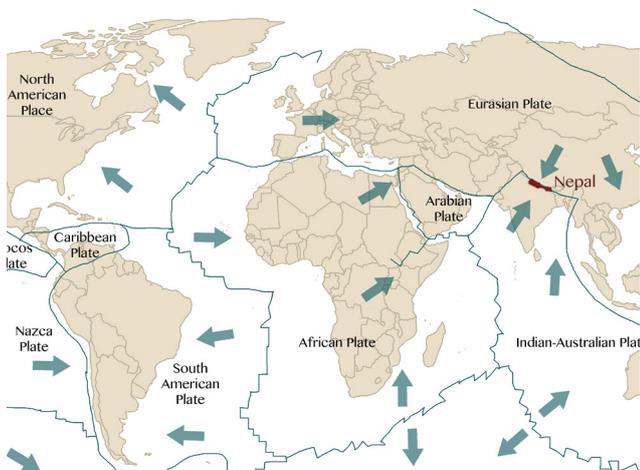


Figure 1.3: World plate structure (based on: *Mysterie & Wetenschap Forum*, 2015)

Nepal has other issues like poverty, literacy, poor access to healthcare, discrimination, trafficking risks, alcohol abuse and domestic violence. In October 2015 a blockade began, due to disagreement about the constitution between the governments of Nepal and India. The border between the two countries was blocked and trucks with oil, medicines and building materials could not get into Nepal (Lamichhane, 2015).

Until 1990 Nepal was an absolute monarchy. Then it turned into a parliamentary democracy, which led to civil war. Since 2008, Nepal has been a democratic federal republic with a stable political situation. Nepal knows three political parties that can be divided in the socialistic Congress, the Communists and the Pro-monarch Royalists (Personal communication B. van Ooij, 2015).

1.2.4 The disaster of Earthquakes

Besides social and economic problems, Nepal is also well known for Earthquake disasters. Only 4% of all natural disasters between 1991 and 2005 were earthquakes, but it is good for 43,4% of total casualties caused by natural disasters (EM-DAT, 2016). Earthquakes often result in a number of secondary hazards like landslides, which result in even more casualties (Corsellis & Vitale, 2010).

Earthquakes in Nepal happen because the Himalayan arc, as one-third part of Nepal, is located between the Indian plate and the Eurasian plate (figure 1.3) (Avouac, 2003). The Himalayan Mountain chain is created because the Indian plate broke from Antarctica around 160 million years ago. With 13 cm per year it moved to the Northeast and slid into the Eurasian plate around 50 million years ago (Bilham et al., 1997; Avouac, 2003). In the last decades, the Indian place is moving five cm per year of which two cm in the direction of the Himalayan region (Bilham et al., 1997; Avouac, 2003). Because of this movement, the surface is continuously under pressure and sometimes the tension releases with and earthquake as a consequence.

Over the last centuries, huge earthquakes in Nepal with more than 8 on the Richter scale happened in 1803, 1833, 1897, 1905, 1934 and 1950 (Gupta and Gahalaut, 2014). These earthquakes resulted in large numbers of casualties and extensive damage. Studies show that two earthquakes of 7.5 or higher on the Richter scale happen every 40 years. On the 25th of April 2015 at 11:56 Nepal time the Gorkha earthquake with 7.8 on the Richter scale struck Nepal. With an epicentre of 80 km west of Kathmandu,



Figure 1.4: Local people selling Herb Nepal products (Herb Nepal, 2016)

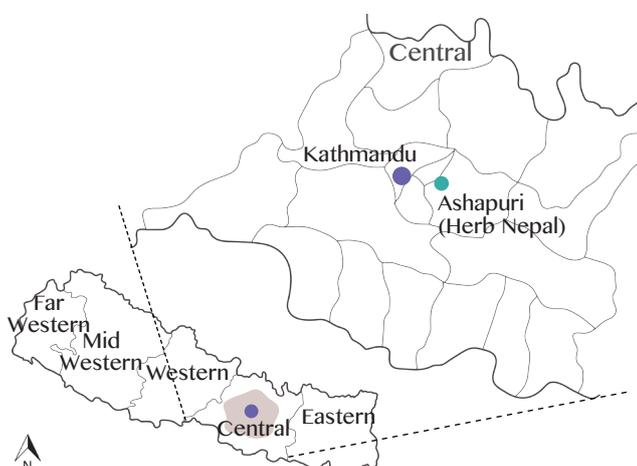


Figure 1.5: Location Ashapuri and Kathmandu in Central Nepal (based on: *Mysterie & Wetenschap Forum*, 2015)

fourteen of the seventy-five districts of Nepal were affected (Dahal, 2015). On the 12th of May 2015 the largest aftershock occurred with an amplitude of 7.3 on Richter scale (Gupta, 2015). The earthquake made huge annihilations with more than 9,000 casualties and more than two million people became homeless (Dahal, 2015). Due to the fact that there were no big earthquakes over the last 65 years, an earthquake like the earthquake of April 25, 2015 was to be expected (Chaulagain, 2015).

1.3 Herb Nepal the Case

A (Western) company that wants to improve the lives of local farmers is Herb Nepal (figure 1.6). They try to accomplish this goal with an earthquake-resistant training centre for the local people. The space around this training centre will be the case of my thesis.

1.3.1 Goals of Herb Nepal

Herb Nepal registered in Nepal in December 2014 and is a for-profit social enterprise that reinvests part of its profits into its activities. This allows the organisation to be financially independent and not donor reliant. Unlike a traditional business that operates using a single bottom-line i.e. financial, Herb Nepal is set up to measure its performance based on a triple-line approach (social, environmental and financial) (Personal communication, S. Alexander, 28 January 2016).

The business model of Herb Nepal (figure 1.6) starts with the small-scale farmers. At the moment, many young people move away from the villages because of lack of livelihood opportunities. Their main means of income consists of farming, which is insufficient. In the case of disasters like earthquakes, it is important to have young people living in a village, so that the local families can take care of each other (B. van Ooij & S. Alexander, Annex D, Interview 2-1, 12 November 2015). By teaching the local farmers improved farming methods, they will create high value and low waste herbal crops, instead of low value and high waste vegetables (Alexander, 2016). The farming methods are based on working with nature, zones of accessibility, variations of plants in one bed, wider beds, feeding the soil with double digging and mulching, and plants and trees with multiple usage. Cultivated herbs, vegetables and edible flowers are special products that are not available everywhere, which creates a higher selling price. Selling products on the bigger market is difficult for local people because they are often not taken seriously, therefore certification of products and organisation would

make it easier. Herb Nepal will go to the market with the products (figure 1.4), so the profit margins stay local and can be put in social programs. The aim of Herb Nepal is to get as many benefits for as many different parties as possible. They want to export directly to restaurants, and to make oil and powders of the herbs themselves (B. van Ooij & S. Alexander, Annex D, Interview 2-2, 12 November 2015). This all will result in more income. In the short term this means a higher income for the small-scale farmers and decrease in food waste. A part of the money will be invested in up-scaling the farm, which will result in more improved livelihoods, organic and sustainable foods and a stronger ecosystem (Alexander, 2016). Their future goal is to pass on their knowledge to 2400 farmers in the West of Nepal, starting with 50 farmers in Timel (B. van Ooij & S. Alexander, Annex D, Interview 2-3,4, 12 November 2015).

Tourism in the form of volunteers and research students who pay to stay at Herb Nepal is also part of Herb Nepal's business model. It is a way to get into contact with international people and learn from them. Moreover, it is an easy way to gather income and provide jobs for the local people. The social programs have as aim passing on gaining knowledge, instead of only giving or taking knowledge. So both parties can learn from each other (Alexander, 2016).

1.3.2 Regional context

Herb Nepal is located near Ashapuri, which is a village in central Nepal, approximately 30 kilometres south-east from the capital city Kathmandu (figure 1.5). According to the local people, Ashapuri lies on the boundary of the Bhaktapur and Kavre district (figure 1.7), just outside the Kathmandu Valley (B. van Ooij, Annex D, Interview 4-6, 10 December 2015). Apart from districts, Nepal is also using Village development committees (VDC), which are comparable with municipalities. According to local knowledge and Nepali sources (Markowski, n.d; Dahal, 2015; Places in the world, 2015), Ashapuri is located in the Kavre district in VDC Ryale, while the land of Herb Nepal is located in the Bhaktapur district in VDC Sipadole. However there is some confusion about the location when compared with Google Maps. According to Google Maps as shown in figure 1.7, Ashapuri is not even close to the boundary of the Bhaktapur district, but is part of the Kavre district and lies on the boundary of VDC Ryale and VDC Sanga (Google Maps, 2016). The exact location of Ashapuri on the map is not important for my research, however, I will conclude that it has different influences due to its location.

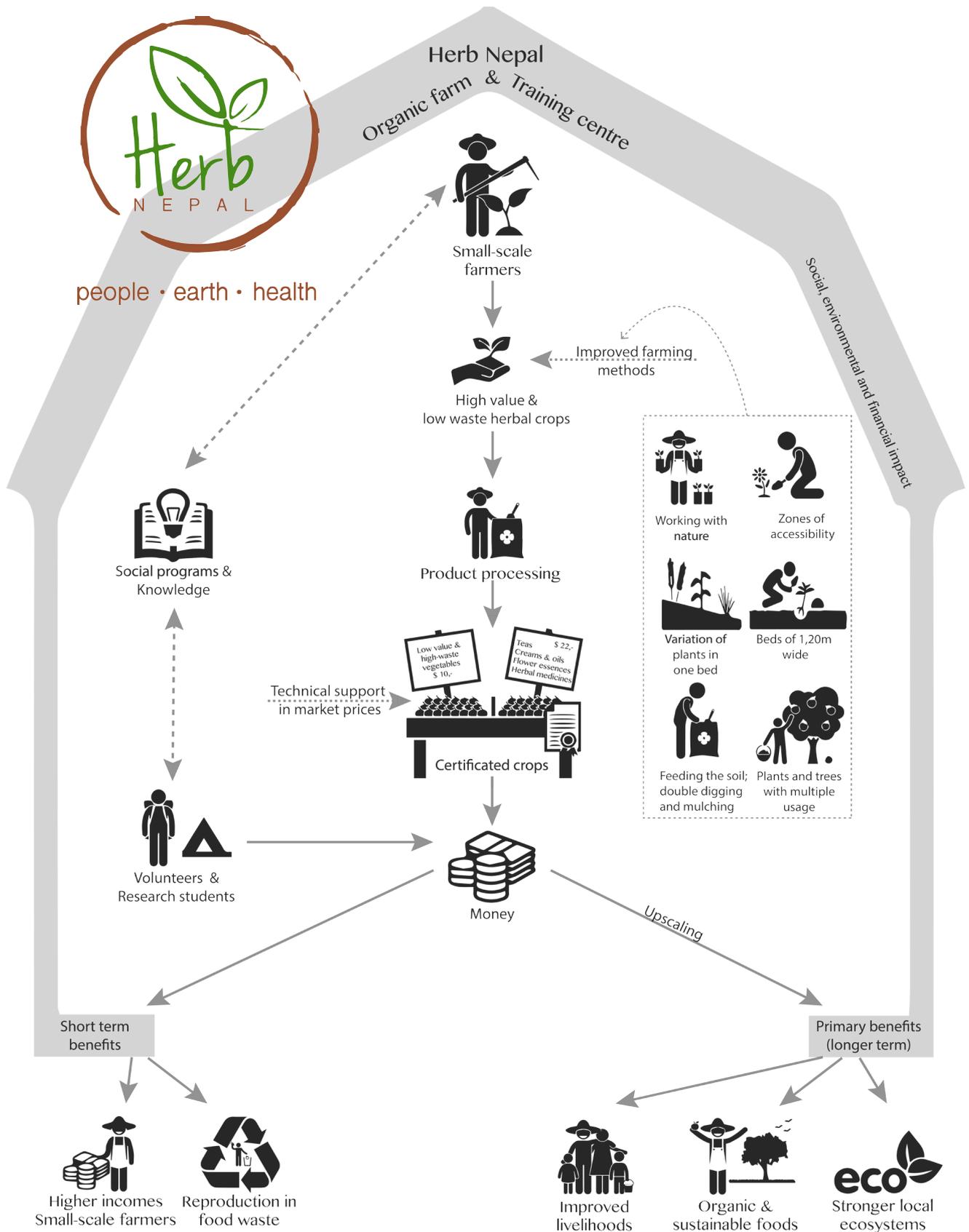


Figure 1.6: Business model of Herb Nepal (based on: Alexander, 2016)

1.3.3 Ashapuri ethnic groups and religions

As the culture of the village Ashapuri is the main research subject, I will start with explaining about the ethnic groups and religion. When looking at the ethnic groups living in the Bhaktapur and Kavre district, there live mainly people from the Newar ethnic group in Bhaktapur and mainly people from the Tamang ethnic group living in Kavre (figure 1.7) (District Profile Census 2011). However, zoomed in on the VDC's Ryale and Sanga, Sanga has again more people from the Newari ethnic group. According to the surnames of the local people in Ashapuri that are all 'Tamang', I take the Tamang as main ethnic group of Ashapuri. As can be seen in figure 1.8, the Tamang ethnic group is influenced by Buddhism and the Newar by Hinduism. Because Ashapuri is located close to a place where Newar and Tamang could live, it is possible that they influence each other's culture, which leads to a hybrid culture.

Tamang ethnic group

The majority of historians believe that Tamang are the indigenous and oldest people living in and around Kathmandu (Himal year 5, number 1: Laxmi Tamang, 2014). According to 30 000 years old fossils found in the region north of Kathmandu that are similar to Mongolian weapons of that period, the first community of Nepal was Tibeto-Mongoloid (The blue space, n.d.). The same source says that Tamang is the largest ethnic group since they came from Tibet around 3000 years ago. Tamang can be found in whole of Nepal, but most of them are gathered in central Nepal. Until 232 years ago, Tamangs were self-ruled and autonomous (The blue space, n.d.).

Because the capital city is located in central Nepal, governments from other ethnic groups did not want an empowered Tamang community. This ensured that the Tamang were disenfranchised, exploited and dominated (The blue space, n.d.). Between 1856 and 1962, the status of the Tamang was comparable with the second lowest rank in the Hindu hierarchical system. At that time, people could kill the Tamang without repercussions (The blue space, n.d.). Land of the Tamang was confiscated and despite the new civil code in 1962 that should improve their lives, they still have little influence. The concerted exploitation of the Tamang caused poverty among the Tamang. They worked as farmers or porters for the Newars. They were excluded from military services and were used for manual physical labour (Himal,1992). According to the handbook on Gurkha soldiers the reason for the exclusion of the Tamang was that they were beef eaters, which is not allowed in the Hindu religion.

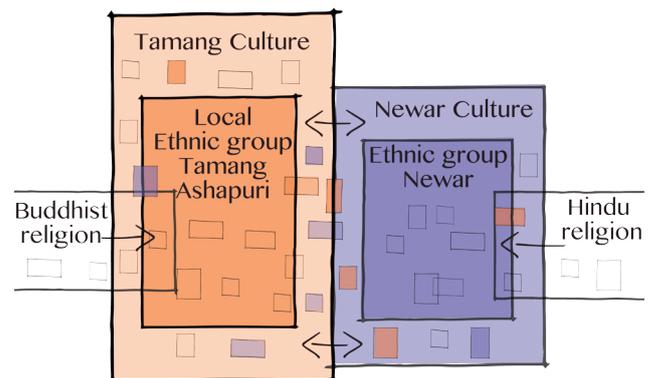


Figure 1.8: Influences on Tamang culture

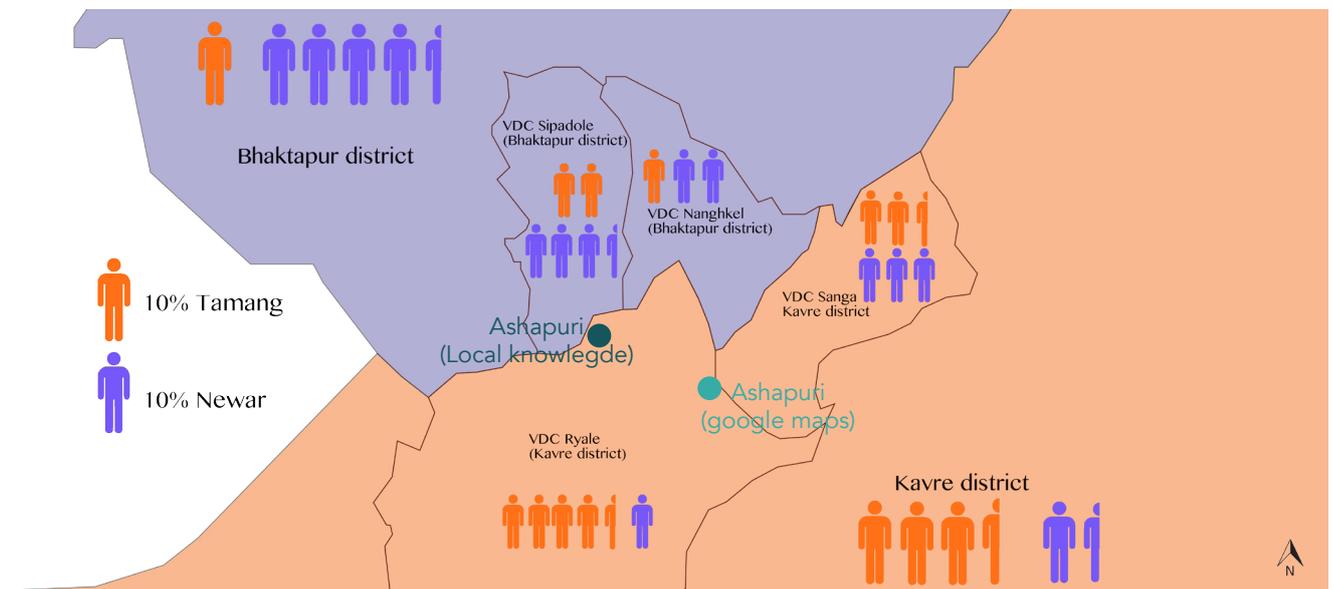


Figure 1.7: Ethnic groups living in the Bhaktapur and Kavre district and location of Ashapuri (based on: District Profile Census 2011)

In the literature, Tamang appear with different names e.g. Murmi (Laxmi Tamang, 2014). Tamang can only be translated in Tibetan language, where Ta means horse and Mang means army, rider or trader (Laxmi Tamang, 2014 and Santosh Tamang, 2011). In these sources, it is believed that horse-riding soldiers of King Tsrong Tschong Gampo settled in the Himalayan Hills and got the name Tamang. However, there is no mentioning of King Gampo in the genealogy of Tamang nationality (Santosh Tamang, 2011). In Tibetan, Tamang people are called 'Rongpo', which means foreigner (Santosh Tamang, 2011). Another Tibetan definition is that Ta means 'entrance' or 'gateway' and Mang means 'large public' or 'common people' (Santosh Tamang, 2011). So a large group of people that came through the gateway.

Tamang follow some form of Tibetan Buddhism, and speak a language derived from Tibetan-Barmeli (The blue space, n.d.). Because Buddhism is not a state religion in Nepal, the Tamang religion is more complicated than Buddhism only (Holmberg, 2005). There are no examples of religious systems that are purely Buddhist and this is also the case for the Tamang (Holmberg, 2005). Tamangs claim to be Buddhist in a Hindu state; they use an equal food system instead of dividing food according to the Hindu caste system; they feel responsible for the brothers of their wives and do not see their Hindu neighbours as being different than they are. Tamang women have some sort of freedom and power, which is unknown by Hindu caste equivalents (Holmberg, 2005). The Tamang society is organized into 240 families with different clans, which are connected by marriage (March, 2002).

Buddhist view

Buddha was born as Gautam Siddhartha, prince of the Sakya clan, in the area of the border between Nepal and India (Shaw, 2013). His view was dismissing worldly life and reaching enlightenment by connecting with dukkha (the human suffering) and dharma (justice on universal and personal level). Buddhist can reach this by following the 'eightfold path' and focussing on eliminating dukkha by thoughts, attitude and action (Shaw, 2013). The main goal of Buddhism is reaching peace and happiness, the Nirvana. Humans are capable of liberating themselves from the barriers and impurities by mindfulness or meditation and wisdom. Worship and rituals are not common, however sometimes there are ceremonies to express respect and appreciation for Buddha. The focus does not lie on abstract questions about the universe or death; it lies on defeating suffering and attaining happiness (Matz, 2002). The base of Buddhism are

the Four Noble Truths: 'life is suffering', 'suffering comes from attachment', 'only detachment brings peace', and 'to get peace you have to follow the Buddhist path' (Matz, 2002).

Buddhism is not a culturally bound religion; it uses and adapts the local culture of the religion. It does not conflict with the local culture, but absorbs it (Guang, 2013). The Buddhism principle is that people should use as few resources as possible without focussing on the idea that natural resources are limited, and being satisfied with the four basic needs: food, clothing, shelter and medicine (Sponsel & Natadecha-Sponsel, 1993). Therefore, Buddhism is a form of economic and social sustainability (Sponsel & Natadecha-Sponsel, 1993). According to Saddhatissa (1970) "*A Buddhist does not sacrifice living beings for worship or food, but sacrifices instead his own selfish motives*" (Sponsel & Natadecha-Sponsel, 1993).

The Newar ethnic group

Newars are part of the Mongoloid group and are originally from the Kathmandu Valley (Banerjee, 1980). They speak Newari and practice a combination of Hinduism and Buddhism. They farm without animals and only use a tool for digging and turning the soil to cultivate it in small strips of land (Banerjee, 1980). They create huge brick or stone monuments, temples, statues or other crafts of wood or metal. They made the famous Nepal paperwork and manuscripts with craftsmanship (Banerjee, 1980).

The origin of the Newari people is not clear, it is probably a mixture of different people or races who were living in the valley (Shrestha, 1999). There is speculation that they descend from Tibetans and Indians, according to their religion (Oldfield, 1974). According to Nepal Census 2001, 85% of the Newars are Hindu and 15% are Buddhist (Oldfield, 1974), but they all exercise aspects of both religions. Hinduism was the first religion of Nepal, already between 500 and 700 CE an Indian king ruled over Nepal (Oldfield, 1974). Only after the 8th century AD Buddhist influences were noticeable, so all temples and buildings before the 8th century are in Hindu style (Tiwari, 1989). Even after the 8th century, the Kathmandu Valley was still ruled by Hindu kings, and when the Buddhist craftsmen built a temple they had to build in Hindu style with brick and wood (Tiwari, 1989).

Hindu view

In Hinduism nature is sacred, so anything to manipulate the nature just for human pleasure is something horrible in Hindu view (Correa, 2010).

Hindus see the earth as a representation of the Divine Mother, which is the Earth goddess. Mountains are seen as sacred because they can bring you to the higher realms of meditation and trees can be seen as gods (Frawley, 2012 and Anthwal, et al., 2010). They honour cows because cows represent “energies and qualities of the earth selfless caring, sharing and the providing of nourishment to all” (Frawley, 2012). Nature is seen as part of the goddess, so plants, animals, water, earth and fire are part of this goddess (Nadkarni and Chauhan, 2004; Anthwal, et al., 2010). Nature is always woven into the Hindu life (Frawley, 2012).

Important for Hindus is the Puja, which is a form of worship performed with special prayers and offerings of flowers, incense, water, food or oil, which are all highly sensory aspects (Frawley, 2012). They use plants to offer and for medicinal systems, like Ayurveda (Kala et al., 2006). The circle with its finite form is everywhere and represents the cosmos, however the finiteness of earth was characterized by a square with its limited symmetry and clear centre (Tiwari, 1989).

1.3.4 Ashapuri village

The land of Herb Nepal is located at 15 minutes walking distance from Ashapuri (figure 1.9). In the future it is the aim of Herb Nepal to gather more land that is connected to each other, as now they have divided plots of land over the area. Ashapuri is a cluster of approximately twenty houses around the important Ashapuri temple. Nevertheless, people who live in the hills around Ashapuri call themselves part of Ashapuri because they want to be associated with the famous Ashapuri temple. According to a count before the earthquake of April 2015, Ashapuri

counted 181 households (B. van Ooij, Annex D, Interview 4-11, 10 December 2015). Ashapuri has the most important temple in the surrounding due to religious reasons, ‘Asha’ means wish, and ‘puri’ means fulfil (Interview 9-9, Annex A). The Temple of Ashapuri is quite old; according to stories the king visited the temple in 1760 (Interview 3-2, Annex A).

1.3.5 Design question of Herb Nepal

The idea of the Herb Nepal farm and training centre is to be open for use by the local community, and to be the base for research and education. Besides, it will be used as a crisis centre in the event of an emergency situation (Personal communication, S. Alexander, 28 January 2016). This means that the outdoor space around this centre is extremely important and needs to fit the local community. When people cannot identify with a place, they are afraid of it, feel left out or think that it is beneath their caste groups (Personal communication, B van Ooij, 12 August 2015). This may demonstrate the importance of social and cultural impact on the place.

1.4 Conclusion

The main focus of this research is the study of culture in Nepal to make a design for a community centre for Herb Nepal in Ashapuri. Nepal is a country that is under pressure from economic, political, but above all from natural disasters, e.g. earthquakes. In Ashapuri, a village 30 km from Kathmandu, the Western organisation Herb Nepal has set up a farm with a training centre to improve the lives of the farmers. The community space around this farm should also serve as a crisis centre when natural disasters happen, which is the design brief of this thesis.



Figure 1.9: Location Ashapuri / Land of Herb Nepal (based on: Google Maps, 2015)

2. Research design

This chapter starts with an explanation of the theoretical and analytical framework and the research is introduced with the knowledge gap and research questions. Then the methodology, and finally the significance and limitations of the study are clarified.

2.1 Theoretical and analytical framework

2.1.1 Landscape architecture

As this report is part of the Master thesis Landscape architecture, I will explain the mindset of landscape architecture shortly. (Landscape) architecture is focused on problem solving with a science-based background. The problems need to be discovered and identified instead of invented (Rapoport & El Sayegh, 2005). A design should have the purpose of creating settings that suit users, needs and activities. In other words, a design should be user oriented and based on the understanding of human characteristics (Rapoport & El Sayegh, 2005). Moreover, knowledge is needed about the interaction of humans with their environments. Hence the design is locally substantiated, instead of based on the designers' preferences and seen as a 'free' artistic activity (Rapoport & El Sayegh, 2005). A design can be used as a hypothesis to test the knowledge. Therefore it needs to be clear how the design solves the problem and what the improvements are, for whom and why (Rapoport & El Sayegh, 2005).

An important aspect is rationality: a mode of thinking with a combination of cognitive beliefs and methodological conducts that creates a frame of principles to judge the truth or validity (Goulet, 1992). Ethical rational thinking promotes values; it judges about what is right or wrong (Goulet, 1992). Two main systems are involved in ethical rationality, the holistic belief system where a religion, culture, world view or philosophy is the starting point, and daily life experience by people without power, status or skills, who ask for respect without being useful to others (Goulet, 1992).

The socio-physical organisation model of Kleefman (1994), which is used for this research, focuses on the interaction between humans and nature. The natural surface is the underlying base for human existence with two subsystems that depend on each other, the abiotic and biotic. Human interactions can take part within tree subsystems: the economic, the cultural and the political. This abiotic, biotic and anthropogenic layers form the triplex model of the landscape. Landscape will be perceived at a certain moment, while the process of the landscape is

constantly changing in which humans will always be a part of the process (Duchhart, 2007).

The research will be performed with a constructivist worldview to get a grip on the historical and cultural settings, because of the focus of this worldview on specific contexts of the daily life of people. My own background shapes my interpretation of the meaning of others, because of my personal, cultural and historical experience (Cornwall & Jewkes, 1995).

2.1.2 Culture

Culture forms a cultural landscape, cultural landscapes as seen in cultural geography and landscape architecture refer to the outcome of the combination of human conduct and the prehistoric landscape over time (Rapoport & El Sayegh, 2005). Cultural landscapes are not literally designed, but are an outcome of countless autonomous choices of people in time. These combined decisions have specific characters to identity (Rapoport & El Sayegh, 2005). According to Rapoport & El Sayegh (2005) culture is an idea, concept or construct, it is a label for people with the same ideas, beliefs and actions. Culture is not a 'thing' so it cannot be seen, only its effects, expressions, or products can be observed (Rapoport & El Sayegh, 2005). Culture includes knowledge, belief, art, law, morals, customs, traditions and rituals and is created and handed down within different generations of groups of connected people (Koehler, 2007; Metge, 1976; Merriam-Webster 1974; Tylor, 1871; Van Peursen, 1970).

Symbols i.e. cultural manifestations, are a way to express culture, so symbols are at the base of humanity. On their own, symbols do not have meaning, but they are ways to create and share meanings (Kerkstra & Vroom, 2003). Symbols are a spontaneous or deliberate abstract of everything that happens around us, so it helps us to understand the world (Kerkstra & Vroom, 2003). So a cultural manifestation is a perceptible, outward or visible expression of culture that we interpreted as symbols in the cultural landscape.

Groups of people over the whole world are different from each other in perception and interaction with nature, which is shaped by values and worldviews, and retained by tradition (Anthwal, et al., 2010). People can communicate because they share the same cultural context that is part of a certain identity. Identities are changing and people can have numerous identities, so over time new interpretations of identities can arise (Banerjee, 2003).

Cultural landscapes can be physically expressed on multiple scales and can be connected by looking at the landscape as system of space, time, meaning and communication (Rapoport & El Sayegh, 2005). A cultural landscape exist of a system of settings with activities that take place in the systems. It contains fixed (infrastructure and buildings) and semi-fixed elements (trees, lights and benches) that are convertible by non-fixed elements (people with their behaviour, social interaction and communication). Daily life represents activity, which is an expression of culture. Important is that the meaning of these activities is included in the landscape (Rapoport & El Sayegh, 2005).

Tradition is a part of culture. According to the Merriam-Webster dictionary (2016) tradition is described as *“a way of thinking, behaving, or doing something that has been used by the people in a particular group, family, society, etc., for a long time”*. Akbar (1984) and Kubiak (1987) add that it focuses on local, historical and religious customs. Parents teach children their culture in their specific national context through rituals and myths (Peterson, 1998; Banerjee, 2003). Rituals exist of the action and the repetition of the action over time (Holmberg, 2005). Myth and rituals complete each other, but do not always agree. A ritual finds its meaning in instruments and gestures, while a myth makes full use of discourse (Holmberg, 2005).

To sum up, I see culture as a moral idea, concept or construct of a group of people led by their behaviour, beliefs, traditions and rituals that give meaning to, and feel connected with a place and the elements of that place. All of this makes the place exclusive and ensures that the people can understand, and feel related to the place. Cultural rules cannot be imposed, but have to be respected (Van Pursen, 1970, Rapoport & El Sayegh, 2005, Banerjee, 2003, Aoyama et al., 2011; Crevoisier, 2016, Koehler, 2007). A cultural manifestation is a perceptible, outward, or visible expression of culture that we interpret as symbols in the cultural landscape. The cultural manifestations in this research will be divided in religion, land use and spatial organisation.

2.1.3 Outdoor space

Outdoor space is where landscape architecture and culture meet. Space is a constant factor in our lives created by ourselves, helping us to define and protect (Loidl & Bernard, 2003). It is *“an area that is used or available for a specific purpose”* (Merriam-Webster’s Collegiate Dictionary, 2016). Contrasted with the architectural word, landscape-architecture

space has no roof and/or walls, so is called ‘outdoor space’. Outdoor space shapes space between enclosed spaces with solid boundary signs (Loidl & Bernard, 2003).

According to Scheibler (1982), outdoor or open space is public domain when everybody can participate. In most cases open space has multiple functions: it is used for private or connective purposes, it consist of access roads, transportation, communication and meeting zones, religious activities, work and leisure places. Because of these different purposes, there is a high economic value (Scheibler, 1982). Cultural symbolism is part of the outdoor space. People give meaning to elements, the so-called symbols, by their cultural experience, which relate in a whole network of cultural symbols (Germeraad, 1990).

To conclude, outdoor space is space that is surrounded by built and natural elements and used for particular or not particular daily business e.g. living and work, which give a positive or non-positive addition by being useful and meaningful to the surroundings and users (Germeraad, 1990).

2.1.4 Earthquake-safety

Part of the research question of Herb Nepal has to do with earthquake-safety. Earthquakes are not only major disasters for human life, they also cause large disturbances in the organisation of a city (Parrinello, 2013). Therefore, (urban) designers and anthropologists play an important role in improving village design in earthquake-prone areas. After an earthquake, places with damaged buildings are no longer safe, and open and public space becomes more interesting as a safe haven (Chaulagain et al., 2015). All sorts of activities will take place in the streets, parks and squares, such as shelter, healthcare and business (Allan et al., 2013). So, a safe shelter place is crucial when an earthquake occurs (Anhorn & Khazai, 2015).

Two trends can be seen according to damaged buildings in Nepal. Buildings of unreinforced masonry, thick masonry structures and framed structures, generally government buildings, are more severely affected than wooden frame non-engineered structures, and new structures are more damaged than old structures (Dutta et al., 2015). In 1994, a building code was introduced in Nepal, but the government did not accept it until 2003. Hence, not all buildings are built according to the code, authorities do not obey the building codes, and public and private buildings do not meet the standards. Besides, masons are not trained well enough and there is a

lack of financial resources (Dixit, 2009; Anhorn & Khazai, 2015). In rural Nepal, adobe materials like sand, clay, water and organic materials are used more often due to the poor economic conditions. Houses made of these natural materials show to have more resilience (Dutta et al., 2015). So, ways to build safe houses are with wood or bamboo, sun-dried bricks with mud mortar or with rammed earth (Chaulagain et al., 2013).

According to Kenny (2012), to prevent a high number of casualties, there should be a combination of awareness and preparedness, and improved land use in the form of building on strategic places strengthened with construction practices. Most articles related to earthquakes focus on house reconstruction or on recovery plans. Little academic interest goes to the urban design for post-earthquake reorganisation (Liu, et al., 2014). Besides, even less interest goes to the design for earthquake-safe places in rural areas. Many unstructured open spaces are created in the process of recovery, which can result in incoherence with a difficult liveable, diverse and sustainable environment. For example the city Tangshan in China, which lost its spatial coherence after the recovery of an earthquake, now has wide streets, low-rise buildings and is less vulnerable. Because of this there is a lack of identifiable centre and urbane refinement (Michell, 2004; Liu, et al., 2014). Liu et al. (2014) concludes that it is important to show more special attention to different functions of land use in a design of outdoor space. Mixed (land) use of public space is more valuable and this could bridge the gap between safety and liveability.

In Istanbul there are examples of green areas that can function as emergency places. However the spaces are inadequate in size, the standards do not deal with modern life style expectations and are not equally efficiently distributed (Aksoy, 2010). The government retakes space for urbanization (Aksoy, 2010). Vice-versa, in traditional villages, modern techniques are applied, which are completely out of place (Aksoy, 2010). When a community is prepared for emergencies, they show more resilience in case of an emergency (Schwab, 2014). A top-down approach for reconstruction ensures a rapid recovery. However, for successful recovery it is important to involve local people as much as possible (Liu, et al., 2014, Schwab, 2014).

An improvement would be to designate safe earthquake proof places (Anhorn & Khazai, 2015). Because earthquakes are unpredictable, there can be a long-term recovery, although, good leadership,

management, and planning can shorten the recovery process (Schwab, 2014). There are guidelines available for safe open spaces. The Open Space Suitability Index measured the qualitative evaluation of the suitability of open spaces and quantitative criterion for the accessibility on network basis (Anhorn & Khazi, 2015). An institution that set minimum standards and a general developed protocol is the SPHERE Project (2011). The SPHERE Project, as quoted from Anhorn & Khazi (2015), "*provides minimum standards and general guidance for use in any of several response scenarios and includes provisions for strategic planning, settlement planning, covering living space, construction, and environmental impact for shelter and settlements.*" These standards will be elaborated further in the next chapters.

2.2 Research

2.2.1 Problem statement

The problem statement of this research is the generality and lack of standards for earthquake-safe places. Guidelines for earthquake-proof buildings are available, but guidelines for outdoor spaces are general, not adapted to local circumstances and do not match with local culture and traditions of specific people (Allan et al., 2013).

2.2.2 Research objective

The objective of this research is to explore and understand the role of cultural manifestations in daily life outdoor space, in order to develop design starting points to improve and rebuild the outdoor space in an earthquake-safe way in mountain villages in Central Nepal, applied at the case of Herb Nepal. In this way, people in earthquake-prone areas can feel safe outside and at the same time can identify with the place because it represents their culture, norms and values.

2.3 Knowledge gap: Culture as missing link

To create a valuable space and a better environment for communities, culture needs to be incorporated (Germeraad & Enebisich 1996). A group of people feels connected because they differ from others in the field of ethnics, religion, language or ideology, which ensures commitment (Banerjee, 2003). Identity as part of everyday life shapes the base of how different people feel connected and can share a certain identity (Banerjee, 2003). Using culture in place shaping ensures that people can identify with a place, trust a place, and will move on intuition when an

emergency happens. Sharing an identity and feeling like a community both has his roots in the historical, social and political elements (Banerjee, 2003). By using culture in the design, it will be more sustainable and therefore it fits in the Buddhist and Hindu view. However culture is also changing, traditions will be forgotten or become more important, so the role of tradition in daily life can enhance landscape planning, management and the environmental ethics (Germeraad & Enebisich 1996).

To gather knowledge in order to design places people can identify with, that are safe and earthquake-proof would be an improvement of the current situation. There are many elements that have the potential to improve these places, but from the above information I conclude that culture is the missing link. Although there is some academic interest for the urban design of post-earthquake restrictions, there is less information about the design of public space that combines safe earthquake-proof outdoor space and local culture. This research is an attempt to bridge the knowledge gap of culture in safe outdoor space in earthquake-prone areas, with a combination of the concepts landscape systems, earthquake-safety and culture sensitivity (figure 2.1).

2.3.3 Research questions

To fill the knowledge gap it is attempted to answer the following questions.

Main research question:

What are and determines the manifestations that can be considered as an expression of culture and land use in Ashapuri?

Associated sub research questions:

What determines the setting of a safe landscape system around the land of Herb Nepal?

What determines the setting of a safe outdoor space in earthquake-prone areas?

Design question:

How can cultural manifestations be integrated in the design of a safe, earthquake-prone community centre in Ashapuri?

2.4 Methodology

To find answers to the research and design questions, there will be multiple steps to take. The research can be divided into two parts, a research- and a design part. The research will end with a coding table of

cultural manifestations for the local village. The design part will start with creating preconditions of the coding table and combine them with preconditions about earthquake-safety, landscape systems and the program of Herb Nepal, to give design starting points that end up in a design for the community space.

2.4.1 Research and design

The main aim of this thesis will be a qualitative research and an evidence-based design. For designing and making decisions explicit scholarly evidence will be used that support the decisions (Brown & Corry, 2011). The received data will be qualitative to understand cultural relationships in a community on a social, economic and political level. Culture will be seen as a local creation as well as a structure of norms and values, and the relationship between these two will be interesting (Milburn and Brown, 2003).

2.4.2 Work process

The Netherlands

As represented in the flow diagram (figure 2.2), the research will start with searching the concepts of landscape systems, earthquake-safety and culture sensitivity. Culture sensitivity will be the main concept in this research. First it will be researched by a literature review with the focus on Buddhism. Buddhism as a religion, expresses itself through invisible and visible elements in the landscape. Invisible elements may have a precipitate on the visible. The visible elements of Buddhism will be shown in the first theoretical framework, coding table 1. The coding table consist of a word or a few words that summarize a piece of literature. This coding scheme will be the basis for the fieldwork.

Nepal

The fieldwork in Ashapuri, Nepal, will have the function to gather local knowledge for the research. The fieldwork will consist of interviews, workshops, surveys, and systematic photo-observation, carried out with the help of a translator. This means that the outcomes of the interviews are based on the interpretation of the translator. In general, the words people say will get their own life and create their own truth, so the gathered local knowledge will be a projection of the truth. The fieldwork will start with interviews with three experts of Herb Nepal, one expert in the technique of earthquake-safe building and with two culture experts in Kathmandu. Then over 200 photographs for the visual content analysis will be made every five meters in the local village, and every twenty meters in the hills around the local village.

The fieldwork in the local village will consist of twenty interviews with local people that are involved with the land of Herb Nepal, as 10% of the households in and around the village. Of these twenty people there will be ten men and ten women of which 60% young (under 45) and 40% old (above 45) as a representation of the local population. I choose to divide the participants in young and old by the age of 45, because at this age the local people are often grandparents. All people will live in or around the land of Herb Nepal. The interviews will be semi-structured and will be adapted over time to the obtained information, because the first interview questions will be based on the theoretical framework of Buddhism.

From these twenty participants, two groups of five people, men and women separated, will be selected for a focus group discussion to gather more space related information. In this workshop pictograms will be used of space related elements that follow from the interviews. The participants will be instructed to take a pictogram and place it with a good reason in the so-called community space. When all elements are finished, people will be able to shuffle the elements into the right place.

With the results of the interviews and workshops, the third phase of the fieldwork will start, the surveys. Ten pictures of settings in the community space will be made, based on the needs and problems of the participants. The participants will be asked to rate them from one to five if they like the place on the picture and if they would go there.

At the end of the fieldwork a design of the community space of Herb Nepal will be made. This design will be mainly based on the needs of Herb Nepal, but the needs and problems of the local people will also be taken into account. This design will be evaluated with the commissioner of Herb Nepal and will feed the program requirements of Herb Nepal.

The Netherlands

Back in the Netherlands the visual content analysis will start. Coding table 1 will be extended with additional literature about the cultures of local research area, Tamang and Newar, that will be found with the help of a culture expert. The colour orange will refer to Tamang and purple to Newari. With this new coding table the interviews, workshop and surveys will be coded and new elements that cannot be covered by Tamang or Newar will be situated in the table as local Tamang, indicated by the colour blue. The table

will be divided in 'land use', 'religious elements' and 'spatial organisation', all as part of the expression of culture. Then the systematic coding of the 200 photographs will start.

There are two fundamental elements in photo coding, that of the representation and the hidden meanings (Jewitt & Leeuwen, 2001). As Jewitt and Leeuwen (2001) formulate: "What do images represent and how?" and "what ideas and values do the people, places and things represented in the images stand for?". The second question is mainly about the elements seen as cultural symbols, and the interpretation of these. A symbol can be translated in two layers, the layer of denotation that is about 'what symbols are visible' and the layer of connotation that is about the deeper meaning of the symbol (Jewitt & Leeuwen, 2001). This denotation will be comparable with the first columns of the coding tables, and connotation will be comparable with the second column with literature.

Every element visible in the photographs will get a code from the coding table of the category Tamang and Newar based on literature, or local Tamang based on the local knowledge from the interviews, surveys and workshops, organized by the three main elements. Elements in the photographs that are still not covered will be designated in a new category but will be called local Tamang too, until the moment of saturation. All bold elements of the coding table can be found in the photographs, the light elements can only be found in literature, interviews, workshops and surveys. This will give an extra category and thereby theoretical framework, called coding table 3. Next, the codes will be combined and divided by a new coding table with clusters of categories that will be

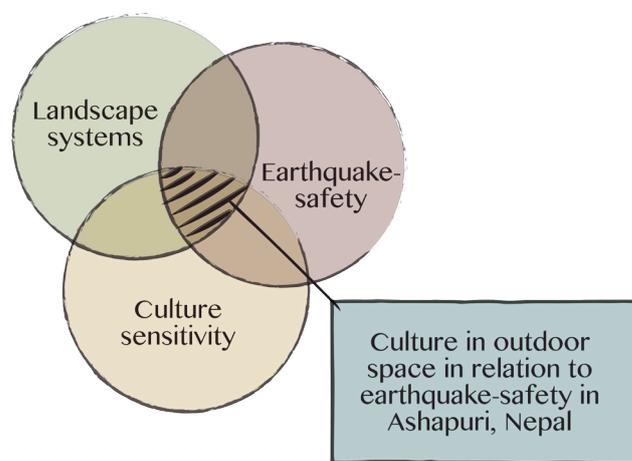


Figure 2.1: Research subjects and knowledge gap

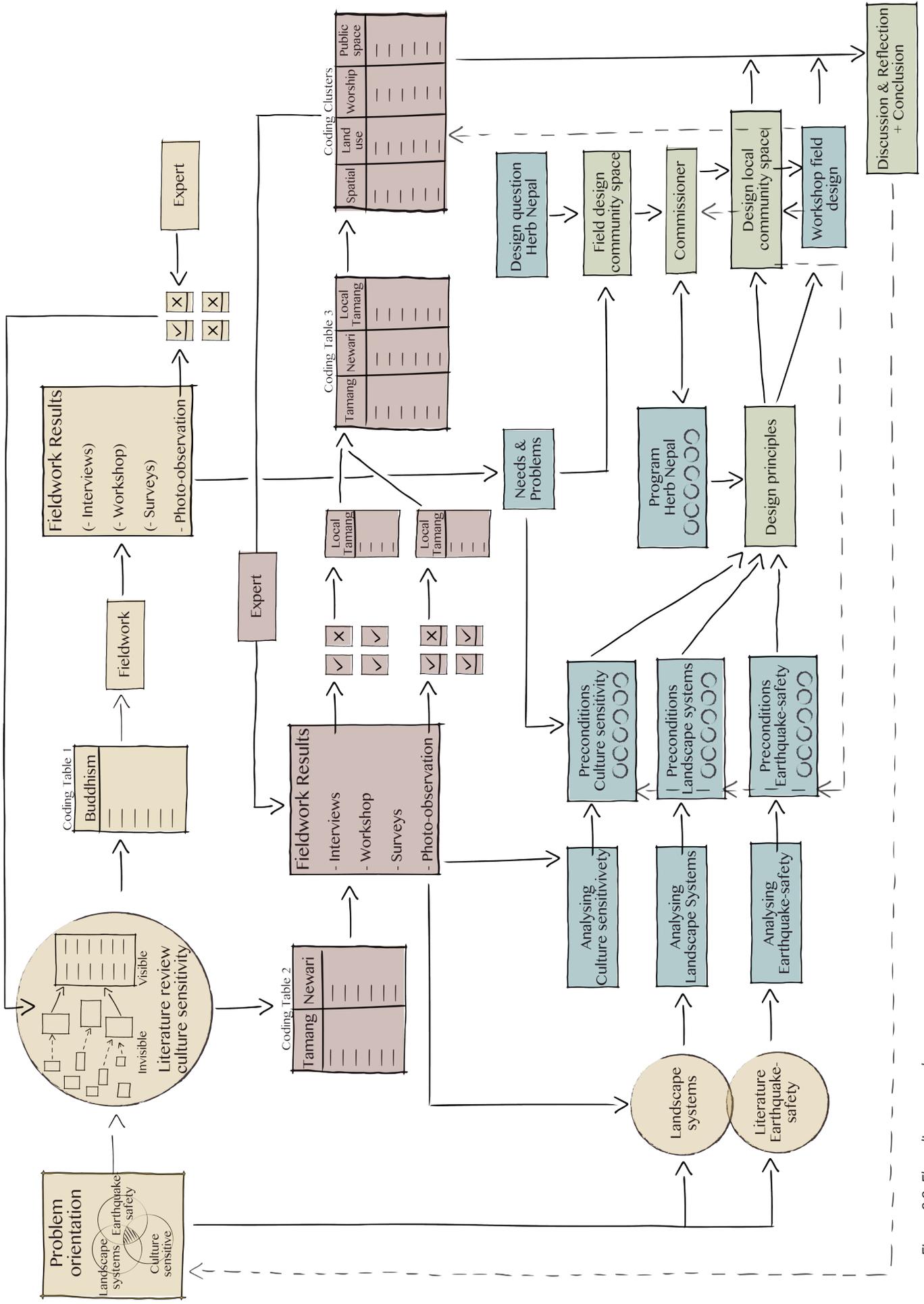


Figure 2.2: Flow diagram work process

based on the research question, but still with their specific colour and boldness or lightness of the word. Elements from the literature that are only for bigger cities will be taken out. These coding clusters will be the conclusions of the first part of the research. Because of the work with literature, local knowledge, photo-observation and experts, there will be a lot of triangulation, which will make it more reliable.

The results of the fieldwork will be evaluated with a culture expert and the coding clusters. The analysing of the culture sensitivity part will start and first preconditions of culture sensitivity will be drawn as basis for the design starting points. Besides, the analyses of the landscape systems and earthquake-safety concepts will start to create more preconditions.

The program for Herb Nepal will be created from the field design that will be discussed with the commissioner. These will be formed into design starting points too that will be used for the final design. The final design will be evaluated multiple times with an expert on its amount of culture and malleability.

The design and the coding clusters will be the conclusions of the research, which will be discussed and reflected on to answers the research and design questions.

2.5 Significance and Limitations of the study

The approach and results of this research could be useful for local governments, architects, planners, emergency response organisations, builders, universities and the local community. Earthquakes can happen again, so it is important that destroyed places are rebuilt in an earthquake-proof way and by using culture. Therefore, directives to rebuild outdoor space in a safe and earthquake-proof way are relevant. When the culture of the local people is taken into account, local people can identify with the places and practice their culture, norms and values.

2.5.1 Social significance

From a social perspective the research is significant because it will be done to improve the life and the environment of local people, people will get a higher change of survival when a new earthquake occurs. Often the importance of culture is underestimated. By the use of the interviews and the workshops, I will try to find some ideal aspects of the local people and the cultural aspects to create a place that they trust and like to come to.

2.5.2 Academic significance

According to Deming and Swaffield (2011) natural hazards are one of the research priorities in landscape architecture. By doing this research new knowledge will be gained about the combination of culture and outdoor space, which can be used by builders that want to make the outdoor space earthquake-safe.

2.5.3 Landscape architectural significance

In design, often the importance of culture is overlooked. Without a proper emergency system, natural hazards like earthquakes can do even more damage, but designing with lack of culture knowledge is senseless. The relevance for landscape architecture is that urban designers or architects can make better designs by using the local culture, so people will trust the place and the place will work.

2.5.4 Limitations of the study

The culture study will be focussed on the outside space because of my background in landscape architecture. The cultural inside world is not part of my research, but can influence the landscape as well. Besides the moment of the study is important. The landscape I will observe may be a temporary landscape, because of the season and the casualties of natural disasters.

The study will only be focussed on the land of Herb Nepal as part of Ashapuri. It will not look at other mountain villages or bigger cities, where earthquake-safety may be more important due to a high building rate.

The research will be not all about Buddhism, as there is no pure Buddhism anymore in Nepal. Therefore all conclusions that will be made for the design, should take into account the prevention of exclusion of other religions.

2.6 Conclusion

In this chapter the research is explained, as a combination of landscape systems, earthquake-safety and culture sensitivity. This bridges the knowledge gap of the relation between culture and outdoor space in relation to earthquake-safety. There is quite some research about earthquake-safety involving buildings. However, there are no clear restrictions and design principles for earthquake-safe outdoor space that people can identify with or feel comfortable and safe, so I conclude that the local culture is missing.



Part II

Research & Results



3. Culture sensitive outdoor space

This chapter is an attempt to answer the sub question: *What are and determines the manifestations that can be considered as an expression of culture and land use in Ashapuri?* I used scientific literature but also unscientific literature, as there is less research done about the ethnic groups. Besides I used the local knowledge of my interviews, workshops and surveys (Annex A-D). When I started my research, I only focussed on Buddhism as religion, with the purpose to find Buddhism influences in the landscape. However, religion is only one aspect that feeds an ethnic group and thereby their culture. Therefore I focussed on the ethnic group Tamang and Newari too. I will start with some more general and non-spatial knowledge of the Local Tamang. The spatial knowledge is directly processed in the coding table, and I will explain by using the coding clusters.

3.1 Local ethnic group: Tamang

According to my interviews and fieldwork, Ashapuri Tamang follow a mixture of the Hindu and Buddhist religion (Interview 18-3, Annex A). Some claim to be Buddhist and go to the Hindu temple (Interview 3-2, Annex A), others are Hindu but practice some Buddhism too (Interview 7-1, Annex A). The Ashapuri Tamangs do no daily pujas (prayers), but only on special religious days and festivals (Interview 1-2, 3-2, 4-2, 5-3, 6-2, 15-3, Annex A). They do not see Buddhism as a religion but just as a way of living (Interview 4-2, 5-3, Annex A). Besides, some people claim to be not religious because they are not Christian (Interview 15-3, Annex A), so religion is a difficult concept for them.

3.1.1 Village life

When looking at the Tamang culture, village life has a huge role. When you drop by a Tamang house, you get offered food (March, 2002). Expensive tea is a luxury so they offer home-brewed ji-beer or raksiliquor (March, 2002). Tamang take care of each other and make sure that no one is left out (Holmberg, 2005). Poor households only have some chicken, a goat or a cow. Richer households have several animals, e.g. water buffalos, bulls, cows, goats and chickens. These big animals are only slaughtered as sacrifices or at festivals, besides the milk of the cows and water buffalo is used for consumption (March, 2002). Women are responsible for the animals, they get animals from their father when leaving the house, this makes it their property (March, 2002). The woman controls the money in the household and the consumption and distribution of household production (Holmberg, 2005). The smallest Tamang household is called a dim, existing of a man, his wife, unmarried sons and daughters (Holmberg, 2005).

As soon as the children are grown up and married, parents start preparing for death. The lives of Tamang are troubled by diseases and the hard work is noticeable, besides Buddhist are not afraid of death, but welcome it after life (March, 2002).

Tamang count their life in twelve year cycles, after the first cycle a child is seen as adult. Before the first cycle there are no full rituals done by Tamang, for example no death ritual (Holmberg, 2005). The second life-cycle is the full bloom of immature freedom, the third is marriage and parenthood, the fourth the heaviness of adulthood, the fifth the start of aging and the sixth being old (March, 2002). Tamang celebrate New Year three times; the Hindu, Tibetan and one of their own that starts at the full moon of April or May (Holmberg, 2005). Every new month starts at the full moon day. On these days there is no big labour, but time for rituals (Holmberg, 2005). The Nepali calendar adds an extra fifty-six years to the Western calendar (March, 2002).

3.1.2 Traditions

Tamang carry out cross-cousin marriage. Men have their own clans, when children are born, they will be part of the clan of the man. There is no formal relationship between mother and child (March, 2002). The sister of the man will marry with a different man and thus a different clan. This means that the children of brother and sister can marry, because they are from different clans, which is called cross-cousin marriage (Holmberg, 2005). It is a way to strengthen the families and weeding out the weaker traits (March, 2002). There is a strong connection between brothers and sisters. Once a year at the festival of Tihar, sisters come back to the village of the brother to bring gifts and receive money. When the brother dies, the sister does the rituals with offerings. When a sister dies and she does not have a husband, the brother will pay for the rituals (Holmberg, 2005 and March, 2002).

Most Tamang are monogamous, however men can marry multiple women. Most of the Tamang will remarry after their partner dies (March, 2002). If a woman wants to divorce, she has to pay her husband how much it costs him to find another wife, but can take all her property from before the marriage. A man who wants to divorce has to divide his property over the children (March, 2002). More than half of the Tamang marriages end up in divorce or they just break up without formal divorce (March, 2002).

There are three ways of marriage: an arranged marriage to strengthen ties between families, a capturing where the groom captures the bride and they spend the night together, and when a girl and

boy run away together. This can also happen when the girl already had an arranged marriage, although an arranged marriage does not mean automatically an unhappy one (March, 2002). During the wedding the groom and bride giving gifts to each other's families, e.g. pieces of cloth, gold, money and whiskey (Holmberg, 2005). The brother of the bride will carry the bride to the groom's house. The Lambu calls for the protection of the gods. People give meat, bread and whiskey to each other. Three days later the new couple returns to the wife's home with bread and whiskey and they will stay for the night (Holmberg, 2005).

3.1.3 Rituals

Every year is divided into two parts, separated by the full moon of February-March and the full moon of August-September. Great rituals happen on these full moons to please the gods (Holmberg, 2005). According to Holmberg (2005) Tamang know eight ritual specialists, with the Lama, Lambu and Bombo in charge. Lamas decide about the death, Lambu sacrifice to the gods and keep them satisfied, and Bombos recall lost shadow-souls, finding life-force and the divine (Holmberg, 2005). Most religious figures just have a normal life and are married (March, 2002).

Death feast of three or four days are typically Buddhist and one of the most important rituals. In a dry and empty field nearby the village an altar will be constructed (Holmberg, 2005). According to Tamang, humans exist out of bones, flesh, blood, breath, and internal warmth. However they also have a heart-minds, which is the seat of consciousness. When a body is cremated, *"the bone and flesh return to soil, the blood to water, the breath to wind, and the warmth to fire"* (Holmberg, 2005). The only thing



Figure 3.1: Damage to road

left is the shadow-soul. Everybody has nine shadow-souls and you can lose one when you are scared (Holmberg, 2005). The shadow-soul will be reborn in the form of a human, animal or god, which depends on how you behaved in your past life. Sometimes the shadow-soul becomes a shade when the dead-rituals went wrong (Holmberg, 2005).

3.2 Methods and results visual content analysis

3.2.1 Methods

To give an overview of all manifestations that can be considered as an expression of culture and land use in Ashapuri, I created coding tables. Coding table 1 (Annex J) is a coding table about Buddhism. This coding table was not sufficient to code the 200 photographs I made during the fieldwork (Annex N). Coding table 2.1 is a coding table of Tamang, supplemented from Buddhism of coding table 1, and Newari. The coding table is divided by 'land use', 'religious elements' and 'spatial organisation'. With this coding table I covered a lot of cultural manifestations in the photographs, but there were still unnamed elements. I used the local knowledge from the interviews, surveys and workshops to complement the coding table (Annex I and L), to create Coding table 3 with Tamang, Newari and local Tamang based on the interviews (Annex M). With this coding table I could code almost all cultural manifestations in the photographs. Besides, to finish the coding table I added all elements that were still not in the coding table and called it local Tamang only based on photographs.

So, Coding table 3 (Annex M) gives an overview of all cultural elements I found in literature and the missing elements I only found during fieldwork divided by ethnic group. Annex J and K give an explanation of the code words. I was looking for the spatial characteristics of the local Tamang in Ashapuri, so it does not matter for the next part of my research where the origin lies of the elements. This is why I set up a code cluster table (Table 1). In this table are those elements that I have seen in the landscape, or could have missed but found in the literature and interviews. It is clustered into new categories 1.Spatial organisation, 2.Worship, and 3.Living space. Figure 3.2 shows an example of how the coded cultural elements are visible in the photographs that form the cultural manifestations. In the next part I will explain

these cultural manifestations. Orange stands for proven by literature about Tamang, with a (B) behind it when it is mainly Buddhist, purple for proven by literature about Newar and blue for local Tamang proven by the interviews. Bold matched also with the photo analysis. I took out the elements that are only present in big cities, bigger temples or the bigger landscape.

3.2.2 Results

This paragraph gives an explanation of the coding clusters, divided by cluster. It is based on the literature and local knowledge of the interviews, workshops and surveys.

1. Spatial organisation

Orientation

Often settlements are built on high grounds because there is less chance of floods. During winter people are dependent on the warmth of the sun, so living higher on the terraces will give them more sun hours. Besides a drainage system is easier to build in hillocks or mounds. Close to valley rivers is early morning fog and these places can be left open for agriculture (Scheibler, 1982). Tamang prefer to live higher up due to the malaria burden in the past (Holmberg, 2005). In Ashapuri people came lower into the valley after the earthquake, or started living in a temporary house in Ashapuri village because they did not have enough place on their land (Interview 1-1, Annex A). Living in the valley has the advantage of living close to the road and water (Interview 7-8, Annex A) and in the hills the wind is hard and sometimes roofs are taken off (Interview 10-7, Annex A). Furthermore, building should be placed towards the cardinal directions, the long axis should be orientated East-West to receive as much sun as possible (Agarwal, 1996). Houses and Stupas should face the East because that is where the sun comes up and where Laxmi comes from, the god of wealth (Neverre & Toffin, 1985, Survey 1-3, Annex C, Workshop 1-3, Annex B, Workshop 1-20, Annex B). Commonly, Stupas are placed on hilltops within one or two kilometres of a settlement (Shaw 2007: fig.13.6; Shaw, 2013). This can be translated into the idea that religious places should be located on its own, but not too far away from town (Shaw, 2013).

Connections

Reasoning of clustered houses

The Tamang society is organized into clans, which are connected by marriage (March, 2002). Houses from the same clan are clustered in the same area (Holmberg, 2005). Tamang women often marry with

someone from a neighbouring village or maximum a few hours walk away, and start living in the house of their husband (Holmberg, 2005 and Interview 2-1, 5-1, Annex A). Men are staying on the land of their parents (Interview 9-1, Annex A), therefore infrastructure between villages should be good, such that they can stay connected.

Infrastructure elements

The car road in Ashapuri finished in June 2015, just before the monsoon. However the monsoon has already done some damage to the road (figure 3.1) (Interview 2-4, Annex A). Before the road was built, the route was muddy and slippery during monsoon (Interview 13-3, Annex A). Every year the monsoon changes the landscape. Small parts of the hills disappear and routes change, this can be deadly for the elders because they navigate on memory (March, 2002). Also landslides occur during the monsoon (Interview 1-11, Annex A).

Land dividing & Family

Ashapuri Tamangs often live with their partner, kids and the father and mother of the men (Interview 1, Annex A). When father and mother do not live with their son they live close by (Interview 4-1, 2-1, 8-1, 9-1, Annex A), so the son takes care of the parents when they are getting old (March, 2002). Mostly the father and mother of the men are helping with the household e.g. taking care of the animals (Interview 1-1, Annex A). Every brother gets a piece of land from his father, and when married he starts building a house on the land (March, 2002). Sometimes there are land issues, then land measurers and mapmakers of the government come to verify who is right. Unfortunately people bribe government officials to get the land on their name (Interview 8-2, Annex A).

Changing purposes

According to Tautscher (2007) the life in many Tamang villages has drastically changed. Not all people can work the whole year on the land, because there is not enough work available. Development has become priority in villages. Men are forced to work in Kathmandu or cities in India and therefore good infrastructure is important. New roads make sure that consumer goods are introduced. The knowledge on schools contradicts with the knowledge passed from generation on generation. People understand that they are not dependent on the gods and that they can find their own happiness. Young Tamang break with tradition and are longing for a modern lifestyle, they see the traditional life as backward and superstitious (Tautscher, 2007).

1. Spatial organisation

Location village/ houses
Houses higher up
House facing east
Settlements or high grounds
Stupas and villages (B)
 Living up in hills
 Living in valley
 Wind in hills
Living higher up
 Reasoning of houses
 clustered
 Clans and marriage
Houses clustered
 Marriage between villages
 Marriage between villages
 Son on land of parents
 Infrastructure elements
Tracks
Bridges
Stairs
Walking trails
Paved road
Walking trails
Monsoon landscape changes
 Monsoon landslides
 Land dividing & Family
Land dividing
 Parents and son same house
 Living with family of men
 Land dividing
 Changing purposes
 Work outside village
Work outside village
 Work for few months a year
 Arable farming
Crops, wet/dry
Development
Keeping things dry or drying
 Intensive labour during monsoon
Harvest time
Terraced fields
Arable farming
Covered agriculture
Agriculture
Herbs
Mulching
Agroforestry
 Flower gardens and fruit trees
 Bees

2. Worship

Sacred places
Groves and temples
 Religious places
Rock or cliff with water
Temples at confluence of rivers
Naag
 Baag
Worship place
 Stupa in east
 Milk problem
 Non-speaking children
 Raski place
 Laxmi in east
Temple
Ashapuri village
 Ashapuri temple wishing
 Devi stone
 Visiting other temples
 Worship and entrances
Snakes and entrances (B)
 Statue of Buddha and Stupa
 Stupa near entrance
 Peepal tree near entrance
 Statue of Buddha near entrance
 Elements of worship
Stupa as Buddha (B)
Prayer flags (B)
Mani stones (B)
Snakes (B)
Erect prayer flags
 Temples
 Temple doors
 Gajur
 Shiva mark
Statuses
 Gate
 Bell
Candle lighting place
Yellow scarves
Vertical prayer flags
 Statue of Buddha
 Shoes
 Worship in infrastructure
 Barriers of stones and branches
 Offerings public space
Sacrificial stones and crossroads
 Vertical stones and crossroads

3. Living space

Characteristics of buildings
Smoke system of houses
 Rectangular house openings
 Brick and wooden buildings
 Wooden struts
 Overhang of roofs
 Carved wood
 Clay buildings
 Symmetric house façade
 Less symmetrical façade with bigger windows
 Chimneys
 Odd numbers
 Craftsmanship
 Buildings in cardinal direction
 Houses 4-8 meter
 Houses of three stories
 Unfinished buildings
 Woodcraft
 Extrovert life (building)
Veranda and social life
 Extrovert life
 Plinths
 Open façade shop
 Sacrifice goods
 Blind wall
 Shelter
 Elements of extrovert life
Piped water for washing or irrigation
Woven mats
 Hygiene
 Toilet
 Washing place
 Drying place
Water storage / treatment
 Electricity
 Waste
 Sitting elements
 Cooking place
 Cooking outside temporary shelter
 Cooking place
Fences
 Non-place elements
 Public water and snakes
 Vegetation
 Waste
 Bamboo
 Retaining wall
 Information
 Vehicles
 Big stones
 Seats
 Tree protection
 Water
 No sanitation
 Dangerous toilet
 Daily life
Woman and animals
 Animal farming
 Gathered wood/plants
 Compost
 Old corn plants
 Doko
 Straw
 Animal shed
Cutting grass
 Earthquake building casualties
 Bamboo temporarily houses
 Temporarily shelter
 Building materials
 Tails
 Damaged buildings
 Temporary house
 Cooking outside
 Public space places
 Pati
Chapat
Pati's as public space
 ECD building
 School
Meeting places
 Meeting place children
Sheltered learning space
 Use of public space
Children
Games
Playing games
 Drinking and sacrificing
 Woman and meeting
 Behaviour men
 Using public space
 Reason of meeting

Table 1: Coding clusters Orange = Tamang Literature, Purple = Newari Literature, Blue = Local Tamang Local Knowledge & Photographs, Bold = also proven by Photographs

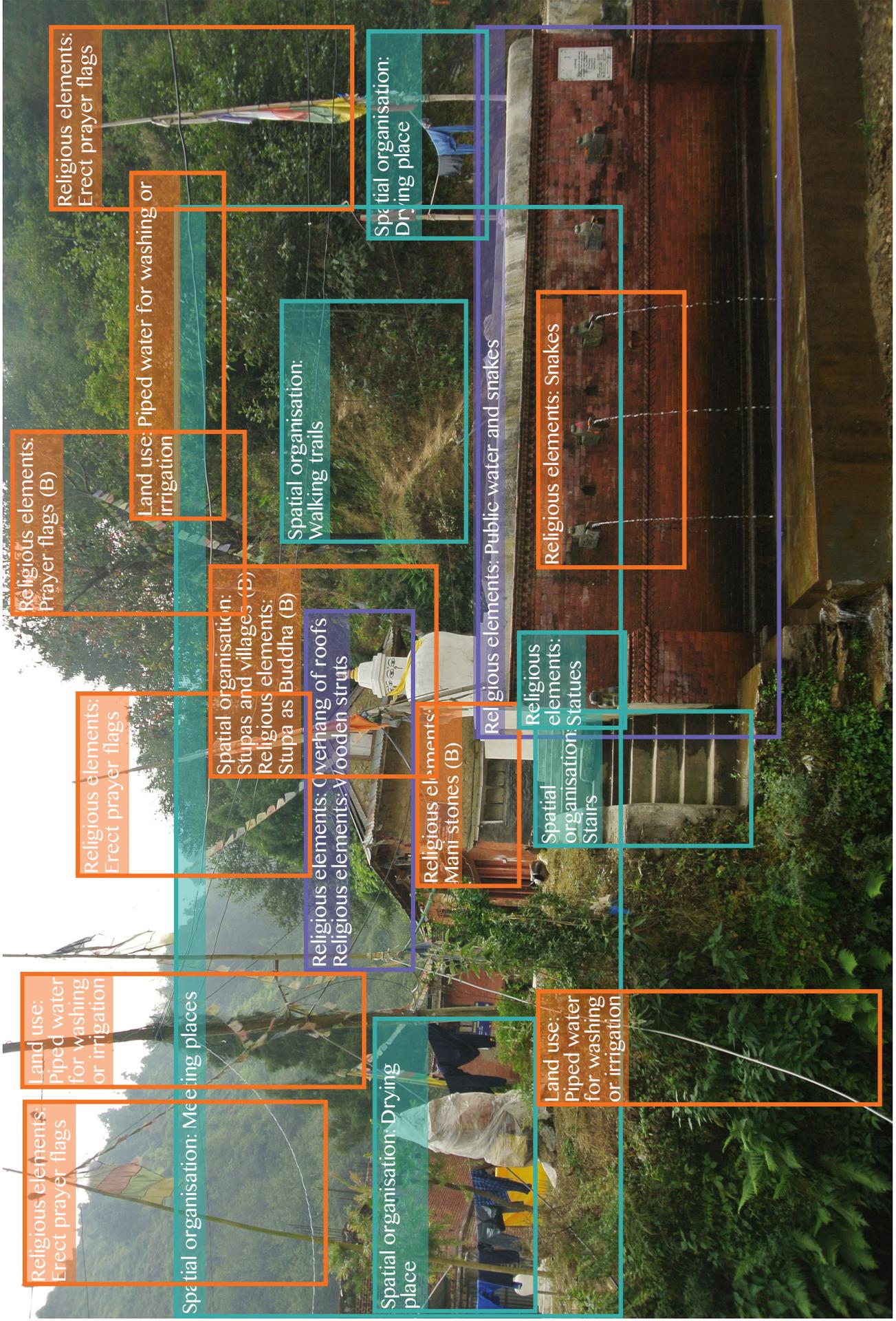


Figure 3.2: Example of photo-coding



Figure 3.3: Mulching farming method



Figure 3.4: Sacred hindu place



Figure 3.5: Stupa in Ashapuri

Land use

Arable farming

The most remarkable elements of the landscape are the terraced fields (March, 2002). These terraces are mainly used for arable farming like rice, maize, wheat, millet, lentils, mustards and vegetable crops (Scheibler, 1982). There are two sorts of crops, the wet-crops in the monsoon period (rice) and the dry-crops in the dry-season (maize or wheat) (Holmberg, 2005). Monsoon rains start in May-June and it intensifies from June until September, then the rain decreases during the dry season. From April until December, the most intensive agricultural labour takes place (Holmberg, 2005). In the other months the feast and rituals, leisure and social events happen (March, 2002). One of the biggest struggles during the monsoon time is keeping things dry, and to dry the things that are wet (March, 2002). The harvest time is the most important time, because there will be no food if people do not work (March, 2002). Villagers help each other with the harvest. Labour teams plant and work from higher to lower plots and during harvest time they start low and work up to the higher plots (Holmberg, 2005). Sometimes they make use of covered agriculture. Currently cultivating herbs and mulching the plants are upcoming (figure 4.3). Tamang love flower gardens and fruit trees (Survey 1-9, 1-10, 1-18, Annex C), and bees because they give honey (Survey 1-1, 1-23, Annex C).

2. Worship

Sacred places

Sacred places

In a Tamang community there are all sorts of places with a kind of worship (figure 3.4). Tamang pray to divinities for the village on places like groves or temples (Holmberg, 2005). Hilltops have special symbolic and mythological associations with place-bound spirits (Misra 1981; Shaw, 2013). According to Tautscher (2007) the same gods at the same places can be found in every Tamang community: in every house by the hearth of the house, in every village by a cluster of big trees and at every water source. The gods under a cluster of big trees are "the lords of the earths seat". This lord protects their crops from natural disasters. Trees can represent gods, stars and planets or symbols of natural elements (Anthwal, et al., 2010). All water bodies, such as rivers and lakes are sacred because they purify the body, mind and inner being (Frawley, 2012).

Special places for festivals are on hilltops or at the confluence of two rivers (Holmberg, 2005). On a rock or cliff where the water comes from are the water spirits

(Tautscher, 2007). Seti Devi Than is a spring close to a rock or cliff. Here the seven-mother goddess is together with Lu (or Naag), the water spirit, and they relieve people of diseases and prevent misfortune. Other goddesses in the trees surround the place. At this place there will be prayed for personal strength, fertility, vitality and wealth (Tautscher, 2007 and interview 9-4, Annex A). Lu/Naag lives in the earth and is connected with water, he is reptile-like, but humans cannot see him. Lu/Naag is waiting in unclean places to attack and give people the plague or stomach-aches (Holmberg, 2005). Baag is a form of the god Shiva with the shape of a tiger that lives at Ranitot. He is honoured during the full moons of April and December (Interview 9-5, Annex A).

Two times a year the Tamang do sacrificing rituals on two different Devi stones close by the village (Interview 2-3, Appendix A). Both stones need a male chicken, a female young virgin goat and a Thorma, which is a mound of rice. One stone needs an extra female chicken (Interview 16-6, Annex A). Occasionally they visit other temples such as the close by Shiva temple of the Manakanama temple at the highway to Pokhara (Interview 7-2, 13-6, Annex A). When there are problems with the milk, Tamangs need to go on pilgrimage to Bajra Barahi (Interview 9-6, Annex A). When children cannot speak, they need to be brought to a temple of Ganesh (Interview 9-7, Annex A). In the hills is a raksi (alcohol) place where they can ask for everything you want, and where they can become a shaman, which is a sort of doctor (Interview 10-4, Annex A).

Entrances

Elements of worship can be found close to entrances. Nāgas are often placed next to entrances, for example railings of Stupas with snake-like patterns or cobra-like gargoyles (Shaw 2007; Shaw, 2013). A Stupa needs to be close to an entrance, so people can ask for a blessing before their working day starts (Workshop 2-3, Annex B). Both the statue of Buddha and the Stupa are seen as equal (Survey 1-6, Annex C). A Peepal tree needs to be close to an entrance so people can pay respect to the gods. People like to come together and wait for their friends before work starts near the entrance (Workshop 2-5, Annex B). A statue of Buddha needs to be close to an entrance so people from outside can see that they follow Buddhism (Workshop 2-32, Annex B).

Public space

Elements of worship

There are all sorts of elements of worship that can be found in the Tamang landscape, such as Stupa

(a Buddhist form of a temple). Stupas are seen as a representation of Buddha, seeing a Stupa is similar to seeing the Buddha (figure 3.5) (Shaw, 2013). The surroundings of Buddhist temples are full of prayer flags. Prayer flags are coloured pieces of cloth in the colours of the five basic elements that ensure harmony to the environment: yellow for earth, green for water, red for fire, white for air, blue for space (Hays, 2008). On the flags are symbols or pieces of text, which are called sutras. These flags are a simple way to increase your happiness. When the flags flutter, the prayers can be released in the wind to purify the air and satisfy the gods, and the person who hangs the fluttering flag will benefit (Hays, 2008). Mani stones are flat stones with prayers on it and are placed at sacred places (Hays, 2008). A statue of Buddha represents Nepal and stands for peace (Interview 10-9, Annex A). Nāgas (the snakes) represent danger due to their deadly fangs and can destroy the environment with their power over the rain. Sometimes they withhold the rain or cause enormous monsoon rains. Besides that Nāgas are protectors of subterranean and sub-aquatic entities, they are seen as guardians of Buddhist relict because they are autonomous deities (Shaw, 2013). In front of the house can be a vertical prayer flag, this flag gives protections and frees the residents of daily pujas (Interview 6-2, 7-2, Annex A). Moreover, it forbids them to do animal sacrifices (Interview 7-2, 10-3, Annex A). These flags are also called lungdar and are shying or life-force poles (Holmberg, 2005). There is also a Hindu tradition with only the pole. Both include a guided ritual with herbs, water and a hot stone, which gives steam that has to be breathed in to purify yourself and the house. The Buddhist ritual is a bit more complicated with more herbs, fruit, grains and root vegetables (Interview 10-3, Annex A). Lamas put banners on it, so that the wind ensures that their karmic condition of the shadow-souls will be improved (Holmberg, 2005).

The Hindu temples are often made from brick and are square in plan (Tiwari, 1989). The temples have large doorways on each side, however only one doorway is actually used (Tiwari, 1989). On top of the temples and Newari buildings Gajur can be found, which has the form of a finial. This symbol of "cosmic axis is pointing to the heavens" (Tiwari, 1989). Other elements of worship are Shiva marks, statues, gates, bells, yellow scarves and places to light candles (figure 3.6).

Worship in infrastructure

Worship can also be found in infrastructure. Shades incommode villagers who walk to their houses in the dark back. When someone falls prey to the shade they



Figure 3.6: Hindu temple in Ashapuri



Figure 3.7: Tamang cows with Hindu rituals with marigold around their necks



Figure 3.8: Bamboo swing typical for the harvest festival

suffer from symptoms, similar to the dead people who became shades (Holmberg, 2005). To prevent an attack of the shade, people sing or scream loudly and build barriers of stones and branches to keep the shades out (Holmberg, 2005). Places in villages for gods are permanent components of the geography of the village, to incorporate the gods in daily life. Offering for bad gods is often taken to crossroads, open places, and the borders of the village (Holmberg, 2005). Crossroads are often marked with a pile of raw sacrificial stones, which are called Shoka. When someone has died, the entrance of a district is marked with three bricks. Rice is placed on the stones when there is illness or bodily pain and at the birth of a newborn child the umbilical cord will be offered on the stones (Scheibler, 1982). Sometimes there is a raw stone in vertical position placed on a crossroad, to counter bad spirits (Scheibler, 1982).

Worship in Nature

Buddhists do not make a difference between the natural and human reality, and humans should certainly not manipulate nature for their or her own benefit. Happiness cannot be built on the sorrow of others, containing the living environment, because all things have effects that endure in our lives (Matz, 2002). Buddhism leads to advantaging ecological knowledge, because of the idea that everything is connected to each other (Matz, 2002).

Originally Tamang are beefeaters, but it is not allowed to kill cows in Nepal, so they only eat it when there is an accident. Tamang respect the sanctity of the cow and even carry out regular Hindu ceremonies of appreciation and loyalty toward cows (figure 3.7) (Holmberg, 2005). The cow is seen as a symbol of the gods, because they give milk that symbolises the mother who gives milk to their child (Interview 6-2, Annex A). Besides, the cows also give compost to fertilize the land (Interview 6-2, Annex A). The marigold plants are very important in the surroundings of the village and the whole of Nepal. People decorate their houses with it during festivals (Interview 6-5, Annex A). Tamang use plants to offer and for medicinal systems, like Ayurveda (Kala et al., 2006). Hindus see nature as part of the gods, so plants, animals, water, earth and fire are part of these gods (Nadkarni and Chauhan, 2004; Anthwal, et al., 2010). The cow stands for Hinduism, the Tiger (or white snow leopard) for Buddhism and the snake for the fertile forces underground (Tautscher, 2007).

Festivals (Temporarily)

There are many festivals in the Ashapuri Tamang year (Interview 19-2, Annex A). It starts with the 'End of the

year' puja, to honour the Devi goddess. It is on the tallest hill around Kathmandu, which is Phulchowki (Interview 19-2, Annex A). Then the 'New year full moon' is celebrated at the Devi stone close to Ashapuri village. Everyone has to take a male chicken and all families together take a female young virgin goat (Interview 19-2, Annex A). On 'full moon day' there is no big labour, but rituals (Holmberg, 2005). Death feasts are one of the most important rituals, they last for several days and an altar is constructed nearby the village in a dry and empty field (Holmberg, 2005). Saune Sankranti is the festival at the beginning of the spring showers to flush all the sickness of the year, because Tamang cannot decide their own destiny (Interview 19-3, Annex A). Janai Purne is during the full moon in Augusts and it is a fortification, strengthening and protecting festival. People eat lots of protein to strengthen (Interview 19-2, Annex A). In October the Dasain harvest festival takes place. Buddha and Kunchyo are worshipped then, they are the kul gods of the clans and need drops of alcohol (Interview 19-2, Annex A). A typical element during this festival is bamboo swings (figure 3.8). Tihar is the festival of light with brothers and sisters day as the biggest day. The other days of the festival are for the crows, dogs, cow manure, cows and light (Interview 19-2, Annex A). During the winter full moon they have to take a female and a male chicken and a female young virgin goat to the other Devi stone (Interview 19-2, Annex A).

There are some other and smaller traditions with less family involvement such as Departed spirits day. On this day all children who lost their parents will visit the temple of Ashapuri (Interview 19-3, Annex A). At the tradition of dead parents honouring Hindu people have to wear white cloths and they cannot eat salt. Buddhists only have to wear something white on their head, and they can eat salt during this day (Interview 19-3, Annex A). The day before full moon day they take a big package of fruit and seeds to Pashupati, which is a big Shiva temple in Kathmandu (Interview 19-3, Annex A). A boy can have the of age coming feast on an odd year after the age of three. The most important person on this day is the brother of the mother, he has to throw away the boys bad luck (Interview 13-4, 19-3, Annex A).

3. Living space

Extrovert life

Characteristics of buildings

Buildings are part of the public space, because they shape and enclose the public space. Clay is commonly used as mortar for all kinds of buildings

with brick and wood underneath (Tiwari, 1989). This clay is very elastic and has amazing long-lasting binding characteristics, even the biggest buildings are built with it (Banerjee, 1980). Often a thick layer of clay is placed between the roof and the walls, to prevent leakage of rainwater. Because the clay is in contact with the wood, the wood will be affected if it has not been treated with chemicals (Banerjee, 1980). Besides, clay and wood are elastic materials and can absorb for example the blows of an earthquake (Banerjee, 1980). Large temples have a large overhang of 4 meters with the wall and the roof, to protect the walls from monsoons or bright sunlight. Normal houses usually have 1 or 1.5 meter overhang (Wolfgang, 1976). Furthermore, brick walls can have horizontal bands of handcrafted woodwork and the sloping roofs can be supported with richly carved wooden struts (figure 3.9) (Tiwari, 1989).

There is no proper smoke exhaust system in the houses, so black smoke stagnates through the whole house and smokes out insects living in the roof (Scheibler, 1982). Therefore the windows are not only used as light source, they are used too to regulate the air inlet (Neverre & Toffin, 1985). Rectangular openings in houses are entry points for gods, spirits and snakes (Scheibler, 1982). The façade of a house is symmetric, with the main window and doors in the middle of the façade (Wolfgang, 1976). According to Scheibler (1982) the Malla period ended due to a devastating earthquake and the concurrence of Shah. Together with the increasing population it made sure that a new architectural period had arrived (Scheibler, 1982). This made sure, among other things, that facades got a new appearance, less symmetrical and with bigger windows for more sun and ventilation. Less wood was used and the woodcarving was limited (Scheibler, 1982). Hinduism has an affinity with odd numbers, for example the odd numbers of windows, plinths and roofs (Tiwari, 1989). Most Newar houses have the dimensions of four by eight meters, however they can vary (Banerjee, 1980). Often they are three-storeyed, but sometimes two-storeyed at the edges of the city (Wolfgang, 1976). Bhaktapur is famous for the traditional wood and brickwork, but it is only very little present in Ashapuri, which local people think is a pity (Interview 10-9, Annex A). Besides in Ashapuri, People typically use the second floor of unfinished buildings as roof terraces.

Extrovert life (building)

Newari in large cities see their district as their living area, which are called Tols. Inside the house they only do family or personal tasks. So life is extroverted, orientated towards the collective space (Scheibler,



Figure 3.9: Carved wooden struts with overhang of roof



Figure 3.10: The bearing wall can be removed to create a shop



Figure 3.11: Fountains shaped as a snake in Ashapuri

1982). "Most professional, economic and social activities take place in public area, even the carpenter works on the street, the barber attends his customers in a public booth (*pati*) and the knife sharpener installs his whetstone on a plinth" (Scheibler, 1982). Most houses have a veranda in front of the outdoor work yard with a central focus on the sitting bench, which is a bed-sized bamboo construction often with chickens underneath (March, 2002). Most buildings are not built deeper than 60-80 cm. The plinths in front of the buildings are neither bearing nor part of the foundations. Although they protect against flooding, they are mostly placed for the exaltation of temples (Wolfgang, 1976). An opening in the facade of a building is often required, because of storage space. The bearing wall can be removed to create a shop (figure 3.10) (Wolfgang, 1976). In these shops, goods to sacrifice are sold. Other small shops are often set up in front of a blind wall and all shops are sheltered.

Elements of extrovert life

The extrovert life is visible by elements in the public space e.g. toilets, washing places, drying places, water storage, electricity, sitting elements and waste. Watercourses are processed in a way that they can serve multiple purposes, piped to water collectors and used for washing, or distributed into field irrigation (March, 2002). People sit on woven rice straw mats or small rounds of braided cornhusks like placemats (March, 2002). Due to the temporary houses after the earthquake in 2015, some people only cook outside, because they could not do the rituals. Others did some small version of the ritual and only cannot cook pork and wild boar (Interview 10-11, Annex A and Interview 15-3, Annex A). There are no rules for the outside cooking place, but it is still sacred because it is a cooking place. (Interview 10-11, Annex A). A more Hindu view on the cooking place are the three stones places inside. One stands for Brahma, the conservation god, the other for Bisnu, the preservation god, and the last for Shiva, the destruction god. Before starting with eating they have to offer some food to the stones (Interview 10-11, 15-3, Annex A).

Non-place elements

Elements that are commonly present in the public space are shoes, bamboo, vehicles, big stones, seats and information signs. Pools and public fountains have the symbolic character of fertility and are often shaped as a snake (figure 3.11) (Scheibler, 1982). Waste is another striking element. Most of the time they burn the waste, because they do not have a purpose for it (Interview 1-11, Annex A) and they are

used to it (Interview 2-5, Annex A). If the inhabitants get money for the waste they would bring it to a collection point, the environment is not really a priority for them (Interview 4-9, Annex A). People know that they cannot bury the waste because it is not biodegradable, and that they pollute the river by throwing it in there. Besides, they argue that there are enough trees to catch the bad air of the burning, so it is not that bad for the environment according to the inhabitants (Interview 10-10, Annex A).

Around the house

Daily life

A place to stay should be warm, dry, sheltered, and close to water. Newari farmers only have animal farming for private use (Scheibler, 1982). Commonly, Ashapuri Tamang women take care of the whole family. In the morning they get up to cook food, wake the children, feed them and send them to school. Then they go to their own work if they have any. Otherwise they stay at home and take care of the house and the animals, and they go to Ashapuri village for shopping (Interview 1-1, 5-1, 15-2, Annex A). Women cut grass and gather wood and plants to feed the animals, rather than letting the animals out. Therefore it is beneficial to live close to plants. They clean the animal shed, make compost and dry food, so there needs to be space for that (Interview 1-3, 6-, Annex A). Sometimes there are no or broken fences around properties, then animals eat the supplies (Interview 7-6, Annex A).

Earthquake building casualties

Temporary tin or bamboo houses, broken houses and piles of rubble and building materials, mark the landscape. The debris is piled next to damaged houses, because it is used for rebuilding. People are afraid to use roof tiles again, so these are lying next to the houses too. Tamang are not planning to rebuild their old house, because they do not have money. Moreover, they do not know how to rebuild the houses, because the houses were built by the generation before them. Some people cannot cook garlic, buffalo, pig, boar or nettle in their temporary house because they cannot do the ritual to make their cooking place useable, but then they can cook this food outside (Interview 9-3, Annex A).

3.3 Methods and results interviews, workshops, surveys for community centre

The life of local people in Ashapuri mainly takes place outside. People meet in the public space of streets, places of worship, community centres or a combination of these. The design question of Herb Nepal has its focus on a meeting space with functions as community centre and emergency place, this is why I will focus on the (existing) community centres in Ashapuri.

3.3.1 Existing community centres

According to the interviews, three meeting places in Ashapuri were mentioned. One is in the village school, another is a large open place in the forest (Interview 1-5, Annex A) and the last is at the ECD in the forest (early child development for children between 18 months to three years old) (Interview 5-4, Annex A). The location of the meeting depends on the reason for the meeting (Interview 3-3, Annex A). The local people describe most meeting places as with poor or no sanitation. The children's meeting place in the forest has a toilet, but at a dangerous place (Interview 1-7, Annex A). The connecting walking trails are not suitable for old people and dangerous during monsoon, and most of the time there is no water available (Interview 3-3, 4-4, 5-4, 8-6, 9-10, Annex A). The building of the ECD is cracked and broken and now the children are placed in a leaking tent with too few supervisors. A place in the valley would be better, because there is less danger of animals and there are more facilities close by (Interview 8-6, Annex A). Besides, up in the hills the wind is too hard and sometimes the roof is taken of, however there is much sun (Interview 10-7, Annex A). People know several community spaces, but claim that there is no open space in Ashapuri, no grounds, infrastructure or benches to sit on (Interview 18-6, Annex A). So a community space on the land of Herb Nepal would be an improvement.

3.3.2 Workshop design community centre

During fieldwork I did two workshops with five men and five women about arrangement of a community space on the land of Herb Nepal. The local people got pictograms that were based on the interviews and observation study, which they had put on a large white sheet that stood for the community space. The comments made during the workshop are used as local knowledge and are included in the previous paragraphs, and thereby in the preconditions of culture sensitivity. However I think it is valuable to show the way of thinking of the local people, therefore in figure 3.12 to 3.23 some examples are given of the elements placed. In Annex B a detailed explanation of all the placed elements can be found.

Design process local women



Figure 3.12: The fieldwork design for the woman starts with the training centre in the middle. Then they need some help with choosing pictograms and placing them on a logical location.



Figure 3.13: They place the playground in Eastern direction, so it is close to Laxmi, which takes care of wealth. The Peepal tree is placed next to the playground, so the children can take a rest.



Figure 3.14: The flowers are placed close to the training centre and the tourists are placed in the South-West corner in the hills, so they have a nice view.



Figure 3.15: First the animals are placed close to the Peepal tree, then in the North-West corner, then in the hills in the South. Up in the hills is the best place so the women can cut grass and give it to the animals.



Figure 3.16: The local house is placed in the West because there is sun all day, only in the evening it is cold, but when they place the fire next to it, they have warmth.



Figure 3.17: The greenhouse is placed next to the water, so it is easy to get water. The Stupa is placed in the East because the Buddha god needs to be at the place where the sun rises.

Design process local men

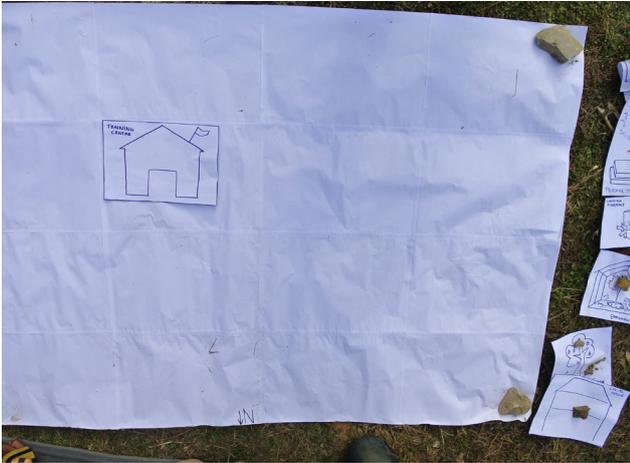


Figure 3.18: The men are starting with placing the training centre in the middle, because when they look at the existing situation, it is next to the vegetables and besides the herbs.



Figure 3.19: The Stupa is placed in the West close to the entrance, so people can ask for a blessing for the day before their work starts.



Figure 3.20: The Peepal tree is placed next to the entrance gate, so they can pay respect to the gods, take a break under the tree, and wait for each other before they start work.



Figure 3.21: The greenhouse is placed next to the training centre so they can learn from the greenhouse too. A stream connects the flower garden, swimming pool and greenhouse, and ends up in the river.



Figure 3.22: The smoking zone is placed far away in the South-East corner, so the wind takes the smoke away. The drinking place and dancing place are placed there too, to give fewer nuisances.



Figure 3.23: At the end they want to change things, most important the Peepal tree in front of the training centre, to hang out when they have a break.

3.3.3 Visualisation survey community centre

The last step in the fieldwork was a visualisation survey. I changed ten pictures from the land of Herb Nepal with elements the local people came up with during the interviews and workshops (Annex F). I asked if they could grade the pictures from 1 till 5, if they liked it and if they would go. The comments obtained during the survey are added to the local knowledge. In figure 3.24 till 3.28 five of the ten visualisations are shown with some comments of the local people. Most of the comments were shallow, and overall people had difficulties understanding the exercise. They had more interest in recognising the place and the people in the pictures, than grading the visualisations. Therefore I do not involve the outcome of the survey papers in my research (Annex G).



Figure 3.24: Bee garden. People like the bee place and they like honey. Before the earthquake they had bees at home. When they see nice vegetables and flowers, they would go all the time.



Figure 3.25: Place of worship. People do not like this because people are only giving attention to the Stupa, and nobody worships the statue of Buddha.



Figure 3.26: Hang out place. If they had time, they would go, but they do not have time because of work. Besides they do not know how to sit on a bench, however they like the fire.



Figure 3.27: Playground. The swings used in the playground are only used during the period of the harvest festival. They are made of bamboo and are very typical.



Figure 3.28: Learning space. People do not like the outdoor learning space because it is not sheltered. Besides, children are not paying attention to the teacher in the picture.

3.4 Cultural guidelines for architecture and urban planning

Both Buddhism and Hinduism have a system of rules about geometric shapes and proportions based on their religion, often used in architecture. For Buddhism it is called sacred geometry, and Hinduism Vastu Shastra. It is a whole profession on itself, and I am not specialised in this, so I will not use it. However I think it is valuable to explain some before I start with the design.

3.4.1 Sacred geometry

In Buddhism sacred geometry means an understanding of “*shapes, functions, contexts, concepts, and colours of Tantric imagery and visualization*” to visualize the romanticized external universe (Watt, 2013-1). In sacred geometry there are four basic subjects that matter. The first is general shapes, which can be two- and three dimensional: the half-circle, square, triangle, tetrahedron and double-tetrahedron (Watt, 2013-1). The second is the basic elements, which are two-dimensional: earth as square, water as circle, air as half-circle and fire as triangle. Every shape has its own colour. Besides the sun and moon are also circles (Watt, 2013-1). The third is the cosmology and continents, which is a more mathematical approximation that sees Mount Meru as the middle of the four continents with a specific form (Watt, 2013-1). The fourth is mandala palace shapes and deities, which means that the palace at the centre of a mandala where the goddess lives can have several shapes (Watt, 2013-1). The goddess in a mandala can be divided over the five Buddha families, with each their own direction, colours, elements, characteristics, emotions and symbolism (Watt, 2013-1).

3.4.2 Vastu Shastra

According to Tiwari (1989) “*the principles of Hindu architecture have been identified in Vastu Shastras.*” The most important feature of Vastu Shastra is the Vastupurusamandala, which is “*a unified design principle based on the square*” (Tiwari, 1989). It is based on a metaphysical design approach with the focus on person-place identity, so a person will fit in the designed space (Sinha, 1998). The purpose is to find balance and harmony between human and environment (Agarwal, 1996). Measurement is the first step to get an item part of reality (Sinha, 1998).

The idea of Vastu Shastra consists of systems based on “*squares, circles, triangles, wheels with spokes and a bird with two wings*”. Every space or object

can be split up in 7.5 squares, the side of a square is comparable to a figure of human height with uplifted arms (Sinha, 1998). So the human body or square is the basic unit of measurement, but it is comparable with different shapes, especially the circle (Sinha, 1998). Vastu shastra can be used on different scales, not only for designing a house, but also for designing the open courtyard with all the rooms around it (Sinha, 1998). The principle works with energy fields and lines coming from the earth, negative and positive (Agarwal, 1996).

“*Cosmology, space, time dynamics and man’s place in nature*” are interrelated principles that influence daily actions like sitting or cooking (Agarwal, 1996). The shape of the building, orientation, symmetry and layout should be considered in the design stage to create a harmony of energy fields that has a positive influence on our body (Agarwal, 1996). According to Agarwal (1996) the South-West is the space of the head of the house to keep control, the South-East is the place of the kitchen because of the fire zone. North-East is the place of the water and South-West is the place to meet people (Agarwal, 1996). Your face should be faced to the East when worshipping, eating or studying, and to the North or South while sleeping (Agarwal, 1996).

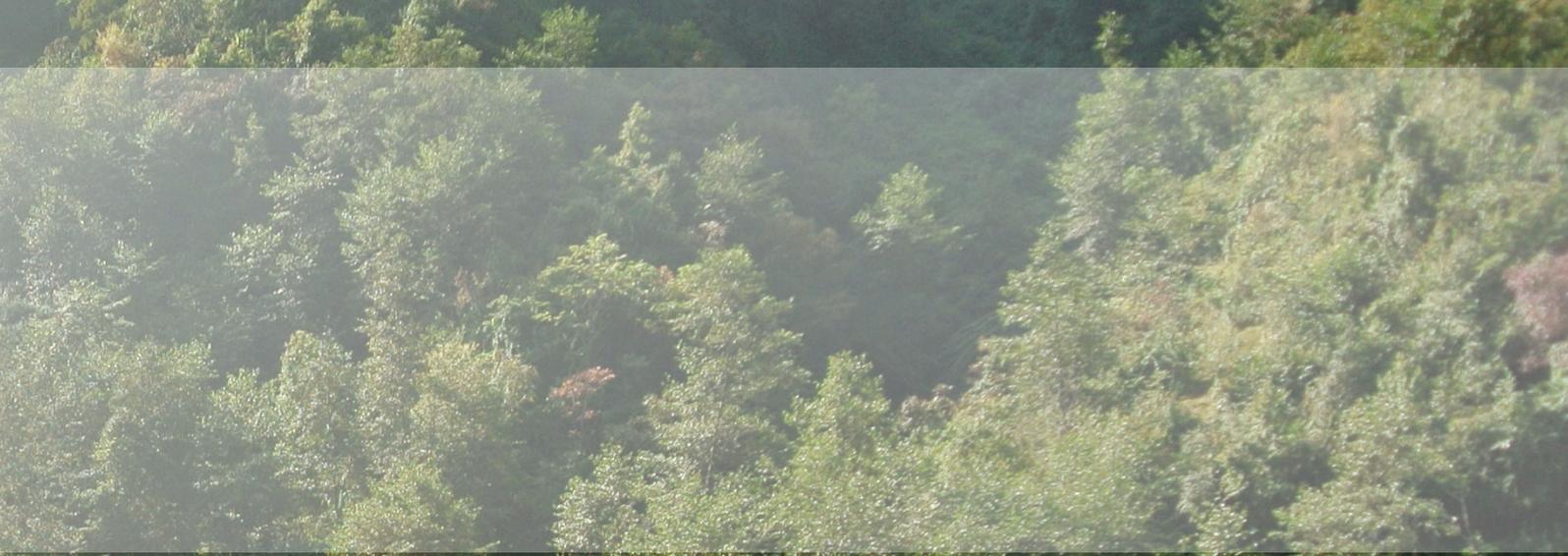
3.5 Conclusions

To conclude, however a large part of culture takes place inside, the more visible part for the Tamang community is set outside as Tamang people follow an extrovert life. Elements of culture can be split into ‘spatial organisation’, ‘worship’, and ‘living space’, with even more sub-subjects underneath it, as the Tamang culture is complex. All these clusters together describe the Tamang culture.

Part III

Application Design





4. Preconditions Design

As already mentioned before, the aim of this research is to explore and understand the role of culture in daily life outdoor space, in order to develop design starting points to improve and rebuild the outdoor space in an earthquake-safe way in mountain villages in Central Nepal, applied at the case of Herb Nepal. A way to do this is creating preconditions of culture sensitivity, landscape systems and earthquake safety, and to formulate the program of Herb Nepal (figure 4.1). These preconditions will be used to give form to the design and in the next chapter they will be combined to create and explain the design.

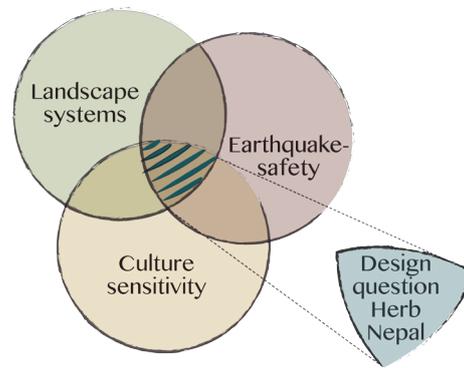


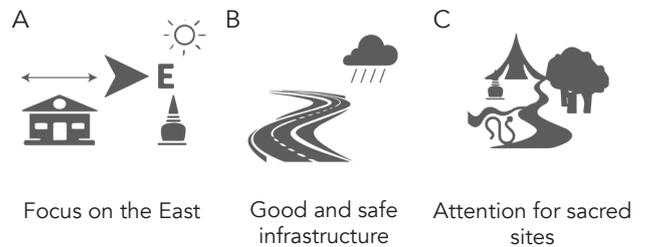
Figure 4.1: Preconditions Culture sensitivity

4.1 Culture sensitivity

In the previous chapter, the coding table of the cultural manifestations in Ashapuri is explained. These cultural manifestations can be summed up in nine preconditions for the design, three main preconditions, and six more detailed preconditions (figure 4.2). Starting with orientation that should be to the East, Stupas should be placed in the East, and houses should face the East and be placed in cardinal direction (West-East). Houses should be placed up in the hills (A). Second, good and safe infrastructure is important to stay connected and to make life easier, especially during monsoon (B). Third, sacred sites e.g. the place of Lu/Naag, confluences of rivers, clusters of trees, groves and temples should have special attention (C).

More detailed directions are: entrances as waiting point and places of worship to ask for a blessing on the day, with statues of snakes or Buddha, Stupas and Peepal trees (1). Places of worship in public space should have place for temporary festivals and offerings. Elements of worship in the public space are: prayer flags, mani-stones, temples, Stupas, trees, statues of Buddha, snakes, piles of stones, holy cows, marigold and Ayurvedic plants. With the consequence that there are elements such as shoes and empty bottles in the public space (2). Traditionally people farm in a sustainable way with small soil beds and monoculture in a terraced landscape. Development has become crucial, e.g. covered agriculture. Flower gardens, bees and fruit trees make a place more attractive for people to visit (3). Life is extrovert, so activities like sanitation, washing, drying, water transport and storage take place outside. People need protection from the seasons. Keeping things dry or drying things is one of the most difficult tasks, especially during monsoon (4). Living space should be close to water, warm, dry and sheltered. The place should also have a place for an animal shed, a compost place and it should be near plants that can be collected and fed

Main preconditions Culture sensitivity



Detailed preconditions Culture sensitivity



Figure 4.2: Preconditions Culture sensitivity

to the animals. Fences should surround properties. Social life takes place on the veranda or plinth of the house and shops are often in front of a blind wall (5). Community space should be safe, taken care of and protected from seasons, people should have a good reason to go there, e.g. good and safe sanitation, place to hang out, purpose for waste, combination of learning and fun, nice garden area, playscape, resting space, restaurant, Peepal tree or smoking area (6).

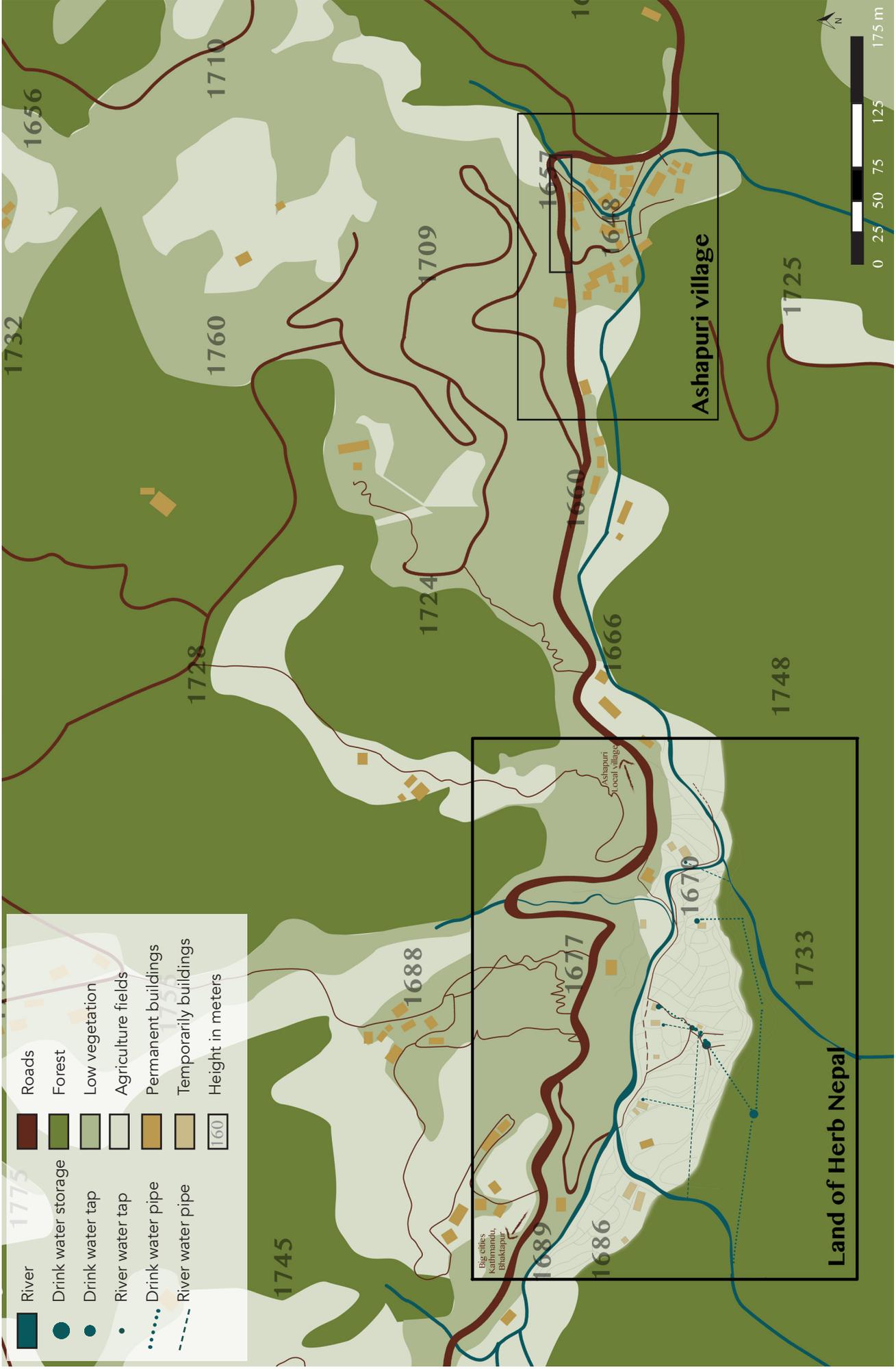


Figure 4.3: Landscape elements map



Figure 4.4: Field design for Herb Nepal

4.2 Herb Nepal

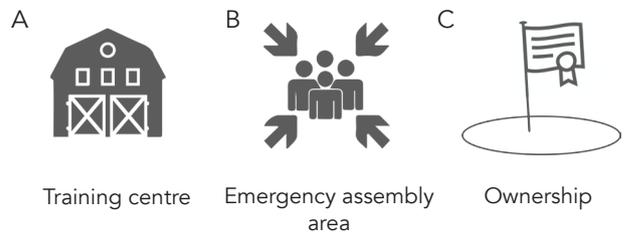
As the research started with the design question of Herb Nepal, the program of Herb Nepal has a huge influence on the application of the design. At the end of my fieldwork I made a concept field design (figure 4.4) for the land of Herb Nepal (figure 4.3), based on the things I remembered of my two months experience at the land of Herb Nepal. This design was overall based on the program of Herb Nepal. It contained all elements that were used in the workshops with the local people. There are special places for the tourists, the local people, the training centre, places to hang out and greenhouses (all yellow). There are orange paths that connect the places and in between are different types of agriculture, flower gardens and water. Two water streams connect the land to the river and feed the swimming pond, flower gardens and green houses. Together with the commissioner or Herb Nepal we discussed the design, and used the comments for the program of Herb Nepal.

In figure 4.5 the spatial program for Herb Nepal is shown. It starts with three main elements. First, a community centre with a training space for the local community (A). Second, an emergency assembly area, where people in and around the village can gather when there is an emergency (B). Third, Herb Nepal has a limited number of plots of land. A goal in the future is to expand their plots, but in first instance they can only build on their own plots (C).

Smaller goals are to create an office for Herb Nepal (1). A place for volunteers and research students where they can stay and live, with a terrace and cafe (2), sustainable and improved ways of farming with big agriculture plots, greenhouses, integral pest management, compost, seeds, herbs, vegetables, drying places and storing places (3), a basis for the

local people who work at the farm, with a storage building, a place to take a break (4), a positive influence on biodiversity with wetlands with water and plants, flowers for smell and colour, and beehives on strategic places (5), and finally on diverse places sanitary facilities like toilets, (drinking) water and places for waste (6).

Main spatial needs and wishes Herb Nepal

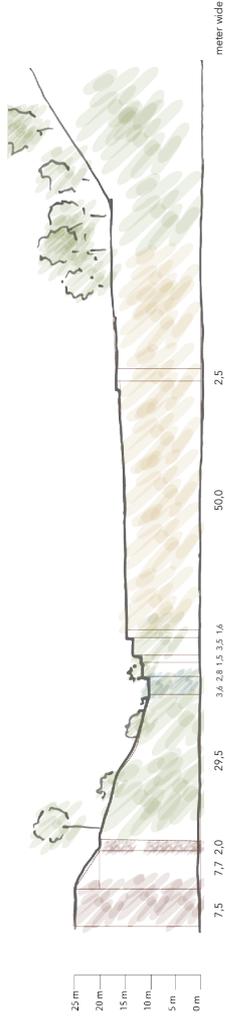


Detailed spatial needs and wishes Herb Nepal

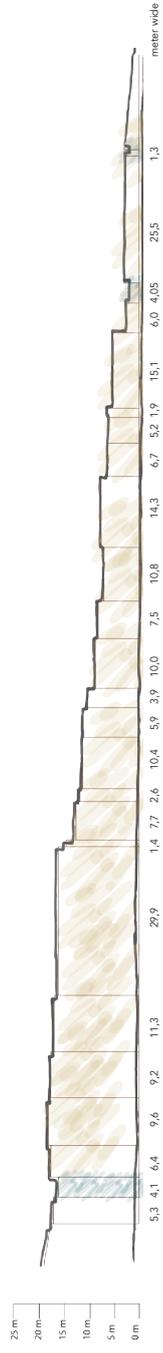


Figure 4.5: Program Herb Nepal

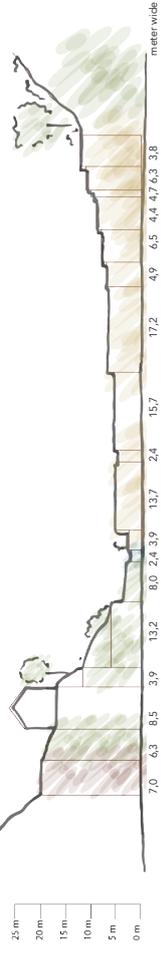
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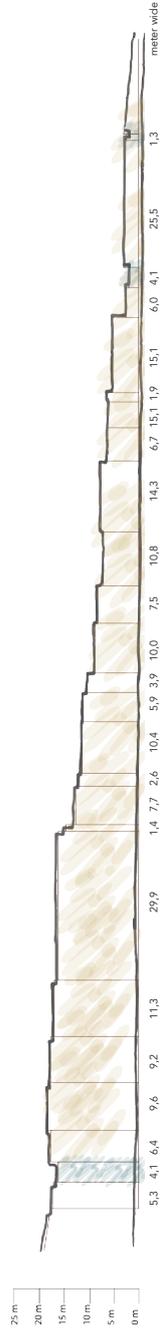
Section 1



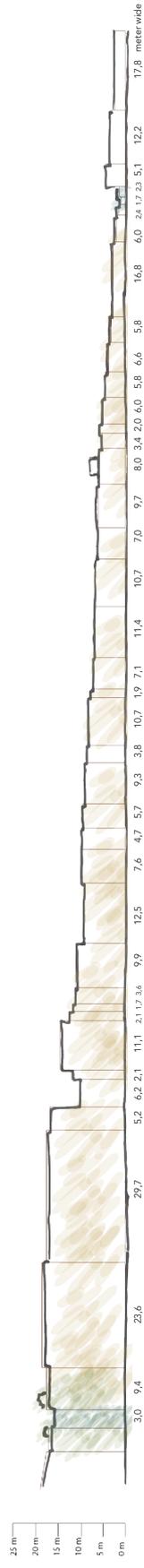
Section 2



Section 3



Section 4



Section 5

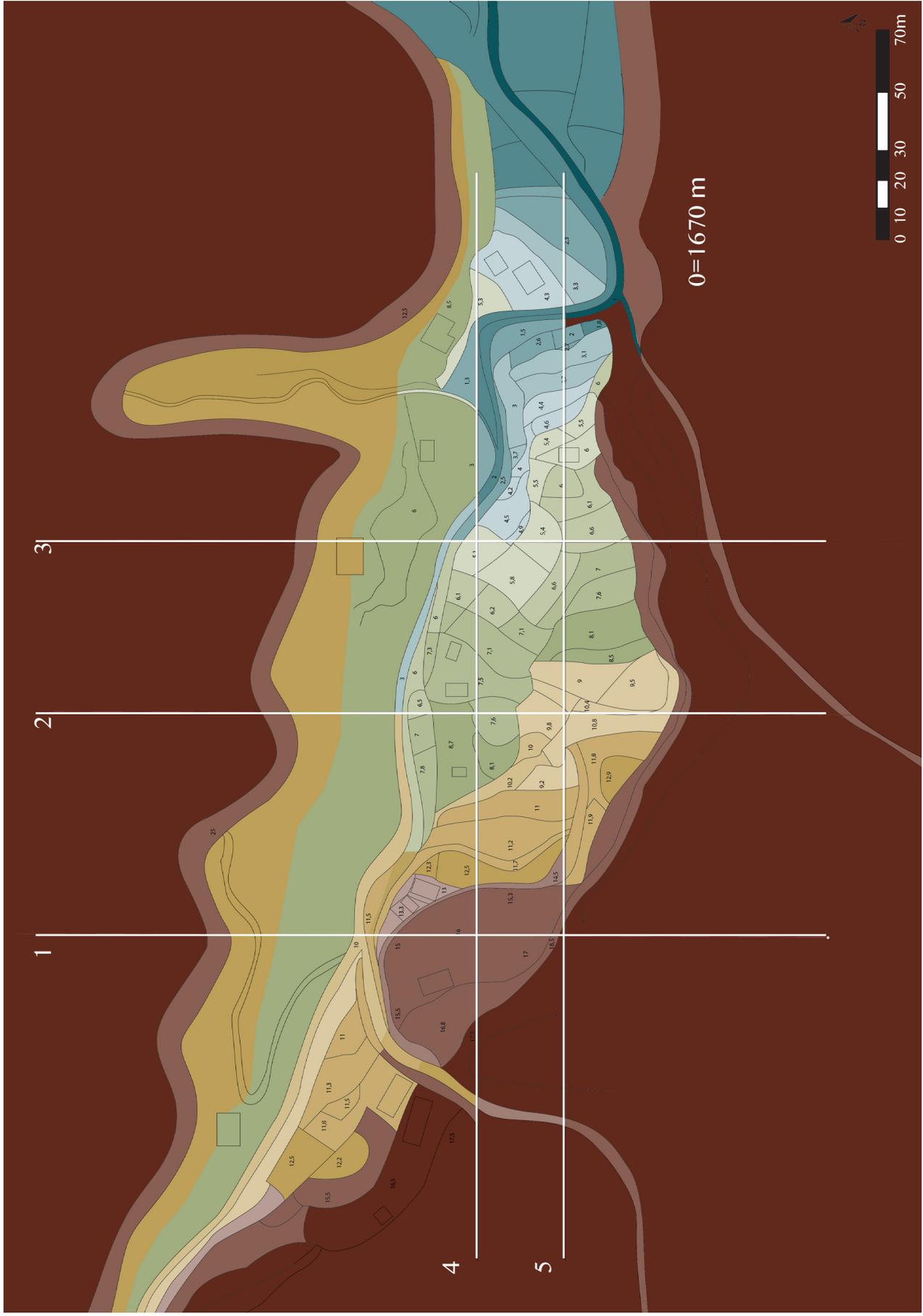


Figure 4.6: Heights of the terraces at land of Herb Nepal



Figure 4.7: River Naheral Khola during winter



Figure 4.8: Land of Herb Nepal and hills around land of Herb Nepal



Figure 4.9: Falling rocks on road (Herb Nepal, 2015)

4.3 Landscape systems

For landscape architecture, the landscape is the main element to take into account, as it is the basis for the design. This section is an attempt to answer the sub question: *What determines the setting of a safe landscape system around the land of Herb Nepal?* This chapter gives an in-depth understanding of the study area in the form of a landscape analysis. It zooms in from regional to local context, with the focus on the rural landscape.

4.3.1 Landscape systems as method

The landscape system is the natural surface used as the underlying base for human existence, with two subsystems that depend on each other, the abiotic and biotic. Landscapes that have been the same for decennia are stable and in equilibrium. However, one single thing can change the whole system and thereby the landscape, for example an earthquake or a changing tradition. The main source to obtain an overview of the landscape systems in this research is the fieldwork done in Ashapuri. It is important to know that there is almost no local data available from this area.

4.3.2 Landscape systems

Regional context

Ashapuri is located on the boundary of the Bhaktapur and Kavre districts. These districts are part of the Sub-Himalayan Region, which has a quite suitable climate and soil for human settlement, which has ensured a large population with extensive agricultural practices and cultivated forest (Shrestha & Shrestha, 1989). The soil in this region consists of silt, loam, sandy loam, clay, sandy-clay, sandy clay-loam, loamy sand, clay, clayey sand and sand. Especially in the Kathmandu Valley, there is very fertile black soil with humus and pure loam. From another sort of black soil the local people bake bricks, which is a daily activity in Bhaktapur (Shrestha & Shrestha, 1989).

Local landscape

Ashapuri is located in a valley at 1700 meter that is open at the South and East side (figure 4.3). Hills at the North and West side reach up to 1800 meters, with a slope of maximum 45 degrees (Dahal, 2015). A small river follows the main structure of the valley that is gently sloping (figure 4.6). This river is called Narehal Khola and is an old outlet of the Paleo lake of Kathmandu (figure 4.7) (Dahal, 2015). Gullies, small water streams, come from the hills and feed the river during the whole year (Dahal, 2015). The clearest marks of human action are the terraced fields in the

hill landscape. There are upland terraces with dry, durable millet, midland terraces with maize, pulses, gourds and beans of different colours. The lowland terraces are planted with bright green rice plants.

The slopes around the land of Herb Nepal consists of rocks but are highly weathered, with the result that the slopes have intensive amounts of loose soil (Dahal, 2015). The slope in the South also has a large amount of landslide mass, which is cut-off by two gullies at the East and West side (figure 4.8) (Dahal, 2015). The access road to the land of Herb Nepal is built on old landslide debris. Lots of loose soil has already been moved, but still superficial landslides are possible on the slope (Dahal, 2015). The road from Bhaktapur to Ashapuri was built in 2015 and during the building rock structures were moved. This caused instability and can give the problem of rocks falling on the road (figure 4.9) (Dahal, 2015).

The car road is the only paved road; all other roads are walking tracks that can lead to dangerous situations during monsoon time. However, the car road can also lead to dangerous situations because of poor construction (figure 4.12) (Interview 13-3, Annex A). According to Dahal (2015), the United States Geological Survey (USGS) shows that "*Sipadol area experienced the ground motion of 15-20% of "g" which is 1.47-1.96 m/sec².*" This is not enough to move down the whole slope, however it can result in tension cracks and amplification of the soil creeping of the slope (Dahal, 2015). Therefore it is important to keep away from the slope or make a protection against the landslides in the form of a gabion wall or a reinforcement of the slope (Dahal, 2015).

The landscape is marked by the three main seasons. In April and May the pre-monsoon starts, with cold or warm weather, but mainly recognisable because of the big windstorms and horizontal rain. Because of the West-East structure of the valley, the wind blows through the valley with an intensive power and can take the rooftops off the houses. Therefore the houses in the valley should be protected from the effects of this wind, for example by planting trees. In July the monsoon starts, with every day a few hours of heavy rain. On average there is 1213 mm rain per year (The world bank group, 2016). It is hard for people dry things e.g. grain and cloths, so protection from the rain is needed. From October until March by daytime it is pleasantly warm, with an average of 19 degrees from July until August. However, the nights can still be cold, with an average of 4.4 degrees Celsius in the coldest month i.e. January (figure 4.10) (Neverre & Toffin, 1985, The world bank group, 2016 and B. van

Ooij, Annex D, Interview 4-4, 10 December 2015). There is no autumn like we know in Europe, most of the trees stay green during winter (B. van Ooij, Annex D, Interview 4-5, 10 December 2015).

The soil down in the valley consists of clay ground that is old debris from the river, also called metasandstone with phyllite partings (Dahal, 2015). This clayground is very fertile and is preferred to be used for agriculture. When there is a landslide on places higher up in the hills, crushed rocks give a type of loess. Many other places in the surrounding contain gravel. Commonly, people live up in the hills, partly because there is less shade. The sun warms the houses of people; therefore building houses in the shade is not wise (figure 4.11). In the past there were no houses in the valley, everyone lived higher up in the hills. In Ashapuri village there are only six old houses, the other houses are of cement because of new techniques in the past. In the surrounding hills there are only four old buildings. Because of the earthquake in 2015, many people came down from the hills and started building temporary houses in the valley (Interview 15-6, Annex A). However, people should use as much as possible of the fertile land in the valley for agriculture instead of housing.

During the monsoon the water is collected inside the hills as groundwater, and vegetation or rock structures pulls the water up (B. van Ooij, Annex D, Interview 4-1, 10 December 2015). In Ashapuri there is river water the whole year, however during and after the monsoon there is a high water level in the rivers that gradually decreases during the year (B. van Ooij, Annex D, Interview 4-1, 10 December 2015). The river flows from West to East, so the water from the hills first comes along the land of Herb Nepal and ends in Ashapuri village. People take water from the river for drinking and cooking. At the land of Herb Nepal, some water points are available with purified drinking water. When the water level is high, people throw their waste in the river, because it floats away quickly, but if this is not the case they burn their waste (B. van Ooij, Annex D, Interview 4-9, 10 December 2015). So to improve their ways of dealing with waste, it is important to give waste a proper function, for example to use it with bio purposes, make energy of it, build with it or use it as fertilizer.

Landslides are overall a big problem during monsoon time. When a landslide West of the land of Herb Nepal blocks the river, the water that is blocked temporarily can create a tidal wave or even mudslide (B. van Ooij, Annex D, Interview 4-10, 10 December 2015). This endangers the west part of the land of Herb



Figure 4.10: Average temperatures and precipitation (Meteoblue, 2006 - 2016)



Figure 4.11: Early morning moisture in Valley



Figure 4.12: Traditional way of farming (T. Kruk, 2016)

Nepal. The river bed faces basin effect causes de-amplification of seismic energy. However, there is the possibility of erosion at the river bank (Dahal, 2015). Therefore it is important to build only seasonal and replaceable constructions next to the river. The South slope of the land of Herb Nepal is old landslide mass. However it is highly forested, still it is vulnerable to small landslides, especially during monsoon. When the gullies at the East and West side of the slope get blocked, the South slope will flood causing danger of debris flow and landslides (figure 4.13) (Dahal, 2015). When the drainage canals are closed during monsoon, the crops will drown or the good soil will be washed away due to the layers of clay in the soil (B. van Ooij, Annex D, Interview 4-10, 10 December 2015). Therefore it is important to create a proper water system including the river, gullies and drainage canals.

The Tamang landscape knows many different species of trees that are dividable in sacred trees and trees used for the wood or as food for animals (March, 2002). Deforestation and degradation is clearly visible, the oldest trees around Ashapuri are ten or twenty years old. However, they also 'secure' the landscape by creating the terraces, which can have a duration of twenty years (March, 2002). In the past, the forest around Ashapuri was much larger and came further down into the valley (Interview 2-5, Annex A). When cutting a tree for wood, new trees are planted or just regrow on their own. A community forest group is in control of the forest. Only private forest can be cut down, but sometimes nomadic groups are not familiar with ownership of land, so they neglect the rules (B. van Ooij, Annex D, Interview 4-5, 10 December 2015). In other Tamang villages there are often shepherds with grazing animals, but in Ashapuri women cut the grass and plants and bring it to the animals (B. van Ooij, Annex D, Interview 4-7, 10 December 2015). Trees that surround the area of Ashapuri are: Alder (*Alnus*), Lapsi (*Choerospondias axillaris*), Wild Cherry (*Prunus avium*), Wild Peach (*Kiggelaria africana*), Strawberry tree (*Arbutus unedo*), Sweet chestnut (*Castanea sativa*), Chillauni (*Schima wallichii*), Kafal (*Myrica esculenta*), Velvet tree (*Miconia calvenscens*), Rush (*Juncaceae*), Mulberry (*Morus*), Sycamore (*Platanus occidentalis*). There is also Birch (*Betula*), but these grow mostly above an altitude of 2500 meter (B. van Ooij, Annex D, Interview 4-5, 10 December 2015).

A traditional way of farming is working with small soil beds with a monoculture (figure 4.12). Therefore the same amount of paths as beds are needed (B. van Ooij, Annex D, Interview 4-2, 10 December 2015).

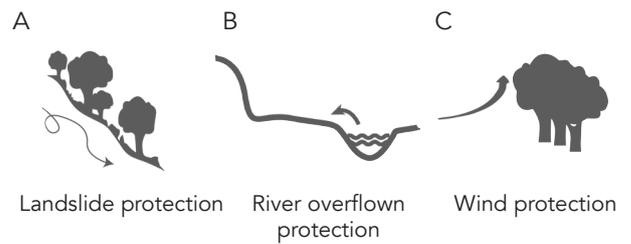
A father divides his land over his sons, thereby the pieces of land become smaller every generation (B. van Ooij, Annex D, Interview 4-19, 10 December 2015). Sometimes pieces of land are sold by the sons without involvement of the government or with fake papers, then the government can claim the land back (B. van Ooij, Annex D, Interview 4-20, 10 December 2015). So ownership of land is complicated.

4.3.3 Preconditions of landscape systems

From the above, directions to improve the landscape systems are shown in figure 4.14. It starts with three main problems in the landscape, and furthermore some details. First, to prevent landslides and erosion, steep slopes need to be avoided, and if necessary these slopes must be strengthened with gabions, bolsters, toe walls, deep-rooted vegetation, or revetment structures (A). Second, the riverbed faces basin effect causes de-amplification of seismic energy. Besides, there is the possibility of erosion at the riverbank, therefore it is important to build only seasonal and replaceable constructions next to the river (B). Third, the valley needs protection from the strong monsoon wind by for example trees that break the wind (C). Fertile river clay from old debris in the valley should be used for agriculture (1). A proper water system is needed, especially during the monsoon that prevents flooding and keeps roads clean (2). Only seasonal and replaceable constructions should be placed next to the river, in case of flooding or mudslides (3). People need protection from heavy monsoon rain, hot sun and cold nights by shelter in the form of trees and structures (4). There are two types of trees: sacred trees and trees used for the wood and leaves for the animals. Therefore trees

with specific purposes need protection from the local people (5). Waste needs to be properly processed to prevent river, groundwater and soil pollution for example by using an incinerator (6).

Main preconditions Landscape systems



Detailed preconditions Landscape systems

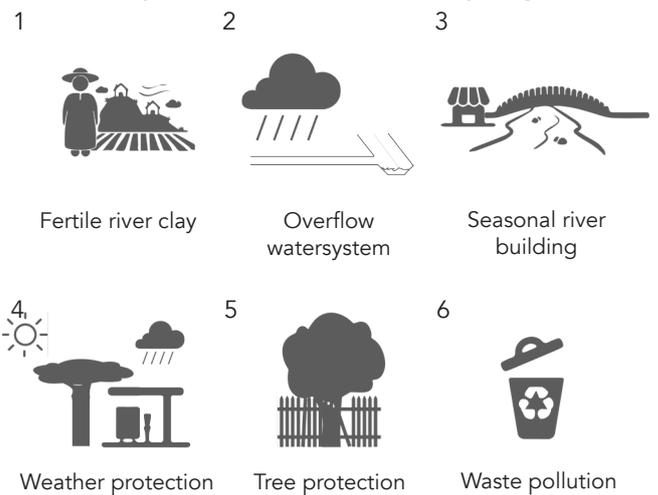


Figure 4.14: Landscape systems



Figure 4.13 : Problems in the landscape

4.4 Earthquake-safety

Part of the landscape problems are the earthquakes. This section will answer the sub question: *What determines the setting of a safe outdoor space in earthquake-prone areas?* From the past, Tamang know an impoverished and desolate position. Hence, it was the ethnic group with the most casualties after the earthquake of April 2015 (Ghale, 2016).

4.4.2 Open space for earthquake-safety

Improvements for earthquake-safety should not only focus on when an earthquake occurs, it should also consider the time before and after the shock (Aksoy, 2010). The size, condition and quality of open green spaces are important. The quality of an area will be measured by how the place improves the quality of daily life, as well as how it can be used as shelter place (Aksoy, 2010). Renovation and improvement of green areas will give these areas more attention and they will become more attractive (Aksoy, 2010). Using green areas as dumps for debris and rubble is unattractive (Nalbantoglu & Guzer, 2000; Aksoy, 2010).

An earthquake-safe place is also a place to search for shelter after an earthquake. To determine the quality of a safe shelter place, the Open Space Suitability Index can be used. This index measures two different aspects: qualitative evaluation of the suitability of open spaces and quantitative criterion for the accessibility on network basis (Anhorn & Khazai, 2015). The need for shelter after an earthquake can be divided into “*emergency shelter, temporary shelter, temporary housing, and permanent housing*” (Anhorn & Khazai, 2015). This study will only focus on emergency shelter and temporary shelter, because this can be fulfilled in the outside public space (Anhorn & Khazai, 2015).

4.4.3 General requirements for shelter-places

If a place can be a shelter place in the future depends on some elements. The possession of property, current practice and future purpose can be important. Governmental land use is preferred (cf. FEMA, 2007; Anhorn & Khazai, 2015). A park or playground is a good option because mostly these are public places with no other functions or elements than for public use (Cross & Crescent, 2011). Thus, the perfect shelter place has public ownership, no future plans or is a park, garden or playground for the long term (Anhorn & Khazai, 2015). Solid ground for a place is important, when the soil has been upturned, it is less safe. According to Nripal Adhikary (2015), who works for ABARI an earthquake-resilient architectural company, building close to a river or water is not

recommendable, because the edge of the river can collapse or the river can flood. People should avoid building next to steep slopes and open, flat and hard surface is better to build on than on terraces, because they can fall down in a landslide. Safe places should be created at least at half of the height distance of surrounding buildings. Besides buildings should be blended in with the natural environment (N. Adhikary, Annex D, Interview 5-3, 13 December 2015).

The higher up in the slope, the more vibration during an earthquake (Dahal, 2015). Along the ridge or slope edge, the movement of the ground is usually worse, at the toe of the slope or base, the movement is usually less (Dahal, 2015). So it is safer to live in the valley than on the slopes due to less movement during an earthquake. This effect was observed on the North slope of the valley of Ashapuri, where houses on the slopes had collapsed and the houses in the valley only had cracks.

Most important for a shelter place is the accessibility. Often people search a shelter place that is close to their own house. When this is not possible, it is important that a shelter place is good and safely accessible (Anhorn & Khazai, 2015). To reach a certain place in a specific time, safe and easy roads are important and people have to be aware of the evacuation routes (Tai et al., 2010).

4.4.4 Applied requirements for shelter-places

Emergency shelter should be based on principles like norms and values, criteria and rules for emergency development. One institution that has made minimum standards and a general protocol is the SPHERE Project (2011). According to the Sphere handbook (2011) the design for an earthquake-resilient program should be based on the risks, what people need and their capacity to reach them (Cross & Crescent, 2011).

The SPHERE Project gives standards of 3.5 m² covered floor area per person for doing household activities, while a minimum surface area of 45 m² is needed for all daily activities. A minimum of 15 liters of water is needed per person with a maximum of 250 persons per tap place, within a distance of the living area of maximal 500 m. Per latrine the maximum is 20 people within a maximum distance of 50 meters from their living area (Cross & Crescent, 2011). According to the Sphere handbook (2011) toilets need to be safe and lockable for the whole population. They should be appropriately provided with water for hand washing and cleaning (Cross & Crescent, 2011).

There should be appropriate drainage facilities available so there is no waste water in the residential areas. Besides, water points should have an effective drainage system to avoid mud forming (Cross & Crescent, 2011). Surface water and ground water should not be polluted by drainage water and eroded water should not flood shelters, paths or sanitation facilities (Cross & Crescent, 2011). Easy and low-cost techniques of drainage from water points are soak pits or banana trees. Channels are better than pipes, besides channels can drain the storm water too.

When there are steep slopes, soil erosion needs to be prevented (Cross & Crescent, 2011). Felled trees and plants used for rebuilding should be replanted to stabilize the soil and to maximize the opportunities for shade and protection from the climate (Cross & Crescent, 2011).

During rebuilding, the affected population should be involved and trained, including local building professionals and authorities (N. Adhikary, Annex D, Interview 5-3, 13 December 2015). Local materials and constructions should be used, for example mud, stone, wood and earth. While building, safe building techniques and standards should be taken into account (Cross & Crescent, 2011). The adverse impact on the local natural environment should be minimised and/or mitigated (Cross & Crescent, 2011).

In order to have a proper emergency assembly area, electricity is important. When electric cables do not function any longer, it is important to have other options to keep connected and warm, for example electricity from water, sun, wind and solar water heaters (N. Adhikary, Annex D, Interview 5-3, 13 December 2015).

4.4.5 Preconditions of earthquake-safety

From the above, some directions for a good disaster assembly area are shown in figure 4.15. It starts with some space related elements. The place should have an open, flat and solid surface with public ownership and no future building plans (A), there should be good and safe access and evacuation routes, especially during monsoon (B), and the place should be away from steep terraces and river edges that can collapse. It is safe at least at half of the height of the building distance between buildings and steep slopes (C).

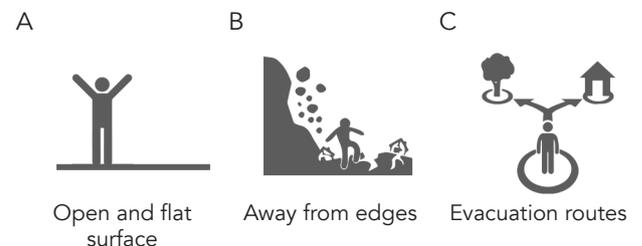
Furthermore there are more space related elements that are more about the device of the place. Minimal 15 liters per person per day for washing and cleaning should be available, maximum of 200-250 people per

water tap within a distance of 500 m of the living area (1). Safe and lockable toilets with a maximum of 20 people per toilet, not included in the house, within a distance of 50 m from the living area (2). Waste water and storm water drainage facilities (3). Plants should be used to prevent soil erosion and give protection from the climate (4). Options for local provisions for generating electricity using water, sun and wind (5). Local materials, constructions and people should be used in earthquake-safe (re)building (6).

4.5 Conclusion

This chapter gave conclusions in an overview of all preconditions of culture sensitivity, landscape systems, earthquake safety, and the program of Herb Nepal. These preconditions will be used to give form to the design and in the next chapter they will be combined to create and explain the design.

Main preconditions Earthquake-safety



Detailed preconditions Earthquake-safety

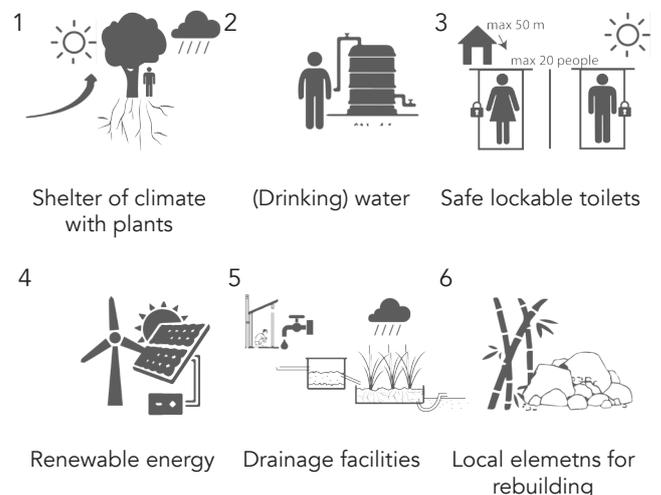
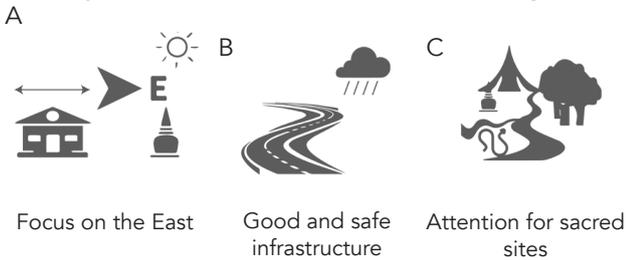


Figure 4.15: Preconditions Earthquake-safety

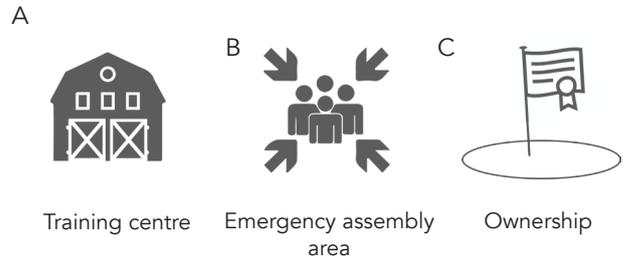
5. Application Ashapuri

To answer the design question: *How can cultural manifestations be integrated in the design of a safe, earthquake-prone community centre in Ashapuri?*, the following preconditions (figure 5.1) will be combined in a design.

Main preconditions Culture sensitivity



Main spatial needs and wishes Herb Nepal



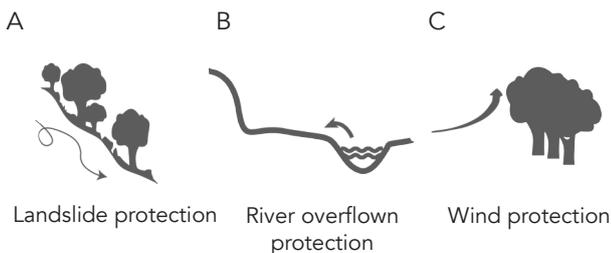
Detailed preconditions Culture sensitivity



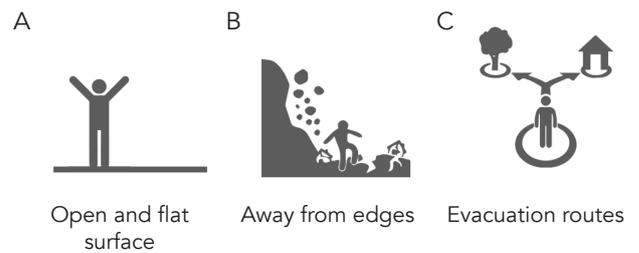
Detailed spatial needs and wishes Herb Nepal



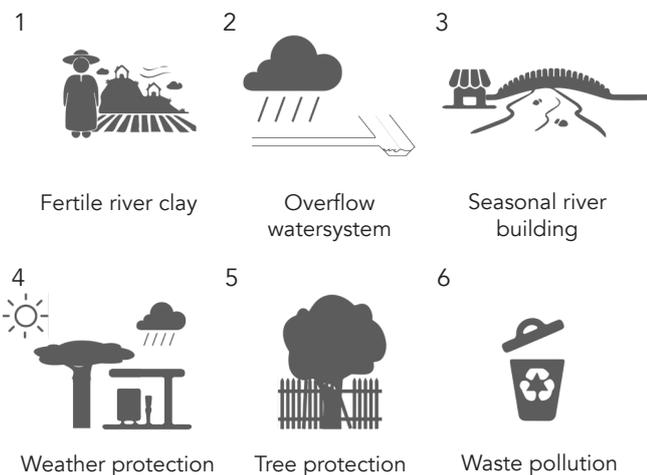
Main preconditions Landscape systems



Main preconditions Earthquake-safety



Detailed preconditions Landscape systems



Detailed preconditions Earthquake-safety

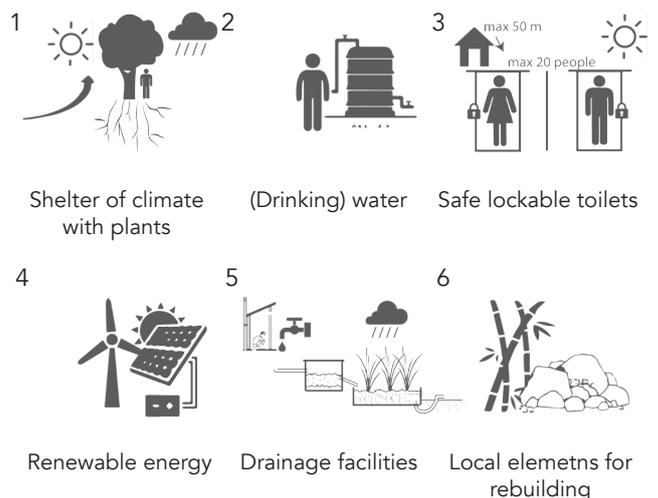


Figure 5.1: Overview preconditions and program

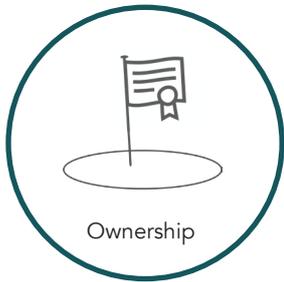


Figure 5.2: Design starting points for Two stages



Figure 5.3: Design starting points for special places

5.2 Design starting points

5.2.1. Two stages

The audience for the design is Herb Nepal. They can implement the design to create an outdoor community centre that is earthquake-safe and adapted to the local culture. Because Herb Nepal owned not all the land of the area designated as land of Herb Nepal, there will be two stages of the design (figure 5.2). Stage one (figure 5.13) can be implemented now, based on the current land ownership with no regret measures. Because the design is a framework that can be extended, there is a stage two with an optimal cultural translation. Stage two includes the land of which the ownership of Herb Nepal is still under negotiation (figure 5.14).

5.2.2 Special places

The design has special places for a training centre, emergency assembly area, office and volunteer space. These places are all combined with the cultural element of focusing to and/or placing in the East and the attention for sacred sites (figure 5.3). The office and tourist place are placed in the West because Herb Nepal already started building. However, according to the cultural preconditions, now they have a view on the East and are placed at the crossing of two rivers (figure 5.26-5.28). The entrance road (figure 5.28), as already made by Herb Nepal, also ends on the West side. To make the entrance culturally valuable, big trees are placed, a gate and a Pati to wait (figure 5.29). The trees planted by Herb Nepal next to the road are removed. Trees planted on a slope can destroy the whole slope with their root system when they fall over. The location of the training centre with testing plots was also already steered by Herb Nepal, however I changed the orientation of the building to the East and connected it to the place of the special snake Naag. With the help of a scale model I explored the best locations based on the landscape (figure 5.4). The tourist buildings and training centre are not placed on the safest places, but I made safety protections which I will explain later.



Figure 5.4: Scale model of land of Herb Nepal

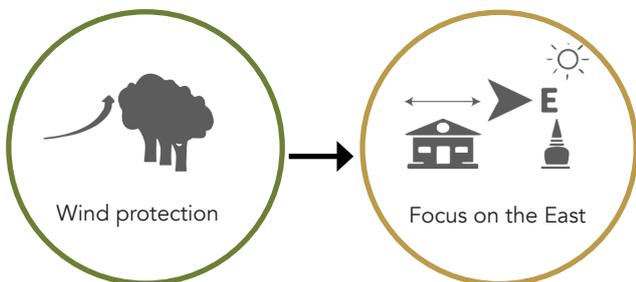


Figure 5.5: Design starting points for wind protection



Figure 5.6: Ashoka trees (Chhajed garden, 2015)

5.2.3. Wind protection

Because of the strong monsoon wind, a protection from the wind is necessary. Windbreaks and shelterbelts are an efficient method for this. Needles or leaves of trees can provide a barrier for wind. The shelterbelt should be placed in North-South direction as the wind comes from the East (figure 5.5). To have an optimal wind reduction, the shelterbelts of trees should be placed again at a distance of five to ten times their own height (figure 5.7) (Germeraad, 1986). In the design the 'Columnnar variety' of the Ashoka trees (*Saraca asoca*) will be used (figure 5.6). This is a dense tree and therefore there needs to be some space between the trees. The trees can reach a height of 8 or 10 meters (Bole & Vaghani, 1986). The shelterbelts are placed in such a way that they underscore the East direction as part of the culture study. The maximum distance between two belts of trees is 55 meter. Therefore the shelterbelt will be effective.

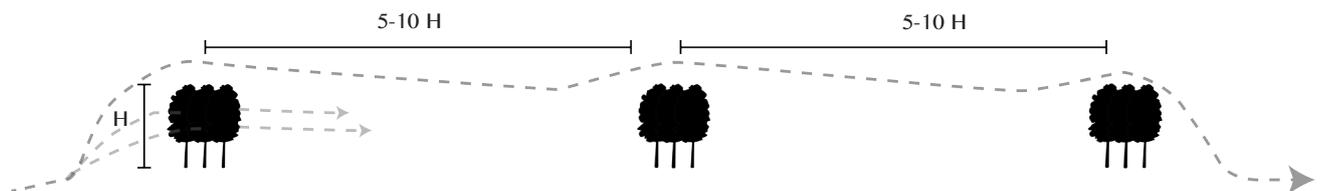


Figure 5.7: Principle of wind shelterbelts, dimensions in m (Based on Germeraad, 1968)

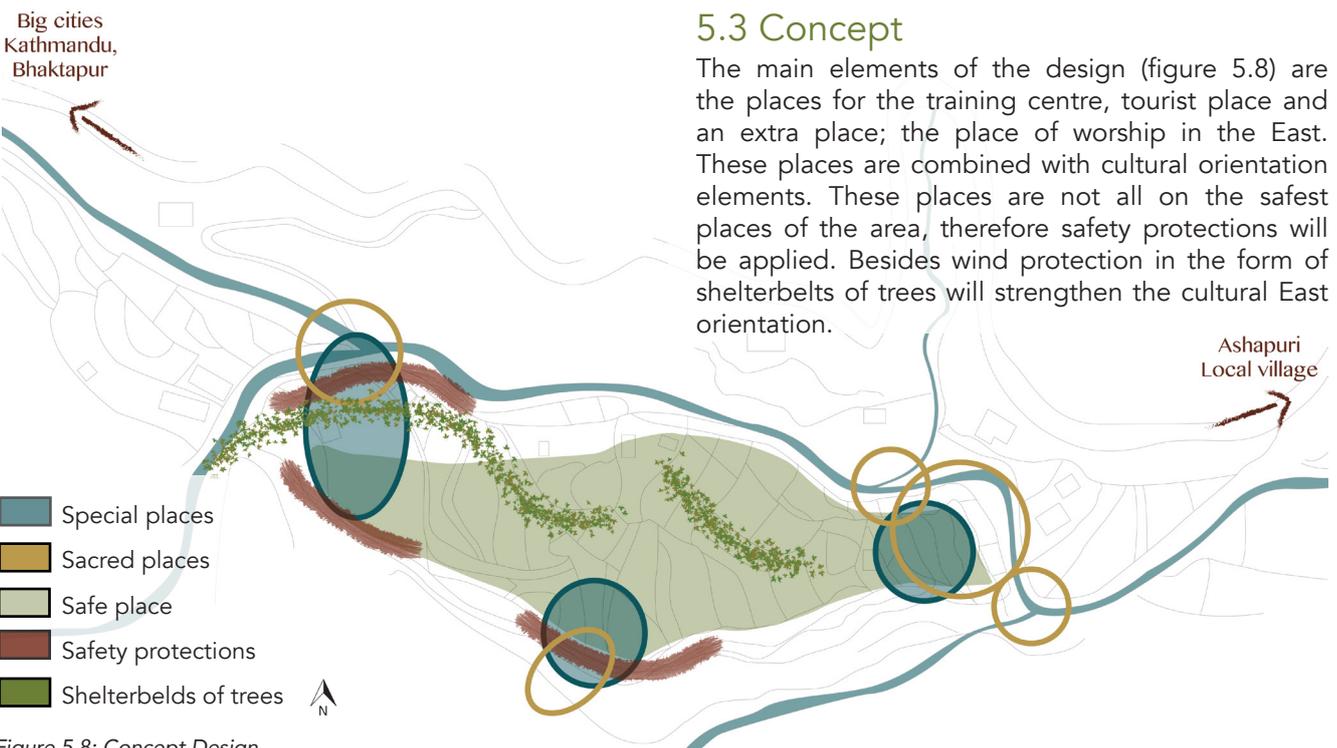


Figure 5.8: Concept Design

5.3 Concept

The main elements of the design (figure 5.8) are the places for the training centre, tourist place and an extra place; the place of worship in the East. These places are combined with cultural orientation elements. These places are not all on the safest places of the area, therefore safety protections will be applied. Besides wind protection in the form of shelterbelts of trees will strengthen the cultural East orientation.

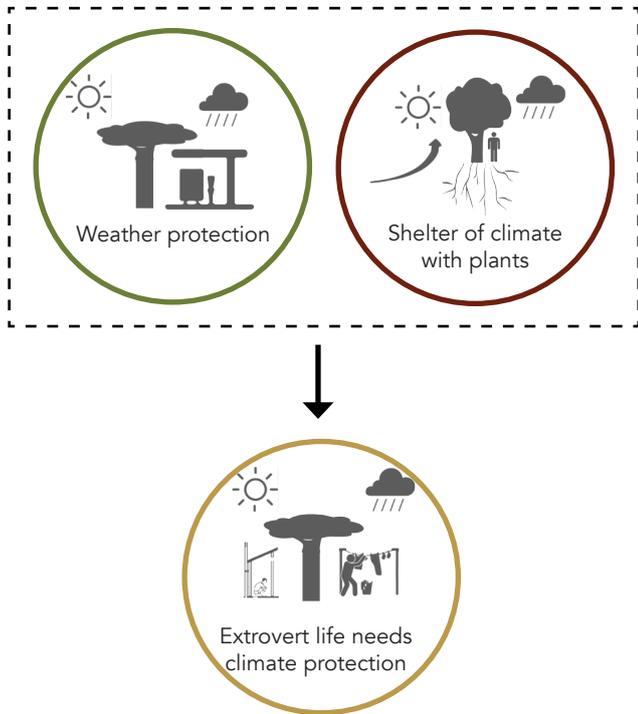


Figure 5.9: Design starting points for shelter

5.2.4 Shelter

The life of the Tamang is extrovert and orientated on the collective space. The monsoon rain and hot sun give struggles (figure 5.9). Therefore shelter is important. This will be implemented in the form of clusters of big trees around the training centre, or Pati's (figure 5.10), which are small cabins that can be placed in the landscape. In addition, the roofs of the buildings that are already designed, should be made wider, to create a covered outdoor space where demonstrations or trainings can be given or underneath people can sit. Four meters is the maximum before a pillar is needed. In figure 5.11 and 5.12 you can see the original design of the lodges of the training centre with the suggestions to make the roof wider.

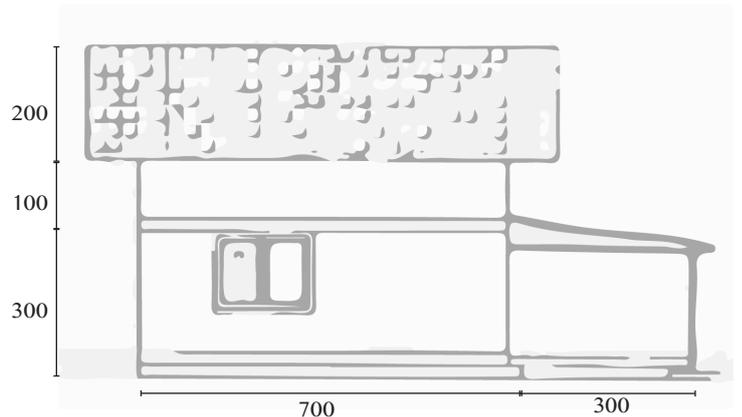


Figure 5.11: Detail B1 Section lodge, dimensions in cm (Pranathi, 2015).

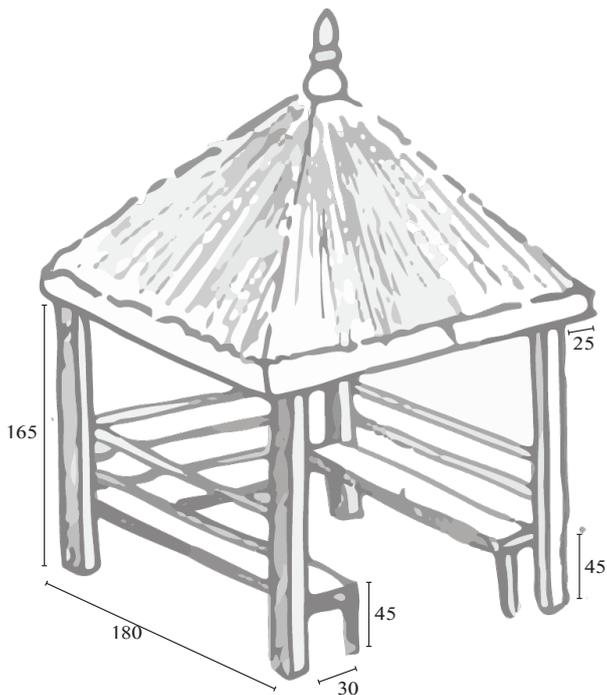


Figure 5.10: Detail A typical detail of a Pati, dimensions in cm (Based on P.W.Germeaad, n.d.)

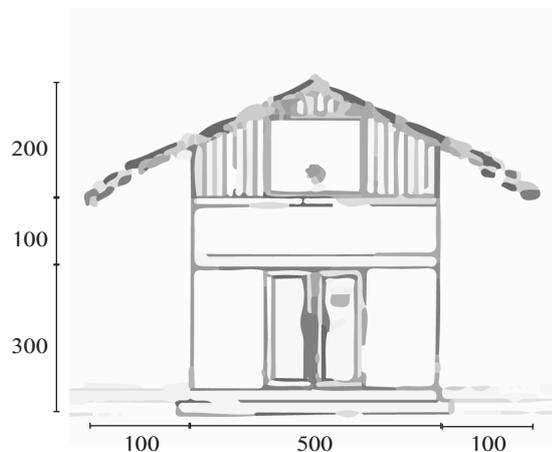


Figure 5.12: Detail B2 Section lodge, dimensions in cm (Pranathi, 2015).

Legend Design phase 1 and 2 of figure 5.13, 5.14 and 5.15

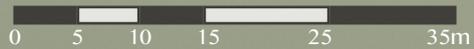
 Buildings:	 Rainwater drainage
A Reception/Office	 Water:
B Lodge	M River
C Pati	N Fishing ponds
D Animal shed	O Swimming pool
E Local kitchen	P Water retention
F Training centre	 Shrubs and bushes (pomegranate/ blueberry)
G Toilets	 Flower field
H Incinerator	 Trees:
I Tea house	Q Tamarind
J Local house	R Flamboyant
 K Disaster assembly area	S Peepal tree
 Arable land	T Mango tree
 Terrace edges	U Ashoka trees
 Demonstration plots	 Roads:
 Green house	V Main road
 Stupa	W Entrance road
 L Place of Naag	 Walkways
 Flushing banana fields	 Stairs
 Leaching fields	X Parking lots
 Septic tank	Y Suspension bridge
 Gabions	Z Culvert bridge



Figure 5.13: Stage 1, design for Herb Nepal based on their ownership of land

Scale: 1:600

note: Before elaborating on structures, construction related detailed site surveys are necessary.





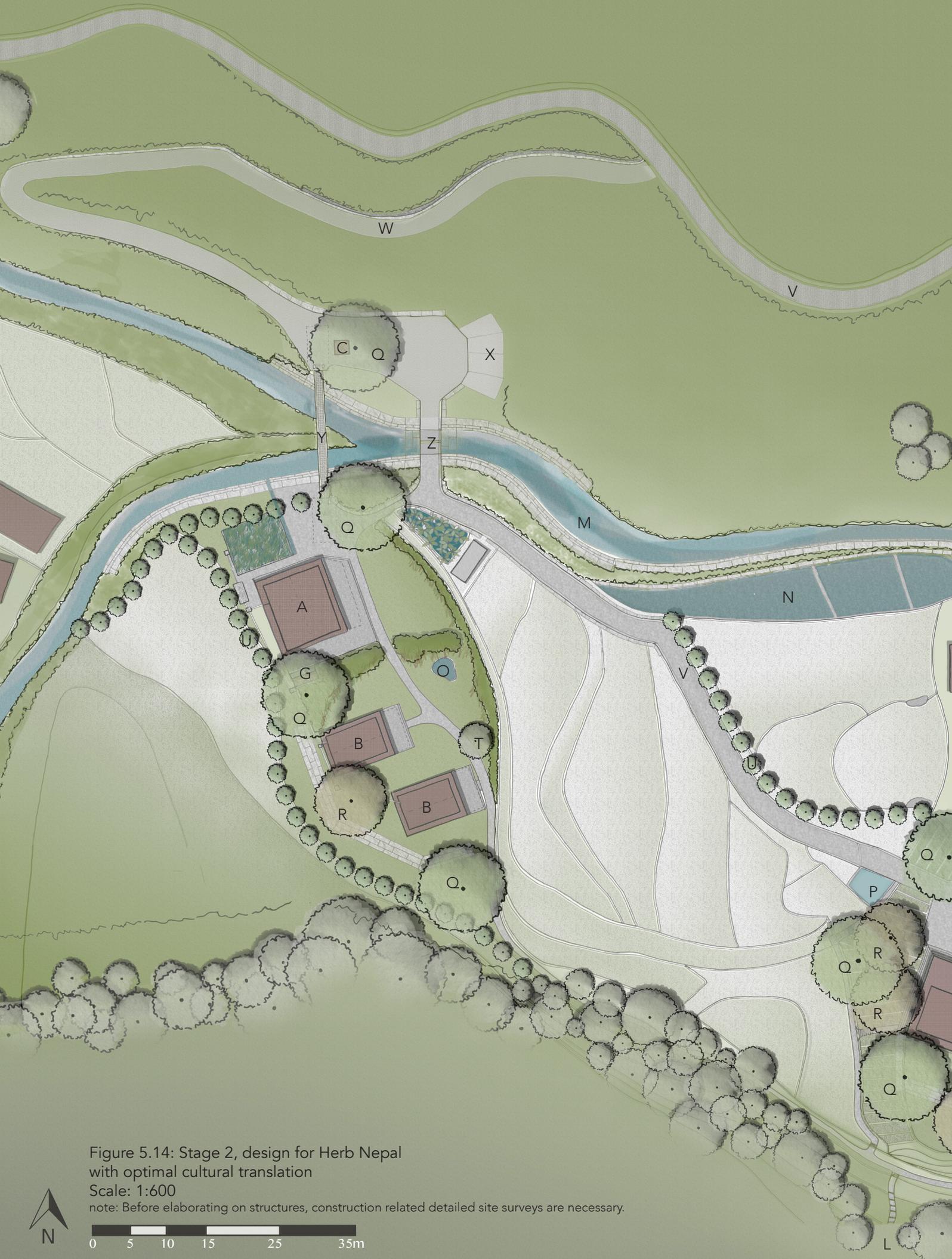


Figure 5.14: Stage 2, design for Herb Nepal with optimal cultural translation

Scale: 1:600

note: Before elaborating on structures, construction related detailed site surveys are necessary.

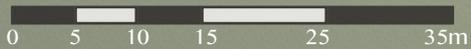
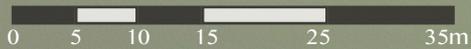






Figure 5.15: Stage 2, design for Herb Nepal;
 details, sections and heights, with 1670 meter = 0 in red
 Scale: 1:600

note: Before elaborating on structures, construction related detailed site surveys are necessary.





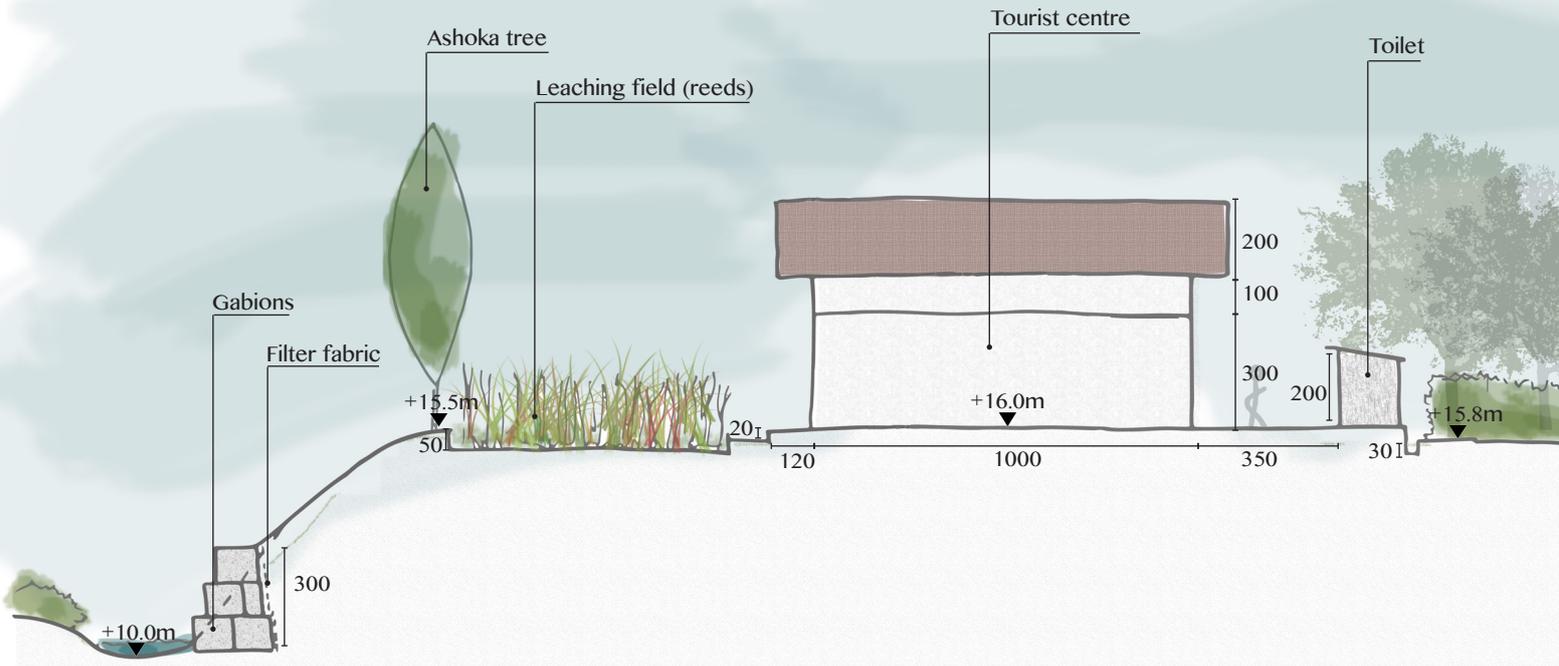


Figure 5.16: Section A-A' Tourist centre, scale 1:200, dimensions in cm

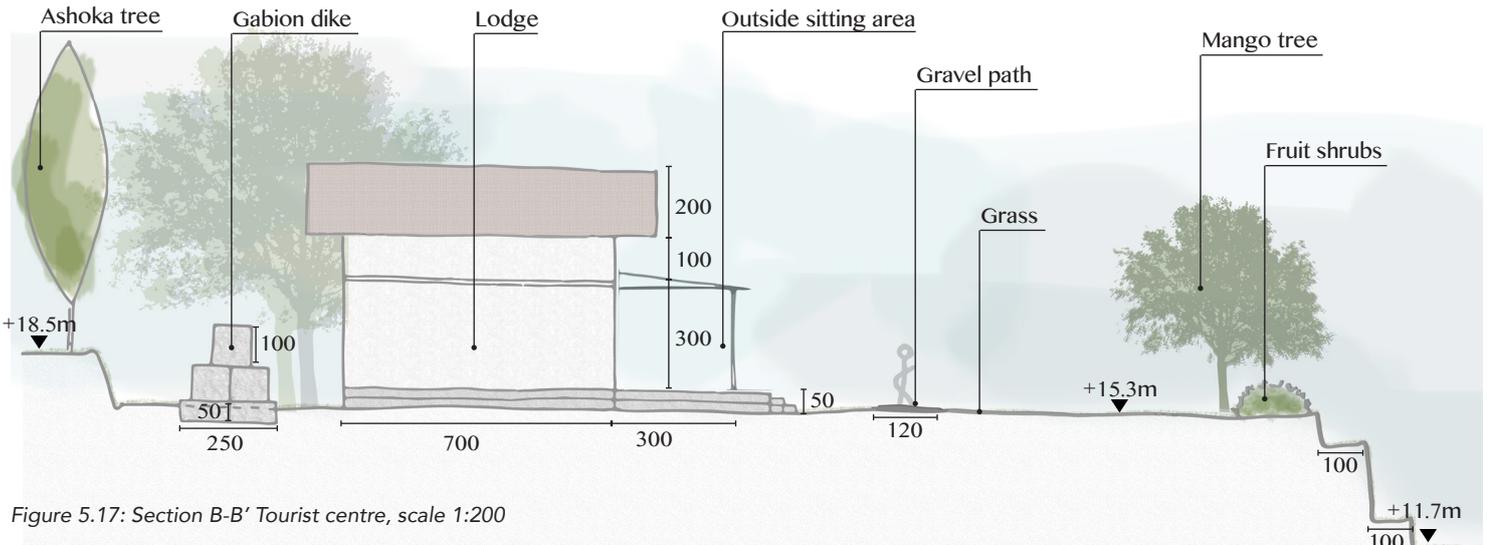


Figure 5.17: Section B-B' Tourist centre, scale 1:200

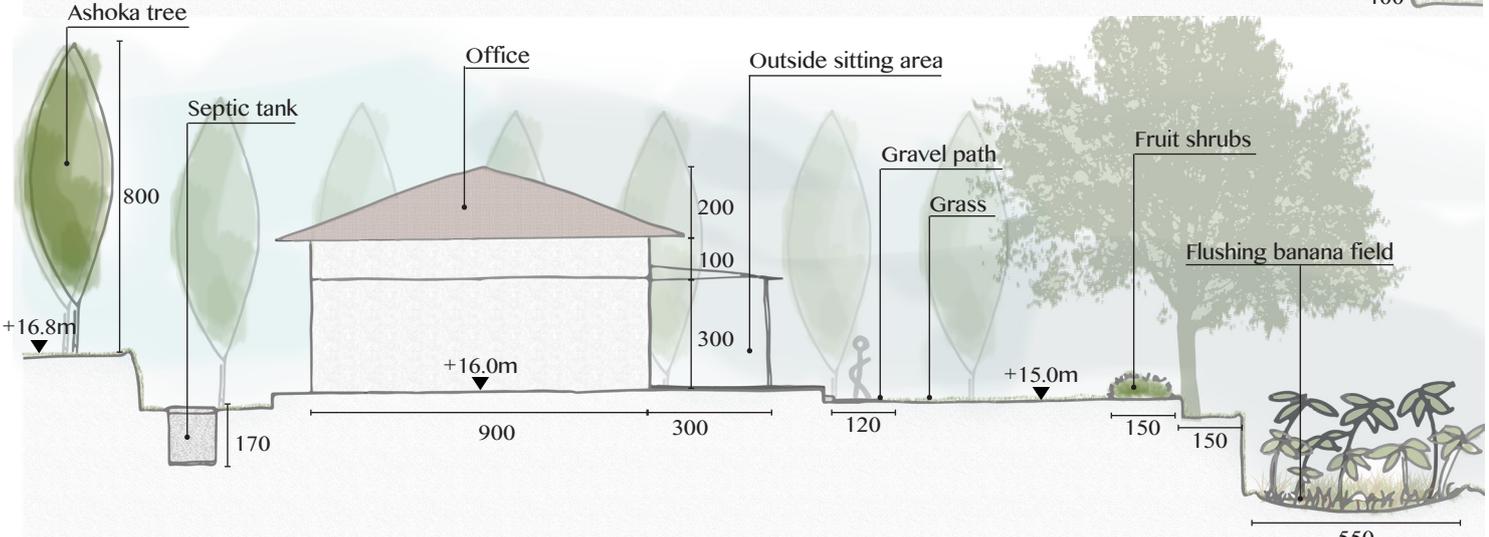


Figure 5.18: Section C-C' Tourist centre, scale 1:200, dimensions in cm

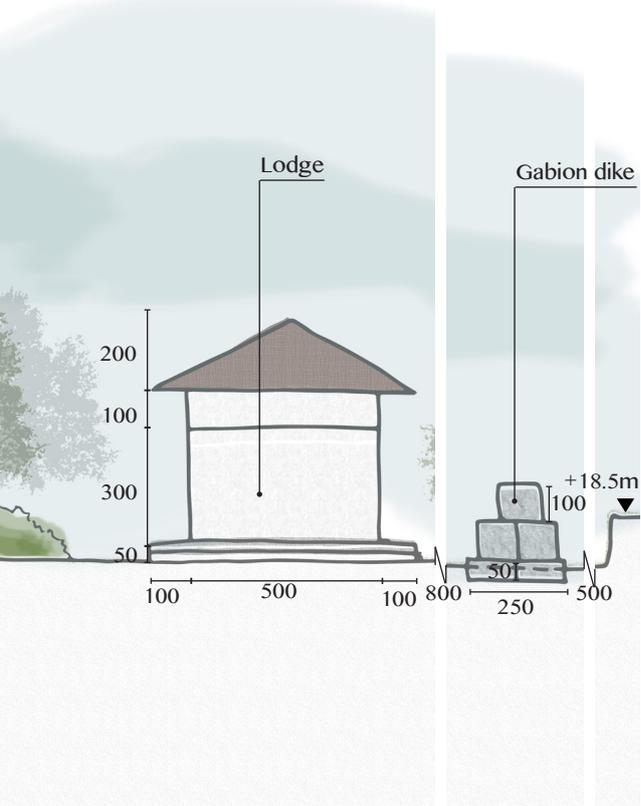


Figure 5.19: Visualisation 1 Entrance (elements with a white frame are not designed or can be found in the sections or map / they need special attention from an cultural expert)



Figure 5.20: Visualisation 2 Tourist centre (elements with a white frame are not designed or can be found in the sections or map / they need special attention from an cultural expert)

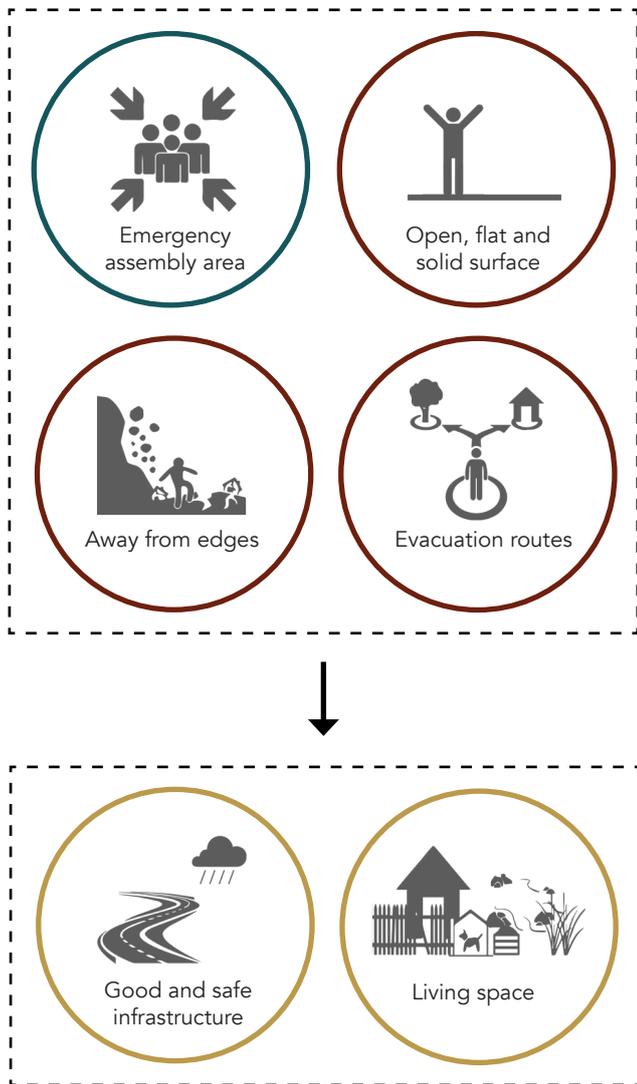


Figure 5.21: Design starting points for safe living



Figure 5.22: Photo of Nepali gabions (P.W. Germeraad, n.d.)

5.2.5 Safe living

To create an emergency assembly area that has an open, flat and solid surface, away from edges and with good evacuation routes would improve the place. It can be combined with the cultural aspects of a good and safe infrastructure for social and physical connection between villages and the living space on the land (figure 5.21). In front of the training centre (figure 5.23 and 5.24) in the design is an emergency assembly area with a minimum of 210 square meters. The minimum area per person is 2.5 square meters, which means that the space is big enough for 60 people. The toilets, placed outside in the South are

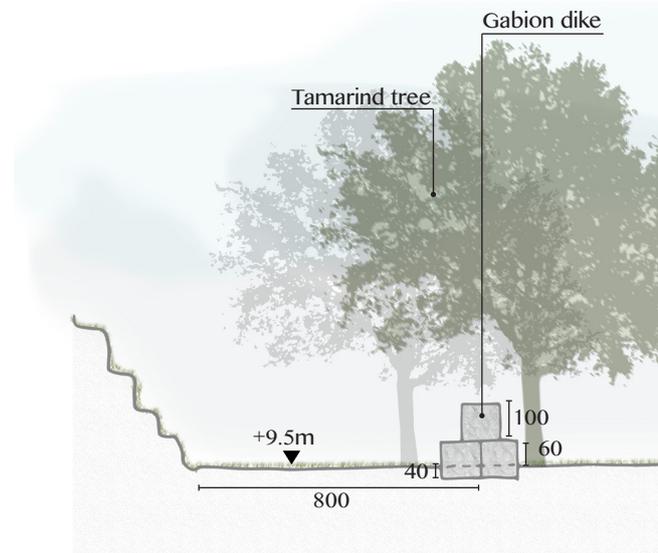


Figure 5.23: Section D-D' Training centre, dimensions in cm

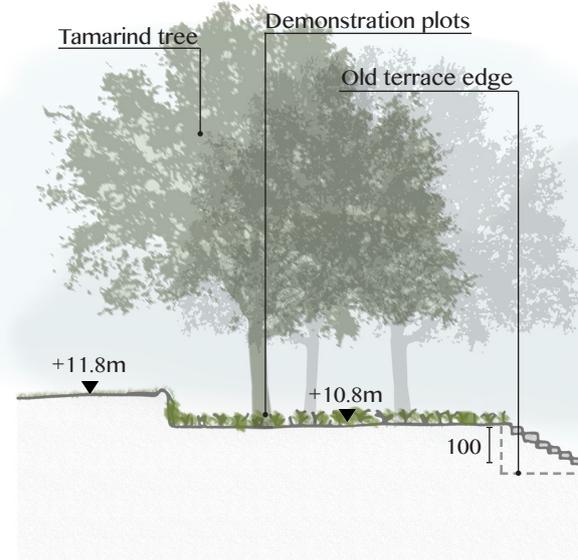


Figure 5.24: Section E-E' Training centre, dimensions in cm

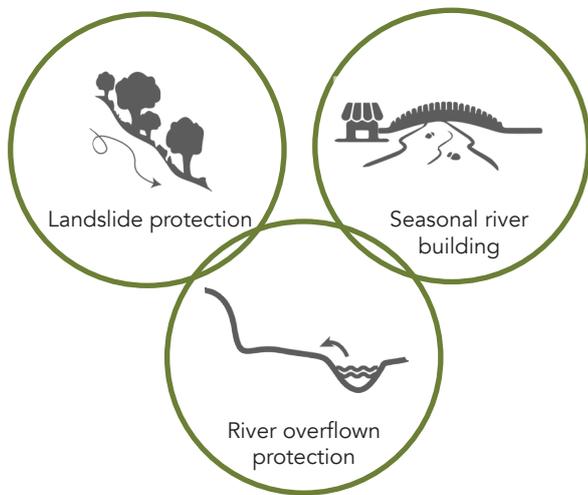


Figure 5.26: Design starting points for edge protection

5.2.6 Edge protection

The land of Herb Nepal needs protection from landslides and river-overflow problems (figure 5.26). Because of the monsoon rain the river level has been highly fluctuating. Therefore only seasonal buildings should be placed next to the river. The tourist centre and training centre are placed higher up the land, so they should be safe from floods. A bridge would be a building in the river, however I created three flexible ways to cross the river. In design stage one, the river can only be crossed by the suspension bridge because of lack of space (figure 5.30). Because the bridge has a span distance of less than 39 meters, the bridge will not lower more than two meter (SATA, 1977). To make the place more accessible, stage two has a culvert bridge that cars can cross. It is filled with earth to keep the construction costs low and it is protected by gabions (figure 5.31), but when the water is too high, it can flow over it. I tested the several possibilities of places for the bridge by designing with the heights of the river edges. The connection to the local village is made with stepping stones over which the water can flow when it is high (figure 5.27).

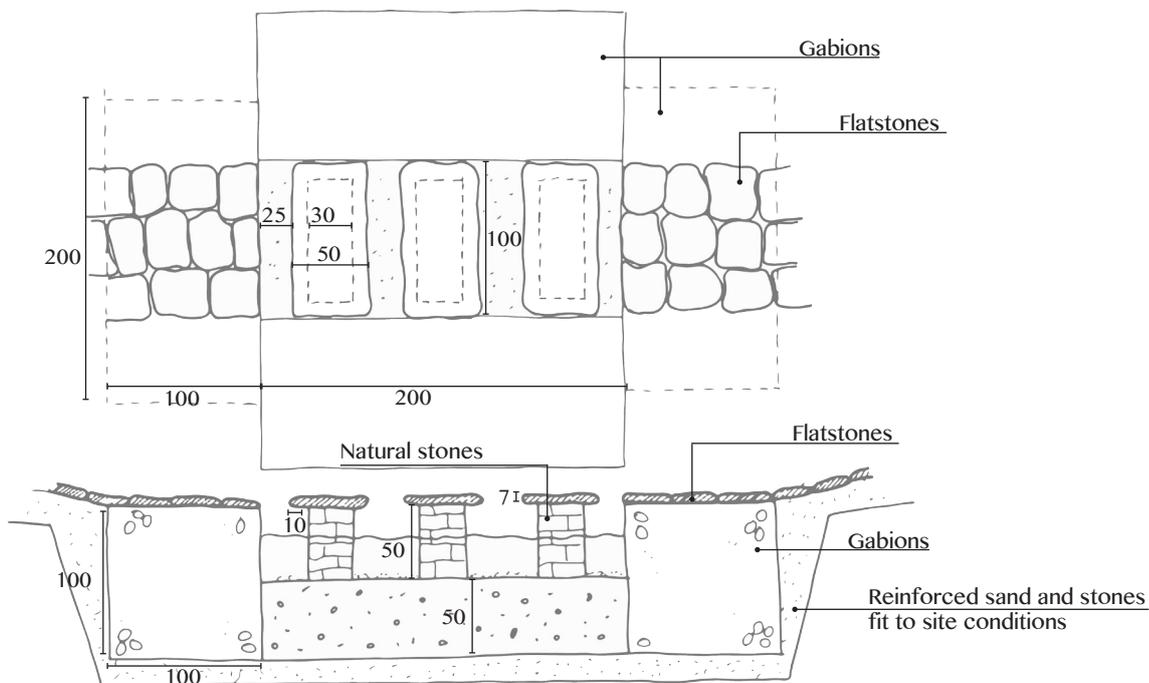


Figure 5.27 Detail D Stepping stones, scale 1:50, dimensions in cm (based on P.W.Germeaad, n.d.)



Figure 5.28: Photo of suspension bridge



Figure 5.29: Photo of culvert bridge (P.W. Germeraad, 2010)

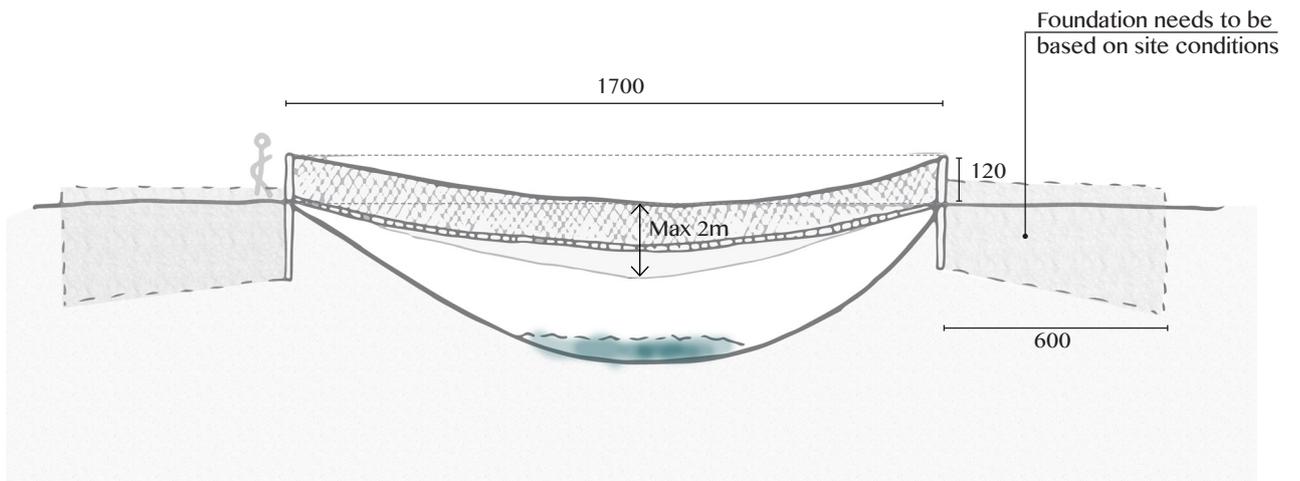


Figure 5.30: Section F-F' Suspension bridge, scale 1:200, dimensions in cm (based on: Sata, 1977)

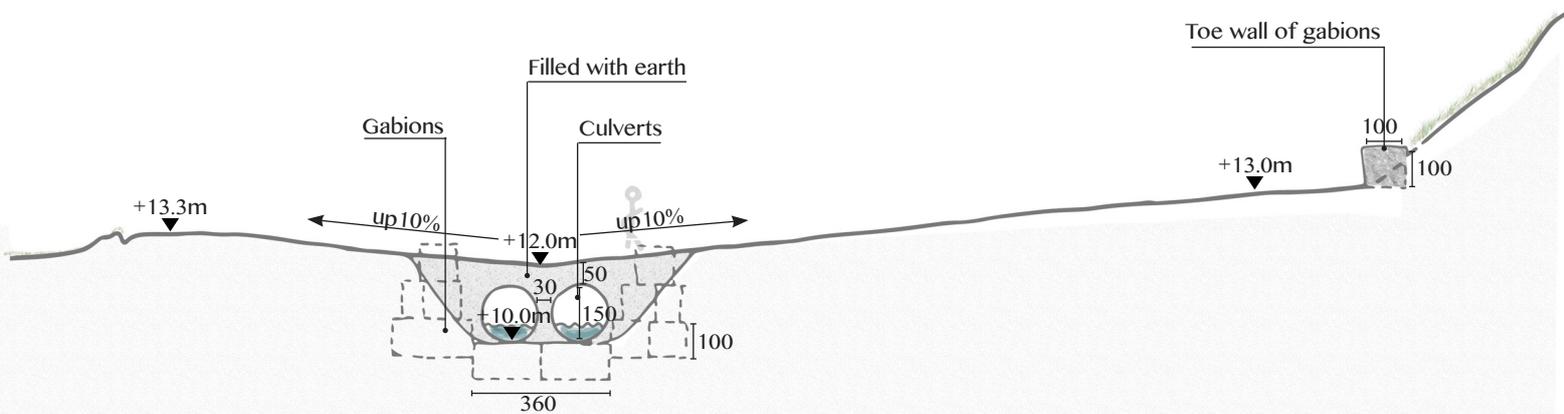


Figure 5.31: Section F-F' Culverts bridge, scale 1:200, dimensions in cm

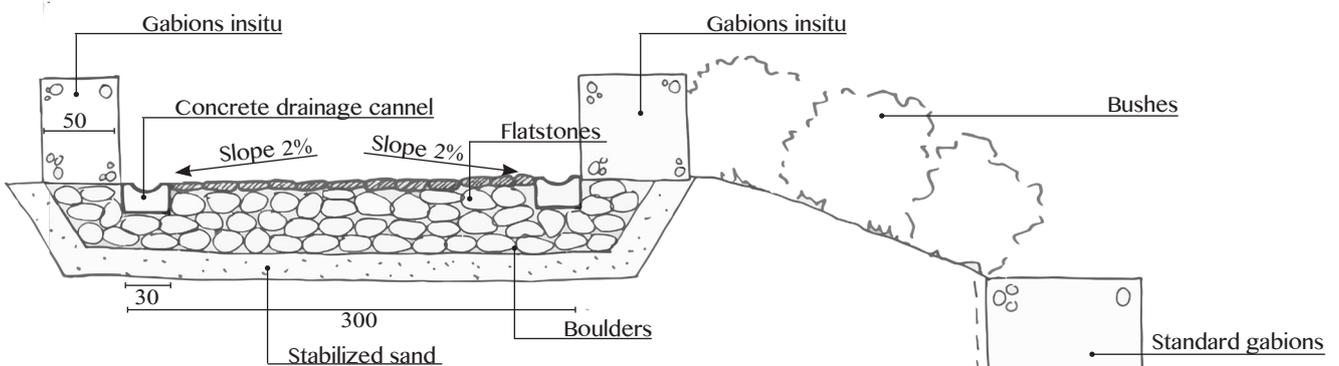


Figure 5.32: Section H-H'1, River bank with road, scale 1:50, dimensions in cm (based on G.W. Germeraad, 2016)

The landslide protection is already mentioned in section 5: Safe living, but in figure 5.32 there are ways to protect the riverbank from the river by using gabions. Behind the gabions filter fabric is used, so the earth cannot be washed away. When the slope of the riverbank is more than 45 degrees, or if monitoring shows that water levels rise more than 2 meters, an extra level of gabions or a gabion mattress at the slope toe should be added to prevent erosion of the fill (figure 5.33).

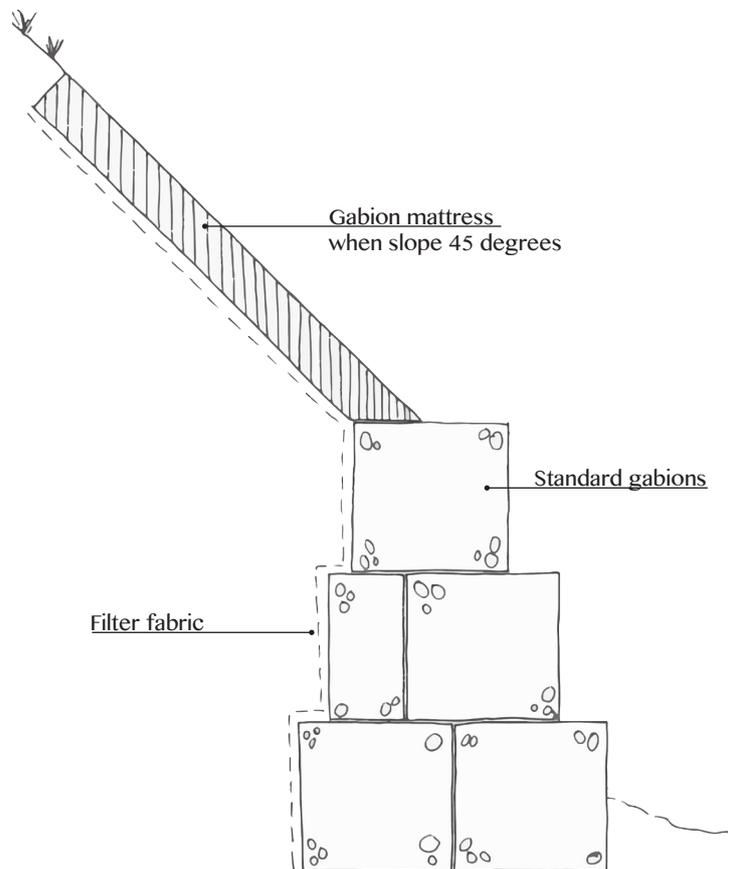
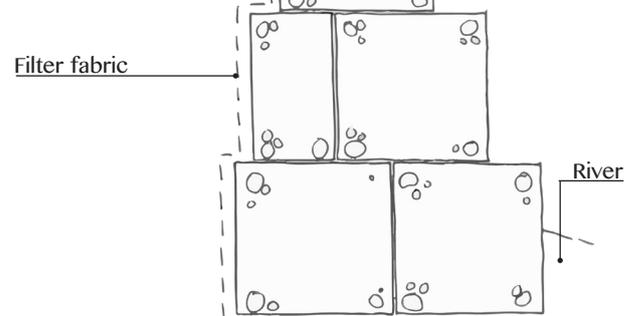


Figure 5.33: Section H-H'2, River bank with road, scale 1:50, dimensions in cm (Based on P.W.Germeraad, 2016)



Figure 5.34: Incinerator (P.W.Germeraad, n.d.)

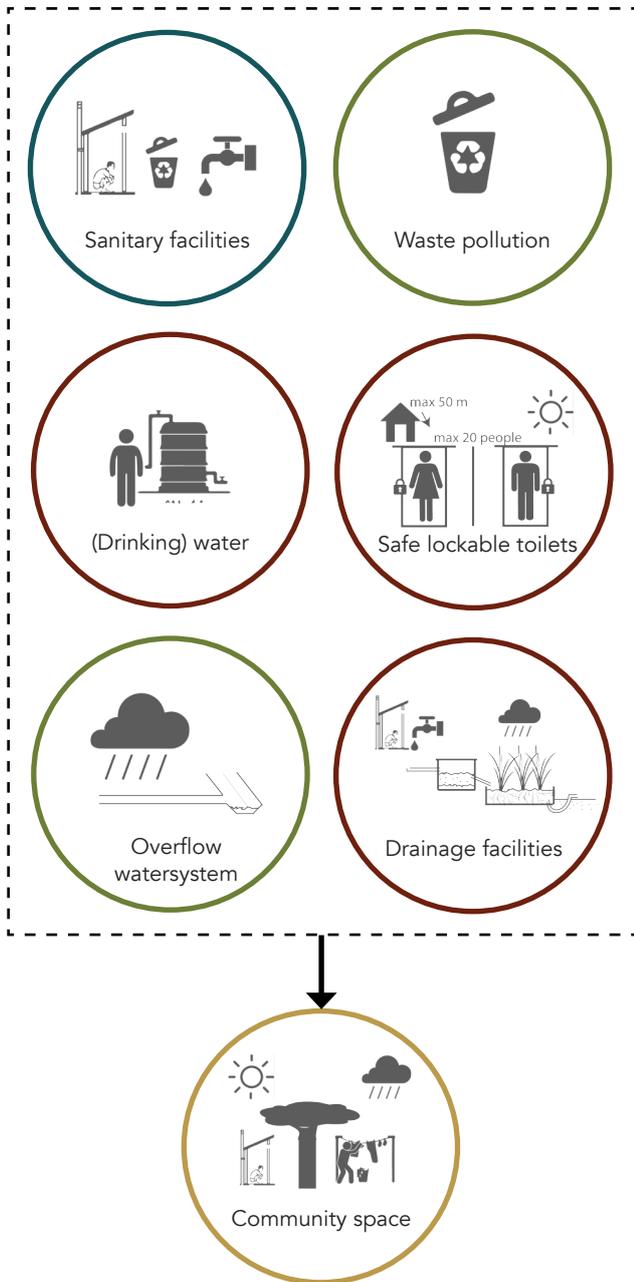


Figure 5.35: Design starting points for facilities

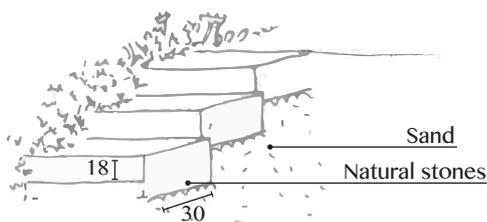


Figure 5.36: Detail E Typical stairs between terraces, dimensions in cm

5.2.7 Facilities

The community place should have sanitary facilities such as a place for waste, (drinking) water, safe and lockable toilets, an overflow water system and drainage facilities (figure 5.35). An incinerator for waste with a roof that can vary in height is a way to regulate the smoke of the burning (figure 5.34 and 5.37). As in general the wind has a West-East direction, the smoke will flow to the East and with lifting the roof, the smoke can be steered.

In several places in the community space there will be water spots. This water comes from the river but is purified by a system to make it drinkable. There will be drinkable water in the buildings too.

Close to the training centre and office there will be toilets outside because of cultural reasons. In the tourist lodges there are toilets inside.

All terrace edges that are too high to step over, will get a step or a small stairs made of local stones (figure 5.35). The height of the steps can vary, but overall the steps are 18 by 30 cm.

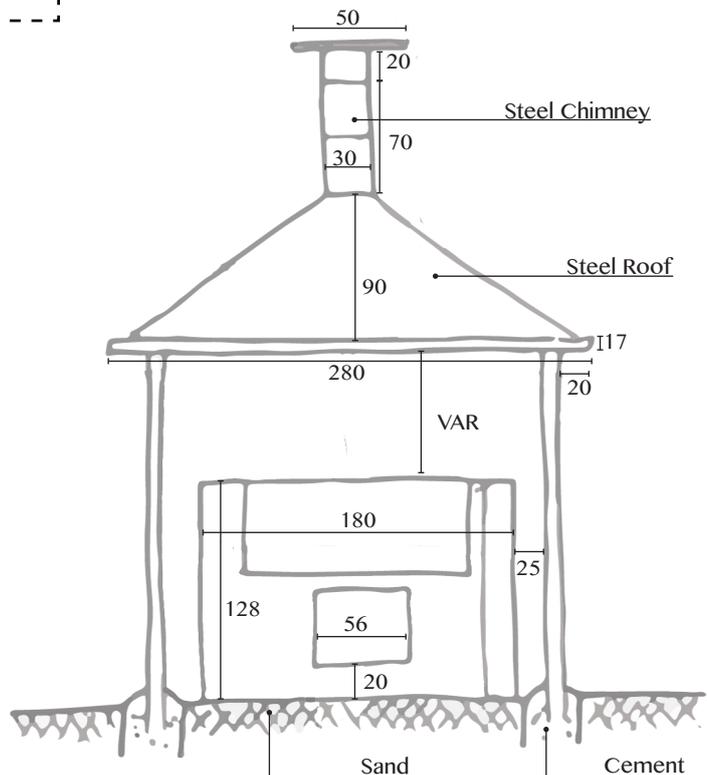


Figure 5.37: Detail F Section incinerator, Scale 1:50, dimensions in cm (based on P.W.Germeaad)

In stage one there is only a walking trail that connects the places on the land of Herb Nepal because of no land ownership of that place. The walking trail exists of flatstones locally found/made (figure 5.38). The road is guided by a shelterbelt of Ashoka trees. These will be planted in stage one. In stage two the road will be extended to a car road (figure 5.39). The three meters wide road will be placed next to the path. The trees can stay but the terrace edge needs to be supplemented with soil for firmness. The car road on the land of Herb Nepal that connects the training centre to the main road to the village has a slope to the sides of the road of 2%, so the rainwater can flow into the drainage channels next to the road. These drainage channels will end up in the leaching fields of the waste water system. The road on the land has a slope of a maximum of 8% and the culvert bridge 10%.

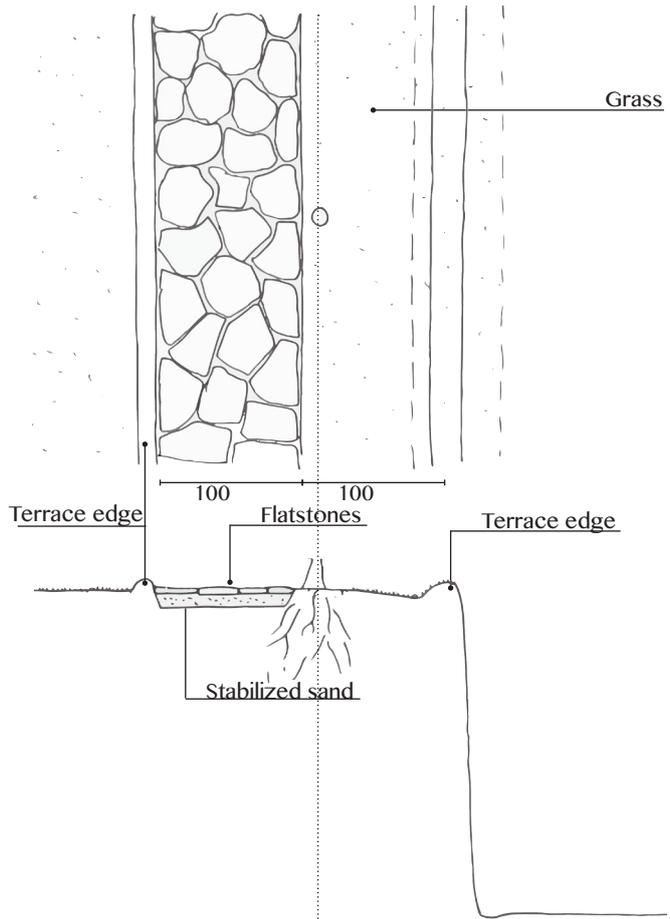


Figure 5.38: Detail G1 Typical detail of road phase 1, Scale 1:50, dimensions in cm

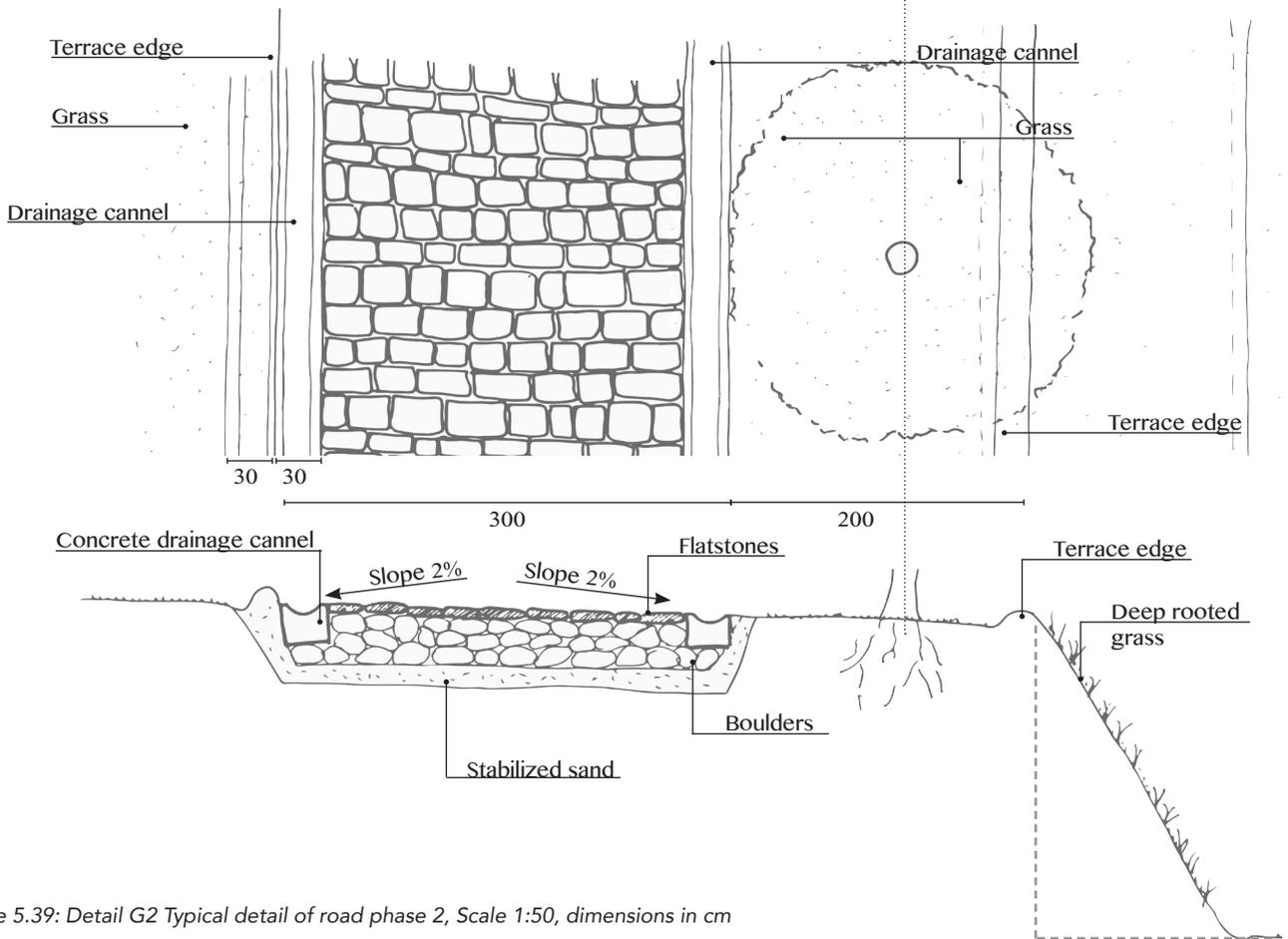


Figure 5.39: Detail G2 Typical detail of road phase 2, Scale 1:50, dimensions in cm

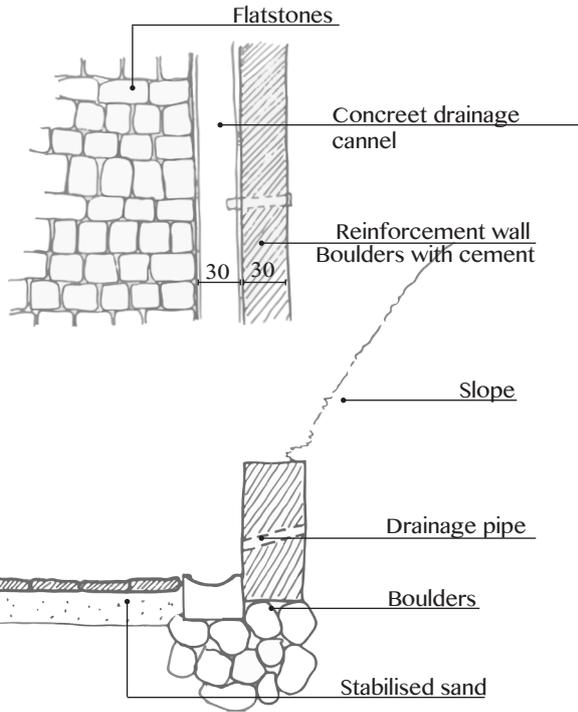


Figure 5.40: Detail H Typical retaining wall and water drainage, Scale 1:50, dimensions in cm

At the entrance road there is slow moving creep, which can be blocked by a toe wall with a drainage channel to capture and steer the rainwater (figure 5.40). On other roads the water will also be captured with drainage channels (figure 5.39). The wastewater will be collected in a septic tank that flows out into a leaching field where the water will be purified by reeds (figure 5.41-5.43). The pipes of the wastewater will have a gradient of 3%. The septic tank will have a content of 270X145X120 cm = 4.7 square meter¹, with an additional 10 cm of concrete wall. This 270 cm in height makes sure that there is more sludge storage, so less pumping of sludge is necessary. The leaching field will have a surface of 1.3 square meter per person, which is 52 square meter for 40 People (UN-HABITAT, 2008). The water will flow into the river at the tourist centre, but at the training centre the water will be caught in a banana field and can be used for the greenhouse. Because of the first stage of the design without a car bridge and road, the septic tanks cannot be emptied with the use of a truck.

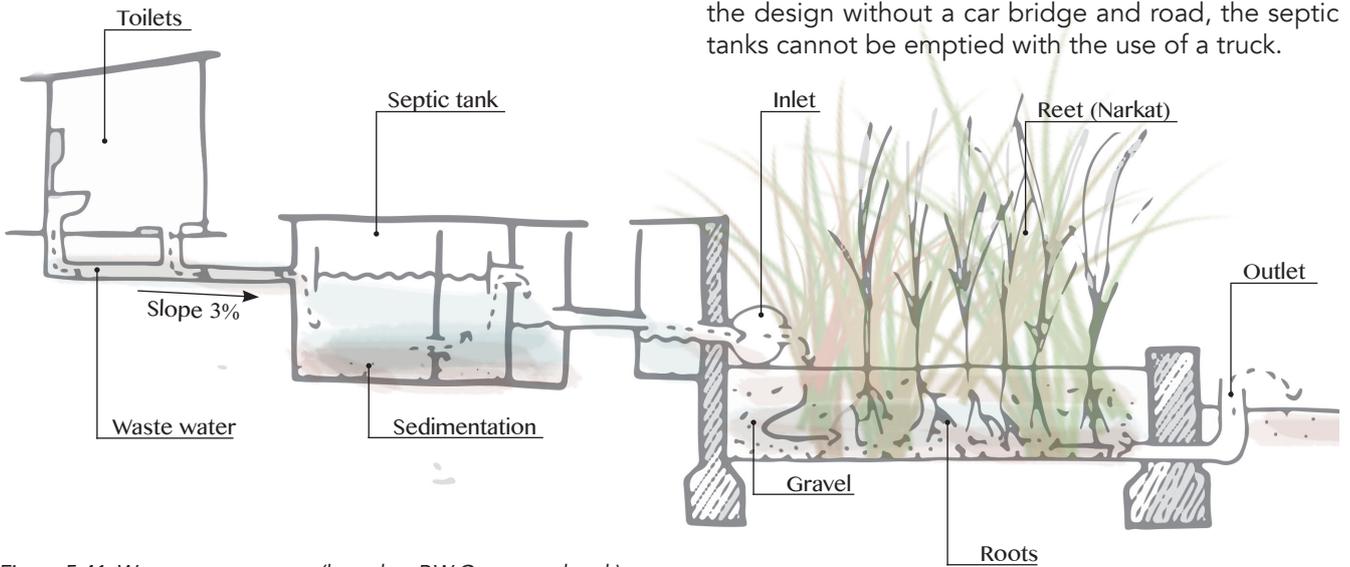


Figure 5.41: Waste water systems (based on P.W.Germeraad, n.d.)



Figure 5.42: Photo of emptying septic tank (P.W.Germeraad, 2011)



Figure 5.43: Photo of leaching field (P.W.Germeraad, 2011)

1. The margin in the above-mentioned tank for the processing of possible additional effluent (that can be a result of additional people) is small. $3.7 - 3.2 = 0.5 \text{ m}^3$

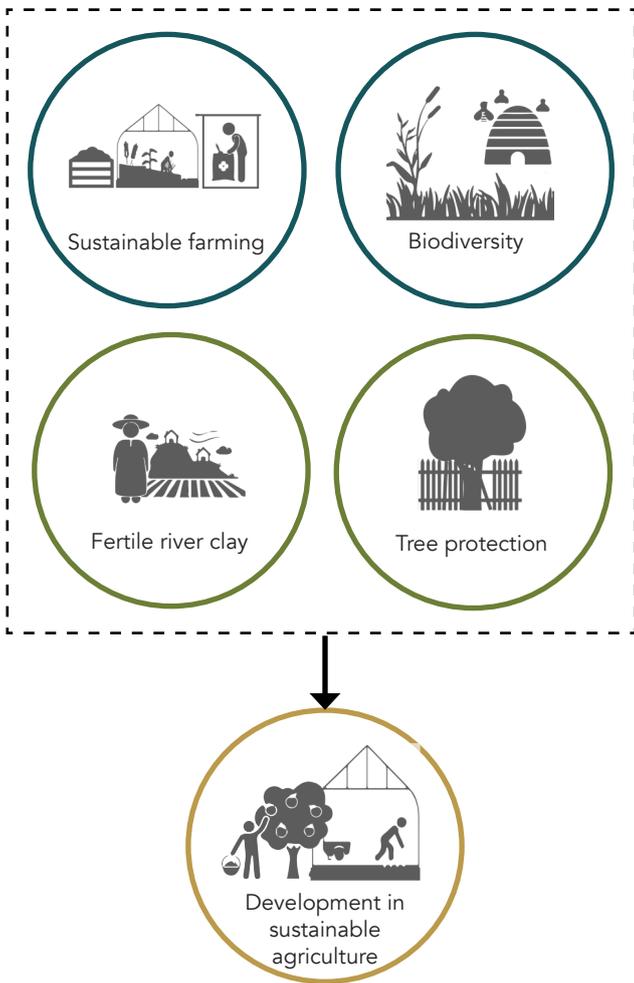


Figure 5.44: Design starting points for farming

5.2.8 Farming

To create the cultural element ‘development in sustainable agriculture’ based on the Hindu and Buddhist view, a form of sustainable farming, strengthening of the biodiversity, using the land in the valley for their fertile river clay and protecting the trees that have other functions than sacred trees or trees for wood (figure 5.44) are needed. A way to improve the biodiversity is placing small pools in the land. This water can also function as fire extinguishing water in case of emergency. Instead of pools, a fishing pond can be placed (figure 5.50), with red clay to keep the water in the fishing pond (figure 5.51). Herbs such as Camomille can be placed on the South slope, in the more shadowy parts. Trees that are used in the design are the Tamarind, Flamboyant, Peepal tree, Mango tree, Ashoka trees, Indian rosewood, banana trees and several shrubs such as blueberry and pomegranate, and reeds and herbs (figure 5.45-5.48). All have multiple functions such as providing fruit, worship, wood or biodiversity. Table 2 gives an overview of the used vegetation.



Figure 5.45: Tamarind (A better word, 2016)



Figure 5.46: Flamboyant (Plant.ai, 2016)

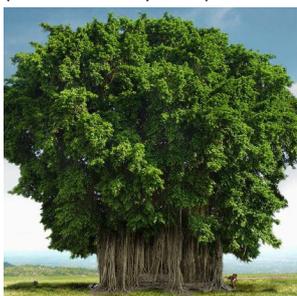


Figure 5.47: Peepal tree (the peepal tree, 2016)



Figure 5.48: Mango (Trees planet, 2013)

Name	Latin name	Function	Max height
Tamarind	<i>Tamarindus indica</i>	Solitaire (/in windbreak), Ayurveda	12-18 m
Flamboyant	<i>Delonix regia</i>	Solitaire (/in windbreak), Color	5-12 m
Peepal tree	<i>Ficus religiosa</i>	Worship	30 m
Mango tree	(<i>Mangifera indica</i>)	Fruit	25 m
Ashoka tree	<i>Saraca asoca</i> "Columnar variety"	Windbreak	10 m
Indian rosewood	<i>Dalbergia sissoo</i>	Firewood	25 m
Banana tree	<i>Manzano</i>	Purifying water/ fruit	3,5 m
Reed	<i>Phragmites and Typha</i>	Purifying water	2,5 – 3 m
Pomegranate shrubs	<i>Punica granatum Dente di Cavallo</i>	Fruit	1,5 m
Blueberry shrub	<i>Vaccinium corymbosum 'Goldtraube'</i>	Fruit	1 m

Table 2: Vegetation in the design



Figure 5.49: Visualisation 3 testing fields training centre in stage 1 (elements with a white frame are not designed or can be found in the sections or map / they need special attention from a cultural expert)

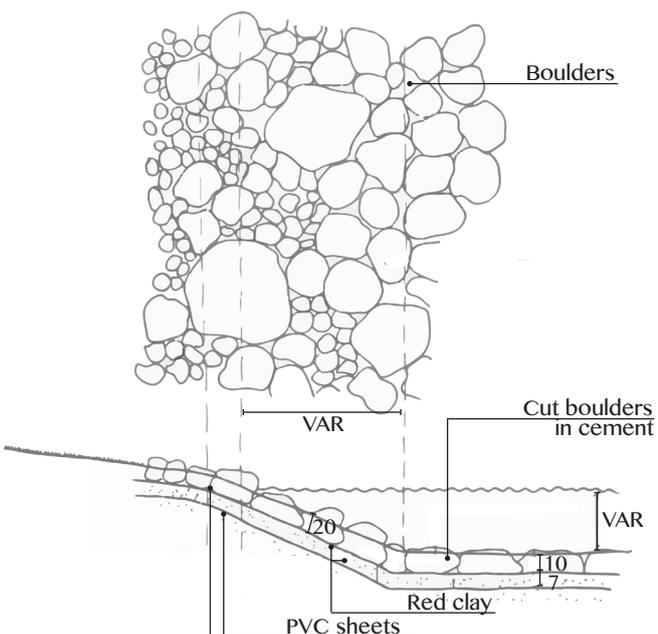


Figure 5.50: Detail I Typical detail of Fishpond edge, scale 1:50, dimensions in cm (based on P.W.Germeaad, n.d.)



Figure 5.51: Photo of red clay of fishing pond (P.W.Germeaad, n.d.)

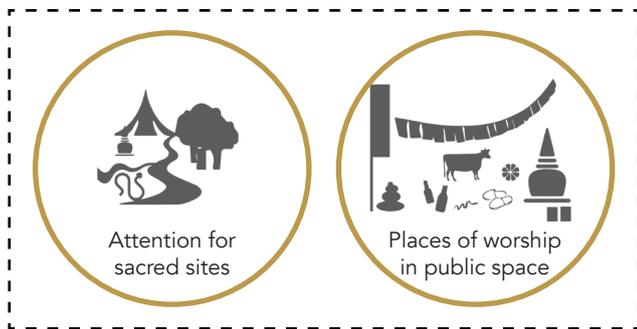


Figure 5.52: Design starting points for places of worship

5.2.9 Place of worship

The place of worship is only designed with elements of culture (figure 5.52). It is in the East, at the crossing of two water streams and the first thing you come by when arriving from the village. It is the main element of the stage two design. Central is the Peepal tree for worship, with a Chautara around it where people can pray or take a rest (figure 5.53 and 5.54). There is a teahouse and possibilities for a mani wall or Stupa/temple. These Stupas or temples need to be placed by the people themselves. So I only suggest that they will be placed on the place of worship (5.55). It might as well be that they need a temple close to the training and emergency centre, or at the entrance, to protect the place.

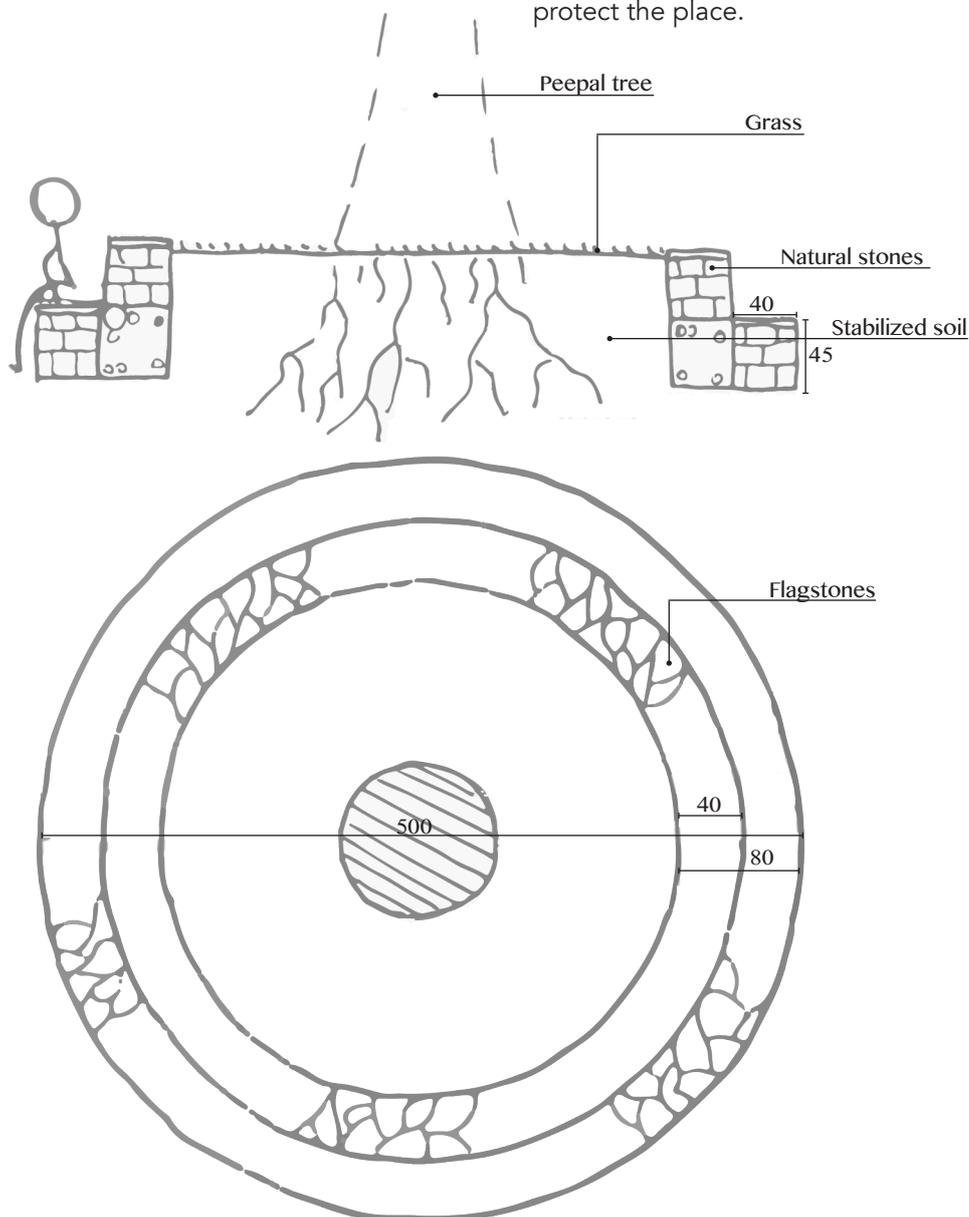


Figure 5.53: Detail J Chautara, scale 1:50, dimensions in cm

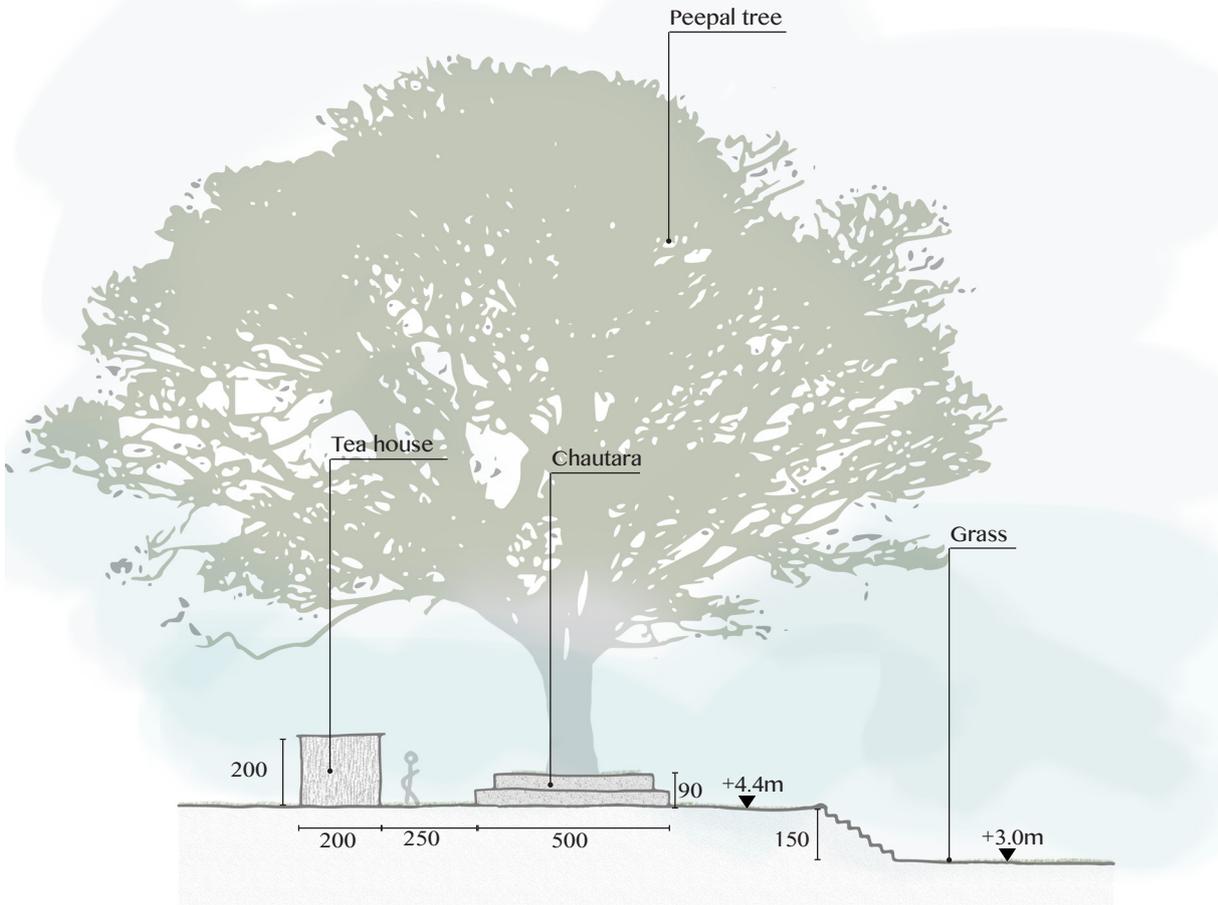


Figure 5.54: Section H-H' Place of Worship, scale 1:200, dimensions in cm



Figure 5.55: Visualisation 4 of Place of worship (elements with a white frame are not designed or can be found in the sections or map / they need special attention from an cultural expert)

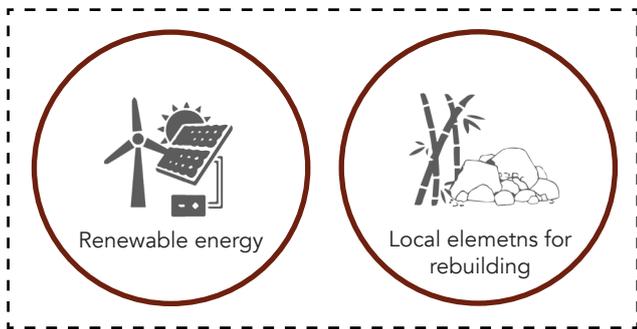


Figure 5.56: Design starting points for details

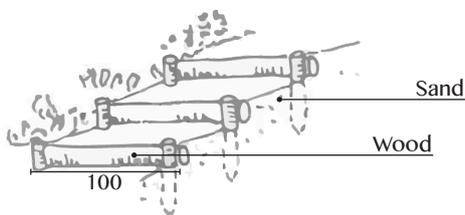


Figure 5.57: Detail K Stairs to Naag (snake), dimensions in cm

5.2.10 Details

Renewable energy and using local elements are on a very detailed scale. Solar and water energy could be used in the design of the buildings (figure 5.56), but it is not indicated in the design. All paths, stairs and roads need to be made of local materials. The flatstones and boulders on the paths and roads can be extracted locally, the same as the red clay for the fishing pond. The buildings will be built of rammed earth and bamboo, which can also be locally extracted. However, the bamboo that will stay unimpaired longer is a special kind of hard bamboo that grows more slowly and needs to be treated before they start building with it.

A cultural detail is the place of Naag, a snake that people worship. Because the ground cannot be polluted or big changes cannot be made, there is wild and natural vegetation in this place. The place is attainable by a special but simple stairs (figure 5.57). In figure 5.58 the walking path to Naag is shown, with a pati to stay dry or take a rest.



Figure 5.58: Visualisation 5 walking path to Naag (snake)

5.4 Conclusion

The design gives a general idea of what the place should look like. It is made in such a way that a technical designer can make the technical drawings without influencing the design as it is now. The second stage is the design with an optimal cultural translation. I tried to involve Buddhist elements as well as Hindu elements, to not exclude either. When I want to design with cultural elements that are not mine (figure 5.59), it is important to be careful. Only the materials and wider forms I can design, and not the symbolic such as the gate.

To make the place not only culturally suitable, I also made safety adjustments. In figure 5.60 the problem map is placed over the design. All places that are close to dangers are strengthened and protected with gabions so landslides can do less damage and the river cannot take the riverbank away.

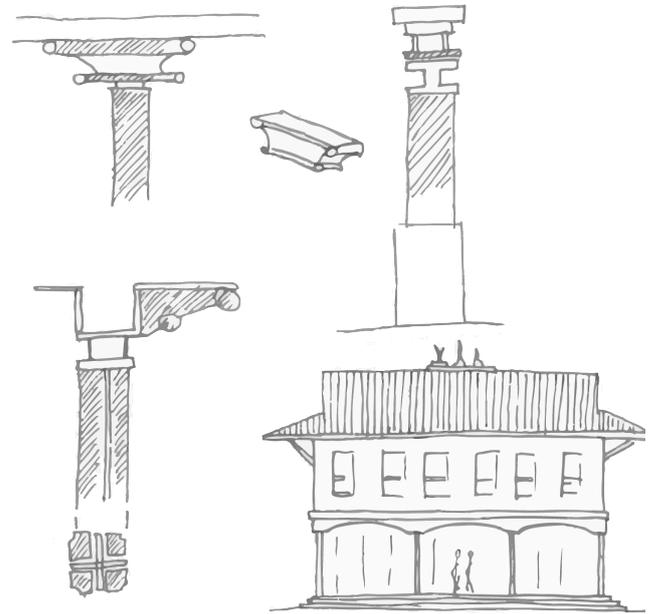


Figure 5.59: Details of pillars (based on P.W. Germeaad, n.d.)

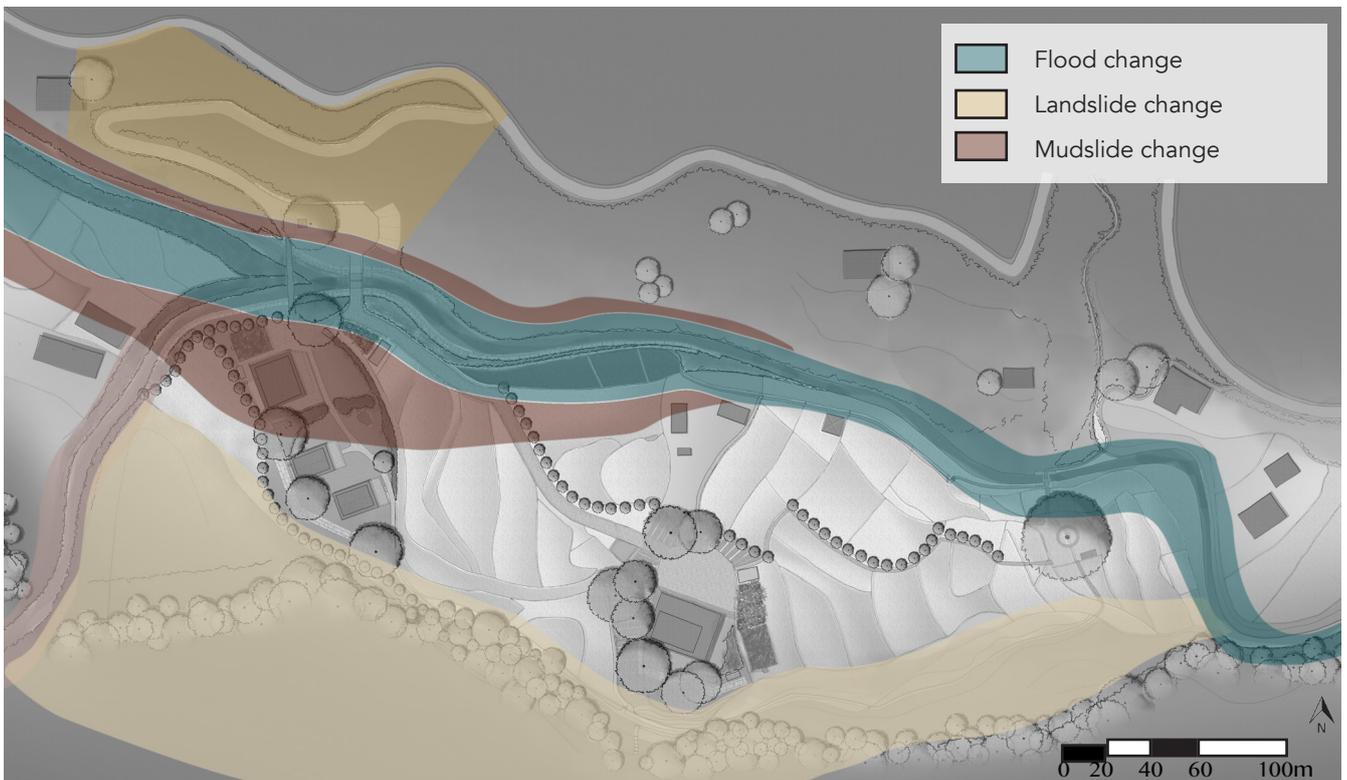


Figure 5.60: Problems in the landscape over the stage two design

Part IV
DÍSCUSSION &
CONCLUSION





6. Discussion and Conclusion

This chapter discusses the research. Only the elements that had a big influence on my research are discussed. At the end of the chapter conclusions and recommendations are given for further research.

6.1 Culture as topic

I started my Master Thesis with special interest in Buddhism, but soon I found out that pure Buddhism in Nepal does not exist. In the beginning I was only interested in the spatial aspects of culture, but spatial aspects of culture are woven into the entire culture. Therefore my research was much broader than expected, I had to dive deeper into the culture and found out that I had a much more complex fascination than I thought.

Research is a process; I had to discover what works and what does not work. I needed to integrate with the culture, I could not just observe culture for two months and then think that I understood everything. When studying a different culture, there are some complexities that are not taken into account beforehand. For example the things I came up with were that the translated word in Nepali for 'religion' is confusing. The Nepali translation is '*dharma*', however '*dharma*' also means 'the real nature of the phenomena' in Nepali. So the *dharma* of fire is heat. This caused confusion. Besides that, the world of the Tamang people in Ashapuri is very small. They see religion as Christianity, so sometimes they denied that they were religious. Therefore I had to adapt my research to the moment. Besides, Tamang people see their religion as a way of life, and therefore do not know what influences it has on their life because they do not know how it is to live without their religion.

Culture is also a sensitive topic. People that study a different culture than their own are at the same time influenced by their own culture. Therefore they are always comparing it with their own norms and values and form a certain opinion about it. When a culture does not answer to your own level of norms and values, soon you will want to improve the lives of the local people of that culture. By improving life, their lives are changing, and changing life may include changing culture, even if some elements are not socially acceptable according to our Western culture (Rapoport & El Sayegh, 2005). A similar situation arises when looking at sustainability; Herb Nepal wants to bring new and sustainable elements to the farm. When things are sustainable, they can be used for a longer time and the idea is that it is better for the environment. However, when looking at the situation of the village, these things can be

really out of context. For example a new stove made of expensive steel does not always fit in a house built of tin sheets.

6.2 Visual content analysis

The main method for this research was the visual content analysis, with a source the coding tables. In first instance, the coding tables were fed with literature. However this literature was limited; Buddhism literature is generally oriented and information about Tamang and Newar is overall unscientific literature. Besides, sources do not agree about the history of the Tamang because Tamang has no written language and there are no clear maps available of the location of the village, as it is still not completely clear where Ashapuri is located on the map due to contradicting sources. Because of this limitation of materials, the local knowledge gained with the fieldwork of interviews, workshops and surveys are valued more highly.

For the local knowledge of the interviews, workshops and surveys I used all comments made. Many people told the same so I could discover trends, but the comments made only once were often more interesting because these were more striking. This ensures that some information is only based on one person, which can be dangerous because one opinion does not always represent the whole community. However, I chose to do this because it was hard to get information from the participants so they thought deeply about it, and often when they spoke they spoke for their whole family.

This local knowledge is not only used as additional information, but overlap between the local knowledge and literature is also examined. As well as with the visual content analysis coding is applied for what elements of this coding table are visual in the systematic photographs that are made. To cover as many elements as possible, but also to see the influence of the extra Newari culture, the help of a Nepali culture expert was extremely important for the layer of meaning, as I am not familiar enough with these cultures. By using these different ways of gaining knowledge, triangulation is applied, which makes the research reliable.

6.3 Culture in details

On landscape scale, cultural manifestations are in orientation of buildings and places, in connections of places and on elements in the landscape. Overall, culture takes place on a very detailed scale. It is

visible in the facades of houses, in the form of matras, sutras and the details in pillars. These details are not in the field of landscape architecture, and I am not authorised according to their culture to design the details of a temple or gate. Even the executive landscape architect needs the involvement of a professional on the field of culture, to discuss where the culture needs to be incorporated. So it is important to be careful when designing with culture. Only the material(s) and the shape(s) can be designed, not the symbolism.

As culture is in many details, the literature found for example about Vastu Shastra and Sacred geometry as tool for architecture and urban planning, is very interesting. I could have used it for the design of the squares, however as it is a whole profession in itself, I am not specialised in this and did not use it. This may make the design incomplete or not finished. So the question pops up if it is even possible to design with culture for a landscape architect with a different cultural background. However on landscape scale culture is implemented as much as possible. So there can be designed with culture up to a certain level.

6.4 Answering research questions

I tried to answer my research questions to explore and understand the role of cultural influences in daily life outdoor space, in order to develop design principles to improve and rebuild the outdoor space in an earthquake-safe way in mountain villages in Central Nepal.

6.4.1 Main research question

What are and determines the manifestations that can be considered as an expression of culture and land use in Ashapuri?

As my research does only focus on the outside, it does not involve the whole world of indoor culture. However this indoor culture is closely linked with outdoor culture, even more after the disaster of an earthquake that destroyed many indoors. On the other hand, the outside culture in Ashapuri is rich on its own account. The cultural manifestations that can be considered as an expression of culture in Ashapuri can be divided into three categories: 'spatial organisation', 'worship', and 'living space' are all part of the outside culture.

The manifestations that are part of the spatial organisation are about orientation. Orientation to the East is highly visible. Stupas are placed in the East, houses face the East and are placed higher up in

the hills. Connections between these places are also important. People should be able to reach places for food and living during the whole year, so also during the heavy monsoon rains that flood the roads. Elements of worship are the sacred places, such as the place of special snakes, the confluence of rivers, clusters of trees, groves and temples. Where spatial organisation and worship come together are the entrances of places. People ask for a blessing of the day or wait for each other. Elements that are visible around these entrances are Peepal trees, statues of Buddha, ornaments of snakes or temples. Other elements of worship in the public space are prayer flags, mani-stones, piles of stones and garlands of marigold. These places of worship also bring mess, such as shoes people have to take off and empty bottles lying in the public space. This public space is also their living space, as Tamang people lead an extrovert life. Activities like sanitation, washing, drying and storage take place outside. Therefore protection from the seasons is important. Keeping things dry or drying things is one of the most difficult tasks, especially during monsoon.

6.4.2 Associated sub research questions

What determines the setting of a safe landscape system around the land of Herb Nepal?

The landscape system in and around of Ashapuri can be divided into the three elements of occupation, abiotic and biotic. The terraces in the landscape are clear human influences; these are made, among other things, to prevent against landslides and erosion. Extra protective measures are slopes strengthened with gabions, bolsters, toe walls and deep rooted vegetation. Besides, there is the possibility of a flood or erosion at the riverbank, therefore it is important to build only seasonal and replaceable constructions next to the river. On the other hand fertile river clay from old debris in the valley should be used for agriculture. The valley needs protection from the strong monsoon wind by for example trees that break the wind and the extra water during the monsoon need to be collected and guided to the river. Taking the elements into account in landscape design, a step will be made towards improved liveability in the landscape.

What determines the setting of a safe outdoor space in earthquake-prone areas?

An outdoor space that is earthquake-safe should have an open, flat and solid surface. It should be away from steep terraces and river edges that can collapse. When the place functions as an emergency place to go to when there is a natural disaster, it is important that the place has public ownership or

no future building plans. The place should be easily accessible with clear access and evacuation routes. The place should be protected from the climate in order to give a secure feeling. Besides, facilities such as toilets, drinking water and electricity should be available.

6.4.3 Design question

How can cultural manifestations be integrated in the design of a safe, earthquake-prone community centre in Ashapuri?

The main answer to how the preconditions of culture sensitivity, landscape systems and earthquake-safety can be applied in combination with the program of Herb Nepal for a community centre, is the final stage two design that fits the local community. All preconditions and program elements are combined into design starting points. As a matter of fact, protection from the climate is important for the culture, as well as for earthquake emergency areas. Good and safe access routes are important for the earthquake-safety as well as for the local people who need to stay connected to other villages as part of their culture. So many elements overlap and can be combined in the final design, and culture is interwoven and connects the whole design.

6.5 Recommendations for further research

This research is finished with this report. It took me almost a year to finish, because of the complexity of culture, however the study itself is very small and can be repeated in more places. There is little data available in combination with Landscape architecture and Nepal and it is a challenge to expand this. Before I started, my aim was to generate general principles. The results are no general principles, but very specific directions for this area in Ashapuri. A follow-up study can be done by applying the specific directions in the village Ashapuri and on community centres around Ashapuri itself. Other follow-up studies, less related with landscape architecture, can for example be done about the possibilities for renewable energy in the area. For culture general principles cannot be made. For earthquake-safety it is possible, but it still depends on the conditions of the site. For further research in the field of landscape architecture, the directions can be tested in other Tamang mountain villages and can be expanded, together with the coding tables, for other ethnic groups and in bigger cities, to get a total overview of the whole of Nepal with all ethnic groups.

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